2020
Sustainability
Report

origin

good energy

"Good energy is giving back to the community I am passionate about."

Maxine Thomas
Origin Stakeholder Liaison
Integrated Gas, Roma

Important information

In this report a reference to 'Origin', 'Origin Energy', 'Group', 'Origin Group', 'Company', 'we', and 'our' is to Origin Energy Limited and its controlled entities and joint venture arrangements as outlined in our 2020 Annual Report.

Unless otherwise stated, Origin Energy's 2020 Sustainability Report provides a summary of Origin's performance on material social and environmental sustainability aspects for the period 1 July 2019 to 30 June 2020 (FY2020).

Its scope is limited to the assets we operate. The exception is emissions performance, which we report on an operated and equity basis, in line with regulatory and reporting standards. Origin is the upstream operator of Australia Pacific LNG and 37.5 per cent shareholder.

This report may also reference significant events occurring after 30 June 2020. Where this report 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. Statements about past performance are not necessarily indicative of future performance.

All monetary amounts are in Australian dollars unless otherwise stated. Due to rounding, numbers presented in this report may not add up precisely to the totals provided and percentages may not precisely reflect the absolute figures.

Featured on our front cover is Maxine Thomas

Maxine Thomas is Origin's Stakeholder Liaison in our Integrated Gas business based in Roma, Queensland. It is important for Maxine to be able to combine her role at Origin with her involvement in the community. Maxine was photographed at Injune Early Learning Centre. Maxine produces early learning programs fortnightly for the Centre, ensuring local children have access to early education.

Maxine is supported by the Origin Energy Foundation, which focuses on supporting education programs that help break the cycle of disadvantage and empower young Australians to reach their potential. Founded by Origin in 2010, the Foundation has provided more than $27 million of community support since inception.

Contents

A message from the Chief Executive Officer 4

FY2020 performance highlights 6

About Origin 8

Responding to a year of challenges 10

How we report 12

Energy and climate change 13

Eraring Power Station 17

Greenhouse gas emissions 18

Customers 22

Our people and culture 26

Safety 28

Environment 30

Working with communities 34

Origin Energy Foundation 37

Procurement 38

Policy and regulation 40

Governance 42

Ratings and awards 44

Appendix 1: TCFD disclosure 45

Appendix 2: Gender diversity performance 46

Appendix 3: Stakeholder engagement 47

Appendix 4: Sustainable Development Goals 48

Glossary 50

A message from the Chief Executive Officer

Welcome to the 2020 Sustainability Report

"The Origin Energy Foundation has provided more than $27 million to support community organisations and has helped more than 62,000 young people to achieve in education."

I am pleased to present Origin's 2020 *Sustainability Report*.

The last 12 months have proved to be challenging for our customers, communities and the economy, with bushfires, drought and the COVID-19 pandemic.

The pandemic has changed the way we work, stay connected and run our business. Today, Origin is managing much of our energy supply and operations remotely – from gas and electricity trading to dispatching our fleet of natural gas-fired power stations into the grid. Fortunately, we had strong foundations to build on, having spent a lot of time in recent years planning, developing and investing in the technologies and tools that enable us to run our business more efficiently.

Supporting our customers and communities

In responding to the challenges of the last 12 months, I am proud that our team has kept the needs of our most vulnerable customers front of mind and made sure we maintain a reliable supply of electricity, natural gas and LPG to our customers.

Origin and our employees donated more than $870,000 to support communities affected by the bushfires and drought in FY2020, including $300,000 to the Australian Red Cross and state-based rural fire services. We supported customers in affected areas with payment extensions and flexible payment plans, and set aside $4 million for a bushfire relief package to help them get back on their feet.

To support those customers in difficulty as a result of COVID-19, we are protecting residential and small business customers in financial stress from disconnection or default listing until at least the end of October 2020. We will continue to support customers through our hardship program, as we always have.

Celebrating 10 years of the Origin Energy Foundation

Our philanthropic foundation, the Origin Energy Foundation, was created back in 2010 with the goal of helping to break the cycle of disadvantage and empower young Australians to reach their potential through education – a focus chosen by Origin employees. Since then, the Foundation has provided more than $27 million to support community organisations and has helped more than 62,000 young people to achieve in education.

A key element of the Foundation's work is our employee volunteering program. This year, more than 40 per cent of our employees volunteered, donating in excess of 6,700 hours to help our community partners. Maxine Thomas, featured on the front cover of this report, is our Stakeholder Liaison in Roma, Queensland, and represents the Foundation at its best in terms of giving back to our local communities.

I want to congratulate the Foundation on its 10 year anniversary and the fantastic work it has done, through people like Maxine, and will continue to do to improve the lives of young Australians.

A cleaner energy future

As one of Australia's leading energy companies, Origin has a critical role in delivering a clean energy future. We are the only company in the Australian energy sector to have validated and approved science-based emissions reduction targets, which include commitments to halve our Scope 1 and Scope 2 greenhouse gas emissions and reduce our Scope 3 emissions by 25 per cent by 2032.

This year, our Scope 1 and Scope 2 emissions fell by nine per cent compared to the previous year, while our Scope 3 emissions declined by 12 per cent on FY2019. We continue to look for ways to decarbonise our business and are investing in leading-edge technologies that drive greater efficiency in our operations and reduce emissions. For instance, we are increasingly using artificial intelligence across the company. At our Eraring Power Station it has helped us to avoid over 150,000 tonnes of greenhouse gas emissions in FY2020 by delivering improved performance, while in our Integrated Gas business we are optimising well production and reducing the need for flaring using a world-first tool developed by Origin. We expect the tool to reduce potential emissions by around 25,000 tonnes every year when fully operational.

In addition to our existing emissions targets, we announced a new short-term emissions target, to reduce our Scope 1 emissions over the next three financial years to FY2023 by 10 per cent on average, compared to our FY2017 baseline. Further demonstrating this commitment, a new climate change target will be linked to executive remuneration in FY2021.

Delivering smarter energy

This year, we demonstrated our capacity for innovation across Origin. We announced a strategic partnership with the innovative UK retailer, Octopus Energy, which brings together Origin's leadership in the Australian market with Octopus' best-in-class platform and operating model. There is strong alignment between our organisations on values and strategies, particularly an aspiration to deliver the best customer experience in market.

We also announced a partnership with OhmConnect, a US-based tech start-up that participated in the first year of Free Electrons, the energy start-up program we co-founded, in 2017. Together we have launched a new product called Spike, which rewards customers for reducing their energy use at home during peak demand times, with the potential to reduce their costs and carbon footprints.

By harnessing our strengths and capturing ideas from around the world, we are connecting our customers to the energy and technologies of the future, and delivering superior outcomes for them.

One Origin

For Origin, protecting the health, safety and wellbeing of our employees and their families is critical as we adjust to major changes in many aspects of our lives. Within this setting, I was pleased that we achieved a significant uplift in our employee engagement this year, to 75 per cent (from 61 per cent in 2019), placing us in the top quartile of Australian and New Zealand employers.

Further, our Total Recordable Injury Frequency Rate fell to 2.6 this year, from 4.4 last year. This is a marked improvement and reflects our focus on personal safety over the past year. We will continue to support our people to ensure a resilient and connected workforce into the future.

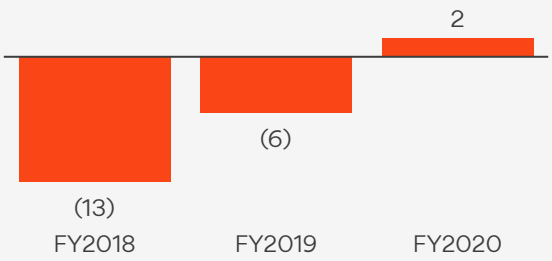
This Sustainability Report – our 19th – details how we strive every day to deliver on our purpose of getting energy right for our customers, communities and planet. These challenging times have only served to strengthen our belief in this commitment.

Frank Calabria
Chief Executive Officer

FY2020 performance highlights

Customers

Strategic Net Promoter Score



33,100

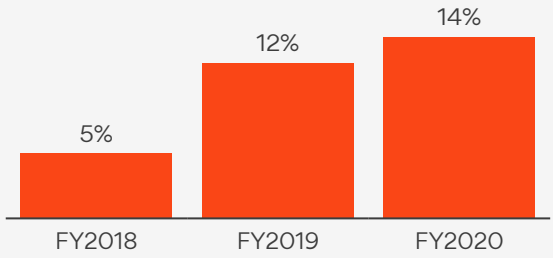
customers successfully completed our Power On hardship program

Communities

>$2.9m

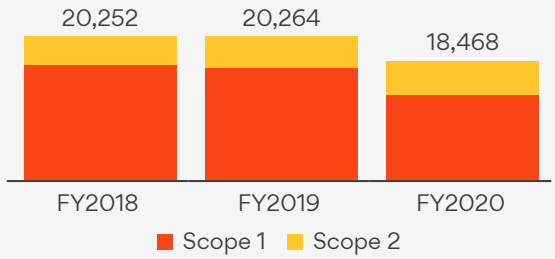
distributed to the community by the Origin Energy Foundation

Regional procurement spend as % of total spend



Planet

Scope 1 & Scope 2 GHG emissions* (kt CO_2-e)



* Operational control basis.

61 MW

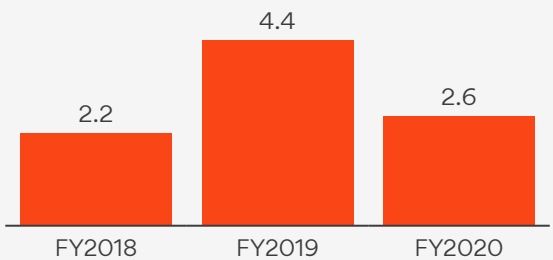
residential and business solar installations, up from 50 MW in FY2019

People

75%

staff engagement

Total Recordable Injury Frequency Rate



Our purpose and values

Our purpose

Getting energy right for our customers, communities and planet.

Our purpose drives everything. It's why we're here and how we make a difference to people's lives. It's an aspiration that acknowledges we're not there yet. For us, every word matters.

Our values

Our values help guide how we make decisions, balance priorities and work together.

- **Work as one team, one Origin**
- **Be the customer champion**
- **Care about our impact**
- **Being accountable**
- **Find a better way**

Our pillars

We're here to deliver to all our stakeholders, equally.

- **Customers**
- **Communities**
- **Planet**
- **Shareholders**

About Origin

Origin at a glance

ASX TOP 50

Leading integrated energy company

Listed on the Australian Securities Exchange in 2000

4.2 million customer accounts

Electricity, gas and LPG customers across Australia and the Pacific

5,200 employees

Inclusivity in the workplace, leading parental support

Five-pillar approach to decarbonisation

Australia's first science-based emissions targets, aligned with the Paris Agreement

Powering Australia

7,400 MW generation portfolio, including 1,400 MW owned and contracted renewables and storage

37.5% interest in Australia Pacific LNG

Exporting to Asia and supplying ~30% of Australian east coast gas demand

Supporting Australian communities

Over its 10 years, the Origin Energy Foundation has contributed more than $27 million

Driving future energy innovation

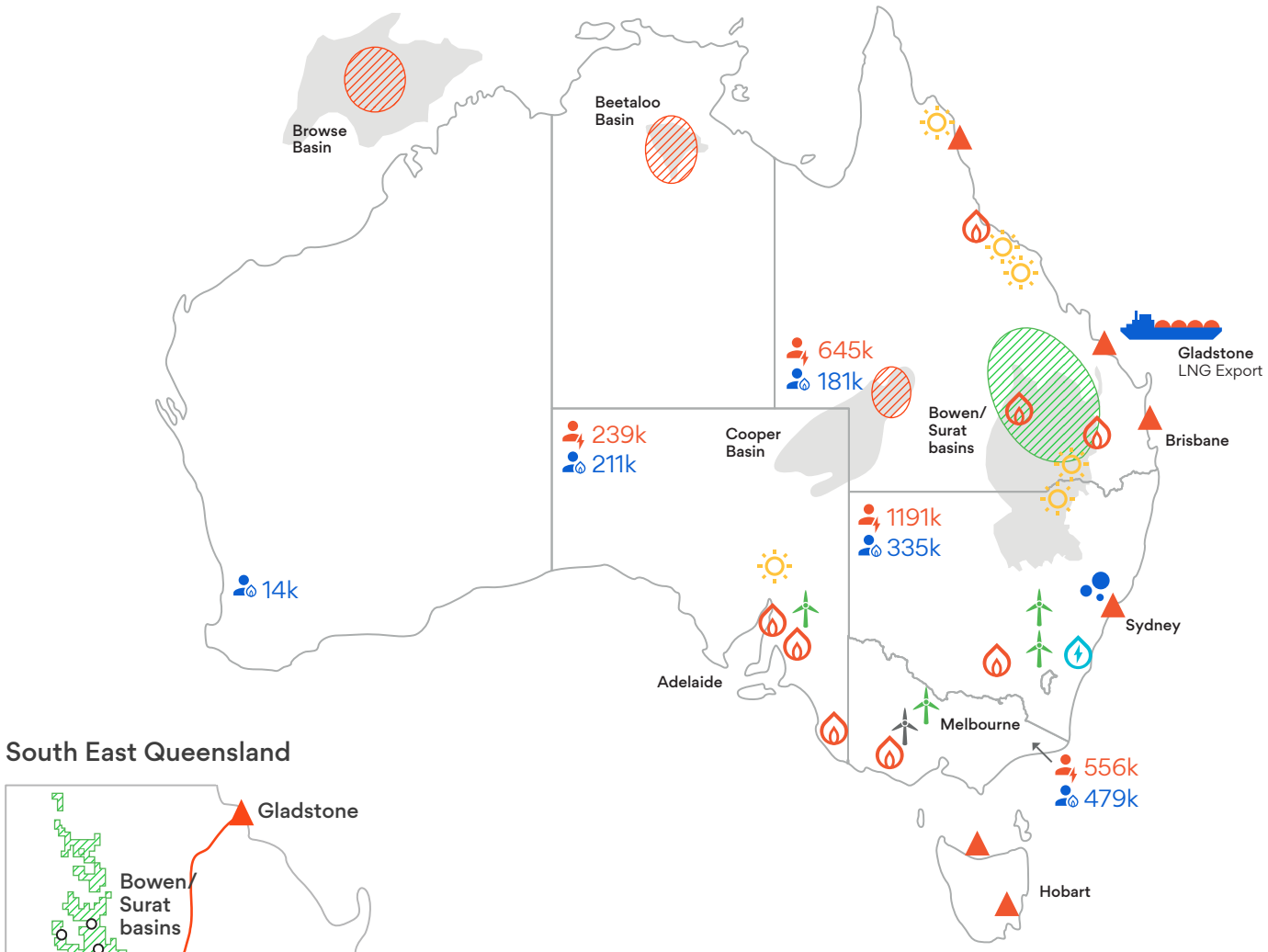
Investing in new technology, start-ups and future fuels

Exploration and development

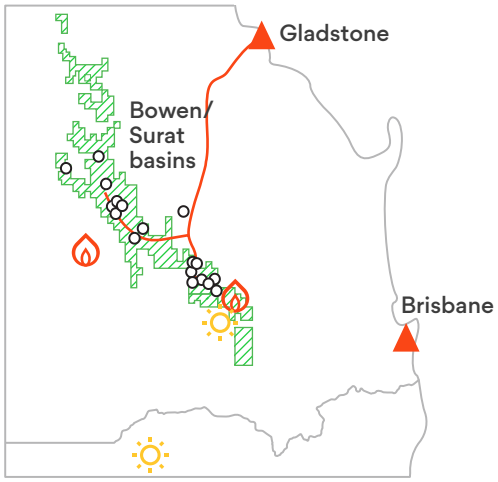
77.5% interest in Beetaloo Basin exploration permits

Bringing **good energy** to everything we say and **do.**

Where we operate



South East Queensland



Exploration & production acreage

- Origin upstream acreage
- APLNG upstream acreage
- Production facility
- APLNG pipeline

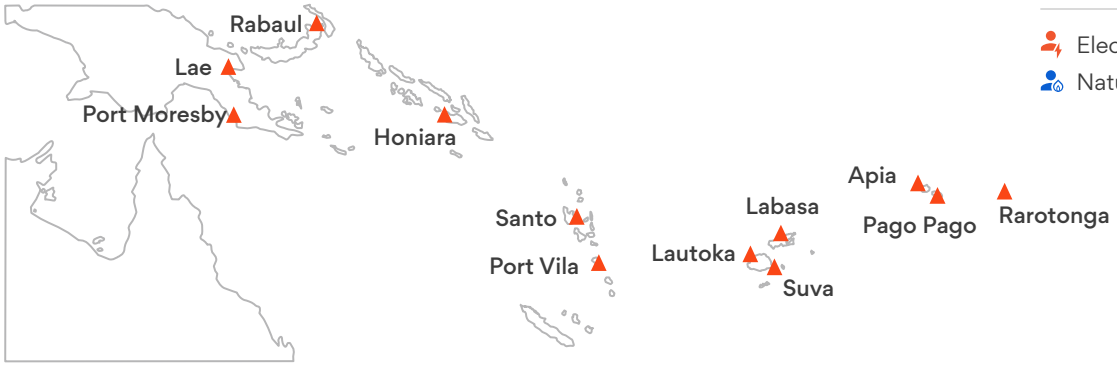
Generation

- Gas
- Pumped hydro
- Solar (contracted)
- Wind (contracted)
- Coal
- Under construction

- LPG seaboard terminal

- Electricity customer accounts
- Natural gas customer accounts

Pacific countries LPG



Responding to a year of challenges

As a provider of essential services, Origin plans extensively for unexpected events, however, with severe drought, a national bushfire crisis and a global health emergency, the events of FY2020 brought many challenges.

Our business has been affected by both COVID-19 and the significant reduction in commodity prices, but this year has also presented us with opportunities to find more effective ways to work, to reinforce our commitments to our customers and communities, and to build resilience for the future.

Drought and bushfires

Many communities were affected by the drought and bushfires experienced in Australia in FY2020. Origin provided short and longer term assistance to customers in impacted areas, including waiving debt and providing ongoing hardship support. We also set aside a bushfire relief fund of $4 million to directly support those who needed assistance with their energy bills.

In addition, Origin and our employees provided over $870,000 in cash donations to bushfire and drought relief – both as corporate donations and through our employee matched giving program via the Origin Energy Foundation. We also increased community service leave for Origin employees who volunteered for bushfire efforts and offered special leave to any employee directly affected by the fires. Through the Origin Energy Foundation, 180 employee volunteers provided practical support to those cut off from power by assembling and distributing over 1,500 solar lights to bushfire evacuees and impacted communities.

To assist with short to medium term recovery from bushfires, the Foundation committed $250,000 to the Foundation for Rural and Regional Renewal's Back to School voucher program to support children returning to school in fire-affected communities.

A number of our operational sites and assets – including the Shoalhaven Pumped Hydro Storage Scheme in the Kangaroo Valley (Shoalhaven), Eraring Power Station at Lake Macquarie (Eraring) and some LPG terminals – were located near where bushfires occurred. We worked closely with emergency services to ensure our employees and sites were prepared for the ongoing bushfire threat. Fortunately, our people remained safe and we did not experience any damage to our assets.

COVID-19

The COVID-19 pandemic has disrupted our way of life and changed the way we work. To date, there has been no material impact on Origin's energy supply operations, with customers continuing to receive electricity, natural gas and LPG supply. However, our business, people, customers and the communities in which we operate have all been significantly affected.

Our response to the pandemic has focused on three key areas:

- protecting the health, safety and wellbeing of our people and the communities in which we operate;
- maintaining safe and reliable energy supply; and
- supporting customers and communities that have been affected.

Protecting our people

From the outset of the pandemic, the health and safety of our employees and their families has been our top priority.

Working safely: To ensure we maintained energy supply, and did so safely, we had to change many aspects of the way we work, including how to safely get key workers to our operational sites. Fast-evolving travel restrictions and border closures provided challenges, as some of our specialist workers commute interstate or long distances for their shifts. We had to quickly assess which workers were most critical, then work closely with governments and health authorities to obtain special clearance for them to keep travelling. We also replaced scheduled plane services with charter flights for all regional fly-in fly-out travel so we could enable appropriate social distancing.

We took the decision to move our office-based staff to remote working from mid-March 2020. Assisted by pre-pandemic work done to improve our technology options, most of our workforce was working from home within one week, equipped with information and tools for managing health and safety when working remotely, including ergonomics assessments.

We also fast-tracked a technology upgrade to our phone systems that enabled 1,200 of our contact centre staff across four locations in two countries to work from home within 48 hours. For employees unable to work remotely, including some operational roles at our power stations, LPG business and gas processing facilities, we implemented a range of measures to mitigate risks, such as managing rosters to reduce contact between staff, restricting visitors to sites and conducting additional health screenings.

In March 2020, we temporarily paused exploration in the Beetaloo Basin in the Northern Territory to help keep the local communities safe. Our response followed discussions with the NT Government and the Northern Land Council, the representative body for the Aboriginal people where we are exploring. A rigorous COVID-19 management plan approved by the NT Chief Health Officer was put in place to support our people and safely maintain the site.

Jobs, learning and development: Our focus has been on managing costs and reducing discretionary spending across Origin in the interest of protecting jobs as best we can. We ceased most external recruitment and established a skill share program that aims to provide short-term learning and development opportunities for employees who have additional capacity, while supporting those parts of the business experiencing increased workloads. We also enhanced our online learning and development resources so our people can continue to focus on their development while working outside of the office.

Providing additional leave and flexibility: We established a new Pandemic Leave Policy to support our people during this time, with up to 10 days paid leave available to cover instances of self-quarantine; caring for a family member with COVID-19; or when pandemic-related restrictions, such as school closures, impact an employee's ability to work. Our flexible work environment has been a core strength in supporting our staff during this time, and we have continued to support flexible working hours in recognition of additional caring responsibilities.

Supporting mental health: We strengthened our focus on supporting the mental health and wellbeing of our people, including providing tools for managers to support team members. We fast-tracked the launch of our Mental Health and Wellbeing Hub so employees have access to a range of resources, including regular webinars, factsheets, videos, mindfulness exercises and support information.

Remaining connected: We increased communication with our employees, including through regular video and email updates from leaders, as well as posts on our internal social platform, and promoted regular communication within teams.

Supporting our customers

COVID-19 is having a significant financial impact on many Australians and we wanted to make sure we had the right support options in place for those customers who are doing it tough.

In March 2020, we announced new measures to support customers impacted by COVID-19, including protecting residential and small business customers in financial distress from disconnection or default listing, and waiving late payment fees until 31 July 2020. We have since extended this support to 31 October 2020 for customers who let us know they are having issues paying on time due to the pandemic. We continue to support customers with payment extensions and flexible payment plans through our hardship program, Power On.

Helping our communities

The impacts of COVID-19 are likely to be far-reaching and we believe in business getting behind the community and offering whatever support we can. For Origin, this has included working with our suppliers to help community organisations source much needed provisions such as hand soap; redirecting our office fruit and biscuit deliveries and sending other perishable items to a range of community groups; and supplying vouchers for food, clothing and other essential items to those in need through local charities.

We are supporting our small business suppliers with shorter payment terms to help them with cash flow through the current period of economic uncertainty. We are also providing health and wellbeing support to communities where we operate, such as in regional Queensland where we launched a program to give small businesses and their employees access to a range of counselling services.

We significantly adapted our predominantly face-to-face workplace volunteering program, delivered through the Origin Energy Foundation, to enable employees to continue volunteering despite social distancing restrictions. 300 Origin families assembled 1,500 solar lights during pandemic lockdowns, which went to children living without power in Africa, while other volunteers created video recordings of their favourite children's books for Indigenous students at Gawura school in Sydney.

Employees are also assisting the Australian Red Cross' psychological first aid telephone service COVID Connect, which supports people affected by social isolation, loneliness or economic uncertainty. Since April 2020, more than 50 Origin volunteers have made 150 calls each week to the elderly, people who are sick and those in need of support, the first time such a program has been delivered remotely.

Origin Energy employee Sabooh Whitelaw and her son (below) build a SolarBuddy solar light at home.

Case study

Working together to protect communities

During the devastating bushfires of 2019-20, fire services across Australia fought tirelessly to protect communities, property and infrastructure. When the Currowan bushfire threatened our Shoalhaven Pumped Hydro Scheme in January 2020, both volunteer and government fire services were there to defend our infrastructure and neighbouring properties, and our team was able to assist by providing vital water to refill firefighting trucks.

Read more here ›

originenergy.com.au/blog

How we report

Our Sustainability Report discloses our performance and how we manage material environmental and social aspects of our activities and governance procedures.

These aspects align with the sustainability-related risks identified in our Operating and Financial Review, released on 20 August 2020 as part of our Directors' Report.

We also engage with our stakeholders to identify aspects of sustainability that are important to them.[1]

This report references the Global Reporting Initiative (GRI). We also use the AA1000 AccountAbility Principles to inform our reporting.

Visit originenergy.com.au/about/sustainability/sustainability-reports.html for more details on our management approach, materiality assessment process and GRI Supplement, and to view full details of our sustainability performance data in FY2020.

In addition to this report, we provide details about different aspects of sustainability in various publications, including our Annual Report, public policy submissions and online at originenergy.com.au

Stakeholder engagement

We engage with our stakeholders in a variety of ways throughout the year.

We recognise the importance of talking to our stakeholders to understand the key sustainability priorities of each stakeholder group.

See *Appendix 3: Stakeholder engagement* for more information of our engagement activities.

We are a member of various industry associations and peak bodies. These memberships enhance our ability to reach and advocate for common industry views and gain industry insights. We may not align with every element of an association's public position, but where we believe there is a benefit in constructive dialogue or advocacy, we will maintain our membership.

See originenergy.com.au/industryassociations for details of our key industry associations.

FY2020 materiality assessment outcomes

Each year, we complete a materiality assessment that involves examining each aspect of sustainability according to its level of risk to the company, its topicality and the degree of stakeholder interest. The aspects of our business that have been identified through our materiality assessment are:

- Air emissions;
- Business model resilience;
- Climate change;
- Customer care;
- Employee engagement, diversity and inclusion;
- Ethical business practices;
- Energy efficiency;
- Greenhouse gas emissions;
- Governance;
- Impact to local communities;
- Labour practices;
- Process safety;
- Water management; and
- Workforce health and safety.

Greenhouse gas emissions

We report our Scope 1 and Scope 2 emissions under the *National Greenhouse and Energy Reporting Act 2007* (NGER). We are not required to report our Scope 3 emissions under NGER, however, we believe it is important that entities take responsibility for influencing emissions up and down the supply chain and as such we estimate and report our Scope 3 emissions data. We calculate Scope 3 emissions based on the Greenhouse Gas Protocol's Corporate Value Chain (Scope 3) Accounting and Reporting Standard and Scope 3 guidance documents.[2]

Where data is not available due to timing, we apply a reasonable estimation methodology. Where applicable, we revise prior year data in the Sustainability Report to update prior estimates and align with external reporting requirements such as NGER.

Additional emissions information is available in our FY2020 sustainability performance data.

Task Force on Climate-related Financial Disclosures

The G20 Financial Stability Board's Task Force on Climate-related Financial Disclosures (TCFD) has developed a set of voluntary recommendations for companies to disclose information about how they oversee and manage climate-related risks and opportunities. Origin became a supporter of the TCFD in FY2018 and continues to implement its recommendations.

See *Appendix 1: TCFD disclosure* for more information.

United Nations Sustainable Development Goals

In 2015, the United Nations adopted the 17 Sustainable Development Goals (SDGs) to end poverty, protect the planet and ensure prosperity for all by 2030.

Look for SDG icons in this report to see how Origin's activities are contributing to these global goals. For example, the icons below appear in the section *Energy and climate change*, reflecting that our decarbonisation strategy and our emissions targets contribute to these goals. See *Appendix 4: Sustainable Development Goals* for more information on how our activities are contributing to the SDGs.

1 Drawn from investor, customer, employee and community feedback.

2 https://ghgprotocol.org/standards/scope-3-standard

Energy and climate change

Climate change remains one of the most significant challenges facing society, and managing the transition to a low-carbon economy is a strategic priority for Origin.

We support the United Nations Framework Convention on Climate Change and the Paris Agreement, and actions consistent with maintaining the average global temperature increase to well below 2°C compared with pre-industrial levels, and pursuing efforts to further limit this increase to 1.5°C (1.5°C pathway).[3]

Electricity generation contributes approximately 33 per cent of Australia's emissions, and as one of Australia's largest generators we believe the sector, and our company, should be at the forefront of reducing emissions.[4] We continue to support a national goal of net-zero emissions in the electricity sector by 2050 or earlier, and are proud of our ongoing contribution to the decarbonisation of the National Electricity Market (NEM).

We continue to believe the electricity sector should be responsible for more than its proportional share of emissions reductions, and has a crucial role to play in unlocking abatement opportunities in other sectors.

A global response is required to achieve the targets of the Paris Agreement. We believe gas has an important role to play in meeting the world's need for a cleaner energy supply, and is a key lower-emissions fuel to support decarbonisation alongside renewables.

A recent International Energy Agency report found that coal-to-gas switching has saved around 500 million tonnes of CO_2 since 2010.[5] Through our joint venture, Australia Pacific LNG, our Integrated Gas business is helping customers reduce the use of coal by exporting liquefied natural gas (LNG) to markets in Asia. Australia was the world's largest exporter of LNG in 2019 and is playing an important role in meeting the world's energy demand while facilitating the global shift to lower emissions.[6]

At home, Australia Pacific LNG continues to be a significant contributor to the Australian east coast gas market, supplying approximately 30 per cent of gas demand. However, we remain mindful of the significant challenge of balancing the transition to a low-carbon energy future, with secure and affordable energy supply.

Managing climate change risks and opportunities

We have long considered the effect of decarbonisation on the value of our assets over the short, medium and long term, and recognise that climate change impacts many parts of our business.

We believe the transition to a low-carbon future provides more opportunities than risks for Origin. The key risks and opportunities that we regularly consider in our strategic planning include the ongoing decarbonisation of energy markets; lower demand for fossil fuels in the markets in which we operate; a shorter lifespan of carbon-intensive assets such as Eraring; changes to energy market dynamics caused by the intermittency of renewables; increased demand from customers for lower-carbon sources of energy, such as renewables, green hydrogen and ammonia, and the electrification of other sectors.

Origin is actively focusing on digitisation, electric mobility and innovation, as we transition our business to a low-carbon economy. Zero- and low-carbon fuels such as hydrogen will also play an important role in decarbonising our business and the broader economy.

Climate scenario analysis is key to better understanding the potential risks and opportunities associated with decarbonisation scenarios for Origin, with the outputs utilised to support our long-term decision-making. See the *Climate resilience* section for more information.

Performance at a glance

- Committed to a new short-term emissions target.
- A new climate change target will be linked to executive remuneration.
- We plan to update our existing science-based target to a 1.5°C pathway, with an aim to achieve net-zero emissions by 2050.

3 unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement

4 industry.gov.au/sites/default/files/2020-05/nggi-quarterly-update-dec-2019.pdf

5 iea.org/publications/roleofgas

6 publications.industry.gov.au/publications/resourcesandenergyquarterlymarch2020/documents/Resources-and-Energy-Quarterly-March-2020.pdf

We are continuously improving the way we identify, assess and manage climate-related risks and opportunities for our business, and we believe the TCFD is a useful way to disclose this information to our stakeholders. See *Appendix 1: TCFD disclosure* for more information.

Decarbonisation commitments

In 2015, we became the first energy company in the world to sign up to the first seven commitments of the We Mean Business coalition, which is dedicated to accelerating corporate action on climate change. See originenergy.com.au/about/sustainability/carbon-commitments for detail on our progress towards our commitments.

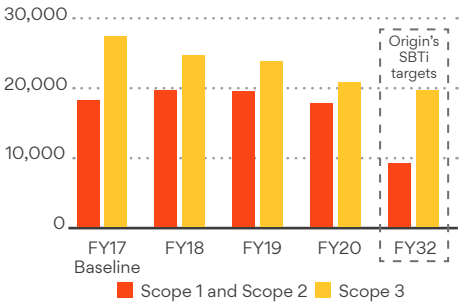
One of our We Mean Business commitments was to set a science-based emissions target independently approved by the Science-Based Target initiative (SBTi), and in 2017, we became the first company in Australia to do so. To date, we remain the only company in the Australian energy sector to have validated and approved science-based targets. Our targets cover not only Scope 1 and Scope 2 emissions but also Scope 3 emissions. We have also long supported a net-zero emissions target for the electricity sector by 2050 or earlier.

The SBTi framework continues to be the global leader for science-based emissions targets and is widely recognised as a credible and verifiable approach to target setting aligned with the Paris Agreement goals. We will be informed by the SBTi's guidance on a 1.5°C pathway for the oil and gas sector, and net-zero targets in the corporate sector once they are released, and we plan to update our current targets to a 1.5°C pathway with an aim to achieve net-zero emissions by 2050.

Scope 1 and Scope 2 targets

Our targets commit us to halve our Scope 1[7] and Scope 2[8] greenhouse gas emissions on an equity share basis[9] by 2032 from our FY2017 baseline of 18,246 kilotonnes (kt) CO_2-e. In FY2020, our equity Scope 1 and Scope 2 emissions were 17,812 kt CO_2-e, a decrease of nine per cent on FY2019.

Graph 1: Equity emissions performance and targets (kt CO_2-e)



Demonstrating progress on our science-based targets since our baseline year has been challenged by the closure of the 1,600 MW baseload brown coal-fired Hazelwood Power Station in 2017, which supplied one-third of Victoria's electricity. In response to the closure, Origin supported the market with our thermal generation fleet of both black coal- and gas-fired generation.

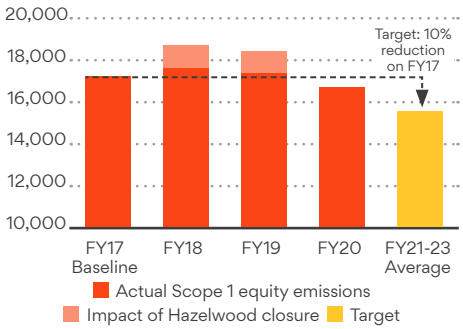
Our response to Hazelwood's closure ensured security of supply and downward pressure on prices in the market for our customers; however, it also resulted in an increase in our emissions from electricity generation over the following years. We have worked hard to reduce our emissions and are proud of the progress we have made to deliver emission reductions while continuing to provide reliable and affordable power for Australians.

Our equity Scope 1 and Scope 2 emissions have declined by nine per cent, largely reflecting lower generation output at Eraring by 17 per cent. While the decline in Eraring's output between now and 2032 is unlikely to be linear and will be influenced by various factors, including demand from the NEM and growth in renewable energy, output from Eraring and emissions are now on a downward trajectory from FY2019.

We are committed to delivering further reductions on our absolute emissions over the short-term and have committed to a new short-term emissions target:

Origin is targeting a reduction in Scope 1 emissions by 10 per cent on average, over the next three financial years to FY2023, compared to our FY2017 SBTi baseline.

Graph 2: Short-term Scope 1 equity emissions reduction target (kt CO_2-e)



In addition, in FY2021 we will be including a climate change target in key executives' short-term incentive plans, defined as a percentage reduction in Origin's Scope 1 emissions. The targets for FY2021 are a minimum of 4 per cent, a target of 6 per cent and stretch target of 10 per cent reduction in Scope 1 emissions from our FY2017 baseline. The climate change target will comprise an element of the 40 per cent non-financial targets within the Chief Executive Officer's short-term incentive plan.

We continue to review the ambition of our targets and the science-based guidance as it evolves. However, the lack of long-term policy and the uncertain regulatory environment in Australia are challenging. This will influence the speed at which we transition, while at the same time we will continue to focus on the key elements of affordability and reliability for our customers.

Scope 3 target

Origin has also committed to reducing Scope 3 emissions by 25 per cent by 2032 from an FY2017 baseline of 27,451 kt CO_2-e.[10] Our FY2020 Scope 3 emissions were 20,910 kt CO_2-e, a decline of 12 per cent on FY2019.

The SBTi requirement for Scope 3 targets is to cover a minimum of two-thirds of total Scope 3 emissions in the baseline. Our validated and approved Scope 3 target covers all supply chain emissions incurred within the domestic market, including the electricity and gas our Energy Markets business sells to customers, and the gas Australia Pacific LNG sells to domestic customers.[11] It does not include Australia Pacific LNG's LNG exports, which satisfies the SBTi two-thirds coverage criteria.

See the *Greenhouse gas emissions* section for more information.

7 Scope 1 greenhouse gas emissions are the emissions released to the atmosphere as a direct result of an activity. These are sometimes referred to as direct emissions; examples include electricity generation and gas production.

8 Scope 2 emissions result from the electricity that we consume to power our offices and operating sites.

9 Emissions on an equity basis include the emissions relating to the assets we own, including our generation fleet and Origin's 37.5 per cent share of Australia Pacific LNG, including the downstream operations and non-operated areas.

10 Scope 3 emissions encompass indirect emissions, other than Scope 2 emissions, relating to our value chain that we do not own or control, including wholesale purchases of electricity from the NEM.

11 Liquefied Petroleum Gas (LPG) and Corporate Scope 3 emissions are excluded as they are not material.

Exit coal-fired generation by 2032

Significantly grow renewables in our portfolio

Utilise our strong gas position as a lower-emissions fuel

Empower customers with cleaner, smarter energy solutions

Demonstrate leadership in climate change advocacy

Decarbonisation strategy

We have a five-pillar approach to progressively decarbonise our business. Our approach is grounded in science, and our decarbonisation pathway is supported by our science-based targets.

Exit coal-fired generation by 2032

To reduce our greenhouse gas emissions and help lead the transition to a decarbonised future, we have committed to exiting coal-fired generation by 2032.

In FY2020, Eraring contributed 8 per cent of our revenue and represented 6 per cent of our total assets. Eraring is Australia's largest coal-fired power station, providing much needed stability and reliability in the NEM. As a black coal generator, Eraring has a lower emissions intensity than brown coal-fired plants.

Eraring is also one of the most flexible coal-fired power stations in the NEM as our units can be rapidly cycled through low, middle and high output levels. This flexibility supports the increase in intermittent renewable generation by providing reliable energy when renewables are not available.

As more renewable generation enters the market, and as emissions-intensive brown coal generation plants reach the end of their operational lives, gas and lower-intensity coal will play an important role in maintaining reliability in the NEM.

We anticipate the replacement of Eraring's 2,922 MW capacity will be from a combination of renewables, storage and gas. Until that time, Eraring remains crucial to the security, reliability and affordability of power supply in the NEM. See the *Eraring* section for more information.

Significantly grow renewables in our portfolio

We sell more electricity than we generate. This gives us the opportunity to expand our generation portfolio with renewable generation, which is the lowest-cost new-build generation today, and progressively reduce the emissions intensity of our generation portfolio.

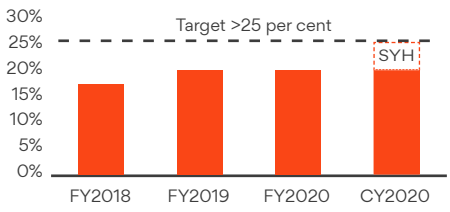
Since March 2016, we have committed to purchase the offtake from approximately 1,200 MW of new wind and solar projects across Queensland and South Australia.

We have also committed to purchase 100 per cent of the output of the 530 MW Stockyard Hill Wind Farm until the end of 2030, which is currently under development. A total of 116 of the 149 turbines have been constructed, the remaining tower components are on site and all three substations have been energised.[12]

We continue to target 25 per cent of our owned and contracted generation capacity being made up of renewables and storage by the end of the year, subject to development and commissioning timelines. When completed, the Stockyard Hill Wind Farm is expected to provide sufficient renewable energy to power 390,000 homes.

We continue to evaluate how large-scale storage will play a role in energy reliability and security. With the support of the Australian Renewable Energy Agency (ARENA), in FY2020 we completed a feasibility study on the expansion of our Shoalhaven Pumped Hydro Storage Scheme. This study determined that while the addition of a 235 MW unit is technically feasible, it is not commercially feasible in the current economic and regulatory environment. Origin will continue to consider this expansion project for our portfolio in the future.

Graph 3: Owned and contracted renewables and storage as a percentage of total generation capacity



Utilise our strong gas position as a lower-emissions fuel

Natural gas is an important transition fuel on the path to a decarbonised world, both in the domestic market as a firming fuel for renewable generation during morning and evening periods of peak demand, and through emissions savings in Asian economies as these countries switch from more carbon-intensive fuels.

The Commonwealth Scientific and Industrial Research Organisation's (CSIRO) Gas Industry Social and Environmental Research Alliance (GISERA) is a collaboration between CSIRO, Commonwealth and State governments and industry, established to undertake publicly reported independent research. A recent study commissioned by GISERA found gas from the Surat Basin, Queensland, where Australia Pacific LNG's coal seam as operations are located, offers an overall lower-carbon solution when compared to coal. The study also confirmed the greenhouse gas emissions benefit from increased use of natural gas in domestic and export markets compared to world averages for coal.[13]

As a flexible fuel, gas is a perfect partner for the increase in intermittent renewable energy as it can quickly respond to changes in both capacity and output. Origin owns Australia's largest fleet of gas-fired power stations, which had an average emissions intensity of 0.50 tonnes of CO_2-e per MWh in FY2020. Our fleet will continue to support the growth of renewables and provide stability in the NEM as its coal fleet, which had an emissions intensity of 0.95 tonnes of CO_2-e per MWh in FY2020, ages.

We invest in our existing gas fleet to improve its reliability and flexibility. We expect to complete the replacement of the second fast-start aeroderivative gas turbine at Quarantine Power Station in South Australia in 2021, helping support the growth in renewables in this state.

Empower customers with cleaner, smarter energy solutions

Energy Markets

Energy markets around the world are rapidly transforming. The take-up of technologies such as solar, batteries and Internet of Things (IoT) devices has changed the way customers use energy and the ever-increasing volume of data created provides us with the opportunity to create more tailored products and services.

12 originenergy.com.au/about/investors-media/presentations/Origin-Energy_Macquarie-Conference-2019.pdf

13 gisera.csiro.au/project/whole-of-life-cycle-greenhouse-gas-assessment

Case study

Supporting reliable and clean energy

Origin is improving the flexibility of our gas fleet to support the rapid uptake of renewables in South Australia and ensure our customers have access to reliable and affordable energy.

Read more here >

originenergy.com.au/blog

We have continued to assess and trial a number of new technologies and business models that will give customers more control over their energy usage. Key activities include the expansion of our Virtual Power Plant, which allows us to orchestrate a myriad of distributed assets, and launching Spike, a behavioural demand response product. See the *Customers* section for more information.

Integrated Gas

Zero- and low-carbon fuels will play an important role in decarbonising our business and we are exploring development of these products, focusing on opportunities in green hydrogen and green ammonia made using renewable energy and sustainably sourced water. These fuels may help energy system resilience, and provide new low- and zero-carbon ways of delivering energy to our customers.

We collaborate on research and development through, among others, our membership of the Future Energy Exports Cooperative Research Centre and our support of the UNSW Australian Research Centre for a Global Hydrogen Economy.

Demonstrate leadership in climate change advocacy

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

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 would facilitate an orderly transition to a low-carbon system without placing undue pressure on affordability.

In FY2020, we conducted a review of relevant industry associations in respect to their climate change and climate-related policies. Where there are areas of difference, we seek to influence the relevant industry association and its members through constructive dialogue. The Business Council of Australia (BCA) and the Australian Petroleum Production and Exploration Association (APPEA) are currently undertaking a review of their climate change policy positions, in part because members such as Origin have pushed for greater ambition and clarity on climate action. We are taking an active role in the working groups for both organisations' climate change policy reviews.

See the *Policy and regulation* section for more information.

Climate resilience

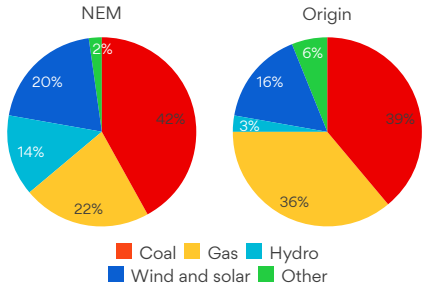
In October 2019, we updated our scenario analysis on the value of our generation portfolio, to evaluate the impact of the more ambitious Paris Agreement goal of a 1.5°C carbon reduction pathway.[14] Our generation portfolio represented 84 per cent of our operated Scope 1 and Scope 2 emissions in FY2020.

This new analysis demonstrated that while the value of Eraring declines under both the 2°C and 1.5°C scenarios, it retains a net positive value due to its role in the transitional period as it will provide secure and affordable baseload power in the short to medium term. The value of Origin's portfolio is lower under a 1.5°C scenario compared to the 2°C case; however, it remains higher than under a low-action, Nationally Determined Contribution case.

Our scenario analysis demonstrates that while transitioning to a low-emissions future presents considerable challenges, we have structured our generation portfolio to support the transition to lower emissions and the resilience of our business in a low-carbon world. Origin has invested in a relatively low-carbon, cost-competitive and flexible energy generation fleet.

Our generation capacity represents approximately 14 per cent of Australia's total NEM. We have a slightly lower proportion of coal than the NEM average and we continue to grow our share of wind and solar renewables. We have less hydro than the NEM average, reflecting the significance of the government-owned Snowy Hydro scheme. We also have a higher proportion of gas, which serves as more reliable, dispatchable ('firming') capacity for the market as coal is retired and renewable generation increases.

Graph 4: Origin's generation portfolio capacity compared to the NEM, July 2020[15]



14 originenergy.com.au/about/investors-media/media-centre/resilience-of-origins-generation-portfolio-to-a-low-carbon-economy

15 https://aemo.com.au/en/energy-systems/electricity/national-electricity-market-nem/nem-forecasting-and-planning/forecasting-and-planning-data/generation-information

Eraring Power Station

As Australia's largest power station, Eraring plays an important role in ensuring the reliability and affordability of energy in the NEM.

Eraring Power Station is a black coal-fired power station with a capacity of 2,922 MW, located on the shores of Lake Macquarie. As Origin's only coal-fired power station, it represents 39 per cent of Origin's owned and contracted generation capacity.

Eraring is one of the most flexible coal-fired power stations in the NEM as our units can be rapidly cycled through low, middle and high output levels. This flexibility supports the increase in intermittent renewable generation by providing reliable energy when renewables are not available.

Ahead of the planned exit from coal-fired generation at Eraring by 2032, there is a significant amount of planning and preparation involved to ensure the continued supply of reliable energy to the NEM. We anticipate replacing Eraring's capacity through a combination of renewables, gas and storage.

Output from Eraring

Following the closure of the Northern and Hazelwood brown coal-fired power stations in 2016 and 2017 respectively, output from Eraring increased in response, from 13.5 TWh in FY2016 to a peak of 16.5 TWh in FY2019, helping to stabilise the energy market. The higher output has resulted in an increase in Eraring's emissions from 12,913 kt CO_2-e in FY2016 to 15,444 kt CO_2-e in FY2019.

In FY2020, output from Eraring was 13.7 TWh, a reduction of 17 per cent on the prior year, and emissions declined to 13,220 kt CO_2-e. The reduction in output was due to forced outages, increased penetration of renewables in the NEM and increased hydro availability, in addition to reduced demand in part due to the COVID-19 pandemic.

Improving Eraring's environmental impact

We continue to look for ways to improve Eraring's environmental impact, including reducing emissions. In an Australian first, we have introduced an artificial intelligence program called Real Time Optimisation (RTO), which is aimed at improving the plant's overall heat rate – the fuel consumed per megawatt of electricity produced – which in turn can reduce the plant's emissions.

The RTO continuously performs technical calculations, learns from the power station's performance and takes actions to operate 32 different pieces of equipment on each unit every five minutes. These actions help Eraring operate more efficiently and reliably. In FY2020, 159,000 tonnes of CO_2-e were avoided due to RTO efficiency improvements. The RTO program is targeted to save up to 1 million tonnes of CO_2-e over the next five years.

The RTO has also increased the quality of the fly ash produced as a by-product from burning coal at Eraring, increasing the amount of ash that can be recycled for industrial uses. See the *Environment* section for more information.

Ash dam

The Eraring ash dam occupies approximately 250 hectares north of the main power station and is a critical part of the operations of Eraring, storing fly ash – the main by-product of burning coal at Eraring – that is not reused.

As part of our ongoing maintenance and monitoring of the Eraring site, we commissioned an engineering review of the ash dam in late 2018. This review found that while the dam is stable, the integrity of the dam's main embankment could be affected in the event of a significant earthquake.

In response to the findings of this assessment, the New South Wales Office of Sport took the decision to close the nearby Myuna Bay Sport and Recreation Centre. We are progressing extensive stabilisation works on the ash dam's southern embankment and are working with the Office of Sport to relocate the recreation centre at Origin's expense. A preferred site for the relocated recreation centre has been announced and the new centre's design concept will likely be available for consultation and discussion with the community by the end of 2020, with construction of the new centre planned for completion by mid-2023.

In December 2019, Origin received approval from the New South Wales Department of Planning, Industry and Environment to expand a section of the Eraring ash dam. This expansion will have no material impact on the stability of the ash dam as the works will be occurring 600 metres from the main embankment. We are currently working to address the conditions set out in the approval and have already established a community consultative committee to provide feedback on the expansion project.

Protecting local biodiversity

The Eraring site covers 1,100 hectares, including bush, waterways and our operating plant. We understand the importance of protecting the surrounding environment and our team is well trained to rescue local wildlife as required. We also help Taronga Zoo release recovered animals, notably turtles that are occasionally found within our canal network.

To support the regeneration of sections of the site, we have created the Eraring seedling nursery. The seedling nursery grows plants from seed harvested locally. The nursery uses traditional Indigenous land management practices and techniques to grow the seedlings and expects to propagate and plant over 2,000 seedlings each year.

Case study

Eraring plant nursery: applying Indigenous techniques to site revegetation

The onsite nursery at Origin's Eraring Power Station is playing an important role in supporting rehabilitation at the site, while also providing training opportunities for Indigenous employees as part of our Stretch Reconciliation Action Plan commitments.

Read more here ›

Greenhouse gas emissions

Performance at a glance

- Total operated Scope 1 and Scope 2 emissions have fallen by nine per cent year on year.
- 57 per cent reduction in emissions from flaring from FY2019.
- Total Scope 3 emissions declined by 12 per cent from FY2019.

Find out more about approach and policies in our Health, Safety and Environment Management Approach

We are committed to reducing our greenhouse gas emissions and helping lead the transition to a low-carbon future.

The output of our power generation portfolio is the main driver of our total emissions and emissions intensity. We also produce emissions as part of our natural gas activities as upstream operator of Australia Pacific LNG. Our total operated Scope 1 and Scope 2 emissions have fallen by nine per cent from FY2019, to 18,468 kt CO_2-e.

Our Energy Markets portfolio continues to support the reliability of the NEM, with output of 18,279 GWh in FY2020. Overall, internal generation output was down 10 per cent on FY2019, reflecting a decline in output from Eraring of 17 per cent due to forced outages, the growth of renewables in the NEM, and lower demand, in part due to the COVID-19 pandemic.

The decrease in Eraring output was partly offset by an increase in gas generation, reflecting the important role of peaking generation in providing support for the increase of intermittent renewables. We also increased the amount of generation sourced from contracted renewables by five per cent in FY2020.

Greenhouse gas emissions across Origin

We report our Scope 1 and Scope 2 greenhouse gas emissions on both an equity basis and an operational control basis.

Greenhouse gas emissions – equity basis

Emissions reported on an equity basis capture the emissions relating to the assets we own, including our generation fleet and Origin's 37.5 per cent share of Australia Pacific LNG, which includes the downstream operations and non-operated areas. Origin's SBTi-approved decarbonisation targets (discussed in the *Energy and climate change* section) are set against our equity emissions.

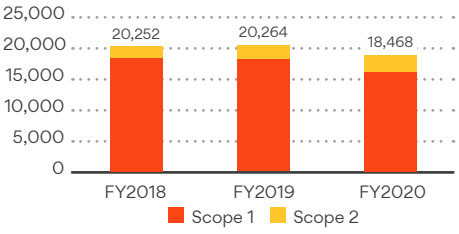
In FY2020, Scope 1 and Scope 2 emissions on an equity basis were 17,812 kt CO_2-e, a decrease of nine per cent compared to FY2019. The reduction largely reflects lower Scope 1 emissions due to reduced output from Eraring.

Greenhouse gas emissions – operational control basis

Our operational control Scope 1 and Scope 2 emissions represent emissions from our operated assets, being our generation fleet and 100 per cent of the upstream operations at Australia Pacific LNG. Operational control emissions reporting aligns with the NGER reporting requirements.[16]

Our Scope 1 operated emissions declined by 11 per cent year on year. The reduction reflects lower output from Eraring, the divestment of Australia Pacific LNG's Denison assets and the continued reduction in flaring at the upstream operations of Australia Pacific LNG. Scope 2 emissions have increased by five per cent in FY2020 due to a small increase in electricity use at Australia Pacific LNG's gas processing facilities.

Graph 5: GHG emissions by scope – operational control basis (kt CO_2-e)



Greenhouse gas emissions from Energy Markets

On an operational control basis, Energy Markets' Scope 1 and Scope 2 emissions were 15,598 kt CO_2-e in FY2020, a 10 per cent decrease on the previous year.

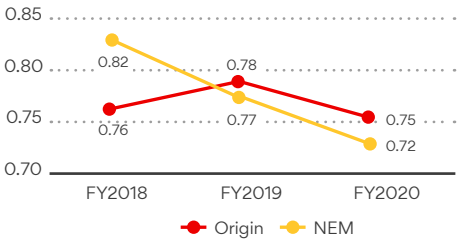
Emissions intensity

Our Scope 1 and Scope 2 emissions intensity in power generation, including contracted renewables, decreased to 0.69 tonnes of CO_2-e per MWh in FY2020, from 0.72 tonnes of CO_2-e per MWh in FY2019. This reflects reduced generation from Eraring as a proportion of total generation and a five per cent increase in generation sourced from contracted renewables, offset by increased gas-fired generation.

16 With the exception of LPG Pacific data, which is not reported under NGER, however is immaterial.

To enable a valid comparison of our performance against the NEM, where intensities consist of Scope 1 and Scope 3 emissions, we also report our emissions intensity in this format. The emissions intensity of our electricity generation portfolio, including contracted renewables, declined from 0.78 tonnes of CO_2-e per MWh in FY2019 to 0.75 tonnes of CO_2-e per MWh in FY2020.

Graph 6: Average emissions intensity NEM vs Origin Energy (t CO_2-e/MWh, Scope 1 and Scope 3)



This was marginally higher than the NEM average of 0.72 tonnes of CO_2-e per MWh in FY2020. The NEM continues to decarbonise via the closure of old, carbon-intensive coal-fired power stations and the introduction of renewables and storage, with more than 4,000 MW of new renewable capacity added to the NEM during 2019. The task of reducing carbon emissions is NEM-wide, and needs to be balanced against maintaining a reliable electricity supply at a competitive cost. Origin is playing an important role in ensuring the reliability of the NEM during this decarbonisation phase.

Emissions intensity across the assets in our generation portfolio varies, depending on the type of generation, and is calculated using Scope 1 emissions only. The reduction in Eraring's output has reduced its absolute emissions; however, its emissions intensity has increased to 0.96 tonnes of CO_2-e per MWh in FY2020, from 0.92 tonnes of CO_2-e per MWh in FY2019. The increase in emissions intensity was primarily due to reduced output at Eraring, as running Eraring at lower loads and ramping units up and down results in less efficient output.

As renewable penetration of the NEM continues to increase, Eraring will increasingly be run at lower loads and operated in response to changes in renewable energy supply. The flexibility of Eraring continues to support increased renewables in the NEM, however this may lead to a higher emissions intensity of Eraring over time.

Gas-fired power stations are typically less emissions-intensive than coal-fired power stations. At the end of FY2020, gas represented 36 per cent of our internal and contracted generation capacity, and 26 per cent of our owned and contracted generation output in FY2020, up from 21 per cent in FY2019. The emissions intensity of our gas generation fleet was 0.50 tonnes of CO_2-e per MWh in FY2020, compared to 0.52 tonnes of CO_2-e per MWh in FY2019, reinforcing our view that gas is the perfect partner for intermittent renewable energy.

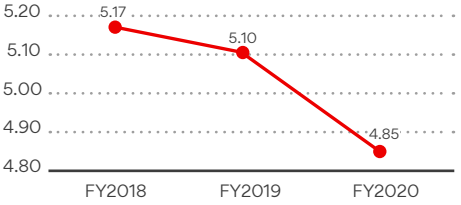
Greenhouse gas emissions from Integrated Gas

On an operational control basis, Integrated Gas produced total Scope 1 and Scope 2 emissions of 2,864 kt CO_2-e in FY2020, marginally lower than FY2019. Approximately one-quarter of the reported emissions from Integrated Gas in FY2020 occurred directly from our onsite activities (Scope 1), and three-quarters were produced by the electricity purchased to run our operations (Scope 2).

Emissions intensity

The Scope 1 and Scope 2 emissions intensity of Integrated Gas was 4.85 tonnes of CO_2-e per TJ in FY2020, a reduction from the FY2019 emissions intensity of 5.10 tonnes of CO_2-e per TJ. The lower intensity is mainly due to a continued focus on reduction in flaring at the upstream operations.

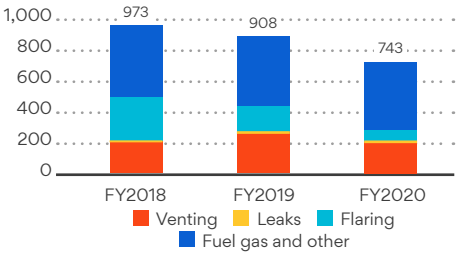
Graph 7: Integrated Gas emissions intensity (t CO_2-e/TJ)



Scope 1 emissions

Integrated Gas Scope 1 emissions, on an operational control basis, declined by 18 per cent in FY2020 to 743 kt CO_2-e due to a significant reduction in flaring and the divestment of the Denison assets.

Graph 8: Integrated Gas Scope 1 emissions, operational control (kt CO_2-e)



Emissions from flaring are predominantly CO_2, as the majority of the methane is combusted during the flaring process. Through targeted planning and implementing learnings from previous field turndowns during major maintenance shutdown operations, as well as the development of field turndown tools utilising artificial intelligence technology, we have been able to substantially reduce flaring at our gas processing facilities by 57 per cent.

Table 1: Origin's electricity supply, (GWh)

	FY2020		FY2019	
Generation output	**GWh**	**%**	**GWh**	**%**
Coal	13,634	61	16,513	67
Gas	5,802	26	5,150	21
Hydro	156	1	157	1
Wind and solar	2,871	13	2,744	11
Other	4	0	9	0
Total	**22,467**		**24,574**	

Of our Scope 1 emissions, 225 kt CO_2-e consisted of methane emitted into the atmosphere from venting and leaks as carbon dioxide equivalents. Vented and leaked methane is determined using a combination of methods including regulatory emission factors, metering and engineering calculations.

Australia Pacific LNG's emissions from venting and leaks reduced by 22 per cent in FY2020 and have remained at less than 0.1 per cent of metered gas sales from operated areas. This is already significantly lower than the 0.25 per cent methane intensity target of the Oil and Gas Climate Initiative, which comprises 12 global oil and gas companies.[17]

Origin has a robust risk-based inspection and infrastructure integrity program that is designed to manage venting and minimise leaks. It includes an annual maintenance program for wellheads and surface facilities, and testing of pipework and vessels. We continue to focus on our gas monitoring program, aiming to reduce our reliance on regulatory emission factors. This monitoring data also informs decisions about whether to retrofit or change the design of new infrastructure to reduce emissions.

Our Integrated Gas business is continuously seeking opportunities to further reduce its emissions. This includes replacing equipment and devices with more efficient and advanced technologies as well as retrofitting facilities to reduce venting of methane and fuel gas consumption.

Methane emissions from the landscape

Shallow gas and seeps are naturally occurring, but we know gas developments can change the natural methane migration and emission patterns, as observed in the Surat Basin.

We have performed targeted intercept and development work around the Condamine River, including drilling specifically designed wells for these seeps. Recent measurements show that these wells have helped us capture the methane emissions before they reach the surface and that the Condamine River seeps have generally decreased since they peaked during 2016.

We continue to monitor the seeps using a methodology developed by the CSIRO, and engage with the neighbouring landholders and communities to provide updates on our activities.

Monitoring and studies

During the year, we continued the Picarro 'sniffer truck' infrastructure survey operations and fugitive emission research with CSIRO. The sniffer truck survey covers all our operating wells and gathering lines at least twice during the year. We use the data from the sniffer truck inspections to establish site specific factors for emission determination, instead of the default factors prescribed by NGER, to enable more accurate measurement of our emissions.

CSIRO finished measuring emissions from 300 coal seam gas (CSG) wells across Origin's operations in the Surat Basin in June 2019 as part of its fugitive emissions research. From this research, CSIRO has confirmed the emissions rates estimated in a 2014 report by CSIRO to the Commonwealth Department of Environment were accurate.[18] This research also validates the data we are collecting via the sniffer truck, and that the design, operation and maintenance of our infrastructure is keeping emissions from venting and leaks low, at or below 0.1 per cent of metered gas sales.

The next phase of the CSIRO research will focus on collecting emission measurement data from CSG processing facilities and gathering lines. The issue of CSIRO's final report has been delayed due to COVID-19 and is expected during FY2021.

While there is no regulatory requirement to report emissions outside of our operations, we continue to work with CSIRO and other independent scientific experts to research landscape emissions, which occur naturally across the Surat and Bowen basins in Queensland. We aim to quantify these emissions against our operations and to identify and quantify other sources of emissions, such as abandoned coal exploration bores that pre-date CSG activity.

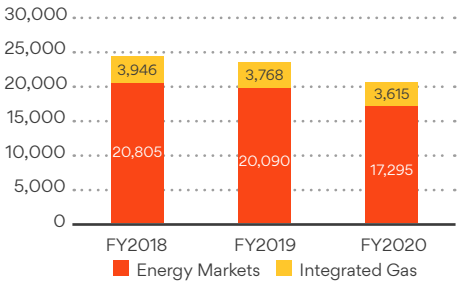
Indirect emissions (Scope 3)[19] performance

Our total Scope 3 emissions declined by 12 per cent in FY2020 to 20,910 kt CO_2-e.

Scope 3 emissions in Energy Markets declined in FY2020 due to an increase in contracted renewable generation and solar feed-in purchases, as well as lower electricity purchases from the NEM. Sales volumes decreased partly due to COVID-19 and increased retail solar uptake and efficiency. The increased penetration of renewables resulted in a lower emissions intensity for the NEM, further reducing our Scope 3 emissions.

Integrated Gas also saw a decline in Scope 3 emissions due to a reduction in domestic gas sales at Australia Pacific LNG.

Graph 9: Scope 3 emissions equity basis (kt CO_2-e)



17 oilandgasclimateinitiative.com/action-and-engagement/provide-clean-affordable-energy/#methane-target

18 csiro.au

19 Origin's Scope 3 emissions do not include Australia Pacific LNG's exported LNG volumes, purchased LPG and corporate emissions, which meets SBTi's minimum two-thirds coverage requirement.

Reducing greenhouse gas emissions across the business

We understand that while the majority of our carbon emissions come from coal-fired generation at Eraring, we can also reduce greenhouse gas emissions through other means. These initiatives often have a positive economic outcome, as well as a positive impact on our carbon footprint.

Artificial intelligence in Integrated Gas

Every day, Origin operates more than 2,000 gas wells across our upstream gas operations in Queensland's Bowen and Surat basins. From time to time, we need to adjust the amount of gas we produce from our gas fields due to changes in customer demand or scheduled downstream maintenance.

Monitoring the wells and deciding which ones to turn down or temporarily suspend used to be performed by one of our operators, who would be in charge of analysing up to 30 wells a day. A world-first artificial intelligence production optimisation tool has been developed by Origin's upstream digital team to help our production engineers and operators make these decisions.

The tool uses machine learning and economic modelling to take data from thousands of wells simultaneously to determine which wells can be turned down and turned back on again with the lowest probability of failure. The tool has been trialled since November 2019 and is enabling more accurate decisions, meaning we can reduce the number of workovers and extend the life of each well. It helps us reduce our emissions from flaring because we can shut off production with confidence that the wells will return to production and we will meet customer requirements.

Once the tool is fully operational, we hope to avoid over 500 TJ of flaring each year through optimising well turndown, avoiding roughly 25,000 tonnes of CO_2-e per year.

See the *Eraring Power Station* section for more information about how we are reducing emissions there using artificial intelligence.

Investing in renewable energy at our sites

As part of our We Mean Business commitments, we have committed to sourcing 100 per cent of energy from renewable sources for our office premises and, where possible, all other operations by 2050. To help with that commitment, we have started a project to identify opportunities to run our sites on renewable energy. A number of our LPG terminal sites already have solar installed. A further five LPG terminal sites have been identified as suitable sites for solar, and installation of around 155 kW of solar capacity is expected this year.

We have also been evaluating our generation assets for their suitability for solar power. Installation of a 73 kW system has recently been completed at our Mt Stuart Power Station, which will be used to power site facilities and support our operations. We are targeting to install solar at our Darling Downs Power Station by the end of FY2021 as well as evaluating options for sites in New South Wales, Victoria and South Australia.

Electric vehicles

Electric vehicles (EVs) produce zero direct emissions and will play an important role in the decarbonisation of the transportation sector. We operate a fleet ranging in size from passenger vehicles right through to heavy-duty trucks, and we have a program to transition to EVs where we can.

We have 10 EVs currently operating in our fleet and have a plan to transition small to medium passenger vehicles to electric when existing leases expire. We will continue to assess emerging zero direct emissions solutions for other vehicle types, such as heavy-duty trucks.

We are also undertaking a number of trials and testing different propositions to assist our customers transition to EVs, including a smart charging trial and EV fleet solution. See the *Customers* section for more information.

Customers

Performance at a glance

- 33,100 customers successfully completed our Power On hardship program.
- Achieved our highest ever Strategic NPS and the highest Strategic NPS of Tier 1 energy providers of +2 as at 30 June 2020.
- Announced strategic partnership with Octopus Energy.

Find out more about our approach and policies in our Customers Management Approach

As an essential service, we are committed to providing energy to our customers that is reliable, affordable and sustainable.

Origin is Australia's largest energy retailer, with 4.2 million customer accounts. Through our joint venture, Australia Pacific LNG, we supply approximately 30 per cent of east coast gas demand and export LNG to customers in Asia.

Energy affordability and support for vulnerable customers

Given the essential nature of energy, protecting people in financial hardship is always a priority for Origin and we have not passed on any price increases to our hardship customers since 2016. We are also working closely with community partners to support these customers in other ways, including investing more than $15 million in our Power On hardship program during FY2020.

During FY2020, our Power On hardship program became even more important in supporting the many customers impacted by natural disasters and COVID-19. In response to the pandemic, we built on our existing program by offering debt deferrals and waivers, and providing a bill smoothing arrangement for up to 24 months. See the *Responding to a year of challenges* section for more information.

At the end of FY2020, we had 34,700 active customer accounts in the Power On hardship program and 33,100 customers paid their debts and successfully completed the program throughout the year. For almost 17 years, this program has helped vulnerable customers with personalised payment plans, matched incentive payments, energy efficiency audits and appliance replacement schemes.

We maintained our support of customers in South Australia through the South Australian Government's Concessions Energy Discount Offer. To date, we have helped more than 50,000 concession cardholders. We continued to provide a loyalty discount offer to our concession customers in New South Wales, Queensland and the Australian Capital Territory on Origin Standing, Supply and Basic products.

Customer snapshot

Retail and business customer accounts at 30 June 2020.

Electricity
2.6 million

Natural gas
1.2 million

LPG
363,000

Broadband
20,000

Since the introduction of the Commonwealth's Default Market Offer and Victorian Default Offer on 1 July 2019, we have continued to simplify our products to make comparison against our peers easier for our customers and we have eliminated products with pay-on-time conditions.

We provided relief to our retail customers by announcing lower electricity and gas prices for most of Origin's customers in New South Wales, Queensland, South Australia and the Australian Capital Territory from 1 July 2020, reflecting lower wholesale gas and electricity prices. We were able to keep prices flat for our residential gas customers in South Australia by absorbing increases in network costs. In Victoria, our electricity prices moved in line with the Essential Services Commission's Victorian Default Offer on 1 January 2020. At the same time, Origin absorbed an increase in network costs for natural gas to keep prices unchanged for all of our customers in that state.

Customer satisfaction

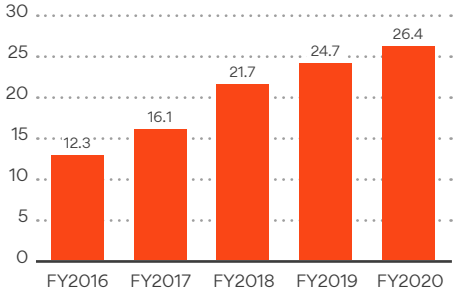
We continued to improve our customer experience through simplifying key customer journeys and providing our people with the best information to better serve our customers. We have implemented a new cloud-based customer platform that has enabled easier self-service experiences tailored to the customer's needs and enhanced our digital functionality.

One of our key customer satisfaction measurement tools is the Net Promoter Score (NPS), which measures customer advocacy and helps us understand what our customers are saying about their experience with us. We measure NPS as a business (at the strategic level), and after a customer has a conversation or digital experience with us (at the interaction level).

Our Strategic NPS improved by eight points from –6 in FY2019 to +2 in FY2020, giving Origin the highest strategic NPS of Tier 1 energy providers. This follows a continuous focus on improving customers experience, offering competitive prices and sustainable energy solutions.

At the interaction level, our NPS was 26.4 in FY2020, an improvement from 24.7 at the end of FY2019. Since we began measuring Interaction NPS in FY2016, our performance has improved from a score of 12.3. This is due to an improved customer experience as tools and processes make it quicker and simpler for customer enquiries to be resolved.

Graph 10: Interaction Net Promoter Score



We were rated the top energy provider by *Reader's Digest* in its 2020 Trusted Brands and awarded Gold in the 2020 Quality Service Awards survey for the electricity and gas provider categories. We also won Canstar's 2020 Outstanding Value Award for SA Electricity and ACT Electricity.

Championing the customer

We have expanded our Customer Insights Panel and Experience Lounge that were established in FY2019. We now include remote testing as well as online surveys and we have received feedback from more than 8,000 customers and over 62,000 comments through our digital channels. These forums help us to ensure that customers' views are well considered and represented in our business decisions.

Making energy smarter and easier for customers

In a rapidly changing energy landscape, we continue to focus on making energy smarter, easier, and cleaner for customers, enabled by developing new capabilities and trialling new technologies. Rooftop solar, batteries, EVs and IoT devices are changing the way our customers use energy. The convergence of new generation sources and the billions of data points they create means we are focusing on technologies that use this data to provide new products and services to customers. This gives them more control over their energy use resulting in a superior customer experience.

Our partnership with Octopus Energy

In May 2020, we entered a strategic partnership with Octopus Energy, a fast-growing UK energy retailer and technology business, to adopt its market-leading operating model and customer technology platform, as well as taking a 20 per cent equity interest. This partnership will accelerate our retail strategy by delivering superior customer experience, driving a further step-change in cost reduction, and opening up further growth opportunities.

Through the partnership, we have acquired an Australian license of Octopus' market-leading customer platform, Kraken. The Kraken platform provides a single view of a customer with advanced analytics to help our people improve the customer experience. Kraken also has a high degree of automation and is designed to work with future changes in energy use, such as connected devices.

We will also work with Octopus to implement its operating model, which combined with Kraken will provide significant benefits for our customers by providing one point of service, simpler processes and the ability to integrate services into a single account.

We are making good progress in customising the Kraken platform for the Australian market and are on track to have our first customer cohort migrated by the end of the calendar year. Our first group of Energy Specialists have been trained on the UK Kraken platform and are supporting Octopus Energy's UK customers, and will be transitioning to the Australian platform as we start to migrate the first customer cohort.

Case study

Creating a digital-first customer experience

Origin's Digital Product Manager, Sarah Howard, has long been championing the potential of technology to help solve problems and make energy smarter and easier for our customers.

Read more here ›

originenergy.com.au/blog

Digital first

In FY2020, we continued to see strong growth in digital service interactions and sales, as we further simplified digital experiences and sign-up journeys. Moving our customer platform to a cloud-based solution provides our customers with easier and smarter authentication; a simpler journey to speak to the right team to resolve their query; agents equipped with better data and processes to quickly help the customer; and the ability to access digital self-serve solutions for simple enquiries.

As further support to this approach, we implemented our Customer Hub technology, which brings together data points from multiple systems to build a complete customer view and improve our ability to deliver a seamless and consistent customer experience.

We continue to make completing simple tasks online easier for our customers in My Account and our app. We have launched new functionality enabling our customers to update or change plans, deal with payments, and seek help and support. Our renewal process has been simplified, by introducing automated renewals and product and benefit extensions at the end of a contract.

We continue to focus on expanding our broadband sales through differentiating Origin as a one-stop shop for essential products in homes and businesses, and have increased customer numbers from 8,000 to 20,000 over FY2020.

Innovative and low-carbon products

We continue to trial new technologies and business models. Over the last three years, we have assessed more than 2,500 companies across areas such as solar, storage, control of distributed assets, IoT devices in the home, energy efficiency, EV smart charging, data security and blockchain. A key part of this is Free Electrons, an open innovation program for clean energy start-ups. Free Electrons has connected us with leading-edge ideas and innovations since we co-founded the program in 2017.

We have recently partnered with OhmConnect, a participant in the first year of the Free Electrons program, and launched a new customer offering called Spike, a unique gamified behavioural demand response technology. Behavioural demand response involves customers voluntarily reducing their electricity use (or shifting their use to another time) through actions such as turning their air-conditioning down a few degrees or using their washing machine or dryer at a time when demand for energy is lower. The Spike technology sets targets, and rewards customers with prizes or cash. Through Spike, we are giving our customers control over their energy use and the opportunity to reduce their carbon footprint, while rewarding them for their choices.

We are also working with another Free Electrons participant from the second year of the program, Orison, on its modular energy storage system. Australians have embraced rooftop solar, with one of the highest penetration rates in the world. However, the take-up of battery storage in the home has been much lower. The portable nature of the Orison system means customers will be able to easily install storage in their home, move it to a new location within the home or take it with them if they move. The system will provide customers with control and flexibility around their energy use, an opportunity to save money on energy bills, back-up power during blackouts and help reduce emissions.

We are building out a Virtual Power Plant, with more than 85 MW of connected distributed energy assets and IoT devices, including batteries, electric hot water, pool pumps, air conditioners, EVs, diesel generators and other large industrial assets. The platform uses artificial intelligence to learn and predict the behaviour of energy consumers, and optimises the performance of assets based on this learned behaviour. This creates value for customers by maximising solar self-consumption, energy efficiency measures, load shifting and peak shaving. The platform also allows us to use customers' assets for demand response and market services.

Delivering solutions for business customers

Origin partners with its business customers to provide them with ongoing support to better manage energy for long-term sustainability. As one of Australia's largest investors in utility-scale solar, we are able to offer our business customers access to renewable energy with firmed supply, under long-term arrangements.

We worked with a number of customers over the course of FY2020 in building a Virtual Power Plant, enabling us to pay customers to leverage their flexible assets and load to minimise exposure to high market prices and volatility.

Supporting Australian manufacturing

We support Australian manufacturing through gas sales agreements between our joint venture, Australia Pacific LNG and commercial and industrial customers. In March 2020, Australia Pacific LNG was granted the Murrungama permit near Chinchilla. The Murrungama permit is the first Australian tenement where the gas produced is reserved solely for domestic manufacturing businesses. The gas produced at Murrungama will support Australia Pacific LNG's gas sales agreements with Incitec Pivot, Orica and Orora, which employ hundreds of workers in Brisbane and regional Queensland.

Our generation portfolio continues to supply reliable and affordable energy across the NEM. In January 2020, a weather event caused damage to transmission lines between Victoria and South Australia, cutting off electricity supply to Victoria's Portland aluminium smelter and isolating South Australia from the NEM. The Portland smelter, the largest employer in the region, requires a large continuous supply of energy to operate and without which was at risk of serious and permanent damage. During this transmission outage, Mortlake Power Station was able to provide electricity directly to the Portland smelter via a closed-loop connection, enabling it to continue operating while transmission cables were replaced.

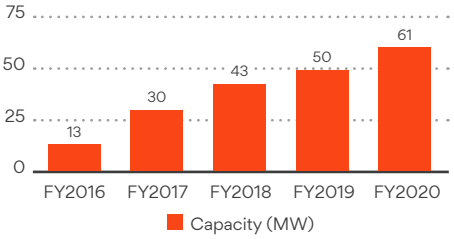
Supporting customers take up of renewable energy

We understand the importance of accessing cleaner energy. With this in mind, we offer both solar energy and green energy products to help our customers.

Solar energy

Origin is a Clean Energy Council accredited retailer of solar energy. In the year to December 2019, we were the second largest installer of solar in terms of overall capacity installed, and number one in the commercial 10 to 100KW category.[20]

Graph 11: Capacity of solar systems installed (MW)



During FY2020, Origin's retail and commercial teams installed 61 MW of solar across the roofs of over 5,500 Australian homes and businesses, an increase of 21 per cent on FY2019. Most of this growth came from our residential customers, with installation up by 12 MW, or 34 per cent year on year, due to growing customer demand and the increase in average system size from 6.0 KW to 6.3 KW.

As at 30 June 2020, 492,000 customers had solar installed at their properties.

For more than 10 years, Origin has been a leader in rooftop solar, installing over 1.3 million panels and offering new products to encourage greater uptake. We continue to offer our customers proactive maintenance services, including solar cleaning and health checks to ensure solar systems are being used to their full capacity, as well as a solar repair service and a system replacement offering to customers with older installations.

20 Sunwiz, December 2019.

We have been working with one of our long-term partners, Kingspan, to help it target its two emissions goals of having a net-zero energy position by December 2020 and being a net-zero carbon manufacturing operation by 2030. In 2018, we installed a 754 kW solar system for Kingspan, helping reduce its carbon position by 40 per cent in the first year. We will continue to work with Kingspan to reach its 2030 target by maximising its onsite use of solar and supplying large-scale generation certificates.

GreenPower and Green Gas

We are one of Australia's largest providers of GreenPower and Green Gas products, with more than 117,000 green energy customers. We have been providing our customers with the option to choose renewable energy products for over 15 years.

When customers choose GreenPower, they are supporting renewable energy in Australia. Under the GreenPower scheme, customers choose the percentage of their electricity that they would like Origin to match with an equivalent amount of electricity from GreenPower-accredited renewable sources. With our GreenPower products, we offer customers the option to offset up to 100 per cent of their household electricity greenhouse gas emissions.

When customers choose Green Gas, we offset emissions from natural gas use through our independently audited Carbon Reduction Scheme.[21] We are also investigating blending zero-carbon gas such as hydrogen into the domestic gas network.

Electric vehicles

EVs will play an important role in the decarbonisation of the transportation sector. We have started to provide charging solutions and infrastructure to customers who have EVs. We are also partnering with a fleet management operator to provide an end-to-end EV fleet management solution for business customers to transition their fleets to EVs.

We are undertaking a smart charging trial with ARENA to manage and reduce the cost of charging EVs, which will create value for EV drivers as well as energy markets. The trial will roll out 150 smart chargers to EV owners and fleets and will connect to Origin's Virtual Power Plant, enabling us to shift charging from times of the day when energy is more expensive to off-peak periods and when wholesale prices are low, typically when wind and solar are generating strongly.

We are also investigating options to support fuel cell EVs powered by hydrogen.

Complaints and resolutions

We endeavour to resolve customer complaints quickly and to identify learning opportunities to enhance our service delivery and customer experience. If a customer feels that, despite our best efforts, we have not addressed their issue or concern, they can have the matter reviewed by the relevant ombudsman in their State or Territory.

In FY2020, the number of ombudsman complaints per 1,000 Origin customers was 2.7, in line with FY2019. In the six years to the end of FY2020, ombudsman customer complaints have declined from 4.9 per 1,000 customers.

Privacy and compliance

We are committed to protecting our customers' privacy and managing their personal information in accordance with the requirements of the *Privacy Act 1988* (Cth) (the Privacy Act). For more information, visit: originenergy.com.au/privacy

In FY2020, we developed a mandatory privacy e-learn focusing on general privacy principles, which has been rolled out to all employees.

There were no reportable privacy matters to the Office of the Australian Information Commissioner during FY2020.

In FY2020, Origin reported breaches to the Australian Energy Regulator (AER), Essential Services Commission of Victoria and Economic Regulation Authority of Western Australia, relating to a range of matters including timeliness, frequency, wrongful disconnections, and complaints. Origin has identified and rectified any system issues related to the root cause of these breaches, and where appropriate has updated process controls to prevent recurrence.

In July 2019, the AER issued Origin with four infringement notices totalling $80,000 in relation to wrongful disconnections occurring between March and May 2018, two of which were the result of a system issue. In line with an enforceable undertaking given to the AER, Origin completed an external audit of controls to ensure disconnections occur only in accordance with regulations. Notwithstanding the audit report indicating that Origin has implemented adequate and effective controls, we remain focused on preventing any wrongful disconnection.

In December 2019, the AER issued Origin with two infringement notices totalling $40,000 in relation to delays by Origin in appointing a metering coordinator after receiving faulty meter notifications from distributors. Origin has implemented controls to prevent recurrence of the system issue that caused the breaches to which the infringement notices relate.

21 originenergy.com.au/electricity-gas/green.html

Case study

Helping low-income households in NSW access solar

Origin is working with the New South Wales Government to provide free, fully installed solar systems to around 2,000 low-income households in the Illawarra-Shoalhaven, Central Coast and southern Sydney regions.

Read more here ›

originenergy.com.au/blog

Our people and culture

Performance at a glance

- Engagement score of 75 per cent, putting us in the top quartile of Australian and New Zealand organisations.
- Ranked ninth globally in Equileap's 2019 Gender Equality Global Report & Ranking.
- Accredited by WORK180.

Find out more about our approach and policies in our People and Culture Management Approach

We believe a diverse and inclusive workplace, where people can bring their whole selves to work, is key to creating a culture where people thrive, contributing to the success of our business.

About our workforce

Our people are one of our greatest strengths. We employed 5,232 people at 30 June 2020, compared to 5,360 employees as at the end of FY2019, as shown in Table 2. The reduction is due to efficiencies in our Retail business.

Table 2: Origin workforce

	FY2020	FY2019
Number of employees	5,232	5,360
Percentage of females	35	37
Percentage of males	64	63

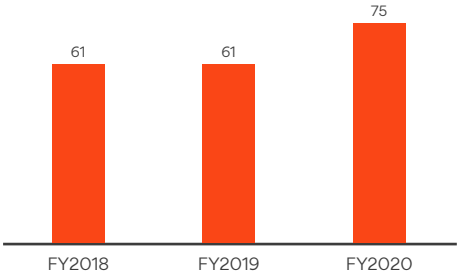
At the end of FY2020, there were 243 Origin employees based at our regional operations.

Employee engagement

Ninety-one per cent of Origin employees participated in our annual engagement survey in FY2020, our highest ever participation rate. Our overall score was 75 per cent, an increase from 61 per cent in FY2019. The three main drivers of the increase were safety, diversity and inclusion, and connection to our purpose and values. With this result, we have achieved our aspiration of being in the top quartile of organisations across Australia and New Zealand. We are 10 per cent ahead of the energy and utilities industry average engagement score of 65 per cent.

Feedback from our FY2019 engagement survey highlighted a desire for more support for learning and development. In response to this, we have launched a Learning and Development Hub and now provide access to LinkedIn Learning for all employees. Together, these resources provide thousands of courses covering a wide range of topics to enable our people to learn more about areas of interest and develop skills and capabilities for the future.

Graph 12: Employee engagement score (per cent)



Diversity and inclusion

We understand that a diverse and inclusive workplace produces better outcomes. To help support this, we continue to build on our policies covering gender equality for women, reconciliation, working parents and our LGBTIQA+ colleagues.

We strive for gender equality and achieved 32 per cent of women in senior roles in FY2020. We also have a continuing focus on delivering gender pay equality on an equal pay for equal work basis. This will remain one of our targets in FY2021, along with achieving an appointment rate of women in senior roles of 50 per cent, improving the retention rate of senior females to 89 per cent and achieving an incumbency of 33 per cent of women in senior roles. See *Appendix 2: Gender diversity performance* for more information.

Inclusion at Origin means we want our employees to feel comfortable and safe to bring their whole self to work every day. We are committed to ensuring an inclusive environment for all employees, regardless of their sexual orientation, gender identity or expression. The Pride@Origin Committee works to create a safe and inclusive workplace and support our LGBTIQA+ community. During the year, we created processes and systems to further this support with a focus on increasing understanding and awareness. We also launched Gender Affirming Support@Origin, which provides detail on gender affirmation in the workplace and a new gender affirming leave policy, providing six weeks paid and six weeks unpaid leave.

Cultural diversity and Indigenous Australians

The inclusion of Aboriginal and Torres Strait Islander peoples in our workplace and communities continues to be an area of focus for us.

We launched our Stretch Reconciliation Action Plan Stretch (RAP) in July 2019, building on our Innovate RAP and embedding social change in our workplace. Our Stretch RAP aligns with Reconciliation Australia's three pillars: relationships, respect and opportunities.

We are progressing our Stretch RAP commitments, including increasing the number of Indigenous employees to 46. Reflecting our work in the Northern Territory, Integrated Gas has developed guiding principles for working with Traditional Owner groups. Further details can be found at originenergy.com.au/about/ community/ reconciliation-action-plan

Since 2015, Origin has partnered with the CareerTrackers 10x10 program by providing temporary work placements for a minimum of 10 Indigenous graduates a year. The program aims to transition Indigenous students into full-time employment once they complete their degree. This year we placed ten summer interns, and the Origin Energy Foundation was awarded the Partner of Excellence, recognising the ongoing support we provide to CareerTrackers.

Ethical business

Our Code of Conduct guides us in meeting our ethical standards and legal requirements, and all Origin employees complete a training program to understand its requirements. We encourage employees to report known or suspected breaches of the code and any other policies and directives, and to raise any other serious concerns they may have.

The Code of Conduct includes an Anti-bribery and Corruption directive that covers all aspects of our business.

Our Corporate Governance Statement outlines our FY2020 disclosures on ethical behaviour and our Code of Conduct. This statement is available at originenergy.com.au/governance

Diversity ratings

Origin was ranked ninth globally in Equileap's 2019 Gender Equality Global Report and Ranking. Equileap looked at over 3,500 companies worldwide, representing 98 million employees. The companies were assessed on 19 criteria including: the gender balance of the workforce, senior management and board of directors; equal pay initiatives; parental leave benefits; non-discriminatory hiring and promotion.

During the year, we were accredited by WORK180, a global jobs network focused on attracting female talent. Endorsement by WORK180 recognises our commitment to creating a diverse and inclusive workplace that provides better balance and equal opportunities for women.

For the past 12 years, Origin has continued to be recognised as an Employer of Choice for Gender Equality (EOCGE) by the national Workplace Gender Equality Agency (WGEA). The EOCGE accreditation recognises our commitment to achieving gender equality in our workplace. In May 2020, Origin reported its annual gender equality performance to WGEA. This report can be viewed at originenergy.com.au/about/ careers/diversity

We also remain accredited by the Australian Breastfeeding Association as a Breastfeeding Friendly Workplace.

Safety

Performance at a glance

- Improved TRIFR performance of 2.6, from 4.4 in FY2019.
- Actual Serious Incidents reduced to three, from nine in FY2019.
- Implemented Mental Health and Wellbeing Hub.

The safety and wellbeing of our people is paramount. We work to create a safe workplace to ensure everyone can return home at the end of every day.

One of our core values is caring about our impact – on each other, on the environment and on the communities in which we operate. We expect our people to demonstrate care by complying with safety regulations that are supported by our strong systems and processes, including our Health, Safety and Environment (HSE) policy, our HSE Management System and our Life Saving Rules. Our people are fully supported by our Authority to Stop Unsafe Operations, which is endorsed by our Executive Leadership Team and Origin's Board.

Our HSE policy describes how we think about, plan and manage HSE impacts and initiatives across our business. This policy is supported by our HSE Management System, including directives that outline minimum requirements for how we manage HSE risks and impacts. The policy is available at originenergy.com.au/safety

This year, our personal safety improved, with our Total Recordable Injury Frequency Rate (TRIFR) decreasing from 4.4 in FY2019 to 2.6 in FY2020. Our Actual Serious Incidents and Potential Serious Incidents measures, which cover all aspects of HSE performance, both improved from last year.

We understand the importance of mental health and this year rolled out our Mental Health and Wellbeing Hub. The hub provides access to regular webinars, factsheets, videos, mindfulness exercises and support information, and we fast-tracked its release to provide additional support during the COVID-19 pandemic.

The health and safety of our people was one of the key priorities of our responses to both the natural disasters and the COVID-19 pandemic during FY2020. We continue to adjust our protocols and measures put in place on the advice from the relevant government and health authorities, particularly to ensure the safety of our people still required to work at site in roles critical to energy supply. See the *Responding to a year of challenges* section for more information.

We aim to continue our strong HSE focus in FY2021 with an ongoing emphasis on preventing actual serious outcomes as well as learning from our incidents and sharing these learnings across our business.

HSE performance

Our HSE strategy outlines the key focus areas for us to improve our performance. It identifies three key levers: leadership, the management of our material HSE risks, and learning. We remain committed to preventing all injuries and ensuring we keep our people, environment and communities safe from harm.

Our overall improved safety performance is reflective of the ongoing commitment and focus on safety across the business, and is demonstrated in the reduction of our TRIFR and Actual Serious Incidents.

The Potential Serious Incident metric measures the number of incidents that have the potential to result in major, critical or catastrophic outcomes for people or the environment. These incidents focus on preventing Actual Serious Incidents by encouraging learning from these incidents and sharing the learnings across the business.

From FY2021, we will focus on two primary measures for managing our HSE outcomes: the number of Actual Serious Incidents, which focuses on preventing harm to people and the environment; and the number of Learning Incidents (previously Potential Serious Incidents), which focuses on learning from incidents and taking actions and measures to prevent serious harm.

Find out more about our approach and policies in our Health, Safety and Environment Management Approach

Table 3: Origin HSE performance

Goal	Performance
TRIFR measures the number of company-wide work-related recordable injuries per million hours worked for employees and contractors.	Our TRIFR result for the year was 2.6, a decrease from 4.4 in FY2019. The reduction reflects the implementation of targeted activities that focus on the safety of our people.
FY2020 target: 2.8	
Actual Serious Incidents measures the number of incidents that resulted in serious, major, critical or catastrophic outcomes for our people or the environment.	The number of Actual Serious Incidents during FY2020 was 3, down from 9 in FY2019. The reduction reflects the ongoing commitment and focus to the safety of all our people during the year.
FY2020 target: No more than 4	
Potential Serious Incidents measures the number of incidents that had the *potential* to have resulted in major, critical or catastrophic outcomes for our people or the environment. **FY2020 target: >30**	Our Potential Serious Incidents increased from 38 incidents in FY2019 to 69 in FY2020. This is a positive result as we use the learnings from these incidents across our business units to prevent Actual Serious Incidents. The increase reflects improved reporting and increased focus on learning from incidents that had the potential to result in serious outcomes.
Environmental Consequence Incidents measures the number of incidents that resulted in a moderate (or above) outcome for the environment.	We met our environmental performance target with 2 environmental consequence incidents in FY2020.
FY2020 target: No more than 2	
Process Safety measures the number of process safety incidents that resulted in Tier 1 or Tier 2 events.	In FY2020, there were three Tier 1 and eight Tier 2 process safety events. The number of Tier 1 incidents increased from zero in FY2019. The number of Tier 2 events has remained the same.

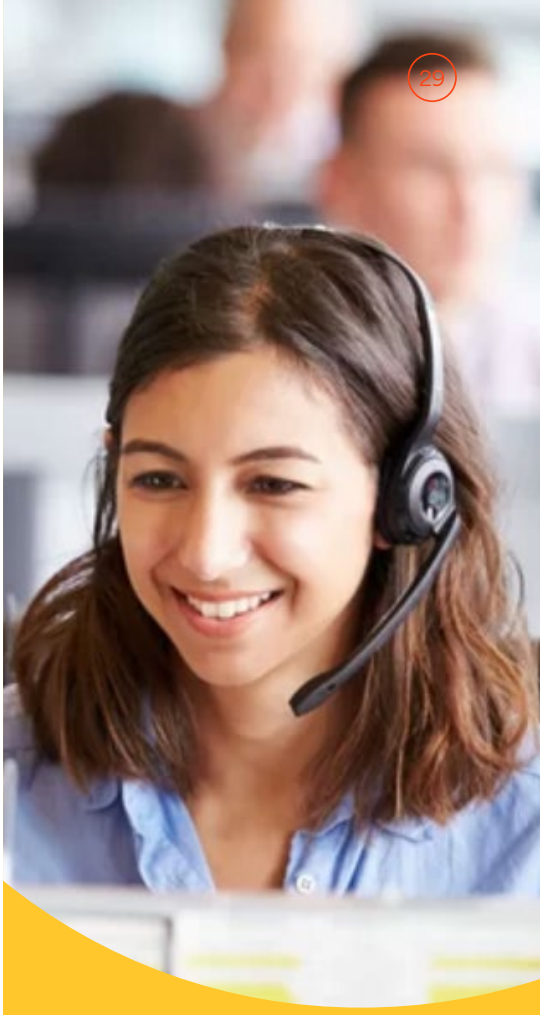
Although we will continue to measure TRIFR, we have decided to shift our primary HSE measures to reflect the most serious of incidents, and promote reporting of incidents that offer opportunities to learn and prevent more serious incidents.

We have set a target of no more than three Actual Serious Incidents and more than 30 Learning Incidents for FY2021. Despite our FY2020 performance for Potential Serious Incidents, our target has remained at more than 30, reflecting reduced capital activity in FY2021 and that an extra learning component has been added to the metric. These targets include personal safety, process safety and environmental outcomes, which will help Origin apply an equal focus across these areas.

Process safety

In July 2019, one of the two gas turbine generators at Mortlake Power Station was damaged due to an electrical fault. During the fault, all safety-critical systems operated as designed and the complete generator was replaced and returned to service in late December. We are implementing a range of technical enhancements and state-of-the-art monitoring for both units.

We continue to monitor our process safety performance in real time through our company-wide dashboard. The dashboard has been recognised as industry best practice and has improved the reporting and visibility of key process safety indicators.



Case study

Supporting safety across Australia

Origin's National Response Centre (NRC) has been providing a wide range of emergency, health and safety response services to energy businesses across Australia for 48 years. The NRC handles thousands of calls ranging from emergency and safety monitoring to dispatching service teams, and is also the first point of contact for many national emergency calls.

Read more here ›

originenergy.com.au/blog

Environment

Performance at a glance

- 39 per cent of ash produced reused across the industrial and construction sectors, an increase from 35 per cent in FY2019.
- 99.9 per cent of water drawn by Eraring returned to Lake Macquarie.
- Air emissions reduced by 13 per cent from FY2019.

We care about our impact on the environment and seek to operate responsibly and protect the environment in which we work.

Environmental performance

We understand the importance of the environment to the community and our operations.

We had two Environmental Consequence Indicents in FY2020, in line with our performance target. An Environmental Consequence is an incident that results in an actual consequence of a moderate (or above), short-term impact to the environment. Work is ongoing to remediate these incidents and put measures in place to prevent them from recurring.

Our environmental performance is also measured in our Actual Serious Incidents and Potential Serious Incidents metrics. See the *Safety* section for more information.

Waste

Origin is committed to effectively managing waste across our entire business. Our two most significant waste-generating activities are at Eraring and at the upstream operations of Australia Pacific LNG.

Eraring Power Station

The main by-product from burning coal at Eraring is fly ash. The fly ash we produce has numerous applications across the industrial and construction sectors and is either supplied on-site to multiple customers for a range of end uses or deposited in our ash dam adjacent to the power station. In FY2020, Origin implemented new arrangements to increase Eraring's ash reuse rate to 39 per cent, up from 35 per cent in the prior year.

Recently we entered into a partnership with ground remediation and fly ash supplier, BFG Daracon. The partnership will see a large classifier installed at Eraring by the end of 2020 (subject to approval and based on the schedule as at the date of this report) that will reprocess fly ash into a grade suitable for concrete and ground remediation applications. This initiative is in addition to the existing ash we sell to BFG Daracon's ground remediation division.

The RTO has also improved the quality of fly ash produced, contributing to the increase in ash recycling at Eraring. The RTO creates more optimal conditions in the boiler by choosing where and how much oxygen to put into the boiler. This minimises the amount of unburnt carbon in the ash, which improves the ability to recycle the ash produced from the electricity generation process.

Fly ash can also contribute to reducing carbon emissions when making concrete, by being used as a substitute product for Portland cement. For every tonne of Portland cement that is substituted by fly ash, it is estimated up to one tonne of carbon dioxide is avoided. Up to 300,000 tonnes of Eraring's fly ash is used for this purpose every year, leading to an indirect reduction of carbon emissions of approximately 300 kt CO_2-e.

Table 4: Ash produced and recycled at Eraring (tonnes)

	FY2020	FY2019	FY2018
Ash produced	1,424,333	1,733,399	1,604,296
Ash deposited	864,623	1,130,819	1,127,004
Ash recycled	559,710	602,580	477,292
Ash recycled	39%	35%	30%

Find out more about our approach and policies in our Health, Safety and Environment Management Approach

Australia Pacific LNG brine management

The main waste product from Australia Pacific LNG's upstream operations is brine. Its operations extract groundwater from CSG wells, and the water contains naturally occurring salt. We use reverse osmosis to remove the salt so that most of the water can be made available for beneficial use. See the *Water* section for more information. This process produces a salty waste product known as brine, which is stored in engineered ponds which are built to regulatory standards and inspected annually by certified engineers.

Each Australia Pacific LNG water treatment facility has multiple brine ponds. The total available storage capacity in the brine ponds was 9,888 ML in FY2020. The total volume of stored brine at the end of the reporting period was 5,815 ML.

Australia Pacific LNG did not record any loss of containment events from brine ponds during FY2020.

Water

We responsibly manage our water consumption, seek to protect water resources in the natural environment and ensure water is available for other users near our operations.

Origin mainly uses water for cooling while generating electricity, primarily at Eraring. We also extract water while developing natural gas at our Australia Pacific LNG operations.

Origin's water use

We draw most of our water for electricity generation from surface sources, such as rivers and lakes. Eraring uses water from Lake Macquarie for cooling purposes. This represents the vast majority of water use in our Energy Markets business. More than 99.9 per cent of the water we draw at Eraring is returned to the lake, in accordance with our environmental approvals.

Our gas-fired power stations require much less water to operate than Eraring. Our combined-cycle gas turbine at our Darling Downs Power Station uses air-cooled condensers, which reduces its water use by more than 95 per cent compared to a typical gas-fired generator. Water is used to generate electricity at our Shoalhaven Pumped Hydro station where it is pumped to the lake at the top of the hydro station when electricity prices are low and then released to generate electricity when electricity prices are high.

Australia Pacific LNG's operations extract groundwater and gas from coal seams and small volumes of water from other sources like dams or bores for project use. In FY2020, we extracted 21,639 ML of water through Australia Pacific LNG's operations, 21,246 ML coming from CSG production, and the balance from other sources such as surface water for operational activities. Around 92 per cent of total water extracted was treated through reverse osmosis. The remaining 8 per cent was used for project activities, stored awaiting treatment or was lost through natural evaporation. Of the treated water, 17,477 ML was available for beneficial use such as irrigation of crops or aquifer reinjection.

In FY2020, there were no releases to water courses from the authorised release points.

Protecting water resources

We understand how important ground water is to the communities near both our Australia Pacific LNG operations and Beetaloo Basin operations.

Australia Pacific LNG

Within our gas operations, production wells are installed to extract gas from below the water aquifers generally used by other users such as local landholders. As part of the installation process, and in accordance with regulation, steel casing is cemented into place to preclude aquifer interconnection during operations. We continuously monitor for interconnection, which can be detected by observing changes in the groundwater levels of shallower aquifers surrounding the gas production well and by changes in the quality of water pumped from the water well.

Table 5: Water use across Origin's portfolio (ML)*

Operation	Water cycle overview	Water extracted from source	Water returned to source	Water consumed/ stored	Water directed to beneficial use
Eraring Power Station	Water is drawn from Lake Macquarie for cooling. More than 99.9 per cent is returned to the lake, and the remainder is evaporated.	2,571,087	2,569,083	2,004	–
Australia Pacific LNG	Water is extracted to depressurise the coal seams to allow production of CSG. Most of the extracted water is provided for beneficial uses (see *Protecting water resources section*). Water is also extracted from other sources for project activities.	21,639	–	4,162	17,477
Other	This includes water for gas-fired power stations, our Beetaloo exploration project, municipal water supply and minor operational uses.	193	–	193	–
FY2020 totals		**2,592,920**	**2,569,083**	**6,360**	**17,477**
FY2019 totals		2,782,705	2,758,795	6,741	17,169

*Shoalhaven Power Station is excluded from the table as pumped storage is not considered a water withdrawal because the water circulates in a closed loop. Furthermore, no excess water was extracted from the catchment in FY2020.

We have installed 206 monitoring bores to date, to regularly monitor groundwater levels and water quality around our Australia Pacific LNG operations. We submit these results to the Queensland Government as part of its regional monitoring and management program.[22]

Since FY2018, Origin has supported a grants program to install monitoring equipment in landholder bores to enable them to participate in CSG Net, which is a monitoring network of private bores. This program provides continuous water data online and also enables landholders to contribute water data to the government's online database.

Water for beneficial use[23]

Our irrigation program comprises:

- the purpose-built Fairymeadow Road Irrigation Pipeline, which started delivering treated water to participating landholders in April 2014; and
- the Spring Gully irrigation scheme, which was expanded in FY2019 to a larger landholder-run irrigation scheme to further enhance beneficial use for treated CSG water.

We inject treated CSG water into aquifers in the Surat Basin for recharge and beneficial use by others in the community. We operate two aquifer injection schemes and in FY2020 a total of 4,800 ML was pumped back into aquifers in the Surat Basin.

Make good agreements

To allow gas to flow from target coal seams, water needs to be removed from the seam to reduce the pressure. The coal seam can also be a minor groundwater aquifer, and some landholder bores extract water from the coal seams that CSG is produced from. Where we have identified a potential reduction in groundwater availability or increased gas release in water bores that access coal seams, potentially as a result of CSG production, we make good any impacts.

To date, it has been possible to install replacement bores in alternative aquifers nearby to access an equivalent water supply where this has been the landholders' preferred option.

Beetaloo Basin

Engineered and natural geological barriers and controls isolate and protect the vital underground water sources of the Beetaloo Basin, and we test these controls prior to proceeding with work.

A water monitoring program was established in 2014 to provide a baseline of the natural variability in water levels and water quality, and detect any impacts associated with gas exploration activity in the Beetaloo Basin. This monitoring has found no evidence of any impact from our work to date.

The well standards we apply in the Beetaloo Basin are high when measured against best practice among the world's reputable and proven operators. We design and engineer our wells to protect aquifers and to ensure they are strong enough to withstand the most extreme pressures they could be subjected to. Added to this is a program of regulatory control and oversight, and a requirement to appropriately decommission wells at the end of their operational life.

Hydraulic fracture stimulation

Hydraulic fracture stimulation, or fracking, is the technical process designed to release the gas trapped in the coal seams or dense shale rocks deep underground. Fracking has been carried out safely in Queensland and the Northern Territory for more than 40 years. Fracking involves pumping water mixed with sand and some chemical additives in low concentrations under pressure to create additional pathways (fractures) that allow the gas to flow into the well and be brought to the surface.

At Origin, at a minimum, we comply with the stringent regulatory requirements that guide fracking.

22 dnrme.qld.gov.au/__data/assets/pdf_file/0019/1461241/uwir-full-report.pdf

23 Beneficial uses of the extracted water are "of value to the environment, existing or new water users, and existing or new water dependent industries", according to the Queensland Government environment.des.qld.gov.au/management/non-mining/csg-water

Eraring Power Station (below)

Australia Pacific LNG

Over the life of Australia Pacific LNG's operations, we expect to frack around half of all wells. We fracked and completed 76 wells as part of our CSG operations in FY2020, compared to 91 wells in the prior period. There were no reportable groundwater impact incidents caused by fracking at any of our operations in FY2020.

Australia Pacific LNG uses water-based fluids in the fracking process. The majority of the hydraulic fracture fluid is recovered from the well during the initial production phase that is part of normal CSG operations. However, a small component (for example sand) is designed to remain within the reservoir.

In April 2020, the CSIRO released the results of a landmark, three-year scientific research program into the impacts of fracking in Australia.[24] CSIRO took over 1,000 air, water and soil samples, across 13 sites before, during and after fracking operations at six of our wells at Reedy Creek Combabula. Results found fracking has minimal to no impact on air quality, and no detectable impact on local waterways, groundwater or soils.

See our online Hydraulic Fracture Stimulation Fact Sheet for further information, including a list of the additives in the hydraulic fracturing fluid used by Origin, which are all found in typical household items such as food and cleaning products.

Beetaloo Basin

An important part of implementing the recommendations made by the 2018 independent Scientific Inquiry into Hydraulic Fracturing in the Northern Territory is the Code of Practice: Onshore Petroleum Activities in the Northern Territory. The Code of Practice includes some of the most comprehensive and rigorous regulations in the world. They set enforceable standards for a range of activities including well operations, surface activities, and water management.

The detailed safeguards we put in place to protect land and water in the Northern Territory are explained in our Environmental Management Plans – including how we comply with our regulatory obligations under the Code of Practice.

During FY2020, we did not frack any wells in the Beetaloo Basin. Due to the COVID-19 pandemic, we temporarily paused our activities at our Kyalla well site and plan to resume work later in 2020.

See the Origin Beetaloo Exploration Project website for more information on our exploration in the Beetaloo Basin.

Air emissions

We report our air emissions under the National Pollutant Inventory framework.

Electricity generation at Eraring produces the majority of the nitrogen oxides (NOx), sulphur oxides (SOx), and particulate matter (PM) emissions. Our operations at Australia Pacific LNG produce most of the volatile organic compounds (VOC).

During FY2020, our air emissions decreased by 13 per cent compared to FY2019. This was primarily due to lower output at Eraring during the year. Eraring is the only coal generator in New South Wales that has installed low NOx burner technology, which reduce NOx emissions by 40 per cent per MWh.

Table 6: Air emissions (tonnes)

	FY2020	FY2019
NOx emissions	24,334	27,789
SOx emissions	39,095	45,087
VOC emissions	701	1,022
PM_{10} from Eraring Power Station	177	225
Total	64,307	74,123
$PM_{2.5}$ from Eraring Power Station	105	121

Biodiversity

The greatest land footprint of our activities is our role as the upstream operator of Australia Pacific LNG in the development and operation of the CSG fields in the Surat and Bowen basins in Queensland. We are committed to engaging with local communities and biodiversity experts on the impacts of our activities, and reducing our disturbance footprint.

We continued our focus on the rehabilitation of legacy sites including wells, monitoring bores, pilot ponds and surface facilities. During FY2020, we rehabilitated 49 well sites, four pilot ponds, three exploration campsites and one quarry.

At Eraring, we supported regeneration through our seedling nursery, and our team is well trained to rescue any injured wildlife. See the *Eraring Power Station* section for more information.

Case study

CSIRO's world-leading study into fracking

CSIRO has released the results of a landmark, three-year scientific research program into the impacts of hydraulic fracturing (fracking) in the Surat Basin, Queensland, finding it has minimal to no impact on air quality and no detectable impact on local waterways, groundwater or soils.

Read more here ›

24 gisera.csiro.au/project/air-water-and-soil-impacts-of-hydraulic-fracturing-phase-2/

Working with communities

Performance at a glance

- More than $870,000 donated by Origin and its employees to support communities impacted by bushfires and drought.
- $795,000 spent on local community investment initiatives.
- Launched our new community partnership with Netball Australia.

Find out more about our approach and policies in our Communities Management Approach and our Land Access and Coexistence Management Approach

We aim to work responsibly and respectfully with our communities, looking for ways to maximise the benefits of our presence and providing support when needed.

We play an important role within Australian communities, including through the provision of reliable and affordable energy, as a major employer with over 5,000 people, and by supporting educational opportunities through the Origin Energy Foundation.

We also contribute to communities through local community investment programs and national partnerships, such as Origin's Little Big Idea, which seeks Australia's next generation of inventors, encouraging creativity and innovation in students in grades three to eight. This year, we announced our new three-year community partnership with Netball Australia, supporting players at all levels across the country – from local clubs right through to the world-leading Australian Diamonds.

Benefits of safe and responsible development

Our assets – such as power stations, gas processing facilities and pipelines - can have a lifespan of several decades, which means we have a long-term presence in the communities in which we operate. Our projects can deliver a range of benefits for local communities, including employment for people living in the region; opportunities for local suppliers; financial payments for pastoralists and Native Title holders; and taxes, levies and royalties for governments.

We seek to procure local goods and services wherever possible and we work with our major contractors to do the same. See the *Procurement* section for more information.

We also support local communities through activities such as dedicated funding programs for community initiatives, offering local apprenticeship and traineeship opportunities and providing financial incentives for our people to 'live local'.

Engaging with communities

We respect the rights and interests of the communities in which we operate. We consult with them to understand and manage the environmental, economic and social impacts of our activities and maximise the benefits.

Origin's three most significant interactions with communities occur in Queensland at our Australia Pacific LNG operations, in the Northern Territory as part of our Beetaloo Basin exploration project, and at our power stations, the largest of which is Eraring in New South Wales.

Australia Pacific LNG

We regularly engage with local councils, chambers of commerce, economic development groups and other community organisations. Our business also proactively engages with our landholders, with dedicated Stakeholder Liaisons in place.

Conduct and Compensation Agreements (CCAs) between Origin and landholders set out how we will enter the land to carry out our activities as upstream operator of Australia Pacific LNG and how landholders will be compensated.

We negotiated and signed 101 CCAs with landholders in FY2020. These CCAs bring the total number of agreements signed since the Australia Pacific LNG project began to 1,276.[25]

Australia Pacific LNG holds Indigenous Land Use Agreements and Cultural Heritage Management Plans with Traditional Owners, which set out processes and plans for protecting Indigenous cultural heritage in areas where we operate. Our Cultural Heritage Officers manage Indigenous scouting of proposed developments in areas of cultural significance, to ensure they are not disturbed and are protected for future generations. During FY2020, Australia Pacific LNG was not associated with any incidents of non-compliance with Indigenous Land Use Agreements or Cultural Heritage Management Plans.

Our ongoing engagement with Traditional Owners has focused on strengthening existing relationships and identifying opportunities for employment, capability building and contractor engagement. In October 2019, we invited Iman elders to help us open a new operations centre in Spring Gully, including holding an ancient smoking ceremony to cleanse and ensure a pathway to a brighter future.

Beetaloo Basin exploration project

We have been engaging with community members across the Northern Territory since we became operator of the Beetaloo Basin permits in 2014. We work constructively, transparently and in good faith with those who share tenure rights to our permit areas, by engaging with communities and sharing factual, scientifically based information.

We continue to work closely with the Northern Land Council (NLC) to ensure we engage with and maintain the support of our host Traditional Owners who are the Native Title holders where we work. The NLC is the statutory body responsible for providing detailed guidance about which Native Title holder family groups to consult and work with for the specific areas within our exploration permits where activity is proposed.

The process we follow is based on sharing annual work programs and participating in on-country meetings with the NLC and Native Title holders. Origin's work program plans are provided to the NLC a year in advance, allowing the NLC adequate time to consult with the Native Title holders and for discussions to occur over time. Sacred site clearances and on-country meetings are part of a wider process of consultation and information sharing about the activity and locations for planned work. To date, we have always received support for our planned activities at the cleared locations, including hydraulic fracture stimulation.

The NLC and our host Traditional Owners also work with us to ensure sacred sites are protected by undertaking sacred site surveys and clearances for each location, which are then certified by law by the Aboriginal Areas Protection Authority. All exploration and activity to date has been certified and complies with the *Northern Territory Sacred Sites Act 1989*.

In March 2020, following discussions with the Northern Territory Government and the NLC, we temporarily paused our exploration activities in the Beetaloo Basin in response to COVID-19, to help protect Northern Territory communities and people.

Before our activities in the Northern Territory were paused, we participated in a number of community engagement sessions and events across the Northern Territory, including regional shows, local business conferences and our *Beetaloo Exploration Project Learning Exchange* events.

25 The number of Australia Pacific LNG CCAs, as defined by Queensland's *Mineral and Energy Resources (Common Provisions) Act 2014* signed during the 12-month period. This excludes non-operated sites.

Case study

Preserving connection to country

As part of our Cultural Heritage team, Jill O'Dea and Daen Munn manage Indigenous scouting of proposed Queensland gas developments for areas of cultural significance and help raise awareness of Indigenous culture in our Integrated Gas operations.

Read more here ›

originenergy.com.au/blog

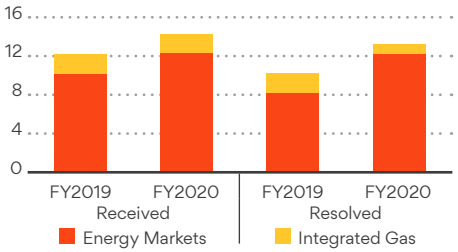
Eraring Power Station

In December 2002, the Eraring Power Station Community Forum was established in response to concern from local environmental and community groups regarding the station's environmental impacts. With representatives from the community and Origin, the forum aims to enhance understanding of both the power station and community issues by providing an opportunity to share updates, raise concerns and discuss proposed community investment and impact management activities.

Responding to complaints

We continue to monitor complaints from community members, our response time and the resolution of these matters. In FY2020, complaints in the Energy Markets business mainly related to noise from our sites and dust from the Eraring ash dam, while the Integrated Gas complaints were related to road safety and workforce behaviour.

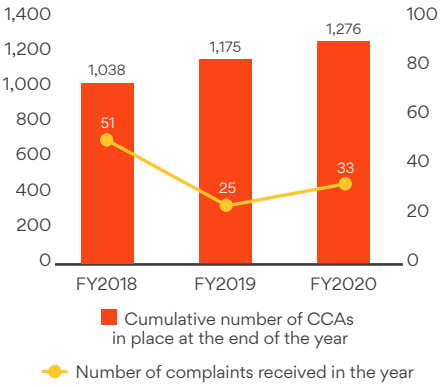
Graph 13: Community complaints*



* The Energy Markets figures do not include complaints from customers. This information is contained in the *Customers* section.

In FY2020, we received 33 complaints from landholders with whom we have negotiated or are negotiating a CCA. There was an increase in the number of complaints relating to construction operations and dust, and workforce behaviour. Each complaint is carefully investigated, and we are striving to improve our performance and reduce the number of complaints.

Graph 14: Conduct and Compensation Agreements and landholder complaints



Supporting communities

We aspire to support the regional communities and local economies in the areas where we operate. In these challenging times, we believe that continuing to support Australian communities is more important than ever.

In FY2020, Origin and our employees donated more than $870,000 to support communities impacted by bushfires and drought, including $300,000 to the Australian Red Cross and state-based rural fire services, and $100,000 to Drought Angels. In July 2020, we announced a three-year partnership with Drought Angels worth a further $175,000, which aims to assist the operational sustainability of the organisation by upgrading its current warehouse, systems and infrastructure, and includes a tailored solar package from Origin.

We are also helping support our communities as the country navigates the COVID-19 pandemic, including providing vouchers for food and other essentials and access to mental health and wellbeing services. See the *Responding to a year of challenges* section for more information.

Local community investment

In addition to emergency responses, our local community investment targets four priority areas: aiming to create safe, vibrant and inclusive communities; build great places to live and work; care for our environment and deliver economic benefits. We provide financial and in-kind support, as well as employee volunteering and charitable donations, which are managed through the Origin Energy Foundation. See the *Origin Energy Foundation* section for more information.

During FY2020, we contributed over $795,000 to support various programs and events in the communities in which we operate. This included multi-year partnerships with schools and local councils, and supporting important services such as the Royal Flying Doctors Service of Australia, the Surat Gas Aeromedical Service and rural fire services, to ad hoc sponsorship of local events, such as those celebrating International Women's Day and R U OK? Day.

To support economic development in regional Queensland, Australia Pacific LNG established a three-year partnership with the Chinchilla Community, Commerce and Industry (CCCI). The partnership aims to strengthen the capacity and capability of CCCI by providing enhanced technology and resources to develop and deliver future growth strategies.

At Eraring, in addition to supporting local events, we have formed multi-year partnerships with local community groups to enable longer-term relationships that deliver greater benefit. Since 2018, we have partnered with Toronto High School to support its science, technology, engineering and maths (STEM) program, including participation in the Hunter Valley Electric Bike Festival. As well as providing financial support, Eraring employees have so far volunteered over 50 hours of their time to mentor and assist students in their STEM learning. With over 200 students having participated to date, Origin's support has helped to raise the profile of STEM and increase enrolment in STEM subjects at the school.

Origin Energy Foundation

The Origin Energy Foundation believes in the power of education to help transform lives and improve communities.

Founded by Origin 10 years ago, the Foundation has provided more than $27 million to support community organisations since inception. Through grants, volunteering and workplace giving programs, over $2.9 million was distributed to the community in FY2020.

The Foundation's focus, chosen by Origin's employees, is to support education programs that help break the cycle of disadvantage and empower young Australians to reach their potential. The Foundation concentrates on three areas:

- creating greater gender diversity in STEM education;
- providing equality of educational opportunity for Indigenous students and young people in regional and rural Australia; and
- helping improve the productivity and professionalism of the not-for-profit sector through training and development.

The Foundation pursues engaged philanthropy, fostering active partnerships based on giving financial support and providing opportunities for Origin employees to volunteer their time and expertise. The members of the Board of the Foundation have also volunteered their time since its inception.

Working with partners

The Foundation provides funding to Australian non-profit organisations through its grants program. The funding is directed to non-profit organisations that use education, training and development to support students from early education to university.

The Foundation is a long-term partner, supporting programs, on average, for more than four years. The majority of programs have benefited students in rural and remote communities and almost half engage Indigenous students to gain skills, opportunities and confidence for success in school and university.

One such partnership is with the Country Education Foundation of Australia (CEFA). CEFA helps young people in regional and rural Australia pursue their post-high-school education, training and vocational goals. By distributing funds to local community foundations, CEFA provides students with much needed financial assistance, support and encouragement to overcome some of the extra obstacles faced by students in the country, including travel and living away from home expenses.

The Foundation is also an inaugural funder of Fulbright Scholarships and has helped provide scholarships for Australians to study in the USA, specifically for leaders of NGOs and non-profit organisations. The scholarships improve access to opportunities and strengthen leadership skills resulting in upskilling those people around them and bringing more funding to the sector.

Over the last 10 years, through the work of its partners, the Foundation has supported more than 62,000 young people to achieve in education. We have also supported more than 2,900 teachers through the National Exceptional Teaching for Disadvantaged Schools, Stronger Smarter Institute, Big Picture Education Australia, and Schools Plus programs.

Supporting employees' giving

Our employees are able to support good causes in education through the Foundation's Give Time volunteer program. This year, our participation rate of 42 per cent saw employees donate over 6,700 hours to help our community partners.[26]

Origin volunteers continue to draw upon their professional skills to help teachers bring real-world science and engineering to life in classrooms around Australia, primarily through our partnership with SolarBuddy. SolarBuddy is an Australian charity working to improve the educational outcomes of children throughout the South Pacific, South East Asia and Africa by distributing portable solar lights assembled by volunteers.

This year, 25 employees shared their experiences and career histories virtually, with more than 200 Year 8 students at Sydney's Rooty Hill High School via the Career Explorers Program. While COVID-19 restrictions meant students were unable to meet our people face to face, it did mean staff from all over Australia were able to participate and share their stories.

Together with our partners, including The Big Issue, Habitat for Humanity, and FareShare, our volunteers have also cooked meals for the most vulnerable in our community, built homes, cleaned up rubbish, and restored natural wildlife habitats.

Through our workplace giving program, Give2, the Foundation matched employee donations of $454,445 dollar for dollar to over 278 Australian not-for-profit organisations in FY2020, doubling their contribution to the causes our people care most about.

Our volunteering program involves mostly face to face work, so we worked with our many partners to adapt our volunteering in response to COVID-19 restrictions. See the *Responding to a year of challenges* section for more information.

Visit the Origin Energy Foundation

26 Participation rate is calculated as number of volunteering instances divided by average employees across the year.

Case study

Working with the Injune Early Learning Centre to provide early education

Maxine Thomas, Origin's Stakeholder Liaison in Roma, Queensland, is using her 20 years' teaching experience to give children in remote communities access to kindergarten. As part of her working hours, and with the support of the Origin Energy Foundation, Maxine develops and uploads an early learning program every two weeks for the local Injune Early Learning Centre.

Read more here >

Procurement

Performance at a glance

- $365 million spent directly with regional suppliers, or 14 per cent of our procurement spend.
- Supplier Code distributed to 650 suppliers.
- First Modern Slavery Statement released.

We strive to work with suppliers and contractors who share our values and are driven to improve our supply chain's social and ethical footprint.

Regional procurement

We recognise that procuring goods and services from local and regional suppliers is an important avenue for sharing economic value in the communities in which we operate. We monitor our progress in this area by tracking our direct procurement spend (paid by Origin) and indirect spend (by subcontractors to Origin).

In FY2020, we spent $365 million directly with regional suppliers, an increase of $118 million from FY2019. This represented 14 per cent of our total spend, up from 12 per cent in FY2019. Our increase in regional spend is due to the inclusion of suppliers to our Eraring and Shoalhaven operations as well as efforts to more actively identify opportunities to include local, regional and Indigenous suppliers.

We have continued to implement our regional participation plans in major contracts, which has driven our indirect spend with regional suppliers in FY2020 of $68 million.

We also continue to engage with local communities around our operating assets. This includes hosting information evenings with some of our key contractors and their communities to discuss subcontracting, supply and employment opportunities on various projects.

Supporting small business

Origin became a signatory to the Business Council of Australia's Australian Supplier Payment Code in FY2018. This voluntary initiative emphasises the importance of complying with best-practice standards by making on-time payments to small business suppliers.

In response to COVID-19, and to support the cash flow of small businesses, we reduced our payment terms for those suppliers from 30 days to 14 days for six months during the pandemic. This is benefiting approximately 1,400 Australian businesses.

Find out more about our approach and policies in our Procurement Management Approach

Responsible procurement

During the year, we assessed our operations and supply chain for risks of modern slavery and published our first Modern Slavery Statement in August 2020. We recognise our responsibility and the opportunity to help eradicate modern slavery, and we consider any form of modern slavery to be unacceptable.

Our assessments to date have not identified any modern slavery practices in our operations or supply chain, however we recognise this is an ongoing process and remain vigilant.

We launched our Supplier Code in 2019 and this has been distributed to 690 of our key suppliers through our vendor portal. Our Supplier Code outlines the attributes we expect of the suppliers we work with, relating to labour and human rights, health and safety, the environment and sustainability, business integrity, community involvement and our suppliers' broader supply chain.

Along with our Supplier Code, we ask our key suppliers to complete a Self-Assessment Questionnaire so we can assess whether suppliers classified as high-risk have documented policies and procedures in place to help manage these risks.

See our Modern Slavery Statement for more information.

Increasing Indigenous participation

Our Stretch Reconciliation Action Plan (Stretch RAP) includes a commitment to increase the participation of Aboriginal and Torres Strait Islander businesses in Origin's supply chain. By doing this, we want to create economic opportunities for the people who lead and are employed by these businesses, their families and communities.

We measure progress towards achieving our Stretch RAP objective by monitoring both direct procurement spend (paid by Origin) and indirect spend (subcontractors to Origin). In FY2020, our spend with Indigenous suppliers was $5.3 million (direct and indirect), exceeding our Stretch RAP target of $5 million.

We understand that opportunities to work with Origin are not always available to smaller, Indigenous businesses; however, there may be opportunities through our major contractors. To help facilitate these opportunities for Indigenous businesses, we include Indigenous Participation Commitments (IPCs) in contracts with our key contractors. During FY2020, we agreed 10 new IPCs with suppliers.

See our Stretch RAP for more information on our commitments.

Case study

Promoting Indigenous opportunities in our supply chain

At Origin, we continue to look at ways to increase the participation of Indigenous businesses throughout our supply chain. Our Indigenous Participation Commitments have enabled CRC Electrical, a small, local, Indigenous business to work indirectly with Origin for the last four years.

Read more here >

Policy and regulation

Performance at a glance

- Working with governments and industry bodies on market reforms and taking action to reduce prices and make energy smarter and easier for customers.
- Supported policy that encourages private sector investment in new electricity generation and gas supply.
- Participating in BCA and APPEA policy reviews, climate change and energy policies.

As one of Australia's largest energy companies, we have long advocated for clear government policies to support Australia's transition to a low-carbon economy.

Energy plays a critical role in almost every aspect of the economy and our everyday lives. As such, the energy industry is of considerable interest to Commonwealth, state and territory governments, and is highly scrutinised and regulated.

More than a decade of policy inaction and confusion around climate change policy has resulted in a muted investment signal and the retirement at short notice of ageing coal fired generators. There has been investment in variable renewable energy to meet the Renewable Energy Target but little other investment over this period. This has stressed system reliability and placed upwards pressure on prices, prompting governments to intervene in energy markets.

Origin continues to advocate for a coordinated and long-term energy policy at the national level to give industry the confidence to invest in new electricity generation and gas supply. Investment is critical to maintain reliability and improve affordability as we transition to a low-carbon energy system.

Government reviews

In recent years, the Australian Government has undertaken many investigations into energy markets including comprehensive reviews by Chief Scientist Dr Alan Finkel and the Australian Competition and Consumer Commission (ACCC). Origin supports well-considered market reforms that can reduce power prices while avoiding unintended consequences that might erode customer benefits, halt innovation or distort the market.

A key recommendation of both the Finkel and ACCC reviews was to integrate energy and climate change policy and encourage new generation. The absence of progress with this recommendation has resulted in a range of piecemeal interventions at Federal, State and Territory levels that are generally poorly targeted and do not address the underlying market issues. These include direct investment and subsidies from governments that act to undermine the market signal for private sector investment.

Electricity policy

The Australian Government has implemented price reregulation through the Default Market Offer (DMO), which commenced on 1 July 2019 in New South Wales, South Australia and southern Queensland, while the Victorian Government also implemented price reregulation at the same time, through the Victorian Default Offer (VDO). These policies make it easier for customers to compare offers and provide protections for the small number of customers who remain on standing offers. However, reregulation may discourage innovation and competition, particularly if prices are not set in a fair and transparent manner.

The *Treasury Laws Amendment (Prohibiting Energy Market Misconduct) Act 2019* became operational in June 2020. We are confident that our practices comply with the legislation, however it features certain interventions including, under certain circumstances, contracting orders from the Treasurer and forced divestiture of assets, that may discourage investment in electricity markets.

Find out more about our approach and policies in our Policy Management Approach and our Industry Associations Policy.

The then Council of Australian Governments Energy Council has asked the Energy Security Board (ESB) to advise on a long-term, fit-for-purpose electricity market framework to support reliability, modifying the NEM as necessary to meet the needs of future diverse sources of non-dispatchable generation and flexible resources including demand-side response, storage and distributed energy resource participation. Called the Post-2025 Market Review, it is important that this review focuses on ensuring that the market works for customers in terms of reliability and affordability. Transmission investment is important, but it adds cost to customers and dispatchable generation close to demand is necessary for a reliable and secure supply.

Beyond the Renewable Energy Target, the Australian Government does not have a comprehensive emissions policy in place to encourage investment in clean and low-emissions generation technologies.

We have encouraged the Australian Government to adopt an emissions policy and will continue to work constructively with all levels of government in this area.

Gas policy

Natural gas is an important fuel source in its own right. It also plays a critical role in firming intermittent renewable energy and maintaining a reliable and affordable supply of electricity as we transition to a low-carbon energy system.

Australia has enormous gas resources that need to compete globally to be developed. Development of these resources for export will have flow on benefits of providing competitively priced gas for Australian manufacturers and other customers.

Interventions, such as domestic gas reservation of volumes or price targets, will discourage investment, leave gas in the ground and ultimately result in higher prices for customers. Focus should be on actions that increase investment and put downwards pressure on prices. These include removing moratoria and restrictions, releasing acreage, streamlining planning approvals and regulatory requirements, investing in infrastructure, and a more efficient and predictable fiscal regime and labour markets.

The Commonwealth recently completed its review of the Australian Domestic Gas Security Mechanism (ADGSM). Significantly, the Government confirmed the mechanism would not be extended beyond the current sunset date of 2023, and ruled out including a direct price trigger – we were strongly supportive of this finding.

In August 2019 the Commonwealth announced it would consider establishing a *prospective* national gas reservation scheme by February 2021. We continue to engage with governments to instead encourage States and Territories to remove unwarranted restrictions on gas developments, to free up more gas resources for development. The Victorian Government has subsequently announced that it will allow for a restart of onshore conventional gas exploration from 1 July 2021, though a ban on fracking and CSG exploration will remain.

The Beetaloo Basin has the potential to bring a new source of competitively priced gas to market for Northern Territory, east coast and LNG customers. The current exploration and appraisal phase is critical to understanding the resource and potential paths to commercialisation. Government support is critical to ensure the appraisal of the basin can progress.

Industry association memberships

Industry associations can be an effective way to reach and advocate for a common industry view on key policy matters.

Industry associations often have a broad range of members and views. Origin uses its memberships to understand the views of other industry participants and present and advocate its views on relevant policy. While there may not be full alignment across industry representatives on some key policy areas, we may remain a member of an industry association with whom we don't have complete alignment on the basis that there is opportunity for constructive industry dialogue and advocacy.

It is our policy to be a member of an industry association only where that association:

1. gives Origin access to industry insights, expertise or information that may improve technical, or operational performance;
2. provides Origin with insight or access into new markets; or
3. enhances Origin's ability to advocate for sound and/or commercially beneficial policy outcomes.

While we may not always agree with every element of an industry association's response to climate change issues, where we believe there is a benefit to Origin in constructive industry dialogue or advocacy, we will maintain our membership. We keep a register of all industry association memberships and review memberships annually with regards to the association's culture of compliance with competition laws, climate change and other key policy positions, and their value for money.

Our review did not find any significant differences in formal positions on climate change policy between Origin and key industry associations. It is pleasing that the BCA and APPEA are currently undertaking a review of their positions on climate change policy, in part because members such as Origin have pushed for greater ambition and clarity on climate change action. We are taking an active role in the working groups for both organisations' climate change policy reviews.

We spent around $1.4 million on industry association memberships in FY2020.

See originenergy.com.au/industryassociations for our Review on Industry Associations, including a list of our key association memberships and further details of the benefits of our industry association memberships.

Governance

Origin is committed to meeting the expectations of all stakeholders to practice sound corporate governance.

We aspire to the highest standards of integrity, personal and process safety, community and social responsibility, and environmental performance. To achieve this, every employee and contractor is required to act in accordance with Origin's governance and business conduct standards across our operations in Australia and internationally.

Our Corporate Governance Statement outlines our approach to governance and risk management and is available at originenergy.com.au/governance

Climate change risk governance

Board

Ultimate responsibility for climate-related risks and opportunities sits with the Origin Board. The Board considers, reviews and monitors climate-related risks and opportunities as part of investment considerations, and regular financial and operational performance reviews.

The Board monitors and oversees progress on our emissions reduction targets and considers climate-related risks and opportunities at least annually as part of the Company's strategic planning process.

The Board's Risk Committee oversees climate change risk governance and related issues. Its role is to assist the Board to monitor our material, strategic and emerging risks. It is also responsible for making recommendations to the Board on the approval and release of climate-related disclosures, including our Sustainability Report, as well as reviewing and making recommendations to the Board on climate-related risks and opportunities associated with the Company's strategy, operations and investment.

Each year, the Risk Committee is presented with a summary of all material climate-related risks using the categories defined by TCFD, including Policy and Legal, Technology, Market, Reputation and Products and Services. The report summarises the reporting to the Board of each climate-related risk during the year. This enables all material climate-related risks to be covered at least once during the year.

The Risk Committee meets at least quarterly.

Management

The Executive Leadership Team Risk, Assurance and Compliance Committee (ELT RAC) is the primary executive level risk governance committee at Origin. Its primary role is to enable the Chief Executive Officer and Executive Leadership Team to discharge their responsibilities under Origin's Risk Management Policy and Risk Management Directive. These responsibilities include:

- identifying and assigning responsibilities for climate-related risks;
- climate change risk governance (which is reviewed at least annually); and
- monitoring regular business unit reports, the quarterly Strategic Risk Report and the annual Sustainability Report.

The ELT RAC also reviews any escalated risks that arise within business unit risk, assurance and compliance meetings, based on the assessed risk level, and agreed escalation protocols.

The Executive General Manager, Integrated Gas and the Executive General Manager, Future Energy and Business Development are responsible for identifying, quantifying and managing climate-related risks and reporting these to the Board and the Board's Risk Committee.

Climate change risk governance

Risk management framework

Climate-related risks and opportunities are identified, assessed and managed using Origin's risk management framework in the same way as all other risks at Origin.

Origin's risk management framework supports the identification, management and reporting of material risks in areas such as health and safety, environment (including climate change), finance, reputation and brand, legal and compliance and social impacts. Our framework is aligned with the International Standard (AS/NZ ISO 31000).

In general, risks are identified that have the potential to affect Origin's ability to meet its business objectives and impact its future financial prospects. They are categorised into one of four broad categories: strategic, operational, financial or project risks. Within this framework, climate-related risks tend to be categorised as either strategic or operational risks. Strategic risks are defined as internal or external uncertainties and potential opportunities affecting Origin's strategy and strategy execution. Operational risks are defined as internal or external uncertainties and potential opportunities affecting Origin's processes, people and systems.

The core of Origin's risk management framework is the Risk Rating Toolkit, which describes the criteria by which management judges the potential likelihood and consequences of key risks associated with our activities. The Toolkit requires management to assess the potential impacts of our decisions and actions, not just by reference to law and regulation, but by reference to the impacts on our own people, the environment, the community and our shareholders.

As defined by the TCFD, climate-related risks extend from product development through to resource extraction, with many different activities in between. The way we manage each risk or opportunity depends entirely on the context in which that risk or opportunity arises. Risks are governed by the risk management framework described above.

All material risks that meet our reporting thresholds are reported to the Board either quarterly or annually depending on materiality.

At least once a year, climate-related risks are gathered together and reported to the Board using the structure of the TCFD.

Further details on our risk management framework can be found in Section 7 of the Operating and Financial Report within our Annual Report.

Board site visits

Members of the Origin Board regularly make site visits to our operations to gain first-hand experience of our assets and for the opportunity to meet some of of our dedicated team and to observe and ask questions. Board members also regularly undertake HSE-specific site visits to observe the safety standards and operational procedures in place, and provide an opportunity for a two-way discussion on safety. The Board HSE site visits highlight the paramount importance the Board places on safe operations. Site have been restricted following the COVID-19 pandemic, however the Board is implementing a process for 'virtual' HSE site visits during the pandemic.

Beetaloo, Northern Territory

In August 2019, Chairman Gordon Cairns and members of Origin's senior management visited the Beetaloo Basin. During his visit, Mr Cairns travelled to Daly Waters and Elliott, where he met with a number of Native Title holder families within Origin's permit areas, as well as a local Indigenous-owned contracting company. He was able to hear first-hand the views and perspectives of our host Traditional Owners on the Beetaloo development, as well as discuss the opportunities for local businesses to work with Origin, and the employment opportunities the project will bring to the community. Mr Cairns toured the Kyalla 117 well site to view the progress that had been made and meet some of the team on site.

Board members John Akehurst and Scott Perkins, along with Chief Executive Officer, Frank Calabria, also visited the Beetaloo Basin in February 2020 for an HSE site visit. Everyone who visits the Beetaloo site undertakes inductions, focusing on health, safety, operations and importantly cultural familiarisation. The Board members visited all facets of the drilling operation, speaking to Origin staff and contractors undertaking the work, and observed a clear commitment to safety on site.

LPG Terminal, Mackay, Queensland

In November 2019, Director Bruce Morgan undertook an HSE site visit to the Mackay LPG Terminal. During his visit, Mr Morgan attended the weekly toolbox meeting with terminal staff and participated in the 'sixty-second investment' physical warm up which is part of the Move for Life training being implemented across all LPG sites. Mr Morgan undertook a thorough inspection of the operations and then met with commercial customers and was able to gain an understanding of the LPG delivery process and the safety aspects of these activities.

Ratings and awards

Australian Council of Superannuation Investors

Leading rating for disclosure of sustainability risks in 2009-2011, 2013-2019.

In 2019 the Australian Council of Superannuation Investors reviewed Origin's level of sustainability disclosure and assessed it as being at a 'Leading' level within the energy and utilities sector for the last four or more consecutive years.

Carbon Disclosure Project

Origin has participated in the Carbon Disclosure Project (CDP) climate change survey since 2006. The survey is conducted globally and reported in arrears.

Origin's 2019 CDP climate change performance score (covering FY2018) improved from a 'D' to a 'B', signifying a 'Management' level. The improvement in our score partly reflected our adoption of the TCFD disclosures in the FY2018 reporting period and reflects a continued focus on our climate related disclosures.

In 2020, we participated in the climate change survey, which covers our performance during the FY2019 reporting period. These responses are expected to be available on the CDP website in late 2020.

Equileap Gender Equality

Origin was ranked ninth globally in Equileap's 2019 Gender Equality Global Report & Ranking, which assessed over 3,500 companies worldwide across 19 criteria as part of their Gender Equality Scorecard.

FTSE4Good

2004-2020

FTSE Russell confirms that Origin Energy has been independently assessed according to the FTSE4Good criteria, and has satisfied the requirements to become a constituent of the FTSE4Good Index Series. The series measures the performance of companies demonstrating strong environmental, social and governance practices.

MSCI

MSCI ESG's AA rating

In 2019, Origin received a rating of AA (on a scale of AAA-CCC) in the MSCI Ratings assessment.[27]

Reader's Digest Quality Service Awards

For the second year running, Origin was voted as a Gold winner for having the best customer service in both the Electricity and Gas Provider categories, as judged by the Australian public in the 2020 Reader's Digest Quality Service Awards.

Sustainalytics

2020

In July 2020, Origin received an ESG Risk Rating of 32.8 and was assessed by Sustainalytics to be at high risk of experiencing material financial impacts from ESG factors. Origin's ESG Risk Rating places it in the 51st percentile of the Multi-Utilities subindustry assessed by Sustainalytics.

Workplace Gender Equality Agency

Origin has once again been recognised as an Employer of Choice for Gender Equality by the National Workplace Gender Equality Agency (WGEA).

27 The use by Origin of any MSCI ESG Research LLC or its affiliates (MSCI) data, and the use of MSCI logos, trademarks, service marks or index names herein, do not constitute a sponsorship, endorsement, recommendation, or promotion of Origin by MSCI. MSCI services and data are the property of MSCI or its information providers, and are provided as-is and without warranty. MSCI names and logos are trademarks or service marks of MSCI.

Appendix 1

TCFD disclosure

Climate change remains one of the most significant challenges facing companies worldwide and a high priority for energy companies given energy production is a major source of carbon emissions.

Origin unequivocally supports the United Nations Framework Convention on Climate Change and the Paris Agreement, and actions consistent with ensuring any rise in global temperatures is limited to well below 2°C.

We support the recommendations made by the TCFD and we set out here where our disclosures on climate-related risks and opportunities can be found in this Sustainability Report.

TCFD recommended disclosure	Where to find more information
Governance	
Disclose the organisation's governance around climate-related risks and opportunities	
a) Describe the board's oversight of climate-related risks and opportunities	*Governance* section, pages 42-43
b) Describe management's role in assessing and managing climate-related risks and opportunities	*Governance* section, pages 42-43
Strategy	
Disclose the actual and potential impacts of climate-related risks and opportunities on the organisation's businesses, strategy, and financial planning where such information is material	
a) Describe the climate-related risks and opportunities the organisation has identified over the short, medium and long terms	*Energy and climate change* section, pages 13-16 Operating and Financial Review, section 7
b) Describe the impact of climate-related risks and opportunities on the organisation's businesses, strategy, and financial planning	*Energy and climate change* section, pages 13-16
c) Describe the resilience of the organisation's strategy, taking into consideration different climate-related scenarios including a 2°C or lower scenario	*Energy and climate change* section, *Climate resilience*, page 16 2°C and 1.5°C Scenario Analysis
Risk Management	
Disclose how the organisation identifies, assesses and manages climate-related risks	
a) Describe the organisation's process for identifying and assessing climate-related risks	*Governance* section, pages 42-43
b) Describe the organisation's process for managing climate-related risks	*Governance* section, pages 42-43
c) Describe how processes for identifying, assessing and managing climate-related risks are integrated into the organisation's overall risk management	*Governance* section, pages 42-43
Metrics and Targets	
Disclose the metrics and targets used to assess and manage relevant climate-related risks and opportunities where such information is material	
a) Disclose the metrics used by the organisation to assess climate-related risks and opportunities in line with its strategy and risk management process	*Energy and climate change* section, *Decarbonisation commitments*, page 14; *Decarbonisation strategy*, pages 15-16
b) Disclose Scope 1, 2 and, if appropriate, Scope 3 greenhouse gas emissions, and the related risks	*Greenhouse gas emissions* section, pages 18-20
c) Describe the targets used by the organisation to manage climate-related risks and opportunities and performance against targets	*Energy and climate change* section, *Decarbonisation commitments*, page 14

Appendix 2

Gender diversity performance

The Board has set our diversity targets for FY2020 and the performance against these targets are set out below.

Table 10: FY2020 Gender diversity targets

Target	Performance
Deliver equal average pay for men and women at each job grade	On an equal-pay-for-equal-work basis the pay gap was within Origin's policy tolerance of ±1 percentage point variation at the conclusion of the FY2020 annual remuneration review process.[28]
Improving the appointment rate of women to senior roles by 15% year-on-year (to 36.2%)	We achieved an appointment rate of women to senior roles of 51.7% in FY2020.
Improving the retention rate for women in senior roles from 79% (FY2019) to 85%	We achieved a retention rate for women in senior roles of 87% in FY2020.

The Board's Remuneration and People Committee monitors the progress towards achieving these gender diversity objectives, including gender pay, and oversees our initiatives to promote broad diversity and inclusion and assess the effectiveness of these programs.

Definition of seniority

For the purpose of gender diversity targets, 'senior roles' includes all people in Hay Pay Scale job grades that pay approximately $180,000 per annum (total remuneration at target).[29] Seniority is defined by reference to standard Hay Pay Scale job grades, rather than reporting relationship to the Chief Executive Officer (CEO), for two reasons:

1. to make genuine comparisons of seniority. A large number of senior people in corporate support areas such as legal, company secretary, human resources, strategy and communications are only two or three levels below the CEO, while in the operating businesses there are many roles with significant line management responsibility that are more than three levels below; and
2. to make analysis comparable over time. Any restructure that changes ELT roles also changes the reporting relationships for hundreds of people at lower levels, making it less valid to accurately compare progress on gender pay equality at those levels before and after the restructure.

We do not use reporting relationship to the CEO to define our gender diversity targets, however, the gender profile of these cohorts is of interest to some external stakeholders and is presented in the table below.

Table 11: Female representation by cohort (%)

Female representation	2018	2019	2020
Board[1]	25.0	25.0	22.2
CEO-1[2]	22.2	22.2	37.5
CEO-2[3]	33.8	40.6	43.9
Senior roles	32.3	30.3	32.2
Origin Group	37.5	36.6	35.4

1. Board includes Executive and Non-executive Directors
2. "CEO-1" is a classification within the WGEA guidelines, which equates to the ELT excluding the CEO
3. "CEO-2" is a classification within the WGEA guidelines which equates to CEO-1 and their direct reports who are themselves responsible for managing people

FY2021 targets

Our diversity targets for FY2021 will be:

1. Continue to deliver equal average pay for men and women at each job grade;
2. Increase the number of women in senior roles by:
   a) achieving an appointment rate of women to senior roles of 50 per cent; and
   b) improving the retention rate of females in senior roles to 89 per cent.

The Origin Scorecard KPI "Women in Senior Roles" target for FY2021 is to achieve a female incumbency of 33 per cent.

The Board has set itself a target of females being at least 40 per cent of the Board by the end of 2020. Although at the date of this Report we have not achieved 40 per cent, the Board remains committed to this target. An active Board renewal program is well underway which would enable the Board to meet this target with the appointment of additional female directors.

28 Equal work is defined in terms of the same job grade, measured using Korn Ferry Hay job evaluation methodology.

29 The dollar number is approximate because the boundary is defined by Korn Ferry Hay Group position grading methodology. The corresponding market rate varies with time.

Appendix 3

Stakeholder engagement

To be a sustainable business, we must demonstrate how we are meeting the needs and expectations of those who are most interested in our business: our shareholders, customers, people and communities.

To understand the potential impacts and opportunities our activities create for our stakeholders, we actively listen to their feedback. What we learn from directly engaging with them is supplemented by research, to help determine the activities that are most important to our business and stakeholders.

This is how we engaged with our stakeholders in FY2020:

Our shareholders

Deliver market-leading performance for shareholders by identifying, developing, operating and growing value-creating businesses.

Areas of interest	How we engaged
• Sustainable earnings • Remuneration • Identification and management of risks • Climate change and emissions • Future energy solutions • Water	• In addition to our Annual General Meeting, we hosted various investor, analyst and media briefings, and investor roadshows, including a sustainability roadshow. • We responded to regular investor, analyst and media enquiries. • We undertook surveys to gather investor feedback. • We responded to sustainability-related information requests and participated in benchmark surveys. • We distributed price-sensitive information to investors and media via the Australian Securities Exchange.

Our customers

As part of our purpose, getting energy right for our customers involves supplying them with reliable, affordable and sustainable energy.

Areas of interest	How we engaged
• Quality of our service • Energy affordability • Ease of interacting with Origin • Smarter energy solutions	• We provided support to customers affected by natural disasters and the COVID-19 pandemic, communicating the availability of assistance in a variety of channels. • As part of our Customer Insights Panel and Experience Lounge, we have received feedback from more than 8,000 customers and over 62,000 comments through our digital channels. • We continued to improve our customer experience through simplifying key customer journeys and providing our people with the best information to better serve our customers.

Our people

The health and safety of our people remains paramount. Employees require an inclusive workplace, fair and equitable remuneration, and recognition of good performance.

Areas of interest	How we engaged
• Strengthen our culture by embedding our purpose, values and behaviours • Health, safety and wellbeing • Improve the employee experience and foster an inclusive workplace • Attract, embrace and retain a diverse workforce • Career development opportunities	• We maintained our annual engagement survey, to give employees a voice so they can provide feedback on culture and engagement and help shape their future working environment. • We launched learning modules to continue to build awareness and understanding and promote inclusion. • We continued a range of mentoring programs across the business to provide support and career development guidance. • We offered employees independent professional support via an independent provider and a new online Mental Health and Wellbeing Hub.

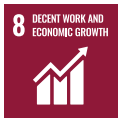
Our communities

Our communities are interested in the public safety, and environmental and social impacts of our operations, and the opportunities for jobs and economic development.

Areas of interest	How we engaged
• Our response to COVID-19 and bushfires • Public policy as it relates to climate change and emissions • Water • Land access and coexistence • Impact on communities • Sharing economic benefits	• We supported communities impacted by drought, bushfires and the COVID-19 pandemic. • We communicated and engaged with communities and the Traditional Owners of the land around our operations and developments. Due to the COVID-19 pandemic, we replaced face to face interactions with other communications. • We interacted with intermediaries such as governments, regulators, the media and non-government organisations that reflect community interests, both in Australia and internationally. • We advocated for sound policy outcomes through the peak industry associations for our core areas of business. • We undertook scientific research in partnership with communities and scientific organisations. • Our Origin Energy Foundation continued to partner with not-for-profit organisations with total FY2020 support of $2.9 million in financial grants, volunteering and workplace giving programs.

Appendix 4

Sustainable Development Goals

Sustainable Development Goal	How Origin is supporting the SDGs:	Section in Sustainability Report
	• We have a strong focus on workplace health and safety and have improved TRIFR to 2.6 in FY2020 from 4.4 in FY2019.	Safety
	• Our Mental Health and Wellbeing Hub supports our people in addition to our Employee Assistance Program and flexible work arrangements.	Safety
	• We established a new Pandemic Leave Policy to support our people, with up to 10 days paid leave available for employees who have been impacted by the pandemic (linked to SDG8).	People
	• The Origin Energy Foundation focuses on supporting educational programs for young Australians. The Foundation has distributed over $27 million to community organisations and supported over 62,000 young people since inception 10 years ago.	Origin Energy Foundation
	• The Origin Energy Foundation has partnered with SolarBuddy, to distribute solar lights to improve educational outcomes of children living in energy poverty in Papua New Guinea and other developing countries (linked to SDG1).	Origin Energy Foundation
	• Through our partnership with CareerTrackers we continue to support the transition of Indigenous students to the workplace (linked to SDG10).	People
	• We achieved 32 per cent of women in senior roles in FY2020 and continue to deliver equal average pay for men and women at each job grade.	People
	• We have been ranked ninth globally in Equileap's 2019 Gender Equality Global Report & Ranking.	People
	• Our Pride@Origin Committee works to create a safe and inclusive workplace and support our LGBTIQA+ community, including creating processes and systems to increase understanding and awareness.	People
	• Our Gender Affirming Support@Origin provides detail on gender affirmation in the workplace and our gender affirming leave policy, provides six weeks paid and six weeks unpaid leave (linked to SDG10).	People
	• We announced lower electricity and gas prices for most of our customers in New South Wales, Queensland, South Australia and the Australian Capital Territory from 1 July 2020.	Customers
	• We have waived outstanding balances for customers with fire or flood damaged properties.	Customers
	• We have increased renewable generation and storage capacity from 14 per cent in FY2016 to 19 per cent in FY2020 and have a target to increase it to 25 per cent by 2020.	Energy and climate change
	• For more than 15 years we have been providing our customers with low- and no-carbon product offerings such as GreenPower, Green Gas, batteries and solar.	Customers
	• We are the second largest installer of solar and during FY2020 installed 61 MW of solar.	Customers
	• Since 2003, we have supported access to energy through our Power On program and in FY2020 invested $15 million.	Customers
	• In response to the COVID-19 pandemic, we have committed to no disconnections for any residential or SMEs until at least 31 October 2020.	Customers
	• 14 per cent of our total spend was spent with regional suppliers.	Procurement
	• We have launched a Learning and Development hub to support the training and development of our people.	People
	• We actively support STEM education through our Origin Energy Foundation.	Origin Energy Foundation
	• We continue to assess our supply chain for risks of modern slavery, human rights breaches and other risks (linked to SDG3 and SDG16).	Procurement
	• Strategic partnership with Octopus Energy.	Customers
	• We have partnered with OhmConnect on a residential plug-in battery solution for customers.	Customers
	• We have improved the flexibility of one unit at our Quarantine Power Station to make it more responsive to changes in supply from intermittent renewables.	Energy and climate change
	• We are investigating low- and zero-carbon fuels such as green hydrogen.	
	• Our Little Big Idea competition is in its seventh year and encourages creativity and innovation in students.	Communities
	• We are one of 10 co-founders of Free Electrons, a global incubator for energy start-ups.	Customers

Sustainable Development Goal	How Origin is supporting the SDGs:	Section in Sustainability Report
	• We offer equal access to parental leave and encourage new fathers to take up 20 weeks paid parental leave as the primary carer within the first 12 months of their child's life (linked to SDG8).	People
	• We continue to work towards our Stretch RAP targets, and the participation of Aboriginal and Torres Strait Islander businesses in Origin's supply chain. We have also increased Indigenous employees to 46 in FY2020.	People, Procurement
	• Our RTO technology at Eraring Power Station optimises operations, improving the efficiency of coal use.	Eraring
	• Our fly-ash recycling rate has increased to 39 per cent in FY2020. The fly ash we produce at Eraring has numerous applications across the industrial and construction sectors and can contribute to reducing emissions when making concrete (linked to SDG13).	Environment
	• Through our Integrated Gas field turn down tool, we hope to avoid over 500 TJ per year of gas flaring. This will also avoid approximately 25,000 tonnes CO_2-e per year (linked to SDG13).	Greenhouse gas emissions
	• We were the world's first energy company to sign up to all seven We Mean Business initiatives in 2015.	Energy and climate change
	• We are reducing our greenhouse gas emissions and have set science-based targets to reduce our Scope 1 and Scope 2 emissions and our Scope 3 emissions. These targets are endorsed by SBTi, and are aligned to the goals of the Paris Agreement.	Energy and climate change
	• We plan to update our existing science-based targets to align with a 1.5°C pathway and aim to achieve net-zero emissions by 2050.	Energy and climate change
	• From FY2021 we have a new short-term emissions target to reduce Scope 1 emissions by 10 per cent, on average, over FY2021-23 from our FY2017 baseline and a new climate change target will be linked to executive remuneration.	Energy and climate change
	• We are actively engaged in responsible engagement in climate policy.	Policy
	• We have released our first Modern Slavery Statement and continue to assess our supply chain for risks of modern slavery (linked to SDG8).	Procurement
	• Our Supplier Code has been distributed to 690 suppliers. The code outlines the attributes we expect of our suppliers including those related to labour and human rights.	Procurement
	• Our Code of Conduct includes an Antibribery and Corruption directive that covers all aspects of our business.	People
	• We develop partnerships and invest in our communities through our operations and the Origin Energy Foundation.	Origin Energy Foundation
	• We collaborate on research and development through our membership of the Future Energy Exports Cooperative Research Centre and support of the UNSW Australian Research Centre for a Global Hydrogen Economy (linked to SDG9).	Energy and climate change
	• We are one of 10 co-founders of Free Electrons, a global incubator for energy start-ups.	Customers
	• We are undertaking an electric vehicle smart charging trial with ARENA (linked to SDG13).	Customers

Glossary

Ash dam
A pond used for disposing of coal ash generated by burning coal in coal-fired power plants.

CO
Carbon monoxide.

CO_2
Carbon dioxide.

CO_2-e
Carbon dioxide equivalent (CO_2-e) is a measure for describing how much global warming potential a given type and amount of greenhouse gas may cause, using the functionally equivalent amount or concentration (CO_2) as the reference.

Consequence rating of serious and above (environmental)
An environmental consequence rating that includes medium to long-term reversible impacts to low-risk or listed species, habitats, ecosystems or area/s of cultural significance; extensive long-term partially reversible damage to vulnerable species, unique habitats, ecosystems or area/s of cultural significance; or extensive permanent damage to endangered species, habitats, ecosystems or area/s of cultural significance.

Consequence rating of serious and above (safety)
A safety rating that includes injury or illness to one or more persons, resulting in a fatality, permanent partial or total disability, life-threatening illness, hospitalisation, five or more days lost time or alternative/restricted duties for one month or more.

CSG
Coal seam gas. Natural gas contained within coal seams.

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 or one million watts.

Megawatt hour (MWh)
One MWh = 1,000 kilowatt hours.

Gigawatt hour (GWh)
One GWh = 1,000 megawatt hours or one million kilowatt hours.

Terawatt hour (TWh)
One TWh = 1,000 gigawatt hours, or one million megawatt hours.

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.

Fugitive emissions
Fugitive emissions are the gases that leak or are vented or flared while extracting, producing, processing, storing, transmitting or distributing certain fossil fuels. The Australian regulatory definition for fugitive emissions includes flaring but excludes landscape emissions.

Gas measures:

Joule (J)
Standard unit of measurement for energy.

Gigajoule (GJ)
One GJ = 10^9 joules.

Terajoule (TJ)
One TJ = 10^{12} joules.

Petajoule (PJ)
One PJ = 10^{15} joules.

GHG emissions
Greenhouse gas emissions mainly refers to carbon dioxide, methane, nitrous oxide, sulphur hexafluoride, hydrofluorocarbons and perfluorocarbons.

GHG emissions intensity
The level of greenhouse gas emissions per unit of economic activity.

kt
One kilotonne = 1,000 tonnes.

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

LNG
Liquefied natural gas.

LPG
Liquefied petroleum gas.

Nationally Determined Contributions
Nationally Determined Contributions (NDCs) are the efforts by each country to meet their commitments under the Paris Agreement to reduce national emissions and adapt to the impacts of climate change.

National Electricity Market (NEM)
The wholesale electricity market for the electrically connected states and territories, with the exception of Western Australia and the Northern Territory.

NGERs
The *National Greenhouse and Energy Reporting Act, 2007* introduced a single national framework for reporting and disseminating company information about greenhouse gas emissions, energy production and energy consumption.

NOx
Nitrogen oxide.

$PM_{2.5}$
Particulate matter that is 2.5 micrometres or less in diameter.

PM_{10}
Particulate matter that is 10 micrometres or less in diameter.

Process safety event
An unplanned or uncontrolled Loss of Primary Containment (LOPC) of any material, including non-toxic and non-flammable materials from a process, or an undesired event or condition that under slightly different circumstances, could have resulted in LOPC.

Reverse osmosis
A process that uses a membrane under pressure to separate relatively pure water (or other solvent) from a less pure solution.

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

SOx
Sulphur oxide.

Venting
The process that relieves pressure in the system, releasing gas.

VOC
Volatile organic compound.

Water measures:

Kilolitre (kL)
One kL = one thousand litres (1,000 L).

Megalitre (ML)
One ML = one million litres (1,000,000 L).

Directory

Registered Office

Level 32, Tower 1
100 Barangaroo Avenue
Barangaroo, NSW 2000

GPO Box 5376
Sydney NSW 2001

T (02) 8345 5000
F (02) 9252 9244

originenergy.com.au
enquiry@originenergy.com.au

Secretary

Helen Hardy

Share Registry

Boardroom Pty Limited
Level 12, 225 George Street
Sydney NSW 2000

GPO Box 3993
Sydney NSW 2001

T Australia 1300 664 446
T International (+61 2) 8016 2896
F (02) 9279 0664

boardroomlimited.com.au
origin@boardroomlimited.com.au

Auditor

EY

Further information about Origin's performance can be found on our website:

originenergy.com.au