



20 October 2016

COAG Energy Council Secretariat
GPO Box 9839
CANBERRA ACT 2601

By email to energycouncil@environment.gov.au

Dear Secretariat,

Submission to COAG Energy Council Secretariat Review of the Regulatory Investment Test for Transmission

The Clean Energy Finance Corporation welcomes the opportunity to make a submission to the COAG Energy Council's review of the Regulatory Investment Test for Transmission.

The CEFC's role in electricity networks

The Clean Energy Finance Corporation invests to increase the flow of finance into the clean energy sector. Our mission is to accelerate Australia's transformation towards a more competitive economy in a carbon constrained world, by acting as a catalyst to increase investment in emissions reduction. Our investment strategy is focused on cleaner power solutions, including large and small-scale solar, wind and bioenergy; and a better built environment, with investments to drive more energy efficient property, vehicles, infrastructure and industry.

The CEFC seeks to promote investments in electricity transmission network – including strategic interconnector augmentations – that will help unlock regions with strong renewable energy resources, facilitate the expected strong growth in utility-scale renewable energy over coming decades and ensure energy security. These objectives are consistent with Australia's emissions reduction commitments and its further international pledge to help limit climate change to below two degrees.

Key points

In this submission, we say that meeting Australia's emissions reduction goals will require a transformation of the electricity system and a higher penetration of renewable energy. Facilitating this energy transition will require strategic investment in transmission.

Regulation of transmission investment must facilitate higher renewables penetration. Without the necessary changes, the regulatory investment test for transmission (RIT-T) is unlikely to deliver sufficient timely investment in transmission infrastructure to cope with the needs of Australia's future electricity system.

Meeting Australia's emissions goals will require a transformation of the electricity system

The electricity system is rapidly transforming. Renewable energy technology costs are declining, consumers' needs are changing, policies are evolving and the generation mix is shifting. Australia's national target to reduce emissions by 26-28% by 2030 implies a significant increase in renewable energy generation in coming decades.

The national target is a minimum pledge under the Paris Agreement and is subject to a five-yearly review, from which the national commitment is only likely to deepen towards a long-term net zero carbon target before 2050. State governments are implementing or considering strategies for decarbonising electricity generation, such as Victoria’s renewable energy targets of 25% by 2020 and 40% by 2025.

Figure 1: Meeting the emissions constraint will require a transformation of the electricity system

Scenario	2030				2050			
	Coal	Gas	Renewable	Other low emission	Coal	Gas	Renewable	Other low emission
Reference	63%	12%	24%	0%	53%	28%	19%	0%
Carbon pricing	3%	41%	46%	10%	0%	8%	65%	27%
Emission intensity	5%	24%	52%	19%	0%	6%	69%	25%
Absolute baselines	21%	3%	76%	1%	0%	1%	71%	28%
RET	16%	9%	74%	0%	4%	15%	81%	0%
LET	20%	5%	70%	5%	1%	5%	72%	22%
FIT	19%	6%	72%	2%	2%	6%	73%	19%
Regulatory	0%	32%	66%	2%	0%	21%	62%	17%

Share of generation by technology type, % of total generation, 2°C emissions constraint
 Source: [Jacobs](#) (2016), *Modelling illustrative electricity sector emissions reduction policies*

Jacobs Group [modelling](#) for the Climate Change Authority finds that meeting Australia’s emissions target will require a rapid transformation of the electricity system. Figure 1 shows that depending on the policy chosen, the share of generation from coal will decline to as low as three per cent and no more than 21 per cent in 2030, compared with 63 per cent in the reference case.

The transformation of the electricity sector will require strategic investment in transmission

Higher penetration of renewable energy requires changes in the electricity transmission network. An electricity system with high levels of renewables is likely to have different geographic coverage and have more inter-regional connections than a fossil fuel-reliant network. That is because, compared to fossil fuels, renewable energy resources have a different geographic distribution and renewable generators generally have a different dispatch profile.

The IEA’s recent report [Repowering Markets](#) (2016) says that meeting decarbonisation targets will require a strong and reliable transmission network to connect load centres with wind and solar resources and to transport electricity between states, and that interconnectors are by far the most cost-efficient solution for aggregating a high share of variable renewable energy and ensuring a highly secure electricity supply.

Interconnectors deliver cost benefits. Lowest-cost generators dispatch first, so in a highly interconnected network, renewable energy generators with low short-run marginal costs such as solar and wind will be dispatched first, leading to lower overall generation costs for a given demand. Diversity in the generation mix across states promotes opportunity for trade.

Weaker interconnection leads to higher and more volatile prices

The experience of South Australia over recent years suggests that underinvestment in interconnectors is likely to see higher and more volatile electricity prices and higher costs for consumers.

Figure 2: South Australia faces higher and more volatile wholesale power prices than other regions

	NSW	Qld	SA	Vic	Tas
Maximum price (\$)	307.38	466.22	13650.15	360.06	2402.02
Minimum price (\$)	4.56	4.37	-1000.00	-196.93	-43.4
Trading periods above \$200	77	51	438	84	118
	1.8%	1.2%	10.0%	1.9%	2.7%
Trading periods with negative prices	0	0	99	33	144
	0.0%	0.0%	2.3%	0.8%	3.3%
90th percentile price (\$)	90.76	86.72	197.38	92.49	94.39
50th percentile price (\$)	40.60	42.28	63.26	37.57	39.12
10th percentile price (\$)	27.20	25.82	16.81	16.87	9.64

Power prices by region, September quarter 2016 [Source: AEMO, CEFC]

Figure 2 shows that with relatively limited interconnection to other markets, South Australia faces higher and more volatile prices than other regions, with more trading periods with a price above \$200 and a wider range of prices.

Augmented interconnector capacity for South Australia and Tasmania would benefit consumers and the National Electricity Market

The CEFC is monitoring several major transmission augmentation proposals, including plans to strengthen interconnectors to South Australia and build a second undersea interconnector to Tasmania. The CEFC is working to build a team of industry participants to investigate the second Tasmania-Victoria interconnector.

Analysis for the Climate Change Authority by Jacobs Group (Australia) found that in all policy scenarios except one, a second interconnector between Tasmania and Victoria would be required in the 2020s for Australia to meet its decarbonisation targets under the Paris Agreement. The Jacobs analysis also showed that rapid closure of brown coal generation is likely under most scenarios and that the overall contribution of coal-fired electricity generation decreases significantly. An important consideration for Victorian energy security is how this rapid closure is managed and how new capacity is added to the network.

A second Tasmania-Victoria interconnector is likely to have a range of benefits, including:

- enhancing security of supply as brown coal generation is withdrawn from the Victorian market
- facilitating Victoria’s renewable energy targets
- improving the security of Tasmanian electricity supply by providing redundancy for the existing Basslink interconnector
- facilitating investment in wind farms and network infrastructure in Tasmania (where community acceptance is high)
- enabling investment in ‘repowering’ Tasmania’s hydro system with higher capacity turbines, allowing Tasmania’s system to supply peak-load renewable energy and ancillary services to mainland regions of the National Electricity Market, and
- improving Australia’s ability to meet its carbon targets under the Paris Agreement.

The current design and implementation of the RIT-T – specifically the fact that it does not take into account international emissions reduction commitments or the rapid evolution of the electricity system – is delaying the development of the investment case for a second interconnector.

Regulatory settings for transmission investment should facilitate higher renewables penetration

In a time of significant market transition, timely interconnector investment should take account of the expected evolution of the electricity system.

In this context, an appropriately designed regulatory investment test would deliver investment that unlocks new renewable resources and boosts inter-regional trade.

The regulatory settings for network investment should facilitate an orderly transformation of the electricity system. As currently designed and implemented, the regulatory investment test for transmission, which is limited to taking into account current policy settings and does not take into account Australia's international emissions reduction commitments, is unlikely to deliver sufficient timely investment in transmission infrastructure to cope with the needs of Australia's future electricity system.

Transmission assets are long-lived and are slow to plan and implement. Given low long-term interest rates, the cost of 'overinvesting' in interconnectors or investing too early is likely to be small and outweighed by the system-wide insurance value of redundancy through a strongly interconnected network and the other benefits of strong interconnection such as lower prices.

Without change, the RIT-T will see underinvestment in transmission and a more costly transition to a low-carbon electricity system

The RIT-T was introduced after a period of elevated investment spending in the transmission network. The conservative bias of the RIT-T is likely to see interconnector investment delayed or undersized. That underinvestment could in turn lead to suboptimal generation investment, slowing the decarbonisation of the electricity system and putting Australia on a carbon emissions pathway that is not consistent with the national emissions reduction goal.

Major network infrastructure is costly and the cost of capital is affected by confidence on the part of investors, including confidence that the project will be included in the regulatory asset base of network companies. It would contribute to a lower cost of capital for new investment if proposed interconnector assets could be given an advance determination under the RIT-T from the Australian Energy Regulator of the kind available to gas transmission assets under Part 9 of the National Gas Rules (where rule 80 provides the AER's power to make advance determination with regard to future capital expenditure).

The RIT-T does not consider distributional effects, which means that decisions could see significant value flow to incumbent producers before the expected closure of coal-fired capacity, at the expense of consumers. In addition, long-term electricity price distortions caused by delays in interconnector investment are likely to affect locational decisions for large electricity consumers such as manufacturers, with significant consequences for state economic output.

Interconnector projects have a range of benefits that are not captured by the RIT-T's narrow cost-benefit test, including enhanced competition and providing better access to high-quality renewable energy resources. A strongly interconnected network offers system-wide efficiency and broad economic and social benefits.

We would be happy to meet with the Secretariat to discuss our experience with transmission investment and explore the barriers faced by projects like a second Victoria-Tasmania interconnector. We look forward to continuing to work together to facilitate the transformation of Australia's electricity system.

Sincerely,



Oliver Yates
Chief Executive Officer
Clean Energy Finance Corporation