

To	Company Announcements Office	Facsimile	1300 135 638
Company	ASX Limited	Date	26 August 2022
From	Helen Hardy	Pages	42
Subject	Climate Transition Action Plan		

Please find attached a release on the above subject.

Regards



Authorised for lodgement by:
Helen Hardy
Company Secretary

02 8345 5000



ASX/Media Release

26 August 2022

Climate Transition Action Plan

Origin Energy Limited (Origin) has released its first Climate Transition Action Plan (CTAP) outlining the company's strategy and ambition to lead the energy transition through cleaner energy and customer solutions. The CTAP includes new targets to accelerate emissions reduction across Origin and create value for shareholders, towards a long-term ambition to be net zero emissions by 2050.

Origin's CTAP includes:

- New ambition of reaching net zero Scope 1, 2 and 3 emissions across the value chain by 2050
- New medium-term target consistent with the goals of the Paris Agreement¹ to reduce Scope 1, 2 and 3 equity emissions intensity by 40 per cent by 2030, from a FY2019 baseline²
- New medium-term target to reduce absolute Scope 1, 2 and 3 equity emissions by 20 million tonnes by 2030, from a FY2019 baseline²
- New short-term target to reduce Scope 1 equity emissions by a cumulative 8 million tonnes between FY2021-FY2023 against FY2017 baseline, linked to remuneration
- Capital allocation supports strategy and emissions reduction targets
- Scenario analysis consistent with a 1.5°C pathway to test the resilience of the business and strategy
- Principles to support a just transition
- Strategy supported by three strategic pillars to accelerate decarbonisation and create value

Origin CEO Frank Calabria said, "As a leading Australian energy company with operations spanning retail, power generation and natural gas production, and as a major employer with a footprint in many communities across the country, we recognise we have an important role to play in the transition to a low-emissions future.

"We have a track record of action and advocacy on climate change and have made progress in several areas; and we also recognise the need for greater ambition and action.

"The release of our first Climate Transition Action Plan is an important milestone for Origin, and we believe it articulates a clear, pragmatic and ambitious pathway to accelerate decarbonisation across our business and create value for shareholders.

"We have set new emissions reduction targets, with our medium-term emissions intensity target and long-term ambition to be net zero emissions by 2050 consistent with the goals of the Paris Agreement, as set out in our CTAP.

"We are proud of the steps we have taken this year towards decarbonising our business, the most significant of which was our announcement to accelerate our exit from coal fired generation with the closure of Eraring power station by as early as August 2025.

"We are also progressing plans for a 700 MW battery on the Eraring site and have more than 1,600 MW of renewable development projects, as we aim to grow renewables and storage capacity within our generation portfolio to 4 GW by 2030.

¹ Pursuant to the methodology set out in Origin's CTAP, published on Origin's website.

² Excluded from the medium-term targets are the potential future emissions from any development of new gas fields like the Beetaloo Basin. This is because there has been no decision, nor is Origin close to a decision, to produce those gas resources. However, any development would only occur where it was consistent with Origin's net zero emissions by 2050 ambition.



“We recognise that a significant proportion of our emissions result from our customers’ use of the energy products we sell, or our Scope 3 emissions, and therefore our customers are a central part of our strategy and are captured within our medium-term targets and long-term net zero ambition.

“Our view is that gas will continue to play an important role in the energy mix for some time, to support variable renewable energy output and for customers who cannot easily electrify and for which there is no viable alternative to gas available today.

“We believe our climate plan is appropriately ambitious, and that our medium-term emissions intensity target and long-term net zero emissions ambition are consistent with the goals of the Paris Agreement, therefore, we encourage shareholders to support it,” Mr Calabria said.

Origin’s Climate Transition Action Plan will be submitted to a non-binding, advisory shareholder vote at the company’s Annual General Meeting on 19 October 2022.

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Climate Transition Action Plan

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origin



About this document



In this Climate Transition Action Plan (plan), a reference to 'Origin', 'Origin Energy', 'Group', 'Origin Group', 'Company', 'we', and 'our' is to Origin Energy Limited and its controlled entities and operated joint venture arrangements as outlined in our 2022 Annual Report unless otherwise stated.

Unless otherwise stated, information in this plan relating to our environmental policies and performance is limited to the assets we operate (including those under exploration, projects in development or execution phases, sites and closed operations). The exception is greenhouse gas (GHG) emissions performance, which we report on both an operational control¹ and equity basis².

A number of terms used in this plan are defined in the glossary on page 35.

Elements of this plan have been assured by EY, and the limited assurance statement is provided on pages 37-38.

Origin is the upstream operator of Australia Pacific Pty Limited (Australia Pacific LNG) and 27.5 per cent shareholder. Origin has a 20 per cent interest in Octopus Energy Limited (Octopus).

Forward-looking information

This plan has been prepared for submission to a non-binding shareholder advisory vote at the 2022 Annual General Meeting (AGM) of Origin. It has not been prepared as financial or investment advice or to provide any guidance in relation to the future performance of Origin.

This plan contains forward looking statements, including, but not limited to, statements regarding trends in commodity prices and supply and demand for commodities; plans, strategies and objectives of management; assumed long-term scenarios; potential global responses to climate change; regulatory and policy developments; the development of certain technologies; and the potential effect of possible future events on the value of the Origin asset portfolio and the plans, strategies and objectives of management.

Where this plan contains forward looking statements, including statements of current intention, statements of opinion and predictions as to possible future events and future financial prospects, these statements are not statements of fact and there can be no certainty of outcome in relation to the matters to which the statements relate. Forward looking statements involve known and unknown risks, uncertainties, assumptions and other important factors that could cause the actual outcomes to be materially different from the events or results expressed or implied by such statements, and the outcomes are not all within Origin's control.

The forward looking statements in this plan are based on management's current expectations and reflect judgments, assumptions, estimates and other information available as at the date of this plan and/or the date of Origin's planning processes or scenario analysis processes. There are inherent limitations with scenario analysis and it is difficult to predict which, if any, of the scenarios might eventuate. Scenarios do not constitute definitive outcomes or probabilities, and scenario analysis relies on assumptions that may or may not be, or prove to be, correct and may or may not eventuate. Scenarios may also be impacted by additional factors to the assumptions disclosed.

Except as required by applicable regulations or by law, Origin does not undertake any obligation to publicly update or review any forward looking statements, whether as a result of new information or future events. Forward looking statements speak only as of the date of this plan or the date on which planning process assumptions or scenario analysis assumptions were adopted, as relevant. Past performance cannot be relied on as a guide to future performance.

Risks

The plan sets out a number of risks and challenges through the document and in particular in the section *Risks to our decarbonisation journey*. Further explanation of strategic risks contained in the Operating and Financial Review to the Annual Report apply equally to the achievement of our ambition, aims, strategies and targets identified in this plan.

We include estimates of Scope 3 emissions in the calculation of our targets as a means to more accurately represent the value chain emissions associated with the action we are taking as we transition our business. Including these emissions in the calculations should in no way be construed as an acceptance by Origin of responsibility for these emissions.

Approach to reporting

All monetary amounts are in Australian dollars unless otherwise stated.

We report our Scope 1 and Scope 2 emissions under the *National Greenhouse and Energy Reporting Act 2007* (NGER).³ We calculate Scope 3 emissions based on the Greenhouse Gas Protocol's Corporate Value Chain (Scope 3) Accounting and Reporting Standard⁴ and Scope 3 guidance documents.⁵

Due to the inherent uncertainty and limitations in measuring emissions under the calculation methodologies used in the preparation of such data, all emissions data or references to emissions volumes (including ratios and percentages) in this plan are estimates. Where data is not available due to timing, we apply a reasonable estimation methodology. Where applicable, we revise prior year data to update prior estimates and align with external reporting requirements such as NGER.

Additional emissions information is available in our FY2022 sustainability performance data.

1 GHG emissions from our operated assets (including our generation fleet and 100 per cent of the upstream operations at Australia Pacific LNG).

2 Proportional emissions from equity investments. For example Origin's equity interest share of Australia Pacific LNG.

3 cleanenergyregulator.gov.au/NGER/Legislation

4 Corporate Value Chain (Scope 3) Standard | Greenhouse Gas Protocol (ghgprotocol.org).

5 Scope 3 Calculation Guidance | Greenhouse Gas Protocol (ghgprotocol.org).

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Where all good
change starts



We recognise Aboriginal and Torres Strait Islander peoples as the Traditional Owners and Custodians of the land where we operate, and we pay our respects to Elders past, present and future.

Chairman and CEO's message



Fellow shareholder,

We are pleased to present Origin's first Climate Transition Action Plan, which outlines our strategy and ambition to lead the energy transition and details updated targets to accelerate emissions reduction across our business.

Origin has a track record in advocacy and action on climate change, and we have taken many steps to position our business for a low carbon future. As the latest science from the Intergovernmental Panel on Climate Change (IPCC) confirms, greater ambition and action will be required by society, including Origin, to limit the global average temperature rise this century to 1.5°C above pre-industrial levels, consistent with the goals of the Paris Agreement.

The energy sector accounts for around three quarters of the world's emissions.⁶ Therefore, meeting climate change goals will require significant changes to the global energy system. The energy transition is a multi-decade, large-scale transformation that will fundamentally change the way society sources, produces, supplies, distributes and uses energy, and will deliver a significant reduction in global emissions. This transition also brings with it challenges, given the important objectives of energy reliability and affordability, particularly for the more vulnerable members of society.

As a leading Australian energy company with operations spanning retail, power generation and natural gas production, as well as a major employer with a footprint in many communities across the country, we recognise we have an important role to play in the transition to a low-emissions future. We support an energy transition that is just, and are taking steps to mitigate the adverse impacts on our stakeholders, as well as promoting the opportunities the transition will bring.

Our strategy and ambition

We do not underestimate the challenge ahead to achieve net zero emissions for our business. However, our core belief is that decarbonisation provides significant opportunities for Origin to grow and prosper, and that it is good for our customers and the environment.

Earlier this year, we articulated a refreshed strategy supported by three strategic pillars: unrivalled customer solutions, accelerate renewable and cleaner energy, and deliver reliable energy through the transition. We believe the successful execution of our strategy will support Origin to achieve our new emissions reduction targets and create value for shareholders.

Our targets

Included in our plan are new short and medium-term targets for increased emissions reduction across Origin, towards our long-term ambition to be net zero in Scope 1, 2 and 3 emissions by 2050.

We are targeting a 40 per cent reduction in Scope 1, 2 and 3 equity emissions intensity by 2030 from a FY2019 baseline, which includes emissions from our operated and non-operated activities, and from our customers' consumption of our products. Our emissions intensity target is consistent with the goals of the Paris Agreement⁷ and more ambitious than our previous 2032 targets. We are also targeting a 20 million tonnes reduction in absolute Scope 1, 2 and 3 equity emissions by 2030, from a FY2019 baseline, to complement our emissions intensity target.

Excluded from these targets are the potential future emissions from any development of new gas fields like the Beetaloo Basin. This is because there has been no decision, nor are we close to a decision, to produce those gas resources. However, any development that may be pursued in the future would only occur where it was consistent with our ambition to be net zero emissions by 2050.

⁶ [IEA \(2021\), Net Zero by 2050, IEA, Paris, page 13](#)

⁷ Pursuant to the methodology set out in this CTAP.

We believe Origin's future prospects will benefit from the opportunities arising from the energy transition and the decarbonisation of society.

We have updated our short-term target as we have achieved the previous target one year earlier than expected. Our new short-term target is to reduce cumulative Scope 1 equity emissions by eight million tonnes CO₂-e between FY2021 and FY2023, from a FY2017 baseline, with the outcome linked to remuneration.

These targets further build on our strong performance over the last five years, where total Scope 1 and 2 equity emissions declined by 21 per cent between FY2017 and FY2022, against our existing science-based target.

Our evolving energy portfolio

Our energy mix and the solutions we produce for our customers are evolving. Earlier this year, we announced that we will accelerate our exit from coal-fired power generation, bringing forward the closure of our Eraring Power Station by up to seven years to as early as August 2025. This is the most significant step we have taken towards decarbonising our business.

We see a multi-gigawatt opportunity to grow renewables and storage in our portfolio over the coming years. We are progressing plans for a 700 megawatts (MW) battery on the Eraring site and have acquired around 1,600 MW of renewable energy development projects, and we are reviewing further growth and expansion opportunities. Combined with the growth in our virtual power plant (VPP), these actions, when delivered, will help replace the capacity from Eraring with competitive, low emissions energy sources.

Gas will remain important to ensuring reliability of the energy system for many years. Gas peaking underpins reliable power supply for customers as the penetration of variable renewable energy sources increases. It is also a major source of energy for heating homes in colder parts of Australia, and for many large businesses both here and in overseas markets where Australia Pacific LNG exports gas as LNG. Many business customers use gas as an input for industrial processes that will take a longer time to transition given that in some cases there are no clear, commercially viable alternatives available today.

We believe demand for gas will decline over time, as more sectors electrify and customer preferences change, and continue to explore the potential of green hydrogen, as we believe it will play a role in the future energy mix, including as a replacement for gas for certain uses.

Our customers

We provide energy to millions of Australian households and businesses, and these customers are at the centre of everything we do. We are passionate about delivering excellent service, and our customers expect us to provide energy that is reliable and affordable, with lower emissions. Their needs and expectations are also changing, and our products and services will need to evolve to address those future needs.

Recognising that a significant proportion of our emissions result from our customers' use of the energy products we sell (Scope 3), our customers are a central part of our strategy and are captured within our medium-term targets and long-term ambition.

We aim to lead the industry in customer-focused innovation to provide both our residential and business customers with a growing portfolio of low-carbon products and cleaner energy solutions. Today, these products and services include rooftop solar and batteries, renewable and carbon neutral energy, electric vehicle solutions, renewable power purchase agreements (PPAs) and demand management. In the future, this is also likely to include green hydrogen as it becomes cost-competitive at scale. This year we also established a new business unit, Origin Zero, which serves our large business customers and aims to accelerate the delivery of cleaner energy solutions to this segment.

As we assist our customers to achieve their own decarbonisation goals, Origin also benefits from reduced Scope 3 emissions.

Your say

Our business will continue adapting and changing as we navigate the energy transition and respond to the climate challenge. We believe it is important that you, our shareholders, have an opportunity to review our strategy and targets and have your say.

That is why this Climate Transition Action Plan has been prepared for submission to a non-binding shareholder advisory vote at Origin's Annual General Meeting on 19 October 2022. It follows extensive engagement with shareholders and stakeholders on our refreshed strategy and ambition to lead the energy transition, and in so doing, strengthen Origin for the future.

We will continue to engage transparently with shareholders and stakeholders and report our progress against our plan annually.

We believe Origin's future prospects will benefit from the opportunities arising from the energy transition and the decarbonisation of society. We consider that our updated medium-term emissions intensity target and long-term net zero emissions ambition are consistent with the goals of the Paris Agreement,⁸ and your Board recommends that you vote in support of this plan.

We thank you for your continued support.

Scott and Frank
Chairman and Chief Executive Officer

8 Pursuant to the methodology set out in this CTAP.

Climate Transition Action Plan

Long-term ambition to achieve **net zero Scope 1, 2 and 3 emissions by 2050**



A refreshed strategy supported by three strategic pillars, to **decarbonise Origin and create value** for shareholders



Medium-term target* and long-term ambition consistent with goals of the **Paris Agreement**[^]



New short and medium-term targets to **accelerate decarbonisation**



Capital allocation

consistent with strategy and decarbonisation targets across portfolio



Scenario analysis

to test resilience of our business and strategy to a 1.5°C pathway



Principles to support a **just transition**



Remuneration

linked to short-term target



Robust **governance and accountability**



Transparent **reporting of our progress and continued engagement**

* Excluded from this target is the potential future emissions from any development of new gas fields. However, any development would only occur where it was consistent with our net zero emissions by 2050

[^] Pursuant to the methodology set out in this CTAP.

The energy transition is a multi-decade transformation, driven by the forces of decarbonisation, decentralisation and digitisation.

The energy transition

Across the world, energy systems are changing rapidly.

The energy sector accounts for around three quarters of global anthropogenic GHG emissions.⁹ Therefore, to pursue the goals of the Paris Agreement, society must continue to transform the way it produces and consumes energy.

This transformation in energy production and consumption is commonly referred to as the energy transition. The energy transition is a multi-decade transformation, driven by the forces of decarbonisation, decentralisation and digitisation. As the energy transition accelerates, one of the challenges facing societies around the world is how to find the right balance in achieving emissions reduction, while maintaining the reliability, security and affordability of energy supply.

In 2022, the energy transition collided with a major shift in the broader macroeconomic and geopolitical environment causing significant price volatility and risk to the security of supply in domestic and global energy markets.

In recent months, Australia has experienced very challenging energy market conditions, with high prices and periods of supply constraint. There are many factors that have contributed to this situation, including the war in Ukraine and the La Niña weather pattern followed by an unseasonably

cold period. These factors were exacerbated by significant coal plant outages, with up to one third of coal-fired generation capacity in the National Electricity Market (NEM) offline during June 2022 due to planned and unplanned outages.¹⁰ This caused unprecedented levels of volatility and uncertainty in the domestic market.

These events have brought into stark focus the important role coal power still plays in Australia's NEM, currently meeting around 60 per cent of electricity needs.¹¹ With the nation's coal-fired fleet ageing, the challenge will be to ensure coal plants can continue to support the market and help meet demand for reliable and affordable power, while the new, lower-emissions power system is built.

With renewables supplying around 26 per cent of electricity in the NEM today,¹² the scale of renewables, storage and transmission that will need to be built should not be underestimated, nor should the potential for this transition to impact on energy affordability.

Origin's ambition is to lead the energy transition through cleaner energy and customers solutions. Over time, we will evolve and optimise our portfolio of assets, products and services to meet customer demand and preference. We are also committed to supporting our people, communities and customers through this major period of change for our sector, as we continue to play our role in Australia developing a reliable, affordable and low carbon energy system.



⁹ IEA (2021), *Net Zero by 2050*, IEA, Paris, page 13.

¹⁰ Source: NEMSight

¹¹ Source: NEMSight, based on FY2022 annual generation

¹² Source: NEMSight, based on FY2022 annual generation

Our beliefs

Our beliefs inform Origin's view on the energy transition:

- The world must pursue efforts to limit the global average temperature rise to 1.5°C above pre-industrial levels.
- The electrification of transport, buildings and industries in Australia is likely to increase dramatically, leading to a substantial rise in demand for electricity. This higher demand is expected to increasingly be met through renewable energy sources.¹³
- Customer preferences will help drive the accelerated growth of renewable energy.
- Firming generation capacity, such as gas peaking power stations, will remain an essential part of the power system to support the growth of renewables and underpin reliability of supply. Other forms of firming capacity, such as batteries and hydro, will also play a significant role in supporting the growth of renewables.
- There will continue to be a long-term role for natural gas¹⁴ to maintain energy security and support the energy transition.
- Green hydrogen will play an important role in the future global energy mix, particularly in hard-to-abate sectors. There is an opportunity for Australia in green hydrogen for both domestic supply, and export given our proximity to the growing economies of Asia.¹⁵
- The transition to a low-carbon future presents Origin with opportunities, given the resilience of our existing portfolio and a strategy focused on growth in renewables, flexibility in gas and storage (both hydro and battery), and delivering cleaner, smarter energy solutions to customers.

- The composition of the NEM will change over the coming decades, facilitating its decarbonisation over time.
- Origin's existing assets and capabilities provide a strong foundation to take advantage of opportunities to grow and create value for our shareholders.
- As an integrated energy company that operates across multiple sectors, we will continue to evolve and optimise our portfolio in response to a low carbon world.
- Getting to net zero emissions by 2050 will be challenging for society and Origin, and our progress against our targets will not necessarily be linear.

Independently reported trends, as illustrated by the adjacent graphic, have helped to guide our beliefs and Origin's approach to the energy transition. We recognise that our beliefs will likely evolve over time as technological, regulatory and market conditions change. The evolution of the market through the energy transition may pose risks and challenges to our business, as well as to achieving our decarbonisation targets and ambition.

¹³ [AEMO 2022 ISP step change scenario](#)

¹⁴ IEA (2021), *Net Zero by 2050*, IEA, Paris, A Roadmap for the Global Energy Sector notes that its Net Zero Emissions (NZE) Scenario results in a significant reduction in fossil fuel demand. Under this scenario global annual natural gas demand falls from 3,900 billion cubic metres (bcm) to around 1,700 bcm by 2050. While demand for gas falls significantly by 2050 under this scenario there is a long-term role for gas. A significant amount of the gas produced after 2050 under this scenario is associated with hydrogen production in facilities with carbon capture and storage (CCS), with the balance used in industry

¹⁵ minister.industry.gov.au/ministers/taylor/media-releases/australia-japan-clean-hydrogen-trade-partnership

Trends through the energy transition*



73%
of NEM to be
renewables by 2030



21%
of NEM sourced
from coal by 2030



8x
growth in storage
in NEM by 2030



15%
growth in electricity
demand in NEM by 2030



6x
growth in hydrogen
globally by 2050



40%
growth in electricity
demand globally by 2030

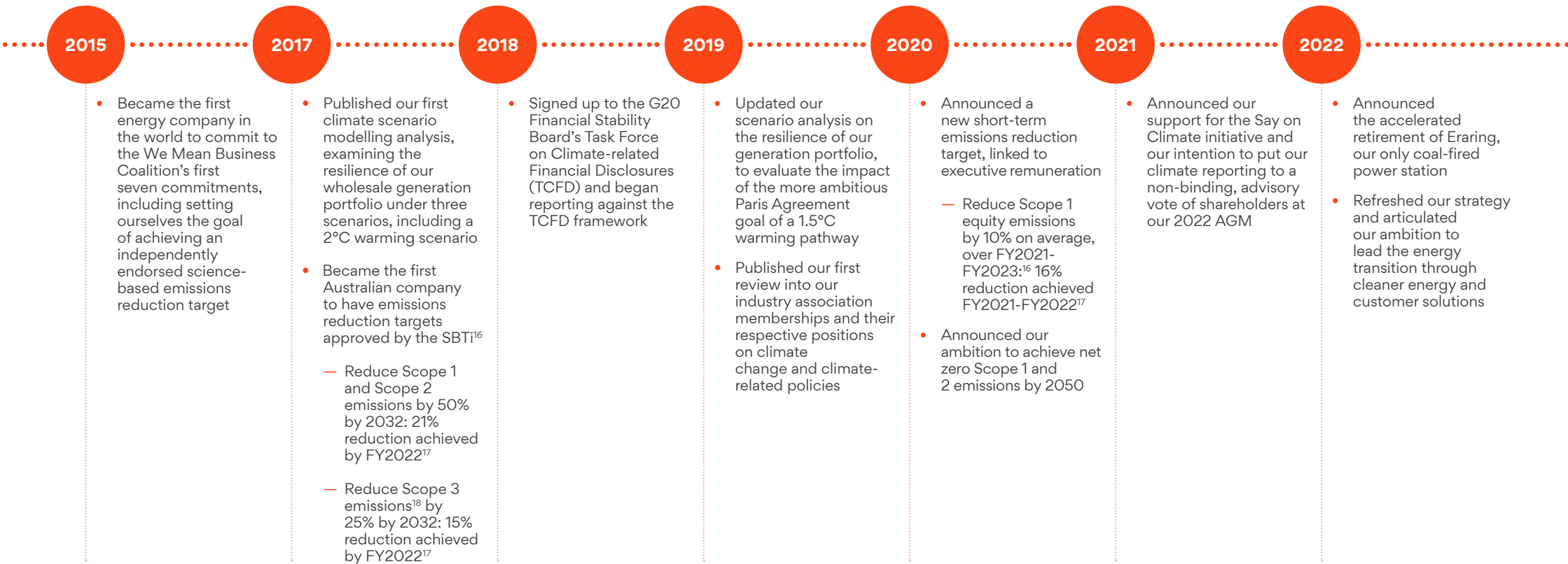
* Sources:

Domestic: [AEMO 2022 ISP step change scenario](#)

Global: IEA (2021), *Net Zero by 2050*, IEA, Paris

Our decarbonisation journey continues

We have been progressively decarbonising our business and are focused on the energy transition.



¹⁶ From a FY2017 baseline

¹⁷ Based on estimates as at the date of this Plan. Where data is not available due to timing, we apply a reasonable estimation methodology. Where applicable, we revise prior year data to update prior estimates and align with external reporting requirements such as NGER

¹⁸ Incurred within the domestic market; excluding liquefied petroleum gas (LPG) and Corporate as their emissions are not material. Does not include Australia Pacific LNG's LNG exports

Targets



Our long-term ambition is to achieve
net zero Scope 1, 2 and 3 emissions by 2050¹⁹



Our targets to support our net zero ambition

By 2023



8 mt

cumulative reduction in Scope 1 equity
emissions between FY2021-FY2023, against
FY2017 baseline

By 2030



40%

reduction in Scope 1, 2 and 3
equity emissions intensity against
FY2019 baseline^{19,20,21}

By 2030



20 mt

reduction in absolute Scope 1, 2 and 3
equity emissions against FY2019 baseline^{19,20}

¹⁹ Covers all material Scope 1, 2 and 3 emissions.

²⁰ Excluded from these targets are the potential future emissions from any development of new gas fields. This is because there has been no decision, nor are we close to a decision, to produce those gas resources. However, any development would only occur where it was consistent with our net zero emissions by 2050 ambition.

²¹ Subject to limited assurance by EY

Consistency with Paris Agreement

The IPCC is the most authoritative source of information on the science of climate change.²² To develop the 1.5°C Paris-aligned pathway envelope for our net zero emissions ambition, we first looked to the IPCC special report to the United Nations Framework Convention on Climate Change (UNFCCC) on the impacts of Global Warming of 1.5°C, published in October 2018 (1.5SR).

The IPCC 1.5SR contains 90 scenarios consistent with limiting the average global temperature increase to 1.5°C above pre-industrial levels. A number of these scenarios contain pathways which temporarily overshoot 1.5°C and rely on negative emissions in the second half of the century to reduce temperatures back to 1.5°C.

Our approach has been informed by the SBTi Foundations of Science-Based Target Setting guidance and the SBTi selection of 20 recommended IPCC 1.5°C low and no overshoot scenarios²³ to translate the IPCC 1.5°C low and no overshoot scenarios to a pathway envelope.

As a further reference, we included the International Energy Agency (IEA) Net Zero report²⁴ pathway (IEA NZE) as it provides a greater degree of sectoral

granularity. Together, these 21 scenarios form our 1.5°C Paris aligned pathway envelope.

To translate our final 1.5°C Paris-aligned pathway envelope to an emissions intensity target, we referred to the SBTi oil and gas sector draft guidance, published in August 2020.²⁵ As an integrated energy company that operates across both the power and oil and gas sectors we adopted an emission intensity target, on an equity basis²⁶ that covers our value chain of equity Scope 1, 2 and 3 emissions²⁷, similar to many of our peers. This method captures Scope 1, 2 and 3 emissions, including direct and indirect emissions derived from the end use of our products, including our share of Scope 3 emissions from Australia Pacific LNG.²⁸

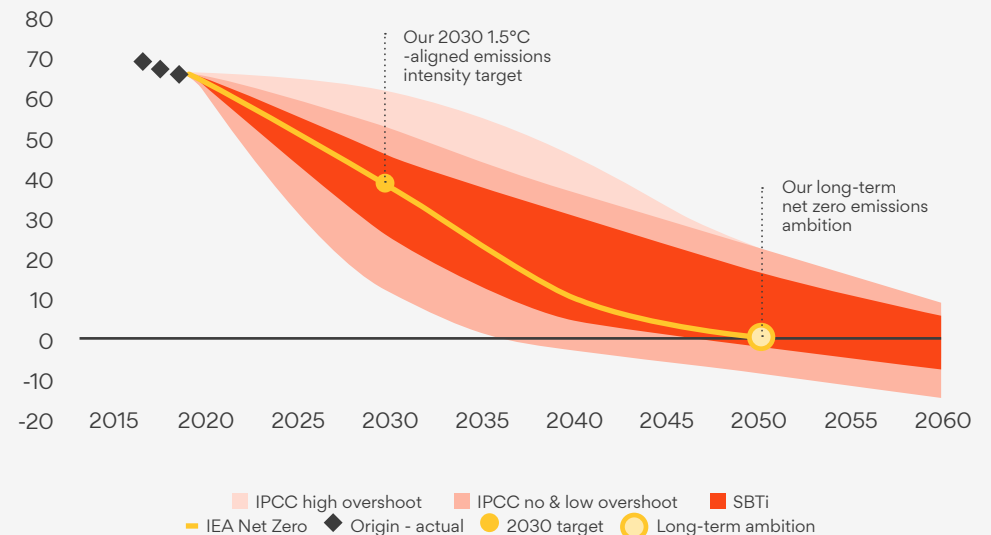
We have applied the Sectoral Decarbonisation Approach (SDA)²⁹ in setting our emissions intensity target. The SDA adopts a subsector-level approach and global least cost mitigation perspective in allocating the remaining carbon budget to different sectors. The SDA uses the convergence allocation formula for emissions intensity to set targets. The convergence approach takes into account the initial starting intensity of the sector and reduces the emissions intensity to a common value in the future. In Origin's case, as we operate across multiple sectors, the sector is the "integrated energy" sector which encompasses the overall provision of energy to the economy.

We then applied a Fossil Fuel Equivalent (FFE) calculation methodology to rebase the 1.5°C aligned pathways to Origin's portfolio baseline year emissions intensity. Through the application of the SDA, convergence and FFE calculations, we were able to develop the final 1.5°C aligned emissions intensity pathway envelope for our portfolio.

In selecting the base and target years for our updated 1.5°C emission target, the SBTi oil and gas sector draft guidance recommends choosing the most recent year for which data is available for the baseline year. We have chosen FY2019 as our baseline, as it is the most recent representative year preceding the impact of COVID-19 on the demand from our customers.³⁰ For our target year, we have chosen 2030.

We believe our medium-term emissions intensity target is consistent with the goals of the Paris Agreement.

Equity emissions intensity target (t CO₂-e/TJ)



We believe our updated medium-term emissions intensity target and our long-term net zero emissions ambition, are consistent with the goals of the Paris Agreement to limit the increase in the average global temperature to 1.5°C above pre-industrial levels.^{31,32}

Our resulting 2030 emission intensity target and methodology has been independently assured on a limited basis for consistency with the IPCC scenarios and the SBTi draft guidance and recommended 1.5°C scenarios.

²² ipcc.ch/about/

²³ The pathway for the decline range of our emission intensity target includes the IEA Net Zero, SBTi recommended 20 IPCC 1.5°C scenarios with either no or low overshoot from the 2018 special report (SR1.5). Median and interquartile ranges defined using data from the IAMC 1.5°C Scenario Explorer and Data hosted by the International Institute for Applied Systems Analysis.

²⁴ IEA (2021), *Net Zero by 2050*, IEA, Paris

²⁵ sciencebasedtargets.org/sectors/oil-and-gas

²⁶ Proportional emissions from equity investments. For example Origin's equity interest share of Australia Pacific LNG.

²⁷ Excluded from these targets are the potential future emissions from any development of new gas fields. However, any development would only occur where it was consistent with our net zero emissions by 2050 ambition.

²⁸ Scope 3 emissions included within the target boundary include LNG export volumes from our interest in Australia Pacific LNG.

²⁹ *Sectoral Decarbonization Approach (SDA): A method for setting corporate emission reduction targets in line with climate science.*

³⁰ As it was set five years ago, our previous SBTi-approved 2032 emissions target utilised our 2017 emissions as a base year.

³¹ Our approach to setting our medium-term emission intensity target for Scope 1, 2 and 3 was independently assured on a limited basis by EY for its alignment with a 1.5°C pathway envelope. EY's limited assurance statement is included on page 37 of this Plan.

³² As noted, Origin has relied on data, analysis and methodologies prepared by the IPCC, the IEA and the SBTi among others, in calculating its 1.5°C envelope and has not sought to verify those materials.

Medium-term targets

Bringing forward our exit from coal-fired power generation is the most significant step we expect to take to achieve our medium-term emissions targets. We will continue to assess the market over time, and this will help inform any final decisions on the timing for closure of all four units of Eraring.

Our medium-term targets include our equity share of Australia Pacific LNG's Scope 1, 2 and 3 emissions.³³ Our Scope 3 emissions included within the medium-term targets' boundary include our equity share of LNG export volumes from our interest in Australia Pacific LNG.

Potential future emissions from any development of new gas fields like the Beetaloo Basin are excluded from the target boundary given they are highly uncertain. If a decision was made to develop these fields in the future, then we intend to review the

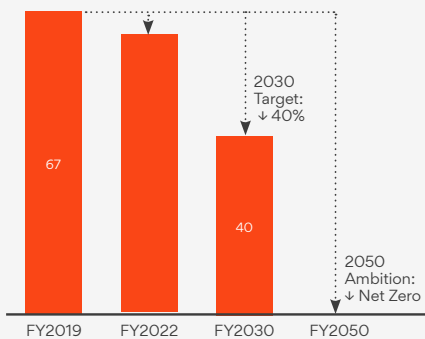
target. However, any development would only occur where it was consistent with our ambition to be net zero emissions by 2050.

Scope 3 emissions account for the majority of our total emissions. The key contributors to our Scope 3 emissions include the purchase of wholesale electricity from the NEM, the combustion of exported LNG and the purchase and sale of domestic gas by both our Energy Markets and Integrated Gas businesses.

As these are indirect emissions that come from sources that Origin does not control, they are more challenging to address. Reducing our Scope 3 emissions will mean working hard, including with our partners, to identify, measure and mitigate emissions within our value chain, and working with our customers and suppliers to help them achieve their decarbonisation goals. Other factors such as decarbonisation of the NEM will also support managing our Scope 3 emissions.

Reduce Scope 1, 2 and 3 equity emissions intensity by 40 per cent by 2030 against our FY2019 baseline³⁴

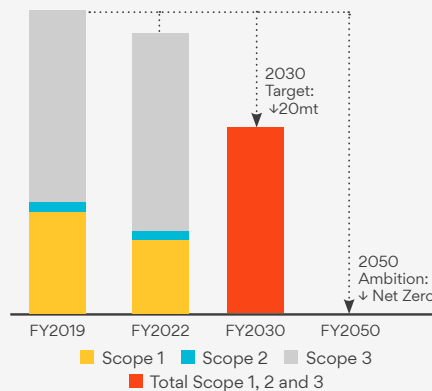
Scope 1, 2 & 3 emissions intensity target (tCO₂-e/TJ)



Reduce Scope 1, 2 and 3 absolute equity emissions by 20 million tonnes by 2030³⁵

To complement our emissions intensity metric, we are also targeting an absolute reduction of 20 million tonnes of Scope 1, 2 and 3 equity emissions by 2030 compared to our FY2019 baseline.

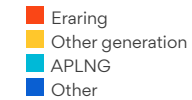
Scope 1, 2 & 3 absolute equity emissions reduction target (mt CO₂-e)



FY2019 baseline equity emissions breakdown

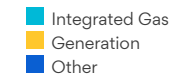
Scope 1

Scope 1 emissions are GHG emissions released to the atmosphere as a direct result of our activity. These are sometimes referred to as direct emissions; examples include emissions from electricity generation, such as Eraring, and gas production.



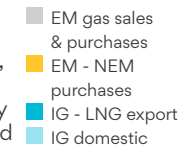
Scope 2

Scope 2 emissions are GHG emissions resulting from purchased electricity we consume to power our offices and operating sites.



Scope 3

Scope 3 emissions are indirect GHG emissions, other than Scope 2, relating to our value chain. This includes wholesale purchases of electricity from the NEM that we sell to our customers and also the use of our sold products such as LNG and domestic gas sales.



³³ Scope 1, 2 and 3 emissions are based on extrapolated assumptions for operated and non-operated activities to 2030, which are not all within the operational control of Australia Pacific LNG or Origin.

³⁴ Excluded from these targets are the potential future emissions from any development of new gas fields like the Beetaloo Basin. This is because there has been no decision, nor are we close to a decision, to produce those gas resources. However, any development would only occur where it was consistent with our net zero emissions by 2050 ambition.

³⁵ Excluded from these targets are the potential future emissions from any development of new gas fields like the Beetaloo Basin. This is because there has been no decision, nor are we close to a decision, to produce those gas resources. However, any development would only occur where it was consistent with our net zero emissions by 2050 ambition.

Short-term target

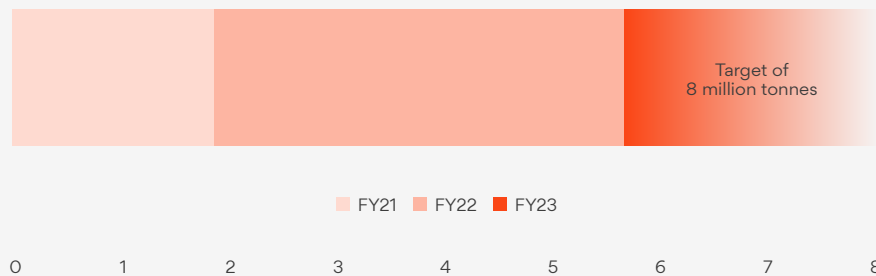
Our updated short-term target is to reduce Scope 1 equity emissions by a cumulative eight million tonnes CO₂-e between FY2021-FY2023, against our FY2017 baseline.³⁶ The target is set over a period of three years and complements our medium-term targets.

This is more ambitious than the target we introduced in 2020 to reduce our Scope 1 equity emissions by an annual average of 10 per cent between FY2021 and FY2023, compared to our FY2017 baseline. We achieved the absolute emissions reductions planned over the three years within the first two years. Scope 1 equity emissions have declined by an average of 16 per cent over FY2021-22 against our FY2017 baseline, or a cumulative reduction of 5.6 million tonnes.

Given the recent energy supply constraints and market volatility we have seen in domestic energy markets, in achieving emissions reduction towards our FY2023 target we also need to consider affordability and reliability of energy supply for our customers and the community. Our generation portfolio, particularly Eraring Power Station, plays an important role in maintaining electricity system reliability. There is the potential that Eraring and other generation could be required to run at higher output levels in the near term to meet customer demand and provide reliability to the market, which would make our short-term target difficult to meet.

Our updated short-term target is reflected in management and employee incentives, including 10 per cent of the Chief Executive Officer's short-term incentive. This short-term target incentivises our people to focus on opportunities to reduce our direct Scope 1 emissions, which they have the greatest potential to influence (refer to our section on *Incentivising our people* on page 33 for more information on remuneration).

Cumulative reduction in Scope 1 equity emissions



Stockyard Hill Wind Farm

³⁶ Our short-term target continues to use our original 2017 SBTi base year as the target was set two years ago, prior to our new base year decision, and was designed to run consecutively over a three year period. We note that this is the only target with a 2017 baseline.

Transitioning to net zero



Our ambition to **lead the energy transition through cleaner energy and customer solutions** is supported by our strategic pillars to drive decarbonisation and evolve our portfolio.

Our purpose

Getting energy right for our customers, communities and planet

Our ambition

Lead the energy transition through cleaner energy and customer solutions

Our strategic objectives



Unrivalled
customer
solutions



Accelerate
renewable and
cleaner energy



Deliver reliable
energy through
the transition

Our decarbonisation priorities

Enable customers to
decarbonise

Grow our portfolio of
renewables and cleaner energy

Reduce emissions from
our existing operations

Delivering on our 2030 targets³⁷



Our 2030 emissions reduction targets

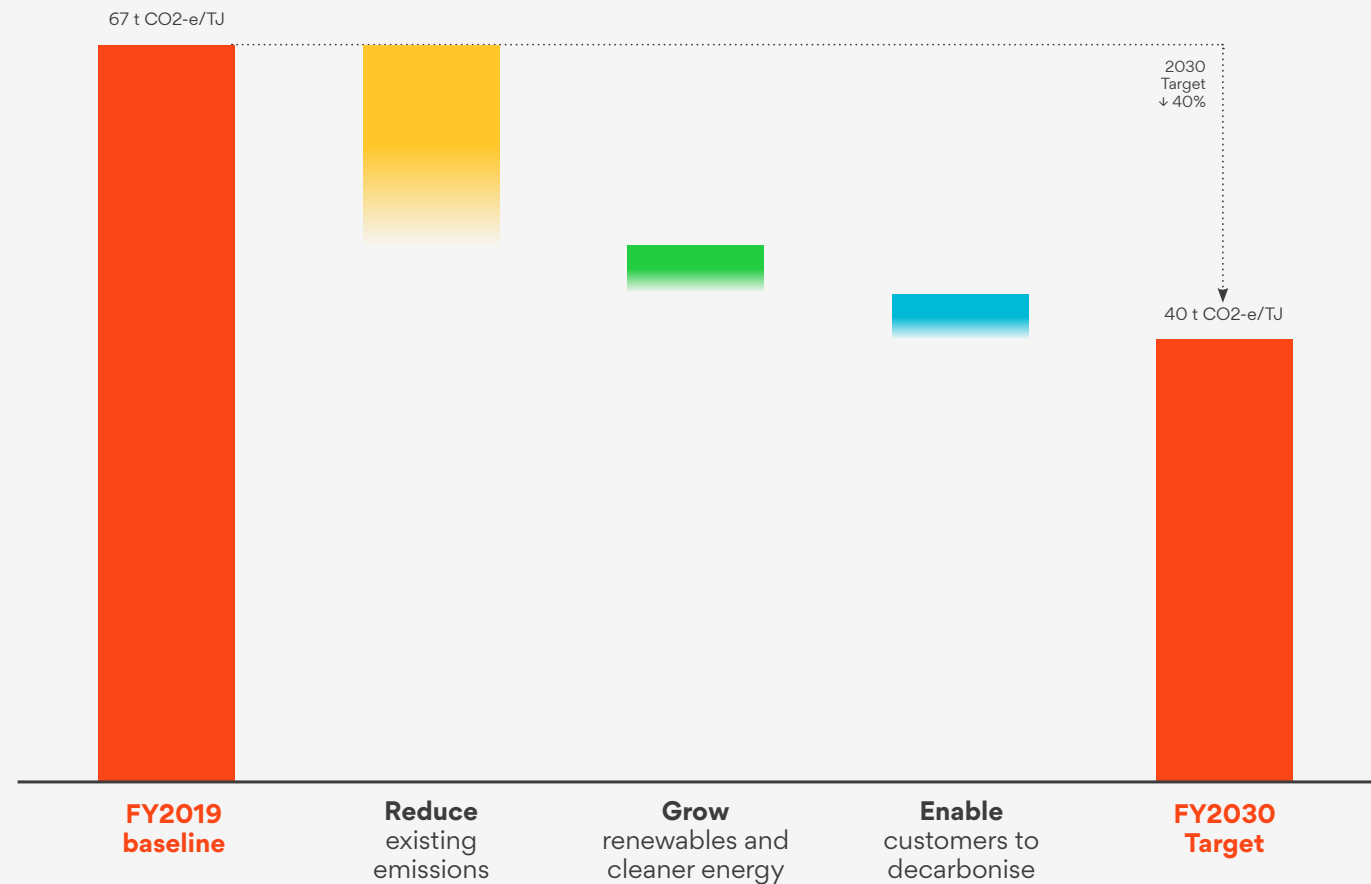
- 40% reduction in Scope 1, 2 and 3 equity emissions intensity
- 20 million tonnes reduction in Scope 1, 2 and 3 equity emissions

Against a FY2019 baseline

The role of offsets in delivering our emission reduction targets

We expect that carbon offsets will play a limited role in meeting our 2030 emissions reduction targets, and only for residual emissions that are hard to abate. We intend to prioritise actions that enable direct emissions reductions, and we expect our targets to be largely achieved through directly reducing emissions in our operations, growing a portfolio of renewable assets, and providing cleaner energy solutions to our customers.

Scope 1, 2 and 3 equity emissions intensity reduction pathway to 2030



³⁷ Excluded from these targets are the potential future emissions from any development of new gas fields like the Beetaloo Basin. This is because there has been no decision, nor are we close to a decision, to produce those gas resources. However, any development would only occur where it was consistent with our net zero emissions by 2050 ambition.

Reduce emissions from our existing operations



Deliver reliable energy through the transition

Reduce emissions from our existing operations

Accelerate exit from coal-fired generation

In February 2022, we announced plans to accelerate our exit from coal-fired power generation, submitting notice to the Australian Electricity Market Operator (AEMO) to retire Eraring Power Station, potentially as early as August 2025 (previously 2032).

Bringing forward our exit from coal-fired power generation is the most significant step we expect to take to achieve our medium-term emissions targets. We will continue to assess the market over time, and this will help inform any final decisions on the timing for closure of all four units at Eraring.

We continue to look for ways to improve Eraring's performance. We have been operating the Real Time Optimisation program at Eraring since FY2019, using artificial intelligence (AI) to improve the plant's overall heat rate – the fuel consumed per MW of electricity produced – which in turn can reduce the plant's emissions. Since implementation, the program has avoided more than 340,000 tonnes of CO₂-e emissions.

Reduce emissions from gas operations

We believe gas will remain a key part of Australia's, and the world's, energy mix for many years to come.³⁸ We will continue to run a leading gas business that is reliable, competitive, and focused on decarbonisation.

Our role in Australia Pacific LNG

Australia Pacific LNG is an LNG exporter and a significant gas supplier into the domestic market. Australia Pacific LNG is an incorporated joint venture and Origin owns a 27.5 per cent interest in the venture.

As upstream operator for the Australia Pacific LNG project, we concentrate on reducing Scope 1 and Scope 2 operational emissions associated with upstream producing and operating assets, noting that some decarbonisation initiatives will require support from the incorporated Australia Pacific LNG joint venture.

We expect the scope of Australia Pacific LNG's operations to grow in the coming years, with increases in the number of wells online, the number of workovers performed and the network of gathering pipelines. This increased operating infrastructure is required to deliver gas to our customers under long term contracts and has the potential to see our operating emissions from the Australia Pacific LNG project increase.

Notwithstanding this increase in operating activity, we continue to target a reduction in operational control methane emissions over the next three years.

Our focus will be on continuing to identify improvements to the identification and quantification of methane emissions to further reduce emissions related to venting, flaring and leaks. We aim to drive emissions reductions through replacing equipment and devices with more efficient and advanced technologies, retrofitting facilities to reduce methane venting, and further reducing flaring using targeted planning and the implementation of AI tools to minimise flaring during planned shutdown and maintenance events.

Around three-quarters of our operational control emissions from the Australia Pacific LNG project are produced by the electricity purchased to run our operations. We expect the share of renewables in our power mix to increase over time as the electricity grid decarbonises, contributing to a decline in Scope 2 emissions.

Managing our Scope 3 emissions from our equity share of Australia Pacific LNG will be challenging. Australia Pacific LNG would need to work with its customers to better understand their decarbonisation goals and identify opportunities to manage Scope 3 emissions. We recognise Origin is only one of three shareholders in the Australia Pacific LNG joint venture and requires the support of the other shareholders for this to be achieved.

Increasing the efficiency of our gas-fired generation fleet

We believe our portfolio of gas-fired peaking plants will continue to have an important role to play in Australia's energy transition and we continue to invest in improving the efficiency and flexibility of our existing gas fleet. Our fleet can support variable renewable output and maintain reliable supply in the electricity market. While we expect batteries and hydro will largely cover short-term demand events and supply outages, in some instances the duration of these technologies may not be sufficient to meet demand, and so gas-fired peaking plants will remain important to reliability of supply.

Upstream exploration portfolio

There has been no decision, nor are we close to a decision, on whether to develop the Beetaloo, Canning and Cooper Eromanga basins. Any potential future increase in gas production and sales is subject to exploration outcomes that remain highly uncertain and has not been included in our medium-term targets. The decision to develop new gas fields in these basins would only occur where it was consistent with our net zero emissions by 2050 ambition. We have previously announced that we are seeking to farm down our interest in the Beetaloo Basin and therefore Origin's equity interest may change.

³⁸ Though declining out to 2050 the IEA shows a role for gas IEA (2021), World Energy Outlook, IEA, Paris

Grow our portfolio of renewables and cleaner energy



Accelerate renewable and cleaner energy

Grow our portfolio of renewables and cleaner energy

Evolve our portfolio

We will continue to evolve our portfolio through further investment in renewables, purchasing more from a decarbonising electricity grid and investing in storage.

We aim to grow renewables and storage capacity within our generation portfolio to 4 GW by 2030.³⁹

We are pursuing a range of opportunities with a focus on large-scale solar, wind and batteries. This may come from Origin-owned installations or contracted sites, and from a combination of direct investment and accessing third-party capital where appropriate. We recognise that it is a competitive time for renewable development, and the delivery of renewable energy and its supporting transmission and distribution infrastructure could take longer than expected.

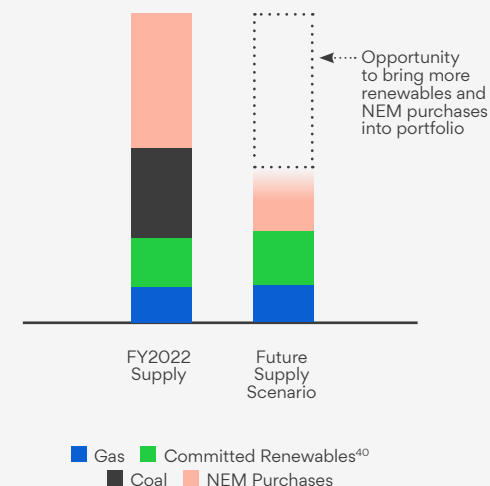
We are a net buyer of electricity from the market, which means we generate less electricity from our assets than we sell to our customers. We plan to increase the share of renewables supply (or purchases) in our portfolio to meet the demands of our large customer base, enabling us to reduce the emissions intensity of our portfolio. Since 2016, we have committed to 1,200 MW of PPAs from wind and solar generation and will continue to identify further opportunities as part of our aim to grow renewables. These transactions are examples where we have supported third-parties with renewable energy purchase agreements to enable the development of renewable energy projects.

We have recently invested in renewable and storage opportunities to support our targets and ambition to get to net zero emissions:

- Eraring battery, NSW – proposed 700 MW project that is well advanced and planned to be delivered in phases with the first phase of 460 MW.
- Carisbrook Solar Farm, Victoria – well advanced 74 MW solar development project.
- Yanco Solar Farm, NSW – well advanced 60 MW solar development project.

- Yarrabee Solar Farm, NSW – proposed solar development project. First stage to include up to 450 MW of solar generation, with the potential for expansion to up to 900 MW.
- Morgan Solar Farm, SA – proposed 250-300 MW solar development project with Stage 1 expected to be up to 120 MW.
- Dapper Solar Farm, NSW – proposed 250-300 MW solar development project.

Energy supply



³⁹ This is inclusive of current portfolio position and previous announcements.

⁴⁰ Increase in future committed renewables supply represents full operating capacity of Stockyard Hill Windfarm, which commenced operating part way through FY2022.

Virtual power plant

We also intend to use our growing VPP and existing gas peaking fleet to ensure we have the ability to manage peak customer demand. We expect to continue to grow our VPP, which connects distributed energy assets across many locations and aggregates and coordinates them to work together, providing Origin with an important tool to manage the supply and demand balance in the electricity market in real time. The VPP uses AI to orchestrate distributed assets, shifting energy load from periods of high demand and high emissions intensity to times when renewable generation is high and demand and electricity prices are low.

Our residential and large business customers have a material amount of distributed energy assets, and we expect the scale of such assets to significantly increase over the coming years. To date, our VPP has grown to more than 258 MW across more than 121,000 connected services, and we aim to grow this to 2 gigawatts (GW) under management.

By accessing distributed assets our customers have already invested in, the VPP reduces the need for Origin to invest in capital-intensive, large-scale generation assets, and maximises the value of these assets for the customer and for the market.

Grow investments in future fuels

We believe we can contribute to the development of Australia's emerging hydrogen industry with our proven experience in project delivery, a flexible portfolio underpinned by renewable energy supply, and end-to-end experience in complex supply chains.

The demand for hydrogen is expected to increase and we are exploring both domestic and export market opportunities for green hydrogen and ammonia through a number of projects. These include a feasibility study into export scale green hydrogen and ammonia in Bell Bay, Tasmania, and our proposed project in the Hunter Valley, NSW, targeting the domestic market which has received a \$41 million grant as part of the federal government's Clean Hydrogen Industrial Hubs Program.⁴¹

We aim to commence domestic green hydrogen supply from the mid-2020s and are continuing to progress export supply opportunities. We recognise the early-stage nature of the hydrogen market in Australia and the technology advancements required to economically compete against other fuels.



41 [Harnessing the Hunter's hydrogen future](#)

Enable customers to decarbonise



**Unrivalled
customer
solutions**

Enable customers to
decarbonise

Low carbon products and solutions

Continued growth of decentralised generation and storage, combined with the rise of internet-enabled devices, is changing the way our customers interact with us and use energy at home and in their businesses.

We are providing customers with a growing portfolio of simple, affordable low-carbon products and cleaner energy solutions. Today, this includes rooftop solar and batteries, renewable and carbon-neutral energy, EV solutions, renewable PPAs, and load and demand management. We are also developing a suite of future energy customer offerings, including green hydrogen and ammonia, and carbon management solutions.

We have been giving our customers the option to choose renewable energy via GreenPower⁴² for more than 20 years, and our Green Gas,⁴³ Green LPG,⁴⁴ Origin Go Zero (electricity), Carbon Neutral Demand Response and Carbon Neutral Solar⁴⁵ products are all certified by Climate Active, an Australian Government backed initiative.

Transportation is the third highest emitting sector in Australia. Therefore, the electrification of transport is a major opportunity to reduce Australia's emissions. The electrification of mobility (E-mobility) is a major focus area in Origin's strategy to help customers decarbonise. In March 2021, we launched 360 EV as the umbrella brand for all our E-mobility solutions across charging, fleet management and car sharing.

In early 2022, we created a new business division, Origin Zero, to partner with business customers to achieve their sustainable energy goals. Origin Zero engages with customers to help them decarbonise and optimise their demand and match it with tailored renewable energy solutions.

Origin Zero's offerings include renewable electricity, installing behind-the-meter solutions that are connected to our VPP, providing full end-to-end EV fleet management solutions, and combining orchestration and data analytics to provide an end-to-end energy efficiency solution and building customer engagement through the energy transition.

We aim to grow a portfolio of carbon credits that will be offered to customers to support them to achieve their decarbonisation commitments. We will strive to prioritise actions that enable direct emissions reductions; however, we recognise carbon offsets still have a role to play in the decarbonisation journey for many businesses.

Growing scale at Octopus

Origin owns a 20 per cent interest in Octopus. Octopus is a globally distinctive, disruptive energy and technology company that has grown significantly as a retailer and software provider through licensing its Kraken software to various leading utilities around the world.

The electricity Octopus supplies to customers is 100 per cent sourced from renewable energy, including wind, hydroelectric and solar power. Octopus also offers customers a range of low-carbon solutions and is investing in research and development in cleaner energy solutions, including EVs, heat pumps and green hydrogen.⁴⁶



⁴² When customers choose our GreenPower product, they can select the percentage of their electricity they would like Origin to match with an equivalent amount of electricity from GreenPower-accredited renewable sources, which is added to the electricity grid.

⁴³ When customers choose our Green Gas product it is 100% carbon neutral and certified by Climate Active.

⁴⁴ When customers choose our Green LPG product it is 100% carbon neutral and certified by Climate Active.

⁴⁵ Our Carbon Neutral Demand Response product will allow customers to offset the GHG emissions associated with the production and consumption of alternative fuel use during demand response events, as well as those associated with the retailing of the product. It will be sold as an opt-in option of Origin's current Demand Response product. Our Carbon Neutral Solar product will allow customers to offset GHG emissions associated with the extraction, manufacturing, transport, installation, and maintenance of their solar photovoltaic (PV) systems.

⁴⁶ octopus.energy/green/

Our ambition for net zero



Our net zero emissions ambition

- **Net zero Scope 1, 2 and 3 emissions by 2050**

We will continue to take action across our business now and beyond 2030 with an ambition of reaching net zero Scope 1, 2 and 3 emissions across our value chain by 2050.⁴⁷

Beyond 2030, we expect our emissions will primarily be associated with gas-fired generation, our equity share of Australia Pacific LNG's gas production and sales and LPG distribution. We have a number of strategic initiatives underway (including green hydrogen, renewables and storage) and we aim to reduce and remove emissions across our value chain by 2050, while recognising that this will be challenging. Our pathway to net zero is subject to uncertainties and risks, including in relation to the advancement in technologies such as batteries and green hydrogen, and government policy and intervention.

In Australia, we expect gas will play an important but ultimately declining role as the economy progressively electrifies and other technologies such as long duration storage play a greater firming role in the electricity market. Overall, we believe the decarbonisation of the electricity grid and decline in our gas production, alongside zero emission customer energy solutions and the neutralisation of any residual emissions through carbon offsets, will help us to achieve our ambition of net zero emissions by 2050.

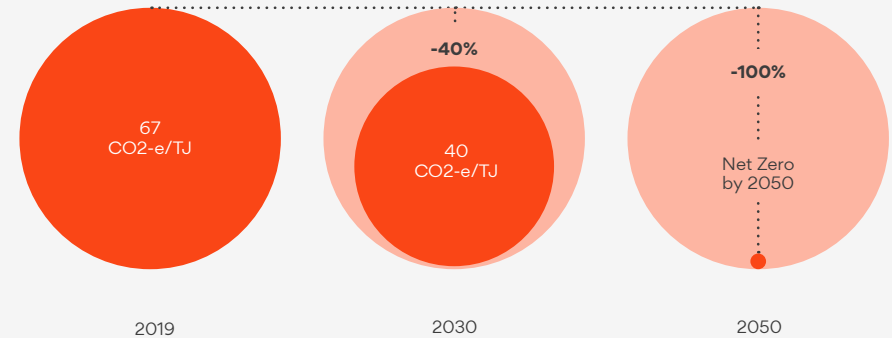
Continuing the decarbonisation journey:

- We expect our gas-fired power stations to retire as these assets reach the end of their useful lives.
- We aim to continue optimising our portfolio through further investment in renewables and storage and by purchasing more from a decarbonising electricity market.
- We aim to increase the supply of renewable energy to our electricity customers.
- We aim to develop and scale green hydrogen projects to supply domestic and export markets.
- We expect reducing gas sales from Australia Pacific LNG's existing acreage as reserves decline with production, and domestically with the expected increase in electrification.⁴⁸
- We would develop new gas fields only where it was consistent with our net zero emissions by 2050 ambition.
- We expect that carbon credits and emerging technologies could play a role to offset hard to abate emissions.
- We aim to work with our customers to reduce the emissions in their operations through the use of carbon credits and emerging technologies.

⁴⁷ Covers all material Scope 1, 2 and 3 emissions.

⁴⁸ This view is held by Origin.

Net zero emissions ambition





Risks to our decarbonisation journey

Our pathway to net zero emissions and achieving our targets is subject to uncertainties and risks. In particular, any pathway to net zero emissions will require significant action and coordination by governments, the private sector and the public.

We will continue to balance the pace of execution of our actions to reduce emissions with the need to support energy reliability and affordability, which will likely result in a non-linear path to achieving our targets and net zero ambition.

There are material risks to achieving our 2030 targets and our 2050 ambition, which include:

- Delays to Eraring closure – material changes to the decommissioning timeline for Eraring Power Station. We will continue to assess the market over time, and this will help inform any final decisions on the timing for closure of all four units of Eraring.
- Timing and alignment of portfolio decisions – decisions on portfolio composition will continue to be based on our analysis which has a number of limitations. This is because it is based on hypothetical outcomes and interdependencies that are extremely difficult to predict due to exogenous variables, ranging from individual competitor decisions to the overarching energy policy framework.
- Delays to renewable projects – material differences between the actual rate of development of renewable energy projects and Origin's current expectations, noting the competitive environment for renewable energy contracts and assets. This may result in the electricity grid decarbonising more slowly than expected.
- Access to infrastructure and land – inability to access infrastructure and land, including the build out of the transmission and distribution infrastructure, could hamper the development of some renewables and cleaner energy solutions.
- Climate change targets and disclosures – carbon accounting methodology, assumptions and scenarios to derive emissions reduction targets and calculate emissions will continue to evolve, which may impact the approach taken to target setting and reporting of emissions.
- Market volatility and security of supply throughout the energy transition – as traditional carbon intensive energy sources decline, energy markets and associated pricing may experience volatility and disrupt our business and impact security of energy supply. Geopolitical factors may further exacerbate volatility and jeopardise progress on meeting climate change targets.
- Demand for energy – if energy markets experience periods of unreliable supply or higher demand, Origin may need to meet any potential supply shortfall and this would result in both higher generation or production output and higher emissions.
- Climate-related government policy, regulation and intervention – energy regulation and policy (including government investment and approvals) may be inconsistent or uncertain, or there may be regulatory change or intervention during the energy transition.
- Access to critical skills and supplies – there may be difficulties accessing the right skills and critical supplies to accelerate renewable and cleaner energy in a cost effective, timely and ethical manner. There may be commodity, product, and broader supply chain constraints, including access to new world minerals to enable the transition, shipping and transport interruptions, and continued access to suitable grades of commodities.
- Access to capital and carbon markets – our ability to maintain access to markets including debt, equity, carbon and insurance during the energy transition may be impacted, including access to sufficient or affordable capital, alternative funding sources, financial instruments, and carbon offsets.
- Technology development – technological advancement may not be timely or cost effective to ensure that energy transition efforts can be achieved, including batteries, VPP and green hydrogen at a commercially viable scale. Competitors, including new market entrants, may develop superior technology to meet market demands.
- New market development – slower than expected growth of customer demand and/or emergence of commercially viable markets for opportunities such as green hydrogen, renewables and VPP.
- Customer preferences – broader societal shifts in consumer preferences and demands, and the products that become available to consumers by competitors.
- Stakeholder expectations – potential for misalignment between the expectations of key stakeholder groups (including employees, shareholders, customers, suppliers, joint venture partners, communities, and/or governments) may impact the delivery of our targets.

We will continue to assess these risks in the coming years and review our pathway to net zero emissions as necessary.

Capital allocation



Capital allocation

We aim to deploy capital in areas that deliver value to shareholders and are consistent with our strategy, targets and ambition.

Origin's investment and capital expenditure decisions are all governed by our capital allocation framework.

All major capital expenditure is subject to a formal review and approval process, which is overseen by the Origin Investment Committee. The committee is comprised of our Executive Leadership Team (ELT), which assesses material investments against our strategic objectives and ability to create value for shareholders. Major investment decisions are also approved by our Board.

The following criteria is used as part of the process:

- **Economics** – relevant investments are evaluated against the risk adjusted hurdle rate using our internal base case economic assumptions and are tested against a range of climate-related scenarios, including incorporating a price on carbon.
- **Strategic value** – relevant investments are prioritised according to their alignment with our strategy and a critical assessment of our long-term competitive advantage.
- **Decarbonisation targets** – relevant investments in growth projects will be evaluated against our emissions reduction targets and our ambition to be net zero emissions by 2050.

Capital Allocation Framework

Investment evaluation criteria

- Independent validation of economics, incorporating price on carbon
- Build a pipeline of strategically aligned customer-led opportunities
- Investments evaluated against our emissions reduction targets and net zero emissions ambition

Managing risk

- Stress test returns under risk scenarios
- Access lower cost of capital for elements of investment pipeline
- Recycle mature capital into higher value creating opportunities

Investment returns

- Strict investment return hurdles for capital allocation
- Investment returns tested against additional distributions to shareholders
- Partner with third-party capital to optimise returns

Funding the transition

We intend to ensure that our capital expenditure portfolio is consistent with our emissions reduction targets. We believe the energy transition provides significant opportunities to invest in potentially value accretive projects. We believe our strong customer base and their increasing desire to decarbonise provides the demand to underpin investments in growing our supply of renewable and cleaner energy, which in turn provides our customers with a growing portfolio of low carbon solutions.

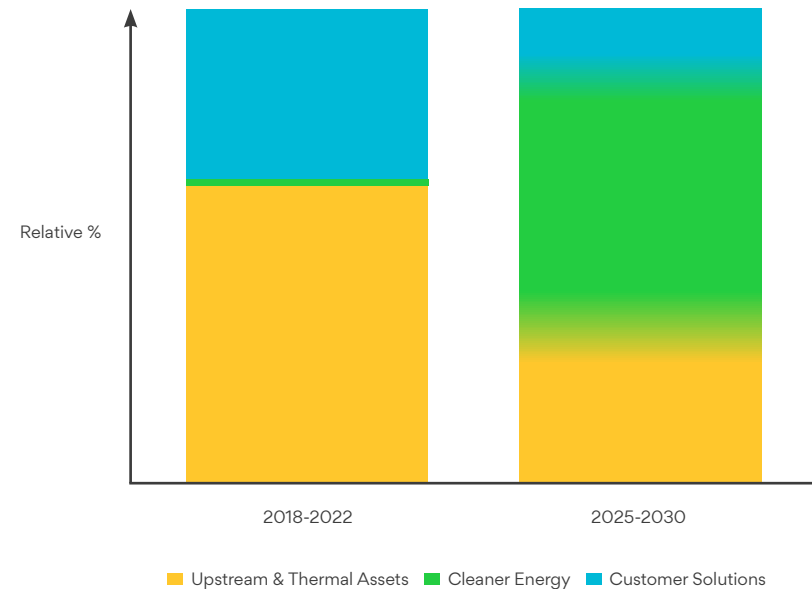
The specific level of capital we allocate to cleaner energy projects will vary depending upon the ownership and funding structure we utilise for these projects. We can grow our renewable business, with low levels of capital, by partnering with third party capital providers.

We can also enter into PPAs or long-term storage contracts that provide revenue certainty to support investment by third party developers and capital providers.

Capital allocation will consist of all maintain, sustain and growth capital, inclusive of our equity share in the Australia Pacific LNG joint venture, as well as the capital investment and the equivalent value of contractual commitments to support our cleaner energy ambition. Investment to develop new gas resources has not been included on the basis that there has been no decision, nor are we close to a decision, on whether to develop basins such as the Beetaloo, Canning and Cooper Eromanga basins. Any potential future increase in gas production and sales is subject to exploration outcomes that remain highly uncertain.

The decision to develop new gas fields in these basins would only occur where it was consistent with our net zero emissions by 2050 ambition.

Origin's capital allocation evolution



Portfolio resilience



Modelling approach

The resilience of Origin's business and strategy to climate transition risk,⁴⁹ has been analysed using a scenario consistent with a 1.5°C aligned pathway (1.5°C scenario) as compared against our reference case.^{50,51} Scenario analysis is a planning tool which can be used to understand the potential impacts of different scenarios on Origin but it does not represent probabilities or definitive outcomes. No single scenario can be used to predict the path to a decarbonised global economy, including this 1.5°C scenario, however we are committed to undertaking analysis to better understand the resilience of our portfolio.

The IEA World Energy Outlook scenarios are often used as a key benchmark for climate resilience testing against key commodities such as oil, LNG and carbon because they are publicly available and represent a range of potential outlooks under different energy transition pathways. The IEA's NZE by 2050 scenario report⁵² describes a pathway that aligns with the Paris Agreement's goal of keeping the global average temperature rise this century to 1.5°C above pre-industrial levels (IEA NZE).

Locally, the AEMO produces forecasts⁵³ for the gas and electricity sectors using a number of scenarios, including the "strong-electrification" scenario which is derived from the IEA NZE.

Our analysis includes the net present valuation of our existing portfolio of operating assets, as well as renewable and storage assets we are aiming to develop. We also include future investments in carbon, green hydrogen and further renewables and storage to meet our stated strategic ambitions, for which significant activity to develop these businesses is underway.

Neither the reference case nor the 1.5°C scenario includes value for exploration assets due to the wide range of technical uncertainties related to the development of these assets. Importantly, there has been no decision, nor are we close to a decision, to produce those gas resources, including from the Beetaloo, Canning and Cooper-Eromanga basins.⁵⁴

A 1.5°C scenario based on external benchmarks was chosen to show the resilience of our strategy and portfolio to a scenario which has relatively extreme shifts in the energy system. The IEA NZE report makes several assumptions about how consumers, governments and businesses will change the way they operate in the future and a shift in some of these assumptions could potentially change the results of the analysis materially. The IEA states in its outlook that *"The world is not investing enough to meet its future energy needs, and uncertainties over policies and demand trajectories create a strong risk of a volatile period ahead for energy markets."*⁵⁵

While there are a range of pathways and scenarios which describe a 1.5°C world, we believe the IEA and AEMO scenarios chosen provide the most objective external benchmark to support this analysis.

Other scenarios, such as those consistent with a 2°C climate outlook, are likely to result in higher valuations for our existing assets primarily due to higher oil and JKM prices assumed, and less additional value in the future portfolio for assets such as green hydrogen, carbon, renewables and storage.

49 We have considered physical climate change risks in the OFR in our 2022 Annual Report.

50 The reference case reflects Origin's internal view of the current market is materially aligned with the outlook used for impairment testing.

51 The assumptions and approach used for our scenario analysis has been independently assured on a limited basis by EY. EY's limited assurance statement can be found on page 37 of this plan.

52 IEA (2021), [Net Zero by 2050, IEA, Paris](#), page 13.

53 [AEMO 2022 ISP](#).

54 However, any development would only occur where it was consistent with our net zero emissions ambition.

55 IEA (2021), [World Energy Outlook 2021, IEA, Paris](#) Page 20.



Key assumptions

Where the IEA NZE and AEMO scenarios lacked sufficient detail, we made assumptions as stated below using an approach consistent with the underlying approach of the scenarios

Oil, LNG and Carbon:

- Near-term oil and LNG prices have been updated to reflect observed prices in the first half of 2022.
- Oil and LNG price assumptions in the IEA NZE report are only provided in 2030 and 2050. The remaining prices are interpolated between current levels and the prices provided.
- LNG price reflects the Japanese natural gas price.
- Carbon prices are based on the IEA NZE report in 2025, 2030 and 2050 and interpolated in the years in between.
- Commodity prices were escalated using inflation averaging 2.2 per cent.

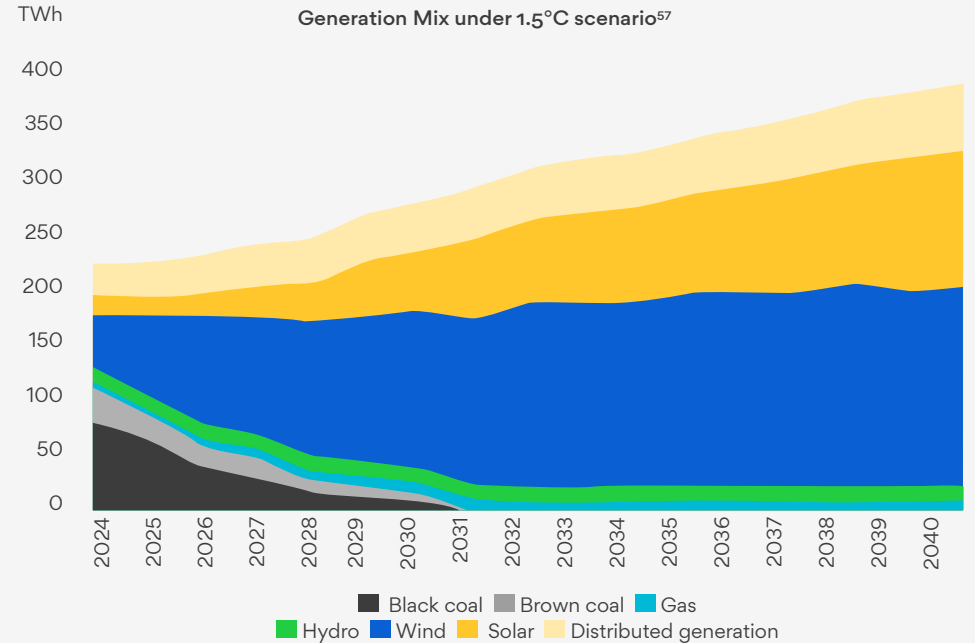
These assumptions were applied to the Australia Pacific LNG asset in our analysis.

Hydrogen: While the IEA NZE report assumes significant growth in global hydrogen demand, it does not provide a hydrogen price. To assess the value of a potential future green hydrogen portfolio a fixed rate of return was assumed for projects, with projects pre-2030 generating a lower return than projects post-2030.

Electricity sector: At a domestic level, the AEMO strong electrification scenario was used as a basis for the development of the electricity sector. This scenario reflects a rapidly decarbonised economy with a net zero electricity grid by the early 2030s. A carbon price consistent with the IEA NZE report was implemented to determine the financial impact on fossil fuel plants, assuming a baseline and credit scheme.⁵⁶

The impact of the 1.5°C scenario has been modelled using third-party market software, PLEXOS, which simulates expected half-hourly electricity dispatch volumes and pricing across the NEM. The modelling incorporates known constraints, such as operational limitations of coal and gas generation, including minimum generation levels, inter-regional transmission constraints and operational constraints for other plant, including hydro and battery storage. The outcomes of the modelling on generation in the NEM can be seen in the chart to the right.

The reference case assumptions reflect the current market and commodity price outlook and a slower energy transition pathway than the IEA NZE.



Key commodity assumptions

Commodity	Units (2022 real)	2025	2030	240	2050
Oil	USD/bbl	67	36	30	24
LNG Price	US/mmbtu	9.4	4.4	4.3	4.2
Carbon Price	USD/t	75	130	205	250

⁵⁶ A form of emissions trading scheme that operates by setting an annual carbon intensity for the market

⁵⁷ Source: Origin modelling of AEMO 2022 ISP, Strong electrification scenario.

Results of scenario analysis and insights

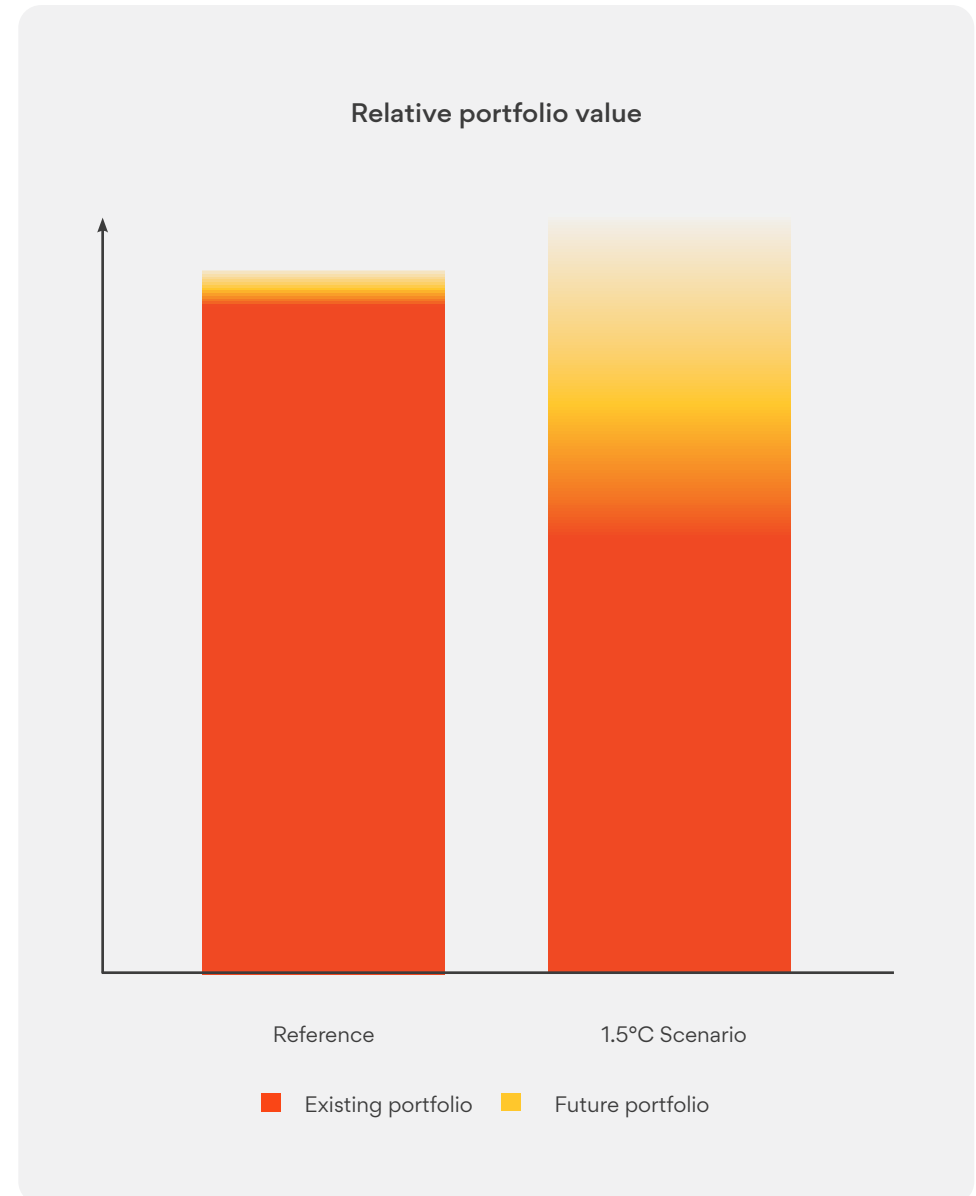
Under the 1.5°C scenario modelled, existing assets are able to retain a portion of their value as they require relatively low amounts of sustaining capital to continue to operate. A number of existing assets also benefit from the tailwinds associated with carbon pricing and increased volatility in a rapidly decarbonising energy system. This is described in more detail below:

- The value of Origin's share of Australia Pacific LNG declines as a result of significantly reduced commodity prices and increased carbon prices. However, Australia Pacific LNG still produces significant cashflow in the short term, retains positive value and is an important contributor to the energy security of the Australian domestic market.
- Origin's domestic natural gas portfolio also loses some value due to lower future volumes. These declines are offset by an increase in the value of the existing renewable PPAs, which benefit from the inclusion of a carbon price.
- The value of our existing generation fleet remains relatively flat. The value of Eraring falls from a small base in the reference case. This decline is offset by an increase in value of our existing gas and pumped hydro peaking generation fleet. This increase is driven by higher capacity contract prices modelled as a result of the rapid removal of coal from the electricity market.
- From a future portfolio perspective, increased uptake of EVs and the increase in connected services is expected to positively impact the value of our retail business as our customers decarbonise their homes and demand increases for decentralised energy management services. This is partially offset by increased behind the meter usage reducing the average electricity consumption per residential customer.

- Investment into future areas of growth – such as green hydrogen, carbon solutions, and renewables and storage – is forecast to rise as the accelerated pace of global decarbonisation increases the need for investment in these assets. This provides an opportunity for us to pivot our portfolio and increase investment in these potentially value adding opportunities.

The relative values of our portfolio under the reference and 1.5°C scenario are shown to the right.

Our analysis has a number of limitations because it is based on several hypothetical outcomes that are extremely difficult to predict. The sensitivity of the valuation results is subject to a number of exogenous variables and dependencies, ranging from individual competitor decisions, customer preferences and overarching energy policy framework, which could change the results materially. The valuation approach uses economic principles to determine modelling outcomes and so we believe it represents a fair view of the resilience of our strategy and portfolio. However, the reference case and the 1.5°C scenario are not a forecast or prediction, and no probability could be assigned to either of these eventuating.



Supporting our plan



Supporting a just transition

We unequivocally support the Paris Agreement, which recognises the importance of a just transition.

We recognise that we have a responsibility to manage the impact of our path through the energy transition in a way that minimises adverse outcomes for those impacted and promotes the opportunities that will come from the energy transition.

We aim to support our people, communities and customers through the energy transition while contributing to an orderly, reliable and low carbon energy system. We intend to do this by working with our stakeholders to develop a tailored approach for priority areas and assets, build partnerships and develop the skills for the future energy system.

Principles for a just energy transition



Customers

We will provide low carbon solutions to support our customers' transition and strive to provide affordable and reliable energy through the energy transition, while supporting the most vulnerable customers with access to energy.



Communities

We will promote opportunities to create economic value and development by engaging with local communities, Traditional Owners, governments and our value chain on the energy transition.



Planet

We aim to lead the energy transition and will take actions to preserve biodiversity and restore the environment.



Our People

We will support our people through the energy transition, providing career planning and upskilling, and seeking redeployment opportunities for those whose roles are directly affected by the transition.



Open, inclusive and transparent engagement

We will develop and act on a tailored approach through inclusive, open, informed and ongoing consultation with our stakeholders, including advocating for policies and regulation to support a just transition.

Creating sustainable value for shareholders and stakeholders

The earlier closure of the Eraring Power Station will deliver on a core aspect of our strategy. We will continue to assess the market over time, and this will help inform any final decisions on the timing for closure of all four units. It will also require us to apply our principles to promote a just transition.

Open, inclusive and transparent engagement in action at Eraring

Immediately following the announcement to bring forward the potential closure of Eraring, we began a program of communications and briefings for employees, contractors and suppliers, government, industry, media and other stakeholders. Key activities included Eraring site employee and contractor briefings; Origin-wide internal communications; government and industry engagement, including federal, state and local representatives; and community and supplier engagement.

Our people

Our key goals as part of our Eraring people transition strategy are to:

1. contribute to safe and reliable operations for the continued delivery of energy to our customers;
2. go above and beyond to support individuals to achieve their future career and life choices; and
3. act in a way that our people feel listened to, respected, well supported and valued.

To help achieve our goals as part of the Eraring people transition strategy, we are committed to:

- actively engaging in open and transparent consultation with employees;
- treating employees as individuals, considering their desires, aspirations, and life stages;

- taking action to re-skill and up-skill workers who are displaced, providing career support and planning, and redeployment into new roles where possible;
- funding the completion of all apprenticeships and traineeships in place at the time the accelerated closure of Eraring was announced;
- providing health and wellbeing support, including superannuation and financial planning and mental health training; and
- reporting transparently on our progress on our transition plan and feedback from our people.

Keeping our employees and contractors informed

A Transition Consultation Committee has been set up with employee, union, and site leader representatives and is currently meeting every three weeks. We are providing regular transition and consultation updates to all Eraring employees, including fortnightly updates with details on employee consultation, transition planning and the support available. We also currently share updates on Eraring transition activities to employees, contractors, unions and government officials.

We also have in place consultation forums between unions, senior management of Origin and employee representatives that meet every six months to discuss industry related matters and the operation of the enterprise agreement.

Support for our employees

We have established a program for supporting our employees throughout Eraring's transition to provide them with ongoing learning, career and wellbeing support, as well as up-to-date information, resources and events.

We have engaged a specialist local career consultancy to conduct one-on-one career conversations with Eraring employees to identify their personal and career ambitions, potential reskilling and/or upskilling requirements, and to develop a detailed people transition plan.

We have supported employees prepare for their one-on-one career conversations, with general and tailored superannuation information workshops, the opportunity to seek independent financial advice, and a series of on-line webinars and career workshops.

Career conversations have been offered to all affected employees, and, as at the end of June 2022, we have held one-on-one conversations with 92 per cent of impacted employees. Our next priority is to put in place individual support plans for each employee.

Engaging with community

We have begun initial consultations with community groups and representatives including the Lake Macquarie City Council, the local member of the NSW Parliament, the Eraring Residents' Association and Eraring's Community Consultative Committee. Our initial engagement with these key community and government stakeholder groups indicates their areas of focus include how we will:

- support employees, contractors and suppliers who may be impacted by the closure;
- repurpose the site, and consider what other uses might be envisaged; and
- approach site rehabilitation, including the ash dam.

We continue to work towards a full community engagement strategy for Eraring that will be informed by community feedback. To date, we have pledged to continue with our community commitments, sponsorships and donations, and we have established a community fund with \$5 million committed between now and 2032. We will also honour existing commitments including our support for a replacement sport and recreation centre.



Origin works constructively with governments and industry associations to advocate for a sound climate change policy

Climate policy engagement

Origin works constructively with governments and industry associations to advocate for sound climate change policy that contributes to the goals of the Paris Agreement.

Government policy engagement

We continue to advocate for climate change action, including the progressive decarbonisation of the energy sector and policy settings to enable this.

We work constructively with the federal and state governments to progress co-ordinated carbon emissions policy and targets for the electricity sector and other parts of the economy. Regular dialogue and meetings are held with representatives from both state and federal governments, and ministerial departments, including our Chairman, CEO, senior executives and members of Origin's Corporate Affairs team. We also make submissions on policy matters and attend key conferences to understand policy direction and ensure the Company's views are understood.

We support integrated energy and climate change policy, set at a national level, including short- and long-term emissions reduction targets and policy mechanisms to achieve those targets. We support an emissions intensity scheme for the electricity sector that will facilitate an orderly transition to a low-carbon system without placing undue pressure on affordability. We also advocate for policy that supports the responsible development of Australia's gas resources, consistent with the goals of the Paris Agreement.

The Australian government has committed to net zero emissions across the economy by 2050. There is bipartisan support for net zero emissions by 2050 at a federal level, and support from all eight state and territory governments on climate change action and targets.

All state and territory governments also have strong 2030 targets to reduce emissions. These are backed up by a suite of policies, including to increase the sources of renewable energy; expansion of the electricity grid; customer support for solar and storage; and support for the uptake of EVs and the development of a green hydrogen industry. These supportive government policies provide confidence to the market to make the necessary investments to facilitate the transition to net zero emissions by 2050.

Industry associations

We use our memberships of industry associations to understand the views of other industry participants, and to share and advocate our views on relevant policy. We list our industry associations on our [website](#).

Principles for industry association membership

1. All industry associations relating to the energy or resources industries should have a public position that supports the goals of the Paris Agreement and the ambition of net zero by 2050, even if there are differing views amongst members. Where Origin has membership, we will actively seek to influence industry associations to have a public position that supports the goals of the Paris Agreement and the ambition of net zero by 2050.
2. Origin will advocate for any industry association it is a member of to conduct its climate change lobbying in support of the goals of the Paris Agreement.
3. Origin acknowledges that some industry associations of which it is a member may have other members who are heavily invested in resources, including coal, and these members may have differing views on climate change. Origin believes it is better to remain a member and seek to influence member views from within, rather than exit and no longer have a voice.
4. Origin will exit any industry association that has a formal policy of climate change denial or actively and consistently promotes anti climate change messages or lobbies against the goals of the Paris Agreement.
5. Origin will exit any industry association that consistently promotes or denigrates a specific political party or attempts to direct members, votes to or away from a specific political party in any local, state or federal election.
6. As industry association meetings involve representatives from competitors, Origin maintains strict protocols around any communication with competitors at these meetings. All Origin representatives attending industry association meetings are required to comply with all relevant competition laws.

Origin reviews its industry association memberships annually and will only maintain memberships that are consistent with the Company's principles for industry association membership outlined in this document. The annual review also considers each industry association's culture of compliance with competition laws. We publish our annual review on our [website](#).

Origin does not make direct political donations, but we do pay to attend a small number of political events to ensure our views are represented. All political payments are reported to the Australian Electoral Commission and included on the Origin website.

Governance

Board and management oversight

Origin recognises the importance of governance to support the consideration of climate-related risks and opportunities.

Origin's climate change governance and management framework is depicted to the right. More details on our approach to climate governance and risk management can be found in our [Corporate Governance Statement](#).

Climate skills and experience

Origin's Board members bring experience from a wide range of industries and backgrounds, including utilities, oil and gas, industrials, banking and finance, legal and technology. Directors receive Origin-specific induction training and ongoing Origin-specific and more general professional education and attend industry and governance conferences and forums.

The Board supplements its skills and experience with input from management with specific experience and expertise in climate science, trends and policy. The Board also regularly invites relevant industry and climate change experts to inform Directors on the latest market and industry developments relating to climate science and climate change matters.

The Board considers that this collective internal and external expertise equips Board members with the necessary skills, knowledge and perspective to understand the implications of climate risks and opportunities on Origin's business and to discharge their duties.

Management experience is drawn from a wide range of fields including climate change, engineering, communication, finance, and importantly relevant industry experience. Our employees continue to hone their skills, as they operate at the forefront of the electricity and gas markets, face emerging future energy trends and technologies and changing energy market dynamics and navigate climate and energy policy in Australia.

Origin actively monitors the latest global climate change science published by leading international organisations to help assess potential risks and opportunities for our portfolio. Through the governance and management structures described above, we seek to manage our portfolio to be resilient and to be able to adapt to the energy transition, and the increasing expectations of our stakeholders.

Read more in the [Corporate Governance Statement](#).

Climate change governance framework



Incentivising our people

Our ELT is incentivised to take a leadership position on climate change. This includes identifying and managing climate change-related risks and opportunities and supporting and progressing our core strategies. These strategies include acceleration towards cleaner energy and our decarbonisation activities. In FY2021, we linked the STI plans of key executives to the achievement of our short-term emissions reduction target. The CEO's FY2022 STI scorecard was weighted 60 per cent to financial measures and 40 per cent to non-financial strategic priorities that include reducing emissions and transitioning customers to cleaner energy.

All executives (except for the Retail and Origin Zero executives) have between 10 and 15 per cent of their STI linked to emissions reduction and/or decarbonisation targets.

Progress towards our updated short-term target is considered in these management and employees' incentives, comprising 10 per cent of the CEO's STI. This short-term target incentivises our people to focus on opportunities to reduce our direct Scope 1 operational emissions, which they have the greatest potential to influence.

We believe that consistent, strong performance in key environmental, social and governance aspects is important to building sustainable shareholder value over the long term. Since 2020, fifty per cent of Origin's Long-term incentive (LTI) equity grants for the CEO and all participants vest conditionally on the Board's satisfaction of progress across a suite of non-financial metrics across our four sustainability pillars of customers, community, planet and people. These include climate-related metrics, such as absolute emissions, emission intensity, solar PV sales and other air emissions.

Climate reporting and engagement

We have an open and transparent approach to engagement with our stakeholders on climate-related matters, including our investors. This includes the investor group Climate Action 100+ and the Investor Group on Climate Change (IGCC).

In preparing this plan, we have used the Climate Action 100+ Net Zero Company Benchmark as a guide, as well as various climate transition action plan guidance documents, including those prepared by the IGCC and the TCFD. We also engaged with our shareholders, and are committed to ongoing, transparent and timely engagement with them on our climate strategy and reporting.

This is a three-year plan and we intend to report our progress against key elements of this plan annually. If circumstances change it may be appropriate to revise the plan within the three-year period. If we intend to materially revise the plan, we intend to put a revised plan to shareholders for a non-binding advisory vote at the next scheduled AGM. Circumstances that may lead us to revise the plan within the three-year period include a significant change in our strategy, asset portfolio or the markets or regulatory environment in which we operate.

We recognise the fast-evolving space in climate and sustainability reporting, and the increasing expectations of our stakeholders. We are monitoring the work of the International Sustainability Standards Board, and welcome the development of one global reporting framework for companies.



Origin is a supporter of the TCFD and has been reporting against the TCFD framework since FY2018. The following table outlines where our TCFD disclosures can be found within our reporting suite.

TCFD recommended disclosure	Where to find more information
Governance	
The organisation's governance around climate-related risks and opportunities	
a) Describe the board's oversight of climate-related risks and opportunities	<i>Corporate Governance Statement</i>
b) Describe management's role in assessing and managing climate-related risks and opportunities	<i>Corporate Governance Statement</i>
Strategy	
The actual and potential impacts of climate-related risks and opportunities on the organisation's businesses, strategy, and financial planning	
a) Describe the climate-related risks and opportunities the organisation has identified over the short, medium and long terms	<i>Operating and Financial Review, Risks related to Origin's future financial prospects</i>
b) Describe the impact of climate-related risks and opportunities on the organisation's businesses, strategy, and financial planning	<i>Climate Transition Action Plan, Transitioning to net zero</i> <i>Annual Report, Overview section of the notes to the financial statements</i>
c) Describe the resilience of the organisation's strategy, taking into consideration different climate-related scenarios including a 2°C or lower scenario	<i>Climate Transition Action Plan, Portfolio resilience</i>

TCFD recommended disclosure	Where to find more information
Risk management	
The process used by the organisation to identify, assess and manage climate-related risks	
a) Describe the organisation's process for identifying and assessing climate-related risks	<i>Corporate Governance Statement</i>
b) Describe the organisation's process for managing climate-related risks	<i>Corporate Governance Statement</i>
c) Describe how processes for identifying, assessing and managing climate-related risks are integrated into the organisation's overall risk management	<i>Corporate Governance Statement</i>
Metrics and targets	
The metrics and targets used to assess and manage relevant climate-related risks and opportunities	
a) Disclose the metrics used by the organisation to assess climate-related risks and opportunities in line with its strategy and risk management process	<i>Climate Transition Action Plan, Targets</i> <i>Sustainability Report, Planet, Energy and climate change</i>
b) Disclose Scope 1, 2 and, if appropriate, Scope 3 GHG emissions, and the related risks	<i>Sustainability Report, Planet, Energy and climate change</i>
c) Describe the targets used by the organisation to manage climate-related risks and opportunities and performance against targets	<i>Climate Transition Action Plan, Targets</i> <i>Sustainability Report, Planet, Energy and climate change</i>

Additional information

Glossary

AEMO

Australian Energy Market Operator

AGM

Annual General Meeting

AI

Artificial intelligence

Ash dam

A pond used for storing of coal ash generated by burning coal in coal-fired power plants

Carbon dioxide equivalent (CO₂-e)

The universal unit of measurement to indicate the global warming potential (GWP) of each greenhouse gas, expressed in terms of the GWP of one unit of carbon dioxide. It is used to evaluate releasing (or avoiding releasing) different greenhouse gases against a common basis

CCS

Carbon capture and storage

CEO

Chief Executive Officer

Cleaner energy

Includes solar, wind, Hydro, green hydrogen, battery storage, bioenergy, and energy efficiency

CSIRO

Commonwealth Scientific and Industrial Research Organisation

Customer solutions

Origin's product and services offerings to customers, including to support their sustainable energy goals, including behind-the-meter solar and batteries, EV solutions and ongoing monitoring, optimisation and orchestration of demand and supply

ELT

Executive Leadership Team

Equity emissions

Proportional emissions from equity investments. For example, Origin's equity interest share of Australia Pacific LNG

Emission intensity

GHG emissions per a unit of measure (expressed as metric tonnes of carbon dioxide equivalent per Terajoule of energy

EV

Electric vehicle

Flaring

A process to release gas by burning the methane in specially designed flares within infrastructure. Flaring converts methane to carbon dioxide, which is a less potent greenhouse gas than methane

Green hydrogen

Hydrogen produced using renewable electricity⁵⁸

Hydro

Hydroelectric power including pumped storage

GHG

Greenhouse gas

IEA

International Energy Agency

IGCC

Investor Group on Climate Change

IPCC

Intergovernmental Panel on Climate Change

Just transition

A just transition means greening the economy in a way that is as fair and inclusive as possible to everyone concerned⁵⁹

Leaks

Gas can leak from infrastructure, particularly at pipe joints, valves and actuators

LNG

Liquefied natural gas

LPG

Liquefied petroleum gas

LTI

Long-term incentive

mt CO₂-e

One million metric tonnes of carbon dioxide equivalent

NEM

The National Electricity Market is the wholesale electricity market for the electrically connected states and territories, except for Western Australia and the Northern Territory

Net zero

Net zero is a state achieved when anthropogenic emissions of GHGs to the atmosphere are balanced by anthropogenic removals over a specified period.⁶⁰

NGER

National Greenhouse and Energy Reporting Act, 2007

NPV

Net Present Value

NZE

The IEA's Net Zero Emissions by 2050 Scenario

Operational control emissions

GHG emissions from our operated assets (our generation fleet and 100 per cent of the upstream operations at Australia Pacific LNG)

Paris Agreement

The Paris Agreement is an agreement between countries party to the United Nations Framework Convention on Climate Change (UNFCCC) to strengthen efforts to combat climate change and adapt to its effects, with enhanced support to assist developing countries to do so

⁵⁸ irena.org/-/media/Files/IRENA/Agency/Publication/2020/Nov/IRENA_Green_hydrogen_policy_2020.pdf

⁵⁹ ilo.org/global/topics/green-jobs/WCMS_824102/lang-en/index.htm

⁶⁰ ipcc.ch/sr15/chapter/glossary/

Paris Agreement goals

The central objective of the Paris Agreement is its long-term temperature goal to hold global average temperature increase to well below 2°C above preindustrial levels and pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels

Paris aligned

Aligned to the Paris Agreement goals

Plan

This Climate Transition Action Plan

PPA

Power Purchase Agreement

PV

Photovoltaic

SBTi

The Science Based Targets initiative is an independent body made up of representatives from the World Resources Institute, the CDP, the World Wildlife Fund and the UN Global Compact

Scope 1 emissions

GHG emissions released to the atmosphere as a direct result of our activity. These are sometimes referred to as direct emissions; examples include emissions from electricity generation and gas production

Scope 2 emissions

GHG emissions resulting from purchased electricity we consume to power our offices and operating sites

Scope 3 emissions

Indirect GHG emissions, other than Scope 2, relating to our value chain that we do not own or control including wholesale purchases of electricity from the NEM and the use of our sold products such as LNG and domestic gas sales

STI

Short-term incentive

TCFD

The G20 Financial Stability Board's Task Force on Climate-related Financial Disclosures

t CO2-e

One metric tonne of carbon dioxide equivalent

t CO2-e / TJ

Metric tonnes of carbon dioxide equivalent per terajoule of energy

UNFCCC

United Nations Framework Convention on Climate Change

Upstream & Thermal assets

Reflects Origin's interest in Australia Pacific LNG, thermal generation fleet as well as LPG business

Venting

The process that relieves pressure in the system, releasing gas to atmosphere

VPP

Virtual power plant

Electricity measures

Watt (W)

A measure of power when one ampere of current flows under one volt of pressure

Kilowatt (kW)

One kW = 1,000 watts

Kilowatt hour (kWh)

Standard unit of electrical energy representing consumption of one kilowatt over one hour

Megawatt (MW)

One MW = 1,000 kW

Megawatt hour (MWh)

One MWh = 1,000 kW hours

Gigawatt (GW)

One GW = 1,000 MW

Gases

CO2-e

Carbon dioxide equivalent

CH4

Methane



Independent Limited Assurance Statement to the Management and Directors of Origin Energy Limited

Our Conclusion:

Based on the procedures we have performed and the evidence we have obtained, nothing has come to our attention that suggests that the disclosures within Origin's Climate Transition Action Plan (the 'Report') have not been prepared, in all material respects in accordance with the Criteria outlined below.

What our review covered

Ernst & Young (EY) was engaged by Origin Energy Limited ('Origin') to provide limited assurance in order to state whether anything has come to our attention that suggests that:

- ▶ Origin's medium-term science-based emissions reduction target as presented in the Report (i.e. 40% reduction in Scope 1, 2 and 3 equity emissions intensity) is not consistent with a 1.5 degree pathway envelope.
- ▶ The assumptions and approach used by Origin for its scenario analysis and the selected disclosures presented in the Report are not:
 - ▶ Reasonable, including:
 - ▶ Transparent – that the Report details Origin's decarbonisation approach, and the assumptions and inputs into the scenario analysis, are appropriately documented and verifiable,
 - ▶ Neutral – that the Report neither overstates, nor understates the impact,
 - ▶ Relevant – that the external climate scenarios referenced are relevant and the assumptions and inputs forming the basis of Origin's scenario analysis do not omit relevant, well-established and publicly available inputs that could reasonably be expected to affect decisions of the intended users made on the basis of that subject matter information,
 - ▶ Defensible – that Origin's approach to decarbonisation set out in the Report is achievable and does not contradict credible external climate scenarios.
 - ▶ Complete – that the Report incorporates Origin's approach to decarbonisation, and with reference to relevant publicly stated climate change frameworks.

The limited assurance procedures relate to the year ending 30 June 2022.

Criteria applied by Origin

The criteria for our assurance engagement ('Criteria') include the following:

- ▶ Origin's internally developed reporting criteria ('Basis of Preparation'), which is summarised in the Report in the Targets and Scenario analysis sections and

includes consideration of the Climate Action 100+ Net Zero Company Benchmark Framework ('CA100+ NZCB').

Key responsibilities

EY's responsibilities

Our responsibility is to express a limited assurance conclusion on selected disclosures included in the Report based on the evidence we obtained.

We were also responsible for maintaining our independence and confirm that we have met the requirements of the APES 110 Code of Ethics for Professional Accountants including independence and have the required competencies and experience to conduct this assurance engagement.

Origin's responsibilities

Origin's management ('Management') was responsible for selecting the Criteria, and for presenting the selected disclosures in accordance with that Criteria. This responsibility included establishing and maintaining internal controls, adequate records and making estimates that are relevant to the preparation of the subject matter, such that it is free from material misstatement, whether due to fraud or error.

Our approach to conducting the review

We conducted our review in accordance with the *Australian Standard for Assurance Engagements Other Than Audits or Reviews of Historical Financial Information* ('ASAE 3000'), *Assurance Engagements on Greenhouse Gas Statements* ('ASAE 3410') and the terms of reference for this engagement as agreed with Origin on 8 April 2022.

Description of procedures performed

A limited assurance engagement consists of making enquiries, primarily of persons responsible for preparing the selected disclosures and related information, and applying analytical and other review procedures.

EY Assurance Statement



Our procedures included:

- ▶ Interviewing key personnel to understand the reporting process, including management's processes to develop climate-related targets and undertake scenario analysis
- ▶ Checking the Report to understand how Origin's decarbonisation ambitions are reflected in qualitative disclosures
- ▶ Evaluating the suitability of the Criteria
- ▶ Checking if the assumptions and approach supporting Origin's scenario analysis were consistent with the principles specified in the Criteria
- ▶ Checking if the approach supporting Origin's planned actions and climate-related targets was consistent with the principles specified in the Criteria
- ▶ Evaluating selected disclosures against the CA100+ NZCB disclosure indicators to consider whether Origin has appropriately applied the requirements of these selected disclosure indicators
- ▶ Undertaking analytical procedures of the metrics disclosed in the Report
- ▶ On a sample basis, based on our professional judgement, agreeing claims and metrics to source information to check the accuracy and completeness of the claims
- ▶ Identifying and testing the reasonableness of assumptions and approach supporting Origin's climate scenarios.

We believe that the evidence obtained is sufficient and appropriate to provide a basis for our limited assurance conclusions.

Other matters

We have not performed assurance procedures in respect of any information relating to prior reporting periods, including those presented in the Report. Our review did not extend to any disclosures or assertions made by Origin that do not relate to Origin's revised medium-term target, its scenario analysis and the selected disclosures informed by the CA100+ NZCB. Additionally, our review did not include establishing whether the Report was complete in accordance with all of the disclosure requirements of the CA100+ NZCB.

Although we considered the effectiveness of Management's internal controls when determining the nature and extent of our procedures, our assurance engagement was not designed to provide assurance on internal controls. Our procedures did not include testing controls or performing procedures relating to checking aggregation or calculation of data within IT systems.

Limited Assurance

Procedures performed in a limited assurance engagement vary in nature and timing from, and are less in extent than for, a reasonable assurance engagement. Consequently, the level of assurance obtained in a limited assurance engagement is substantially lower than the assurance that would have been obtained had a reasonable assurance engagement been performed. Our procedures were designed to obtain a limited level of assurance on which to base our conclusion and do not provide all the evidence that would be required to provide a reasonable level of assurance.

Use of our Assurance Statement

We disclaim any assumption of responsibility for any reliance on this assurance statement, or on the selected disclosures to which it relates, to any persons other than the management and the Directors of Origin, or for any purpose other than that for which it was prepared.

Our review included web-based information that was available via web links as of the date of this assurance statement. We provide no assurance over changes to the content of this web-based information after the date of this assurance statement.

Ernst & Young
Melbourne, Australia
23rd August 2022

Meg Fricke
Partner

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EY

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can be found on our website:

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