


Major Transmission Projects

For the consideration of government
as economic stimulus

A decorative graphic element consisting of a thick, wavy line that starts in a dark blue color on the left, transitions through a gradient to a teal color, and then continues in a solid teal color towards the right. The line has a fluid, undulating shape, resembling a stylized wave or a ribbon.

Who we are

TransGrid manages, operates and plans the high voltage network to benefit electricity customers and the community.

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Our commitment

TransGrid is committed to supporting the recovery of the Australian economy

TransGrid has been approached by industry and government on the contribution we could make to support stimulus to the Australian economy.

We have a plan to invest \$11 billion to build transmission infrastructure, creating 7,000 jobs in regional NSW and \$25 billion in economic activity over the next 5 to 10 years.

In response to the request for additional stimulus to the economy, we have analysed our pipeline of projects and specifically identified where expenditure can be brought forward and a greater proportion invested in Australia. This analysis shows an additional 1,000 jobs, \$2 billion in expenditure and \$4 billion in further economic activity can be realised over the immediate period to 2024.

AN \$11 BILLION PIPELINE

TransGrid is progressing a number of transmission infrastructure projects which have been identified by the Australian Energy Market Operator and the NSW Government as critical to Australia's future energy system and which provide long-term benefits to electricity customers.

These projects - collectively worth \$11 billion of investment for the Australian economy and creating 7,000 direct jobs - will help ensure the future reliability and security of the network, as well as lead to lower wholesale electricity prices. The projects are based in regional NSW and by utilising local suppliers and regional workforces, much of the estimated \$25 billion in wider economic benefits can be captured in regional NSW.

HIGH VOLTAGE SKILLS TRAINING

To boost economic growth, TransGrid is developing a \$10 million training initiative, in collaboration with transmission construction businesses, to utilise and upgrade training facilities in Western Sydney and Wagga Wagga. This will increase the number of Australian traineeships and jobs by up to 350 by 2021.

A DUAL PURPOSE

The projects in this plan have been identified as needed for Australia's energy future. They can also be leveraged to provide significant stimulus to the economy. The analysis outlined in this document demonstrates that the boost to the Australian economy can be increased by bringing these projects forward, resequencing the delivery programs to purchase large items earlier and by increasing the proportion of goods and services purchased in Australia. By doing this we can provide \$1-2 billion of additional expenditure in the Australian economy, creating another 1,000 direct jobs and an extra \$3-4 billion in economic activity by 2024.

TRANSGRID'S COMMITMENT

TransGrid will commit to full open book transparency in progressing these projects, with oversight by independent representatives and external audit. TransGrid will also commit to receive no uplift nor benefit from any change in schedule, cost or timing that may be required as part of a stimulus package.



CAPITAL EXPENDITURE

\$11.1 bn



DIRECT JOBS

7,175



TOTAL ECONOMIC BENEFIT

\$25.4 bn



TRAINING THE WORKFORCE

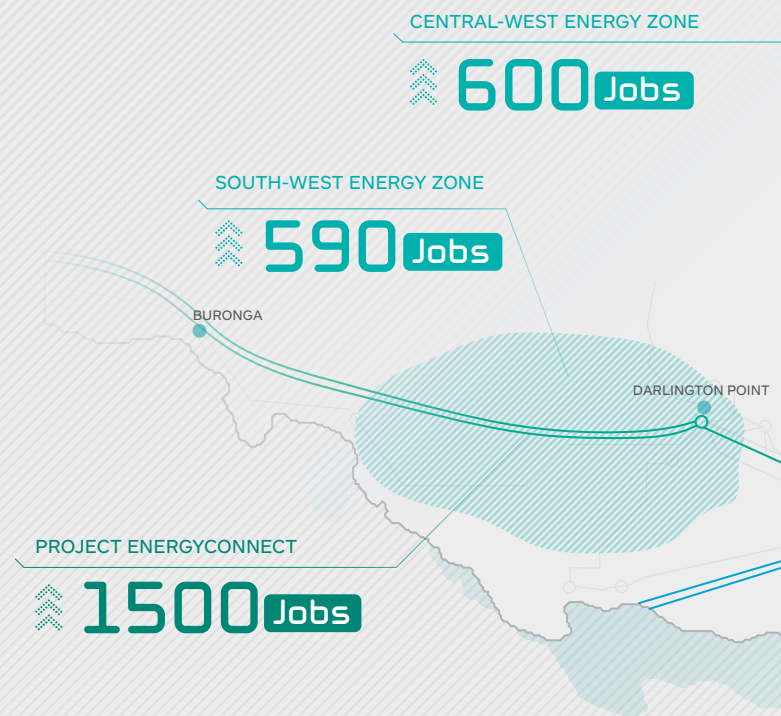
350
new apprentice and training positions

Pipeline of transmission projects

An \$11 billion pipeline of infrastructure projects creating 7,000 jobs in regional NSW and \$25 billion in economic activity.

These transmission projects have been independently identified by AEMO and government as critical to be built over the next decade to meet Australia's energy needs.

- ✓ Prioritised in the AEMO Integrated System Plan or by NSW Government in the Transmission Infrastructure and Electricity Strategy
- ✓ Significant expenditure in the NSW economy and in regional areas
- ✓ Progressing through the regulatory process to ensure value for consumers
- ✓ Required to ensure security and reliability of the National Electricity Market



CAPITAL EXPENDITURE

\$11.1 bn



DIRECT JOBS

7,175



INDIRECT JOBS

14,680



TRAINING THE WORKFORCE

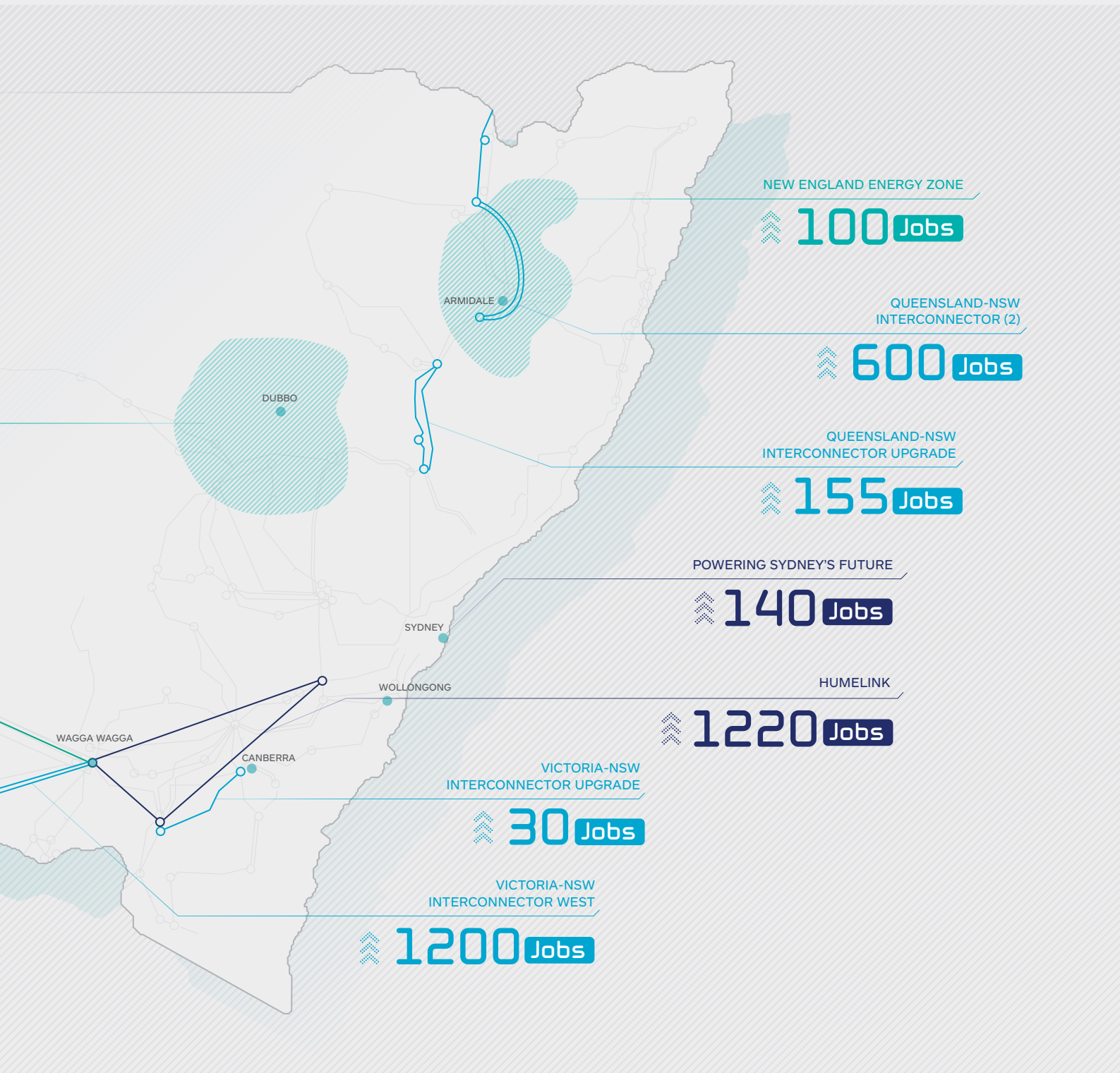
350

new apprentice and training positions in regional NSW and Western Sydney



TOTAL ECONOMIC BENEFIT

\$25.4 bn



MANUFACTURING AND INVESTMENT IN DOMESTIC ECONOMY

AROUND

\$7 bn

invested in sourcing equipment and supplies from Australia



UNLOCKING PRIVATE SECTOR INVESTMENT IN RENEWABLE ENERGY ZONES (REZ)

DELIVERING THE INFRASTRUCTURE REQUIRED TO UNLOCK

UP TO \$10.9 bn

in private sector investment in renewable generation, low-cost, clean energy projects

COVID-19 impacts on the energy system

COVID-19 reinforces potential long-term risks for meeting Australia's energy supply needs

Australia's energy system is undergoing a once-in-a-lifetime transformation. Renewable generation is increasing, displacing coal-fired generators sooner, which is resulting in risks to system resilience and reliability.

The impacts of COVID-19 are expected to accelerate this transformation with the wholesale electricity price falling by 50% and impacting the long-term viability of high fixed cost coal-fired generation.

As more coal-fired generation retires, the major transmission projects are needed to ensure reliability of supply to peak load centres such as Sydney.

COVID-19 IMPACTS ON THE ENERGY SYSTEM

The COVID-19 crisis is expected to bring forward some of the changes underway across the energy system.

The impacts observed so far due to COVID-19 show electricity consumption for 2020 across the National Electricity Market is about 5% lower compared to previous years and peak demand in NSW is almost 10% lower. This has had significant implications for the wholesale electricity price which has fallen by about 50% compared to the last four years due to:

- the lower demand during COVID-19
- mild autumn conditions
- the continued growth in rooftop and large-scale solar, and
- lower gas prices.

ELECTRICITY DEMAND



ELECTRICITY CONSUMPTION IS

5% lower



PEAK ELECTRICITY DEMAND IS

10% lower

DUE TO COVID-19 RESTRICTIONS

RENEWABLE GENERATION IS INCREASING, DISPLACING COAL-FIRED GENERATORS SOONER

Renewable generation in NSW has increased from 5% of total supply in 2015 to 16% in 2020. With increased generation being provided from renewable resources at a lower cost, coal-fired generation is down around 12% in April 2020 compared to the previous four years.

Increased growth in renewable resources, combined with lower wholesale electricity prices and more frequent aged-related reliability issues with coal-fired generation, may lead to earlier than anticipated plant closures.

REDUCED SYSTEM RESILIENCE AND GRID STABILITY

Australia's electricity system has been under severe pressure following the closure of Northern and Hazelwood coal-fired power stations and the significant growth in large-scale, solar and wind generation. The recent bushfires and storm damage to the Heywood interconnector between Victoria and SA - which left South Australia disconnected from the NEM - exposed the fragility of the system and the critical need for resilient and efficient interconnection between the states. This single event has been estimated to cost South Australian electricity customers \$93 million.

This brings into sharp focus the need for reinforcement and extension of the transmission network to ensure new generation can connect to the grid and electricity can reliably reach key load centres.



RENEWABLE GENERATION INCREASED TO

16%



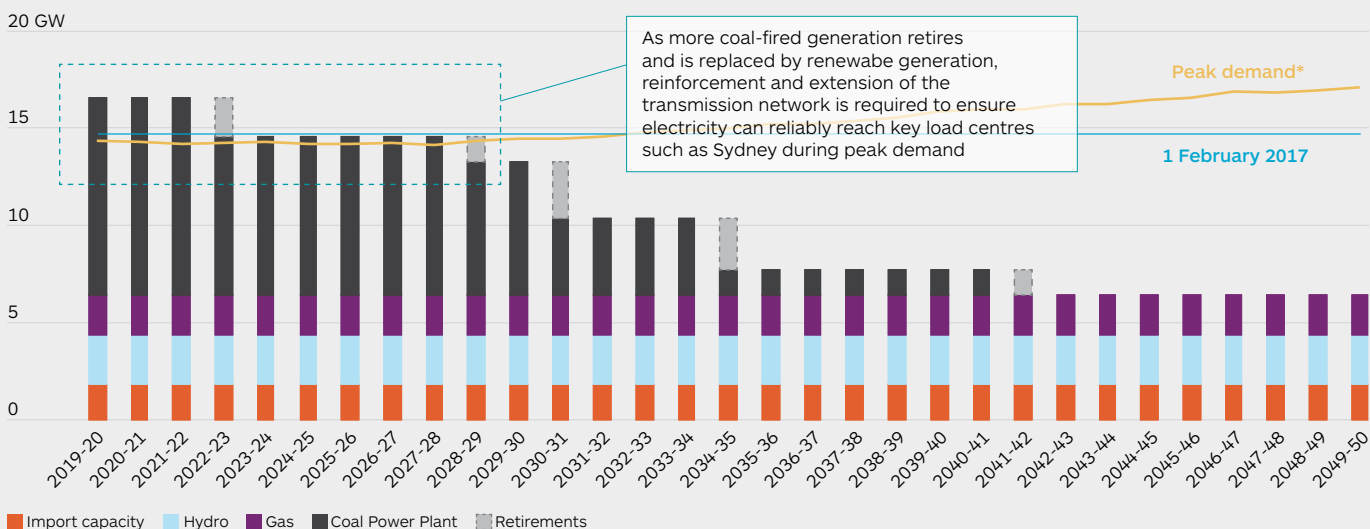
WHOLESALE ELECTRICITY PRICE HAS FALLEN BY

50%

Delivery of major transmission projects is needed to ensure reliability of supply to peak load centres such as Sydney

NSW PEAK DEMAND AND SUPPLY PROFILE

(NAMEPLATE CAPACITY AND ASSUMING NO FUTURE DISPATCHABLE CAPACITY ADDITIONS) GW, FY2020-FY50

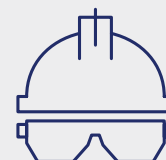


Note: *Peak demand based on AEMO 2019 ISP maximum demand forecast (central case, 10% PoE, Summer)
Source: AEMO 2019; AER 2019; TransGrid analysis

TransGrid's economic stimulus

Actions and benefits of a stimulus response

TransGrid has analysed the pipeline of transmission projects and identified four ways to increase the positive benefit to the Australian economy.



FY21-24	1. BRING FORWARD CONSTRUCTION PROGRAM	2. BRING FORWARD EXPENDITURE	3. INCREASE EXPENDITURE ON AUSTRALIAN PRODUCTS AND SERVICES	4. INCREASE NUMBER OF TRAINEESHIPS AND JOBS
	Bring forward construction to start spending on construction sooner	Resequence the program to bring forward expenditure on large items sourced in Australia	Buy products and services in Australia instead of overseas	Invest to upskill workers at TransGrid training facilities in Western Sydney and Wagga Wagga
Capital expenditure increase	Increase capital expenditure over FY21-24 by \$1.7 billion, to a total of \$6.9 billion	Increase capital expenditure over FY21-24 by \$450 million to \$5.65 billion	Invest an additional \$1.1 billion over FY21-24 in the domestic economy	\$10 million investment to upskill Australian workers
Jobs increase	Additional 980 direct jobs and 2,200 indirect jobs	Additional 300 direct jobs and 600 indirect jobs	Additional 860 direct jobs and 1,770 indirect jobs	350 new apprentice and training positions
Australian investment	Up to 70%	Up to 70%	Increase up to 90%	100%
Economic benefit increase	Additional \$4.3 billion	Additional \$1.3 billion	Additional \$3.8 billion	Additional \$34 million

TransGrid's economic stimulus

Implementing the stimulus

ADDITIONAL COST AND NO GAIN TO TRANSGRID

There is additional cost to bring forward expenditure and buy Australian products and services.

- **Option 1 Bring forward construction program:** 10 per cent of the project cost or an additional \$600 million
- **Option 2 Bring forward expenditure:** 10 per cent of the work package or an additional \$50 million
- **Option 3 Increase expenditure on Australian products and services:** additional \$250 million to expand Australian suppliers' manufacturing capability
- **Option 4 Increase number of Australian traineeships and jobs:** no additional cost

Under the existing regulatory process TransGrid must identify the most efficient and prudent cost which is then allocated to TransGrid's regulated asset base.

Should government choose to work with TransGrid to adopt one or more of these options, no increased cost will be added to TransGrid's regulated asset base and therefore no further cost to electricity customers.

IMPLEMENTING THE STIMULUS

TransGrid suggests a close working partnership with governments, the regulator, consumer groups and independent experts to unlock these additional economic benefits as a stimulus response, including:

- Establishing a steering committee to oversee the governance of these projects and ensure the needs of consumers, regulators and stakeholders are addressed under an economic response
- Appoint independent experts and auditors chosen by government and the AER
- Joint participation in the procurement of contracts and equipment
- Adopting a completely open book transparent process overseen by a probity auditor
- Streamlined planning and environmental approval processes to fast-track assessments that meet the relevant criteria
- Joint engagement and investment with manufacturers and suppliers to upsize and upskill capability to manufacture and procure key components such as steel transmission towers and high voltage equipment locally, and
- Launch the training and apprenticeship program.



Overview of projects

Investment in major transmission projects

PROJECT	PROPONENTS	STATUS	ESTIMATED INVESTMENT (\$)
Powering Sydney's Future – Reinforce electricity supply to Sydney's CBD	TransGrid	Approved by AER. Planning approval received in May 2020	\$285 million
Queensland NSW Interconnector Upgrade – Upgrade to increase transfer capacity	AEMO ¹ , Federal ² & NSW Government ³	Approved by AER. Construction underway	\$230 million
Victoria NSW Interconnector Upgrade – Upgrade to increase transfer capacity	AEMO & NSW Government	AER approval - October 2020	\$41 million
Project EnergyConnect (with ElectraNet) – A new 900km interconnector linking NSW, SA and Victoria	AEMO, NSW & SA Government	RIT-T approved by AER. Contingent project application to be lodged June 2020	\$2 billion ^{4,5}
HumeLink – Increase capacity of the southern shared network including for Snowy 2.0	AEMO, Federal & NSW Government	Regulatory test to be completed end of 2020 A Fed-NSW Government early works support agreement pending	\$2.1 billion ⁵
Central West Renewable Energy Zone – Developing access to the energy zone to bring on initially 3,000MW of renewable generation	NSW Government	Feasibility and planning works	\$600 million
New England Renewable Energy Zone – Virtual transmission line with a 200MW/100MWh grid-connected battery ⁶	NSW Government	Feasibility and planning works	\$200 million
South West Renewable Energy Zone – Transmission to facilitate up to 4,950 MW of new energy generation	AEMO and NSW Government	Feasibility and planning works	\$1.8 billion

1. AEMO's Integrated System Plan (ISP)

2. Joint Commonwealth and NSW underwriting agreement

3. NSW Transmission Infrastructure Strategy 2018

4. Total project cost

5. Confidential draft estimate for AEMO's 2020 ISP

6. Future transmission upgrades will be needed to unlock additional capacity in the REZ, for example Uralla to Bayswater

7. Direct jobs include construction and support jobs during the construction phase. Indirect jobs calculated using economic input-output multipliers

8. Indicative estimates of economic impact to 2030 by economics firm FTI Consulting



DOMESTIC INVESTMENT (%)	EMPLOYMENT ⁷		ECONOMIC IMPACT ⁸ (\$)	CONSTRUCTION COMMENCEMENT
	DIRECT JOBS	INDIRECT JOBS		
65%	140	350	\$740 million	July 2020
70%	155	380	\$620 million	Commenced October 2019
50%	30	60	\$90 million	March 2021
70%	1,500	2,780	\$5 billion	End 2021
70%	1,220	2,980	\$5.1 billion	Early 2022
70%	600	900	\$1.5 billion	End 2022
40%	100	200	\$460 million	2022 (indicative)
65%	590	2,070	\$3.7 billion	2025/2026 (indicative)

Overview of projects

Investment in major transmission projects

PROJECT	PROPONENTS	STATUS	ESTIMATED INVESTMENT (\$)
Victoria NSW Interconnector West (with AEMO) – A new interconnector between Victoria and NSW	AEMO and Victorian Government	Regulatory test scheduled for completion end 2021	\$2.4 billion ^{4, 5}
Queensland NSW Interconnector (2) – To further increase transfer capacity between QLD, New England Energy Zone and NSW	AEMO	Regulatory test to start by end 2021	\$1.1 billion ⁵
NSW Grid Battery – 50MW grid-scale battery to pilot “synthetic” inertia and energy market services	TransGrid	Contracts under negotiation	>\$50 million
New England Connection – A new dedicated transmission line to support development of the Tamworth to Gunnedah area	TransGrid	ARENA funding in place to commence generator EOI	\$150 million
Special Activation Precincts (SAPs) – A initiative to “power the digital economy” in regional and rural NSW	NSW Government	EOI under review by NSW Government	\$20 million
TransGrid/Western Sydney Airport – A new energy hub to connect Western Sydney Airport and key surrounding projects/precincts	Western Sydney Airport	Full project approval by end October 2020	\$120 million
Skills Training Initiative – A new initiative to provide skills training and apprenticeship for up to 350 people to work in high voltage transmission construction and maintenance and to fill identified sector skills gaps	TransGrid with construction contractors	Development by TransGrid as Registered Training Organisation	\$10 million
Total	—	—	\$11.1 billion

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DOMESTIC INVESTMENT (%)	EMPLOYMENT ⁷		ECONOMIC IMPACT ⁸ (\$)	CONSTRUCTION COMMENCEMENT
	DIRECT JOBS	INDIRECT JOBS		
65%	1,200	2,720	\$5.1 billion	2024 (indicative)
65%	600	1,220	\$2.1 billion	2024 (indicative)
35%	30	50	\$130 million	Mid 2020
65%	300	230	\$370 million	July 2021 – can fast-track with direct investment
60%	110	140	\$50 million	Ready to proceed subject to funding
60%	250	380	\$280 million	Feb 2021
100%	350	220	\$35 million	2020/21
—	7,175	14,680	\$25.4 billion	—

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