



TELSTRA CORPORATION LIMITED

Submission to Investment NSW Green Paper

Securing future innovation and global competitiveness in NSW

Public Submission

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Executive Summary

Our submission draws on our knowledge and experience as Australia's largest telecommunications company with a portfolio that builds and operates telecommunication networks covering fixed line, mobile, internet, subscription television in addition to entertainment. Our submission is structured to follow the Green Paper's four main elements and the corresponding questions that accompany them:

- Transformative forces creating challenges and opportunities.
- Business operating environment
- Community views
- Views on current industry programs and actions

Transformative forces creating challenges and opportunities.

Enabling technology will assist in facilitating growth of the digital economy, which involves the economic activity that results from the billions of everyday online connections among people, businesses, devices, data, and processes (Deloitte, 2022). The global digital economy is worth an estimated US\$11.5 trillion in 2022, or 16% of global GDP, growing 2.5 times faster than global GDP in the 15 years prior to the pandemic (Brookings Institute 2019).

The telecommunications sector is already facing increased demands from users that will necessitate increased funding for infrastructure to provide additional data capacity. The pandemic spike in usage of the internet [driven by education and work from home] provided both opportunities and costs for the sector that will need to be managed in the light of broader structural changes occurring in telecommunications from both consumers and businesses (PwC, 2022).

Telstra was already undertaking a significant transformation when the pandemic struck, but it accelerated our own transformation as well as being a catalyst for telecommunication companies across the globe to adapt and change. It has also changed the culture of the workplace, enabling more people to work flexibly and remotely from the office, leading to more efficiency and productivity.

Business operating environment

As the demand for data has increased over time, the telecommunications sector has had to invest to increase supply. Investment decisions are being taken now that will deliver the data capacity requirements for the next few decades. Major infrastructure upgrades will be needed to ensure that telecommunications supply is able to meet consumer and business demand for work and leisure related activity. Data will be created and modified through edge computing with the emergence of 5G and eventually 6G, and communication will become more interactive, driven in part by remote working. It's important to note that 5G heavily relies on its given bandwidth, so changes in neighbourhood infrastructure will be required to be successful. In addition to this, 5G and 6G will also lead to more IoT models with data being collected and analysed at the edge (data processing on the periphery) (Deloitte, 2022).

Telstra as a technology enabler of business is impacted by both demand and supply side government intervention in the economy. Government can contribute to the increase in capacity through co-funding infrastructure upgrades where it is not commercially viable. For example, the NSW Government's funding for infrastructure in remote regions of the state through programs (such as the Connecting Communities Fund) assists regional communities in accessing productivity enhancing infrastructure (Government NSW, 2022). Telstra also sees an important role for government in developing a skilled workforce for the digital age. The World Economic Forum (WEF, 2016) warned of



a major disruption in the labour markets that would lead to a net loss of over 5 million jobs and the emergence of millions of new jobs. The pandemic has added to disruption within labour markets, therefore, to minimise emerging unfavourable social and economic impact, reskilling and upskilling of the workforce will need to become a priority for companies and governments

Telstra would like to see the NSW Government work with the Commonwealth Government to help in delivering an AI Action Plan that is designed to build capability in the economy around artificial intelligence, in industry sectors identified in the Green Paper including manufacturing and farming activities, biotechnology, and which enhances our defence capabilities (Department of Infrastructure, Transport, Regional Development and Telecommunications, 2022).

Community views

The pandemic highlighted the importance of effective and efficient infrastructure. Governments in NSW, along with their state and Commonwealth counterparts, will need to continue to invest in high quality hard and soft infrastructure with cost-effective and durable “software” including effective rules, regulations, and procedures (like trade facilitation), and reliable risk-based business continuity (WEF, 2021).

Telstra agrees with the Green Paper’s view that all government programs need to be assessed based on constraints identified in the affected industry sector that are unable to be addressed by industry alone, and constraints that may arise due to consumer needs but may be uneconomical for the private sector to deliver.

Successful public policies tend to address a problem that was well defined and broadly acknowledged at the outset of the policy development process (Productivity Commission, 2010). This would also include clearly establishing a conceptual framework to guide evidence gathering and interpretation around policy programs. The government should gather data on ‘baseline’ situations and measure changed outcomes as new policies are implemented. There needs to be wide consultation with those affected by policies to enable available evidence to be incorporated and to make changes to policy where appropriate. In addition to this the NSW Government should draw on academic expertise and shared experience from other jurisdictions to effectively evaluate policy outcomes (Australian National Audit Office, 2020).

Views on current industry programs and actions

Successful policies and programs rely on coherent, evidence-informed advice which can be realistically implemented. Policies and programs that have been developed, debated, and refined over time, will succeed, and deliver structural economic change, over those made ‘on the run’ (Australia National Audit Office, 2020).

Telstra would like to acknowledge the investment that the NSW Government has made in delivering connectivity to regional areas of NSW. Programs such as the Connecting Country Communities Fund and the Regional Digital Connectivity Program are two examples that have made a difference to productivity and competition within the ICT sector and importantly delivered additional telecommunications capacity to regional NSW (Government NSW, 2022).



The approach by the NSW Government to deliver programs that drive growth and value will need to deliver a long-term approach that has flexibility to respond rapidly and efficiently to changing market circumstances.



Introduction

Telstra welcomes the opportunity to provide a submission in response to the Investment NSW Green Paper, *Securing future innovation and global competitiveness in NSW* (the **Green Paper**). Our submission draws on our knowledge and experience as Australia's largest telecommunications company with a portfolio that builds and operates telecommunication networks covering fixed line, mobile, internet, subscription television in addition to entertainment. Telstra operates within the Information Media and Telecommunications sector (ABS, 2022) and operates as a provider of enabling technology as identified in the Green Paper from Investment NSW.

There are a range of opportunities that Telstra can assist with in securing future innovation and global competitiveness in NSW, that will be addressed in this submission's response to the consultation questions. Our submission is structured to follow the Green Paper's four main elements and the corresponding questions that accompany them:

- Transformative forces creating challenges and opportunities.
- Business operating environment
- Community views
- Views on current industry programs and actions



Transformative forces creating challenges and opportunities

1. Describe the top two or three transformative forces that will shape transition challenges and opportunities in your industry over the next 10 years:

Enabling technology will assist in facilitating growth of the digital economy, which involves the economic activity that results from the billions of everyday online connections among people, businesses, devices, data, and processes (Deloitte, 2022). The global digital economy is worth an estimated US\$11.5 trillion in 2022, or 16% of global GDP, growing 2.5 times faster than global GDP in the 15 years prior to the pandemic (Brookings Institute 2019). In Australia, modelling from PwC suggests that the digitisation of the Australian economy would add AUD\$90 bn and 250,000 jobs to the Australian economy by 2025 (PWC, 2022). There are a range of transformative forces that will drive innovation and global competition in the coming years that Telstra believes will have an economy wide impact. Some of these forces include the following (Nokia, 2022; PwC, 2022):

5G and 6G

5G built on the advances of Telstra's successful 4G network and assisted in advancing the move forward to wireless connectivity. It is estimated that by 2030 5G technology will add up to US\$1.3 trillion in global GDP, with industry sectors such as healthcare (US\$530 bn), utilities management (US\$330 bn) and consumer and media applications (US\$254 bn), accounting for 85% of the GDP contribution (PwC, 2022).

Industry 4.0

Industry 4.0 has sometimes been referred to as the next production revolution that will occur due to a range of technological confluences that will alter the nature and availability of work and production. These changes range from digital technologies (e.g., 3D printing, the Internet of Things, advanced robotics) and new materials (e.g., bio- or nano-based) to new processes (e.g., data-driven production, artificial intelligence, synthetic biology) (OECD, 2017). The technology has the potential to influence a range of economic and social factors including (but not limited to) productivity, employment, skills, income distribution, trade, well-being and the environment.

Internet of Things and The Metaverse

The internet of things, or IoT, is a system of interrelated computing devices, mechanical and digital machines, objects, animals, or people that are provided with unique identifiers (UIDs) and the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction.

The Metaverse blends the real and digital worlds into one. Accessed via VR headsets and haptic wearables, it's a 3D spatial internet that avatars can move through and interact with. World-leading companies will create parallel worlds within the Metaverse where users can play games, access healthcare, learn new skills and participate in the economy. We'll see the increased use of digital twins, increased demand for digital assets and the ever-growing collection of data for monetization.



2. What effects do you expect these transformative forces will have on your industry (or on your own business) over the next 10 years?

The telecommunications sector is already facing increased demands from users that will necessitate increased funding for infrastructure to provide additional data capacity. The pandemic spike in usage of the internet [driven by education and work from home] provided both opportunities and costs for the sector that will need to be managed in the light of broader structural changes occurring in telecommunications from both consumers and businesses (PwC, 2022). The telecommunications sector will need to manage the 5G infrastructure network, in particular the once passive tower networks which have become more dynamic as towers become important in the delivery of 5G and eventually 6G technology (PwC, 2022).

5G and then 6G will in the business world provide a range of enabling use cases serving a range of needs for business identified in the Green Paper such as managing remote workforces, to enterprise such as industrial manufacturing and automated agriculture. Telstra will be able to play a role in supporting companies in determining how their work environments look in the future. This will help companies determine what connectivity platforms and technology infrastructure are required to make working in the office and working from home productive and enabling a seamless switch to hybrid working environments (Forbes, 2021).

Telstra will increasingly focus on diversifying its revenue streams by creating value add through new services or monetising existing assets for its customer base. In the case of consumers this will include areas such as data collection and collation, home security and family management. In the SME sector, the lifecycle of a start-up, running a business and scaling offer prospects for Telcos to provide services and solutions. In larger organisations the ability of 5G, and around the end of the decade, 6G to support low latency and thousands of devices using data and automation offer scale potential in sectors such as energy, manufacturing, and agriculture. The move towards Industry 4.0 will offer the potential for Telstra to work with the industry sectors identified in the Green Paper explore what Industry 4.0 will look like as cloud storage, cloud compute and connectivity realise their potential. Some of the key changes that will transform a range of industry sectors including Telstra's Information, Media and Telecommunications include the following (Forbes, 2021):

IoT systems will cover entire cities

5G will open more opportunities for businesses to use IoT. The rollout of 5G will build upon the advances of the 4G network allowing IoT to further develop, providing further potential to unite separate devices and sensors into one system. IoT systems will be able to cover entire cities, making smart cities even more of a reality.

Real-time application of collected data will be enabled

With 5G, the amount of data that can be collected and aggregated will be tremendous. This could allow for real-time diagnosis and mitigation of health conditions, farming optimizations (fertilization, water, etc.), autonomous vehicle tracking, and traffic and city services monitoring (parking availability, crime reporting).

Businesses across all industry sectors will need to become much more agile.

5G and 6G will facilitate the ability of businesses to become more agile, as they adjust to changing market conditions associated with structural economic and social change. Businesses must be able to launch new services and products quickly, analyse their performance and bring them down quickly for



non-performance. For consumers, 5G and 6G will bring a host of new experiences in terms of products and services.

3. What action is your industry or business taking, or intending to take, to address the effects of these transformative forces?

Telstra was already undertaking a significant transformation when the pandemic struck, but it accelerated our own transformation as well as being a catalyst for telecommunication companies across the globe to adapt and change. It has also changed the culture of the workplace, enabling more people to work flexibly and remotely from the office, leading to more efficiency and productivity. The pandemic has placed telecommunication companies such as Telstra at the forefront of enabling technology, as almost every aspect of human interaction moved online amid lockdowns and physical-distancing measures.

Telstra has been able to innovate quickly with a renewed focus on customer support to enable us to respond to the changing customer needs and unprecedented connectivity needs. Telstra has been able to connect customers to public health and safety information, support enterprises and their employees in work-from-home arrangements and keep families connected across the country. Telstra has assisted in remote learning, along with making online business accessible for remote regions of the country. Telstra has also been able to enable the connection of an ecosystem of suppliers, distributors, and partners, which will continue to evolve over the coming years in response to the structural economic and social changes in the economy.

At the same time, the industry was experiencing seismic, irrevocable shifts. Customer behaviours have advanced five to ten years ahead of where it was projected (McKinsey, 2022). Digital-enabled sales interactions doubled, with consumers moving online and increasingly embracing self-service customer care (McKinsey, 2022). Through its provision of both fixed and mobile infrastructure platforms and a broad range of retail customer service offerings, Telstra has been able to respond to these fundamental changes in consumer behaviour, by providing industry sectors such as retail trade with the capacity to deliver these digital interactions.



Business operating environment

4. Are there critical constraints across the business operating environment (for instance, related to markets, skills, production capacity, technology, finance capital or infrastructure) that affect the capacity of your industry or business to take up opportunities

As the demand for data has increased over time, the telecommunications sector has had to invest to increase supply. Investment decisions are being taken now that will deliver the data capacity requirements for the next few decades. Major infrastructure upgrades will be needed to ensure that telecommunications supply is able to meet consumer demand for work and leisure related activity. Data will be created and modified through edge computing with the emergence of 5G and eventually 6G, and communication will become more interactive, especially with remote work. It's important to note that 5G heavily relies on its given bandwidth, so changes in neighbourhood infrastructure will be required to be successful. In addition to this, 5G and 6G will also lead to more IoT models with data being collected and analysed at the edge (data processing on the periphery) (Deloitte , 2022). The role of the NSW state government is to assist with the provision of infrastructure in remote and regional areas of the state where it is not economically feasible for the private sector to do so.

5. Why would your industry be a suitable target for demand or supply side industry policy interventions over the next 10 years? Where in your supply chain would this intervention be most effective, and why?

Telstra as a technology enabler of business is impacted by both demand and supply side government intervention in the economy. Government can contribute to the increase in capacity through co-funding infrastructure upgrades where it is not commercially viable. For example, the NSW Government's funding for infrastructure in remote regions of the state through programs (such as the Connecting Communities Fund) assists regional communities in accessing productivity enhancing infrastructure (Government NSW, 2022). Telstra also sees an important role for government in developing a skilled workforce for the digital age. The World Economic Forum (WEF, 2016) warned of a major disruption in the labour markets that would lead to a net loss of over 5 million jobs and the emergence of millions of new jobs. The pandemic has added to disruption within labour markets. Therefore, to minimise emerging unfavourable social and economic impact, reskilling and upskilling of the workforce will need to become a priority for companies and governments. The education and training systems will need to provide curriculum that will enable the workforce to reskill and upskill using virtual solutions. Human-centric technology adoption will become important to ensure optimisation of communication and knowledge streams.

Telstra supports the NSW governments current training programs as outlined in Table A1 (pp 31-32) (Investment NSW, 2022) under the Skills target area noting that as identified by the WEF, targeting in the identified areas needs to be ongoing and reflective of the findings from the consultation process in the Green Paper.



6. What are the key areas and opportunities in your industry where there are opportunities for NSW Government programs and actions to accelerate ongoing economic growth?

Telstra will continue to work with other Industry sectors and the Commonwealth and State Governments to deliver on the Australian Consumer Data Right an initiative that Telstra believes will assist in strengthening the digital economy. In addition to this, Telstra believes that the Australian Data Strategy offers an opportunity for the Commonwealth and State Governments to work with companies like Telstra to enable a data driven economy that efficiently and effectively utilises economy wide data sharing (Department of Prime Minister and Cabinet, 2022). This has the potential to realise the potential identified in the Green Paper around the shift to an increasingly digital economy.

Telstra would like to see the NSW Government work with the Commonwealth Government to help in delivering an AI Action Plan that is designed to build capability in the economy around artificial intelligence, in industry sectors identified in the Green Paper including manufacturing and farming activities, biotechnology, and which enhances our defence capabilities (Department of Infrastructure, Transport, Regional Development and Telecommunications, 2022). This will form part of the enabling technologies support areas identified by the NSW government in the Green Paper, around Digital Technology and can assisted by Telstra's capabilities in delivering AI technology.



Community views

7. Considering the transformative forces underpinning economic structural change, such as those described above, what are the benefits to NSW citizens of adequate and well-coordinated industry policies that accelerate this change?

No comment on this.

8. Where do you think the NSW Government could make the biggest difference to encourage industry innovation and growth?

The pandemic highlighted the importance of effective and efficient infrastructure. Governments in NSW, along with their state and Commonwealth counterparts, will need to continue to invest in high quality hard and soft infrastructure with cost-effective and durable “software” including effective rules, regulations, and procedures (like trade facilitation), and reliable risk-based business continuity (WEF, 2021).

In areas like digital infrastructure, there is a need for more collaboration on communication protocols for data sharing, interoperability of systems, privacy, and cybersecurity (IMF, 2013). This will require continued government engagement in adopting the digital transformation, as well as ongoing cooperation between the public and private sectors (WEF, 2021). The NSW government can work collaboratively to ensure enabling regulatory frameworks are consistent across national (and international) borders. The NSW government can assist in improving the physical and communications links to regional centres for poor, remote, and disadvantaged communities, so their livelihoods can benefit from regional economic and social networks.

9. Are there any risks or costs from intervention that the NSW Government should consider?

Telstra agrees with the Green Paper’s view that all government programs need to be assessed based on constraints identified in the affected industry sector that are unable to be addressed by industry alone, and constraints that may arise due to consumer needs but may be uneconomical for the private sector to deliver. In these instances where government action is warranted, Telstra agrees with Investment NSW that the effects of the government intervention must outweigh the costs to ensure societal welfare is maximised (Investment NSW, 2022).

10. What information would you like to see to demonstrate how progress is being made towards accelerating industry growth through NSW Government programs and actions?

Successful public policies tend to address a problem that was well defined and broadly acknowledged at the outset of the policy development process (Productivity Commission, 2010). This would also include clearly establishing a conceptual framework to guide evidence gathering and interpretation around policy programs. The government should gather data on ‘baseline’ situations and measure changed outcomes as new policies are implemented. There needs to be wide consultation with those affected by policies to enable available evidence to be incorporated and to make changes to policy where appropriate. In addition to this, the NSW Government should draw on academic expertise and



shared experience from other jurisdictions to effectively evaluate policy outcomes (Australian National Audit Office, 2020).

While an evaluation should be planned during the design phase of a new or amended program or policy, a clear strategy (what you want the evaluation to inform and how it will do this) for reviewing and evaluating existing policies and programs is also needed. This is important as government policies and programs in sectors such as education, health and community and social services may take several years to generate benefits from structural reform. The benefits from these reforms may exceed the policy and program evaluation time scales and may not occur until after a program has finished. It is important that any progress reporting considers this and allows a framework that allows for consideration of this (Australian National Audit Office, 2020).



Views on current industry programs and actions

11. What are your views on how well the current selection of NSW Government programs and actions enable change at the industry level?

The NSW premier has prioritised a strong economy and the current NSW Government programs and actions will enable change at an industry level through partnering with recognised businesses who have the infrastructure to deliver of the strategic goals, programs and actions nominated by the NSW Government. Programs such as 'Tomorrow's Sydney', 'Towards a customer centric government', 'The future is digital identity' and '24-Hour Economy' are examples of successful programs (Government NSW, 2022). Successful policies and programs rely on coherent, evidence-informed advice which can be realistically implemented. Policies and programs that have been developed, debated, and refined over time, will succeed, and deliver structural economic change, over those made 'on the run' (Australia National Audit Office, 2020).

12. Describe any current programs and actions that have made a notable difference to productivity and competitiveness in your industry?

Telstra would like to acknowledge the investment that the NSW Government has made in delivering connectivity to regional areas of NSW. Programs such as the Connecting Country Communities Fund and the Regional Digital Connectivity Program are two examples that have made a difference to productivity and competition within the ICT sector and importantly delivered additional telecommunications capacity to regional NSW (Government NSW, 2022).

Telstra acknowledges the key role that regional Australia has in delivering economic growth to the nation. The Regional Digital Connectivity Program's aim of providing families and businesses in regional NSW with better access to mobile, internet and digital services will assist in bridging the digital divide between metropolitan and regional areas. Further to this the four priority areas identified in the Regional Digital Connectivity Program of addressing mobile coverage; the Gig State; Farms of the future; and smart regional spaces can assist regional NSW in developing competitiveness in the emerging industries identified in the Green Paper most notably Agriculture and Agrifood, Resources and Energy and Waste (Investment NSW, 2022). The digitisation of the economy has the potential to improve productivity through more efficient use of enabling infrastructure such as digital technology with modelling indicating that up to AUD\$10bn in connectivity growth opportunity for the ICT sector (PwC, 2022).



13. Could any programs be merged to be more effective, or should any be ceased?

Please refer to the response to Question 9 for Telstra's position on this question.

14. Are there any actions, or examples of effective practice in other jurisdictions (within Australia or overseas) that the NSW Government should consider to better support economic structural change in NSW industries?

Telstra would like to provide two examples of structural reform, that have been implemented in South Australia and in the European Union that could be used as examples in this Green Paper submission.

In 2019, a review was undertaken in South Australia to reform the state's international and interstate engagement and skills development function. One of the review's recommendations was to rename and refine the focus of the Department for Industry and Skills to focus on skill development within the state. The new Department for Innovation and Skills was formed from the former Department for Industry and Skills with a mission focus on developing the human factors in the economy. The department became responsible for supporting and leading the delivery of several whole-of-government priorities around skill development, entrepreneurialism, and innovation with a responsibility to maximise people and business success within the state (Department for Innovation and Skills, 2021).

The European Union (EU) as part of its response to the pandemic implemented a range of policy measures to limit the long-term damage to the economy. One of these was the Recovery and Resilience Facility (RRF) as part of the *NextGenerationEU* program. To assist in the implementation of this program, the National Recovery and Resilience Plans (RRPs) were developed to address structural changes for EU member states (CEPR, 2021). The RRF provided EU member states with substantial financial support for investment and reforms that contributed to a greener, more digital, and resilient economy. The RRP's that were developed in response to the RRF provide reforms to doing business and the reduction of barriers to investment, along with reforms to the judicial system and public administration, addressing some of the key bottlenecks to sustainable growth in the EU (CEPR, 2021). The RRFs will also fund investment in human capital to reduce the extent of long-lasting negative impacts on the labour market associated with the pandemic (CEPR, 2021).

The EU forecast the total direct impact of the RRP's to be 1.2% of the EU's 2019 real GDP, with several member states this direct impact exceeds 3% of GDP (European Commission 2021). The European Commission, however, believes that the expected positive impacts of the structural reforms will be greater than the direct impacts to GDP, due to the difficulties with quantifying some of the reforms (CEPR, 2021). The aim of the RRF is to provide sustainable, stronger economic growth in the EU post COVID-19 and move towards a more digitally focussed and sustainable economy.



15. How can the NSW Government generate program outcomes that drive growth and value? How should the NSW Government work to achieve these outcomes with your industry, private sector, and other levels of government?

In response to the first part of this question, as mentioned in Telstra's submission response to question 11, policy that is developed, debated, and refined will be successful over the longer term and is better positioned to drive structural reforms in the economy. McKinsey (2019) found that Governments in outperforming economies will develop new approaches to markets and the regulatory environment that uses tools such as pilot programs to test new approaches, the refine them as required based on the pilot outcomes, followed by the implementation of policies that work. As an example, the Monetary Authority of Singapore uses a "regulatory sandbox" to relax regulations temporarily for select private-sector players to encourage innovation in fintech (Monetary Authority of Singapore, 2021).

The approach by the NSW Government to deliver programs that drive growth and value will need to deliver a long-term approach that has flexibility to respond rapidly and efficiently to changing market circumstances.

In response to the second part of this question, we would welcome the opportunity to contribute our expertise across the NSW and broader Australian economy to continue to work with the NSW Government through the development of the Green Paper. We can offer specialist advice on the shift to the digital economy, digital systems and software development and the role of enabling infrastructure on delivering the structural economic change as envisaged in the Green Paper.

Once the Green Paper consultation process is complete, Telstra would welcome the opportunity to respond to its submission and assist in informing the Industry Policy White Paper. Telstra sees itself contributing to industry policy development within NSW and Australia more broadly in our role delivering world class infrastructure and services to individuals and organisations across Australia.



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