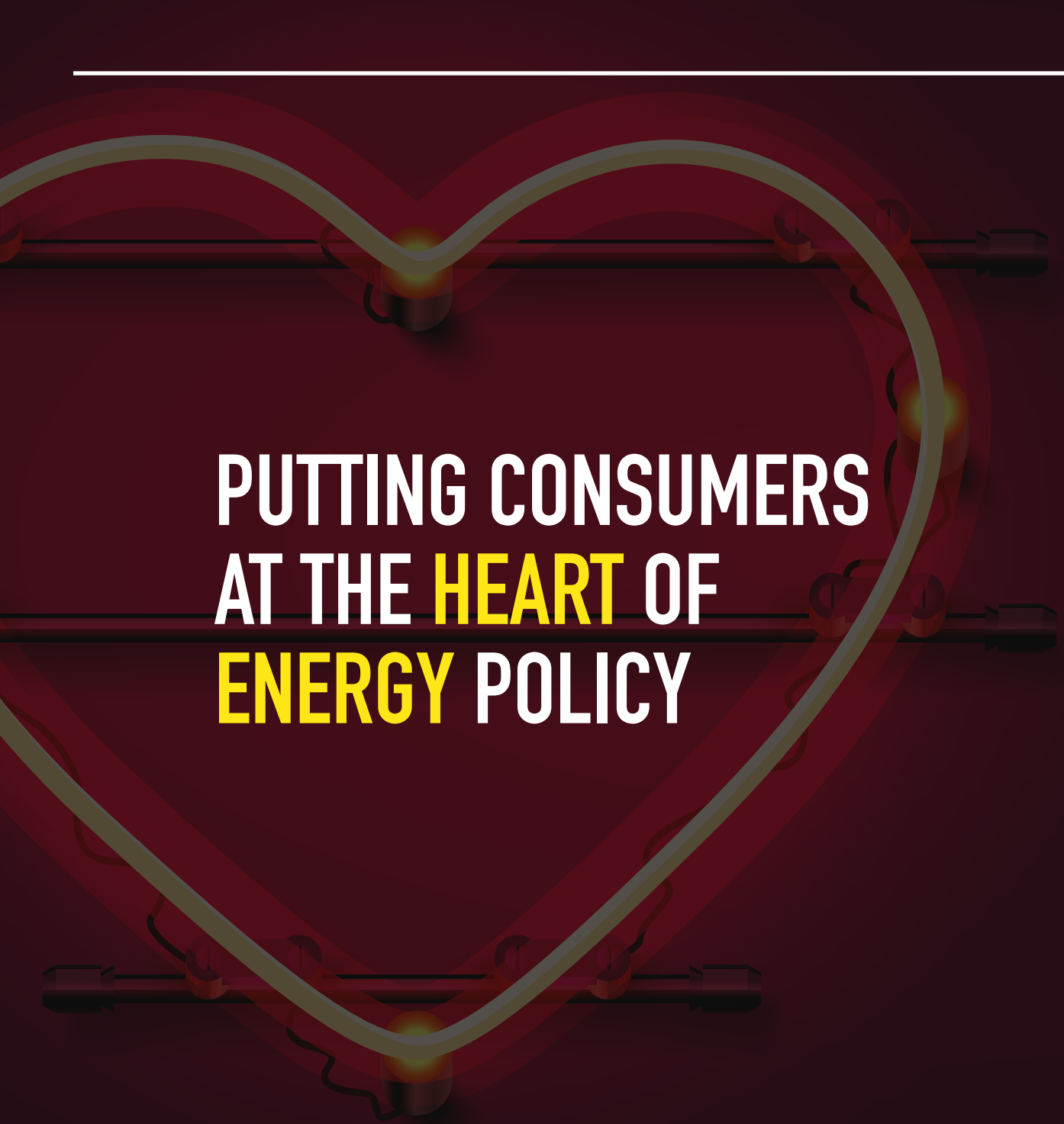

PUTTING CONSUMERS AT THE HEART OF ENERGY POLICY

In recent years, issues of the affordability and reliability of energy have largely captured the spotlight even as sustainability and climate change-related issues continue to simmer in the background. Although it remains committed to the Paris Agreement targets, Australia has abandoned the National Energy Guarantee as a means of meeting these obligations. Arguably, this leaves the energy sector, which is responsible for a third of Australia's overall emissions, with no policy directive to reduce those emissions.

With one of the highest population growths in the OECD, Sydney is facing significant challenges around liveability and quality of life. Our energy future is at the heart of this.

Baker McKenzie.

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ENERGY TO GROW AND GO

Whilst Sydney's population is expected to continue to grow strongly, one challenge is that much of Sydney's future population, housing and employment growth is planned for the hotter north-western and south-western corridors. The existing network is already under significant strain during peak times, especially during the hot summer months in Sydney's west.

On hot days, the residents of Sydney's western regions are subjected to temperatures 6–10 degrees hotter than people in coastal areas of Sydney. This leads to a huge spike in power demand and power bills as air conditioning becomes an unavoidable necessity for those in the west, adding living costs to the communities where disposable incomes are already the most stretched. Climate forecasts point to even hotter summers, with rising frequencies of heatwaves and droughts.

Beyond increasing households' demand for energy, the electrification of transport will increase the demand for energy. Electric vehicle (EV) uptake is expected to accelerate after 2025, as the price of electric vehicles falls (EV battery prices have fallen by 80 percent in the past decade alone).

Bloomberg Energy Finance estimates that electric and conventional vehicles will be of a similar price by 2025 and it is estimated that there will be 230,000 electric cars on our roads by 2025 and more than one million by 2030.[1] This is the equivalent of 5.2 terawatt hours of power demand and about a two percent increase in overall grid demand nationally.

It will be necessary to find a means to manage home electricity demand related to EV charging, to help avoid a situation where owners all attempt to charge their vehicles during the evening — the peak time for household energy use. Price incentives, for example, could help to stagger demand to place less strain on the grid. With further technology advancements, electric vehicles also have the potential to discharge excess energy back to the grid, to help take the edge off those residential peak demands.

Sydney's growth is also being supported by public transport infrastructure that relies on electricity to operate, such as metro rail, trams and electric buses. Whilst these transport alternatives will have a lower impact than EVs and reduce reliance on fossil fuel-powered combustion engines, they will increase network energy demand.

Business-as-usual approaches to planning and network development will require significant upgrades to the distribution and transmission networks. Distribution network upgrades will impact the day-to-day lives of residents, as poles and wires along their streets are replaced and outages are planned to complete the works. Transmission-network upgrades in Sydney have the potential to cause even greater interruptions, as roads, parks and footpaths would need to be dug up to upgrade and replace cables. Short-term electricity price management needs to be balanced with delivering a long-term city vision.

PUTTING CONSUMERS AT THE HEART OF ENERGY POLICY

So, how does Sydney balance the growing power needs of a population that is expected to hit eight million people by 2050, whilst meeting the sustainability and affordability challenges that this growth presents?

The current approach to residential renewable energy generation and storage only benefits households, but with advancing technology there is potential to benefit the community by making excess household energy available for other residents, or for supporting network resilience. Network-support services and reduced demand will prevent the need for many significant distribution and transmission network upgrades, improving liveability for Sydney's residents.

To allow the city to capitalise on the potential of new distributed-generation technologies to support network resilience, distribution, generation, storage, demand management and energy-trading, the introduction of those technologies must be properly planned, managed and integrated with Sydney's electricity grid. The network requires smart features that allow consumers to sell network-stability services and spare energy to their neighbours, or back into the grid — whether that comes from roof-top solar panels or the battery of the family electric car parked in the garage. Our regulatory framework, which has been developed to set the rules for existing electricity infrastructure, needs to evolve to enable the full potential for technology development to be realised. The complex challenge changing the rules, whilst keeping the system operating safely, should not be underestimated, so we need to make sure that our regulatory bodies are resourced to meet those challenges.

Care needs to be taken, however, to ensure that Sydney isn't divided into a small group of well-off consumers being further subsidised by selling energy to the grid whilst no one else can afford the technology to generate, store and sell their own power. As such, retail energy offerings that allow consumers choice in the level of service will allow lower-income groups to take advantage of opportunities to lower their power bills.

In addition, it is not only Sydney's residents who worry about the cost of power. Both large, energy-intensive businesses and also small businesses often struggle with the cost — and the reliability — of energy, which can have negative implications for their competitiveness if not managed appropriately.

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> NETWORK-SUPPORT SERVICES AND REDUCED DEMAND WILL PREVENT THE NEED FOR MANY SIGNIFICANT DISTRIBUTION AND TRANSMISSION NETWORK UPGRADES, IMPROVING LIVEABILITY FOR SYDNEY'S RESIDENTS.

VOICE OF THE PEOPLE

Of the more than 1,000 Sydney residents who completed AECOM's Future of Infrastructure survey, most (59 percent) said governments are short sighted in the way they manage infrastructure planning, with more than a third (37 percent) saying they did not have confidence in the government's ability to select the right projects to fund.

According to the survey findings, the three technologies with the greatest-expected positive impact on quality of life for Sydneysiders were fibre-optic broadband, solar power and fast rail connections to airports. So, although Sydneysiders feel somewhat disengaged and often don't feel their opinions are being heard on infrastructure, they are interested in the role that renewable energy plays in Sydney's future.

Despite a complex and often-confusing public debate between energy generators, retailers, consumers and the government, there is a significant group of informed and economically empowered buyers who have taken matters into their own hands by becoming self-generators of electricity through installing solar panels. Unfortunately, the majority of consumers are left to the vagaries of the market, with many feeling exposed to price increases and reliability issues that can threaten supply during peak periods.

Source: AECOM's Future of Infrastructure survey and report

THE PEOPLE SAY

59%

59 per cent of Sydneysiders say governments are short sighted in the way they manager infrastructure planning

37%

37 per cent of Sydneysiders do not have confidence in the government's ability to select the right projects to fund.

3 TECHNOLOGIES WITH THE GREATEST EXPECTED POSITIVE IMPACT ON QUALITY OF LIFE FOR SYDNEYSIDERS.

#1

FIBRE-OPTIC BROADBAND

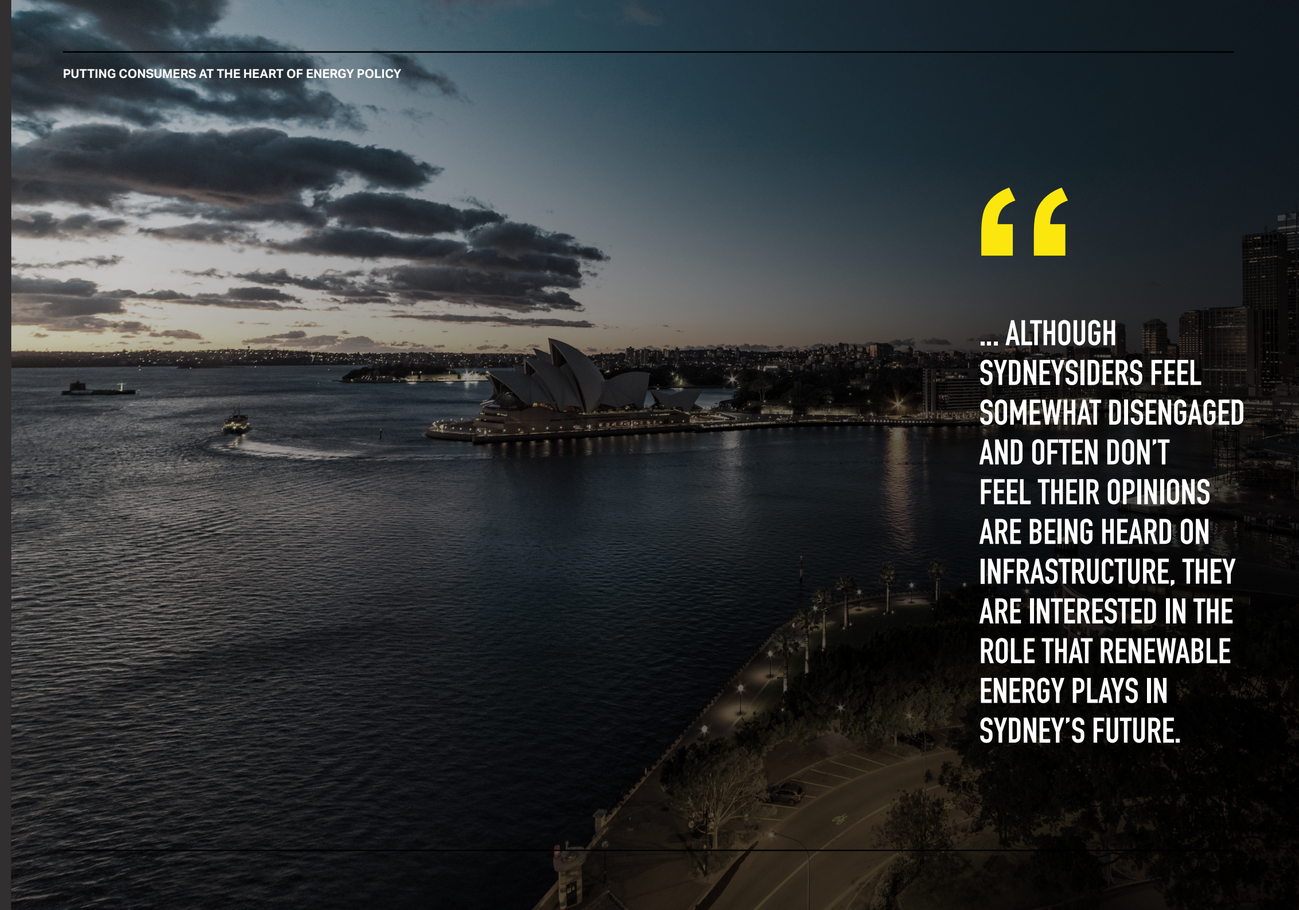
#2

SOLAR POWER

#3

FAST RAIL CONNECTIONS TO AIRPORTS

PUTTING CONSUMERS AT THE HEART OF ENERGY POLICY



> "... ALTHOUGH SYDNEYSIDERS FEEL SOMEWHAT DISENGAGED AND OFTEN DON'T FEEL THEIR OPINIONS ARE BEING HEARD ON INFRASTRUCTURE, THEY ARE INTERESTED IN THE ROLE THAT RENEWABLE ENERGY PLAYS IN SYDNEY'S FUTURE.

VULNERABILITY OF ENERGY CONSUMERS

There are a number of types of vulnerability that Sydneysiders may already be experiencing as a result of the current energy regulatory system, with potentially serious consequences. And some of these are poised to worsen.

ABILITY TO REDUCE COSTS

Renewable-energy installations, such as home solar panels, home-battery storage and electric vehicles, are costly and favour more-affluent energy consumers who can pay for the installation of such equipment. Lower-income Australians, who would proportionally benefit most from lower bills, often cannot afford to access this solution. Renters are unable to access renewables where landlords have no incentive to install them.

Furthermore, current retail pricing structures do not generally allow consumers to choose the level of service that they require and are willing to pay for, giving consumers limited ability to influence their power bills.

COMPLEXITY OF RETAIL ENERGY OFFERINGS

People of all walks of life are already finding it difficult to understand the multitude of consumer energy products available on the market. You shouldn't have to be a lawyer to understand a simple energy-pricing offer. This is an issue that can certainly affect very-well-educated people, so it is understandable that the majority are ill-equipped to discern a good offer from a bad one or to understand the terms and conditions of an offer.

BUILT UP AREAS INCREASE TEMPERATURE

Large infrastructure projects in Western Sydney, such as the new Western Sydney Airport, new roads, pavements and housing will create more-built-up areas. As greenspace is replaced by infrastructure built of concrete and asphalt, it has the potential to further increase temperatures in the Western Sydney region, which is already experiencing extreme heat. Gladly, the Greater Sydney Commission and others are driving a 'Parkland City' vision for the growth in the west, where water and green space will be embedded into new developments, mitigating the urban heat impacts; however, this is still ahead of us. Residents in older Western Sydney homes may need to retrofit air conditioning to avoid vulnerability to heat stroke, and other damaging health effects of extreme heat, such as interrupted sleep. Installing air conditioning costs a lot of money and may further increase consumers' energy bills in addition to the up-front costs.

THE KNOCK-ON EFFECT OF VULNERABLE BUSINESSES

Businesses can also be vulnerable to significant disruption in ways that potentially affect the livelihoods of owners, employees and broader communities. High power costs can have just such a negative effect, so alternative power sources need to be attainable for local businesses as well as individuals.

The story of South Australian town Whyalla and its steelworks is a case study example of how vulnerability to power outages can affect a large business in a regional area, with potentially devastating consequences for both the business and its host community. Manufacturers who consume power to run their operations in towns and cities throughout Australia can be vulnerable to costly shutdowns owing to interrupted power supply.

"In September 2016, … another crisis hit Whyalla when a wild storm led to a blackout across South Australia. "We had a pipeline, which is really the artery of the business … which is the slurry that comes from the iron ore mine to the pellet plant that feeds the blast furnace. It has the consistency of toothpaste,' Mr Mentha said. "If that solidified, the blood stops flowing to the blast furnace, and it only needed about another six hours and we would have had to re-lay [the] pipeline at a cost which basically would have meant we would have closed that operation the next day. The power came back in the nick of time …".[2]

Not every business is going to be as fortunate as the Whyalla steelworks in finding a deep-pocketed buyer who was willing to invest in more-stable power, as the steelworks' new owner, Mr Sanjeev Gupta, did with his purchase of Zen Energy. There is still much more work to do to make Australia's energy grid resilient.

6

POTENTIAL SOLUTIONS TO TURN SYDNEY ELECTRIC:

1/ SIMPLIFY OFFERINGS

Create simple energy products that consumers (commercial and residential) actually understand, and also capture value in the form of reliability and affordability. These products must be simple, easy to understand and marketed in a way that connects with the electricity consumer's wants and needs and, ultimately, lead to changes in electricity-buying behaviour. Defining minimum standards, as was done to define the 'bronze', 'silver' and 'gold' tiers introduced by the 2019 Australian private health insurance reforms, could allow consumers to choose between comparable types of offers. Common-sense changes need to be made to make offers clearer and to ensure that energy retailers make every effort to educate consumers about the obligations they have signed up for.

2/ INCREASE CONSUMER CHOICE AND PARTICIPATION

There's a need to entice consumers to opt for a sustainable energy supply, along with infrastructure for Sydney in the future that supports electric vehicles. Individuals' energy needs depend on where they reside (i.e. urban, rural or semi-rural consumers often have much-different usage patterns). Simplified offerings from electricity retailers that meet the differing needs of Sydneysiders will again change buyer behaviour towards a more-sustainable mix. Consumer choice can be increased by adapting network pricing and pricing structures, such as offering peak limited pricing, participation in Virtual Power Plants (VPPs) and novel ownership and usage models for energy storage.

3/ IMPLEMENT A 'REGULATORY SANDBOX'

Sydney could embrace innovation by implementing the idea of a 'regulatory sandbox' to trial how smart energy products can work in the absence of today's regulatory barriers. This is something that has been undertaken in the UK by the Office of Gas and Electricity Markets (Ofgem).[3] The idea is to see the potential of smart technical solutions without existing regulatory or market barriers, and then assess what reforms should be made to facilitate the products that have the best potential.

PUTTING CONSUMERS AT THE HEART OF ENERGY POLICY

4/ ESTABLISH INDEPENDENT POWER AGGREGATORS

Create independent power aggregators that are not traditional retailers and that could manage generation and distribution, with a view to ensuring that new electricity products are in the interests of consumers. Most people don't have the time or desire to optimise their distributed energy resource (DER) products. There will be increased opportunities for new market players that help customers to manage their DER products.

5/ COLLABORATE TO DELIVER EFFICIENCIES AND PROMOTE A CIRCULAR ECONOMY

An integrated approach to energy, waste, and water use and management is identified in the Greater Sydney Commission's 'A Metropolis of Three Cities' as a key objective. Efficient and sustainable precincts, such as Rouse Hill, Barangaroo, and Chippendale, reduce pressure on existing energy, water, and waste infrastructure and deliver lower carbon emissions. Sydney Water, which is a high energy user at pumping and treatment facilities, has trialled waste-to-energy technologies at locations across the city. The energy sector's criticality to, and reliance on, other infrastructure sectors means that our energy, water, waste, transport, and other city service providers must be solving problems together. The Greater Sydney Commission's role in coordinating all of the various city delivery agencies, utilities, and developers is an important one that must be maintained for the long term. Collaborative city planning, particularly in Western Sydney through the Western City Deal and Planning Partnership, offers the chance to deliver efficiencies in infrastructure delivery staging, colocations, or operational models that could be passed on to energy and other customers.

6/ ATTRACT INFRASTRUCTURE FINANCE BY BEING AN EASY PLACE TO DO BUSINESS

In order to build Sydney's future electricity infrastructure, we need a suite of options for investment and a market deemed attractive by investors in energy infrastructure. The Australian Energy Regulator's new Retailer Reliability Obligation guidance, effective from 1 July 2019, stipulates that energy companies must achieve systems that will deliver the energy reliability the public expects as well as new investment in energy generation.[4] The NSW government's current commitments to the National Energy Guarantee and for a national mechanism to integrate climate and energy policy, the declaration of renewable energy zones, and to ensuring that investments in generation and transmission systems are delivered in complementary ways, need to be maintained to deliver market certainty that can drive the best sustainable, liveable city outcomes for Sydneysiders.[5]

> CREATING SIMPLE ENERGY PRODUCTS THAT CONSUMERS ACTUALLY UNDERSTAND, AND ALSO CAPTURE VALUE IN THE FORM OF RELIABILITY AND AFFORDABILITY ...

PUTTING CONSUMERS AT THE HEART OF ENERGY POLICY

CONTRIBUTORS

Recently, AECOM and Baker McKenzie met with several senior representatives from power suppliers, networks and industry bodies to discuss Sydney's energy future and how we can support our transition to renewable energy and make cities like Sydney more resilient, self-reliant and efficient.

AECOM and Baker McKenzie would like to thank the following people for their contributions to the conversation on Sydney's Energy Future:

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Evenergi

Igor Brandao
Infigen Energy

Amy Kean
NSW Department of Planning & Environment

FURTHER READING

MAKING SYDNEY BRILLIANT
A manifesto for Sydney at 8 million people

THE FUTURE OF INFRASTRUCTURE
Voice of the people

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