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# **SPONSOR** DIRECTORY



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# CHAIR'S MESSAGE



Welcome to Partnerships 2023 - I am delighted you can join us.

For more than 15 years, Infrastructure Partnership Australia's *Partnerships* conference has been an important annual milestone for our industry. It serves as an opportunity for us to come together, as an industry, to take stock over the last 12 months and put in place the building blocks for success over the coming 12 months and beyond.

Since last year's conference in Sydney, there have been a number of state elections, including a change in the NSW Government, as well as several new priorities and agendas for the infrastructure sector at a state, territory, and Federal level.

Amidst this significant change, our industry continued to grapple with formidable challenges including economic uncertainty, geopolitical instability, and supply chain insecurity. These challenges have been compounded by the inflationary pressures major governments around the globe are struggling to reel in.

Closer to home, pipeline uncertainty ranks highly among the biggest challenges facing our members, with several government reviews into the infrastructure pipeline still impending. We look forward to the certainty the findings will bring for our members and your clients.

At the same time, the industry is having a watershed moment with the transition to renewable energy ramping up at home and abroad. To meet the Albanese Government's legislated emissions reduction target as a nation, we need to put our best foot forward in the growing global competition for resources and skilled workers.

These are key themes that some of Australia's most prominent and well-respected leaders across the political, public, and business sectors will deliberate today.

The Treasurer of Victoria, Tim Pallas MP, will open our conference today with an address on the Victorian economy and infrastructure pipeline.

Infrastructure Partnerships Australia, Chief Executive, Adrian Dwyer will host Australia's former chief scientist Dr Alan Finkel AC, deriving insights on the evolving technological environment supporting Australia's energy transition.

The conversation will continue during our annual Respected Leaders' Panel featuring Infrastructure Victoria Chair Jim Miller, Australian Energy Regulator Chair Clare Savage and Productivity Commission Chair Michael Brennan, moderated by Macquarie Capital's Executive Director and Global Head of Private Capital Markets, Joanne Spillane.

Later the Victorian Deputy Premier, Minister for Trasport and Infrastructure and Minister for the Suburban Rail Loop, the Hon Jacinta Allan MP, will discuss the state's current transport program.

Prominent leaders across infrastructure, energy, investment, and technology will continue to add their voice to the conversation over the course of the day.

I hope today serves as a reminder of the depth of expertise and experience we have as an industry to not only stay the course in the face of challenges, but to capitalise on the opportunities to deliver a pipeline that benefits all Australians.

Thank you to all our sponsors, speakers, and contributors for ensuring this year's event is yet another success, and once again thank you for joining us.

Yours sincerely,

Kod Ellips

Sir Rod Eddington AO Chair, Infrastructure Partnerships Australia





# **CLEAN ELECTRIFICATION** How Australia can unleash its renewable energy potential



# Electrification is a critical piece of Australia's decarbonisation puzzle.

With the phaseout of the country's fossil fuel capacity expected to accelerate, a significant share of new energy production is shifting to the micro-level, particularly towards households.<sup>1</sup>

"Australia is rapidly transitioning away from fossil fuels, and expectedly, this is throwing up all kinds of challenges," says Danish Aleemullah, Division Director, Infrastructure and Energy at Macquarie Capital.

"Even though Australia has abundant renewable energy resources, at the micro level<sup>2</sup> we still need to act fast – and in multiple ways – if we're to meet our goal of net zero emissions by 2050."

#### Moving to greener energy sources

Jessica Edwards, Associate Director in Macquarie Capital's Infrastructure and Energy team, says that as fossil fuels are phased out, electrification is becoming an integral part of Australia's decarbonisation equation. "Australia still relies on fossil fuels to meet most of its electricity demands,<sup>3</sup> but the message is clear: to reach our national decarbonisation goals, this will need to end sooner rather than later," she says.

Over the past couple of years, Australia's energy companies have closed – or announced the accelerated closure of – some of the country's largest coal-fired power plants.<sup>4</sup> While some of these decisions have become the subject of political discussion, none were too surprising to those in the sector.

- 1. BloombergNEF Datasets, 'Installed capacity database': <u>https://www.bnef.</u> com/interactive-datasets/2d5d59acd9000010?data-hub=7
- 2. Our World in Data, 'Annual Change in Renewable Energy Generation', 2022: https://ourworldindata.org/grapher/annual-change-renewables
- 3. Energy.gov.au, Australian Electricity Generation, Fuel Mix: <u>https://www.energy.gov.au/data/australian-electricity-generation-fuel-mix#</u>
- Nikkei Asia, 'Australia Hasten Coal Plant Closures to Catch Up on Climate': <u>https://asia.nikkei.com/Spotlight/Environment/Climate-Change/Australia-hastens-coal-plantclosures-to-catch-up-on-climate</u>

# The challenges Australia needs to (urgently) address

The early shutdown of coal-fired power plants may mean fewer coal-based emissions, but it presents some serious challenges in relation to energy supply. While investors may be reluctant to support coal, the reality is that it's still used to generate much of Australia's energy needs.

"We need to roughly triple Australia's renewable energy generation over the next decade to account for these closures," Edwards says.

Although large-scale hydro, wind, and solar projects – as well as large batteries – must be part of the solution, they can't be the only ones, especially not in the short term.

"Developing and building a reasonable-sized wind or solar project – something, for example, that could produce 400 MW – generally requires a three-to-five-year timeframe. Planning and permission alone usually take around 18 months to complete," Edwards says.

"There are a lot of projects in this phase of development at the moment, but not many under construction," she continues. "These assets also need to be supported by adequate transmission infrastructure and an appropriate portfolio of dispatchable energy assets – for example, grid scale batteries and pumped hydro – both of which are lagging in development."

# The micro matters

The good news is that at least part of Australia's goals can be achieved without large-scale grid-connected projects. Instead, the grid can be supported by shifting energy production from large scale to small scale, with behind the meter assets in homes and businesses doing much of the heavy lifting.



"Australians have shown an enormous appetite for renewable energy at the individual level," Aleemullah says, pointing to the fact that almost a third of households now have a solar energy system.<sup>5</sup> "We can take this even further and transition to the home of the future already," he adds.

The next step is to encourage more households to adopt solar, Aleemullah says, as well as household batteries, and an electric vehicle – even with recent spectacular growth, electric vehicles still only account for around 7 per cent of all new car sales, meaning there's plenty of room for growth.<sup>6</sup> This would allow Australians to generate their own electricity and feed it back into the grid, either individually or as part of a virtual power plant (VPP). This setup could help alleviate the network strain and technical issues the grid is currently facing (and likely continue to face) as more renewables come onstream.



"Big batteries get all the publicity, but there is a real place for small batteries and small-scale solutions to Australia's energy transition," Aleemullah says. "It's already happening right now. More than two thirds of the solar panels installed in Australia as of last year, were installed on the roofs of homes and commercial buildings.<sup>7</sup>

"The technology exists, and Australian consumers want to be part of the solution. We just need the software and policy settings to encourage greater adoption."

- Roy Morgan Research, 'Solar Energy Systems on Households Have Doubled Since 2018 – Now at Nearly a Third of All Households (32.3%)': <u>https://www. roymorgan.com/findings/9091-solar-energy-systems-on-households-morethan-double-since-2018-now-at-nearly-a-third-of-all-households</u>
- 6. CarExpert, 'Australia's 2023 electric car sales by make, model and region' https://www.carexpert.com.au/car-news/australias-2023-electric-car-sales-bymake-model-and-region
- BloombergNEF Datasets, 'Capacity (solar short term forecast)': <u>https://</u> www.bnef.com/interactive-datasets/2d5d59acd9000010?datahub=7&tab=Capacity%20(solar%20short%20term%20forecast)

# The longer timeframe

The impetus for change is highlighted by Clean Energy Council estimates that the pace of deployment for new large-scale projects must double if Australia is to meet the government target of 82 per cent renewable generation by 2030.<sup>8</sup>

Though speeding up development timelines will encourage greater development of large-scale storage projects, there are other hurdles that need to be overcome, Edwards points out, including some unique to Australia.

"The well-publicised supply chain issues that have affected world trade hit us harder than many countries. We're a small part of the global market, and we currently lack the local manufacturing to build our own parts," Edwards says. "Construction costs are also at an all-time high which challenges the economics of projects."

The distances involved in Australia's network, and the interconnected nature of the network itself, also make it complicated and expensive to 'plug in' a new asset once built. "Connection of new assets is becoming more complicated and costly and is more frequently becoming dependent on completion of government-led upgrades to the transmission systems."



Grid-scale dispatchable energy resources, such as mediumduration batteries and pumped hydro, are also lagging in development but will be critical in meeting Australia's decarbonisation goals.<sup>9</sup>

These assets provide energy for extended hydroperiods (four hours plus) when the wind isn't blowing or the sun isn't shining. Post 2030, when a significant amount of coal generation capacity will have come offline, this infrastructure will be critical to the security of energy supply and needs to be planned for now.

- Clean Energy Council, 'Clean Energy Report 2023': <u>https://www.</u> cleanenergycouncil.org.au/news/australias-big-clean-energy-build-hits-recordhighs-clean-energy-australia-report
- 9. IEA, 'Australia 2023', 2023: https://www.iea.org/reports/australia-2023

# A need for government support

Overcoming these challenges will help Australia scale electrification and fill the void left by the decommissioning of coal power plants. It requires, however, governments to step in and play a direct role in facilitating and encouraging take-up at both the macro and micro levels, Aleemullah says. The latter, for example, has seen success from financial incentives. "Australians have generally done a good job of installing rooftop solar, encouraged by government rebates, with which there's a direct correlation," he says.

In 2019, when Queensland's government offered generous grants and interest-free loans for switching to solar, installation almost trebled. In 2020, when these measures were removed, installation fell below 2018 levels.<sup>10</sup>



Similar patterns emerged with battery installation. In South Australia, the state government offered a \$A6,000 subsidy for such installations in 2020 before progressively reducing this to \$A2,000 by early 2022. As this happened, battery installations in the state fell by 55 per cent.<sup>11</sup>

"If this transition is to succeed, we need support from governments and government agencies through incentives, the formation of new markets, and clearer revenue streams for the services that energy assets can provide," Aleemullah says. "We also need to address some of the real underlying issues, like workforce skills and barriers to entry.<sup>12</sup>

"More than anything, however, we need a coordinated approach between the state governments and the Commonwealth with energy market participants and investors. Otherwise, innovation may be slowed at the micro-level and infrastructure projects will face complexity as they deal with the challenges of development."

Aleemullah says there is a real opportunity across Australia to focus on developing initiatives that support the build-out of gridscale medium and long duration storage assets. However, unlike wind and solar farms, these assets can be more challenging for private capital as they require long lead times and come with development risks and higher costs.

For this reason, encouraging private investment requires providing some level of certainty around revenue. By providing supporting mechanisms, such as capacity payments or downside revenue protections, governments can help firm a project's development now rather than in five to ten years' time.

- 10. Australian Energy Council, 'Solar Report', January 2022: <u>https://www.energycouncil.com.au/media/5wkkaxts/australian-energy-council-solar-report\_jan-2022.pdf</u>
- 11. Ibid, p. 6.
- Briggs C, Atherton A, Gill J, Langdon R, Rutovitz J, Nagrath K, 'Building a 'Fair and Fast' energy transition? Renewable energy employment, skill shortages and social licence in regional areas', Renewable and Sustainable Energy Transition Vol 2, Elsevier 2022: <u>https://www.sciencedirect.com/science/article/ pii/S2667095X2200023X</u>

### Opportunities on the horizon

Edwards points to Australia's renewable energy zones (REZs) as an example of the type of government initiative that should help encourage the investment needed to meet its targets.

Up to 41 sites in eastern Australia were identified as potential REZs, with state governments then committing to developing them (the NSW government has pledged to develop five and Victoria six).<sup>13</sup>

The Australian Energy Market Operator (AEMO) describes these as 'high resource areas where clusters of large-scale renewable energy projects can be developed using economies of scale'.<sup>14</sup>

This means that they are places close to existing transmission lines, where the sun regularly shines, or the wind regularly blows. In these areas, state governments and the Commonwealth have pledged to create certainty for investors, project developers and communities through strategic land usage, collaboration and consultation.

"Macquarie has been actively advising on projects in these renewable zones," Edwards says. "The way they're set up means we can understand the risks, develop a business plan and expedite development so that a project comes online quicker."

- Australian Energy Market Operator, Appendix 3 to 2022 ISP for the National Electricity Market, June 2022: <u>https://aemo.com.au/-/media/files/major-</u> <u>publications/isp/2022/2022-documents/a3-renewable-energy-zones.</u> <u>pdf?la=en</u>
- Infrastructure Australia, 'National Electricity Market: Renewable Energy Zone Expansions': <u>https://www.infrastructureaustralia.gov.au/map/nationalelectricity-market-renewable-energy-zone-expansions</u>

# \_\_Transurban

# CONNECTING FREIGHT WITH ITS FUTURE POTENTIAL

Transurban's automated truck trial

Jeremy Nassau | Head of Future Transport and Partnerships, Transurban



# Infrastructure to vehicle (I2V) connectivity is showing promise in supporting the future transition to connected and automated vehicle operations on Australian roads.

With road freight projected to grow steadily in coming decades, connected and autonomous trucks have the potential to transform the freight industry, helping to move more goods, more quickly, between businesses and consumers.

Transurban's Australian-first trial tested the capability of a highly automated truck in live traffic conditions on major Melbourne motorways – CityLink and the Monash Freeway – over seven nights in late 2022.

The trial was run with the Industrial Technology Research Institute (ITRI), the truck's Taiwan-based automated driving system (ADS) developer and in collaboration with government and industry. (An ADS is the system that operates an automated vehicle – in this case, the trial truck.) The trial measured how well road-infrastructure data helped the truck's ADS understand road and traffic conditions beyond the reach of its own sensor data.

Transurban roads, including CityLink, are among the most technologically sophisticated roads in the world, kitted out with embedded technology such as CCTV cameras, automatic incident detection systems and smart sensors that monitor for debris, stopped vehicles and other traffic events. And while the widespread adoption of connected and automated vehicles (CAVs) appears to be a way off, our trial showed that road infrastructure data can enhance automated vehicle capability and performance. For example, sharing road data effectively enabled the truck to 'see' around corners. It also negated the need to 'train' the truck's ADS on reading LED speed-limit signage.

Overall, the results showed that well-instrumented, managed motorways with mid-to-high freight volumes would be ideal candidates for early automated truck deployments. These roadways have enough freight demand to attract automated truck operators and enough instrumentation to generate infrastructure data to support the automated trucks.

Another technology innovation we trialled was creating a dynamic dedicated lane for the truck. The truck's lane was automatically and progressively closed to other traffic as the truck travelled along the road. This minimised disruptions to other road users and safely delineated the automated truck from live traffic. We found this approach worked well, with excellent compliance from other road users.



Specially trained truck drivers were aboard the truck as it operated, ready to take control if needed. Our expert drivers' feedback during training also improved the truck's ADS configuration and performance. We expect freight drivers will continue to play key roles in the future automation of freight.



In total, the truck drove more than 370 kilometres with its ADS engaged, successfully adjusting its own speed, staying inside its lane and changing lanes as needed throughout.

These findings are now helping Transurban, and our government and industry partners, to better understand how roads and roadside technology can be leveraged to support automated trucks joining the mix of vehicles already moving freight on our roads. We plan to build on the trial by partnering with Plus – a global Silicon Valley-based autonomous driving software company – to explore how its Level 4 autonomous driving technology, combined with our smart road infrastructure, could help make trucking safer, more efficient and sustainable in Australia.

Today we're also looking at how our road infrastructure can support the next generation of CAVs in the United States. Transurban operates multiple Express Lanes in the Greater Washington Area, and we've partnered with the Virginia Tech Transportation Institute, Virginia Department of Transportation and global auto manufacturers to deliver this new I2V trial.

Our technology trials are an early step in the transition to automated travel, with significant work yet to be done across all aspects of road transport. While most automotive manufacturers are rapidly transitioning to EVs, the path to autonomous vehicle technology appears to have slowed as manufacturers, technology companies and governments tackle technical and regulatory hurdles. Most experts agree that CAVs offer huge potential to improve safety, traffic flow and transport accessibility. But mass adoption will require road infrastructure that is equally sophisticated and fit for purpose. We continue to partner with government and industry bodies on trials to ensure our infrastructure will be ready for this technology.

Our roads already use world-leading technology that is designed to enhance road efficiency, travel reliability and road-user and worker safety.

For example, our Transurban Queensland Network Operations Centre uses artificial intelligence and machine learning technology to keep traffic moving. The centre's incident response system is learning, via these state-of-the-art capabilities, to spot and respond to incidents faster over time.

The control centre is the hub for all six Transurban-operated roads, and this leading technology is integral to improving our incident response times and minimising disruptions for road users on our roads and across the wider Brisbane road network.

Captured data helps us detect patterns in road-user behaviour and implement safety solutions that reduce incident risk and also reduce potential travel delays.



Ultimately, our CAV trial and operations data will continue to support Australia's transition to connected and autonomous driving, providing insights focused on enhancing safety, capability, capacity and regulatory requirements.

Learn more about our automated truck trial and download the report here: <u>Trials | Transurban CAV trials</u>.



# DECONSTRUCTING OUR SKILLS CHALLENGE

Why the skills shortage in construction demands a fresh approach to meet the demands of the future

Joe Barr | CEO, John Holland



In the construction industry, we've always prided ourselves on adapting and responding to the challenges of the day. Whether it's delivering nation-building projects, responding to major disasters and global events or riding the economic waves – the answer has been to roll up our sleeves and do what is needed.

It seems we're at one of those crossroads again. Skill shortages are nothing new in our industry but the circumstances we find ourselves in today are, in my mind, unprecedented. They require a more considered and nuanced response than the usual calls about encouraging STEM in schools or adjusting our immigration policies. While these things are important, we need to dig deeper and address the cultural barriers that exist within our industry.

Many of those barriers – the hours we work, the expectations on our people, our gender mix, our approach to wellbeing and employee support – are deeply entrenched. And in the cut and thrust of winning and delivering work, it's all too easy to consign them to the 'too-hard basket'.

To put the skills crisis into real world context, Infrastructure Australia tells us that labour demand for infrastructure projects is expected to peak in the second half of this year, with more than 300,000 workers required.

At the same time, the construction industry faces a shortfall of more than 110,000 workers – meaning a third of estimated demand won't be met.

Our skills gap will be further exacerbated by the changing infrastructure pipeline as the focus on renewable energy increases.

We'll need to reskill people and transition them away from traditional construction methods to those of the future. We'll need to find new people and train them. And we'll need to think outside the box on how we attract and retain a workforce set to have a growing presence in the regions in the coming years.

Right now, our industry is failing to attract – and importantly – keep enough people.

There's a lot at play here, and culture is one of our biggest barriers.

### Ways of working - let's do better

If you asked most people within the construction industry to describe the hours and conditions on a typical construction site, they would still say 'inflexible.'

"You'll have a 6am pre-start meeting – followed by a 12-hour workday – and you'll do this all week without complaint because that's the job." What's frustrating is that we know the old paradigm isn't working for any of us. It's certainly not the image we want to communicate to the next generation of construction professionals – because they simply won't put up with it.

In just five years, John Holland is forecast to see an explosion in the number of Gen Z workers, in the order of about 170%. By 2028, Gen Z is predicted to make up nearly a third of our workforce, or 1,100 people.

A recent study from HR platform Employment Hero found that while pay packets are important to Gen Z people, their career choices are dictated by critical factors like workplace diversity and culture, relationships, and their mental health and wellbeing.

Crucially, the research also found younger workers across all industries and their employers have 'misaligned expectations' around flexibility, money, and support – leading to dissatisfied employees and high turnover.

We can't afford to have that outcome in construction.

Employee satisfaction must be high. Our workplaces must be flexible and family-friendly. Managers need to foster growth and ensure people can progress in their careers. We need to offer comprehensive mental health support at every stage, and create environments where people feel empowered to be their true selves, each and every day.

These need to be bare minimums - not "nice to haves."

If the construction industry is to truly change its colours, the time for change is upon us.

### Widening the pool for talent

Women remain woefully underrepresented in our industry, making up around 12 per cent nationally. We've allowed the stereotypes to permeate for far too long, instead of shattering them.

I see us all moving in the right direction here. We've got the targets, we've got the policies and programs, we've got the agreement we need to do more, and we've got the concerted efforts.

But the simple truth is, change is not happening fast enough. The one thing I continue to hear, whether it's from the female leaders at John Holland, graduates, or our up-and-coming junior site engineers – it is because as an industry we're not prepared to do the hard yards of challenging the way we work, questioning the way we've always done things, and being braver in our decisions we make to promote and sponsor our people.

The difficulties in attracting women to join the construction industry will continue if women already working in the industry are not collectively satisfied or thriving. The same can be said about people who are gender diverse, or who come from different cultural and religious backgrounds.

John Holland recently extended its three-year partnership with CareerSeekers to support refugees and asylum seekers into employment, having just placed our one hundredth



CareerSeeker. That number may seem like small change in the context of the skills challenge we're facing, but for us it's a case of creating awareness, hope and opportunity to grow a more diverse workforce.

The truth is that making improvements to our culture isn't just good for some groups – it's good for everyone. When we look at exit data, we see trends that tell us that when a number of women all decide to leave in close proximity, broader attrition will occur shortly after.

Flex is for everyone. Clearer paths to promotion are for everyone. A safe and healthy workplace is for everyone. A supportive leader is for everyone. Interesting and challenging projects are for everyone. A purpose that gets us up everyday is for everyone. A focus on climate and the bigger picture is for everyone. Not tolerating harassment, discrimination or poor behaviour is for everyone. Being willing to push ourselves and challenge the status quo is for everyone.

### So where to from here?

As contractors, let's stop talking about the idea of disruption – and get on and make it happen.

The time has come for our industry to push boundaries, break down barriers, and make meaningful change.

Let's not waste a minute.

Joe Barr is the CEO of John Holland



# **TRANSITION, RISK & NET ZERO**



Meeting Australia's net-zero targets will require more than the best intentions, according to Tsen Wong, ANZ's Head of Energy Transition, Resources, Energy & Infrastructure. It will require action – and investing in energy efficiency is an effective way for businesses to do their part.

Speaking on an ANZ Institutional On Air podcast with Holly Taylor, Head of Strategy and Partnerships at Australia's Energy Efficiency Council, Wong said the shift to a low-carbon economy in the coming decades would require a fundamental reshaping of the energy system, and business has an important role to play.

"From a timeline perspective – and there's actually not a lot of time left when you think about it, we are in 2023 – [the world has] hard targets to meet to keep to a maximum warming ambition of 1.5 degrees," Wong said.

"It's not a case of 'let's just hope for the best at 2050'; you actually have to do things out to 2030, 2040. When you think about all the things we have to do... we need to think about the solutions that are relevant at each stage of the transition."

Taylor and Wong were speaking after the release of Putting Energy Efficiency to Work, a report that finds energy efficiency in Australia has not reached its potential as a method for addressing energy concerns. It also contains modelling suggesting energy efficiency is a critical tool to help businesses lower their emissions.

#### Huge role

Incoming sustainability rules – including changes to the safeguard mechanism – means emissions, and how they can be reduced, are front of mind for many large businesses in Australia.

Modelling discussed in Putting Energy Efficiency to Work suggests energy efficiency and the additional efficiencies that come from electrification can play a significant role in this, Wong said on the podcast.

"The modelling suggests it's in the order of 40 per cent of Australia's total emissions reduction target out to 2050," he said.

Wong said many of ANZ's large institutional customers were well on the way in their sustainability journey, including considering how energy efficiency fits into their risk-management and sustainability strategies.

"But the value of energy efficiency is amplified because this is something businesses of all shapes and sizes can actually do and participate in," he said.



Taylor said an important finding from the report is not just what energy efficiency can do – but what would happen if nothing is done at all.

"The business-as-usual modelling has energy efficiency only playing 2.1 per cent of our emissions reductions job out to 2050," she said. "It's critical to think about how we can massively ramp up something that, in most situations, is the most costeffective thing you can do – and just get it out to businesses and households now, immediately.

"We're talking thermal performance from insulation, draft proofing. We're talking energy-efficient heat pumps. We're talking energy-efficient lighting.

"We're talking energy-efficient process improvements, from energy management systems, electrification. We're talking about changing something from a gas system to an electric system or a fuel system to an electric system."

#### Time

Wong said investment in renewables, including Australia's electricity network, would eventually help lower Australia' s emissions – but take time. Energy efficiency is more readily available and faces less immediate barriers, he said.

"We are approaching a level of technical constraint in our network," he said. "[The shift to renewables] requires a fundamental rewiring of the transmission network. Because the pipes that transport those electrons are now built for existing technologies, which is largely around centralised thermal generation.

When Australia moves to a decentralised grid, that transmission system needs rebuilding – a project with substantial scale, Wong said.

"We're talking... about 10,000 kilometres of new transmission lines," he said.

"Those issues will be dealt with, but I think that just takes time. In the meantime, I think energy efficiency plays a role in reducing emissions... while you're waiting for that next wave of renewable energy to really hit the market. It buys you time, effectively."

Taylor said the key takeaway from the report for businesses is "energy efficiency should be a part of any sensible businesses' business plan for achieving decarbonisation".

"The report is really trying to demonstrate if you're a business and you care about action on climate or you just care about saving money, roll out energy efficiency right now," she said.

The experts also touched on expected impact of the energy efficiency measures announced in the May federal budget. Listen to part two of the discussion on podcast above to find out more.

This article reflects the edited version of the conversation as it appears on the podcast, listen to the podcast by scanning the QR code below.



You can also read the ANZ and EEC report Putting Energy Efficiency to Work by scanning the QR code below.





# MORE HOME CHOICES CLOSER TO EXISTING INFRASTRUCTURE Can Meet Unmet Demand

#### Dr Jonathan Spear | Chief Executive Officer, Infrastructure Victoria



One in five Australians now live in a growth area suburb – and these areas are growing at a faster rate than other suburbs across our cities and regional capitals. In Victoria, just seven local government growth areas accounted for 50 per cent of Victoria's total population increase over the last 10 years. In NSW, growth areas in western Sydney are set to form a third CBD, the Western Sydney Aerotropolis.

Growth areas bring unique opportunities and challenges for residents, developers, planners and governments. Residents – many of them with or looking to start a family – often buy off the plan and move in before schools, public transport, community centres and hospitals are in place. Local and state governments shoulder much of the responsibility for this new infrastructure. Yet building new infrastructure in these areas can be up to four times more expensive than adapting existing infrastructure in established suburbs with capacity to support growth.

Meeting these growing infrastructure needs comes at a time when government and industry are dealing with escalating construction costs and shortages of skilled labour and materials. With competing interests and budget constraints, governments must make difficult choices on how and where to invest. Evidence-based policy advice can support better decision making. Infrastructure Victoria's latest research *Our home choices: how more housing options can make better use of Victoria's infrastructure* provides new evidence and policy options for governments to increase the number and type of quality homes being built in established suburbs. This will give households – especially those on moderate incomes – more choice. Furthermore, it will enable better use of our infrastructure.

This extensive research project included a survey of 6,000 people to better understand why they choose to live where they do, the largest study of its kind in Australia.

The research reveals an untapped market for more housing options in established suburbs. Up to one in three households said they would trade a detached house and larger land size in a growth area suburb to live in an established suburb in a medium density home, such as an apartment or townhouse, at a comparable price.

Our analysis shows that existing suburbs do not offer a choice of homes at a price that many households can afford. For a moderate-income household, purchasing a 3-bedroom house will only be possible in a small number of growth suburbs on Melbourne's fringe some 30 kilometres or more from the city centre. And it's a similar story in regional cities.

Governments can encourage more diverse housing choices in existing areas and reduce the pressure on infrastructure development in growth areas. Our research found high-rise apartments are not attractive to many people buying in greenfield areas, so increased density must come in different forms including townhouses. villa units and both low-rise and high-rise apartments. Many established suburbs can accommodate more new

#### **BEGIN NOW**

- Reform infrastructure
- contributions to send the right price signals
- Remove home subsidies that encourage greenfield choices without improving affordability
- Measure and incentivise progress towards new local housing targets

#### **DELIVER WITHIN 3 YEARS**

- Prioritise and streamline approvals for urban renewal precincts
- Develop better standards for low-rise apartments, then increase their supply by expanding use of the Residential Growth Zone
- Develop a dual occupancy and townhouse code

#### DELIVER OVER THE MEDIUM TERM

- Reform stamp duties that distort home choices
- Use government 'shared equity' schemes to encourage established suburb home ownership
- Encourage child-friendly design in new apartments

homes, but governments must pursue policies to make it easier for developers and new residents to invest in these areas.

The 10 policy options Infrastructure Victoria proposes can give communities more certainty and developers more clarity in how to deliver well-designed, higher-density homes in established suburbs. Combined, the options reduce price disincentives to buying in established suburbs, support more homes being built in these areas and increase the diversity and choice of homes, particularly three-bedroom apartments and townhouses.



Nightingale apartments, Ballarat, Victoria. Photo: wDerek Swalwell.

Planning reform has a big role to play in encouraging more affordable homes in established suburbs including local housing targets, streamlined approvals for urban renewal precincts, better standards for low-rise apartments, and rezoning more areas for homes near public transport and services. Reducing compulsory minimum car parking requirements can give homebuyers the option to choose how much onsite parking they want to pay for and increase development feasibility by lowering costs for developers.

Infrastructure contribution scheme reform is needed to better reflect the costs of building infrastructure in different areas. Development contributions can enable better accounting for the costs of building essential infrastructure when land is developed. Too often various infrastructure contribution schemes operate in isolation rather than as an overall system, curbing their potential to influence where new homes and infrastructure are built.

At present, financial incentives exist that distort home choices and favour greenfield development. Infrastructure Victoria has recommended scrapping the first home buyer grant, which adds little to improve affordability and encourages buyers to purchase in greenfield growth areas. A shared equity scheme for eligible households would deliver a better outcome for buyers and the government.

We also recommend that government remove the distortions created by stamp duty concessions and ultimately abolish stamp duties altogether, potentially by replacing them with a broadbased land tax. In doing so, other states can follow the process already started in other jurisdictions.

No single policy option will mean enough new homes will be built in established suburbs. Implementing a combination of policy options is needed if our cities are to reverse the trend towards more new homes in growth areas rather than established suburbs. But with the right policy interventions, governments can influence the quality, height and location of new homes, giving more Australians more home choices close to jobs, services and existing infrastructure, at a price more people can afford.

Visit infrastructurevictoria.com.au/project/our-home-choices to read the full report.



# INNOVATIVE PARTNERSHIPS In Health And Housing

Natasha Payze | Acting Executive Director - Infrastructure Delivery Group, Victorian Department of Treasury and Finance



Victoria continues to be a leader in major infrastructure procurement with an impressive track record of successfully delivering large and complex infrastructure projects.

The Department of Treasury and Finance (DTF) has been working with public sector delivery agencies and industry to tailor procurement approaches to the diverse characteristics and risk profiles of the State's largest infrastructure projects. Cost reimbursable contracting, where the State and the contractor collaboratively manage project risks, is being successfully used on projects where there is uncertainty as to scope and design definition, or there are unknown or unquantifiable risks and complex interfaces to be managed. This includes using the Alliance model for the North East Link freeway packages, the Managing Contractor model to upgrade operating health facilities and the Incentivised Target Cost model to deliver the Suburban Rail Loop East tunnelling packages.

The Partnerships Victoria model also remains a key feature of the suite of infrastructure procurement models available for project delivery. Experience in Victoria shows that, when used for appropriate projects, the Partnerships Victoria models provide significant benefits during procurement, delivery and once the infrastructure is operational. Private investment drives innovation, efficiencies and enhanced value through a whole-of-life lens and a greater focus on long-term service delivery and asset performance outcomes. DTF continues to adapt these models to meet the challenges and demands of the unprecedented investment pipeline, market conditions and to respond to project specific characteristics. A series of recent successful health projects including the New Footscray Hospital, Frankston Hospital redevelopment and New Melton Hospital have generated significant precinct opportunities and additional amenity beyond the base project scope. The new and innovative Partnerships Victoria Ground Lease Model (GLM) has also been used to deliver new and rejuvenated public housing. These models will continue to be adopted for the future social infrastructure pipeline.

#### New Footscray Hospital



The new Footscray Hospital will support increasing demand for health services in Melbourne's western suburbs. A unique feature of this new hospital is its central location in the inner west, close to the heart of Footscray and next door to Victoria University's Footscray Park campus. The new hospital brings together education and training partnerships between the Victorian Government and Victoria University. Victoria University will have dedicated education and research facilities at the hospital and will be linked by a public use pedestrian footbridge. The impact of these innovations delivered through a Partnerships Victoria model means the new Footscray Hospital will be a vibrant community asset that is not only a catalyst for urban regeneration of the inner west but will also help improve social and civic amenity as well as foster collaboration in education, training and research.

The new Footscray Hospital was procured as an availability PPP. In 2021, the Plenary Health consortium were awarded the contract to finance, design, construct and maintain the hospital for 25 years following construction completion. Construction is underway and the hospital is expected to open to the public in 2025.

### Frankston Hospital redevelopment

The Frankston Hospital redevelopment represents a significant health infrastructure investment in Melbourne's south-east. A unique feature is the complex brownfield nature of the site and the need to integrate the new facility effectively with the existing campus. The all-electric new facility will be a model of environmental sustainability enabling carbon neutral power use, a first for a Victorian health project. Another Victorian first relates to enhanced mechanical systems to enable 100 per cent fresh air ventilation contributing to excellent indoor environmental quality and enhanced infection control. Commercial and other value-add initiatives will activate the site and provide amenity, including a new community centre, childcare centre, rooftop helipad, food and beverage outlets, and new bus stops to improve public access.

In 2022, the Exemplar Health consortium was contracted to design, build and finance a new acute health services tower which includes 12 storeys of clinical services, a new multideck carpark and refurbish certain existing buildings, maintain the facility and provide cleaning and grounds maintenance services to the integrated site for 25 years. The project is financed by an innovative multi-tranche debt package issued as a sustainability loan, demonstrating Exemplar Health's commitment to ongoing sustainability outcomes. Construction is well underway with the new tower expected to be completed in late 2025 and the current hospital remains operational throughout construction.

# New Melton Hospital

The new Melton Hospital will support the growing communities of Caroline Springs, Rockbank, Melton, Bacchus Marsh and Gisborne. Once completed, Melton Hospital will have the capacity to treat 130,000 patients each year and see almost 60,000 patients in the emergency department. The new hospital will play a unique role in activating the Cobblebank precinct and stimulating further investment and development in the area which will assist in driving employment growth. The all-electric hospital will also support the Victorian Government's climate policy and renewable energy targets. Procurement commenced in early 2023 with the release of invitation for Expression of Interest. The hospital is being procured as an availability PPP and presents an opportunity for the private sector to partner with the State to deliver an enduring hospital. Construction is expected to commence in 2024 and be finished in 2029.

# Ground Lease Model



The Partnerships Victoria GLM has enabled the State to leverage long term institutional and private investment to regenerate aging public housing sites and create an uplift in social, affordable and market housing (in mixed tenure developments) while retaining ownership of high value public land. The Victorian Government is leveraging the design and building management capability of the private sector, at an affordable price that represents value for money to the State. By partnering with the community housing sector, the project is also able to access Federal funding options not accessible via other housing delivery approaches and social housing tenants are provided with a more complete range of tenancy management services supplying the social housing.

The GLM 1 project was the first of its kind in Australia and was structured as a hybrid availability PPP and Build to Rent project. This innovative structure allows revenues generated from market rental dwellings to offset a portion of the costs to deliver social and affordable housing outcomes. Under this structure the State makes a quarterly service payment to the successful consortium which is subject to the availability of the dwellings and achievement of a range of key performance indicators. The success of the first transaction led to a second transaction which is currently under procurement, with the outcomes to be announced later this year.

These health and housing projects are strong examples of the many successful projects delivered under the Partnerships Victoria procurement models. Partnerships Victoria models, and DTF's wider suite of procurement models available for use on major infrastructure projects in the pipeline. The models will continue to evolve in response to recent learnings and innovations, industry feedback and market conditions.



# SKILLS IN HAND Bridging The Gap To Australia's Next Infrastructure Boom

David Simpson | Chief Executive Transport, The APP Group



# Australia is in the midst of an unprecedented boom in infrastructure.

Population growth is driving demand for infrastructure across the board including housing, social infrastructure, and public transport. According to Infrastructure Australia's Infrastructure Market Capacity 2022 Report, demand for public infrastructure grew by \$15 billion in one year alone.

A strong pipeline of major infrastructure projects is essential to boosting the economy, enhancing productivity and improving the lives of communities across the country.

However, the growing need for quality infrastructure is playing out against a backdrop of climate anxiety, rising interest rates, increasing government debt, skills shortages and global geopolitical shifts and tensions.

With significant investment already starting to flow toward the renewable energy sector and to bolstering Australia's national security, the question remains — how can government and industry mobilise to meet demand?

### A significant pipeline of opportunity

In just seven years' time, the Federal Government wants Australia to be 82 per cent powered by renewable energy. This is a big ask that will require rapid transformation of where our energy is currently coming from, given only 35 per cent of our power came from renewable sources last year.

A report released by RACE for 2030, a government funded cooperative for energy research, estimated that the number of jobs required by the clean energy sector in 2030 is to increase by between 130,000 and 200,000, a sharp increase from the estimated 30,000 jobs the renewable energy industry currently demands.

Furthermore, the release of the Defence Strategic Review earlier this year signalled that significant investment will be required in order to strengthen Australia's national security and ensure future readiness in light of the most difficult strategic climate since the Second World War.

Over the next four years, the Federal Government will invest more than \$19 billion toward the immediate priorities identified in the Defence Strategic Review.

The \$300 billion allocated to the AUKUS plan for Australia to acquire and manufacture nuclear-powered submarines is anticipated to create 20,000 direct jobs over the next 30 years. This is in addition to the billions of funding allocated toward north base infrastructure and long-range strike capabilities.

With these significant pipelines of investment on the horizon, and a capable workforce needed to deliver them, government and industry need to seize every opportunity available to rapidly scale up capacity and make the most of the transferable skills at hand.

## Partnering to develop solutions

Thousands of skilled workers are needed to keep Australia's infrastructure boom booming. The workers required over the next 30 years to continue delivering the nation building transport, social infrastructure, renewable energy, and defence projects will look very different from those required over the previous decades.

Understanding the skills, training, and knowledge required will be essential to leverage the opportunities that arise in the forward pipeline of investment. I believe that there are a few ways we can achieve this.



#### Redeploy transferable skills

There is a major benefit to deploying the skills and capability currently working across major infrastructure projects.

For instance, at The APP Group, our people are helping tackle Australia's most complex projects and challenges across a range of sectors. Our engineers and technical experts have been providing Independent Certification and Verification services for many of Australia's infrastructure mega-projects such as North East Link, West Gate Tunnel, Cross River Rail, Tonkin Gap, and Sydney Metro.

We also partner with clients to provide Transport advisory and project delivery services and advice across a broad spectrum of complex city-shaping projects, such as the John Hunter Health and Innovation Precinct, Curtin University, Chadstone, Geelong Port, and the Western Renewables Link in Victoria.

There is a significant opportunity here to translate these skills and extensive capabilities over to assist with the energy transition. Given the risks inherent to major project ventures, it is imperative that clients have an independent, rigorous reporting structure in place.

On major infrastructure and heavy engineering projects, the Independent Certifier and Verifier role has been used historically and is becoming increasingly necessary in all sectors as complex financial arrangements are structured to secure a project's tenure. The demand for skilled workers is higher than supply, so it won't always be possible to employ someone new to do the work. Instead, many organisations already have access to the talent they need. Getting the best out of the current workforce will be key to fostering capacity, productivity and sustainability across the sector.

#### Enhance productivity through innovation

The challenges around Australia's ability to meet infrastructure demand will only intensify in the future. Population growth, supply chain disruptions, and new technologies have made innovation a non-negotiable to securing the delivery of major infrastructure projects.

By leveraging innovative approaches to contracting and delivery across the infrastructure lifecycle, the sector can boost productivity and drive better outcomes for the community.

The adoption of new delivery models such as Modern Methods of Construction (MMC), a new way of building that leverages modular and off-site manufacturing techniques which is gathering speed in the property and social infrastructure sectors, can be applied to projects to enable improvements in productivity, quality and safety.

By integrating innovative techniques into the lifecycle of an asset, we can yield a step-change and enable economies of scale that drive delivery success.



#### Build industry capacity and capability

The infrastructure sector relies on a range of workers and skills to deliver projects. Even despite the solutions presented above, finding the right people with the right skills will continue to be a challenge. Skilling up the next generation and attracting new workers to the sector must be part of the solution, and government and industry must work together to remove the barriers putting constraints on supply.

Ways to bridge the capacity and capability gap going forward include upskilling the current workforce, reframing the culture of the industry to retain more talent, and seeking ways to increase the talent pool through diversity and training the future workforce.

The challenges for the capability and capacity of Australia's infrastructure workforce are clear. But by acting early and by acting strategically, government and industry together can find solutions to help deliver this once in a lifetime investment pipeline in the years to come.



# RETHINKING THE WAY OUR CITY GROWS IN THE FUTURE

Maintaining World-Recognised Liveability While Managing Exponential Growth



# Few cities in the world are seeing the population growth Melbourne has enjoyed.

By the 2050s, Victoria will be home to around nine million people – the size of London today.

Melbourne has so far accommodated its growth predominantly on the outer fringe, growing outwards faster than almost any other global metropolis.

Rezoning the metropolitan fringe and peri-urban areas has created homes for hundreds of thousands of people and fulfilled their dream to live in the best city in the best state in the world.

But without a seismic shift, half of all Melburnians will be living in the outer suburbs in the next 30 years, even while the majority of jobs stay in inner or middle Melbourne.

More people will live further from employment opportunities, services, hospitals and universities – with no option but to drive. Commuters will battle longer and more frustrating journeys.

Many great cities of the world have faced similar pressures.

New York, London, Singapore and Sydney have all prioritised the growth challenge. They have approached the problem in differing ways but with one common thread – they have all invested in transport infrastructure that encourages multiple employment and economic districts.

The international experience suggests there isn't a major liveable city anywhere with a population of more than nine million focussed on a single CBD. Melbourne is not about to become the exception.

### Plan Melbourne and Big Build

Two key Victorian Government initiatives will ensure the city follows this proven strategy. One is Plan Melbourne and the other is the Big Build.

Plan Melbourne is the fundamental principle guiding the Victorian Government's metropolitan planning strategy.

It advocates a more compact city that promotes higher productivity, greater social interaction and equity, and a more sustainable urban footprint – all with the additional goal of creating a healthier community.

At its heart, it is a policy to optimise existing infrastructure, services and access to jobs. In other words, to plan smarter, rather than spread wider.

The other key strand of a more compact city with multiple employment and economic centres is the Big Build.

Big Build is a \$128 billion pipeline of transport infrastructure. It encompasses more than 165 rail and road projects including Metro Tunnel, West Gate Tunnel, North-East Link, Suburban Rail Loop, Regional Rail Revival and 110 level crossing removals.

Metro Tunnel, which opens in 2025, is a pair of nine-kilometre train tunnels with five new stations connecting train passengers across all lines to key destinations such as St Kilda Road, the Shrine of Remembrance, the University of Melbourne and worldleading research and medical facilities in Parkville for the first time.



Also opening in 2025 is the West Gate Tunnel. It will make it easier to get to the booming western suburbs by delivering an alternative to the West Gate Bridge, as well as delivering the freight industry direct freeway-quality access to the Port of Melbourne.

In Melbourne's middle suburbs, the North-East Link will deliver the missing link in the city's freeway network.

Regional Rail Revival is upgrading every regional passenger line in Victoria and the Level Crossing Removal Project has removed 72 of a planned 110 dangerous and congested level crossings. The Werribee, Frankston, Cranbourne, Pakenham and Lilydale lines will all be level-crossing free by 2030.

These major projects will boost transport connectivity. However, none on its own overcomes the geographic challenges Melbourne faces.

### Suburban Rail Loop

That's the purpose of Suburban Rail Loop, a project designed to revolutionise the public transport system and reshape the city by recalibrating how and where the city grows in the decades ahead.

Suburban Rail Loop is a 90-kilometre orbital rail line from Cheltenham in Melbourne's south-east to Werribee in the west. It will slowly reshape Melbourne from a city centred around a single CBD to a 'city of centres' – attracting more businesses and people to its stations and creating more jobs in Melbourne's middle suburbs, closer to where people live.

Around 50,000 new households and 550,000 jobs are anticipated to be accommodated in the broader areas around SRL stations by the 2050s – about the same number of jobs as in the central city today.

Work has begun on SRL East – a 35-kilometre section from Cheltenham to Box Hill.

Strategic infrastructure has enormous capacity to change a city's development patterns. It makes a particular location more attractive, catalysing urban renewal in some areas, while easing pressure in others. It intensifies development where it is needed.

That's why the Victorian Government has given the Suburban Rail Loop Authority the legislative power it needs to provide planning certainty and consistency across multiple municipalities.

It's also behind the creation of the Department of Transport and Planning.



#### A new department

Transport has always been integral to land use, and the new department is a natural evolution that brings the planning and transport functions together.

The new, integrated department is an important step in the Victorian Government's work to deliver thriving places and connected communities.

It integrates the transport portfolio with land use, planning, building and heritage, property delivery, business precincts and the Office of the Victorian Architect.

It enables the Victorian Government to better link the new precincts that will become the realisation of Big Build – and it means a more efficient way of delivering Plan Melbourne and bringing its key elements to reality.

Fundamentally, the Department of Transport and Planning's vision will deliver fairer and more equitable outcomes for all Victorians.

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# Unlocking renewable energy for Australians

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Learn more about how Macquarie Capital is supporting the transition to a greener global economy at macquarie.com

1. By deal value and/or deal count in each calendar year, based on Inspiratia, IJGlobal or Inframation league table rankings (2017-2022). 2. 'Squadron to lead Australia's energy transition', Squadron Energy, December 2022 https://www.squadronenergy.com/news/squadron-to-lead-australias-energy-transition | Image credit: Squadron Energy and Sapphire Wind Farm | None of the Macquarie Capital entities are authorised deposit-taking institutions for the purposes of the Banking Act 1959 (Commonwealth of Australia). The obligations of these entities do not represent deposits or other liabilities of Macquarie Bank Limited ABN 46 008 583 542 (MBL). Any investments are subject to investment risk including possible delays in repayment and loss of income and principal invested. MBL does not guarantee or otherwise provide assurance in respect of the obligations of these entities.



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