22 NOVEMBER 2022

Delivering the biggest infrastructure challenge in a century

Origin Energy CEO Frank Calabria's CEDA address

Tuesday, 22 November 2022.

To begin, I'd like to acknowledge the traditional custodians of the land on which we are meeting today, the Gadigal people of the Eora Nation. I pay my respects to their elders past, present and emerging.

I'd also like to officially welcome you all here today, and acknowledge the sponsor, PwC.

It's an absolute pleasure to be here, speaking on a topic I am incredibly passionate about – the energy transition.

The simplicity of those few words – the energy transition – defy the sheer scale and complexity of the challenge and opportunity that lies in front of us.

We are talking about a multi-decade, large-scale, global transformation that will fundamentally change every aspect of our energy system – the way we source, produce, supply, distribute and use energy.

Society's shared goal – to reduce emissions from energy – is clear, and we have good alignment across state and federal governments, businesses, and the community, to work towards net zero emissions by 2050 or sooner. Origin's own aim is to be net zero scope 1, 2 and 3 emissions across our full value chain by 2050. Our inaugural Climate Transition Action Plan, released in August, also outlined more ambitious short- and medium-term goals.

By 2030, we're targeting a 40 per cent reduction in Scope 1, 2 and 3 equity emissions intensity and a 20-million-tonne-reduction in absolute Scope 1, 2 and 3 equity emissions, from a FY2019 baseline.

Over the last five years, Origin's total Scope 1 and 2 equity emissions have declined by 21 per cent. This is important progress to emphasise in the wake of COP27, even as we acknowledge there remains a very large task ahead to decarbonise energy supply.

The energy transition is already well underway, with renewables today accounting for around 30 per cent of the total volume of electricity supplied in the National Electricity Market (NEM), and more than 3 million homes have rooftop solar. This means more than one in three Australian households are harnessing the benefits of the sun.

We are fortunate to be in a strong position relative to global peers in developing a reliable, affordable, cleaner energy system. We have all the ingredients to be successful: abundant renewable resources, access to capital, stable governments, and broad-based community support.

Of course, 2050 is a long-time horizon, and there are myriad different scenarios that may play out over that period. So, for the purpose of today's discussion, my focus is on the next phase of the transition, which is the timeframe from now until 2030.

No matter which way you look at it, the scale of the change over this decade is truly staggering. By 2030 we expect:

- $76 billion to be invested in energy infrastructure in Australia, as estimated by Labor's Powering Australia plan. This is ~3 per cent of GDP, and with inflationary pressures, many believe this to be a conservative estimate.

- 44 GW of renewables need to be built to achieve the Government's 82 per cent renewables target, of which 28 GW will come from utility scale assets, and 16 GW behind the meter.
- Those 28 GW of utility scale renewables is the equivalent of ~110 projects of ~250 MW.
- Some 15 GW of firming needs to be installed to back up renewables, the bulk of which is short-duration storage.
- 10,000km of new transmission needs to be built.
- 7.9 GW of coal-fired power is expected to have left the system.

- Total NEM electricity demand is expected to increase by 15 per cent as sectors like transport electrify.
- Up to 5 million EVs could be on our roads, under the most bullish scenarios.

All of this will be occurring concurrently, representing a magnitude of investment and construction akin to the wartime reconstruction effort. The upshot is, in a decade our energy system will be virtually unrecognisable when compared against today.

As if this wasn't enough of a challenge, the task became more complex over the past year or so. It was clear as the global economy and demand rebounded from COVID shutdowns that the energy supply-demand balance had become increasingly tight, and when combined with the low investment in new supply, this caused prices to rise. The war in Ukraine followed and we moved rapidly into what the International Energy Agency has called the 'world's first truly global energy crisis'.

The war has placed pressure on global energy supply and sent commodity prices soaring. Countries around the world are grappling with the same, significant challenges in accessing secure, reliable energy and homes and businesses are paying much higher prices heading into the northern hemisphere winter. While the impacts here are not nearly as acute as in the UK and Europe, we are certainly not immune, and Australian homes and businesses are already feeling the impact of rising energy prices, with more to come.

Related to these global events – but not solely caused by them – we had an extraordinary period in June when the National Electricity Market was pushed to its absolute limits, ultimately resulting in the entire market being suspended for the first time in its history. Significant coal plant outages, coal supply challenges due to weather and other factors, hydro challenges, an early winter spike in demand due to cold weather and lower renewables output – had all combined to send wholesale prices soaring.

All of this is not really news to any of you, as these challenges have played out on the front-pages of newspapers for months. And, given the essential nature of products and services we provide, governments are evaluating all the levers available to them to place downwards pressure on prices and support vulnerable members of the community – all the while keeping an eye on the longer-term goal of delivering the energy transition.

I've often talked about what customers stand to gain from a future energy system more aligned to a 1.5-degree-future. But right now, those benefits feel out of reach and out of step with what many customers are experiencing today. With 4.5 million customer accounts, we hear every day how customers large and small are managing their energy costs, and many are concerned about the rising cost of living – not just energy prices, but mortgages and rent, fuel, groceries and a range of other household staples.

A future built on renewable energy with new technology such as electric vehicles, is something to look forward to. But delivering the energy transition, given the scale of investment required, will undoubtedly create upwards pressure on energy bills. I fear rising energy prices could erode community support for the transition – a task that can only be delivered with coordination and commitment across governments, the private sector, market operators, regulators and communities.

All these stakeholder groups must increase efforts to inform the community about the challenges, opportunities and costs of the transition. We must be honest about the likely impact on bills over the short- to-medium-term to reduce bill shock. Energy retailers are the highest profile players in the supply chain as issuers of energy bills, yet as we know, the composition of charges belong to many across the chain, from governments and regulators, to transmission providers. We must consider what levers are available to ease cost inputs right across energy bills, while implementing additional support for those in our community least able to pay.

Which brings me to what I believe are the **six** immediate challenges we must address to enable us to get where we need to be by 2030, in order to unlock the benefits of the transition.

First, we must heed the lessons from the June NEM crisis. Ultimately, we were able to navigate this extraordinarily challenging time and keep the lights on for customers, and there are some important lessons to take. We must maintain reliability of our existing power system, while we build out our new, low-emissions system. Over the next few years, we will not be able to meet the needs of customers reliably and affordably without existing generation performing well.

Coal still fuels around 65 per cent of electricity, having reduced from 75 per cent of total supply over the last four years. Origin was not immune from the coal supply challenges in June, threatening our ability to run Eraring Power Station. Our teams worked incredibly hard to diversify Eraring's coal supply and increase rail deliveries to ensure it could continue to provide reliable power. It's worth noting that we could only achieve this through working collaboratively with coal suppliers, rail network operators and governments.

The NEM crisis also drove home the important role gas plays – and will continue to play for some time – in our energy system, particularly in providing reliable power through gas-fired power stations, and in 'firming' intermittent renewable energy supply. Gas peakers stepped in to fill the void left by coal plant outages in June, and without them the lights would likely have gone out.

As we look ahead to more renewables entering the system, and the likelihood of further reliability challenges for the ageing coal fleet, firming technologies including storage, pumped hydro and gas peakers will play a critical role as they can step in quickly when the market needs more supply. We continue to support the establishment of a capacity mechanism – which is needed as a matter of urgency – to drive new investment in back up, or firming, generation. It is an important policy to underpin reliability of the system by rewarding the availability of new dispatchable capacity.

Secondly, we must execute projects with greater urgency. A great deal has happened in 2022, with 8 GW of accelerated coal closures announced, including Eraring. When you add in state government policy announcements, that is likely to bring forward a further 9 GW of closures by 2035 (7.8GW QLD + 1.2GW VIC).

Against this backdrop, I'd argue that we're still not moving with enough urgency to build the replacement infrastructure needed within the next seven years to manage coal closures and achieve the nation's objective of 82 per cent renewables by 2030. As each day passes, not only does the urgency and complexity of the challenge increase, so too does the cost.

We need to deliver utility scale renewables faster than we've ever done before. The NEM currently has 3 GW of renewable capacity slated to come online. This is good but we'll need much more – an expected 28 GW by 2030.

Origin sees a multi-gigawatt opportunity to grow renewables and storage in our portfolio over the coming years. We are progressing plans for a 700 MW-battery on the Eraring site and have acquired around 1.6 GW of solar development projects. Our aim is to grow renewables and storage capacity within our generation portfolio to 4 GW by 2030.

Firming too, needs to be built at pace. Of the 15 GW of firming needed by 2030, only 4 GW is slated to come online, and 2 GW of that is facing delay.

In transmission, major projects covering 10,000km need to be built as quickly as possible to connect the new renewable energy supply and storage to the grid.

In Origin's experience, there is no shortage of global capital keen to invest in Australia's energy transition. This is a fortunate position to be in, and is evidenced by the recent indicative, conditional and non-binding bid by Brookfield and EIG to acquire Origin, and Brookfield's slated ambition to invest $20 billion in delivering the transition in Australia out to 2030. This is one example, but there are many global energy companies and funds with deep pockets keen to play a bigger role in our transition.

Intent is one thing, but what practical things can be done to speed up execution? Streamlining approvals and better coordination of community consultation, particularly around Renewable Energy Zones where there are likely to be multiple infrastructure projects across renewables, batteries and transmission within quick succession, is one way. It is clearly better for the community to hear a single, coordinated narrative around the transition and impacts on their community, and its more time and cost efficient for multiple projects.

With access to labour another major challenge, we will inevitably need to tap the global market for highly-skilled workers and governments could support this effort.

At Origin, we are also looking at longer-term, partnership agreements with contractors, so rather than contracting on a per-project basis, we partner to deliver a suite of renewables or battery developments over several years, enabling efficiencies in planning, resourcing, supply chain and logistics. The real key is we need industry, regulators and governments actively working together towards common goals and timeframes.

Third, we must actively manage project delivery risks. Despite our best efforts to unblock processes and accelerate execution, project delays are likely, given the scale of the infrastructure challenge. History tells us that infrastructure projects in Australia take longer, and cost more, than planned. Most recently, Snowy 2.0 has been delayed, and its overall project costs increased and the EnergyConnect transmission project between South Australia and NSW is also delayed by a year.

As a result, careful consideration must be given to policies that can help manage the final timeline for coal closures. The reality is that policy support to

date has been consistently provided to introduce new renewables and low emissions energy supply, and it is now the time to refocus effort and support for an orderly transition away from coal.

Coal closure timeframes have accelerated this year with some 17 GW expected to exit the market by 2035, which is important to achieve the nation's emissions targets, however consideration must be given to the cumulative impact of these closures on the market alongside the prospect of delays to new infrastructure coming online. There may be a requirement to delay the exit of some of these coal units, and only for as long as needed, to maintain the security and reliability of the NEM. These policies will need to be flexible, with consideration given to commercial factors like compensation for costs incurred in running uneconomic plants, as well as the need to retain coal plant workers, secure coal supply contracts, and many other related matters.

Fourth, we must not ignore the demand side. When it comes to the transition, we need to be using every tool we have to reduce emissions, maintain reliability and manage costs, and the supply side is only part of the equation. Harnessing the flexibility of demand-side management has an important role to play and this is currently an untapped opportunity.

Many large energy users are already familiar with the value they can realise from demand management and some participate in lucrative programs, reducing their demand to help manage peak events in the NEM. But more can be done on a day-to-day basis to balance supply and demand efficiently, while unlocking savings for customers and encouraging more renewables into the system. This also has the potential to help us avoid investment in unnecessary centralised infrastructure.

At Origin, we run one of the largest virtual power plants in the market with around 300 MW under management and growing fast. Some 120,000 devices are already connected and being controlled and managed in real time using AI. This is already bigger than a unit at a gas-fired peaking power plant, and as the VPP scales, it has the potential to alleviate pressure on the grid during peak times. The VPP allows for the more effective management of demand in real time by shifting energy use into periods where renewable output is abundant, and energy costs cheaper.

Origin has also been leading the way in demand management for the mass market. Our Spike program, which connects to our virtual power plant, is a fun and easy gamified platform that rewards customers for reducing their energy use during 'Spike Hours'. We've had great success with this program to date, and it can play a role in allowing smarter, more efficient use of all the energy capacity that sits across distributed assets in people's homes.

Fifth, achieving emissions targets will come at a cost and this cost must be shared, with support for the vulnerable. In the recent Federal Budget, the government advised that electricity prices, which are set by the regulators (AER and ESC), had increased 20 per cent in the current financial year (FY2023). Prices are projected to increase by a further 30 per cent next financial year (FY2024), driven by higher wholesale energy prices that have occurred from June this year and are yet to be recovered.

This will be difficult for many customers, particularly given other cost of living pressures. For example, interest rate increases since May have driven the payments on a $750,000 mortgage up by more than $1,100 per month.

And, the investment needed in new energy infrastructure will place further upwards pressure on bills between now and 2030, notwithstanding the benefits it will deliver. That $76 billion in investment to deliver the transition that I mentioned earlier, needs to be paid for.

It's our core belief at Origin that the decarbonisation of energy will be good for customers. It will drive an influx of cheaper, cleaner renewable energy and storage, and – over time – this will place downward pressure on wholesale prices. It will also be a more democratised energy system providing far greater opportunity for people to actively engage with their energy choices and manage their costs.

However, we must recognise there will be limits to the magnitude of price increases that the community can and will absorb on the premise that it will result in cheaper and cleaner energy over time. To avoid losing community support, we need greater coordination and collaboration between retailers, transmission and distribution companies, regulators and advocacy groups, and state and federal governments. We must:

- Find equitable methods to share the costs of the transition between all parts of the energy value chain, including governments and maintaining a healthy and competitive market. We must not forget that recent high wholesale energy prices resulted in seven smaller energy retailers failing through an inability to recover higher costs;
- Put in place stronger support frameworks for vulnerable members of our community, and I recognise the significant work the AER and the industry are already doing here; and,
- Have an honest conversation with the community about the ambition and targets we're aiming to achieve, and the associated cost of that scale and pace of change.

Lastly, we need to acknowledge and support the continuing role of gas. It is indisputable that gas will continue to play a critical role in the energy system

for some time.

Gas peaking plants will underpin reliable energy supply, in combination with other firming technologies like storage and pumped hydro, given their ability to supply the market over long-durations when needed – days and weeks, versus the hours of supply from a battery or pumped hydro.

Gas remains a major source of energy for heating homes in colder parts of Australia, and it will inevitably take time for these households to switch out gas. Gas is also critical for large businesses, and while those sectors that can electrify will, in many other cases a viable alternative to gas isn't yet available.

Today, our gas market is facing significant challenges. Globally gas supply remains tight, and it will take time for new supply to come online to address this imbalance. Commodity prices remain high, and domestic prices have risen compared to last year, although to a much lesser extent than we are seeing in overseas markets. While spot prices in Australia remain well below international export prices, we're acutely aware of the pressure higher gas prices place on large gas users. Origin is also exposed to these challenges as a large buyer of gas to support the needs of our customers.

To solve gas challenges on the east coast of Australia, it remains important to diversify supply beyond the existing sources. Given the lag in any new supply coming online, we need to take steps now to encourage new sources of supply near southern markets, where the traditional fields are in decline and most gas demand exists.

Conclusion

Make no mistake, I am excited about the energy transition and the benefits it will ultimately deliver for customers and the planet.

However, I don't believe it's helpful to underestimate the challenges ahead as it's only by facing into them that we can find solutions. It is a truly staggering task to achieve those 2030 targets, and we must act with more urgency, as each month that passes, makes the challenge harder with the propensity for adding costs.

We must never forget who we serve and our central objective of delivering reliable, affordable and cleaner energy for customers. We must acknowledge the cost burden of the investment required. And, we must shield the most vulnerable who can least afford to pay.

This must be done while maintaining an honest dialogue with the community that amounts to much more than virtue signalling about achieving emissions

reduction. The community won't congratulate us for that if we deliver poor reliability outcomes or unsustainable price increases on the way through.

I fundamentally believe this is one of our biggest risks, and we simply can't afford to lose community support, or we risk derailing the transition – the very thing that will put us on a pathway to a cleaner, smarter and lower cost energy system that benefits all.

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Next Article

Due diligence status and exclusivity extension

Origin Energy Limited (Origin) refers to its announcement on 10 November 2022 advising the receipt of an indicative, conditional and non-binding proposal from a Consortium comprising Brookfield Asset Management Inc., together with its affiliates and their managed funds (Brookfield), and MidOcean Energy (MidOcean), an LNG company formed and managed by EIG, to acquire all the issued shares in Origin by way of a scheme of arrangement at a price of $9.00 cash per share (Indicative Proposal).

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Where all good change starts

We acknowledge the Traditional Owners of the land where we work and live. We pay our respects to Elders past, present and emerging. We celebrate the stories, culture and traditions of Aboriginal and Torres Strait Islander Elders of all communities who also work and live on this land.