



MONASH University

***Changing the Way We Live: Investigating Australian
Renewable Energy Legislative Measures***

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ABSTRACT

Australia is one of the highest contributors to the world's greenhouse gas emissions on a per capita basis. The stationary electricity sector in Australia is the highest contributor to Australia's national greenhouse gas emissions due to that sector's historically heavy reliance upon fossil fuels. Reducing the use of fossil fuels in the stationary electricity sector through encouraging the increased supply of and demand for renewable energy is key to Australia being able to reduce its high national greenhouse gas emissions.

The Australian Commonwealth Government has introduced a range of greenhouse gas emissions reduction policy and legislative measures over the past two decades including renewable energy policy and legislative measures. However, these measures are considered to have had a modest impact on increasing the uptake of electricity generated from renewable energy sources in Australia and in turn, Australia's high national greenhouse gas emissions.

The *Paris Agreement* recognises the importance of the engagement of all levels of government in addressing climate change. The Paris Conference of Parties is notable for the fact that it agreed to uphold and promote 'bottom up' action by sub-national actors in order to mobilize stronger and more ambitious climate action.

To demonstrate Australian sub-national action on climate change through the reduction of greenhouse gas emissions, this thesis considers the key policy and legislative measures Australian State and Territory sub-national governments have implemented to promote the increased supply of and demand for electricity generated from renewable energy sources.

Using a functional comparative law method, this thesis analyses and compares specific renewable energy related legislative measures of South Australia against those of the other Australian sub-national jurisdictions that form the National Electricity Market; these are Queensland, New South Wales, the Australian Capital Territory, Victoria and Tasmania.

The specific legislative measures analysed in this thesis are renewable energy target schemes, feed-in tariff schemes, measures that promote research in, and the development and commercialisation of, renewable energy technologies, and subordinate tools that promote 'grass roots' action on renewable energy. This thesis analyses the similarities and differences

between South Australia's measures and those of the other National Electricity Market jurisdictions, and considers the policy and legislative insights arising from those similarities and differences.

The key findings of this thesis show that there is a 'patchwork quilt' of renewable energy policy and legislative measures across the NEM jurisdictions with a broad range of historical and political factors that have influenced the evolution of those policy and legislative measures. The National Electricity Market jurisdictions have played, and continue to play, a valuable and critical sub-national role in promoting the increased uptake of electricity from renewable energy sources albeit at different times and to differing extents.

This thesis reflects the law as at 31 August 2019.

DECLARATION

This thesis contains no material which has been accepted for the award of any other degree or diploma at any university or equivalent institution and that, to the best of my knowledge and belief, this thesis contains no material previously published or written by another person except where due reference is made in the text of the thesis.

.....

Michelle Rachael Louise Willetts

Date.....

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LIST OF ABBREVIATIONS

ACCC – Australian Competition and Consumer Commission

ACT – Australian Capital Territory

ACT CC Act – *Climate Change and Greenhouse Gas Emissions Reduction Act 2008* (ACT)

ACT CCC – ACT Climate Change Council

ACT Large-scale FiT Act – *Electricity Feed-in (Large-scale Renewable Energy Generation) Act 2011* (ACT)

ACT Premium FiT Act – *Electricity Feed-in (Renewable Energy Premium) Act 2008* (ACT)

AEMO – Australian Energy Market Operator

AER – Australian Energy Regulator

ARENA – Australian Renewable Energy Agency

CEFC – Clean Energy Finance Corporation

CEIF – Clean Energy Innovation Fund

COAG – Council of Australian Governments

CO₂ – Carbon dioxide

CO_{2e} – Carbon dioxide equivalent

CSIRO – Commonwealth Scientific and Industrial Research Organisation

ESC – Essential Services Commission (Victoria)

ESCOSA – Essential Services Commission of South Australia

FiT – Feed-in tariff

GHG emissions – Greenhouse gas emissions

GW – Gigawatt

GWh – Gigawatt per hour

ICRC – Independent Competition and Regulatory Commission (ACT)

IPCC – International Panel on Climate Change

IEA – International Energy Agency

IRENA – International Renewable Energy Agency

KW – Kilowatt

KWh – Kilowatt per hour

MW – Megawatt

MWh – Megawatt per hour

NAZCA – Non-State Actor Zone for Climate Action

NEG – National Energy Guarantee

NEL – National Electricity Law

NEM – National Electricity Market

NEPP – National Energy Productivity Plan

NER – National Electricity Rules

NSW – New South Wales

OECD – Organisation for Economic Co-operation and Development

PCCC – Premier’s Climate Change Council (South Australia)

QCA – Queensland Competition Authority

Queensland FiT Act – *Electricity Act 1994* (Qld)

RDC measures – Measures that promote research in, and the development and commercialisation of, renewable energy technologies

RET – Renewable energy target

SA CC Act – *Climate Change and Greenhouse Gas Reduction Act 2007* (SA)

SA FiT Act – *Electricity Act 1996* (SA)

Tasmanian CC Act – *Climate Change (State Action) Act 2008* (Tas)

Tasmanian FiT Act – *Electricity Supply Industry Act 1995* (Tas)

UNEP – United Nations Environment Programme

UNFCCC – *United Nations Framework Convention on Climate Change*

Victorian CC Act – *Climate Change Act 2017* (Vic)

Victorian FiT Act – *Electricity Industry Act 2000* (Vic)

Victorian RET Act – *Renewable Energy (Jobs and Investment) Act 2018* (Vic)

WMO – World Meteorological Organization

In memory of Jocelyn Louise Willetts

24 January 1945 – 13 April 2015

I THESIS INTRODUCTION

The *Paris Agreement* is notable for its recognition of the importance of ‘bottom up’ action by sub-national actors to address climate change:

Recognizing the importance of the engagements of *all levels of government and various actors*, in accordance with respective national legislations of Parties, in addressing climate change (emphasis added).¹

The Paris Conference of Parties’ decision expressly welcomed the efforts of non-party stakeholders, including sub-national authorities, to respond to climate change and agreed to ‘uphold and promote’ action by sub-national actors to ‘mobilize stronger and more ambitious climate action’.²

To demonstrate Australian sub-national action on climate change through the reduction of greenhouse gas emissions (‘GHG emissions’), this thesis considers the critical role Australian State and Territory sub-national governments play in increasing the supply of and demand for electricity generated from renewable energy sources.

This Chapter sets out the key context and background to the thesis topic including the relevance and importance of the thesis topic. This Chapter also outlines the Key Research Questions, the scholarly contribution made and the thesis method and structure.

¹ Paris Agreement annexed to Conference of the Parties, *United Nations Framework Convention on Climate Change*, Report of the Conference of Parties on its twenty-first session, held in Paris from 30 November to 13 December 2015 – Addendum – Part two: Action taken by the Conference of the Parties at its twenty-first session, Decision 1/CP.21, Adoption of the Paris Agreement, UN Doc FCCC/CP/2015/10/Add.1 (29 January 2016) (‘*Paris Agreement*’) Preamble. The *Paris Agreement* was opened for signature 22 April 2016 and entered into force 4 November 2016. Australia ratified the *Paris Agreement* on 9 November 2016.

² Conference of the Parties, *United Nations Framework Convention on Climate Change*, Report of the Conference of Parties on its twenty-first session, held in Paris from 30 November to 13 December 2015 – Addendum – Part two: Action taken by the Conference of the Parties at its twenty-first session, Decision 1/CP.21, Adoption of the Paris Agreement, UN Doc FCCC/CP/2015/10/Add.1 (29 January 2016) Preamble and paras 117 and 133-4. The Paris Conference of Parties also encouraged non-party stakeholders to register their actions in the Non-State Actor Zone for Climate Action (‘NAZCA’) platform. South Australia, Tasmania, the Australian Capital Territory (‘ACT’) and New South Wales (‘NSW’) have all registered their actions in NAZCA.

A Context and Background

1 The Significance of Climate Change for Australia

The events of the past 250 years have seen an extraordinary change in the way we live our lives. Many nations are now more affluent, industrialised and populated than they were at the start of the Industrial Revolution in the 1750s.³ Living standards in developed countries and emerging economies are at a level of sophistication unimaginable 250 years ago.

At the same time, there has been a rise in the extraction and use of fossil fuels to meet the energy needs and wants of modern society since the start of the Industrial Revolution.⁴ The increased uptake in fossil fuels has been linked to an increase in global GHG emissions⁵ and, in turn, a potentially ‘catastrophic’⁶ rise in the average global temperature leading to climate change.⁷

The International Panel on Climate Change (‘IPCC’) has stated that ‘warming of the climate system is unequivocal’⁸ and that human activities are estimated to have caused approximately

³ This thesis has used the International Panel on Climate Change’s (‘IPCC’) estimation of when the Industrial Revolution is considered to have begun (IPCC, *Second Assessment: Climate Change 1995. A Report of the Intergovernmental Panel on Climate Change* (1995) 4).

⁴ IPCC, *Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (2014) 45-6.

⁵ The three key greenhouse gas emissions (‘GHG emissions’) measured by the IPCC are carbon dioxide (‘CO₂’), methane and nitrous oxide (IPCC, above n 3, 4).

⁶ David Suzuki and Ian Hanington, *Just Cool It! The Climate Crisis and What We Can Do* (NewSouth Publishing, 2017) 12 and Chapter 2. An increase in the average global temperature of two degrees Celsius (‘°C’) or more is widely considered to be dangerous. See also Tim Flannery, *Atmosphere of Hope* (Text Publishing, 2015).

⁷ Climate change has been defined by the IPCC as ‘a change in the state of the climate that can be identified (for example, by using statistical tests) by changes in the mean and/or variability of its properties, and that persists for an extended period, typically decades or longer’ (IPCC, *Climate Change 2007: Synthesis Report. Contribution of Working Groups I, II and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* (2007) 30). This definition can be contrasted with the more anthropogenic focused definition of climate change adopted by the *United Nations Framework Convention on Climate Change*: ‘a change of climate which is attributed directly or indirectly to *human activity* that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods’ (emphasis added) (*United Nations Framework Convention on Climate Change*, opened for signature 4 June 1992, 1771 UNTS 107 (entered into force 21 March 1994) (‘UNFCCC’) art 1, para 2).

⁸ IPCC, above n 4, 40. The World Meteorological Organization (‘WMO’) has reported that 2018 was the fourth warmest year on record with the years 2015 to 2018 being the four warmest years on record; the global average surface temperature was around 1°C above the pre-industrial reference period (WMO, *Statement on the State of the Global Climate in 2018* (2018) 5-6).

one degree Celsius (°C) above pre-industrial levels of global warming.⁹ The IPCC has also warned that warming from anthropogenic emissions will persist for ‘centuries to millennia’.¹⁰

As acknowledged by the *United Nations Framework Convention on Climate Change* (‘UNFCCC’), climate change is a ‘common concern of humankind’¹¹ that has far reaching and serious consequences for our society’s existence.¹² It impacts on almost every facet of our everyday lives and it affects everyone from the poorest to the wealthiest.¹³

Australia’s hot, dry and variable climate,¹⁴ coastal based population¹⁵ and unique biodiversity¹⁶ make it ‘particularly vulnerable’ to even small variations in climate.¹⁷ Australia is the driest of all inhabited continents¹⁸ and experiences considerable rainfall variability both across the continent and from year to year.¹⁹

Rainfall has been particularly variable across Australia in the past 40 years with a decline in long-term rainfall observed across the south-west and south-east of Australia, impacting on key economic sectors such as agriculture and tourism as well as Australia’s ecosystems.²⁰ The annual average temperature in Australia has increased by just over 1°C since 1910 and most of this warming has occurred since 1950.²¹ 2018 was Australia’s third warmest year on record.²² In recent decades, Australia has experienced an increase in the number and intensity of

⁹ IPCC, 2018: *Summary for Policymakers. In: Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development and efforts to eradicate poverty* (2018) 4. Discussion of climate change related counter-arguments, for example, that the increase in the average global temperature currently being experienced is a natural phenomenon, is outside the scope of this thesis.

¹⁰ Ibid 5.

¹¹ UNFCCC Preamble.

¹² For a discussion of climate change related risks to, for example, health, food security and water supply, see IPCC, above n 9, 8.

¹³ Ibid.

¹⁴ Ross Garnaut, *The Garnaut Climate Change Review* (Cambridge University Press, 2008), xix.

¹⁵ Australia has a highly urbanised coastal population of just over 25 million people which is relatively small compared to its size (768,812,631.9 hectares which is approximately 7.7 million kilometres²) (Australian Bureau of Statistics <<https://www.abs.gov.au>>).

¹⁶ Australia is one of only seventeen mega-diverse countries in the world, housing more than one million native species, many of which are exclusive to Australia (Department of Industry, Innovation, Climate Change, Science, Research and Tertiary Education, Australian Government, *Australia’s Sixth National Communication on Climate Change* (2013) 18). For a brief discussion on the Great Barrier Reef, see Chapter II.

¹⁷ Ibid 5.

¹⁸ Department of the Environment and Energy, Australian Government, *Australia’s Seventh National Communication on Climate Change* (2017) 15.

¹⁹ Ibid 24.

²⁰ Department of Industry, Innovation, Climate Change, Science, Research and Tertiary Education, Australian Government, above n 16, 5 and 29.

²¹ Bureau of Meteorology, Australian Government, *State of the Climate 2018* (2018) 4.

²² Bureau of Meteorology, Australian Government, *Annual climate statement 2018* (2019).

heatwaves and bushfire type weather.²³ Unmitigated, climate change poses a ‘significant’ threat to Australia’s unique environment, economic security and ‘way of life’.²⁴

2 *The Paris Agreement and Reducing Australia’s Greenhouse Gas Emissions*

The key objective of the *Paris Agreement* is to strengthen the international response to climate change by keeping the increase in the average global temperature to well below 2°C this century and to pursue aspirational efforts to limit this increase to 1.5°C.²⁵ As a party to the *UNFCCC*, the *Kyoto Protocol*²⁶ and the *Paris Agreement*, Australia has committed to these ambitious international efforts to limit the increase in the average global temperature.²⁷

Australia’s commitments include adopting national measures²⁸ to prevent or minimise the causes of climate change by, amongst other things, addressing and limiting its national GHG emissions.²⁹ The Australian Commonwealth Government has committed to reducing Australia’s national GHG emissions by 26% to 28% below 2005 levels by 2030 in its nationally determined contribution (‘NDC’).³⁰ Australia’s NDC describes this as a ‘serious and ambitious effort for Australia’ that takes into account ‘higher than average abatement costs’.³¹ At the core of Australia’s ability to meet its GHG emissions reduction commitments under the *Paris Agreement* is the need for Australia to reduce its high national GHG emissions.

²³ Department of Industry, Innovation, Climate Change, Science, Research and Tertiary Education, Australian Government, above n 16, 25. For a general discussion of recent heatwaves and bushfires in Australia, see Climate Council, *The Angriest Summer* (2019).

²⁴ Department of Industry, Innovation, Climate Change, Science, Research and Tertiary Education, Australian Government, above n 16, 4. For a general discussion of climate change related impacts in Australia, see, for example, Department of the Environment and Energy, Australian Government, *Australia State of the Environment 2016* (2016); Garnaut, above n 14, Chapter 6; The Climate Commission, *The Critical Decade* (2012).

²⁵ *Paris Agreement* art 2. The *Paris Agreement* also contains a long-term goal of reaching ‘global peaking of greenhouse gas emissions as soon as possible’ and achieving ‘a balance’ between sources of GHG emissions and removal of those GHG emissions ‘in the second half of this century’ (art 4). The reference to ‘balance’ has been interpreted to mean net zero GHG emissions.

²⁶ *Kyoto Protocol to the United Nations Framework Convention on Climate Change*, opened for signature 16 March 1998, 2303 UNTS 148 (entered into force 16 February 2005) (‘*Kyoto Protocol*’). Australia signed the *Kyoto Protocol* on 24 April 1998 but only ratified the Protocol on 12 December 2007, almost ten years later.

²⁷ Examination of the *UNFCCC*, the *Kyoto Protocol* and the *Paris Agreement* is outside the scope of this thesis.

²⁸ In recognising the sovereign rights of its Parties to regulate their own affairs under international law, the *UNFCCC* and its supporting instruments do not specify the particular measures Australia is required to implement.

²⁹ *UNFCCC* art 4(2), *Kyoto Protocol* art 2(1) and *Paris Agreement* art 4(2). The *Paris Agreement* establishes binding commitments on all Parties to prepare, communicate and maintain nationally determined contributions (‘NDC’), and to pursue domestic measures to achieve them (*Paris Agreement* art 4). Each successive NDC is to represent a progression beyond the previous one and reflect the highest possible ambition. According to the recent analysis of NDCs undertaken by the United Nations Environment Programme (‘UNEP’), the pledges received need to be ‘roughly tripled for the 2°C scenario and increased around fivefold for the 1.5°C scenario’ (UNEP, *Emissions Gap Report 2018* (2018) xv).

³⁰ Australian Government, *Australia’s Intended Nationally Determined Contribution to a new Climate Change Agreement* (2015) 1.

³¹ *Ibid.*

In 2017, Australia's total national GHG emissions, including the Land Use, Land Use Change and Forestry ('LULUCF') sector, were 534.7 metric tonnes of carbon dioxide ('CO₂') equivalent ('CO_{2e}').³² This is approximately 1.35% of the total global GHG emissions (53.5 gigatonnes of CO_{2e})³³ which appears relatively low. However, an examination of Australia's per capita GHG emissions³⁴ reveals a different story. In 2015, Australia's per capita GHG emissions were approximately 22 metric tonnes of CO_{2e} per person.³⁵ When compared with other more densely populated UNFCCC Parties, for example, the United States of America (18 metric tonnes of CO_{2e} per capita), Russia (15 metric tonnes of CO_{2e} per capita) and the European Union (7.9 metric tonnes of CO_{2e} per capita), this shows that Australia has comparatively high levels of national GHG emissions on a per capita basis.³⁶

A range of sources including the stationary energy,³⁷ industrial, agriculture, transport and waste sectors contribute to Australia's national GHG emissions in differing proportions. In 2017, the stationary energy sector was the highest contributor to Australia's total national GHG emissions at 51.4%; this can be contrasted with the second and third highest contributing sectors, the transport sector (17.8%) and the agriculture sector (13.2%).³⁸ The electricity generation sub-sector ('stationary electricity sector') contributed 66.6% of the stationary energy sector's GHG emissions in 2017.³⁹

³² Department of the Environment and Energy, Australian Government, *National Inventory Report 2017 Volume 1* (2019) 34. CO₂ equivalent ('CO_{2e}') is a measure that is used to compare the emissions from different greenhouse gases based on their global warming potential. The inclusion of emissions and removals from the Land Use, Land Use Change and Forestry ('LULUCF') sector depends on the accounting approach being used to calculate GHG emissions. When the LULUCF sector is not included, Australia's total national GHG emissions for 2017 were 554.1 metric tonnes CO_{2e} (Department of the Environment and Energy, Australian Government, *National Inventory Report 2017 Volume 1* (2019) 34).

³³ UNEP, above n 29, xv.

³⁴ Per capita GHG emissions is a measurement of the amount of GHG emissions per person.

³⁵ <https://www.climatewatchdata.org/ghgemissions?breakBy=regionsPER_CAPITA&gases=151®ions=AUS%2CRUS%2CUSA%2CEU28§ors=440&source=36>. Australia's NDC target is the equivalent to halving its per capita emissions (Australian Government, above n 30, 1). Australia's per capita GHG emissions for 2018 have been estimated to be approximately 21.5 metric tonnes of CO_{2e} per person. This indicates there has been a small decrease in Australia's per capita GHG emissions since 2015 (Department of the Environment and Energy, above n 32, 35).

³⁶ <https://www.climatewatchdata.org/ghg-emissions?breakBy=regions-PER_CAPITA&gases=151®ions=AUUS%2CRUS%2CUSA%2CEU28§ors=440&source=36>. Australia has a population of just over 25 million people (Australian Bureau of Statistics <<https://www.abs.gov.au>>). The populations of the United States of America, Russia and the European Union are 325 million, 145 million and 512 million respectively (<<https://data.worldbank.org/indicator/sp.pop.totl>>).

³⁷ The stationary energy sector is primarily the combustion of fossil fuels for electricity and heat production and the manufacturing and construction industries (Department of the Environment and Energy, Australian Government, above n 32, 43).

³⁸ Ibid 34.

³⁹ Ibid 43.

Australia's national net GHG emissions, including the LULUCF sector, has overall declined by 11.6% between 1990 and 2017.⁴⁰ This decline has been primarily attributed to changes in agriculture, land clearing and waste management practices.⁴¹ However, the same data also shows that GHG emissions in the stationary electricity sector rose by 46.5% during the same period.⁴² The increase in GHG emissions in the stationary electricity sector during this period was the second largest increase in GHG emissions after the transport sector, partly due to population growth and increasing household incomes.⁴³

An examination of Australia's domestic fuel mix profile reveals the reason behind the high levels of GHG emissions in the stationary electricity sector. Like many developed countries, as shown in Figure 1 below, Australia's domestic fuel mix is heavily dependent upon fossil fuels.⁴⁴ In 2016-17, fossil fuels (oil (38%), coal (31%) and natural gas (25%)) accounted for 94% of the fuel mix in Australia compared to renewable energy (6%).⁴⁵

As illustrated in Figure 2 below, this dependence on fossil fuels is most notable in the stationary electricity sector where black and brown coal has long dominated base load electricity generation. Fossil fuels (coal (63%), natural gas (19%) and oil (2%)) accounted for 84% of total electricity generation in 2016-17.⁴⁶ In contrast, electricity generation from renewable energy sources during 2016-17 accounted for only 16% of total electricity generation in Australia.⁴⁷

The high proportion of fossil fuels in the stationary electricity sector is driven primarily by Australia's cheap, readily accessible and plentiful supply of coal.⁴⁸ The externalities of climate change are not factored into the costs of extraction, supply and use of coal as an energy

⁴⁰ Ibid 34.

⁴¹ Department of the Environment and Energy, Australian Government, above n 18, 33.

⁴² Department of the Environment and Energy, Australian Government, above n 32, 44.

⁴³ Ibid 36.

⁴⁴ Australia has substantial fossil fuel reserves, and its resource intensive industries and fossil fuels export sector contribute significantly to the Australian economy. Australia is the world's second largest net exporter of coal, supplying 6.6% of the world's total coal (International Energy Agency ('IEA'), *Key world energy statistics 2018* (2018) 7).

⁴⁵ Department of the Environment and Energy, Australian Government, *Australian Energy Update 2018* (2018) 7.

⁴⁶ Ibid 23.

⁴⁷ Ibid.

⁴⁸ Department of Industry, Innovation, Climate Change, Science, Research and Tertiary Education, Australian Government, above n 16, 23. See also Rowena Cantley-Smith, 'Mitigating the Environmental Consequences of Electricity Sector 'Lock In': Options for a decarbonised energy future' in Mona Hymel and others (eds), *Innovation Addressing Climate Change Challenges: Market-Based Perspectives* (Edward Elgar, UK, 2018) 213.

Figure 1 – Australian Energy Consumption by Fuel Type – 2016-17⁴⁹

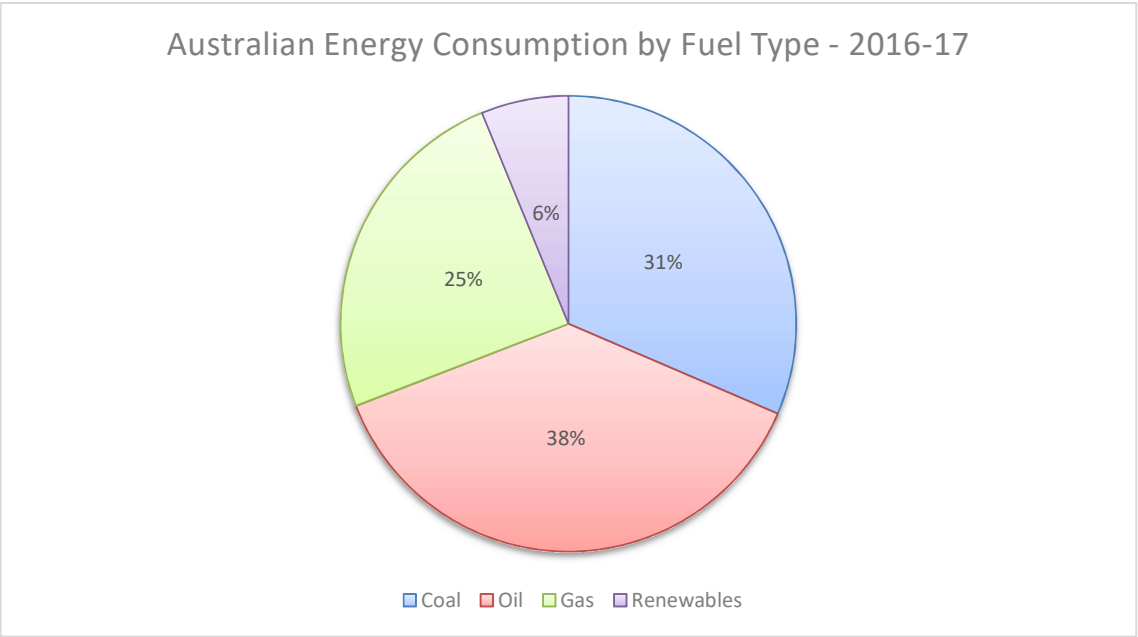
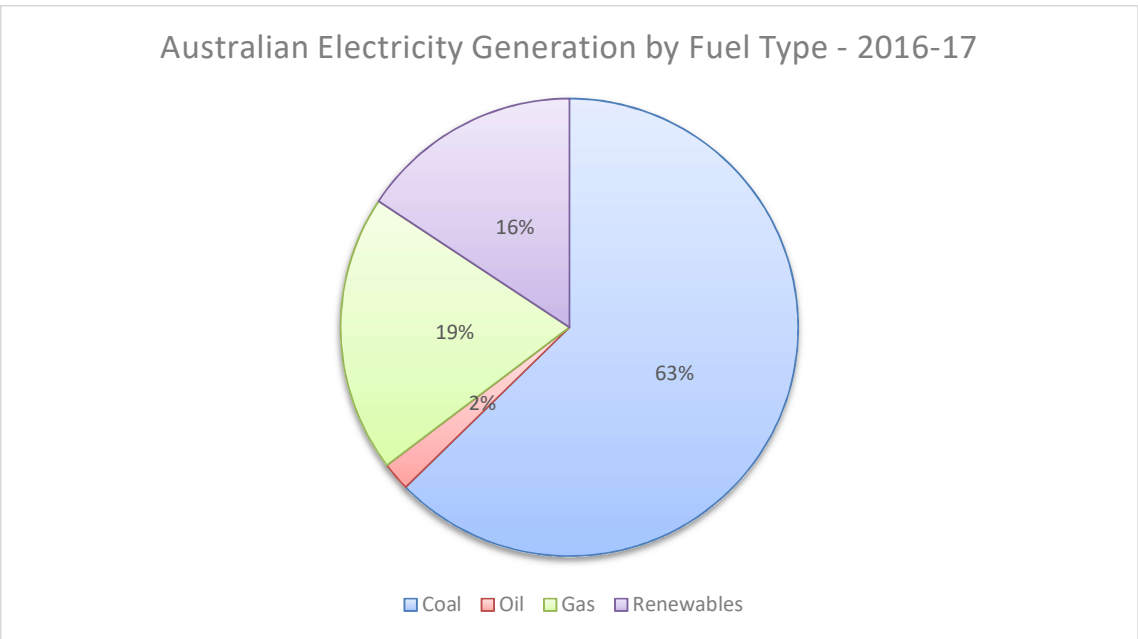


Figure 2 – Australian Electricity Generation by Fuel Type – 2016-17⁵⁰



⁴⁹ Department of the Environment and Energy, Australian Government, above n 45, 7.

⁵⁰ Ibid 23.

source.⁵¹ This has historically resulted in coal being a cheaper source of energy compared to, for example, renewable energy.⁵²

The need to reduce Australia's high national GHG emissions presents an opportunity to reduce the high levels of GHG emissions in the stationary electricity sector. The dominance of fossil fuels in the stationary electricity sector fuel mix presents an opportunity for promoting the increased uptake of electricity generated from renewable energy sources.

As discussed above, there is a broad range of sources of GHG emissions in Australia. This breadth of sources presents a challenge for the design of Australian policy and legislative GHG emissions reduction measures. This is partly because there is no 'one size fits all' approach that can be adopted to reduce GHG emissions; each sector has its own particular set of characteristics and issues, requiring a different GHG emissions reduction 'tool kit' for each sector.

Buckman and Diesendorf have argued that out of all GHG emissions sources in Australia, the most 'feasible' areas of GHG emissions reduction are electricity generation and use; this is because these GHG emissions sources are 'easier and less expensive to reform' than other GHG emissions sources such as the agriculture and transport sectors.⁵³ In the case of the stationary electricity sector, one particular challenge to achieving GHG emissions reduction through promoting the increased uptake of renewable energy is overcoming the dominant availability of cheap, readily accessible and plentiful coal.

GHG emissions reduction in the stationary electricity sector can be achieved through a broad range of measures including discouraging the use of fossil fuels by putting a price on carbon emissions, promoting the short to medium-term use of lower emissions or 'cleaner' fossil fuels such as natural gas, promoting the use of carbon capture and storage and improving energy efficiency.⁵⁴

In addition to the GHG emissions reduction measures listed above, reducing the use of fossil fuels in the stationary electricity sector through encouraging the increased supply of and

⁵¹ Greg Buckman and Mark Diesendorf, 'Design limitations in Australian renewable electricity policies' 38 (2010) *Energy Policy* 3365; Dermot Duncan and Benjamin Sovacool, 'The Barriers to the Successful Development of Commercial Grid Connected Renewable Electricity Projects in Australia, Southeast Asia, the United Kingdom and the United States of America' 2 (2011) *Renewable Energy Law and Policy* 283.

⁵² Liam Byrnes and others, 'Australian renewable energy policy: Barriers and challenges' (2013) 60 *Renewable Energy* 714.

⁵³ Buckman and Diesendorf, above n 51, 3366.

⁵⁴ Examination of these GHG emissions reduction measures is outside the scope of this thesis.

demand for renewable energy is key to Australia being able to reduce its high national GHG emissions and is the focus of this thesis.⁵⁵ Achieving this reduction in its GHG emissions will enable Australia to meet, and perhaps even exceed, its GHG emissions reduction commitments under the *Paris Agreement*.

3 The National Electricity Market

Identifying opportunities for GHG emissions reduction in the stationary electricity sector requires an understanding of the regulatory framework and market structure that applies to electricity in Australia. There are three electricity wholesale markets in Australia, the National Electricity Market ('NEM') in the southern and eastern region of Australia, the South West Interconnected System and the Wholesale Electricity Market in Western Australia and the Interim Northern Territory Electricity Market in the Northern Territory. The focus of this thesis is the NEM primarily as it comprises multiple jurisdiction participants (see below) with a broad range of historical and current renewable energy policy and legislative measures, providing a rich source of research data for this thesis' analysis of Australian sub-national action in promoting the increased supply of and demand for electricity generated from renewable energy sources.⁵⁶

The NEM⁵⁷ was established in 1998 under the National Electricity Law and comprises Queensland, New South Wales ('NSW'), the Australian Capital Territory ('ACT'), Victoria, Tasmania and South Australia ('NEM jurisdictions').⁵⁸ The NEM is a product of the electricity industry restructuring reforms that took place in the 1990s.⁵⁹ Prior to the reform of the

⁵⁵ Buckman and Diesendorf, above n 51, 3365; Byrnes and others, above 52, 713-14; Anne Kallies, 'A Barrier for Australia's Climate Commitments: Law, the Electricity Market and Transitioning the Stationary Electricity Sector' (2016) 39 *University of New South Wales Law Journal* 1548; Mark Diesendorf, *Renewable electricity policy for Australia* (The Australia Institute, 2018) 8.

⁵⁶ Examination of Western Australia and the Northern Territory's renewable energy policy and legislative measures is outside the scope of this thesis.

⁵⁷ The National Electricity Market ('NEM') is one of the world's longest interconnected power systems; it comprises approximately 40,000km of transmission lines and cables with the network stretching from Port Douglas in Far North Queensland down to Port Lincoln in South Australia and across the Bass Strait to Tasmania. The NEM supplies around 9 million customers and has a total electricity generating capacity of over 54,000 MW (as of December 2017). During 2016-17, \$16.6 billion was traded in the NEM. There are over 300 registered participants in the NEM including electricity generators, transmission network service providers, distribution network service providers and consumers (Australian Energy Market Operator ('AEMO'), <<https://www.aemo.com.au/-/media/Files/Electricity/NEM/National-Electricity-Market-Fact-Sheet.pdf>>).

⁵⁸ South Australia was the lead jurisdiction for the introduction of the National Electricity Law ('NEL') and National Electricity Rules ('NER'). Detailed examination of the NEM legislative framework is outside the scope of this thesis.

⁵⁹ Reform of the electricity industry began in 1991 with the Council of Australian Governments ('COAG') responding to the Industry Commission's report, *Inquiry Report: Energy Generation and Distribution*, commissioned the previous year by the then Commonwealth Treasurer, Paul Keating.

electricity industry, all utilities were owned and run by the State Governments, meaning that all generation, transmission, distribution and retail was effectively undertaken by the State Governments.⁶⁰ One consequence of this reform is the privatisation of most electricity generators, both fossil fuel and renewable energy electricity generators. This has, in turn, increased competition between renewable energy electricity generators and fossil fuel electricity generators, leading to a need for additional support for renewable energy electricity generators in the form of renewable energy support measures such as those examined in this thesis. The wide range of historical and current renewable energy policy and legislative support measures in the NEM supports the selection of the NEM as the focus of this thesis.

By way of a brief introductory overview to the NEM framework, the NEM is governed by the National Electricity Rules and overseen by four regulatory bodies - the COAG Energy Council, the Australian Energy Market Commission ('AEMC'), the Australian Energy Regulator ('AER') which forms part of the Australian Competition and Consumer Commission ('ACCC'), and the Australian Energy Market Operator ('AEMO').

The COAG Energy Council is the principal policy setting body with responsibility for the legislative and regulatory framework of the NEM; the AEMC is responsible for setting the NEM rules; the AER undertakes enforcement activities and the AEMO is responsible for the physical operation of the NEM. The AEMO also has a national planning function for the NEM. Other participants in the NEM are the electricity generators, transmission network service providers, distribution network service providers and the electricity retailers.⁶¹

The NEM has as its core objective the promotion of

efficient investment in, and efficient use of, electricity services for the long-term interests of consumers of electricity with respect to price, quality, reliability and security of supply of electricity and the reliability, safety and security of the national electricity system.⁶²

⁶⁰ For a discussion on reform of the Australian electricity industry, see, for example, Rowena Cantley-Smith, 'A Changing Legal Environment for the National Electricity Market' in Wayne Gumley and Trevor Daya-Winterbottom (eds), *Climate Change Law: Comparative, Contractual and Regulatory Considerations* (Lawbook, 2009).

⁶¹ For a discussion of the NEM institutions and the regulatory and legislative frameworks, see, for example, Anne Kallies, 'The Impact of Electricity Market Design on Access to the Grid and Transmission Planning for Renewable Energy in Australia: Can Overseas Examples Provide Guidance?' (2011) 2 *Renewable Energy Law and Policy Review* 147.

⁶² NEL, section 7. The transmission of electricity from generators to consumers in the NEM is facilitated through the 'spot market' where the output from all generators is aggregated and scheduled at intervals of five minutes to meet demand. The spot market uses sophisticated systems to send signals to generators instructing them how

4 Renewable Energy in the NEM

The term ‘renewable energy’ encompasses a broad range of sources including solar, wind, hydro, tidal, geothermal and various types of waste including landfill and agricultural related waste.⁶³ Australia has ‘abundant and diverse’ renewable energy sources.⁶⁴ Currently, the most predominant renewable energy technologies for the generation of electricity in Australia are solar, wind and hydro.⁶⁵ The size of renewable energy electricity generation in Australia ranges from power station type operations such as the Snowy River Hydro Scheme through to single dwelling rooftop solar photovoltaic systems.

Figure 3 below illustrates the fuel mix profiles of each of the Australian States and Territories. Collectively, the NEM jurisdictions have a higher percentage of renewable energy in their respective fuel mixes out of all of the Australian States and Territories. In particular, renewable energy dominates the fuel mix profiles of South Australia and Tasmania at 47% and 91% respectively. This can be contrasted with Western Australia (8%) and the Northern Territory (4%). The higher percentage of renewable energy in the NEM jurisdictions supports the selection of the NEM as the focus of this thesis.

As this thesis demonstrates, renewable energy policy and legislation is a complex space. A number of authors have identified a range of regulatory, technical, economic, political and social barriers to increasing the supply of and demand for renewable energy in the NEM and more generally.⁶⁶ For example, Kallies has argued that one regulatory barrier is the lack of a ‘green’ market objective in the NEM regulatory framework which has, amongst other things,

much energy to produce each five minutes so that production can be matched to consumer requirements and the electricity price can be calculated. The ‘spot market’ is a set of procedures that the AEMO manages in line with the NEL and the NER (AEMO, above n 57).

⁶³ For example, see the definition of ‘eligible renewable energy sources’ in section 17(1) of the *Renewable Energy (Electricity) Act 2000* (Cth). For a detailed discussion of the different types of renewable energy sources and technologies, see Mark Diesendorf, *Sustainable Energy Solutions for Climate Change* (University of New South Wales Press, 2014); Stephen Peake (ed), *Renewable Energy: Power for a Sustainable Future* (Oxford University Press, 2018).

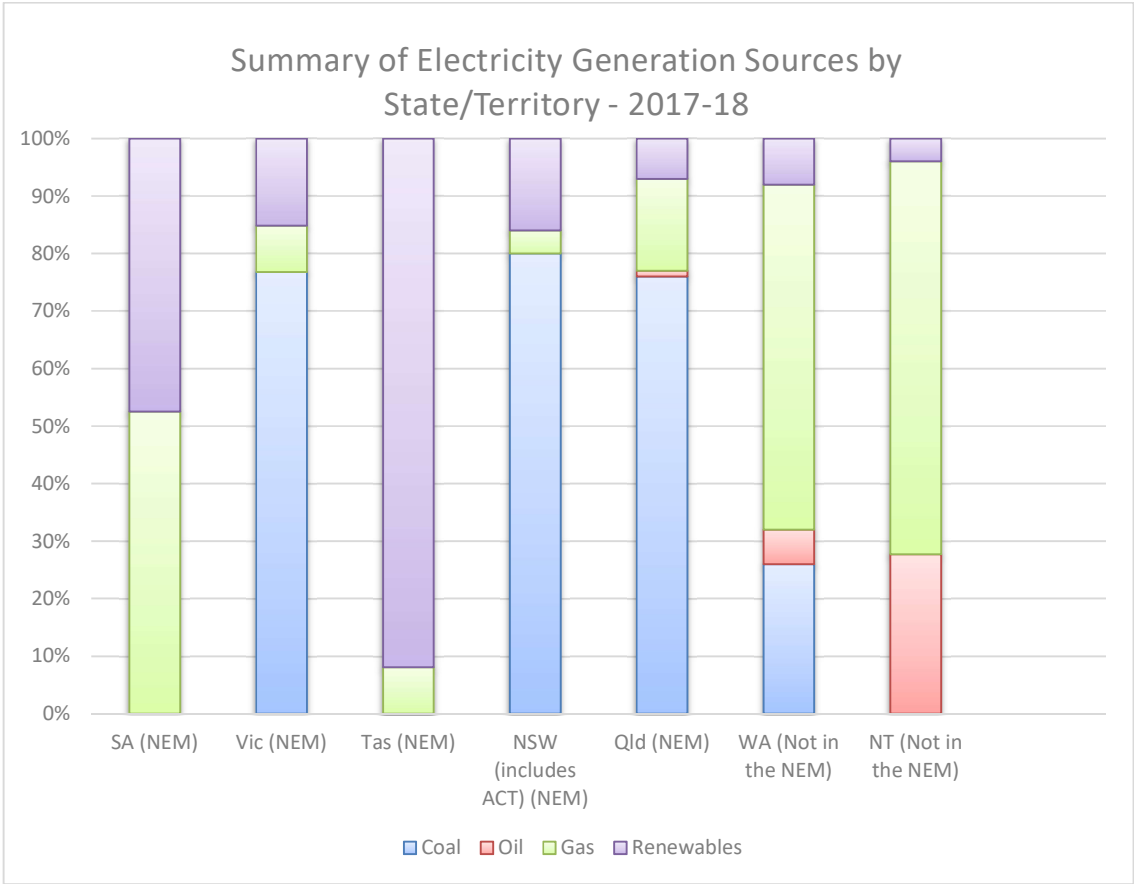
⁶⁴ Ben Elliston, Jenny Riesz and Iain MacGill, ‘What cost for more renewables? The incremental cost of renewable generation – An Australian National Electricity Market case study’ (2016) 95 *Renewable Energy* 128.

⁶⁵ <<https://www.iea.org/statistics/?country=AUSTRALI&year=2016&category=Renewables&indicator=ShareRenewGen&mode=chart&dataTable=RENEWABLES>>.

⁶⁶ Lee Godden and Anne Kallies, ‘Electricity Network Development: New Challenges for Australia’ in Martha Roggenkamp, Lila Barrera-Hernandez, Donald Zillman and Inigo Del Guayo (eds), *Energy Networks and the Law: Market Liberalization and Challenges for Network Investments and Planning* (Oxford University Press, 2012); Duncan and Sovacool, above n 51, 283; Byrnes and others, above n 52. Kallies also identifies other barriers, for example, constitutional constraints which have resulted in the NEM being a co-operative intergovernmental arrangement between the Commonwealth and the NEM jurisdictions (Kallies, above n 55, 1547). Detailed discussion of these barriers is outside the scope of this thesis.

impacted on the Commonwealth Government’s ability to introduce high-level GHG emissions reduction policies in the NEM.⁶⁷

Figure 3 – Summary of Electricity Generation Sources by State/Territory – 2017-18⁶⁸



Godden and Kallies have analysed other barriers including the technical ability of renewable energy generators to connect to the NEM electricity network grid and the grid’s technical capability to cope with intermittencies in the flow of electricity generated from renewable energy sources.⁶⁹ Large-scale renewable energy generators are required to undertake costly

⁶⁷ Kallies, above n 55, 1579. For further discussion of the lack of an environmental or sustainability objective in the NEM, see also Cantley-Smith, above n 60; Rowena Cantley-Smith and Diana Bowman (eds), *Green Power – An Environmental Audit of the National Electricity Market* (Research Publications, 2009).

⁶⁸ Department of the Environment and Energy, Australian Government, *Australian Energy Statistics, Table O, Australian electricity generation, by fuel type, physical units* (March 2019) Table O10. Energy data collected for NSW includes data for the ACT. Additionally, renewable energy data for the ACT is calculated based on electricity consumption, not production, as the ACT purchases most of its renewable energy from projects located in other States.

⁶⁹ Kallies, above n 55, 1566. The Australian electricity industry commenced operation in the late 19th century with a range of small-scale electricity companies generating and distributing electricity through small-scale localised grids in cities such as Sydney and Melbourne (Kallies, above n 55, 1557; Byrnes and others, above n 52, 718). These companies were eventually consolidated into integrated state-based monopolies, for example, the State

electricity network grid connection assessment studies and substantial infrastructure investment to enable connection to the grid.⁷⁰ Diesendorf and Elliston amongst others have argued that political resistance to the increased uptake of renewable energy in the NEM has been demonstrated by, for example, the dominant incumbent fossil fuels industry.⁷¹ Duncan and Sovacool have analysed social barriers that shape, and are shaped by, for example, technological change and behaviours.⁷²

An NEM jurisdiction's success in increasing the supply of and demand for electricity generated from renewable energy sources can therefore depend on a complex interaction between a broad range of factors, for example, the availability of high quality renewable energy sources, the availability of suitable transmission networks, the cost of electricity from competing energy sources such as fossil fuels, local political appetite and consumer/community sentiment.

As this thesis demonstrates, the NEM jurisdictions are all at different stages of progress in terms of increasing the supply of and demand for renewable energy in their respective jurisdictions. The Climate Council's most recent comparison of State and Territories' renewable energy activities in 2018 found that South Australia, Tasmania and the ACT are currently leading the way out of all the NEM jurisdictions.⁷³

Electricity Commission of Victoria, that were responsible for the entire electricity supply chain from generation through to retail (Cantley-Smith, above n 60, 19). Over time, localised grids were increasingly integrated to form state-wide grids within each of the NEM jurisdictions (Kallies, above n 55, 1557). Historically, the generation components of electricity network grids within each of the NEM jurisdictions have been large, centralised generation facilities oriented around major energy resources such as coal reserves with the transmission and distribution components running to major population centres (Godden and Kallies, above n 66, 294; Kallies, above n 55, 1557). For example, main transmission lines run to Sydney from coal-powered generators located in the Hunter Valley and to Melbourne from coal-powered generators located in the Latrobe Valley (Kallies, above n 55, 1557). There is limited cross-NEM jurisdiction connection and minimal cross-connection within each NEM jurisdiction which is, in part, due to the high expense involved of network grid extensions to cover the often considerable distances between population centres (Godden and Kallies, above n 66, 296). See Chapter V for a brief discussion of these barriers in the context of legislative measures promoting the research in, and the development and commercialisation of, renewable energy technologies.

⁷⁰ Kallies, above n 61. See Chapter IV for a brief discussion of this barrier in the context of feed-in tariff ('FiT') schemes.

⁷¹ Mark Diesendorf and Ben Elliston, 'The feasibility of 100% renewable electricity systems: A response to critics' (2018) 93 *Renewable and Sustainable Energy Reviews* 318; Grace Cheung and Peter Davies, 'In the transformation of energy systems: what is holding Australia back?' (2017) 109 *Energy Policy* 97. Detailed discussion of this barrier is outside the scope of this thesis.

⁷² Duncan and Sovacool, above n 51, 283. See Chapter III for a brief discussion of this barrier in the context of renewable energy target ('RET') schemes.

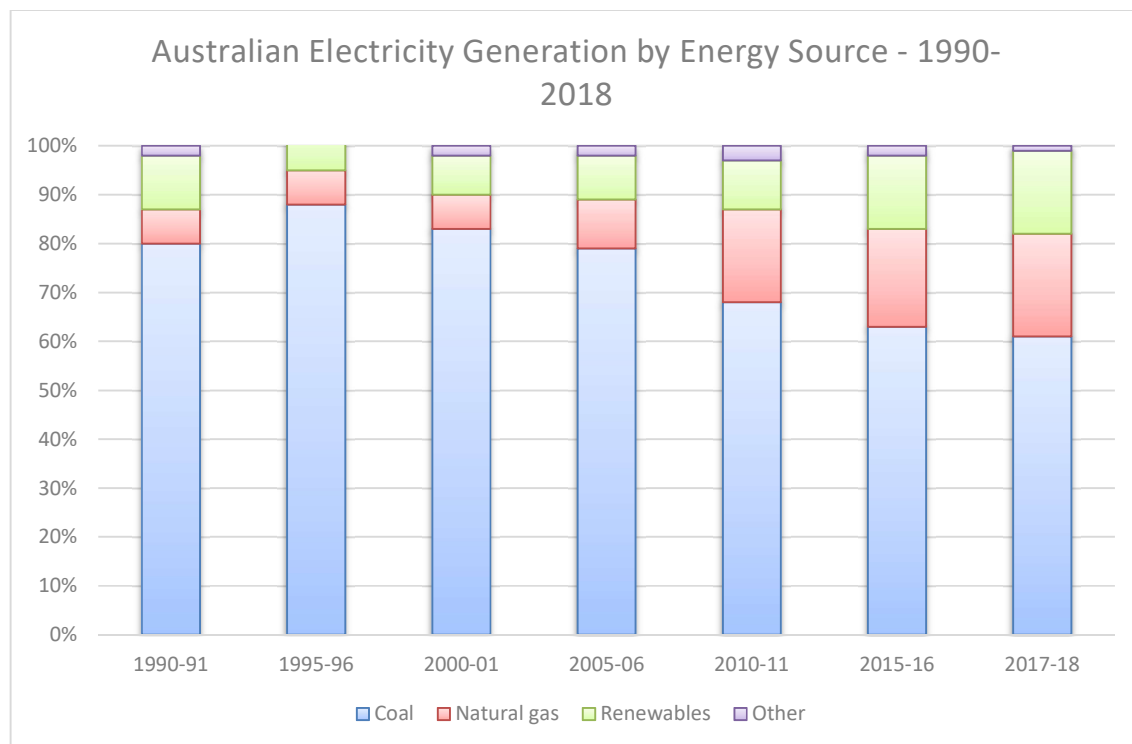
⁷³ Climate Council, *Powering Progress: States Renewable Energy Race* (2018).

5 Promoting the Increased Uptake of Renewable Energy in Australia

As shown in Figure 4 below, the contribution made by renewable energy to Australia's domestic fuel mix since 1990 has been small compared to natural gas and coal. Figure 4 also illustrates the dominance of coal in the stationary electricity sector since 1990.

The Australian renewable energy sector is not as developed as that seen in other parts of the world. The pace with which renewable energy has been implemented in Australia has been slow compared to other countries. For example, Germany, one of the world's leaders in renewable energy, has installed 39.8 gigawatts of solar photovoltaic capacity.⁷⁴ In comparison, Australia has installed only 4.4 gigawatts of solar⁷⁵ despite its abundant sunshine.⁷⁶

Figure 4 – Australian Electricity Generated by Energy Source – 1990-2018⁷⁷



Australia is well placed to see a far more extensive deployment of renewable energy than is currently the case. Australia's Seventh National Communication to the *UNFCCC* suggests that

⁷⁴ IEA, above n 44, 25. See Chapter IV for a brief discussion of Germany's success in promoting the increased uptake of renewable energy.

⁷⁵ Ibid.

⁷⁶ Byrnes and others, above n 52, 714.

⁷⁷ Department of the Environment and Energy, Australian Government, above n 68, Table O1.

there is ‘potential for future development in large-scale solar, onshore wind and marine energy’.⁷⁸ Indeed, several recent studies including those undertaken by Elliston, Diesendorf and MacGill have shown that it is technically and economically feasible for 100% of the electricity in the NEM to come from renewable energy sources.⁷⁹

Over the past 25 years, the Commonwealth Government has introduced a range of renewable energy policy and legislative measures. Current key measures that promote the supply of and demand for renewable energy include the Commonwealth Renewable Energy Target (‘Commonwealth RET’),⁸⁰ the Clean Energy Innovation Fund⁸¹ and the National Energy Productivity Plan 2015-2030.⁸² However, these measures have been considered to be ‘modest’ and falling short of what is required to accelerate the uptake of electricity generated from renewable energy sources in Australia and reduce Australia’s high national GHG emissions.⁸³

The deficiencies in the Commonwealth Government’s renewable energy policy and legislative measures has meant that the promotion of electricity generated from renewable energy sources has been left to the governments of the NEM jurisdictions in line with their respective legislative competencies on energy related matters.⁸⁴ The examination of the NEM

⁷⁸ Department of the Environment and Energy, Australian Government, above n 18, 18.

⁷⁹ Ben Elliston, Mark Diesendorf and Iain MacGill, ‘Simulations of scenarios with 100% renewable electricity in the Australian National Electricity Market’ (2012) 45 *Energy Policy* 606; Ben Elliston, Iain MacGill and Mark Diesendorf, ‘Least cost 100% renewable electricity sectors in the Australian National Electricity Market’ (2013) 59 *Energy Policy* 270; Elliston, Riesz and MacGill, above n 64.

⁸⁰ The Commonwealth Renewable Energy Target (‘Commonwealth RET’) was first introduced in Australia through the *Renewable Energy (Electricity) Act 2000* (Cth) and known as the Mandatory Renewable Energy Target. It was the first scheme of its kind in the world at the time. The Commonwealth RET is currently set at 33,000 gigawatt hours by 2020. Examination of the Commonwealth RET is outside the scope of this thesis.

⁸¹ The Clean Energy Innovation Fund (‘CEIF’), a \$200 million program, provides early stage seed or growth capital to businesses to finance the development of renewable energy, energy efficiency and low emissions technologies. The CEIF is jointly administered by the Australian Renewable Energy Agency (‘ARENA’) and the Clean Energy Finance Corporation (‘CEFC’). Examination of the CEIF is outside the scope of this thesis.

⁸² The National Energy Productivity Plan 2015-2030 (‘NEPP’) is a package of measures agreed by the COAG Energy Council to improve Australia’s energy productivity by 40% between 2015 and 2030. In relation to renewable energy, the NEPP is intended to complement the Commonwealth RET. Examination of the NEPP is outside the scope of this thesis. Another Australian Commonwealth Government measure, the National Energy Guarantee (‘NEG’), recommended by the Energy Security Board formed out of the *Independent Review into the Future Security of the National Electricity Market* (‘Finkel Review’) conducted by Dr Alan Finkel, Chief Scientist, was to require energy retailers and some large users in the NEM to deliver reliable and lower emissions energy generation. The NEG failed to proceed in 2018 following disagreement between the Australian State, Territory and Commonwealth Governments over the content of the NEG, for example, the ‘emissions guarantee’. Examination of the NEG is outside the scope of this thesis.

⁸³ See, for example, James Prest, ‘Australian Renewable Energy Law: Carbon Lock-in or Clean Energy Transition?’ 9 (2018) *Renewable Energy Law and Policy* 44; Byrnes and others, above n 52, 719; Cheung and Davies, above n 71, 98 and 105; Cantley-Smith, above n 48, 215; Jacqueline Peel and others, ‘Climate Change Law in an Era of Multi-Level Governance’ (2012) 1:2 *Transnational Environmental Law* 276.

⁸⁴ The States and Territory in the NEM are able to deal with renewable energy related matters under plenary powers that enable them to enact legislation on subject matter which is not covered by a matter exclusively conferred on the Commonwealth Parliament by the Australian Constitution (*Commonwealth of Australia*

jurisdictions' actions to promote the increased supply of and demand for renewable energy in the NEM is particularly relevant given the recognition in the *Paris Agreement* of the importance of sub-national action on climate change.

6 Summary

The above Section has outlined the significance of climate change for Australia and discussed the implications of Australia's high national GHG emissions in the stationary electricity sector for Australia's ability to meet its GHG emissions reduction commitments under the *Paris Agreement*. The above Section also provided an overview of the NEM regulatory framework, the role renewable energy currently plays in Australia's stationary electricity sector fuel mix and the opportunities available in Australia to substantially increase the uptake of electricity generated from renewable energy sources. The next Section explains the Key Research Questions this thesis aims to answer and the scholarly contribution made.

B Key Research Questions and Scholarly Contribution

1 Key Research Questions

Using South Australia as the 'target' jurisdiction,⁸⁵ this thesis aims to analyse how different key policy and legislative measures of the NEM jurisdictions (Australian sub-national governments) attempt to solve the problem of increasing the supply of and demand for renewable energy. This thesis aims to achieve this analysis through answering the following four Key Research Questions:

- (a) What key renewable energy policy and legislative measures currently exist (or do not exist) in each of the NEM jurisdictions? (See Chapter II.)
- (b) What are the similarities and differences between particular renewable energy legislative measures in South Australia and the other NEM jurisdictions? (See Chapters III, IV and V.)

Constitution Act 1901 (Cth)). Examination of the Australian Constitution and the NEM jurisdictions' constitutional powers is outside the scope of this thesis.

⁸⁵ See Section C for an explanation of this approach.

- (c) What do these similarities and differences reveal about the effectiveness of those particular renewable energy legislative measures in South Australia and the other NEM jurisdictions? (See Chapters III, IV, V and VI.)
- (d) What are the policy and legislative insights of these findings in relation to the role Australian sub-national policy and legislative measures can play in increasing the supply of and demand for electricity generated from renewable energy sources? (See Chapter VI.)

2 *Scholarly Contribution*

(a) Aims, Scope and Method

The primary aim of this thesis is to contribute a greater understanding of Australian sub-national action on climate change through an analysis of the key current and historical renewable energy policy and legislative measures in the NEM jurisdictions.⁸⁶ This thesis seeks to also contribute a greater understanding of key notable aspects of the historical and political contexts in the NEM jurisdictions that may help to explain the existence (or non-existence) of these policy and legislative measures.⁸⁷

Whilst electricity can be generated from a broad range of renewable energy sources, this thesis focuses on policy and legislative measures that encourage the uptake of two particular renewable energy sources in the NEM, these being solar and wind. This is because solar and wind are currently the two most widely encouraged renewable energy technologies in the NEM.⁸⁸

This thesis analyses and compares specific renewable energy related legislative measures of the NEM jurisdictions using a functional comparative law method. This involves the selection of South Australia as the ‘target’ jurisdiction and comparing specific renewable energy related legislative measures of the other NEM jurisdictions against those of South Australia.⁸⁹

⁸⁶ Examination of the renewable energy policy and legislative measures of the Commonwealth Government is outside the scope of this thesis. The examination of renewable energy related actions of the local government sector is also outside the scope of this thesis.

⁸⁷ See Section C for an explanation of this approach.

⁸⁸ See Chapters III, IV and V for a discussion of key factors that have resulted in solar and wind being the two currently most widely encouraged renewable energy technologies in the NEM.

⁸⁹ See Section C for an explanation of this approach.

(b) *Literature Review*

While much has been written by, for example, government agencies, academics and stakeholders, about renewable energy policy and legislation in Australia, this thesis can be distinguished from those works in a number of key ways.

Whilst there is an emerging body of academic literature on the development and effect of the *Paris Agreement*,⁹⁰ there is little academic literature analysing the role Australian sub-national governments can play in mitigating climate change under the *Paris Agreement*. As stated above, this thesis will investigate Australian sub-national action on climate change through an analysis of the actions of the NEM jurisdictions (Australian sub-national governments) in increasing the uptake of electricity generated from renewable energy sources.⁹¹

In doing so, this thesis seeks to build on the earlier work of Bradbrook and Wawryk, Hodgkinson and Garner, and Prest through providing a recent (as at 31 August 2019) and detailed examination of key current Australian State and Territory renewable energy policy and legislative measures, drawing on key historical renewable energy policy and legislative measures for context.

Earlier examinations of Australian State and Territory renewable energy policy and legislative measures include Bradbrook and Wawryk's analysis of key State renewable energy measures in 2002⁹² and 2005.⁹³ These analyses looked at the NSW Greenhouse Gas Benchmark Scheme and the NSW Rebates for Solar Power Scheme as well as the Commonwealth Mandatory Renewable Energy Target ('MRET').⁹⁴ Bradbrook and Wawryk briefly referenced other State

⁹⁰ For example, see Daniel Bodansky, 'The Paris Climate Change Agreement: A New Hope?' (2016) 110(269) *The American Journal of International Law* 288; Annalisa Savaresi, 'The Paris Agreement: a new beginning?' (2016) 34(1) *Journal of Energy & Natural Resources Law* 16.

⁹¹ There is a range of academic literature analysing and comparing renewable energy policy and legislative measures of the states and countries comprising the United States of America and the European Union respectively. For example, see Kim Schumacher, 'Approval procedures for large-scale renewable energy installations: Comparison of national legal frameworks in Japan, New Zealand, the EU and the US' (2019) 129 *Energy Policy* 139 (comparison of environmental approval procedures for large-scale renewable energy installations), Chelsea Schelly, 'Implementing renewable energy portfolio standards: The good, the bad, and the ugly in a two state comparison' (2014) 67 *Energy Policy* 543 (comparison of renewable energy portfolio standards in Colorado and Wisconsin), and Néstor Aparicio, Iain MacGill and Juan Rivier Abbad, 'Comparison of Wind Energy Support Policy and Electricity Market Design in Europe, the United States, and Australia' (2012) 3(4) *IEEE Transactions on Sustainable Energy* 809 (comparison of a range of renewable energy support policies in a range of jurisdictions, for example, Spain, Ireland, Texas, Iowa and South Australia).

⁹² Adrian J Bradbrook and Alexandra S Wawryk, 'Government Initiatives Promoting Renewable Energy for Electricity Generation in Australia' (2002) 25(1) *University of New South Wales Law Journal* 124.

⁹³ Alexandra S Wawryk and Adrian J Bradbrook, 'Australian Initiatives Promoting Renewable Energy Resources in Electricity Generation' (2005) 23(2) *Journal of Energy & Natural Resources Law* 188.

⁹⁴ The New South Wales Greenhouse Gas Benchmark Scheme and the New South Wales Rebates for Solar Power Scheme closed in 2012 and 2016 respectively.

solar hot water rebate and subsidy schemes and other State measures such as guaranteeing grid access for renewable energy generators on a non-discriminatory basis and prohibiting retailers from engaging in price discrimination against purchasers of electricity from renewable energy sources.⁹⁵

Another earlier examination is Bradbrook and Wawryk's comparison of these Australian Commonwealth and State policy and legislative measures in 2002 against renewable energy policy and legislative measures in the United States of America and the United Kingdom.⁹⁶ Bradbrook and Wawryk also examined the use of net metering and funding for publicly beneficial programs, such as research in and development of renewable energy technologies, and considered their application in Australia.⁹⁷ In this examination, Bradbrook and Wawryk's view was that a level of government intervention was required in order to ensure electricity suppliers undertook a minimum level of action to increase uptake of renewable energy. They sought to answer the question of what the most appropriate form of government intervention was through their examination of the United States of America, Australia and the United Kingdom's main renewable energy related measures at the time. Bradbrook and Wawryk's examination of the United States of America and the United Kingdom's equivalents to renewable energy target ('RET') schemes (renewable portfolio standards) draws on a functional comparative approach.

In 2008, Hodgkinson and Garner published a high-level overview of Australian climate change related legislation and policies which included an overview of Australian States and Territories' renewable energy policies and legislation.⁹⁸ More recently, in 2018, Prest published a high-level examination of key renewable energy policy and legislative measures of the Australian States and Territories as part of his observations on recent developments in Australia's renewable energy policy and law.⁹⁹

This thesis seeks to expand on the above works through providing a detailed analysis and comparison of specific current renewable energy legislative measures of all six NEM jurisdictions with a focus on the promotion of solar and wind renewable energy technologies. This thesis also seeks to expand on the above works through providing a close examination of

⁹⁵ Bradbrook and Wawryk, above n 92 and Wawryk and Bradbrook, above n 93.

⁹⁶ Bradbrook and Wawryk, above n 92.

⁹⁷ Ibid.

⁹⁸ David Hodgkinson and Renee Garner, *Global Climate Change: Australian Law and Policy* (LexisNexis Butterworths, 2008).

⁹⁹ Prest, above n 83.

key design features of these specific renewable energy legislative measures, drawing on international and national policy and academic research.

The Climate Council has undertaken four comparisons of State and Territories' renewable energy activities since 2014, the purpose of which is to generate a 'report card' on progress for each of the States and Territories;¹⁰⁰ these comparisons are however at a high level only and do not, for example, examine the States and Territories' renewable energy policy and legislative measures in detail.¹⁰¹

Other than the contributions identified above, there has been minimal academic literature analysing and comparing renewable energy policy and legislative measures of Australian States and Territories in detail. There is a considerable body of academic literature analysing planning policy and legislative frameworks in relation to renewable energy projects in individual States,¹⁰² but discussion of the NEM jurisdictions' planning policy and legislative frameworks as they relate to renewable energy is outside the scope of this thesis.

There is a body of academic literature on the application of functional comparative law theory to Australian case studies.¹⁰³ A secondary aim of this thesis is to demonstrate the application of functional comparative law theory to a comparison of Australian sub-national jurisdictions, using the approach of comparing one 'target' jurisdiction against a 'collective' of jurisdictions.¹⁰⁴

¹⁰⁰ Climate Council, *The Australian Renewable Energy Race: Which States Are Winning or Losing?* (2014); Climate Council, *Game On: The Australian Renewable Energy Race Heats Up* (2016); Climate Council, *Renewables Ready: States Leading the Charge* (2017).

¹⁰¹ The most recent review by the Climate Council is *Powering Progress: States Renewable Energy Race* (2018).

¹⁰² For example, see Alexandra Wawryk, 'Legislating for offshore wind energy in South Australia' (2011) 28 *Environmental and Planning Law Journal* 265; Lisa Caripis and Anne Kallies, "'Planning away" Victoria's renewable energy future? Resolving the tension between the local and global in windfarm developments' (2012) 29 *Environmental and Planning Law Journal* 415; Andrew Newman, 'Creating the power for renewal: Evaluation of New South Wales' renewable energy planning law changes and suggestions for further reform' (2012) 29 *Environmental and Planning Law Journal* 498; Nigel Martin and John Rice, 'Improving Australia's renewable energy project policy and planning: A multiple stakeholder analysis' (2015) 84 *Energy Policy* 128.

¹⁰³ For example, see Paul von Nessen, *The Use of Comparative Law in Australia* (Lawbook, 2006); Petra Mahy, 'The functional approach in comparative socio-legal research: reflections based on a study of plural work regulation in Australia and Indonesia' (2016) 12(4) *International Journal of Law in Context* 420; Vanessa Johnston, *An Australian Road Transport Carbon Price: A Comparative Analysis* (Sydney Australian Tax Research Foundation, 2016).

¹⁰⁴ See Section C for an explanation of this approach.

C Thesis Method

1 Selection of Comparative Law Method

Comparative law has been described as an “‘école de vérité’” which offers the opportunity of finding the ‘better solution for [our] time and place’.¹⁰⁵ There are a number of different comparative law methods that can be employed including functional comparison, structural comparison, systemic comparison, critical comparison and law in context or historical comparison.¹⁰⁶ Such methods can in some circumstances be combined as they can be complementary and not necessarily ‘mutually exclusive’.¹⁰⁷

Functional comparative law, probably the more ‘mainstream’ of the different comparative methods,¹⁰⁸ is founded on the premise that ‘the legal system of every society faces essentially the same problems, and solves those problems by quite different means though very often with similar results’.¹⁰⁹ According to Zweigert and Kötz, functional comparative law involves the selection of a ‘target’ legal system and the comparison of that legal system’s solution for a particular problem with other legal systems’ ‘functionally equivalent’ solutions.¹¹⁰ As a method, functional comparative law has become the ‘mantra’ of comparative law due to its ability to make sense of legal systems in a meaningful fashion through examination of those systems’ functionally equivalent measures i.e. different measures that address the same problem.¹¹¹

In structural comparison law, similar structural elements in legal systems are examined in order to understand what ‘socio-legal functions’ they perform and how they arose in that system, for example, the division of legal systems into ‘different fields of law whose similarity or difference is under study’.¹¹² This examination takes place at the level of macro comparison compared to functional comparison which operates at a level of micro-comparison.

¹⁰⁵ Ernst Zitelmann cited in Konrad Zweigert and Hein Kötz, *An Introduction to Comparative Law* (Clarendon Press, 3rd revised edition, 1998) 15.

¹⁰⁶ Jaakko Husa, *A New Introduction to Comparative Law* (Bloomsbury, 2015) 117. A detailed examination of other comparative law methods is outside the scope of this thesis.

¹⁰⁷ Ibid.

¹⁰⁸ Ibid 118.

¹⁰⁹ Zweigert and Kötz, above n 105, 34.

¹¹⁰ Zweigert and Kötz, above n 105, 35.

¹¹¹ Ralf Michaels, ‘The Functional Method of Comparative Law’ in Kevin R Gray, Richard Tarasofsky and Cinnamon Carlarne (eds), *The Oxford Handbook of Comparative Law* (Oxford University Press, 2006) 339 and 363. There are other comparative law methods such as structural and hermeneutical analyses; discussion of other comparative law methods is outside the scope of this thesis.

¹¹² Husa, above n 106, 128.

Systemic comparison involves the examination of a specific legal institution in a legal system side by side with the solutions of other legal systems for the same socio-legal problem.¹¹³ Critical comparison, a less ‘mainstream’ method of comparative law compared to, for example, functional comparative law, is more complex to define compared to the other methods listed above. One explanation of the critical comparison method is that it is almost the opposite of functional comparative law; it places a greater emphasis on identifying *differences* in the way different legal systems attempt to solve the same problem rather than similarities as is the case with functional comparative law (emphasis added).¹¹⁴

As this thesis is analysing at a micro-comparison level the key policy and legislative measures of the NEM jurisdictions and how they attempt to solve the same problem of increasing the supply of and demand for renewable energy, the functional comparative law method was selected as the method most likely to yield a meaningful result.

There are a number of critiques of Zweigert and Kötz’s functional comparative law method. For example, Frankenberg argues that functionalism ‘has no eye and no sensitivity for what is not formalised and not regulated under a given legal regime’.¹¹⁵ However, Zweigert and Kötz acknowledged in their treatise on functional comparative law that solutions to a particular problem may not necessarily be ‘legal’, that they may be produced by ‘extra-legal’ solutions that bypass legislation for example.¹¹⁶ Another criticism of functional comparative law is that it ‘artificially separates law from society and takes an essentially technical and utilitarian approach to analysis’.¹¹⁷

Mahy nevertheless argues that the use of functional comparative law is a ‘concrete and defensible strategy for undertaking comparison’.¹¹⁸ The criticisms of Zweigert and Kötz’s functional method does not prevent the use of this method and taking a ‘particularly socio-legal and/or regulatory approach to considering the solutions that arise’.¹¹⁹ Indeed, Mahy concludes that functional comparative law is a ‘very useful beginning point’.¹²⁰

¹¹³ Ibid 133.

¹¹⁴ Ibid 136.

¹¹⁵ Gunter Frankenberg cited in Mahy, above n 103, 426.

¹¹⁶ Zweigert and Kötz, above n 105, 35.

¹¹⁷ Mahy, above n 103, 427.

¹¹⁸ Ibid 432.

¹¹⁹ Ibid 426.

¹²⁰ Ibid 422.

Whilst functional comparative law as contemplated by Zweigert and Kötz is usually used to compare laws of different national legal systems, this thesis uses functional comparative law to examine and compare policy and legislative measures of the NEM jurisdictions which form part of the same Australian legal system. The comparison of the NEM jurisdictions in this way is an innovative use of functional comparative law and fulfils the functional comparative law criteria set down by Zweigert and Kötz.

For example, Zweigert and Kötz suggest that for functional comparative law exercises to be effective, as a starting point, the laws of legal systems should be compared with the laws of other legal systems with, for example, comparable levels of democracy and economic stability.¹²¹ Similarity is important in this context as it helps to reduce the complexity of factors that need to be taken into account when identifying causal links between measures and effects.¹²²

The NEM jurisdictions are all similarly mature components of the Australian legal system with comparable levels of democracy. The NEM jurisdictions form part of the Commonwealth of Australia, formed in 1901 upon the Australian Constitution coming into force.¹²³ Each of the NEM State jurisdictions has its own government, judiciary and legislature. The ACT has its own government but does not have the same full legislative independence enjoyed by the States.¹²⁴ The NEM jurisdictions all have, broadly speaking, comparable levels of economic stability; they are all developed economies that are experiencing economic growth albeit at different rates.¹²⁵

2 Application of Principles of Functional Comparative Law Theory

For the purposes of this thesis' comparative exercise, South Australia has been selected as the 'target' jurisdiction.

There are a number of reasons for using South Australia as the 'target' jurisdiction rather than one of the other NEM jurisdictions. Whilst South Australia's stationary electricity sector used to be dominated by fossil fuels, it has demonstrated a progressive reduction in the dominance

¹²¹ Zweigert and Kötz, above n 105, 41.

¹²² Gerhard Danneman, 'Comparative Law: Study of Similarities or Differences?' in *The Oxford Handbook of Comparative Law* (Oxford University Press, 2006) 418.

¹²³ *Commonwealth of Australia Constitution Act 1901* (Cth).

¹²⁴ *Australian Capital Territory (Self-Government) Act 1988* (Cth).

¹²⁵ CommSec, *State of the States, July 2019 State & territory economic performance report* (July 2019) (<https://www.commsec.com.au/content/dam/EN/Campaigns_Native/stateofstates/july2019/CommSec_State_of_the_States_July2019.pdf>).

of fossil fuels and a consistent upwards trajectory in the uptake of renewable energy in its stationary electricity sector over the past 10 years or so.¹²⁶ Additionally, South Australia has been a ‘first mover’ on a range of renewable energy activities and has a higher international profile on renewable energy compared to some of the other NEM jurisdictions.¹²⁷ South Australia’s economic profile makes it more comparable to other NEM jurisdictions than, for example, Tasmania, despite that latter State’s high proportion of renewable energy. Finally, South Australia has developed a broad suite of renewable energy policy and legislative measures, providing a rich source of research data.

As Danneman and Curran have said, there is merit in also considering differences as well as similarities; ‘similarities and differences are equally important to a comparison, and....the interplay of both will advance our knowledge substantially more than focusing on either similarities or differences’.¹²⁸ Searching for differences will also help reveal gaps within legal systems.¹²⁹ The NEM jurisdictions are different in terms of the progress being made in promoting the increased supply of and demand for renewable energy in the stationary electricity sector. The differences between the NEM jurisdictions are as relevant and useful as the similarities to the overall comparative analysis.¹³⁰

In order to achieve a meaningful result in the examination and comparison of the NEM jurisdictions’ renewable energy policy and legislative measures, it is important to ensure that such examination and comparison is more than a ‘mere description, or a simple chronicling of sameness and difference’.¹³¹ To overcome this, Zweigert and Kötz argue that comparatists in their analyses must treat as a source of law ‘whatever moulds or affects the living law’.¹³² Curran advocates a ‘cultural immersion’ approach; an immersion into the historical, political, economic and linguistic¹³³ contexts that mould the legal system and in which that system operates.¹³⁴ Accordingly, this thesis also analyses key notable aspects of the historical and political contexts of the NEM jurisdictions in order to acquire a better understanding of the

¹²⁶ See Figure 5 below.

¹²⁷ See Section B in Chapter II.

¹²⁸ Danneman, above n 122, 399 and Vivian Grosswald Curran, ‘Cultural Immersion, Difference and Categories in U.S. Comparative Law’ 46 *American Journal of Comparative Law* 67.

¹²⁹ Danneman, above n 122, 419.

¹³⁰ John Reitz, ‘How to Do Comparative Law’ (1998) 46 *American Journal of Comparative Law* 617, 626.

¹³¹ Terry Hutchinson, *Researching and Writing in Law* (Lawbook Co, 3rd ed, 2010) 117.

¹³² Zweigert and Kötz, above n 105, 35-6.

¹³³ This is most relevant when undertaking functional comparisons of legal systems where the primary language used is not the same.

¹³⁴ Curran, above n 128, 51.

way in which the NEM jurisdictions' renewable energy policy and legislative measures have evolved.

Additionally, it may be that a problem is regulated by legal rules in one system, but be controlled by mechanisms which operate outside of the law in another system.¹³⁵ The comparatist therefore sometimes needs to 'look outside the law'.¹³⁶ As well as analysing and comparing the renewable energy legislative measures of the NEM jurisdictions, this thesis therefore also analyses those jurisdictions' renewable energy policy measures, and where relevant, climate change policy and legislative measures.

In this way, the epistemological function of functional comparative law offers a means by which to gain a deeper insight into legal materials and, as a result, a more sophisticated analysis of the potential solutions on offer.¹³⁷ Curran has also observed that the more insight the comparatist gains into a legal system, the more aware the comparatist becomes of 'irreducible incomparables'.¹³⁸

3 Functional Comparative Law Analysis Method

In summary, the key elements of the functional comparative law method discussed above are:

- (a) The laws of legal systems should be compared with the laws of other systems with, for example, comparable levels of democracy and economic stability;
- (b) A 'cultural immersion' approach to comparing laws of different legal systems is desirable – the immersion into the historical, political, economic and linguistic contexts that mould the legal system and in which that system operates;
- (c) When comparing laws of different legal systems, comparatists should 'look outside the law' at, for example, policy measures;
- (d) There is merit in also considering differences as well as similarities between the laws of legal systems.

This thesis, using South Australia as the 'target' jurisdiction, analyses specific legislative measures of the NEM jurisdictions that are 'functionally equivalent', in other words, those

¹³⁵ Zweigert and Kötz, above n 105, 38.

¹³⁶ Zweigert and Kötz, above n 105, 39.

¹³⁷ Michaels, above n 111, 367.

¹³⁸ Curran, above n 128, 91.

measures that promote the increased supply of and demand for renewable energy in the NEM, to identify similarities and differences between South Australia and the other NEM jurisdictions.

As a starting point, the thesis provides a high-level overview of South Australia's key current and historical renewable energy policy and legislative measures, drawing on complementary climate change policy and legislative measures where relevant. This thesis then considers key notable aspects of the historical and political contexts in which these measures have evolved. This analysis encompasses a 'longitudinal' perspective, looking at historical and political factors in South Australia since 2002.¹³⁹ This thesis also examines South Australia's fuel mix profile, drawing on energy related data and statistics compiled since 2007.

This thesis then provides a high-level overview of functionally equivalent policy and legislative measures in other NEM jurisdictions together with key notable aspects of the historical and political contexts in which these measures have evolved. Similar to the analysis of South Australia's policy and legislative measures, this analysis encompasses a 'longitudinal' perspective, looking at historical and political factors in each of the NEM jurisdictions since 2002.¹⁴⁰

This thesis then identifies similarities and differences between South Australia's policy and legislative measures and those of the other NEM jurisdictions and considers the possible reasons for such similarities and differences against the backdrop of the key notable aspects of the historical and political contexts in which they have evolved. Where some or all of the other NEM jurisdictions share the same similarity or difference to South Australia, they are treated as a 'collective' for the purposes of discussing the comparison outcome. The specific legislative measures selected for comparison in this thesis have been chosen on the basis of being present in the majority of the six NEM jurisdictions and having potentially some of the broadest coverage out of all the NEM jurisdictions' renewable energy policy and legislative measures.

This thesis also examines the fuel mix profiles of the other NEM jurisdictions, drawing on energy related data and statistics compiled since 2007. This analysis includes consideration of each NEM jurisdiction's rankings in terms of, for example, number (by MW capacity) of

¹³⁹ Paul von Nessen, above n 103, 40 and 118. The year 2002 has been selected as the baseline year for this thesis' comparative exercise as this marks the start of the South Australian Rann Labor Government term in which South Australia introduced its first key renewable energy related measures. See Section B of Chapter II.

¹⁴⁰ Ibid.

currently operating fossil fuel power stations and renewable energy generation, and proposed new fossil fuel and renewable energy generation, and compares those rankings with South Australia. As illustrated in Figure 3 above, this analysis shows that the NEM jurisdictions are all at different stages of progress in terms of increasing the supply of and demand for renewable energy in their respective jurisdictions.

D Thesis Structure

This thesis comprises six Chapters. In accordance with Zweigert and Kötz's functional comparative law method, Chapter II provides a high-level overview of the NEM jurisdictions' key current and historical renewable energy policy and legislative measures, drawing on complementary climate change policy and legislative measures where relevant. Chapter II also sets out a high-level examination of key notable aspects of the historical and political contexts of the NEM jurisdictions in which these policy and legislative measures have evolved. Additionally, Chapter II examines the fuel mix profiles of the NEM jurisdictions, drawing on energy related data and statistics compiled since 2007. This analysis includes consideration of each NEM jurisdiction's rankings in terms of, for example, number (by MW capacity) of currently operating fossil fuel power stations and renewable energy generation, and proposed new fossil fuel and renewable energy generation.

Chapter III examines and compares the NEM jurisdictions' RET legislative schemes. Chapter IV examines and compares the NEM jurisdictions' feed-in tariff ('FiT') legislative schemes. Chapter V analyses and compares other specific legislative measures of the NEM jurisdictions that promote research in, and the development and commercialisation of, renewable energy technologies ('RDC measures') and the use of voluntary sector agreements and GHG emissions reduction pledges as mechanisms for increasing the supply of and demand for renewable energy. Chapters III, IV and V consider the similarities and differences between South Australia and the other NEM jurisdictions and discusses both explanations for those similarities and differences and the insights gained.

Chapter VI concludes this thesis by considering the policy and legislative insights of the findings of this thesis.

II OVERVIEW OF RENEWABLE ENERGY POLICY AND LEGISLATIVE MEASURES IN THE NEM JURISDICTIONS

A Introduction

As outlined in the previous Chapter, the examination and comparison of the NEM jurisdictions' renewable energy legislative measures in this thesis is based on a functional comparative law method. As part of that method, using South Australia as the focal point of comparison, this Chapter provides a high-level overview of key current and historical renewable energy policy and legislative measures of each of the NEM jurisdictions and key notable aspects of the historical and political contexts in which those policy and legislative measures have evolved. This Chapter also draws on the NEM jurisdictions' complementary climate change policy and legislative measures where relevant. This Chapter also examines the fuel mix profiles of the NEM jurisdictions, drawing on energy related data and statistics compiled since 2007. This analysis includes consideration of each NEM jurisdiction's rankings in terms of, for example, number (by MW capacity) of currently operating fossil fuel power stations and renewable energy generation, and proposed new fossil fuel and renewable energy generation.

Section B analyses South Australia's key current and historical renewable energy policy and legislative measures together with key notable aspects of the historical and political contexts in which those policy and legislative measures have evolved. Section C undertakes a similar exercise with respect to the other NEM jurisdictions. Section D concludes this Chapter.

B South Australia – 'Target' Jurisdiction

As discussed below, there are several events and components of South Australian regulation outside of the law that help support South Australia's position as a 'first mover' amongst the NEM jurisdictions. These include political leadership, a poor local supply of coal, relatively high electricity prices due to a comparatively high reliance upon natural gas for electricity generation and progressive climate change legislation.

1 Climate Change and Renewable Energy Politics, Policies and Legislation

As shown in Table 1 below, the current South Australian Government is the Marshall Liberal Government which was elected in 2018. Prior to that, the Rann and Weatherill Labor Governments governed in consecutive terms over 16 years between 2002 and 2018. As a result, the South Australian political cycle has been relatively stable since 2002 compared to that of the Commonwealth and some of the other NEM jurisdictions.¹⁴¹

As discussed below, South Australia has a history of ‘firsts’ in relation to climate change and renewable energy policy and legislative measures.

In 1978, the South Australia Law Reform Commission prepared a paper exploring the use of solar generated energy in the State.¹⁴² Wind generated energy was being explored in South Australia as far back as 1989 with the South Australian Government commissioning a wind monitoring study that indicated a number of prime wind farm locations in the State.¹⁴³

One of the drivers for South Australia exploring alternative sources of energy at this early stage is that the State has historically had a comparatively poor supply of local coal,¹⁴⁴ leading to a high reliance upon natural gas for electricity generation and resulting in some of the highest electricity costs in Australia.¹⁴⁵

¹⁴¹ The year 2002 has been selected as the baseline year for this thesis’ comparative exercise as this marks the start of the Rann Labor Government term in which South Australia introduced its first key renewable energy related measures, for example, the amendment of local councils’ development plans under the *Development Act 1993* (SA) in relation to renewable energy projects.

¹⁴² Law Reform Committee of South Australia, Law and Solar Energy Committee, *Solar energy and the law in South Australia: a paper for information and discussion as to law reform and incentives to assist the use of solar energy in South Australia* (1978). This paper also briefly discusses wind energy.

¹⁴³ Energy SA State Energy Research Advisory Committee, *The South Australian Wind Energy Program, 1984-1988* (1989) cited in Alexandra S Wawryk, ‘The Development Process for Wind Farms in South Australia’ (2002) *Environmental and Planning Law Journal* 19(5) 333. The Electricity Trust of South Australia also commissioned an early study of wind energy in the 1950s (Law Reform Committee of South Australia, Law and Solar Energy Committee, above n 142, 69).

¹⁴⁴ The main source of coal for electricity generation in South Australia was from the Leigh Creek coal mine, approximately 250 kilometres from Port Augusta where the Northern Power Station, South Australia’s last coal fired power station, was located; the South Australian Government closed the Leigh Creek coal mine in 2015. For further discussion of coal deposits in South Australia, see, for example, <<https://sarigbasis.pir.sa.gov.au/WebtopEw/ws/samref/sarigl/image/DDD/ISM23.pdf>>.

¹⁴⁵ See, for example, South Australia, *Parliamentary Debates*, House of Assembly, 1 March 2005, 1787 (Robert Such). The Australian Energy Market Commission’s (‘AEMC’) recent review of residential electricity prices shows that South Australia has some of the highest wholesale electricity prices and annual electricity bills out of all the NEM jurisdictions (AEMC, *Final Report – 2018 Residential Electricity Price Trends Review* (2018) 5-6). See also Law Reform Committee of South Australia, Law and Solar Energy Committee, above n 142, 11.

Table 1 – Key Statistics for South Australia¹⁴⁶

| Population (National – 24,597,528) | Geographical Size (National – 768,812,631.9 ha) | State Governments since 2002 |
|---|--|---|
| 1,723,671 (4 th in the NEM) | 98,427,490.8 ha (2 nd in the NEM) | 2018 – Liberal (Marshall) 2011 – 2018 – Labor (Weatherill) 2002 – 2011 – Labor (Rann) |
| Total Required Electricity Generation Capacity | | Full Time Equivalent Jobs in the Renewable Energy Industry (National – 17,740 jobs) |
| 4,808 MW | | 1,560 = 9% (4 th in the NEM by percentage) |
| Greenhouse Gas Emissions Reduction Target | | RET |
| Equal to or less than 40% of 1990 levels by 31 December 2050 (legislated) Net zero GHG emissions by 2050 (policy commitment to legislate) ¹⁴⁷ | | 33.3% by 2020 (legislated) |
| Coal Fired Power Stations | | Small-scale Solar Panel System Installations 2001 to 2016 (National – 1,640,486) |
| None ¹⁴⁸ | | 205,624 = 13% (3 rd in the NEM by percentage) |
| Gas and Diesel Power Stations | | Large-scale Wind Farms |
| 14 gas and diesel power stations operating – 3,038.14 MW (1 st in the NEM by capacity) ¹⁴⁹ proposed new gas power stations – 914 MW (1 st in the NEM by capacity) | | 13 operating – 1,412.7 MW (1 st in the NEM by capacity) 13 proposed new wind farms – 2,939.20 MW (3 rd in the NEM by capacity) |
| Hydro Projects | | Large-scale Solar Projects |
| None in operation 4 proposed new hydro projects – 1,025 MW (2 nd in the NEM by capacity) | | 2 operating – 218 MW (4 th in the NEM by capacity) 20 proposed new solar projects – 2,729.5 MW (3 rd in the NEM by capacity) |

¹⁴⁶ Statistics obtained from <https://www.abs.gov.au> and the AEMO. The number of fossil fuel power stations, wind farms, solar projects and hydro projects has been calculated on the basis of the AEMO's scheduled and semi-scheduled generation data as at 10 May 2019. The number of proposed new fossil fuel power stations, wind farms, solar projects and hydro projects has been calculated on the basis of AEMO's generation data for new developments as at 10 May 2019; new developments range from projects that have been publicly announced through to projects under construction. The AEMO also compiles data on non-scheduled generation but this has not been used for the purposes of this thesis with the exception of data for the ACT (see below n 271); non-scheduled generation is, generally speaking, either primarily for local use or not capable of participating in central dispatch due to physical or technical attributes.

¹⁴⁷ *Climate Change and Greenhouse Emissions Reduction Act 2007* (SA) ('SA CC Act'), section 5(1). Department of Environment, Water and Natural Resources, South Australian Government, *South Australia's Climate Change Strategy 2015 – 2050: Towards a low carbon economy* (2015) 26.

¹⁴⁸ South Australia's last coal fired power station, Northern Power Station (520 MW) at Port Augusta, closed in 2016.

¹⁴⁹ The Torrens Island A Power Station (gas) (480 MW) is scheduled for closure by 2021.

In 2002, the Rann Labor Government released a Ministerial Plan Amendment Report which amended local councils' development plans under the *Development Act 1993* (SA) to add renewable energy related objectives and principles of development control for renewable energy, especially wind farms.¹⁵⁰ This was the first time an Australian jurisdiction introduced planning guidelines for renewable energy projects.¹⁵¹

From around 2006 onwards, South Australia saw a continued push for renewable energy when climate change and renewable energy began to become particularly prominent in South Australian political discourse.¹⁵²

One of the primary drivers for the Rann Labor Government's first climate change policy and legislation, the *Tackling Climate Change – South Australia's Greenhouse Strategy 2007-2020* and the *Climate Change and Greenhouse Emissions Reduction Act 2007* (SA) ('SA CC Act')¹⁵³ was the release in 2003 of a Commonwealth Scientific and Industrial Research Organisation ('CSIRO') report looking at the potential effect of climate change in South Australia.¹⁵⁴

This report suggested that over the next 20 to 50 years, South Australia could expect higher temperatures, lower annual rainfall and an increase in bushfires and droughts.¹⁵⁵ At the time, much of Australia was in the grip of a long, serious and sustained drought, resulting in considerable scrutiny and concern over Australia's declining rainfall totals and what the future might bring.¹⁵⁶ Additionally, at the international level, in late 2006, Sir Nicholas Stern released his report, *The Economics of Climate Change: The Stern Review*, which resulted in climate change receiving worldwide attention as an economic issue for the first time.¹⁵⁷

¹⁵⁰ Examination of the renewable energy projects related aspects of the planning framework in each of the NEM jurisdictions is outside the scope of this thesis. For a detailed discussion of wind farm development in the early 2000s in South Australia, see Wawryk, above n 143.

¹⁵¹ Department of State Development, South Australian Government, *A Low Carbon Investment Plan for South Australia* (2015) 24. In 2014, South Australia was also the first Australian jurisdiction to enact legislation enabling a wind farm developer to apply for a licence to build and operate a wind farm on Crown land that is subject to a pastoral lease (*Pastoral Land Management and Conservation (Renewable Energy) Amendment Act 2014* (SA)). This scheme commenced operation on 19 September 2015. Discussion of this scheme is outside the scope of this thesis). The same legislation is also designed to expedite access to Crown land for large-scale solar projects.

¹⁵² In 2006, the then Minister for Sustainability and Climate Change portfolio was the first of its kind in Australia; the Minister was Mike Rann, the then Premier, an indication of the significance placed on the portfolio at the time (South Australia, *Parliamentary Debates*, House of Assembly, 6 December 2006, 1522 (Mike Rann, Premier)).

¹⁵³ The SA CC Act came into operation on 3 July 2007.

¹⁵⁴ K L McInnes and others, *Climate change in South Australia - Report on: Assessment of climate change, impacts and possible adaptation strategies relevant to South Australia* (2003) (Commonwealth Scientific and Industrial Research Organisation ('CSIRO')). See, for example, South Australia, *Parliamentary Debates*, above n 152, 1523.

¹⁵⁵ South Australia, *Parliamentary Debates*, above n 152, 1523.

¹⁵⁶ *Ibid.*

¹⁵⁷ Sir Nicholas Stern, *The Economics of Climate Change: The Stern Review* (2007) (Cambridge University Press).

The SA CC Act was the first climate change legislation to be introduced in Australia and only the third in the world at the time after California and the Canadian province of Alberta.¹⁵⁸ When the SA CC Act was introduced into Parliament in late 2006, it was described by Rann as ‘bold and historic legislation designed to tackle the single biggest threat facing [the] state and [the] planet: climate change’.¹⁵⁹

At the time of introduction of the SA CC Act, South Australia had less than 8% of Australia’s population but 51% of the national wind power capability and 45% of the national grid-connected solar power.¹⁶⁰ South Australia went from having no wind farms in 2002 to six in 2006.¹⁶¹

The SA CC Act originally legislated a RET of at least 20% by 31 December 2014; this can be contrasted with the Commonwealth MRET at the time of 2% by 2010.¹⁶² Illustrating the South Australian Government’s desire to progressively increase the uptake of renewable energy in the State, this target was revised upwards in 2009 to 33.3% by 2020.¹⁶³ The RET was then further revised in 2015 to 50% by 2025 by the Weatherill Labor Government as part of their renewable energy policy measures.¹⁶⁴ South Australia reached this revised RET seven years ahead of schedule in 2018 with 51% of its electricity coming from renewable energy sources.¹⁶⁵ Chapter III analyses South Australia’s legislative RET scheme in more detail.

In 2008, South Australia was also the first Australian jurisdiction to provide a premium FiT to support the installation of small-scale solar photovoltaic systems. This scheme was closed to new entrants in October 2011. Given the absence of a Commonwealth FiT scheme, this was an innovative development in Australia at the time. South Australia also has a legislated electricity

¹⁵⁸ South Australia, *Parliamentary Debates*, above n 152, 1523.

¹⁵⁹ *Ibid* 1522.

¹⁶⁰ *Ibid*. Rann’s second reading speech indicated that at the time of introduction, solar panels had been placed on major public buildings such as the Art Gallery of South Australia, the South Australian Museum, the State Library and the South Australian Parliament.

¹⁶¹ *Ibid*. South Australia’s first wind farm, Starfish Hill at Cape Jervis, with a capacity of approximately 34.5 MW, commenced operation in 2003 (<<https://www.abc.net.au/news/2017-03-14/south-australias-electricity-timeline/8312062>>).

¹⁶² SA CC Act, sections 5(2)(a) and (b). Commonwealth MRET: *Renewable Energy (Electricity) Act 2000* (Cth), section 40 (since amended). The original RET in the SA CC Act comprised two separate targets, one for generation and one for consumption. This reflects South Australia’s reliance upon electricity imports at the time (Department of Environment and Natural Resources, South Australian Government, *2011 Review of the Climate Change and Greenhouse Emissions Reduction Act 2007* (2012) 15). Both targets were set at the same level, being at least 20% by 31 December 2014.

¹⁶³ Ministerial determination made under section 5 of the SA CC Act – South Australian Government, *2020 Renewable Energy Target – South Australian Government Report under the Climate Change and Greenhouse Emissions Reduction Act 2007* (2009).

¹⁶⁴ Department of State Development, South Australian Government, above n 151, 3.

¹⁶⁵ Department of the Environment and Energy, Australian Government, above n 68, Table O9.

retailer FiT scheme currently operating.¹⁶⁶ Chapter IV analyses South Australia's legislative FiT schemes, set out in the *Electricity Act 1996* (SA) ('SA FiT Act'), in more detail.

In September 2016, South Australia experienced a major State-wide electricity blackout ('September 2016 blackout'). The September 2016 blackout occurred when tornadoes with wind speeds of between 190 and 260 kilometres per hour took out some of the State's transmission lines; this in turn caused some wind farms to effectively power down due to system protection settings. The State's grid then drew more power from the NEM via the Heywood (Limestone Coast) Interconnector with Victoria. The Interconnector overloaded and consequently switched off, plunging the State into darkness.¹⁶⁷

At the time, it was suggested that the intermittent nature of South Australia's wind generated energy and the State's high reliance on renewable energy were to blame.¹⁶⁸ However, an investigation by the AEMO found the blackout was primarily caused by grid-system related issues such as protection setting levels and that the intermittency of wind generated energy was not a 'material factor'.¹⁶⁹

As part of its response to the September 2016 blackout, the South Australian Government's current renewable energy related plan, *Our Energy Plan*, released by the Weatherill Labor Government in 2017, places an emphasis on South Australia having greater local control of the State's energy security.¹⁷⁰ The Weatherill Labor Government also announced that the State would build a new gas power station with a 250 MW capacity¹⁷¹ and Australia's largest

¹⁶⁶ South Australia's original premium FiT scheme was inserted into the *Electricity Act 1996* (SA) ('SA FiT Act') by the *Electricity (Feed-In Scheme-Solar Systems) Amendment Act 2008* (SA) and commenced operation on 1 July 2008. The electricity retailer FiT scheme was inserted into the *Electricity Act 1996* (SA) by the *Electricity (Miscellaneous) Amendment Act 2011* (SA) and commenced operation on 1 October 2011.

¹⁶⁷ AEMO, *Black System South Australia* 28 September 2016 (March 2017) 6.

¹⁶⁸ Matthew Doran and Alexandra Beech, 'SA weather: State-wide power loss raises 'serious questions', Josh Frydenberg says', *ABC News* (online), 28 September 2016, <<https://www.abc.net.au/news/2016-09-28/sa-weather-serious-questions-must-be-answered-frydenberg-says/7886262>>. The September 2016 blackout in South Australia was one of the factors that influenced the development of the Finkel Review (for example, see Prest, above n 83, 51).

¹⁶⁹ AEMO, above n 167, 7.

¹⁷⁰ Department of Premier and Cabinet, South Australian Government, *Our Energy Plan* (2017) 3. Action 52 of the South Australian Government's *Towards a resilient state: The South Australian Government's Climate Change Adaptation Action Plan* refers to implementation of the *Our Energy Plan*. The *Adaptation Action Plan* indicates that the *Our Energy Plan* will ensure that South Australia will become more self-reliant for its power and create local jobs through initiatives such as building the Tesla renewable energy storage battery at the Hornsdale Power Reserve and the solar thermal plant at Port Augusta (Department of Premier and Cabinet, South Australian Government, *Towards a resilient state: The South Australian Government's Climate Change Adaptation Action Plan* (2015) 32). See Chapter V for further discussion of the Tesla renewable energy storage battery and the solar thermal plant.

¹⁷¹ The South Australian Government also announced in 2017 that it would give the South Australian Minister responsible for administering the *Electricity Act 1996* (SA) the power to direct the new gas power station to be

renewable energy storage battery facility at the Hornsdale Power Reserve to provide grid stability and for emergency power.¹⁷² As part of facilitating development of this next generation technology, the South Australian Government established a \$150 million Renewable Technology Fund amongst other RDC measures.¹⁷³ Chapter V examines South Australia's legislative RDC measures in more detail.

The South Australian Government's *Low Carbon Investment Plan*, released by the Weatherill Labor Government in 2015, sets out the Government's aim of achieving \$10 billion of investment in the low carbon industry by 2025.¹⁷⁴

To date, the current Marshall Liberal Government has communicated their focus on 'restoring affordable, reliable electricity' to South Australia,¹⁷⁵ whilst acknowledging there is a need to 'transition away from fossil fuels towards renewable energy'.¹⁷⁶

switched on in times of emergency. Currently, this type of authority is held by the AEMO. The AEMO was criticised for failing to direct the second unit at the Pelican Point gas power station to be switched on during the State's load-shedding episode in February 2017; SA Power Networks initiated load-shedding for around 30 minutes to cope with a surge in demand for electricity prompted by the heatwave at the time ('SA heatwave forces blackouts to cope with electricity demand, angering Government, *ABC News* (online), 9 February 2017, <<https://www.abc.net.au/news/2017-02-08/sa-heatwave-forces-rolling-blackouts-angering-government/8252512>>).

¹⁷² Nick Harmsen and Angelique Donnellan, 'SA power: Energy Minister to be given more control in state's \$500m plan to secure future', *ABC News* (online), 14 March 2017, <<https://www.abc.net.au/news/2017-03-14/sa-power-energy-minister-electricity-market-plan-jayweatherill/8351450>>.

¹⁷³ Department of Premier and Cabinet, South Australian Government, above n 170, 3. Another example of a measure promoting demand for renewable energy is the South Australian Government's previous *Strategic Plan*, consisting of 100 specific and measurable targets, including Target 64. Target 64 supported the development of renewable energy so that it comprised 33% of the State's electricity production by 2020 with a milestone of 20% by 2014. The *Strategic Plan* indicated that as at December 2017, the proportion of electricity produced from renewable energy sources in the State grew from 4.9% in 2004-05 (the baseline year) to 48.9% in 2016-17. The *Strategic Plan* indicated that wind energy was the main renewable energy technology that contributed to this result with small-scale solar photovoltaic installations also contributing increasing amounts.

¹⁷⁴ Department of State Development, South Australian Government, above n 151, 3.

¹⁷⁵ <<https://premier.sa.gov.au/news/powering-south-australia-s-future-energy-needs>>. An illustration of the renewable energy related ideological differences between the two major political parties in South Australia is that during the 2018 State election, the Weatherill Labor Government committed to increasing the State's RET to 75% by 2025 and, for the first time, a renewable energy storage target of 750 MW storage capacity by 2025. The Weatherill Labor Government also committed to an additional \$20 million for the State's Renewable Technology Fund. In contrast, the current Marshall Liberal Government pledged as part of its election campaign to scrap the State's RET of 50% by 2025 on the grounds that the target had resulted in the State having the highest wholesale electricity prices in Australia. As a result of the RET being scrapped, South Australia slipped down the Climate Council's rankings to share first place with Victoria and the ACT (Climate Council, above n 101, iv).

¹⁷⁶ Adam Morton, 'South Australia on track to meet 75% renewables target Liberals promised to scrap', *The Guardian* (online), 25 July 2018, <<https://www.theguardian.com/environment/2018/jul/25/south-australia-to-hit-75-renewables-target-by-2025-liberal-energy-minister-says>>. In late 2018, the South Australian Parliament passed the *Petroleum and Geothermal Energy (Ban on Hydraulic Fracturing) Amendment Bill 2018* (SA) which enshrines a ten-year moratorium on fracking in the south-eastern areas of South Australia. One of the key drivers for this legislation is the support of the agriculture industry in this part of South Australia (South Australia, *Parliamentary Debates*, House of Assembly, 4 July 2018, 1433 (Troy Bell)).

Recent polling by The Australia Institute revealed that more than two thirds of South Australians want to see the State reach 100% renewable energy by 2030.¹⁷⁷ The AEMO has projected that South Australia will have 73% renewable energy by 2020-21.¹⁷⁸ Recent analysis by Green Energy Markets shows that South Australia only requires approximately another 1,300 MW of capacity to achieve 100% renewable energy generation.¹⁷⁹

The above supports the selection of South Australia as the ‘target’ jurisdiction for the purposes of this thesis’ comparative exercise.

2 South Australia’s National and International Profile on Climate Change and Renewable Energy

As the following examples show, the South Australian Government has demonstrated strong political leadership on renewable energy and climate change related matters.

In December 2015, South Australia was the first Australian jurisdiction to sign the Under2 Coalition’s Memorandum of Understanding on Subnational Global Climate Leadership (‘Under2 MOU’).¹⁸⁰ Signature of the Under2 MOU indicated the South Australian Government’s ‘clear and lasting’ commitment to reducing GHG emissions to 80% to 95% below 1990 levels by 2050, this being the level of GHG emissions reduction believed necessary to limit global warming to less than 2°C by the end of this century.¹⁸¹ The South Australian Government’s target of net zero GHG emissions by 2050 exceeds the Under2 MOU commitment.¹⁸²

In 2015, South Australia became the first Australian jurisdiction in which a State government and a city council both signed international agreements on climate change.¹⁸³ The Weatherill

¹⁷⁷ <<https://www.tai.org.au/content/majority-south-australians-including-coalition-voters-want-100-renewables-2030>>.

¹⁷⁸ AEMO, *South Australian Generation Forecasts* (2017) 4.

¹⁷⁹ Green Energy Markets, *Renewable Energy Index* (2019) 1. Data is sourced from the AEMO, the AEMC and the Commonwealth Government’s National Greenhouse Accounts amongst other sources.

¹⁸⁰ The Under2 Coalition, formerly the States and Regions Alliance, consists of over 200 governments around the world, covering six continents and 43 countries. Governments join the Under2 Coalition by either signing or endorsing the Under2 Coalition Memorandum of Understanding on Subnational Global Climate Leadership (<<https://www.under2coalition.org>>). The States and Regions Alliance was formed by The Climate Group in 2005 with the aim of bringing together sub-national government leaders from around the world to share expertise and influence international dialogue on climate change. South Australia was a founding member of the States and Regions Alliance and its longest standing co-chair (Department of Environment, Water and Natural Resources, South Australian Government, above n 147, 28).

¹⁸¹ Ibid 26.

¹⁸² Department of Environment, Water and Natural Resources, South Australian Government, above n 147, 26.

¹⁸³ Ibid 28.

Labor Government and the Adelaide City Council signed the United Nations supported Compact of States and Regions¹⁸⁴ and Compact of Mayors respectively. These require the South Australian Government and the Adelaide City Council to report on their GHG emissions reduction targets on an annual basis.¹⁸⁵

In 2015, the then Premier, Jay Weatherill, hosted a Jurisdictional Meeting on Climate Change which was attended by representatives from seven Australian jurisdictions. Two outcomes of the Jurisdictional Meeting were that the jurisdictions agreed to promote the uptake of large-scale renewable energy and to discuss progress towards developing state-based GHG emissions reduction targets.¹⁸⁶ Subsequently, South Australia convened the Climate Change and Energy Working Group with Victoria, Queensland and the ACT as members and the Commonwealth, NSW and Tasmania as observers. Two of the key areas being worked on by the Working Group are identification of opportunities to drive supply and demand in renewable energy and sharing of information on GHG emissions reduction targets.¹⁸⁷

South Australia is a founding partner of Climate-KIC (Knowledge and Innovation Community) Australia, a partnership between public, private, research and non-government organisations to foster innovation to pioneer solutions to a changing climate that was launched in 2017.¹⁸⁸ The South Australian Government is also a member of the National GreenPower Steering Group, responsible for overseeing the GreenPower scheme, a national government-accredited renewable energy purchase scheme which sees electricity retailers purchasing renewable energy from accredited renewable energy sources at the request of customers.¹⁸⁹

3 South Australia's Energy Profile

As shown in Figure 5 below, during the period 2007 to 2018, electricity generation in South Australia became increasingly less dominated by fossil fuels with the reduction in fossil fuels

¹⁸⁴ The Compact of States and Regions is the first ever single, global account of GHG emissions reduction targets made by State and regional governments. Supported by the United Nations, it is a partnership between The Climate Group, Regions 20 (R20), Network of Regional Governments for Sustainable Development (nrg4SD) and the CDP, (formerly known as the Carbon Disclosure Project). The initiative was announced at the United Nations Climate Summit in New York in 2014. Reports under the Compact are submitted through the NAZCA portal.

¹⁸⁵ Department of Environment, Water and Natural Resources, South Australian Government, above n 147, 28. The South Australian Premier also acts as a climate ambassador for the Asia-Pacific region (Department of Environment, Water and Natural Resources, South Australian Government, above n 147, 28).

¹⁸⁶ Ibid.

¹⁸⁷ Australian Government, *Agreed Statement of Meeting of Environment Ministers*, 15 December 2015, 3.

¹⁸⁸ Climate-KIC Australia is based on Climate-KIC Europe, Europe's largest public-private innovation partnership focused on innovation to mitigate and adapt to climate change. The objective of Climate-KIC is to promote innovation in climate change through creative partnerships between the private, public and academic sectors.

¹⁸⁹ See the discussion on NSW in Section C for a brief discussion of this scheme.

reaching almost 50% in 2017-18. The downward trend in the dominance of fossil fuels started around 2009-10 onwards. Wind generated electricity started to increase from around 2009-10 onwards with solar generated electricity increasing from around 2010-11 onwards. South Australia has high quality wind and solar resources available, particularly wind partly due to South Australia's proximity to the 'Roaring Forties'.¹⁹⁰

South Australia is notable for the fact that its coal fired power stations have been progressively closed despite there being some local coal reserves in the State. Alinta Energy, the operator of the Port Augusta coal fired power stations in the north of South Australia, closed the power stations partly as a result of increased competition from renewable energy generation subsidies.¹⁹¹ As shown in Table 1 above, South Australia has the highest number of gas and diesel power stations (by MW capacity) in the NEM and has 909 MW of proposed new gas generation (the highest in the NEM). This may seem high however this is partly a reflection of the fact that South Australia has no coal fired power stations unlike some of the other NEM jurisdictions. Additionally, the South Australian Government's current climate change strategy, *South Australia's Climate Change Strategy 2015 – 2050: Towards a low carbon economy*, envisages the use of gas in the transition to a low carbon economy as an essential *complement* to renewable energy (emphasis added).¹⁹²

As shown in Table 1 above, South Australia has the third highest number of small-scale solar panel system installations, the highest number of currently operating large-scale wind farms (by MW capacity) and the fourth highest number of currently operating large-scale solar projects (by MW capacity) in the NEM. Whilst these may seem low compared to some of the other NEM jurisdictions, South Australia's upwards trajectory in the uptake of renewable energy and downwards trajectory in the use of fossil fuels indicates that renewable energy is performing well in South Australia. Additionally, when considered as a proportion of South Australia's current total electricity generation capacity, renewable energy generation comprises approximately a third.

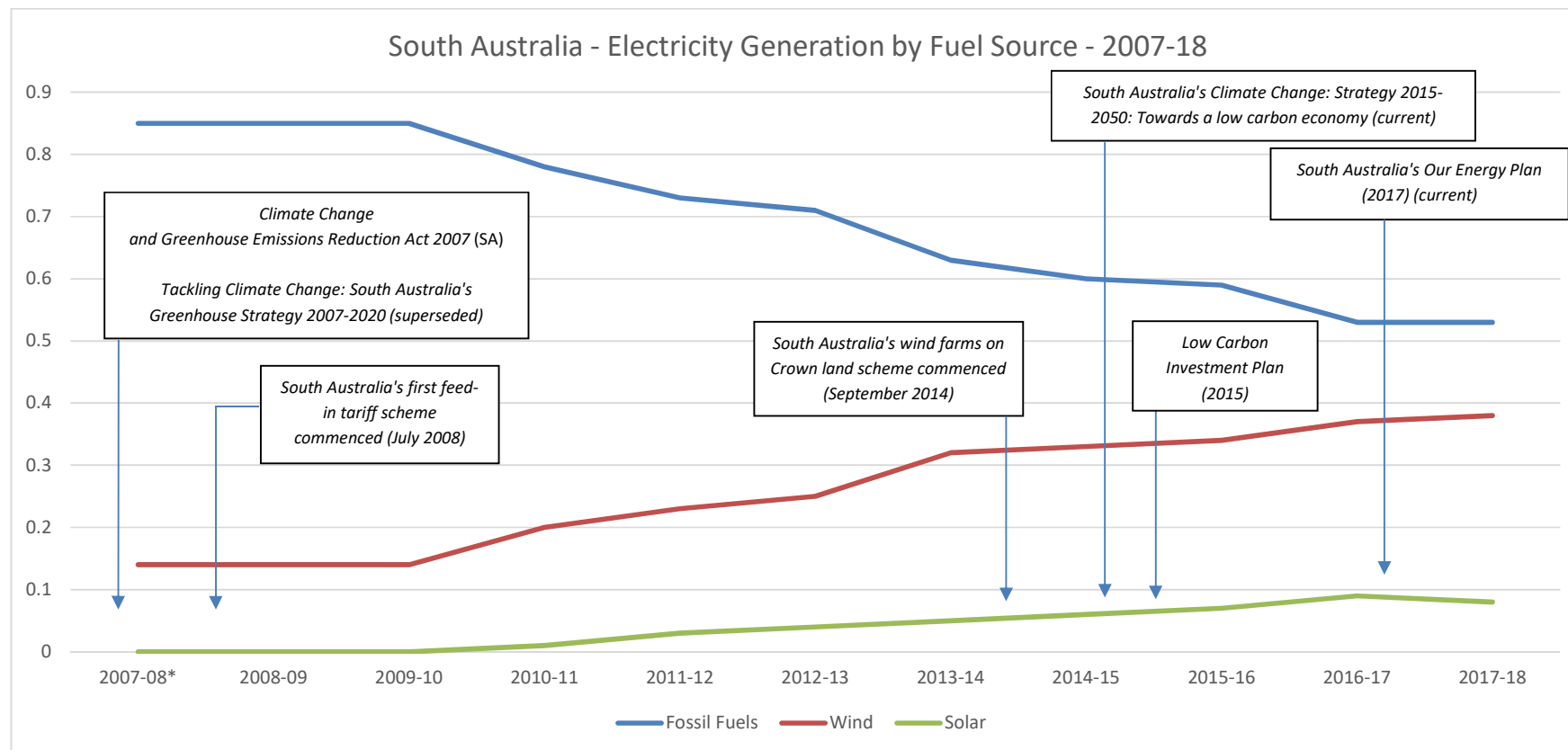
The above supports the selection of South Australia as the 'target' jurisdiction for the purposes of this thesis' comparative exercise.

¹⁹⁰ Geoscience Australia, Australian Government, *Australian Energy Resources Assessment* (2019), Figure 2 (<<https://aera.ga.gov.au/>>). The term 'Roaring Forties' is used to describe the wind currents between 40 and 50 degrees latitude created through the displacement of air from the Equator towards the South Pole.

¹⁹¹ <<https://www.abc.net.au/news/2016-05-09/port-augustas-coal-fired-power-station-closes/7394854>>.

¹⁹² Department of Environment, Water and Natural Resources, South Australian Government, above n 147, 8.

Figure 5 – South Australia – Electricity Generation by Fuel Source – 2007-18¹⁹³



¹⁹³ Department of the Environment and Energy, Australian Government, above n 68, Table O6. Data shown for 2007-08 is based on data available for 2008-09 and shown for illustrative purposes. Plotting of key climate change and renewable energy policy and legislative measures is approximate and shown for illustrative purposes.

South Australia has the third highest amount of proposed new large-scale wind generation and the third highest amount of proposed new large-scale solar generation in the NEM. The amount of potential new renewable energy generation is more than double South Australia's current non-renewable energy generation.¹⁹⁴

C The Other NEM Jurisdictions

As discussed below, the other NEM jurisdictions are all at different stages of progress in increasing the uptake of electricity generated from renewable energy sources. There is a broad range of events and regulatory components outside of the respective NEM jurisdictions' laws that have contributed to the differing levels of progress in the NEM jurisdictions. These include the dominance of the mining and fossil fuel sectors in some jurisdictions, bi-partisan political leadership in one jurisdiction, a lack of political leadership in other jurisdictions, the upcoming closure of ageing coal fired power stations in some jurisdictions and progressive climate change legislation in some jurisdictions.

1 Queensland

The following sub-section sets out an analysis of key Queensland political and historical events, particular characteristics of Queensland including its energy profile and its national and international profile on renewable energy and climate change, and components of Queensland regulation outside of the law that have informed Queensland's progress to date in increasing the uptake of electricity generated from renewable sources.

(a) Climate Change and Renewable Energy Politics, Policies and Legislation

As shown in Table 2 below, the current Queensland Government is the Palaszczuk Labor Government which was elected in 2015. Prior to that, the Newman Liberal Government governed for three years between 2012 and 2015. The Beattie and Bligh Labor Governments governed in consecutive terms over 14 years between 1998 and 2012. Since 2002, the Queensland political cycle has not been as stable compared to that of South Australia.

Early climate change related policies of the Queensland Government include the 2004 *Queensland's Greenhouse Strategy* and the *ClimateSmart 2050 – Queensland Climate Strategy*

¹⁹⁴ As shown in Table 1 above, South Australia also has the second highest amount of proposed new hydro generation in the NEM.

Table 2 – Key Statistics for Queensland¹⁹⁵

| Population (National – 24,597,528) | Geographical Size (National – 768,812,631.9 ha) | State Governments since 2002 |
|--|--|--|
| 4,929,152 (3 rd in the NEM) | 173,017,208.3 ha (1 st in the NEM) | 2015 – Labor (Palaszczuk) 2012 – 2015 – Liberal National (Newman) 2007 – 2012 – Labor (Bligh) 1998 – 2007 – Labor (Beattie) |
| Total Required Electricity Generation Capacity | | Full Time Equivalent Jobs in the Renewable Energy Industry (National – 17,740 jobs) |
| 12,829 MW | | 5,080 = 29% (1 st in the NEM by percentage) |
| Greenhouse Gas Emissions Reduction Target | | RET |
| 30% below 2005 levels by 2030 Net zero by 2050 (all policy commitments) ¹⁹⁶ | | 50% by 2030 (policy commitment) ¹⁹⁷ |
| Coal Fired Power Stations | | Small-scale Solar Panel System Installations 2001 to 2016 (National – 1,640,486) |
| 8 operating (black coal) – 8,186 MW (2 nd in the NEM by capacity) | | 499,882 = 10% (4 th in the NEM by percentage) |
| Gas and Diesel Power Stations | | Large-scale Wind Farms |
| 10 gas and diesel power stations operating – 2,871.5 MW (2 nd in the NEM by capacity) 2 proposed new gas power stations – 147.21 MW (3 rd in the NEM by capacity) | | 3 proposed new wind farms – 875 MW (5 th in the NEM by capacity) |
| Hydro Projects | | Large-scale Solar Projects |
| 3 operating – 722.4 MW (4 th in the NEM by capacity) 1 proposed new hydro project – 250 MW (4 th in the NEM by capacity) | | 7 operating – 625.5 MW (2 nd in the NEM by capacity) 69 proposed new solar projects – 12,306.6 MW* (1 st in the NEM by capacity) ¹⁹⁸ |

2007: *A Low Carbon Future*.¹⁹⁹ Reflecting the dominance of the mining and resources sector in Queensland, the latter policy indicated the Queensland Government's aim of transitioning Queensland towards a 'lower carbon future'²⁰⁰ through, amongst other measures, investing in

¹⁹⁵ See above n 146 for information regarding the statistics in this table.

¹⁹⁶ Department of Environment and Heritage Protection, Queensland Government, *Pathways to a clean growth economy: Queensland Climate Transition Strategy* (2017) 2 and 5-6.

¹⁹⁷ Department of Energy and Water Supply, Queensland Government, *Powering Queensland Plan: an integrated energy strategy for the state* (2017) 5.

¹⁹⁸ Two projects' nameplate capacity to be determined.

¹⁹⁹ For a high-level examination of both policies, see, for example, Hodgkinson and Garner, above n 98, 125.

²⁰⁰ Hodgkinson and Garner, above n 98, 125.

‘technological innovation in *clean coal* and renewable energy sources’ (emphasis added).²⁰¹ One of the ‘most significant’ energy related initiatives set out in *ClimateSmart 2050 – Queensland Climate Strategy 2007: A Low Carbon Future* was the Queensland Government’s plan to invest \$900 million in the development and demonstration of ‘clean coal technologies’.²⁰²

The Queensland Government’s early focus on developing ‘clean’ coal technologies and expanding the use of gas in the State’s fuel mix is illustrated by the *Clean Coal Technology Special Agreement Act 2007* (Qld)²⁰³ and the amendments made to the *Electricity Act 1994* (Qld) to establish the ‘13% Gas Scheme’.²⁰⁴ The former was aimed at ‘accelerating the development, implementation and use of clean coal technology’.²⁰⁵ The latter, a tradeable certificate scheme, was aimed at encouraging ‘the development of new gas sources and gas infrastructure to meet Queensland’s future energy requirements’.²⁰⁶

An early renewable energy policy of the Queensland Government is the 2009 *Renewable Energy Plan*, introduced by the Bligh Labor Government. This indicated the Queensland Government’s intention at the time to leverage the Commonwealth RET initiative to increase Queensland’s renewable energy generation by a further 2,500 MW.²⁰⁷ When compared to the capacity of Queensland’s current coal fired power stations (see Table 2 above), this amount of renewable energy generating capacity is relatively low. The Plan highlighted the ‘unique challenges’ in relation to cost and reliability of electricity faced by Queensland as a result of ‘its vast geographic area and highly decentralised population’ and that renewable energy would play a key part in addressing those challenges.²⁰⁸

Recognising that Queensland has a ‘high-carbon econom[y]’ and that reducing GHG emissions is ‘a priority’,²⁰⁹ Queensland has in recent years begun to increase its supply of and demand

²⁰¹ Ibid 126.

²⁰² Ibid.

²⁰³ The *Clean Coal Technology Special Agreement Act 2007* (Qld) commenced operation on 15 June 2007 and was repealed on 1 October 2014 by the *State Development, Infrastructure and Planning (Red Tape Reduction) and Other Legislation Amendment Act 2014* (Qld).

²⁰⁴ The ‘13% Gas Scheme’ was inserted into the *Electricity Act 1994* (Qld) by the *Clean Energy Act 2008* (Qld) and commenced operation on 1 July 2008. The Scheme was repealed on 23 September 2013 by the *Energy and Water Legislation Amendment Act 2013* (Qld).

²⁰⁵ Hodgkinson and Garner, above n 98, 127.

²⁰⁶ Ibid 131.

²⁰⁷ Department of Employment, Economic Development and Innovation, Queensland Government, *Renewable Energy Plan* (2009) 17.

²⁰⁸ Ibid 6.

²⁰⁹ Governments of Victoria, South Australia, Queensland and the ACT, *Climate Leadership Declaration* (2017) 3.

for renewable energy. However, at the same time, the Queensland Government has supported the opening up of the Galilee Basin for thermal coal, the proposed Adani Carmichael export coal mine, and further areas of the Surat Basin for developing coal seam gas. The Queensland Government's support for this new fossil fuel mining is a reflection of the challenge for the Queensland Government to maintain the State's economic prosperity during the end of the mining boom whilst facing rising GHG emissions and climate change.²¹⁰

The Adani Carmichael coal mine proposal has met with considerable controversy²¹¹ and there have been a number of court cases addressing various aspects of the proposal. Judicial review, for example, of both the State and Commonwealth Environment Ministers' decisions were launched under the *Environmental Protection Act 1994* (Qld) and the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) respectively in relation to approving the mine.²¹²

In the Land Court of Queensland,²¹³ Adani said it expected the Carmichael coal mine to produce 2.3 billion tonnes of coal over 60 years, equivalent to just under 40 million tonnes of coal per year, generating 4.7 billion tonnes of CO₂.²¹⁴ In a joint expert report to the Land Court, two experts, Drs Christopher Taylor and Malte Meinshausen, said this would be the equivalent to approximately 0.53 to 0.56% of the global carbon budget remaining after 2015 to have a likely chance of not exceeding the *Paris Agreement* 2°C goal.²¹⁵

As noted by the Climate Council, the GHG emissions increases arising from the extraction and burning of coal from the Adani Carmichael coal mine will outstrip the GHG emissions reductions Queensland seeks to achieve through its policy RET (see below).²¹⁶ The Queensland Government's continued support for fossil fuel mining places Queensland at odds with international efforts to tackle climate change through, for example, promoting the increased

²¹⁰ <<https://www.abc.net.au/news/2019-04-26/what-we-know-about-adanis-carmichael-coal-mine-project/11049938>>.

²¹¹ The campaign against the Adani Carmichael coal mine has been described as the biggest environmental campaign seen in Australia since the conservationist protests against the Tasmanian Franklin Dam proposal in the 1980s (Katharine Murphy, 'Federal Labor feels the heat over Adani, and Coalition is sweating too', *The Guardian* (online), 27 May 2017, <<https://www.theguardian.com/environment/2017/may/27/federal-labor-feels-the-heat-over-adani-and-coalition-is-sweating-too>>).

²¹² See, for example, *Land Services of Coast and Country Inc v Chief Executive, Department of Environment and Heritage Protection & Anor* [2016] QSC 272 and *Mackay Conservation Group Inc v Commonwealth of Australia and Ors* (2015) (there was no judgment as the case was settled with the Commonwealth Environment Minister's decision set aside – see the unreported decision at <<https://www.comcourts.gov.au/file/Federal/P/NSD33/2015/actions>>).

²¹³ *Adani Mining Pty Ltd v Land Services of Coast and Country Inc & Ors* [2015] QLC 48.

²¹⁴ Originally, Adani had proposed to extract up to 60 million tonnes of coal per annum over 150 years.

²¹⁵ *Adani Mining Pty Ltd v Land Services of Coast and Country Inc & Ors* [2015] QLC 48 at [434].

²¹⁶ Climate Council, above n 101, 28.

uptake of electricity generated from renewable energy sources in Australia and globally.²¹⁷ This is partly because the Queensland Government's support for the Adani Carmichael coal mine is anticipated to pave the way for other fossil fuel mining initiatives in the area.²¹⁸

Mitigating the impact of climate change in Queensland is particularly important as Queensland is home to one of the world's most significant natural features, the Great Barrier Reef. The Reef has more than 400 different types of coral, over 1,500 species of tropical fish, more than 200 species of birds and approximately 20 species of reptiles including giant clams 'over 120 years old'.²¹⁹ The Great Barrier Reef marine park stretches for over 3,000 kms along the eastern coast of Queensland.²²⁰

The Great Barrier Reef is considered to be particularly vulnerable to the impact of climate change; there were serious mass coral bleaching events in 1998, 2002, 2016 and 2017.²²¹ The 2002 event saw over 50% of the Reef experience bleaching.²²² The back-to-back bleaching events of 2016 and 2017 was 'unprecedented and collectively affected two thirds' of the Reef.²²³ The *Garnaut Climate Change Review* found that if the temperature of the Great Barrier Reef increases by 0.55°C, mass bleaching events will be twice as common as they have been to date.²²⁴

As the Great Barrier Reef is a significant contributor to Queensland's economy, contributing \$6 billion per year and supporting 69,000 jobs,²²⁵ the mitigation of climate change impacts on the Reef can be viewed as an important part of maintaining Queensland's economic prosperity as well as the State's unique environmental heritage.

Unlike South Australia, Queensland does not have a legislated RET. One of the Queensland Government's key current renewable energy related policies, the *Powering Queensland Plan*, however indicates the Government's policy commitment to a 50% RET by 2030.²²⁶ The

²¹⁷ Ibid. The Adani Carmichael coal mine received its final approval in 2019, this being its groundwater management plan, and is anticipated to commence construction shortly ('Adani gets final environmental approval for Carmichael mine', *ABC News* (online), 14 June 2019, <<https://www.abc.net.au/news/2019-06-13/adani-carmichael-coal-mine-approved-water-management-galilee/11203208>>).

²¹⁸ Above n 210.

²¹⁹ <<https://www.greatbarrierreef.org/about-the-reef>>.

²²⁰ Ibid.

²²¹ <<https://www.aims.gov.au/docs/research/climate-change/coral-bleaching/bleaching-events.html>>.

²²² Ibid.

²²³ Ibid.

²²⁴ Garnaut, above n 14, 143.

²²⁵ Department of Environment and Heritage Protection, Queensland Government, above n 196, 10.

²²⁶ Department of Energy and Water Supply, Queensland Government, above n 197, 5.

Queensland Government's other key current renewable energy policy, the *Powering North Queensland Plan*, states that achieving a sustainable transition to 50% renewable energy will require a diverse portfolio of renewable energy projects.²²⁷ To help achieve this, the Queensland Government is supporting a range of programs promoting research in and development of renewable energy technologies. Chapter V considers these measures further in the context of this thesis' examination of the NEM jurisdictions' legislative RDC measures.

Similarly to South Australia, Queensland's *Electricity Act 1994* ('Queensland FiT Act') provides for a premium solar FiT scheme which was closed to new entrants in July 2012 and an electricity retailer FiT scheme for regional Queensland.²²⁸ Unlike South Australia, there is also a voluntary solar FiT scheme in operation in Queensland. Electricity retailers in South-East Queensland voluntarily offer solar FiTs that are monitored by the Queensland Competition Authority ('QCA'). Chapter IV analyses Queensland's legislative FiT schemes in more detail.

In 2018, the Queensland Government established CleanCo Queensland, a new publicly owned clean energy generator.²²⁹ CleanCo Queensland's mandate is to secure a 'cleaner, more affordable, sustainable and secure energy supply for Queensland'.²³⁰ CleanCo Queensland will, amongst other things, build, construct, own and maintain renewable energy generation assets.²³¹ CleanCo Queensland is anticipated to start trading in the NEM during the course of late 2019, subject to receiving the required regulatory approvals.²³²

The Clean Energy Council's 2019 review of the renewable energy industry found that Queensland was the renewable energy 'construction capital' of Australia in 2018.²³³ Out of the 38 large-scale renewable energy projects completed in 2018 across Australia, 17 were located in Queensland.²³⁴ Despite this, recent analysis by Green Energy Markets shows that Queensland is on track to only achieve 29.2% of its electricity from renewable energy

²²⁷ Department of Energy and Water Supply, Queensland Government, *Powering North Queensland Plan* (2017) 2.

²²⁸ The original premium FiT scheme was inserted into the *Electricity Act 1994* (Qld) ('Queensland FiT Act') by the *Clean Energy Act 2008* (Qld) and commenced operation on 1 July 2008. The electricity retailer FiT scheme was inserted into the *Electricity Act 1994* (Qld) by the *Electricity and Other Legislation Amendment Act 2014* (Qld) and commenced operation on 1 July 2014.

²²⁹ The establishment of CleanCo Queensland was foreshadowed in the Queensland Government's *Powering Queensland Plan* (Department of Energy and Water Supply, Queensland Government, above n 197, 3).

²³⁰ <<https://www.treasury.qld.gov.au/programs-and-policies/queenslands-new-cleanco/>>.

²³¹ Ibid.

²³² <<https://cleancoqueensland.com.au/>>.

²³³ Clean Energy Council, *Clean Energy Australia Report 2019* (2019) 57.

²³⁴ Ibid.

sources,²³⁵ ‘significantly short’ of its policy RET of 50% by 2030.²³⁶ To achieve its RET of 50% by 2030, Queensland requires approximately another 4,500 MW of capacity.²³⁷

(b) Queensland’s National and International Profile on Climate Change and Renewable Energy

Similarly to South Australia, Queensland, under the Palaszczuk Labor Government, has signed the Under2 MOU (in 2017). Queensland is also a member of the inter-jurisdictional Climate Change and Energy Working Group convened by South Australia in 2015. The Queensland Government is also a member of the National GreenPower Steering Group, responsible for overseeing the GreenPower scheme. Unlike South Australia, the Queensland Government has not signed the Compact of States and Regions nor is it a member of Climate-KIC Australia.

Based on the above, compared to South Australia, the Queensland Government, despite Queensland’s relative political instability, has shown a degree of strong political leadership on renewable energy and climate change related matters.

(c) Queensland’s Energy Profile

Despite Queensland’s vulnerability to climate change and its progressive policy position on climate change, as shown in Figure 6 below, during the period 2007 to 2018, electricity generation in Queensland has been dominated by fossil fuels, reflecting Queensland’s traditionally strong mining and resources sectors, with wind, solar and hydro playing a comparatively minor role to date.

As shown in Table 2 above, Queensland has the second highest number (by MW capacity) of currently operating coal fired, gas and diesel power stations in the NEM. Queensland has the third highest amount of proposed new gas generation in the NEM. The Queensland Government has indicated in its recent *Powering Queensland: Our renewable energy achievements* policy statement its intention to continue to use coal and gas to ensure a ‘steady transition to a renewable energy economy’.²³⁸

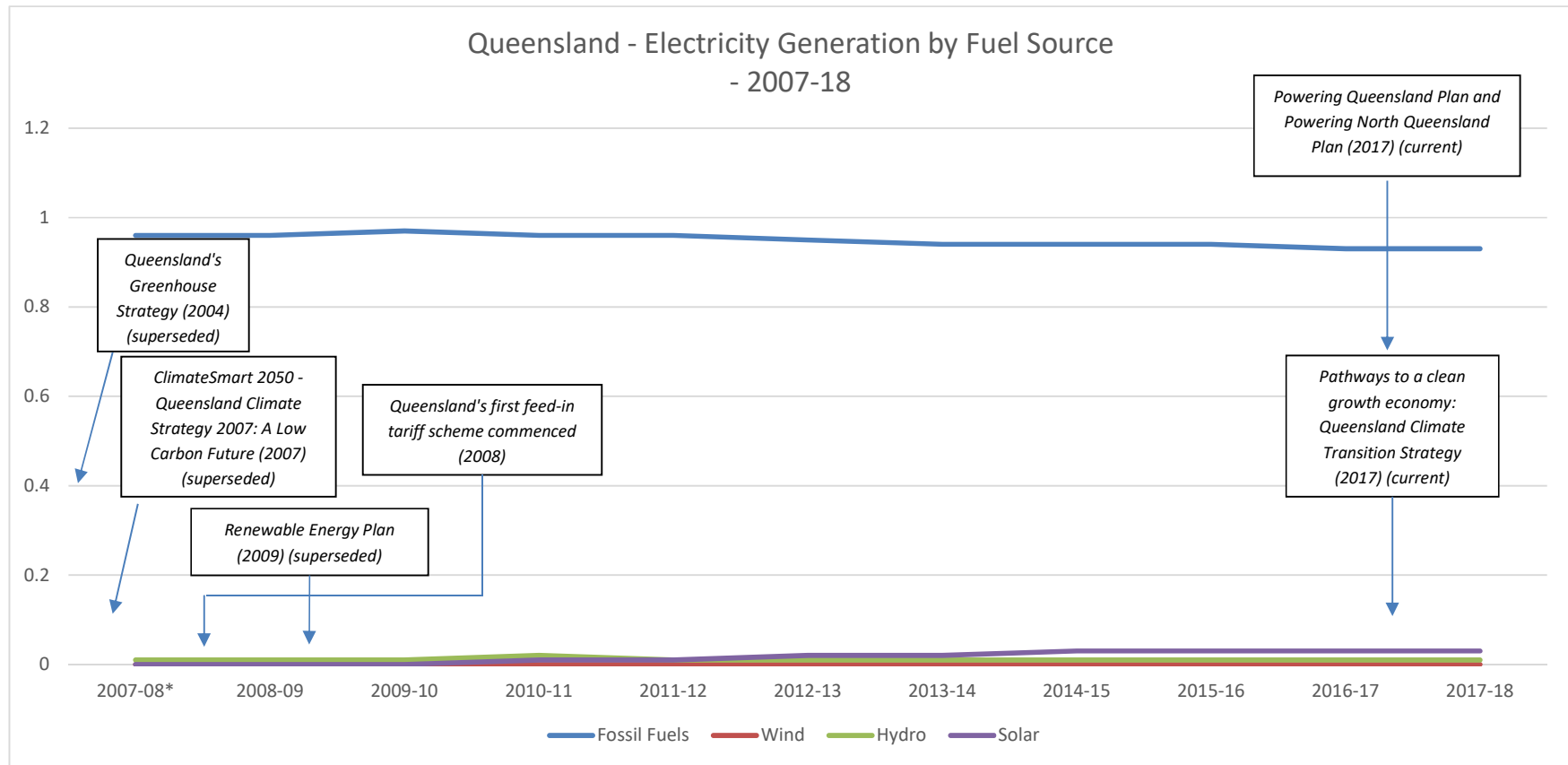
²³⁵ Green Energy Markets, above n 179, 6. See also Stephen Letts, ‘Renewable energy is growing, but NSW and Queensland are still undershooting their targets’, *ABC News* (online), 2 July 2019, <<https://www.abc.net.au/news/2019-07-02/renewable-energy-targets-may-not-be-met-by-all-states/11267824>>.

²³⁶ Ibid 1.

²³⁷ Ibid.

²³⁸ Department of Energy and Water Supply, Queensland Government, *Powering Queensland: Our renewable energy achievements* (2017) 1.

Figure 6 – Queensland – Electricity Generation by Fuel Source – 2007-18²³⁹



²³⁹ Department of the Environment and Energy, Australian Government, above n 68, Table O4. Data shown for 2007-08 is based on data available for 2008-09 and shown for illustrative purposes. Plotting of key climate change and renewable energy policy and legislative measures is approximate and shown for illustrative purposes.

This is a point of difference with South Australia which envisages the use of gas as a *complement* to renewable energy (emphasis added). As shown in Table 2 above, Queensland has the fourth highest number of small-scale solar panel system installations and the second highest number (by MW capacity) of currently operating large-scale solar projects in the NEM. When considered as a proportion of Queensland's current total electricity generation capacity, the amount of renewable energy generation is low compared to South Australia.

Compared to South Australia, Queensland has the highest amount of proposed new large-scale solar generation. This is partly due to the availability of high quality solar resources in Queensland.²⁴⁰ Queensland also has the fifth highest amount of proposed new large-scale wind generation. The amount of potential new renewable energy generation is more than Queensland's current non-renewable energy generation; however, the excess amount is not as substantial as South Australia (see Table 1). Additionally, there is a degree of uncertainty inherent in some proposed new renewable energy generation projects which may mean that some of the currently proposed projects may not come to fruition.²⁴¹

As Table 2 above shows, Queensland has the highest number of full-time equivalent jobs in the renewable energy industry out of all of the NEM jurisdictions. This may be a reflection of the amount of construction of new large-scale renewable energy projects underway in Queensland.

As discussed above, a range of issues impact on Queensland's capacity to promote the increased supply of and demand for renewable energy. At this high level, Queensland exhibits both similarities and differences to South Australia. A detailed discussion of Queensland's

²⁴⁰ Geoscience Australia, Australian Government, above n 190.

²⁴¹ Queensland also has the fourth highest amount of proposed new hydro generated energy in the NEM. The Queensland Government's *Powering North Queensland Plan* explains that Queensland currently has around 700 MW of hydro energy generation (Department of Energy and Water Supply, Queensland Government, above n 227, 2). The Plan anticipates that hydro generation will play an important part in Queensland's future energy mix. The Queensland Government is to undertake a feasibility study to assess options for the deployment of new hydro generation capacity. The Queensland Government is also to invest \$100 million to assist with developing a 50 MW hydro-electric power station at Burdekin Falls Dam subject to completion of the business case. Once operational, the power station will generate enough electricity to power 30,000 homes. A pumped-hydro station is also proposed at Kidston which will provide around 250 MW of power. The *Powering North Queensland Plan* lists 11 committed renewable energy projects that, collectively, will generate enough electricity to power over 363,000 homes. The largest of those projects, the Mount Emerald Wind Farm, near Cairns, will power 94,608 homes when operational (Department of Energy and Water Supply, Queensland Government, above n 227, 4). The Plan indicates the Queensland Government's intention of investing \$150 million to the development of a clean energy hub in North and North-West Queensland subject to a feasibility study. This hub is anticipated to unlock around 2,000 MW of renewable energy projects and support approximately 4,600 jobs (Department of Energy and Water Supply, Queensland Government, above n 227, 2).

legislative measures to achieve its renewable energy policy objectives in these circumstances is set out in Chapters III to V.

2 NSW

The following sub-section sets out an analysis of key NSW political and historical events, particular characteristics of NSW including its energy profile and its national and international profile on renewable energy and climate change, and components of NSW regulation outside of the law that have informed NSW's progress to date in increasing the uptake of electricity generated from renewable sources.

(a) Climate Change and Renewable Energy Politics, Policies and Legislation

As shown in Table 3 below, the current NSW Government is the Berejiklian Liberal Government which was re-elected in 2019. Prior to the Berejiklian Liberal Government, the O'Farrell and Baird Liberal Governments governed in consecutive terms over six years between 2011 and 2017. Subsequent to the comparatively long serving Carr Labor Government, the Iemma, Rees and Keneally Labor Governments governed in relatively short consecutive terms over six years between 2005 and 2011. Compared to South Australia, the political cycle in NSW has seen a reasonable amount of variability both in political parties and elected Premiers since 2002.

As discussed below, NSW, in some respects, was an early pioneer in relation to renewable energy and climate change policy and legislative measures.

In 1997, GreenPower, a national government-accredited renewable energy purchase scheme which sees electricity retailers purchasing renewable energy from accredited renewable energy sources at the request of customers, was established by the former Sustainable Energy Development Authority in NSW.²⁴² Customers can opt to purchase between 10% and 100% of their electricity as renewable energy under the GreenPower scheme.²⁴³ Renewable energy purchased under the GreenPower scheme is additional to the Commonwealth RET.²⁴⁴ The

²⁴² <<https://www.greenpower.gov.au/News/GreenPower-Review-Public-Consultation-Paperreleased/~media/83096DBBECEC4C6292D2E749D6C46B8D.pdf>> 1.

²⁴³ <<https://www.greenpower.gov.au/About-Us/How-GreenPower-Works/>>.

²⁴⁴ <https://www.greenpower.gov.au/About-Us/FactSheets/~media/Files/Fact%20Sheets/GreenPower_Fact_Sheet_March_2010.pdf>.

Table 3 – Key Statistics for NSW²⁴⁵

| Population (National – 24,597,528) | Geographical Size (National – 768,812,631.9 ha) | State Governments since 2002 |
|--|--|--|
| 7,861,674 (1 st in the NEM) | 80,081,078.2 ha (3 rd in the NEM) | 2019 – to date – Liberal (Berejiklian) 2017 – 2019 – Liberal (Berejiklian) 2014 – 2017 – Liberal (Baird) 2011 – 2014 – Liberal (O’Farrell) 2009 – 2011 – Labor (Keneally) 2008 – 2009 – Labor (Rees) 2005 – 2008 – Labor (Iemma) 1995 – 2005 – Labor (Carr) |
| Total Required Electricity Generation Capacity | | Full Time Equivalent Jobs in the Renewable Energy Industry (National – 17,740 jobs) |
| 16,463 MW | | 4,470 = 25% (2 nd in the NEM by percentage) |
| Greenhouse Gas Emissions Reduction Target | | RET |
| Net zero GHG emissions by 2050 (policy commitment) ²⁴⁶ | | None |
| Coal Fired Power Stations | | Small-scale Solar Panel System Installations 2001 to 2016 (National – 1,640,486) |
| 5 operating (black coal) – 10,160 MW (1 st in the NEM by capacity) ²⁴⁷ | | 356,209 = 22% (1 st in the NEM by percentage) |
| Gas and Diesel Power Stations | | Large-scale Wind Farms |
| 4 gas and diesel power stations operating – 2,043.9 MW (4 th in the NEM by capacity) 7 proposed new gas and diesel power stations – 1,018.8 MW ²⁴⁸ (1 st in the NEM) | | 9 operating – 1,212.6 MW (2 nd in the NEM by capacity) 42 proposed new wind farms – 10,689.8 MW (1 st in the NEM) |
| Hydro Projects | | Large-scale Solar Projects |
| 6 operating – 2,525 MW (1 st in the NEM) 1 proposed new hydro project – 600 MW (3 rd in the NEM) | | 8 operating – 521.5 MW (3 rd in the NEM) 42 proposed new solar projects – 7,006.7 MW ²⁴⁹ (2 nd in the NEM) |

²⁴⁵ See above n 146 for information regarding the statistics in this table.

²⁴⁶ Office of Environment and Heritage, NSW Government, *NSW Climate Change Policy Framework* (2016) 2. See also Office of Environment and Heritage, NSW Government, *NSW: Making It Happen: Achieving Net-Zero Emissions by 2050* (2016).

²⁴⁷ The Liddell C Power Station (1,680 MW) and the Bayswater Power Station (2,640 MW) are scheduled for closure in 2022 and 2035 respectively. AGL’s decision to close the Liddell Power Station and replacing it with renewable energy generation came under considerable political pressure from the NSW and Commonwealth Governments. The Chairman of AGL said the decision to close the Power Station was based on the fact that the costs of keeping it open and ‘moderately reliable’ were likely to be ‘substantial’ (<https://www.abc.net.au/news/2017-09-27/agl-continues-to-resist-pressure-over-liddell-power-station/8992560>).

²⁴⁸ Two projects’ nameplate capacity to be determined.

²⁴⁹ Seven projects’ nameplate capacity to be determined.

Governments of the ACT, NSW, Queensland, South Australia and Victoria are all members of the National GreenPower Steering Group.²⁵⁰

In 2002, the Carr Labor Government pioneered one of the first emissions trading schemes in the world with the introduction of the NSW Greenhouse Gas Emission Reduction Scheme, also known as the Greenhouse Gas Abatement Scheme.²⁵¹ The scheme, a ‘baseline and credit’ scheme, required the State’s electricity retailers and other specified parties to meet mandatory GHG emissions reduction targets from the production of electricity they supplied or used.

Liable parties were assigned shares of the overall GHG emissions reduction target and demonstrated compliance by surrendering Greenhouse Gas Abatement Certificates. This scheme was repealed in 2012 when the now repealed Commonwealth carbon price scheme came into operation.²⁵²

In 2005, NSW became the first Australian jurisdiction to commit to a long-term GHG emissions reduction target when the Iemma Labor Government in its *New South Wales Greenhouse Plan 2005* committed to a GHG emissions reduction target of 60% by 2050 and returning to 2000 levels of GHG emissions by 2025.²⁵³

NSW is notable for the fact that it does not currently have a RET, a point of difference with South Australia. In 2006, the Iemma Labor Government contemplated the introduction of a mandatory RET as part of its response to the Commonwealth Government’s decision at the time not to extend the Commonwealth RET.²⁵⁴ The NSW Government indicated that one factor for seeking to introduce the RET scheme was to provide ‘ongoing support’ to the renewable energy industry; the decision by the Commonwealth Government not to extend the Commonwealth RET meant that ‘many proposed projects were not likely to proceed’.²⁵⁵ The

²⁵⁰ < <https://www.greenpower.gov.au/About-Us/> >.

²⁵¹ *Electricity Supply Amendment (Greenhouse Gas Emission Reduction) Act 2002* (NSW). The scheme was further amended by the *Electricity Supply Amendment (Greenhouse Gas Abatement Scheme) Act 2006* (NSW). The scheme was predated by a largely voluntary Greenhouse Gas Benchmark scheme. For a discussion of the earlier scheme, see Bradbrook and Wawryk, above n 92, and Wawryk and Bradbrook, above n 93.

²⁵² The Commonwealth carbon price scheme was established through the *Clean Energy Act 2011* (Cth) and other Commonwealth legislation, and repealed by the *Clean Energy Legislation (Carbon Tax Repeal) Act 2014* (Cth). For further discussion of the Greenhouse Gas Abatement Scheme, see, for example, Hodgkinson and Garner, above n 98, 104.

²⁵³ Ibid 97. The *New South Wales Greenhouse Plan 2005* indicated the NSW Government at the time was contemplating an extension of the Greenhouse Gas Abatement Scheme if a Commonwealth emissions trading scheme was delayed and imposing an obligation on all electricity retailers to offer an optional 10% GreenPower component on all residential customers’ electricity accounts (Hodgkinson and Garner, above n 98, 99).

²⁵⁴ Department of Energy, Utilities and Sustainability, NSW Government, *NSW Renewable Energy Target – Explanatory Paper* (2006) 2.

²⁵⁵ Ibid.

proposed RET was 10% of all electricity consumed in NSW to come from renewable energy generation anywhere in the NEM by 2010, increasing to 15% by 2020.²⁵⁶ NSW's proposed RET scheme did not proceed due to the Rudd Labor Commonwealth Government's decision to pursue a new co-operative approach to the development of renewable energy following its election in late 2007.²⁵⁷

Similarly to South Australia, NSW's *Electricity Supply Act 1995* provided for a premium solar FiT scheme, the Solar Bonus Scheme, which expired on 31 December 2016.²⁵⁸ Unlike South Australia, following the expiry of the Solar Bonus Scheme on 31 December 2016, the NSW Government has called upon electricity retailers to voluntarily offer a solar FiT to their customers. The Solar Bonus Scheme, whilst successful in facilitating an increase in the uptake of solar photovoltaic systems in NSW, was marked by particularly high scheme administration and subsidy costs. Chapter IV analyses NSW's experiences with its previous legislative FiT scheme in more detail.

The NSW Government's renewable energy policy, the *Renewable Energy Action Plan*, released by the O'Farrell Liberal Government in 2013, sets out the NSW Government's vision of a 'secure, reliable, affordable and clean energy future' for the State and states that '[i]ncreasing renewable energy generation is a critical part of [the State's] energy solution'.²⁵⁹ The *Renewable Energy Action Plan* places an emphasis on the NSW Government's ability to support the Commonwealth RET.²⁶⁰

In December 2018, the NSW Government announced that all 24 actions set out in the *Renewable Energy Action Plan* have been implemented including the appointment of a Renewable Energy Advocate.²⁶¹ As at November 2018, there were almost 90 renewable energy projects with a total capacity of approximately 18,500 MW that had either been approved or

²⁵⁶ Ibid 3.

²⁵⁷ Stephen Jones, 'The Future of Renewable Energy in Australia: A Test for Cooperative Federalism?' (2009) 68(1) *The Australian Journal of Public Administration* 17.

²⁵⁸ The *Electricity Supply Act 1995* (NSW) was amended by the *Electricity Supply Amendment (Solar Bonus Scheme) Act 2009* (NSW) to establish the Solar Bonus Scheme. The Scheme commenced operation on 1 January 2010.

²⁵⁹ Department of Planning and Environment, NSW Government, *NSW Renewable Energy Action Plan – Completion Report* (2018), 2.

²⁶⁰ Ibid.

²⁶¹ Ibid 6. The Renewable Energy Advocate is a position established to support the *NSW Renewable Energy Action Plan* including working closely with NSW communities and the industry to facilitate the deployment of renewable energy in NSW.

were progressing through the NSW planning system.²⁶² The amount of wind and solar in NSW's electricity fuel mix has tripled over the past five years.²⁶³

In 2018, the NSW Government launched its new \$55 million *Emerging Energy Program* which is 'designed to support the commercialisation' of 'dispatchable' technology including large-scale renewable energy storage batteries.²⁶⁴ The Program however may not include some wind and solar photovoltaic technologies due to the Program's focus on dispatchable technologies.²⁶⁵ Chapter V considers this Program further in the context of this thesis' examination of the NEM jurisdictions' legislative RDC measures. In June 2017, the NSW Government also launched the *Climate Change Fund Strategic Plan* which will see the doubling of NSW's renewable energy capacity to 10,000 MW by 2021.²⁶⁶

Recent analysis by Green Energy Markets has found that NSW will fall short of 'achieving timely progress' towards its target of net zero GHG emissions by 2050.²⁶⁷ To reach this target, NSW would need to increase its use of renewable energy to approximately 46% of its overall electricity consumption by 2030.²⁶⁸ NSW is however currently on track to achieve only 28% renewable energy based on its projected rooftop solar photovoltaic installations and committed and contracted large-scale wind and solar projects.²⁶⁹ NSW requires approximately an additional 5,000 MW of new renewable energy capacity by 2030 to 'bridge the gap'.²⁷⁰

(b) NSW's National and International Profile on Climate Change and Renewable Energy

Unlike South Australia, NSW is not a signatory to the Under2MOU or the Compact of States and Regions. It is also not a member of any other international or national partnerships such as

²⁶² Ibid 4.

²⁶³ Ibid 5.

²⁶⁴ Department of Planning and Environment, NSW Government, *NSW Emerging Energy Program Guidelines* (2019) 5.

²⁶⁵ Dispatchable' generation is electricity that can be used on demand at the request of electricity network grid operators and includes biomass and geothermal. Wind and solar technologies tend to be 'non-dispatchable' generation sources which are not able to be controlled by electricity network grid operators (<<https://energy.nsw.gov.au/sites/default/files/2018-10/DPE8811%20EmergingEnergy-WEB.pdf>>). See the AEMO's discussion of dispatchable technologies in its *Power System Requirements*, 6 (<https://www.aemo.com.au/-/media/Files/Electricity/NEM/Security_and_Reliability/Power-system-requirements.pdf>).

²⁶⁶ Clean Energy Council, above n 233, 24. The Climate Change Fund, established under section 34E of the *Energy and Utilities Administration Act 1987* (NSW), provides funding for GHG emissions reduction and mitigating the impacts of climate change associated with energy activities amongst other things.

²⁶⁷ Green Energy Markets, above n 179, 1.

²⁶⁸ Ibid.

²⁶⁹ Ibid 5. See also Stephen Letts, 'Renewable energy is growing, but NSW and Queensland are still undershooting their targets', *ABC News* (online), 2 July 2019, <<https://www.abc.net.au/news/2019-07-02/renewable-energy-targets-may-not-be-met-by-all-states/11267824>>.

²⁷⁰ Ibid 1. Green Energy Markets has assumed that NSW would need to achieve 100% renewable energy in order to reach its target of net zero GHG emissions by 2050 (Green Energy Markets, above n 179, 16).

Climate-KIC Australia. NSW is an observer at the inter-jurisdictional Climate Change and Energy Working Group convened by South Australia in 2015.

Based on the above, compared to South Australia, the NSW Government has demonstrated a lower level of political leadership on renewable energy and climate change related matters. The variability in NSW's political cycle may have contributed to this.

(c) NSW's Energy Profile

As shown in Figure 7 below, during the period 2007 to 2018, electricity generation in NSW (and the ACT)²⁷¹ has been dominated by fossil fuels with wind, solar and hydro playing a comparatively minor role. There has been a slight decrease in fossil fuels between 2008 and 2017.

As shown in Table 3 above, NSW has the highest number of coal fired power stations and the fourth highest number of gas and diesel power stations in the NEM (by MW capacity). NSW has the highest amount of proposed new gas and diesel generation in the NEM.

As shown in Table 3 above, NSW has the highest number of small-scale solar panel system installations, the second highest number (by MW capacity) of currently operating large-scale wind farms and the third highest number (by MW capacity) of currently operating large-scale solar projects in the NEM. NSW has Australia's largest utility-scale solar plants at Nyngan, Moree and Broken Hill.²⁷² This is partly due to the availability of high quality solar resources in NSW.²⁷³ When considered as a proportion of NSW's current total electricity generation capacity, the amount of renewable energy generation is low compared to South Australia.²⁷⁴

NSW has the highest amount of proposed new large-scale wind generation and the second highest amount of proposed new large-scale solar generation in the NEM.²⁷⁵ The amount of potential new renewable energy generation is more than NSW's current non-renewable energy

²⁷¹ Energy data collected by the Commonwealth Department of the Environment and Energy for NSW includes data for the ACT. Additionally, renewable energy data for the ACT is calculated based on electricity consumption, not production, as the ACT purchases most of its renewable energy from projects located in other States.

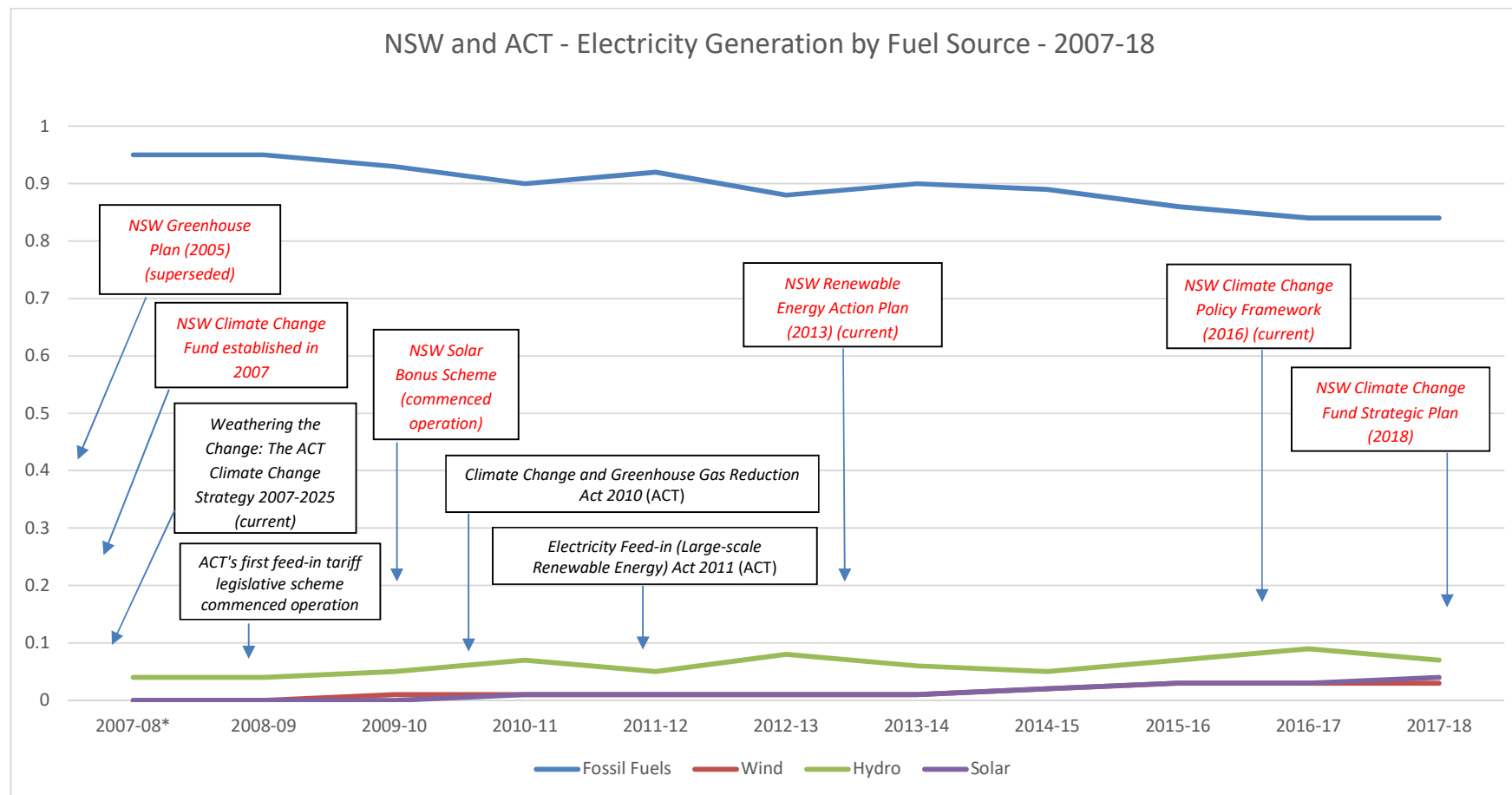
²⁷² Office of Environment and Heritage, NSW Government, above n 246, 4.

²⁷³ Geoscience Australia, Australian Government, above n 190.

²⁷⁴ As shown in Table 2 above, NSW has the highest amount of hydro generation in the NEM. Hydro generated by the Snowy Mountains hydro scheme comprises the largest portion of NSW's renewable energy generation (Department of Planning and Environment, NSW Government, above n 259, 6).

²⁷⁵ As shown in Table 2 above, NSW has the third highest amount of proposed new hydro generation in the NEM.

Figure 7 – NSW and ACT – Electricity Generation by Fuel Source – 2007-18²⁷⁶



²⁷⁶ Department of the Environment and Energy, Australian Government, above n 68, Table O2. Data shown for 2007-08 is based on data available for 2008-09 and shown for illustrative purposes. Plotting of key climate change and renewable energy policy and legislative measures is approximate and shown for illustrative purposes.

generation; however, the excess amount is not as substantial as South Australia (see Table 1). Additionally, there is a degree of uncertainty inherent in some proposed new renewable energy generation projects which may mean that some of the currently proposed projects may not come to fruition.

As shown in Table 3 above, NSW currently has the second highest number of full-time equivalent jobs in the renewable energy industry out of all the NEM jurisdictions. This may be a reflection of the amount of construction of new large-scale renewable energy generation projects underway in NSW.

As discussed above, a range of issues impact on NSW's capacity to promote the increased supply of and demand for renewable energy. At this high level, NSW exhibits both similarities and differences to South Australia. A detailed discussion of NSW's legislative measures to achieve its renewable energy policy objectives in these circumstances is set out in Chapters III to V.

3 ACT

The following sub-section sets out an analysis of key ACT political and historical events, particular characteristics of the ACT including its energy profile and its national and international profile on renewable energy and climate change, and components of ACT regulation outside of the law that have informed the ACT's progress to date in increasing the uptake of electricity generated from renewable sources.

(a) Climate Change and Renewable Energy Politics, Policies and Legislation

As shown in Table 4 below, the current ACT Government is the Barr Labor Government which was re-elected in 2018. Prior to that, the Stanhope and Gallagher Labor Governments governed in consecutive terms over 13 years between 2001 and 2014. The ACT has had the most stable political cycle out of all the NEM jurisdictions in that one political party, the Labor Party, has consistently held government since 2002.

In 2004, the Stanhope Labor Government introduced the ACT Greenhouse Gas Abatement Scheme which was similar to the NSW Greenhouse Gas Abatement Scheme.²⁷⁷ The ACT Greenhouse Gas Abatement Scheme established GHG emissions benchmarks for the electricity

²⁷⁷ The Greenhouse Gas Abatement Scheme was established through the *Electricity (Greenhouse Gas Emissions) Act 2004* (ACT). For further discussion of the Scheme, see for example, Hodgkinson and Garner, above n 98, 141.

sector and promoted GHG emissions reduction activities. Similarly to the NSW Scheme, the Scheme was repealed in 2012 when the now repealed Commonwealth carbon price scheme came into operation.²⁷⁸

Table 4 – Key Statistics for the ACT²⁷⁹

| Population (National – 24,597,528) | Geographical Size (National – 768,812,631.9 ha) | State Governments since 2002 |
|---|--|--|
| 411,667 (6 th in the NEM) | 235,817.2 ha (6 th in the NEM) | 2018 – to date – Labor (Barr) 2014 – 2018 – Labor (Barr) 2011 – 2014 – Labor (Gallagher) 2001 – 2011 – Labor (Stanhope) |
| Total Required Electricity Generation Capacity | | Full Time Equivalent Jobs in the Renewable Energy Industry (National – 17,740 jobs) |
| Data not available | | 580 = 3% (6 th in the NEM by percentage) |
| Greenhouse Gas Emissions Reduction Target | | RET |
| 50-60% below 1990 levels by 2025 65-75% below 1990 levels by 2030 90-95% below 1990 levels by 2040 Net zero GHG emissions by 2045 (all targets are legislated) ²⁸⁰ | | 100% by 2020 (legislated) ²⁸¹ |
| Coal Fired Power Stations | | Small-scale Solar Panel System Installations 2001 to 2016 (National – 1,640,486) |
| None in operation | | 17,525 = 1% (6 th in the NEM by percentage) |
| Gas and Diesel Power Stations | | Large-scale Wind Farms |
| None in operation | | None in operation |
| Hydro Projects | | Large-scale Solar Projects |
| None in operation | | 4 operating – 982.6 MW (1 st in the NEM by capacity) |

The ACT Government's *ACT Sustainable Energy Policy: Energy for a sustainable city 2011-2020* indicates that the ACT does not have 'substantial natural renewable energy resources' that would allow the ACT to be competitive with other States and Territories in large-scale

²⁷⁸ See above n 252.

²⁷⁹ See above n 146 for information regarding the statistics in this table. The statistics regarding the number of large-scale solar projects operating in the ACT have been based on the AEMO's data for non-scheduled generation as at 10 May 2019.

²⁸⁰ *Climate Change and Greenhouse Gas Reduction Act 2010* (ACT) ('ACT CC Act'), sections 6 and 7 and *Climate Change and Greenhouse Gas Reduction (Interim Targets) Determination 2018* (ACT), clause 3. The ACT CC Act commenced operation on 5 November 2010.

²⁸¹ ACT CC Act, section 9(1).

renewable energy generation.²⁸² The Policy indicates that the ACT Government's renewable energy related actions include promoting the purchase of renewable energy through the GreenPower scheme,²⁸³ the deployment of small-scale renewable energy technology such as rooftop solar photovoltaics²⁸⁴ and the introduction of a new large-scale renewable energy generator scheme (see below).²⁸⁵

A significant difference between the ACT and South Australia, and indeed, the other NEM jurisdictions, is that the ACT is the first Australian jurisdiction in which both the major political parties have provided bi-partisan support for the ACT's RET.²⁸⁶ The ACT's original RET set under the *Climate Change and Greenhouse Gas Reduction Act 2010* (ACT) ('ACT CC Act') was 15% by 2012 and 25% by 2020; the ACT currently has a legislated RET of 100% by 2020.²⁸⁷ ACT's RET was originally 100% by 2025 but in 2016, the ACT Government announced that it was bringing forward its RET to 2020.²⁸⁸ This is likely a reflection of the ACT Government leveraging the symbolism associated with the ACT housing the capital of Australia, Canberra. Chapter III analyses the ACT's legislative RET scheme in more detail.

Similarly to South Australia, the ACT's *Electricity Feed-in (Renewable Energy Premium) Act 2008* (ACT) ('ACT Premium FiT Act') establishes a premium solar photovoltaics FiT scheme which was closed to new entrants in 2011.²⁸⁹ Unlike South Australia, the *Electricity Feed-in (Large-scale Renewable Energy Generation) Act 2011* (ACT) ('ACT Large-scale FiT Act') establishes a scheme for promoting large-scale renewable energy generation in the ACT primarily through the use of reverse auctions. This approach was the first of its kind in Australia at the time.²⁹⁰ The electricity generated by successful projects is accredited by the ACT as

²⁸² Environment and Sustainable Development Directorate, ACT Government, *ACT Sustainable Energy Policy: Energy for a sustainable city 2011-2020* (2011) 22.

²⁸³ See the discussion of the GreenPower Scheme in the NSW section above.

²⁸⁴ Environment and Sustainable Development Directorate, ACT Government, above n 282, 22-23.

²⁸⁵ Ibid 24.

²⁸⁶ Climate Council, above n 101, 21.

²⁸⁷ Climate Change and Greenhouse Gas Reduction (Renewable Energy Targets) Determination 2011 (No 1) (ACT), clause 3; ACT CC Act, section 9(1).

²⁸⁸ The ACT Government's announcement of its revised RET was made shortly after the then Turnbull Liberal Nationals Commonwealth Government was presented with the trigger for a double dissolution federal election.

²⁸⁹ The *Electricity Feed-in (Renewable Energy Premium) Act 2008* (ACT) ('ACT Premium FiT Act') commenced operation on 1 March 2009. There is also a voluntary small-scale renewable energy generator buy-back scheme operating in the ACT. ActewAGL, now known as Evoenergy, an electricity retailer operating in the ACT, purchases electricity exported from customers' generators at a FiT rate of 11 cents per kWh. This is limited to residential generators of less than 10 KW and business generators of less than 30 KW.

²⁹⁰ Environment and Sustainable Development Directorate, *ACT Government, AP2 – A new climate change strategy and action plan for the Australian Capital Territory* (2012) 70. The *Electricity Feed-in (Large-scale Renewable Energy Generation) Act 2011* (ACT) ('ACT Large-scale FiT Act') commenced operation on 15 December 2011.

GreenPower.²⁹¹ According to the Climate Council, solar and wind projects under the ACT's renewable energy reverse auctions have delivered some of Australia's cheapest prices for renewable energy.²⁹² Chapter IV analyses the ACT's legislative FiT schemes in more detail.

The ACT Government's *ACT Renewable Energy Local Investment Framework* sets out a vision for Canberra to become an 'internationally recognised centre for renewable energy innovation and investment'.²⁹³ The Framework focuses on building Canberra's capacity as a national renewable energy related tertiary education and trades skills hub, fostering renewable energy related research partnerships to develop the capability and global recognition of ACT's tertiary institutions.²⁹⁴ Chapter V examines the ACT's legislative RDC measures in more detail.

Participants in the ACT's large-scale renewable energy reverse auctions are required to demonstrate how their proposals will support the ACT Government's renewable energy investment priorities set out in the Framework.²⁹⁵ Successful proposals have resulted in new wind industry related education and training courses being established at the Canberra Institute of Technology and the Australian National University.²⁹⁶

Recent analysis shows that the ACT is well on track to meet its RET of 100% by 2020 with nearly 78% of its electricity coming from renewable energy sources in late 2018.²⁹⁷

(b) The ACT's National and International Profile on Climate Change and Renewable Energy

Similarly to South Australia, the ACT, under the Barr Labor Government, has signed the Under2 MOU (in 2016) and joined the Compact of States and Regions (in 2015). The ACT is also a member of the inter-jurisdictional Climate Change and Energy Working Group convened by South Australia in 2015. The ACT Government is also a member of the National

²⁹¹ Environment and Sustainable Development Directorate, ACT Government, above n 290, 73.

²⁹² Climate Council, above n 101, 23. In July 2017, the Independent Competition and Regulatory Commission ('ICRC'), the ACT's independent economic regulator, increased electricity prices in the ACT by 19%, the increase being driven by rising wholesale electricity prices in the NEM which in turn were affected by substantial gas price increases. The ACT's fixed price contracts to achieve 100% renewable energy by 2020 through the large-scale renewable energy reverse auctions will in part shield the ACT's households and businesses from future wholesale price increases (Climate Council, above n 101, 23).

²⁹³ Environment, Planning and Sustainable Development Directorate, ACT Government, *ACT Renewable Energy Local Investment Framework* (2016) 1.

²⁹⁴ Ibid.

²⁹⁵ Ibid. See Chapter IV for a discussion of the ACT's renewable energy reverse auctions.

²⁹⁶ ACT, *Parliamentary Debates*, Legislative Assembly for the ACT, 14 May 2015, 1775 (Simon Corbell, Minister for the Environment).

²⁹⁷ Clean Energy Council, above n 233, 62.

GreenPower Steering Group, responsible for overseeing the GreenPower scheme.²⁹⁸ Unlike South Australia, the ACT is not a member of Climate-KIC Australia.

Based on the above, compared to South Australia, the ACT Government has demonstrated a similar level of strong political leadership on renewable energy and climate change related matters.

(c) The ACT's Energy Profile

Due to being the least populous of the NEM jurisdictions, the ACT has a comparatively small electricity consumer base compared to other NEM jurisdictions. The ACT is also predominantly a service-based economy that has relatively low energy intensity.²⁹⁹ The ACT does not have any generators and imports over 99% of its electricity from the NEM.³⁰⁰

As shown in Table 4 above, the ACT has no coal, gas or diesel power stations located within in the ACT. The ACT has the lowest number of small-scale solar panel system installations but the highest number of currently operating large-scale solar projects in the NEM. As shown in Table 4, the ACT has the lowest number of full-time equivalent jobs in the renewable energy industry out of all the NEM jurisdictions. This is likely a reflection of the ACT's small population and the fact that the ACT has no proposed new renewable energy generation within the Territory.

As discussed above, a range of issues impact on the ACT's capacity to promote the increased supply of and demand for renewable energy. At this high level, the ACT exhibits both similarities and differences to South Australia. A detailed discussion of the ACT's legislative measures to achieve its renewable energy policy objectives in these circumstances is set out in Chapters III to V.

4 Victoria

The following sub-section sets out an analysis of key Victorian political and historical events, particular characteristics of Victoria including its energy profile and its national and international profile on renewable energy and climate change, and components of Victorian

²⁹⁸ The ACT is the largest purchaser of GreenPower (Environment and Sustainable Development Directorate, ACT Government, above n 290, 68).

²⁹⁹ Ibid 27.

³⁰⁰ Ibid 26.

regulation outside of the law that have informed Victoria's progress to date in increasing the uptake of electricity generated from renewable sources.

(a) Climate Change and Renewable Energy Politics, Policies and Legislation

As shown in Table 5 below, the current Victorian Government is the Andrews Labor Government which was re-elected in 2018 for a further term of four years. Prior to the Andrews Labor Government, the Baillieu and Napthine Liberal Governments governed between 2010 and 2014. The Bracks and Brumby Labor Governments governed in consecutive terms over eight years between 2002 and 2010. The Victorian political cycle has not been as stable compared to that of South Australia since 2002.

One of the Victorian Government's earliest renewable energy policy measures is its *Greenhouse Challenge for Energy* position paper, released in 2004 by the Bracks Labor Government.³⁰¹ This outlined the Victorian Government's energy related GHG emissions reduction policy objectives which included reducing GHG emissions from the 'production and use of energy' and identifying 'policy paths which facilitate Victoria's transition to a carbon-constrained future'.³⁰² The Victorian Government's view at the time was that its energy related GHG emissions reduction policy objectives could 'best be met through an integrated package of measures including....measures to increase use of renewable energy.....and support for the development, commercialisation and deployment of low emission energy technologies'.³⁰³

The Victorian Government's *Our Environment, Our Future – Sustainability Action Statement 2006* and its *Renewable Energy Action Plan*, released by the Bracks Labor Government, established energy and climate change related policies for the period 2006-09 and beyond including requiring electricity retailers to purchase at least 10% of electricity from renewable energy sources and providing \$12.5 million for research in and commercialisation of renewable energy technologies.³⁰⁴

In 2006, the Bracks Labor Government also introduced the *Victorian Renewable Energy Target Act 2006* (Vic) which legislated the policy objective of requiring electricity retailers to purchase

³⁰¹ Hodgkinson and Garner, above n 98, 134.

³⁰² Hodgkinson and Garner, above n 98, 135.

³⁰³ Ibid.

³⁰⁴ Ibid 135-6.

Table 5 – Key Statistics for Victoria³⁰⁵

| Population (National – 24,597,528) | Geographical Size (National – 768,812,631.9 ha) | State Governments since 2002 |
|--|--|---|
| 6,321,648 (2 nd in the NEM) | 22,749,563 ha (4 th in the NEM) | 2018 – to date – Labor (Andrews) 2014 – 2018 – Labor (Andrews) 2013 – 2014 – Liberal (Naphthine) 2010 – 2013 – Liberal (Bailieu) 2007 – 2010 – Labor (Brumby) 1999 – 2007 – Labor (Bracks) |
| Total Required Electricity Generation Capacity | | Full Time Equivalent Jobs in the Renewable Energy Industry (National – 17,740 jobs) |
| 10,771 MW | | 3,180 = 18% (3 rd in the NEM by percentage) |
| Greenhouse Gas Emissions Reduction Target | | RET |
| Net zero GHG emissions by 2050 (legislated) ³⁰⁶ | | 25% by 2020 (legislated) 40% by 2025 (legislated) 50% by 2030 (policy commitment) ³⁰⁷ |
| Coal Fired Power Stations | | Small-scale Solar Panel System Installations – 2001 to 2016 (National – 1,640,486) |
| 3 operating (brown coal) – 4,660 MW (3 rd in the NEM by capacity) | | 304,956 = 19% (2 nd in the NEM by percentage) |
| Gas and Diesel Power Stations | | Large-scale Wind Farms |
| 8 gas power stations operating – 2,382 MW (3 rd in the NEM by capacity) 1 proposed new gas power station – 600 MW (2 nd in the NEM by capacity) | | 8 operating – 1,130 MW (3 rd in the NEM by capacity) 33 proposed new wind farms – 6,364.8 MW (2 nd in the NEM by capacity) |
| Hydro Projects | | Large-scale Solar Projects |
| 7 operating – 2,211 MW (3 rd in the NEM by capacity) 1 proposed new project – 34 MW (5 th in the NEM by capacity) | | 4 operating – 333 MW (4 th in the NEM by capacity) 27 proposed new solar projects – 2,546.7 MW (4 th in the NEM by capacity) |

10% of electricity from renewable energy sources.³⁰⁸ During this time, the Victorian Government's renewable energy measures were considered to be the 'most advanced' of all

³⁰⁵ See above n 146 for information regarding the statistics in this table.

³⁰⁶ *Climate Change Act 2017* (Vic) ('Victorian CC Act'), section 6. The Victorian CC Act commenced operation on 1 November 2017.

³⁰⁷ *Renewable Energy (Jobs and Investment) Act 2017* (Vic) ('Victorian RET Act'), sections 7(a) and 7(b). The Victorian RET Act commenced operation on 15 December 2017. Victorian Government policy RET commitment: <<https://www.energy.vic.gov.au/renewable-energy/victorian-renewable-energy-auction-scheme>>; *Renewable Energy (Jobs and Investment) Amendment Bill 2019* (Vic), clause 3.

³⁰⁸ The *Victorian Renewable Energy Target Act 2006* (Vic) currently does not operate due to the existence of the Commonwealth RET.

States' initiatives.³⁰⁹ In 2004, the Brumby Labor Government introduced Victoria's first FiT scheme for wind generation.³¹⁰ In 2010, the Brumby Labor Government also saw the introduction of Victoria's first climate change related legislation, the *Climate Change Act 2010* (Vic).³¹¹ Following the election of the Andrews Labor Government, the *Victoria's Renewable Energy Roadmap: Delivering jobs and a clean energy future*, was released in 2015. The Roadmap sets out a strategy for increasing renewable energy in Victoria including the development of the Victorian Government's *Renewable Energy Action Plan*.³¹²

The *Renewable Energy Action Plan* sets out the Victorian Government's actions to achieve the State's RETs of 25% by 2020 and 40% by 2025, subsequently legislated in the *Renewable Energy (Jobs and Investment) Act 2017* (Vic) ('Victorian RET Act').³¹³ The Andrews Labor Government plans to increase Victoria's RET to 50% by 2030³¹⁴ with legislation currently in the Victorian Parliament to implement this increased RET in the Victorian RET Act.³¹⁵ Chapter III analyses Victoria's legislative RET scheme in more detail.

The cornerstones of the Victorian Government's *Renewable Energy Action Plan* are ensuring that there is a 'renewable, affordable and reliable energy system'³¹⁶ and the new energy technology sector is creating jobs and attracting investment.³¹⁷ Similarly to South Australia, the *Renewable Energy Action Plan* contemplates a future scenario in which renewable energy storage batteries play an active role in promoting the 'security, resilience and reliability' of the

³⁰⁹ Prest, above n 83, 11. Prest's analysis focused on the Australian States and did not include the ACT or the Northern Territory.

³¹⁰ See *Electricity Industry (Wind Energy Development) Act 2004* (Vic).

³¹¹ An illustration of the climate change 'political pendulum' can be found in the Victorian experience with its Climate Change Acts. In 2010, the Brumby Labor Government introduced the *Climate Change Act 2010* (Vic); the Act had a GHG emissions reduction target of 20% below 2000 levels by 2020 (section 5). In 2012, the *Climate Change Act 2010* (Vic) was amended by the Baillieu Liberal Nationals Government to, amongst other things, remove the GHG emissions reduction target; this was on the grounds that it was no longer required as a result of the now repealed Commonwealth carbon price (*Climate Change and Environment Protection Amendment Act 2012* (Vic), section 4). In 2017, the Andrews Labor Government reformed the *Climate Change Act 2010* (Vic) by replacing it with the *Climate Change Act 2017* (Vic); the 2017 Act has as its central objective the achievement of net zero GHG emissions by 2050 (section 6).

³¹² Department of Economic Development, Jobs, Transport and Resources, Victorian Government, *Victoria's Renewable Energy Roadmap: Delivering jobs and a clean energy future* (2015) 2.

³¹³ See above n 307.

³¹⁴ Ibid.

³¹⁵ Ibid.

³¹⁶ Department of Environment, Land, Water and Planning, Victorian Government, *Renewable Energy Action Plan 2017 Statement of Progress* 4.

³¹⁷ Ibid 17.

State's electricity grid.³¹⁸ Chapter V examines Victoria's legislative RDC measures in more detail.

Similarly to South Australia's FiT scheme, Victoria's *Electricity Industry Act 2000* (Vic) ('Victorian FiT Act') establishes two FiT schemes, the premium and general electricity retailer FiT schemes.³¹⁹ The premium FiT scheme closed to new entrants in late 2011. A key difference to South Australia however is that Victoria had a form of FiT scheme in place in relation to wind generators before South Australia's premium FiT scheme commenced operation.³²⁰ Victoria's FiT schemes support a broader range of renewable energy technologies compared to South Australia's FiT schemes. Chapter IV analyses Victoria's legislative FiT schemes in more detail.

In 2017, ENGIE closed the coal fired Hazelwood Power Station in the Latrobe Valley, one of Australia's most polluting power stations, as it was no longer economically viable.³²¹ Three other coal fired power stations, Loy Yang A and B Power Stations and the Yallourn Power Station, are also scheduled for closure in the next two decades.³²² The closure of these power stations suggests that the Victorian Government will need to identify alternatives for the generation of electricity in Victoria.

In July 2017, the Victorian Government released its new coal policy, the *Statement on Future Uses of Brown Coal*. The Statement indicates that whilst brown coal has 'ensured the supply of affordable and reliable electricity that has supported [Victoria's] economic prosperity for nearly a century', a 'fundamental change' is underway that will see the eventual reduction of brown coal in Victoria's electricity generation fuel mix.³²³ Whilst the Statement does not impose any new GHG emissions limitations on existing brown coal generators, it does however

³¹⁸ Ibid 32.

³¹⁹ These two FiT schemes were introduced into the *Electricity Industry Act 2000* (Vic) ('Victorian FiT Act') by the *Electricity Industry Amendment (Premium Solar Feed-in Tariff) Act 2009* (Vic) and the *Energy Legislation Amendment (Feed-in Tariffs and Other Matters) Act 2013* (Vic). The premium FiT scheme commenced operation on 1 November 2009 and the electricity retailer FiT scheme commenced operation on 1 January 2013.

³²⁰ The main focus of the Victorian Government's first FiT scheme in the *Electricity Industry (Wind Energy Development) Act 2004* (Vic) was to facilitate better access to the electricity network grid for wind generators and to provide a more certain market for wind generated electricity (Victoria, *Parliamentary Debates*, Legislative Assembly, 13 October 2004, 1013 (Michael Brumby, Treasurer)). The Victorian Government however did not mandate the FiT rate to be offered to wind generators; this is a key difference to Victoria's later premium solar FiT scheme.

³²¹ <<https://www.abc.net.au/news/2016-11-03/hazelwood-power-station-in-victoria-to-close/7987018>>.

³²² Hazelwood Power Station (1,760 MW) closed in 2017. The Loy Yang A Power Station (2,210 MW), Loy Yang B Power Station (1,070 MW) and the Yallourn Power Station (1,480 MW) are scheduled for closure in 2048, 2046 and 2032 respectively.

³²³ Department of Economic Development, Jobs, Transport and Resources, Victorian Government, *Statement on Future Uses of Brown Coal* (2017) 1.

indicate that any new uses for brown coal will be considered against the backdrop of the State's target of net zero GHG emissions by 2050.³²⁴ On one level, the Statement is somewhat at odds with the Victorian Government's commitment to mitigating climate change. However, one of the key drivers for the Statement was the need to promote economic certainty for the Latrobe Valley region following the Hazelwood Mine fire³²⁵ and subsequent closure of the Hazelwood Power Station.³²⁶

Recent analysis by Green Energy Markets shows that Victoria is on track to achieve its RET of 40% by 2025 and 'within striking distance' of achieving its RET of 50% by 2030.³²⁷ Victoria requires approximately another 2,000 MW of capacity to achieve its 50% RET.³²⁸

(b) Victoria's National and International Profile on Climate Change and Renewable Energy

Similarly to South Australia, Victoria, under the Andrews Labor Government, has signed the Under2 MOU (in 2016) but, unlike South Australia, has not signed the Compact of States and Regions. Victoria is one of the founding partners of Climate-KIC Australia. Victoria is also a member of the inter-jurisdictional Climate Change and Energy Working Group convened by South Australia in 2015. The Victorian Government is also a member of the National GreenPower Steering Group, responsible for overseeing the GreenPower scheme.

Based on the above, compared to South Australia, Victoria has demonstrated a similarly high level of strong political leadership on renewable energy and climate change related matters.

(c) Victoria's Energy Profile

As shown in Figure 8 below, during the period 2007 to 2018, electricity generation in Victoria has been heavily dominated by fossil fuels with wind, solar and hydro playing a comparatively minor role. Wind generation started to increase from around 2012-13 onwards.

³²⁴ Ibid. In 2017, both the major Victorian political parties, Labor and Liberal Nationals, indicated bi-partisan support for a moratorium on gas exploration. The *Resources Legislation Amendment (Fracking Ban) Act 2017* (Vic) puts a permanent ban on unconventional onshore gas exploration and a moratorium on conventional onshore gas exploration until the end of June 2020.

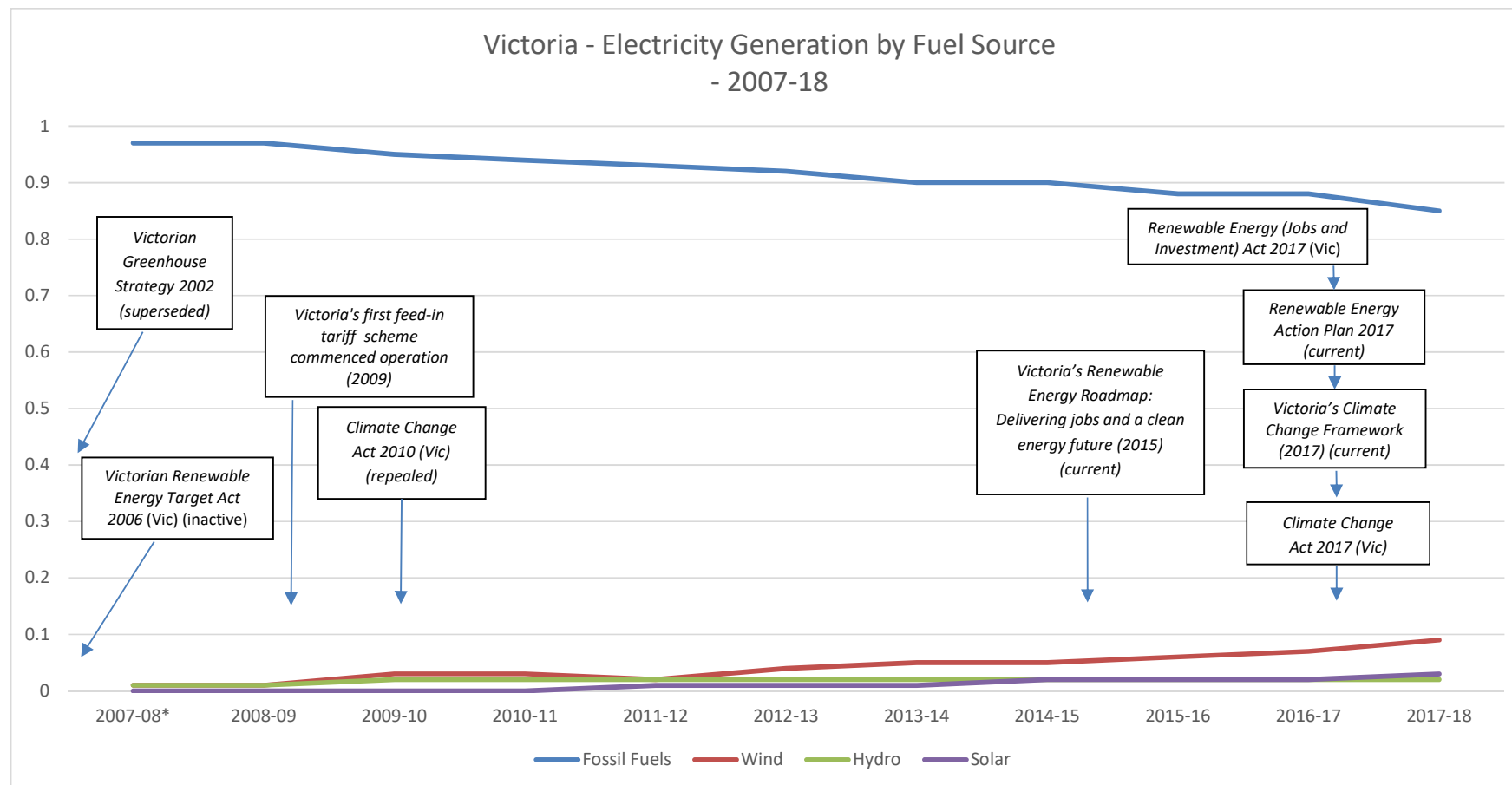
³²⁵ The Hazelwood Mine fire in February 2014 occurred as a result of bushfire embers spotting into the open cut mine. The fire burned for 45 days. The costs of the fire have been estimated to be in the region of \$100 million (Hazelwood Mine Fire Inquiry Board, *Hazelwood Mine Fire Inquiry Report* (2014), 12).

³²⁶ Department of Economic Development, Jobs, Transport and Resources, Victorian Government, above n 323, 1.

³²⁷ Green Energy Markets, above n 179, 1 and 4.

³²⁸ Ibid 1.

Figure 8 – Victoria – Electricity Generation by Fuel Source – 2007-18³²⁹



³²⁹ Department of the Environment and Energy, Australian Government, above n 68, Table O3. Data shown for 2007-08 is based on data available for 2008-09 and shown for illustrative purposes. Plotting of key climate change and renewable energy policy and legislative measures is approximate and shown for illustrative purposes.

As shown in Table 5 above, Victoria has the third highest number (by MW capacity) of coal, gas and diesel power stations and the second highest amount of proposed new gas generation in the NEM.

As shown in Table 5 above, Victoria has the second highest number of small-scale solar panel system installations and the third highest number (by MW capacity) of currently operating large-scale wind farms in the NEM.³³⁰ When considered as a proportion of Victoria's current total electricity generation capacity, the amount of renewable energy generation is approximately on a par with South Australia.

As shown in Table 5 above, Victoria has the second highest amount of proposed new large-scale wind generation and the fourth highest amount of proposed new large-scale solar projects in the NEM.³³¹ This is partly due to the availability of high quality wind and solar resources in Victoria.³³² The availability of high quality wind resources is particularly notable in the South West of Victoria partly due to the area's proximity to the 'Roaring Forties'. The amount of potential new renewable energy generation is more than Victoria's current non-renewable energy generation; however, the excess amount is not as substantial as South Australia (see Table 1). Additionally, there is a degree of uncertainty inherent in some proposed new renewable energy generation projects which may mean that some of the currently proposed projects may not come to fruition.

The Victorian Government has established the \$20 million New Energy Jobs Fund which provides funding for new energy technology projects that create long-term jobs.³³³ As shown in Table 5 above, Victoria has the third highest number of full-time equivalent jobs in the renewable energy industry out of all the NEM jurisdictions. This may be a reflection of the amount of construction of new large-scale renewable energy generation projects underway in Victoria.

As discussed above, a range of issues impact on Victoria's capacity to promote the increased supply of and demand for renewable energy. At this high level, Victoria exhibits both similarities and differences to South Australia. A detailed discussion of Victoria's legislative

³³⁰ As shown in Table 5 above, Victoria has the third highest amount of hydro generation in the NEM.

³³¹ As shown in Table 5 above, Victoria has the fifth highest amount of proposed new hydro generation in the NEM.

³³² Geoscience Australia, Australian Government, above n 190.

³³³ <<https://www.business.vic.gov.au/support-for-your-business/grants-and-assistance/future-industries/newenergy-technologies>>.

measures to achieve its renewable energy policy objectives in these circumstances is set out in Chapters III to V.

5 Tasmania

The following sub-section sets out an analysis of key Tasmanian political and historical events, particular characteristics of Tasmania including its energy profile and its national and international profile on renewable energy and climate change, and components of Tasmanian regulation outside of the law that have informed Tasmania's progress to date in increasing the uptake of electricity generated from renewable sources.

(a) *Climate Change and Renewable Energy Politics, Policies and Legislation*

As shown in Table 6 below, the current Tasmanian Government is the Hodgman Liberal Government which was re-elected in 2018. Prior to that, the Bacon, Lennon, Bartlett and Giddings Labor Governments governed in consecutive terms over 12 years between 2002 and 2014. Similarly to South Australia, the Tasmanian political cycle has been one of the more stable political cycles since 2002 compared to some of the other NEM jurisdictions.

Hydro has dominated the Tasmanian stationary electricity sector for the past 100 years. According to the Tasmanian Government's renewable energy related strategy, *Tasmanian Energy Strategy: Restoring Tasmania's energy advantage*, released in 2015 by the Hodgman Liberal Government, the history of the 'Hydro' has been 'inextricably linked' with Tasmania's industrial, economic, geographic and cultural development.³³⁴

³³⁴ Department of State Growth, Tasmanian Government, *Tasmanian Energy Strategy: Restoring Tasmania's energy advantage* (2015) 12. In the 1980s, the Tasmanian Government's proposal to allow the development of a hydro scheme on the Franklin River was met with large-scale and high-profile public protest. About 1,400 people were arrested for attempting to prevent work on the hydro-electric dam project on 14 December 1982. Bob Brown, former leader of the Greens, has been quoted as saying it was the biggest environmental protest in Australia's history ('Franklin dam still controversial 30 years on', *ABC News* (online), 15 December 2012, <<https://www.abc.net.au/news/2012-12-14/environmental-anniversary/4427336>>). The proposal also saw the Commonwealth's constitutional powers to legislate with respect to environmental matters tested in the High Court case of *Commonwealth of Australia v State of Tasmania* (1983) 46 ALR 625. The Tasmanian Government challenged the Commonwealth Government's enactment of the *World Heritage Properties Conservation Act 1983* (Cth). This Act had the effect of overriding the Tasmanian Government's decision to allow the development of the hydro scheme on the Franklin River. Amongst other arguments, the Commonwealth Government argued that it was relying on its external affairs power set out in section 51(xxxix) of the Australian Constitution to ensure domestic implementation of the Convention Concerning the Protection of the World Cultural and Natural Heritage. The High Court in a 4 to 3 decision upheld the Commonwealth Government's right to rely on the external affairs powers to enact the Act.

In late 2015 through to the first half of 2016, Tasmania experienced an energy crisis when the Basslink Interconnector failed.³³⁵ Tasmania had during the previous two years exported record

Table 6 – Key Statistics for Tasmania³³⁶

| Population (National – 24,597,528) | Geographical Size (National – 768,812,631.9 ha) | State Governments since 2002 |
|--|--|--|
| 522,152 (5 th in the NEM) | 6,801,786.1 ha (5 th in the NEM) | 2018 – to date – Liberal (Hodgman) 2014 – 2018 – Liberal (Hodgman) 2011 – 2014 – Labor (Giddings) 2008 – 2011 – Labor (Bartlett) 2004 – 2008 – Labor (Lennon) 1998 – 2004 – Labor (Bacon) |
| Total Required Electricity Generation Capacity | | Full Time Equivalent Jobs in the Renewable Energy Industry (National – 17,740 jobs) |
| 2,724 MW | | 1,360 = 8% (5 th in the NEM by percentage) |
| Greenhouse Gas Emissions Reduction Target | | RET |
| At least 60% below 1990 levels by 31 December 2050 (legislated) Net zero by 2050 (policy commitment) ³³⁷ | | 100% by 2022 ³³⁸ |
| Coal Fired Power Stations | | Small-scale Solar Panel System Installations – 2001 to 2016 (National – 1,640,486) |
| None in operation | | 28,738 = 2% (5 th in the NEM by percentage) |
| Gas and Diesel Power Stations | | Large-scale Wind Farms |
| 3 operating – 386 MW (5 th in the NEM by capacity) | | 1 operating – 168 MW (4 th in the NEM by capacity) 5 proposed new wind farms – 1,357.6 MW (4 th in the NEM by capacity) |
| Hydro | | Large-scale Solar Projects |
| 17 operating – 2,170.10 MW (2 nd in the NEM by capacity) 6 proposed new hydro projects – 2,310 MW (1 st in the NEM by capacity) | | None in operation 2 proposed new solar projects – 17.5 MW (5 th in the NEM by capacity) |

levels of electricity (and consequently, ran down storage levels) to capitalise on the time remaining under the now repealed Commonwealth carbon price scheme before the

³³⁵ The Basslink Interconnector is an underseas cable connecting the Tasmanian electricity network grid to the mainland NEM electricity network grid.

³³⁶ See above n 146 for information regarding the statistics in this table.

³³⁷ *Climate Change (State Action) Act 2008* (Tas), section 5. Department of Premier and Cabinet, Tasmanian Government, *Climate Action 21: Tasmania's Climate Change Action Plan 2017-2021* (2017) 4.

³³⁸ Climate Council, above n 101, iv.

Commonwealth Abbott Liberal Nationals Government came to power.³³⁹ This combined with record low rainfall totals resulted in an energy shortage that lasted for six months following the failure of the Basslink Interconnector.³⁴⁰

Amongst actions taken to address the energy shortage, the previously decommissioned gas-fired Tamar Valley Power Station was re-commissioned and 200 diesel generators were imported.³⁴¹ An inquiry conducted by the Tasmanian Parliamentary Standing Committee of Public Accounts recommended the retention of the Tamar Valley Power Station to assist with promoting energy security in Tasmania.³⁴²

Compared to the other NEM jurisdictions, whilst wholesale electricity prices are amongst some of the lowest in the NEM jurisdictions,³⁴³ Tasmanians have experienced relatively high electricity bills in recent years³⁴⁴ due to a combination of a comparatively cold climate, the ‘relatively old and inefficient’ condition of the State’s housing stock and low penetration of alternative fuels like natural gas.³⁴⁵ Tasmanians have a comparatively high dependence on electricity partly due to the fact that Tasmania’s gas network is not as developed as that in other NEM jurisdictions.³⁴⁶

The Tasmanian Government’s *Energy Strategy* sets out nine energy related outcomes the Tasmanian Government is seeking to achieve including maximising renewable energy opportunities in Tasmania in order to position the State to continue to contribute significantly to renewable energy nationally and reinforcing the State’s reputation as the ‘renewable energy State’.³⁴⁷

The *Energy Strategy* was driven by the current Tasmanian Government’s election commitment to ‘identify ways in which energy can once again be utilised as an *economic driver*, including by securing a *stable and sustainable price path* for power that can provide relief to consumers

³³⁹ Richard Baines, ‘Tasmanian energy crisis: Labor, Greens want Senate inquiry’, *ABC News* (online), 14 March 2006, <<https://www.abc.net.au/news/2016-03-13/labor-greens-want-senate-inquiry-tasmania-energy-crisis/7243038>>. See above n 252. Tony Abbott had undertaken to repeal this legislation if the Liberal Nationals Party won the 2013 Commonwealth election.

³⁴⁰ Richard Baines, above n 339.

³⁴¹ *Ibid.*

³⁴² Tasmanian Parliamentary Standing Committee of Public Accounts, *Report on the financial position and performance of Government owned energy entities* (2017) 15.

³⁴³ AEMC, above n 145, 5.

³⁴⁴ *Ibid.* 6.

³⁴⁵ Department of State Growth, Tasmanian Government, above n 334, 10.

³⁴⁶ *Ibid.*

³⁴⁷ *Ibid.* 11.

and help grow the economy and attract new investment’ (emphasis added).³⁴⁸ Tasmania’s *Energy Strategy* indicates that Tasmania should be more active in pursuing customers who see a ‘strategic advantage’ in sourcing their energy from renewable sources.³⁴⁹ The *Energy Strategy* also indicates that the Tasmanian Government is a ‘strong supporter’ of the Commonwealth RET as a means to allow Tasmania to ‘take advantage of its renewable energy capabilities’.³⁵⁰

Similarly to South Australia’s FiT schemes, Tasmania’s *Electricity Supply Industry Act 1995* (Tas) (‘Tasmanian FiT Act’) provides for a solar FiT scheme, the currently operating ‘standard’ FiT scheme.³⁵¹ In 2018, the Tasmanian Government conducted a review of its solar FiT scheme, resulting in its previous transitional FiT rate being reduced from 28 cents per kWh to the standard FiT rate of 8.541 cents per kWh as from 1 January 2019 in order to ‘ensure the system remains fair and equitable to all Tasmanians’.³⁵² The Tasmanian Government has agreed to provide an additional 5 cents per kWh for one year as part of easing the transition for customers moving from the previous transitional FiT scheme to the standard FiT scheme.³⁵³ By January 2020, all Tasmanians with solar photovoltaic systems will be on the single standard FiT. Chapter IV analyses Tasmania’s legislative FiT scheme in more detail.

The Tasmanian Government’s *Climate Change Action Plan* indicates the Government’s plan for Tasmania to become a net exporter of electricity to the NEM and the ‘renewable energy battery’ of Australia with the viability of a second Bass Strait interconnector, the Marinus Link, being explored.³⁵⁴ Chapter V considers this in more detail as part of this thesis’ comparison of NEM jurisdictions’ legislative RDC measures.

³⁴⁸ Ibid.

³⁴⁹ Ibid 34.

³⁵⁰ Ibid.

³⁵¹ The Tasmanian Government’s FiT scheme was inserted into the *Electricity Industry Act 1995* (Vic) by the *Electricity Supply Industry Amendment (Feed-in Tariffs and Other Matters) Act 2013* (Tas) and commenced operation on 1 January 2014.

³⁵² <https://www.premier.tas.gov.au/releases/a_fair_and_equitable_solar_tariff_system>.

³⁵³ Ibid.

³⁵⁴ In February 2019, TasNetworks undertook an initial feasibility report into the Marinus Link which showed that it is technically feasible and economically viable (<<https://www.marinuslink.com.au/wp-content/uploads/2019/02/Initial-Feasibility-Report-Project-Marinus-Feb-2019.pdf>>). In February 2019, the Commonwealth Government announced funding of \$56 million to accelerate the delivery of the Marinus Link (<<https://www.marinuslink.com.au/2019/02/initial-feasibility-report-released/>>).

In August 2017, the Tasmanian Government announced a policy RET of 100% by 2022.³⁵⁵ Recent analysis by Green Energy Markets shows that Tasmania is on track to reach this RET with 95.9% of the State's electricity in 2018 being generated from renewable energy sources.³⁵⁶

In 2015-16, Tasmania's total GHG emissions were -0.01 Mt CO_{2-e}, in other words, less than net zero GHG emissions.³⁵⁷ Tasmania is notable for the fact that it is the first Australian jurisdiction to have achieved net zero GHG emissions let alone less than net zero GHG emissions.³⁵⁸

(b) Tasmania's National and International Profile on Climate Change and Renewable Energy

Unlike South Australia, Tasmania is not a signatory to the Under2MOU or the Compact of States and Regions. It is also not a member of any national or international partnerships such as Climate-KIC Australia. Tasmania is an observer at the inter-jurisdictional Climate Change and Energy Working Group convened by South Australia in 2015.

Based on the above, compared to South Australia, the Tasmanian Government has demonstrated a lower level of political leadership on renewable energy and climate change related matters.

(c) Tasmania's Energy Profile

Due to being one of the two least populous of the NEM jurisdictions,³⁵⁹ Tasmania has a comparatively small electricity consumer base compared to the other NEM jurisdictions.³⁶⁰

As shown in Figure 9 below, during the period 2007-18, electricity generation in Tasmania was predominantly from hydro. Electricity generation from fossil fuels declined in 2012-13 to 2014-15 before increasing slightly again from 2014-15 onwards. Electricity generated from wind increased slightly from 2013-14 before levelling out in 2014-15 onwards. Electricity

³⁵⁵ See above n 338.

³⁵⁶ Green Energy Markets, above n 179, 52.

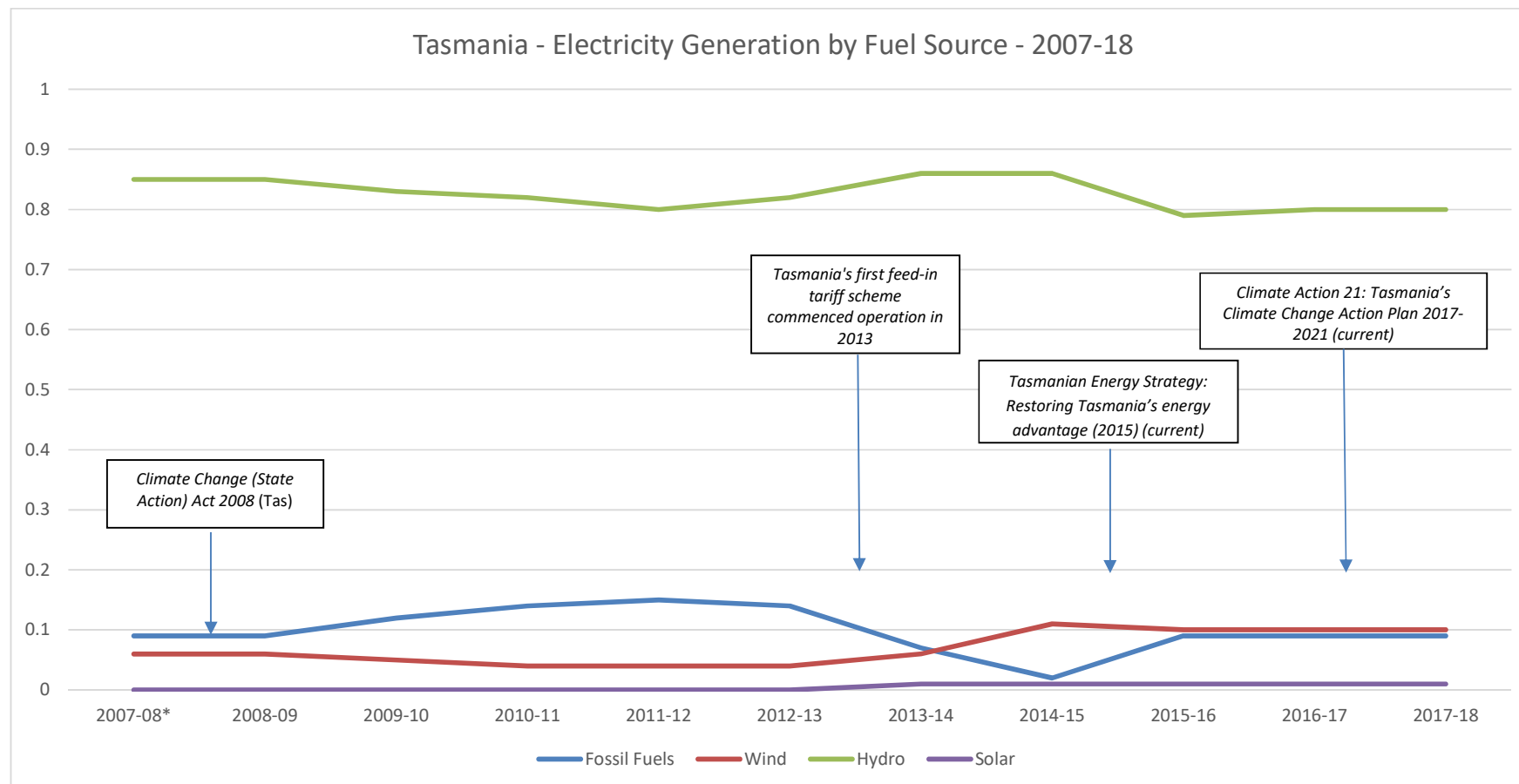
³⁵⁷ Department of Premier and Cabinet, Tasmanian Government, <https://www.dpac.tas.gov.au/divisions/climatechange/Climate_Change_Priorities/reducing_emissions>. A key change in Tasmania's GHG emissions has been the shift of the LULUCF sector from being a major source of GHG emissions (11.4 Mt CO_{2-e} in 1990) to a carbon sink in 2015 (-7.0 Mt CO_{2-e}) (Department of Premier and Cabinet, Tasmanian Government, above n 337, 26).

³⁵⁸ Department of Premier and Cabinet, Tasmanian Government, *Climate Action 21 Report Card 2018* 2 and 6.

³⁵⁹ The ACT is the least populous of all the NEM jurisdictions (see above).

³⁶⁰ Department of State Growth, Tasmanian Government, above n 334, 10. More than half of Tasmania's electricity load is consumed by four large industrial businesses (Department of State Growth, Tasmanian Government, above n 334, 10).

Figure 9 – Tasmania – Electricity Generation by Fuel Source – 2007-18³⁶¹



³⁶¹ Department of the Environment and Energy, Australian Government, above n 68, Table O7. Data shown for 2007-08 is based on data available for 2008-09 and shown for illustrative purposes. Plotting of key climate change and renewable energy policy and legislative measures is approximate and shown for illustrative purposes.

generated from solar started to play a role in Tasmania's electricity generation from around 2013-14 onwards.

As shown in Table 6 above, Tasmania is notable for the fact that the State has no coal fired power stations; with the exception of South Australia and the ACT (see above), Tasmania is the only NEM jurisdiction without coal fired power stations. Tasmania has the lowest number (by MW capacity) of gas power stations in the NEM. Unlike South Australia, Tasmania has no proposed new gas or diesel generation.

As shown in Table 6 above, Tasmania has the second highest amount of hydro generation in the NEM. Whilst hydro generation dominates Tasmania's energy profile, the statistics reflect the fact that Tasmania has one of the smallest customer bases in the NEM. Table 6 also shows that Tasmania has the fifth highest number of small-scale solar panel system installations and the fourth highest number (by MW capacity) of currently operating large-scale wind farms. Tasmania has the fourth highest amount of proposed new large-scale wind generation and the fifth highest amount of proposed new large-scale solar generation in the NEM.³⁶² Tasmania has high quality wind resources partly due to Tasmania's proximity to the 'Roaring Forties'.³⁶³

As shown in Table 6 above, Tasmania has the fifth highest number of full-time equivalent jobs in the renewable energy industry out of all the NEM jurisdictions. This is likely representative of the fact that Tasmania has one of the smallest populations in the NEM.

As shown above, a range of issues impact on Tasmania's capacity to promote the increased supply of and demand for renewable energy. At this high level, Tasmania exhibits both similarities and differences to South Australia. A detailed discussion of Tasmania's legislative measures to achieve its renewable energy policy objectives in these circumstances is set out in Chapters III to V.

D Conclusion

As part of this thesis' functional comparative law method outlined in Chapter I, this Chapter has provided a high-level overview of the key current and historical renewable energy policy and legislative measures in each of the NEM jurisdictions, drawing on complementary climate change policy and legislative measures where relevant. It has also examined key notable

³⁶² As shown in Table 6 above, Tasmania has the highest amount of proposed new hydro generation in the NEM.

³⁶³ Geoscience Australia, Australian Government, above n 190.

aspects of the historical and political contexts of each of the NEM jurisdictions in which these renewable energy policy and legislative measures have evolved. This Chapter has also examined the fuel mix profiles of the NEM jurisdictions, drawing on energy related data and statistics compiled since 2007, with an analysis of each NEM jurisdiction's rankings in terms of, for example, number (by MW capacity) of currently operating fossil fuel power stations and renewable energy generation, and proposed new fossil fuel and renewable energy generation.

The key findings of this Chapter show that there is a 'patchwork quilt' of renewable energy policy and legislative measures across the NEM jurisdictions. There is a broad range of historical and political factors that have influenced the evolution of renewable energy policy and legislative measures in the NEM jurisdictions.

In the case of South Australia, a comparatively poor supply of local coal, a relatively high dependence upon the use of natural gas for electricity generation and comparatively high electricity prices saw some of the earliest explorations into renewable energy in the NEM.³⁶⁴ In recent years, climate change concerns and a desire to enhance the security and stability of the State's electricity supply and grid following the September 2016 blackout has seen the South Australian Government pursue a sustained expansion of renewable energy in South Australia.³⁶⁵ South Australia is notable for a number of 'firsts' in relation to action on climate change and renewable energy.³⁶⁶ South Australia is also notable for its comparative political stability since 2002.³⁶⁷ South Australia, as well as the ACT, is anticipated to reach 100% of electricity generated from renewable energy sources in the near future.³⁶⁸ The above has supported the selection of South Australia as the 'target' jurisdiction for the purposes of this thesis' comparative exercise.

Reflecting the historical dominance of the mining and resources sectors and the associated implications for jobs, the Queensland Government's early climate change actions saw more of a focus on the development of 'clean coal' technologies and use of natural gas than renewable energy.³⁶⁹ In recent years however, Queensland has become the renewable energy 'construction capital' of Australia with the highest number of proposed new large-scale solar projects in the

³⁶⁴ See above n 142 and 143.

³⁶⁵ See above n 153 and 170.

³⁶⁶ See Chapter II, Section B.

³⁶⁷ See Table 1.

³⁶⁸ See above n 179.

³⁶⁹ See above n 203 and 204.

NEM partly driven by climate change concerns.³⁷⁰ Despite this expansion, recent analysis by Green Energy Markets has shown that Queensland is some way off achieving its RET of 50% by 2030 with Queensland having the second highest number of coal fired power stations in the NEM.³⁷¹ Additionally, the Queensland Government's support of the Adani Carmichael coal mine places it at odds with both efforts to promote the increased uptake of renewable energy and international climate change efforts.³⁷² This inconsistency is particularly acute in the context of Queensland being home to one of the world's most significant and climate change vulnerable natural features, the Great Barrier Reef.³⁷³

In some ways, the NSW Government was an early pioneer in climate change and renewable energy policy and legislative measures.³⁷⁴ However, despite this, NSW is home to the highest number of coal fired power stations in the NEM.³⁷⁵ NSW will see the closure of two key coal fired power stations over the next two decades requiring the NSW Government to explore alternatives means of electricity generation.³⁷⁶ Since 2002, the NSW political cycle has been one of the least stable compared to South Australia and some of the other NEM jurisdictions. NSW is notable for the fact that it is the only NEM jurisdiction that does not have either a legislated or policy RET with its renewable energy policies instead placing an emphasis on the need to support the achievement of the Commonwealth RET.³⁷⁷ As with Queensland, recent analysis by Green Energy Markets shows that the NSW Government is some way off achieving its GHG emissions reduction target of net zero GHG emissions by 2050; this is despite NSW having the highest amount of proposed new wind generation and the second highest amount of proposed new solar generation after Queensland.³⁷⁸

The ACT Government's ambitious renewable energy policy and legislative measures have been largely driven by the fact that the ACT, the smallest of the NEM jurisdictions, has only limited renewable energy resources within the Territory.³⁷⁹ This has prompted the ACT Government to look elsewhere for renewable energy generated electricity and in doing so, to be as competitive as possible in order to attract renewable energy generation to the Territory.

³⁷⁰ See above n 233.

³⁷¹ See above n 236.

³⁷² See above n 217.

³⁷³ See Chapter II, Section C.

³⁷⁴ Ibid.

³⁷⁵ See Table 3.

³⁷⁶ See above n 247.

³⁷⁷ See above n 260.

³⁷⁸ See above n 267 and Table 3.

³⁷⁹ See above n 282.

The ACT is particularly notable for its comparative political stability and the fact that there is bi-partisan support for the ACT's comparatively ambitious RET of 100% by 2020.³⁸⁰ The ACT has also pioneered the use of renewable energy reverse auctions for large-scale renewable energy generation. The ACT Government's actions have resulted in the ACT being at almost 100% of renewable energy generated electricity with some of the lowest electricity prices in the NEM.³⁸¹

The Victorian Government is a similar story to the NSW Government in that it was, in some respects, an early mover in relation to climate change and renewable energy policy and legislative measures.³⁸² Since 2002, the Victorian political cycle has not been as stable compared to South Australia and some of the other NEM jurisdictions. The closure of one key coal fired power station and the scheduled closure of another three key coal fired power stations within the next two decades has seen a recent drive by the Victorian Government to increase the State's renewable energy capacity and to promote the creation of jobs in the renewable energy sector.³⁸³ Victoria has the second highest amount of proposed new wind generation out of all of the NEM jurisdictions.³⁸⁴ Recent analysis by Green Energy Markets has shown that Victoria is on track to meet its legislated and policy RETs.³⁸⁵ The Victorian Government's recent statement on the future use of brown coal in Victoria is however somewhat at odds with its drive to encourage the increased uptake of renewable energy in Victoria and illustrates the ongoing dominance of the use of fossil fuels in Victoria.³⁸⁶

Tasmania has historically had comparatively high levels of renewable energy and low levels of fossil fuel use due to the dominance of the Hydro in the State.³⁸⁷ Additionally, Tasmania's GHG emissions are the lowest in the NEM, reaching less than net zero in 2015-16.³⁸⁸ The Tasmanian Government has therefore probably not had as much incentive or need to pursue renewable energy as an alternative to fossil fuels for the generation of electricity compared to, for example, South Australia. However, the Tasmanian Government's desire for Tasmania to become the 'renewable energy battery' for Australia has informed some of the Tasmanian

³⁸⁰ See above n 286.

³⁸¹ See above n 292 and 297.

³⁸² See Chapter II, Section C.

³⁸³ See above n 317.

³⁸⁴ See Table 5.

³⁸⁵ See above n 327.

³⁸⁶ See above n 323.

³⁸⁷ See above n 334.

³⁸⁸ See above n 357.

Government's recent renewable energy related actions including exploring the feasibility of a second interconnector to the mainland, the Marinus Link.

Against the backdrop of this Chapter, the next Chapter analyses and compares specific legislative measures in the NEM jurisdictions that establish RET schemes, exploring the similarities and differences between South Australia's RET scheme and those of the other NEM jurisdictions.

III RET SCHEMES IN THE NEM JURISDICTIONS

A Introduction

As part of this thesis' functional comparative law method, the previous Chapter provided a high-level overview of the NEM jurisdictions' key current and historical renewable energy policy and legislative measures and key notable aspects of the historical and political contexts in which those measures have evolved. Against this backdrop, this Chapter analyses and compares specific legislative measures in the NEM jurisdictions that establish RET schemes.

Specifically, this Chapter aims to demonstrate the critical sub-national role played by the NEM jurisdictions in promoting the increased uptake of electricity generated from renewable energy sources through the establishment of RET schemes. This Chapter also aims to demonstrate the important signalling role that RET schemes play in promoting the increased supply of and demand for renewable energy in the NEM.

With this in mind, Sections B and C provide an introduction to RET schemes and some background to RET schemes in Australia more generally. Section D analyses the RET scheme currently operating in South Australia, the 'target' jurisdiction. Section E analyses the RET schemes currently operating in the other NEM jurisdictions and compares those with South Australia's RET scheme. Section F summarises the findings of Sections D and E. Section G concludes this Chapter.

B Introduction to RET Schemes

As introduced in Chapter I, there is a range of regulatory, technical, economic, political and social barriers to increasing the supply of and demand for renewable energy in the NEM and more generally.³⁸⁹ This Section explores key aspects of these political and social barriers and the role that RET schemes can play in overcoming these barriers. This Section also analyses

³⁸⁹ Godden and Kallies, above n 66; Duncan and Sovacool, above n 51, Byrnes and others, above n 52.

the key design features of RETs to form the basis of the comparative exercise undertaken in Section E.

1 Benefits of RET Schemes

The NEM jurisdictions have the ability to create their own ‘sub-national signals’ of their policies for increasing the supply of and demand for renewable energy in their jurisdiction through the establishment of RETs. The International Renewable Energy Agency (‘IRENA’) has defined a RET to be

numerical goals established by governments to achieve a specific amount of renewable energy production or consumption. They can apply to the electricity, heating/cooling or transport sectors, or the energy sector as a whole. They often include a specific time period or date by which the [RET] is to be reached.³⁹⁰

When a government establishes a RET, this serves to ‘signal political commitment’ to the community, business and industry sectors, and to other governments, of the importance that government is placing on increasing the supply of and demand for renewable energy in its region and its aspirations for renewable energy in its region.³⁹¹ The use of RET schemes in this way may act as a policy signal to the renewable energy industry and investors inside and outside of the NEM regulatory framework, acknowledging that this is only part of the equation for increasing the uptake of renewable energy in the NEM.

The concept of using RET schemes to signal a political commitment to increasing the uptake of renewable energy is particularly relevant in the Australian context. Australian climate change related politics has been somewhat volatile with, for example, Kevin Rudd losing his Prime Ministership in 2013 partly as a result of delays with the now repealed Commonwealth carbon price scheme. Another example is Malcolm Turnbull losing his leadership of the Commonwealth Liberal Party in 2009 to Tony Abbott, a noted ‘climate change sceptic’,³⁹² partly as a result of Turnbull’s support for the then Rudd Labor Government’s proposed

³⁹⁰ International Renewable Energy Agency (‘IRENA’), *Renewable Energy Target Setting* (2015), 8.

³⁹¹ *Ibid* 33.

³⁹² For example, see Louise Yaxley, ‘Tony Abbott says climate change action is like trying to ‘appease the volcano gods’’, *ABC News* (online), 11 October 2017, <<https://www.abc.net.au/news/2017-10-10/tony-abbott-says-action-on-climate-change-is-like-killing-goats/9033090>>.

emissions trading scheme. The situation with Australian climate change related politics has resulted in an ‘erosion of belief in political leadership, trust and credibility’.³⁹³

As Duncan and Sovacool have observed, while economic signals are necessary to promote the increased uptake of electricity from renewable energy sources in the NEM and more generally, on their own, they are insufficient. People do not

function like automatons that rationally input price signals and change their behaviour to optimize benefits and minimize costs. Instead, they are embroiled in a complicated social and cultural environment that is shaped by and helps to shape technological change, rituals, behaviours, values, attitudes, emotions and interests.³⁹⁴

The ‘signalling’ function of RET schemes means that RETs may offer a means by which to overcome some of these political and social barriers. The next two sub-sections look at the design and functions of RET schemes and certain aspects of the Australian experience with the Commonwealth MRET and RET schemes.

2 Design and Functions of RET Schemes

There are over 164 countries around the world that have some form of a national RET scheme in place.³⁹⁵ RET schemes, first appearing in the 1970s, can range from small-scale political announcements through to sophisticated schemes with legally binding obligations backed up by enforcement mechanisms.³⁹⁶ The majority of RET schemes currently operating at the national and sub-national levels are non-binding.³⁹⁷

RETs can be established in absolute terms, for example, a specific amount of energy expressed in output (MWh) or capacity (MW), or in percentages ‘relative to a moving baseline’ of energy generation or consumption.³⁹⁸ RET schemes can impose obligations on a variety of actors, for example, as occurs in the United States of America, obligations can be imposed on electricity providers in the form of renewable portfolio standards or, as occurs in the European Union

³⁹³ The Climate Institute, *Climate of the Nation: Australians’ Attitudes Towards Climate Change and its Solutions* (2010) 4 cited in Duncan and Sovacool, above n 51, 291. See also Cheung and Davies, above n 71, 99.

³⁹⁴ Duncan and Sovacool, above n 51, 301.

³⁹⁵ IRENA, above n 390, 12. This is based on data as at mid-2015.

³⁹⁶ Ibid 22.

³⁹⁷ Ibid 17.

³⁹⁸ Ibid 10.

(‘EU’), obligations can be imposed on member states. RET schemes can be technology specific or technology neutral and set for a short, medium or long-term duration.³⁹⁹

RETs can be policy statements or enshrined in law as mandatory or aspirational RETs. Enshrining a RET scheme in legislation can help with ‘increasing [its] credibility and longevity’ and, in theory, ‘may be less vulnerable to changes in the political climate’.⁴⁰⁰

A notable example of a mandatory RET enshrined in law is that of the EU. The EU was one of the earlier movers in developing renewable energy policy and legislative measures. As early as 2001, the European Council⁴⁰¹ developed the EU’s first RET in the form of the 2001 Renewable Electricity Directive which sought to increase the EU’s overall consumption of electricity from renewable energy sources to 22.1% by 2010.⁴⁰² In 2007, the European Council committed to a new RET of sourcing 20% of the EU’s overall energy consumption from renewable energy sources by 2020 in the form of the 2009 Renewable Energy Directive.⁴⁰³ This forms part of the EU’s 20/20/20 strategy that ultimately aims to achieve the EU’s ambitious GHG emissions reduction target of 80% of 1990 levels by 2020.⁴⁰⁴ A key difference between the 2001 Renewable Electricity Directive and the 2009 Renewable Energy Directive is that the latter imposes legally binding RETs on the EU member states.⁴⁰⁵

³⁹⁹ For a more detailed discussion of the design of specific elements of RETs, see IRENA, above n 390.

⁴⁰⁰ IRENA, above n 390, 10.

⁴⁰¹ The European Council comprises the heads of the European Union (‘EU’) member states and is responsible for setting the EU’s overall policy direction and priorities.

⁴⁰² Council Directive 2001/77/EC of 27 September 2001 on the promotion of electricity produced from renewable energy sources in the internal electricity market (‘2001 Renewable Electricity Directive’). The 2001 Renewable Electricity Directive did not impose legally binding RETs upon the EU member states. The EU member states were required to adopt ‘national indicative targets’ for electricity generated from renewable energy sources. EU member states were required to take ‘appropriate steps’ to achieve their national indicative targets and to publish reports indicating their progress in meeting their targets. See generally Edwin Woerdman, Martha Roggenkamp and Marijn Holwerda, *Essential EU Climate Law* (Edward Elgar, 2015) 131.

⁴⁰³ Council Directive 2009/28/EC of 23 April 2009 on the promotion of the use of energy from renewable sources (‘2009 Renewable Energy Directive’). EU member states are required to ‘transpose’ the EU RET into their national legislation. See generally Woerdman, Roggenkamp and Holwerda, above n 402, 131. For a general discussion of the EU’s binding RETs, see Angus Johnston and Eva Van der Marel, ‘How Binding are the EU’s “Binding” Renewables Targets?’ (2016) 18 *Cambridge Yearbook of European Legal Studies* 176.

⁴⁰⁴ 2009 Renewable Energy Directive, above n 403. It should be noted that the EU’s current RET relates to *all energy*, not just electricity (emphasis added) (see Woerdman, Roggenkamp and Holwerda, above n 402, 131). The EU’s RET also relates to consumption rather than generation which is broader. These two aspects make the EU’s RET considerably more ambitious than, for example, the Commonwealth RET.

⁴⁰⁵ The use of legally binding targets in the 2009 Renewable Energy Directive was introduced as a result of EU member states’ performance under the 2001 Renewable Electricity Directive being ‘somewhat patchy’ with only two EU member states achieving their national RETs (Woerdman, Roggenkamp and Holwerda, above n 402, 130). Each EU member state is required to achieve a binding national RET as set out in Annex I to the 2009 Renewable Energy Directive. The EU member states’ RETs set out in Annex I to the Renewable Energy Directive vary considerably as they take into account each EU member state’s particular circumstances, for example, the progress made to date under the 2001 Renewable Electricity Directive and the EU member state’s economic capability to exploit its renewable energy resources. Each EU member state has the discretion to determine how

The NEM jurisdictions' RET schemes being examined in this Chapter are examples of legislated aspirational RET schemes in an Australian context.

As discussed below in Sections D and E, the reasons for a government seeking to promote the supply of and demand for renewable energy can range from needing to achieve regional GHG emissions reductions, increasing energy efficiency⁴⁰⁶ and the security of their region's energy supply through, for example, diversification of energy sources and reducing reliance upon energy imports.⁴⁰⁷

Setting a RET can also act as a clear tangible goal against which to assess that government and its region's progress in increasing the supply of and demand for renewable energy; having a RET can help 'measure the effectiveness of [any complementary] policies and measures, and provide an opportunity for review, adaptation and continuous improvement'.⁴⁰⁸

Ideally, to promote stability for the renewable energy industry and investors, and to encourage technological innovation, a RET scheme should include a durable and ambitious RET. As the IRENA has observed, it is important that RETs be

based on a sound knowledge base where metrics and design features are one dimension, and where decisive contextual factors such as political, institutional and economic aspects are also considered.⁴⁰⁹

A RET scheme should ideally include an ability to set interim RETs and vary RETs as this can assist with 'stage-managing' a State's transition to a low carbon economy and help to keep it 'on track' to meet its longer term RET.⁴¹⁰ Setting interim RETs can help provide a clearer indication of where a State needs to be at certain intervals in order to ultimately achieve its longer term RET. Similarly to the use of interim RETs, having the ability to vary RETs can assist with managing the trajectory required to achieve a State's longer term RET through, for

best to achieve its national RET through the use of 'effectively designed' measures. See generally Woerdman, Roggenkamp and Holwerda, above n 402, 131.

⁴⁰⁶ For example, two of the main drivers for the EU RET are to achieve GHG emissions reductions and increase energy efficiency (see 2009 Renewable Energy Directive, above n 403).

⁴⁰⁷ For example, in the United Kingdom, one of the main drivers for setting its RET in the form of its Renewables Obligation was to reduce the UK's reliance upon energy imports (see British Government, *National Renewable Energy Action Plan for the United Kingdom* (2010) 4).

⁴⁰⁸ IRENA, above n 390, 9.

⁴⁰⁹ Ibid 9.

⁴¹⁰ Ibid 55.

example, scaling up its interim RETs in order to drive a higher increase in the uptake of renewable energy to achieve the State's longer term RET.

To be fully effective, a RET should be accompanied by other complementary measures such as a FiT scheme.⁴¹¹ Setting a long-term RET together with other complementary measures can help to 'indicate long-term investment' in a region's renewable energy industry which in turn can promote greater certainty for that industry.⁴¹² This can assist to, for example, drive further investment in that industry leading to the creation of jobs and encourage the development of skills and knowledge.⁴¹³

C Background to RET Schemes in Australia

This Section discusses RET schemes in Australia more generally to provide some background for the following consideration of legislative RET schemes in South Australia and the other NEM jurisdictions.

1 RET Schemes in Australia

Whilst the focus of this Chapter is on the NEM jurisdictions' sub-national RET schemes, the Commonwealth Government's approach in this policy area is an important aspect of the background to the NEM jurisdictions' RET schemes. Recognising that the Commonwealth MRET and RET have, generally speaking, worked well to increase the uptake of renewable energy in Australia within the confines of the scheme cap, certain experiences with the Commonwealth MRET and RET offer some insight into the difficulties that can arise when there is uncertainty surrounding the duration and ambition of a RET.

Figure 10 below sets out a timeline of the NEM jurisdictions' RETs against the backdrop of the Commonwealth MRET and RET.⁴¹⁴ As Figure 10 shows, the Commonwealth MRET was set at approximately 2% by 2010.⁴¹⁵ The Commonwealth RET is currently 33,000 GWh,

⁴¹¹ IRENA, above n 390, 12. See Chapter IV for a discussion of the NEM jurisdictions' FiT schemes.

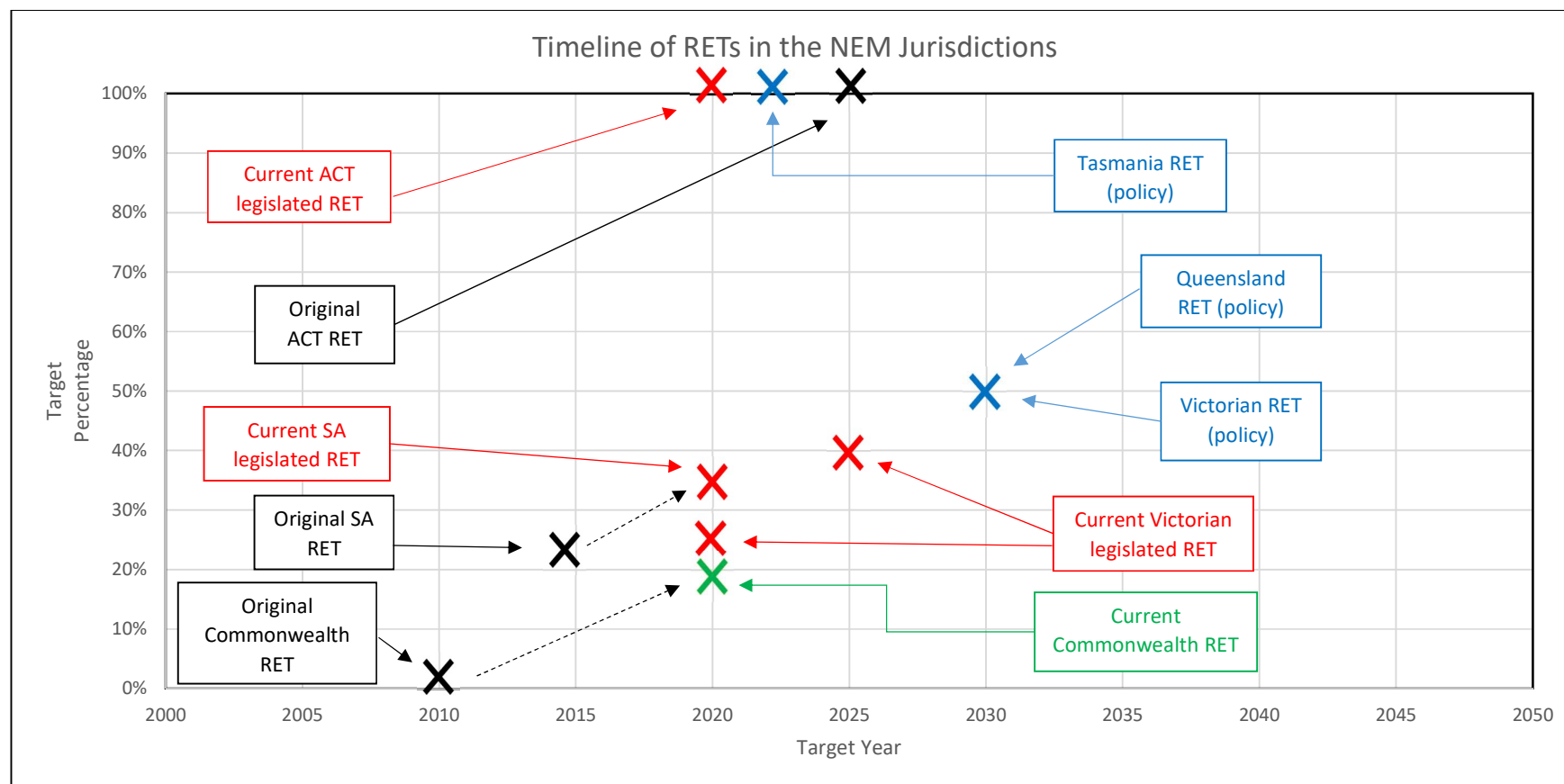
⁴¹² Ibid 9.

⁴¹³ Ibid 50.

⁴¹⁴ Commonwealth MRET and RET: *Renewable Energy (Electricity) Act 2000* (Cth), section 40 and *Renewable Energy (Electricity) Amendment Act 2015* (Cth), section 2; South Australia's RET: SA CC Act, sections 5(2)(a) and (b) and subsequent Ministerial determination made in 2009 under section 5 of the SA CC Act; Queensland's RET: Department of Environment and Heritage Protection, Queensland Government, above n 196, 17; ACT's RET: ACT CC Act, section 9(1); Victoria's RET: Victorian RET Act, see above n 307; Tasmania's RET: Climate Council, above n 101, iv. The plotting of target percentages and target years is approximate and shown for illustrative purposes only.

⁴¹⁵ See above n 414.

Figure 10 – Timeline of RETs in the NEM Jurisdictions⁴¹⁶



⁴¹⁶ See above n 414.

approximately 20%, by 2020.⁴¹⁷ As Figure 10 shows, these RETs are comparatively low compared to the NEM jurisdictions' RETs.

The Commonwealth RET scheme has, for example, been reviewed a number of times since 2002 which has in of itself generated a degree of uncertainty for the renewable energy industry and investors.⁴¹⁸ The most recent review of the Commonwealth RET scheme in 2014, undertaken by Dick Warburton, a noted 'climate change sceptic',⁴¹⁹ resulted in considerable uncertainty followed by a decline of up to 88% in investment in the Australian renewable energy industry.⁴²⁰ This was in part due to the 'heated political debate' surrounding the review's recommendation that the Commonwealth RET be scaled back.⁴²¹

Another criticism of the Commonwealth RET scheme is that the 2020 peaking RET timeframe does not provide sufficient long-term certainty for investors and the renewable energy industry.⁴²² Once the 2020 peaking RET has been achieved, there will be little to no economic incentive for additional investment in new renewable energy generation.⁴²³

The difficulties experienced with the design and implementation of the Commonwealth RET demonstrate why the NEM jurisdictions' sub-national RET schemes can play such a critical role in promoting the increased supply of and demand for renewable energy in the NEM.

⁴¹⁷ Ibid.

⁴¹⁸ Previous key reviews that examined the Commonwealth RET include the *2002 Independent Review of Energy Market Directions* chaired by Senator Warwick Parer and the *Renewable Opportunities: A Review of the Operation of the Renewable Energy (Electricity) Act 2000* chaired by Grant Tambling in 2003. Parer found that the Commonwealth MRET, as the Commonwealth RET was then known, was a more costly GHG emissions reduction measure than it needed to be as it focused on renewable energy technologies rather than least cost GHG emissions reduction technologies. In contrast, Tambling found that the Commonwealth MRET had been successful in encouraging the development of the renewable energy industry in Australia and that the Commonwealth MRET should be expanded. For a general discussion of the Commonwealth RET and the Commonwealth MRET, see, for example, Jones, above n 257 and Parliament of Australia, *The Renewable Energy Target: A Quick Guide* (2014) <https://www.aph.gov.au/About_Parliament/Parliamentary_Departments/Parliamentary_Library/pubs/rp/rp1314/QG/RenewableEnergy>.

⁴¹⁹ Lenore Taylor, 'Climate sceptic to lead review of Australia's renewable energy target', *The Guardian* (online), 17 February 2014, <<https://www.theguardian.com/environment/2014/feb/17/climate-sceptic-to-lead-review-of-australiasrenewable-energy-target>>.

⁴²⁰ James Prest and Grace Souter, 'The Future of Australia's Federal Renewable Energy Law' (2018) 92 *Australian Law Journal* 803; Prest, above n 83, 48.

⁴²¹ Expert Panel, *Renewable Energy Target Scheme: Report of the Expert Panel* (2014) Recommendations 2 and 3, vii-viii; Prest and Souter, above n 420, 803.

⁴²² Prest and Souter, above n 420, 805.

⁴²³ Ibid 804.

2 Summary

Sections B and C have provided an introduction to RET schemes, looking at key design features and functions of such schemes, and some background on RET schemes in Australia more generally.

RETs are intended to play a ‘signalling’ function, for example, to ‘signal political commitment’ to the community, business and industry sectors, and to other governments, of the importance that government is placing on increasing the supply of and demand for renewable energy in its region and its aspirations for renewable energy in its region.

Key design features of RET schemes include a durable and appropriately ambitious RET and the ability to vary and set interim RETs. RETs should also be established on the basis of solid knowledge that takes into account political, institutional and economic aspects. To be fully effective, RET schemes should be accompanied by other complementary mechanisms such as FiT schemes and RDC measures.⁴²⁴

In Australia, RET schemes operate at the Commonwealth and NEM jurisdiction levels. However, the difficulties associated with the design and implementation of the Commonwealth RET scheme have created an opportunity for the NEM jurisdictions to pursue their own, and, for some jurisdictions, more ambitious, RETs.

Against this backdrop, the next two Sections examine and compare the NEM jurisdictions’ legislative RET schemes, identifying similarities and differences between South Australia and the other NEM jurisdictions, and considering the policy and legislative insights arising from the comparison.

D RET Schemes in South Australia – ‘Target’ Jurisdiction

This Section analyses South Australia’s RET scheme, looking at the level of RETs, scheme coverage in terms of sources of renewable energy and classes of renewable energy generators captured, the flexibility of South Australia’s RET scheme in terms of expanding scheme coverage and varying and setting interim and sector-based RETs and the use of independent expert advice to inform the setting of RETs on the basis of sound knowledge.

⁴²⁴ See Chapters IV and V for a discussion of FiT schemes and RDC measures.

1 RETs

As introduced in Chapter II, South Australia currently has a legislated 2020 RET of at least 33.3% pursuant to South Australia's climate change legislation, the SA CC Act.⁴²⁵ As discussed in Chapter II, the previous Weatherill Labor Government had a policy based RET commitment of 50% by 2025 prior to the 2018 State election which was dropped by the current Marshall Liberal Government.⁴²⁶ Despite this, the AEMO has projected that South Australia will have 73% renewable energy by 2020-21.⁴²⁷

As shown in Figure 5 above, there has been a steady decrease in fossil fuels and increase in renewable energy (wind and solar) in South Australia since approximately 2007. As Chapter II demonstrated, when considered as a proportion of South Australia's current total electricity generation capacity, renewable energy generation in South Australia comprises approximately a third. As shown in Table 1, the amount of potential new renewable energy generation in South Australia is more than double South Australia's current non-renewable energy generation.

2 Sources of Renewable Energy Captured

The SA CC Act captures electricity 'generated from renewable energy sources'.⁴²⁸ The term 'renewable energy sources' is not defined in the SA CC Act and is instead given its plain English meaning. The plain English meaning of 'renewable energy' is 'energy that is produced from a renewable source, for example, the sun, wind and biomass'.⁴²⁹ The effect of this is that the SA CC Act encompasses a broad range of renewable energy sources.

This results in the SA CC Act providing a high degree of flexibility in relation to the SA CC Act's application to, for example, emerging new renewable energy technologies not contemplated at the time of developing the SA CC Act. As shown in Figure 5 above, the two most dominant sources of renewable energy in South Australia since 2007 have been wind and solar.⁴³⁰

⁴²⁵ SA CC Act, sections 5(2)(a) and (b) and subsequent Ministerial determination made in 2009 under section 5 of the SA CC Act.

⁴²⁶ Climate Council, above n 101, iv.

⁴²⁷ AEMO, above n 178, 4.

⁴²⁸ SA CC Act, section 4.

⁴²⁹ Macquarie Dictionary, meaning of 'renewable energy' (<https://www-macquariedictionary-com-au.ezproxy.lib.monash.edu.au/features/word/search/?search_word_type=Dictionary&word=renewable+energy>).

⁴³⁰ Chapter V briefly discusses other types of renewable energy generation being explored in South Australia.

3 Ability to Set Other Types of RETs and Vary RETs

The SA CC Act enables the Minister to set interim⁴³¹ and sector-based targets,⁴³² and to also vary targets.⁴³³ The Minister may, amongst other things, set a target that relates to a particular industry, a sector of South Australia's economy or a sector of the South Australian community.⁴³⁴

In setting interim and sector-based targets, the Minister is required to obtain the advice of relevant experts and to take into account applicable methodologies and principles applying within other Australian jurisdictions.⁴³⁵ The Minister must also seek to provide consistency with 'best national and international practices' with respect to the use of renewable energy electricity.⁴³⁶ 'Best international practices' may include those found in countries leading on renewable energy such as Germany.⁴³⁷ When considering a target variation, the Minister must take into account 'any other factor' the Minister considers relevant.⁴³⁸

To date, no sector-based RETs have been set. Possibly, this is because it is intended that there only be sector-based GHG emissions reduction targets under the SA CC Act. South Australia's current legislated 2020 RET was set by the Minister as an interim RET rather than by way of variation of the original RETs. Possibly, this is because it is intended that the power to vary targets in the SA CC Act only be used for GHG emissions reduction targets.

4 Use of Independent Expert Advisory Bodies

The SA CC Act establishes the Premier's Climate Change Council ('PCCC') whose primary function is to provide independent advice to the Minister on a range of matters associated with reducing GHG emissions and adapting to climate change.⁴³⁹ Relevantly, these include, amongst other things, increasing the use of renewable energy, and establishing and achieving the RETs set under the Act.⁴⁴⁰

⁴³¹ SA CC Act, section 5(3).

⁴³² Ibid.

⁴³³ SA CC Act, section 5(6).

⁴³⁴ SA CC Act, section 5(5).

⁴³⁵ SA CC Act, section 5(4)(b).

⁴³⁶ SA CC Act, section 5(4)(c).

⁴³⁷ See Chapter IV for a brief discussion of Germany's success in promoting the increased uptake of renewable energy.

⁴³⁸ SA CC Act, section 5(6). This section focuses on the need for the Minister to take into account new or updated GHG emissions related methodologies or advice.

⁴³⁹ SA CC Act, sections 9(1) and 11(1).

⁴⁴⁰ SA CC Act, section 11(1).

The PCCC is expected to take a leadership role in consulting with business, the environment and conservation movement, and the wider community about issues associated with climate change.⁴⁴¹ The PCCC members come from a broad range of sectors including local government, business, environment and conservation and the scientific community.⁴⁴² In the performance of its functions, the PCCC is expected to provide advice to the Minister on aspects such as the impact of the SA CC Act on business and the wider community, any legislative amendments the PCCC considers the Minister should promote, commercial opportunities associated with increasing the use of renewable energy and the effectiveness of the RETs set under the Act.⁴⁴³

The SA CC Act requires any advice provided by the PCCC to be tabled in Parliament. The Minister is also required to table a statement explaining the extent to which the Minister has acted or will act on the relevant advice and if the advice is not accepted, the reasons why.⁴⁴⁴ This promotes transparency of the PCCC's advice and the South Australian Government's actions in acting upon that advice. To date, the PCCC has provided a range of advices to the Minister including advice on the proposal, *Facilitating Climate Smart Precincts*, which recommended, amongst other things, planning amendments to promote the uptake of small-scale and community solar projects.⁴⁴⁵ Additionally, the PCCC is required to provide an annual report to the Minister of its activities during the preceding financial year.⁴⁴⁶ The Minister is required to table those annual reports in Parliament.⁴⁴⁷

Moreover, the SA CC Act requires that reports into the operation of the Act incorporate at specific intervals a report from the CSIRO or, if CSIRO is unwilling or unable to provide a report, an independent entity chosen by the Minister.⁴⁴⁸ Amongst other things, the CSIRO report provides an independent expert assessment of the extent to which the RETs are being achieved and whether they should be revised.⁴⁴⁹

⁴⁴¹ SA CC Act, section 11(3)(b).

⁴⁴² SA CC Act, section 9(2).

⁴⁴³ SA CC Act, sections 11(3)(a)(ii), (v) and (vi).

⁴⁴⁴ SA CC Act, sections 11(4)(b) and (c).

⁴⁴⁵ Premier's Climate Change Council, *Annual Report 1 July 2012 to 30 June 2013* (2013) 7.

⁴⁴⁶ SA CC Act, section 13(1).

⁴⁴⁷ SA CC Act, section 13(2).

⁴⁴⁸ SA CC Act, section 7(5).

⁴⁴⁹ Ibid. When setting the current legislated RET of at least 33.3% by 2020, the South Australian Government at the time sought the expert advice of McLennan Magasanik Associates ('MMA') and the National Institute of Economic and Industry Research ('NIEIR'). MMA suggested a new RET of between 30% and 40%. The NIEIR recommended a new RET of around 30%.

5 Summary

The above analysis has revealed that the SA CC Act contains all the key design features identified in Section B. This supports the selection of South Australia as the ‘target’ jurisdiction for the purposes of this thesis’ comparative exercise. The extent to which these key design features also appear in the other NEM jurisdictions’ legislative RET schemes is explored in the next two Sections.

E RET Schemes in the Other NEM Jurisdictions

This Section explores how the key design features of RET schemes identified in Section B appear in the other NEM jurisdictions’ legislative RET schemes in comparison with South Australia.

1 RETs

Table 7 below set out below provides a comparison of the legislated RETs currently operating in the NEM jurisdictions.

Table 7 – RET Schemes – Targets and Sources of Renewable Energy Captured

| | RET | Sources of Renewable Energy Captured by Act |
|--|--|--|
| South Australia – ‘Target’ Jurisdiction | 33.3% by 2020 ⁴⁵⁰ | Electricity ‘generated from renewable energy sources’ ⁴⁵¹ |
| Queensland | None legislated at present | N/A |
| NSW | None legislated at present | N/A |
| ACT | 100% by 2020 ⁴⁵² | The Act is silent on the types of renewable energy captured |
| Victoria | 25% by 2020 ⁴⁵³ 40% by 2025 ⁴⁵⁴ | Solar and wind ⁴⁵⁵ May apply to other sources as determined by Minister ⁴⁵⁶ |

⁴⁵⁰ The original RETs of 20% by 31 December 2014 in the SA CC Act were increased by way of a Ministerial determination made in 2009 under section 5 of the SA CC Act.

⁴⁵¹ SA CC Act, section 4.

⁴⁵² ACT CC Act, section 9(1).

⁴⁵³ Victorian RET Act, section 7(a).

⁴⁵⁴ Victorian RET Act, section 7(b).

⁴⁵⁵ Victorian RET Act, section 3.

⁴⁵⁶ Victorian RET Act, section 4.

| | | |
|-----------------|----------------------------|-----|
| Tasmania | None legislated at present | N/A |
|-----------------|----------------------------|-----|

Like South Australia, the ACT and Victoria also have legislated RET schemes. At the time of legislating their respective RET schemes, the South Australian, ACT and Victorian Governments were the Rann, Stanhope and Andrews Labor Governments respectively.

Similarly to South Australia, ACT's RET forms part of the ACT's climate change legislation, the ACT CC Act.⁴⁵⁷ However, unlike South Australia, the ACT's 2020 RET is the most ambitious of all current legislated RETs in the NEM, being 100% by 2020. As discussed in Chapter II, the ACT's ambitious 2020 RET of 100% is possibly due to the ACT Government leveraging the symbolism associated with the ACT housing the capital of Australia, Canberra and needing to attract renewable energy generation from outside of the Territory.

To achieve its legislated 2020 RET, the ACT Government has established a large-scale FiT scheme with a number of reverse auctions held to acquire the requisite renewable energy.⁴⁵⁸ The most recent review of the ACT CC Act observed that the reverse auctions and supporting FiT legislation were a direct result of the RET set out in the ACT CC Act.⁴⁵⁹ The ACT is anticipated to achieve 100% of its electricity coming from renewable energy sources by 2020.⁴⁶⁰

Unlike South Australia, Victoria's legislated RETs are set out in a standalone legislative RET scheme, the Victorian RET Act, rather than in Victoria's equivalent climate change legislation, the *Climate Change Act 2017* (Vic) ('Victorian CC Act'). In the context of setting legislated RETs, the SA CC Act and the Victorian RET Act are functionally equivalent measures in this respect.

Whilst Victoria's legislated 2020 RET of 25% by 2020⁴⁶¹ is less ambitious than South Australia's legislated 2020 RET, unlike South Australia, Victoria's RETs also include a further legislated RET for 2025 of 40%⁴⁶² which extends beyond South Australia's current legislated RET timeframe. The current Andrews Labor Government has also committed to a policy RET of 50% by 2030 with legislation currently before the Victorian Parliament to incorporate this

⁴⁵⁷ ACT CC Act, section 9.

⁴⁵⁸ Environment and Planning Directorate, ACT Government, *Review of the Climate Change and Greenhouse Gas Reduction Act 2010* (2016) 12. See Chapter IV for a discussion of the ACT's large-scale FiT scheme.

⁴⁵⁹ Ibid.

⁴⁶⁰ Ibid.

⁴⁶¹ Victorian RET Act, section 7(a).

⁴⁶² Victorian RET Act, section 7(b).

RET into the Victorian RET Act.⁴⁶³ The ‘ramping up’ of Victoria’s RET may be a reflection of the upcoming closure of three of Victoria’s key coal fired power stations.

The Victorian RET Act requires the Minister to determine the minimum amount of renewable energy generation capacity needed to meet the RETs; this has been set at 6,341 MW for the 2020 RET.⁴⁶⁴ The Victorian RET Act has only been in operation for a comparatively short period of time however Victoria is on track to meet its 2020 RET of 25% with 5,345 MW of installed renewable energy generation capacity and a further 1,707 MW under construction or commissioning.⁴⁶⁵ If the total installed renewable energy generation capacity is achieved, this will exceed the minimum required generation capacity amount of 6,341 MW.⁴⁶⁶

As shown in Figure 7 above, there has been a small decrease in the amount of electricity generated from fossil fuels and a small increase in the amount of renewable energy (wind primarily) in Victoria since approximately 2007. As shown in Table 2, when considered as a proportion of Victoria’s current total electricity generation capacity, the amount of renewable energy generation in Victoria is approximately on a par with South Australia. The amount of potential new renewable energy generation is more than Victoria’s current non-renewable energy generation; however, the excess amount is not as substantial as South Australia.

In contrast to South Australia, at present, Queensland, NSW and Tasmania do not have legislated RETs. Queensland has a policy RET commitment of 50% by 2030.⁴⁶⁷ NSW does not have a policy RET commitment; the tenor of the NSW Government’s *Renewable Energy Action Plan* is very much about supporting the achievement of the Commonwealth RET.⁴⁶⁸ In August 2017, the Tasmanian Government committed to a policy RET of 100% renewable energy by 2022.⁴⁶⁹

To date, Queensland, NSW and Tasmania have never had legislated RETs. In the case of Queensland and NSW, the absence of a legislated RET is likely due to the historical dominance of the resources and mining sectors in those States, particularly Queensland. As discussed in Chapter II, the NSW Government contemplated the development of a RET in 2009 when the

⁴⁶³ See above n 307.

⁴⁶⁴ Victoria Government Gazette, No. S466, 28 December 2017. The second determination in relation to the RET for 2025 is required to be published by 31 December 2019 (Victorian RET Act, section 9(b)).

⁴⁶⁵ Department of Environment, Land, Water and Planning, Victorian Government, *Victorian Renewable Energy Target 2017-18 Progress Report*, 5.

⁴⁶⁶ Ibid 8.

⁴⁶⁷ Department of Energy and Water Supply, Queensland Government, above n 197, 5.

⁴⁶⁸ Department of Planning and Environment, NSW Government, above n 260, 2.

⁴⁶⁹ Climate Council, above n 101, 4 and 15.

Commonwealth Government at the time decided not to extend the Commonwealth RET. In the case of Tasmania, the lack of a legislated RET is most likely due to the historical dominance of hydro resulting in a reduced need for the Tasmanian Government to set a RET.

2 Sources of Renewable Energy Captured

As shown in Table 7 above, the breadth of renewable energy captured by the SA CC Act, the ACT CC Act and the Victorian RET Act is similar albeit achieved in different ways in terms of legislative drafting.

For example, the ACT CC Act is silent on the types of renewable energy captured under that Act. This is an interesting difference given that the ACT CC Act is almost a ‘carbon’ copy of the SA CC Act. This means that, similarly to the SA CC Act, the plain English meaning of ‘renewable energy’ is applied when interpreting the ACT CC Act. This has the effect that, like the SA CC Act, the ACT CC Act encompasses a broad range of renewable energy technologies and provides flexibility to accommodate emerging new renewable energy technologies.

The Victorian RET Act is more narrowly drafted than the SA CC Act in that it expressly refers to only solar and wind.⁴⁷⁰ However, there is scope for the Victorian RET Act to apply to additional energy sources if determined by the Minister.⁴⁷¹ This means that, subject to the Minister’s determination, the Victorian RET Act provides a similar flexibility to the SA CC Act in relation to, for example, application of the Victorian RET Act to emerging new renewable energy technologies.

3 Ability to Set Other Types of RETs and Vary RETs

Similarly to the SA CC Act, the ACT CC Act enables the Minister to vary RETs;⁴⁷² the ACT RET has been varied twice to date.⁴⁷³ In contrast to the SA CC Act, the ACT CC Act does not enable the Minister to set interim RETs or sector-based RETs. This is an interesting difference given that the ACT CC Act is very similar to the SA CC Act. It is possible that it is not intended to be able to set interim RETs, that this ability is intended to be reserved for GHG emissions reduction targets. Additionally, given that the ACT is the smallest, least populous jurisdiction

⁴⁷⁰ Victorian RET Act, section 3.

⁴⁷¹ Victorian RET Act, section 4.

⁴⁷² ACT CC Act, section 9(2).

⁴⁷³ See above n 287 and 288.

in the NEM, it may not have ‘sectors’ as such compared to the larger NEM jurisdictions and there may be no need therefore to be able to set sector-based targets.

Unlike the SA CC Act, the Victorian RET Act does not enable the Minister to set interim or sector-based RETs. The Victorian RET Act also does not enable the Minister to vary the RETs set out in the Act. Compared to the SA CC Act, this is a considerably less flexible approach with the effect being that any changes to the RETs require legislative amendments to the Act.

However, given the Victorian experience with its Climate Change Acts,⁴⁷⁴ it is possible that this was a deliberate political decision in order to try and reduce the possibility of a future Victorian Government reducing or even removing the RETs set out in the Victorian RET Act. Requiring legislative amendments to, for example, vary the RETs in the Victorian RET Act results in Parliamentary scrutiny which in turn throws a public spotlight onto any proposed Victorian Government amendments to the RETs.

4 Use of Independent Expert Advisory Bodies

Like South Australia, the ACT CC Act provides for the establishment of a dedicated advisory entity, the ACT Climate Change Council (‘ACT CCC’). The key function of the ACT CCC is to advise the Minister on matters relating to GHG emissions reduction and addressing climate change.⁴⁷⁵ Relevant examples of such matters include ‘actions or strategies’ to increase the use of renewable energy, to achieve the targets set out in the ACT CC Act including the RET, and to encourage private entities to take action to reduce GHG emissions including using electricity from renewable energy sources.⁴⁷⁶ This similarity is not surprising given that the ACT CC Act is almost the same as the SA CC Act.

Similarly to the PCCC in South Australia, the ACT CCC is required to prepare annual reports for each financial year. Amongst other things, the reports must cover any advice given by the ACT CCC and any recommendations made to the Minister.⁴⁷⁷ The Minister is required to present the report to the Parliament together with a statement responding to any advice given or recommendations made by the ACT CCC in its report.⁴⁷⁸

⁴⁷⁴ See above n 311.

⁴⁷⁵ ACT CC Act, section 17(1).

⁴⁷⁶ ACT CC Act, sections 17(3)(b), (c) and (e).

⁴⁷⁷ ACT CC Act, section 19(1).

⁴⁷⁸ ACT CC Act, section 19(3).

Unlike South Australia, the Victorian RET Act does not provide for the establishment of an independent advisory entity. However, the *Sustainability Victoria Act 2005* (Vic) provides for the establishment of Sustainability Victoria, an independent statutory authority, whose functions include providing advice to the Minister on renewable energy.⁴⁷⁹ In the context of renewable energy related advice provided to a Minister by an independent advisory body, the *Sustainability Victoria Act 2005* (Vic) and the SA CC Act are functionally equivalent measures in this respect. It is possible that at the time the Victorian RET Act was being developed, there was a desire to avoid a duplication of advisory bodies with similar functions. Unlike South Australia, any renewable energy related advice provided to the Minister under the *Sustainability Victoria Act 2005* (Vic) is not required to be tabled in Parliament.

Similarly to the requirement that the CSIRO provide an independent expert report on the operation of the SA CC Act at specified intervals, the ACT CC Act requires the Minister to request an ‘independent competition and regulatory commission’ to prepare reports about the various targets set out in the Act for each financial year.⁴⁸⁰ To date, the Independent Competition and Regulatory Commission (‘ICRC’), ACT’s independent economic regulator, has prepared these reports. The Minister is required to table these reports in Parliament.⁴⁸¹ Such reports must include an analysis of the ACT’s progress in meeting the different targets set out in the ACT CC Act including the RET.⁴⁸²

The similarity of reporting requirements between South Australian and the ACT is not surprising given that the ACT CC Act is almost the same as the SA CC Act. However, the difference in the choice of independent expert used is interesting given the otherwise similarity between the SA CC Act and the ACT CC Act. The CSIRO is Australia’s national science research agency; the ICRC is the ACT’s economic regulator, responsible for regulating essential services such as water and energy in the ACT. South Australia also has its own economic regulator, the Essential Services Commission of South Australia (‘ESCOSA’), which has similar functions to the ICRC. However, the South Australian Government has not elected to use the ESCOSA for the purpose of preparing independent expert reports on the operation of the SA CC Act.

⁴⁷⁹ *Sustainability Victoria Act 2005* (Vic), section 7(u).

⁴⁸⁰ ACT CC Act, section 12(1). The reports are produced two years after the end of the financial year the subject of the report (section 12(3)).

⁴⁸¹ ACT CC Act, section 12(4).

⁴⁸² ACT CC Act, sections 12(2)(b)(ii) and (iii).

Unlike the SA CC Act, the Victorian RET Act does not require the Minister's report on activities for each financial year to include a report by an independent advisory body.

F Discussion of Similarities and Differences

The comparison of legislative measures establishing RET schemes in South Australia and the other NEM jurisdictions has shown a number of similarities and differences.

South Australia, the ACT and Victoria are the only NEM jurisdictions with a legislated RET. As discussed above, a possible reason for the similarity between South Australia, the ACT and Victoria is that at the time of legislating their respective RETs, the South Australian, ACT and Victorian Governments were the Rann, Stanhope and Andrews Labor Governments respectively.

In contrast to South Australia, at present, Queensland, NSW and Tasmania do not have legislated RETs. Queensland and Tasmania both have policy RETs of 50% by 2030 and 100% by 2022 respectively. NSW does not have a policy RET.

As discussed above, in the case of Queensland and NSW, the absence of a legislated RET is likely due to the historical dominance of the resources and mining sectors in those States, particularly Queensland. In the case of Tasmania, the absence of a legislated RET is likely due to the historical dominance of hydro resulting in a reduced need for the Tasmanian Government to set a RET.

As Table 7 above shows, the level of ambition of South Australia, the ACT and Victoria's RETs varies quite considerably with Victoria's 2020 RET of 25% at one end of the spectrum and the ACT's 2020 RET of 100% at the other end of the spectrum.

Out of South Australia, the ACT and Victoria, South Australia has a longer history of consistently 'ratcheting up' its RETs under the SA CC Act. The ACT has consistently increased its RET but over a shorter period of time compared to South Australia. Victoria at one point had no legislated RET in place for approximately eight years.

South Australia, the ACT and Victoria's RETs are all relatively similar in relation to potentially capturing a broad range of renewable energy sources and technologies.

The SA CC Act and the ACT CC Act enable their respective Ministers to vary RETs set under those Acts. However, the ACT CC Act does not enable its Minister to set interim RETs or

sector-based RETs. Unlike the SA CC Act, the Victorian RET Act does not enable its Minister to vary RETs or set interim or sector-based RETs.

South Australia and the ACT are similar in that their respective RET Acts establish independent advisory bodies charged with the function of providing advice to their respective Ministers on increasing the uptake of renewable energy and the achievement of RETs in their jurisdictions. Victoria is somewhat similar to South Australia in that its *Sustainability Victoria Act 2005* (Vic) provides for the provision of advice to the relevant Minister on renewable energy by Sustainability Victoria, an independent statutory authority.

South Australia and the ACT are similar in that their respective RET Acts require the preparation of a report on the operation of the Acts by an independent expert. Victoria is different to South Australia in this respect in that the Victorian RET Act does not require a similar report to be prepared. This suggests that there may be greater scope in South Australia and the ACT for transparency and monitoring of progress towards their respective RETs.

The above discussion shows that the ACT and Victoria are catching up to South Australia, particularly the ACT with its ambitious legislated 2020 RET of 100%.⁴⁸³ One likely reason for the similarities in progress between South Australia, the ACT and Victoria is the fact that all three jurisdictions share similarly ambitious legislated GHG emissions reduction targets (equal to or less than 40% of 1990 levels by 2050 in the case of South Australia (supplemented by a policy commitment to legislate a target of net zero by 2050),⁴⁸⁴ and net zero by 2045 and 2050 in the case of the ACT and Victoria respectively).

Whilst both Queensland and NSW have the highest amount of proposed new wind and solar projects in the NEM and similarly ambitious (policy) GHG emission reduction targets of net zero by 2050, as discussed in Chapter II, they are considerably behind South Australia, the ACT and Victoria in terms of existing renewable energy capacity.⁴⁸⁵

G Conclusion

This Chapter has examined and compared the NEM jurisdictions' legislative RET schemes. The examination of academic and policy research in Section B has shown that RET schemes

⁴⁸³ This was also the finding of the Climate Council in its latest report, *Powering Progress: States Renewable Energy Race* (2018).

⁴⁸⁴ See above n 147.

⁴⁸⁵ Ibid.

should include certain key design features, these being a durable and appropriately ambitious RET and the ability to vary and set interim RETs. RETs should also be established on the basis of solid knowledge that takes into account political, institutional and economic aspects.

This Chapter has shown that South Australia, the ‘target’ jurisdiction, has these key design features. Compared to South Australia, this Chapter has shown that, out of the other NEM jurisdictions, the ACT has all but one of the same key design features and Victoria approximately half the same key design features. Queensland, NSW and Tasmania are different to South Australia in that they do not have legislated RET schemes in place.

As discussed above in this Chapter, one of the key benefits of legislating RETs is the strong signal this sends to the community, the renewable energy industry, investors and other governments of the importance being placed on the generation of electricity from renewable energy sources. To be fully effective, RET schemes should be accompanied by other complementary mechanisms such as FiT scheme and RDC measures.⁴⁸⁶

Against this backdrop, the next Chapter analyses and compares legislative measures in the NEM jurisdictions that establish FiT schemes, exploring the similarities and differences between South Australia’s FiT schemes and those of the other NEM jurisdictions.

⁴⁸⁶ See Chapters IV and V for a discussion of FiT schemes and RDC measures.

IV FiT SCHEMES IN THE NEM JURISDICTIONS

A Introduction

The previous Chapter examined and compared the NEM jurisdictions' RET schemes. Against the backdrop set out in Chapter II, this Chapter analyses and compares specific legislative measures in the NEM jurisdictions that establish FiT schemes.

Specifically, this Chapter aims to demonstrate the critical sub-national role played by the NEM jurisdictions in promoting the increased uptake of electricity generated from renewable energy sources through implementation of FiT schemes. The history of these schemes also illustrates some of the complexities of and challenges facing the design and implementation of renewable energy policies.

With this in mind, Sections B and C provide an introduction to FiT schemes including an examination of key design features of FiT schemes and some background on FiT schemes in Australia more generally. Section D analyses the FiT schemes currently operating in South Australia, the 'target' jurisdiction. Section E analyses the FiT schemes currently operating in the other NEM jurisdictions and compares those with South Australia's FiT schemes. Section F summarises the findings of Sections D and E. Section G concludes this Chapter.

B Introduction to FiT Schemes

As introduced in Chapter I, there is a range of regulatory, technical, economic, political and social barriers to increasing the supply of and demand for renewable energy in the NEM and more generally.⁴⁸⁷ This Section explores key aspects of these economic barriers and the role FiT schemes can play in overcoming these barriers. This Section also analyses the key design features of FiT schemes to form the basis of the comparative exercise undertaken in Section E.

⁴⁸⁷ Godden and Kallies, above n 66; Byrnes and others, above n 52; Duncan and Sovacool, above n 51.

1 Benefits of FiT Schemes

Renewable energy technologies have been, and continue to be for some types of renewable energy technologies, more expensive to deploy than ‘conventional’ fossil fuels technology.⁴⁸⁸ For example, in the early years of the renewable energy industry in Australia, the costs of small-scale renewable energy technologies such as solar photovoltaic systems were comparatively higher compared to present day costs; these higher costs have acted as a barrier to the increased uptake of renewable energy by, for example, small-scale renewable energy generators such as individuals, families and small businesses.⁴⁸⁹

One mechanism that can assist with overcoming some of the economic barriers associated with the deployment of renewable energy technologies is the use of a FiT scheme.⁴⁹⁰ A FiT is a payment of a price over a period of time for electricity generated through the use of renewable energy sources that is fed into the electricity network grid.⁴⁹¹

FiT schemes have been used around the world to encourage the increased uptake of renewable energy since the early 1980s.⁴⁹² There are approximately 60 countries with FiT schemes currently in operation.⁴⁹³ FiT schemes have been some of the most widely used and successful measures for increasing the uptake of renewable energy.⁴⁹⁴

A FiT for a particular renewable energy technology effectively acts as a subsidy for that technology, providing a potential source of income against which to, for example, offset the costs of purchasing, installing and maintaining the technology.⁴⁹⁵ FiT schemes can range from legislated to voluntary schemes. The NEM jurisdictions’ FiT schemes being examined in this

⁴⁸⁸ Zahar and others, *Australian Climate Law in Global Context* (Cambridge University Press, 2012), 312; Nicola Durrant, *Legal Responses to Climate Change* (The Federation Press, 2010), 127.

⁴⁸⁹ Duncan and Sovacool, above n 51, 291.

⁴⁹⁰ The term ‘feed-in tariff’ is derived from the translation of Germany’s first FiT law, the *Stromeinspeisungsgesetz*, which implies that electricity is being ‘fed-in’ to the electricity network grid (National Renewable Energy Laboratory (‘NREL’), *A Policymaker’s Guide to Feed-in Tariff Policy Design* (2010) 7).

⁴⁹¹ Hope Ashiabor, ‘Carbon Taxes and Feed-in Tariffs: Their Impact on the Development and Uptake of Renewable Energy’ in Rowena Cantley-Smith and Diana Bowman (eds), *Green Power: An Environmental Audit of the National Electricity Market* (2009) 172.

⁴⁹² In 1984, California introduced a FiT scheme in the form of Standard Offer Contract No 4. See Diesendorf, above n 63, 233.

⁴⁹³ James Prest, ‘The Future of Feed-in Tariffs: Capacity Caps, Scheme Closures and Looming Grid Parity’ (2012) 3 *Renewable Energy Law and Policy Review* 25.

⁴⁹⁴ NREL, above n 490, v and 1.

⁴⁹⁵ Richard Ottinger, Lily Matthews and Nadia Czachor, ‘Renewable Energy in National Legislation: Challenges and Opportunities’ in Donald Zillman, Catherine Redgwell, Yinka Omorogbe and Lila Barrera-Hernandez (eds), *Beyond the Carbon Economy: Energy Law in Transition* (2008) 192.

Chapter are examples of legislated FiT schemes. FiT schemes can be technology specific or technology neutral, and apply to a range of sizes of renewable energy generators.⁴⁹⁶

In most cases, the cost of a FiT scheme is covered by a small increase in the price of electricity which is paid by all electricity consumers.⁴⁹⁷ In some cases, the cost of a FiT scheme has been subsidised by a State's government; this can carry the risk of sudden dramatic change in the event of a change of government or in national circumstances as was experienced in Spain during the Global Financial Crisis.⁴⁹⁸

Germany's FiT scheme, in the form of the *Stromeinspeisungsgesetz* (Act on Feeding Renewable Energies into the Grid)⁴⁹⁹ in 1990 followed by the *Erneuerbare-Energien-Gesetz* (Renewable Energy Sources Act)⁵⁰⁰ in 2000, has been particularly successful in increasing that country's uptake of wind and solar as well as developing its domestic renewable energy industry.⁵⁰¹ For example, the *Stromeinspeisungsgesetz* applied to a broad range of renewable energy sources and required electricity utilities to purchase electricity generated from renewable energy sources.⁵⁰² The *Stromeinspeisungsgesetz* set out a range of FiTs for different renewable energy technologies.⁵⁰³ The FiT set out in the *Stromeinspeisungsgesetz* for solar and wind was 90% of the average revenue per kWh from the delivery of electricity to customers.⁵⁰⁴

Compared to other renewable energy mechanisms, for example, mandatory RET schemes, FiT schemes carry a number of benefits.⁵⁰⁵ For example, they generally have comparatively low transaction costs and are able to be more readily accessible by small-scale renewable energy generators such as individuals, families and small businesses.⁵⁰⁶ FiT schemes can hold greater policy flexibility, enabling adaptation to changing renewable energy technologies and

⁴⁹⁶ NREL, above n 490, v. For a general discussion of FiT scheme design, see NREL, above n 490.

⁴⁹⁷ Diesendorf, above n 63, 234.

⁴⁹⁸ The Spanish Government subsidised the cost of its FiT scheme. Following the Global Financial Crisis, the Spanish Government had to suddenly close its FiT scheme which had a catastrophic impact on its renewable energy industry (Diesendorf, above n 63, 234).

⁴⁹⁹ *Stromeinspeisungsgesetz* (Act on Feeding Renewable Energies into the Grid) (Germany) 7 December 1990, BGBl 1, 1990, 2663 (Windworks, P Gipe, 1991 trans) ('*Stromeinspeisungsgesetz*').

⁵⁰⁰ *Gesetz für den Vorrang Erneuerbarer Energien (Erneuerbare Energien Gesetz, EEG)* (Renewable Energy Sources Act) (Germany) 18 October 2016, BGBl 1, 2016, 2258 (6 December 2017 BWE trans).

⁵⁰¹ Volkmar Lauber, 'The European Experience with Renewable Energy Support Schemes and their Adoption: Potential Lessons for Other Countries' (2011) 2 *Renewable Energy Law and Policy* 122.

⁵⁰² *Stromeinspeisungsgesetz*, sections 1 and 2.

⁵⁰³ Ibid section 3. In recent years, Germany has moved towards the use of reverse auctions to determine rates for certain types of renewable energy installations (see the market premium related provisions of the Renewable Energy Sources Act).

⁵⁰⁴ Ibid.

⁵⁰⁵ Diesendorf, above n 63, 234.

⁵⁰⁶ Diesendorf, above n 63, 234; NREL, above n 490, 11.

circumstances, and can readily be made site and technology specific.⁵⁰⁷ Germany's FiT scheme is a notable example of a scheme which applies to multiple types of renewable energy technologies with different FiT rates for each technology.⁵⁰⁸

FiT schemes have been somewhat controversial in that they are perceived to provide renewable energy technologies with an advantage over existing forms of electricity generation, for example, 'conventional' fossil fuels, the advantage being in the form of a guaranteed, sometimes premium, rate for electricity over a set period of time.⁵⁰⁹ The subsidisation of a fuel or technology can be undesirable in the long-term as it can have a distorting effect on the market.⁵¹⁰ However, over the past decade or so, renewable energy technologies have had to compete with the dominant incumbent fossil fuels industry, an industry which has historically received considerable subsidies, for example, mining diesel fuel tax credits and concessions on infrastructure costs, and the benefit of concerted support in its early years of development.⁵¹¹ Short-term subsidisation of renewable energy technologies has proven to be 'often essential to accelerate market acceptance'.⁵¹²

Another criticism of FiT schemes is that the cross subsidies and scheme administration costs involved can lead to short-term upwards pressure on electricity prices and social inequity.⁵¹³ One criticism of Germany's FiT scheme is that the accompanying cross subsidies have resulted in higher electricity prices; a consequence of this is that electricity consumers and businesses pay a premium for electricity which in turn has resulted in job losses in other industries.⁵¹⁴

Depending on the design of a FiT scheme, electricity consumers without the benefit of renewable energy generators, for example, lessees and lower income electricity consumers, may be required to pay a small uplift in electricity charges to support electricity consumers with renewable energy generators which can lead to social inequity.⁵¹⁵ Administration costs and cross subsidies associated with FiT schemes require careful monitoring and actively

⁵⁰⁷ Diesendorf, above n 63, 234.

⁵⁰⁸ *Stromeinspeisungsgesetz*, section 3; Ottinger and others, above n 495, 193.

⁵⁰⁹ Zahar and others, above n 488, 312.

⁵¹⁰ Ottinger and others, above n 495, 192.

⁵¹¹ Ottinger and others, above n 495, 192; Duncan and Sovacool, above n 51, 301; Lauber, above n 501, 121; Martin and Rice, above n 102, 138.

⁵¹² Ottinger and others, above n 495, 192.

⁵¹³ NREL, above n 490, 12.

⁵¹⁴ Ashiabor, above n 491, 173.

⁵¹⁵ Prest, above n 493, 26; NREL, above n 490, 12; Andrew Chapman, Benjamin McLellan and Tetsuo Tezuka, 'Residential solar PV policy: An analysis of impacts, successes and failures in the Australian case' (2016) 86 *Renewable Energy* 1278.

managed robust parameters.⁵¹⁶ As Martin and Rice have observed, governments ‘have an obligation to protect electricity consumers from additional taxes and levies and/or excessive electricity retail prices hikes that may result from uncontrolled scheme costs’.⁵¹⁷

In Australia, the argument that supporting renewable energy generation leads to higher electricity prices has from time to time been employed in the political sphere, both at the Commonwealth and the NEM jurisdiction level. The ACCC’s recent inquiry into electricity pricing has found that one of the main drivers for increased electricity prices in Australia over the past decade was the increase in transmission and distribution network costs rather than the costs of supporting renewable energy generation.⁵¹⁸

2 Design and Functions of FiT Schemes

(a) Types of FiTs

There are two types of FiTs – a gross FiT and a net FiT. A gross FiT involves payment of a FiT for every kWh of electricity produced by a renewable energy generator connected to the electricity network grid regardless of whether it is consumed by the generator or fed into the grid.⁵¹⁹ The renewable energy generator pays the retail price for any electricity they purchase from the electricity network grid. A net FiT arises when a FiT is paid for any surplus electricity generated by a renewable energy generator connected to an electricity network grid that is fed into that grid.⁵²⁰

Gross FiTs have been found to be more expensive than net FiTs.⁵²¹ This is partly because with a gross FiT there is little incentive for renewable energy generators to change their electricity consumption behaviour through reducing their electricity usage. In contrast, to maximise the financial benefits of receiving a net FiT, this requires renewable energy generators to become more energy conscious and efficient in order to be able to supply electricity to the electricity network grid that is in excess of their own usage.⁵²²

⁵¹⁶ Nigel Martin and John Rice, ‘The solar photovoltaic feed-in tariff scheme in New South Wales, Australia’ (2013) 61 *Energy Policy* 704.

⁵¹⁷ Ibid.

⁵¹⁸ Prest, above n 83, 50; Australian Competition and Consumer Commission (‘ACCC’), *Restoring electricity affordability and Australia’s competitive advantage – Retail Electricity Pricing Inquiry – Final Report* (2018) 7.

⁵¹⁹ Diesendorf, above n 63, 234.

⁵²⁰ Ibid.

⁵²¹ Chapman and others, above n 515, 1278.

⁵²² Diesendorf, above n 63, 234.

(b) Setting a FiT Rate

There is a range of FiT calculation methodologies employed around the world.⁵²³ For example, a FiT rate may be based on the actual ‘levelised’ cost of renewable energy generation.⁵²⁴ Another methodology is to calculate a FiT rate based on the ‘value’ of renewable energy generation to, for example, society.⁵²⁵ Two other methodologies are to calculate a FiT rate based on the outcome of a renewable energy reverse auction or to offer a FiT rate as a fixed price without reference to the actual ‘levelised’ cost or value of the renewable energy generation.⁵²⁶ The reverse auction approach appears to have become the dominant methodology.⁵²⁷

Issues can arise where FiT rates are set too high or too low at the outset. Issues can also arise where FiT rates are not adjusted quickly enough to, for example, reflect technological developments or other changes in circumstances, are adjusted downwards too quickly or FiT schemes suddenly close to new entrants.

If a FiT rate is set too high at the outset or not adjusted downwards quickly enough, this can result in a strong market response with more cross-subsidy support being provided by electricity consumers than required to incentivise the desired level of investment in renewable energy generation.⁵²⁸ This in turn can ‘exacerbate social inequity’ particularly amongst lower income electricity consumers that do not have renewable energy generation systems.⁵²⁹ If a FiT rate is set too low at the outset, this has the opposite effect in that there will be an insufficient incentive for the uptake of renewable energy technologies.⁵³⁰

If a FiT rate is set too high over too long a period of time, this can result in the development of a ‘speculative investment bubble’ which may require a ‘drastic counter-action’ by a government.⁵³¹ If a FiT rate is adjusted downwards too quickly or even brought to a close, this can result in market shock with flow-on effects for renewable energy generators and the renewable energy industry.

⁵²³ For a general discussion of these methodologies, see NREL, above n 490.

⁵²⁴ NREL, above n 490, 7-8.

⁵²⁵ Ibid.

⁵²⁶ Ibid.

⁵²⁷ See above n 503 (Germany), below n 602 (ACT) and below n 605 (Victoria and Queensland).

⁵²⁸ Prest, above n 493, 26.

⁵²⁹ Prest, above n 493, 26; NREL, above n 490, 12; Chapman and others, above n 515, 1278.

⁵³⁰ Prest, above n 493, 26.

⁵³¹ Ibid.

To be sustainable, FiT rates should ideally be set at a level that largely represents the costs of distributed electricity generation.⁵³² A generous FiT rate may lead to ‘accelerated investor participation’ however a ‘suitable long term [FiT rate] is a key design parameter’.⁵³³ Additionally, FiT rates ideally should be able to be scaled down in a timely, graduated and public manner if required, for example, to ensure continuous innovation resulting in an overall reduction in the costs of renewable energy technologies and installation.⁵³⁴

(c) Objectives of FiT Schemes

One common aim of FiT schemes is to encourage the increased supply of and demand for renewable energy.⁵³⁵ FiT payments can assist with making the cost of, for example, small-scale solar photovoltaic system purchases and installation more affordable and therefore more accessible, for example, for individuals, families and small businesses through ultimately reducing their electricity costs. In theory, the savings made on electricity costs help to offset the cost of system purchases and installation.

Other common aims of FiT schemes include the promotion of jobs and economic development through the creation and support of a new (renewable energy) industry, the achievement of GHG emissions reductions and the encouragement of a diversification of sources of electricity.⁵³⁶ Diversification of electricity sources can be beneficial in that it can help to reduce a State’s reliance upon sources that might become compromised, for example, as a result of gas shortages such as those that occurred in Victoria in 1998 and Western Australia in 2008.⁵³⁷

(d) Other Design Features of FiT Schemes

Ideally, FiT schemes should expressly provide that either the relevant distribution network operator or the electricity retailer is required to credit any FiT payment to the renewable energy generator, for example, as an offset against customer electricity charges. FiT schemes should also ideally be clear in terms of what is to happen in the event there is a credit owing to the renewable energy generator at the end of each billing period. Placing such obligations on key

⁵³² Martin and Rice, above n 516, 704.

⁵³³ Ibid.

⁵³⁴ Prest, above n 493, 26.

⁵³⁵ NREL, above n 490, 2.

⁵³⁶ Ibid.

⁵³⁷ In 1998, the explosion at the Esso Longford gas processing facility, Victoria’s primary gas processing facility at the time, resulted in Victoria experiencing gas shortages for two weeks. The economic impact was estimated at around \$1.3 billion. In 2008, the explosion at the Apache Energy Varanus Island gas processing facility which at the time provided a third of Western Australia’s gas, resulted in Western Australia experiencing gas shortages for nearly two months. The economic impact was estimated at around \$2.5 billion.

actors and designing this level of certainty in FiT schemes helps to promote renewable energy generators and investors' confidence in the scheme.

Another mechanism in FiT schemes for encouraging the supply of and demand for renewable energy is requiring the relevant distribution network operator to allow access to the electricity network grid by renewable energy generators.⁵³⁸ Providing for this express obligation on relevant distribution network operators can assist with overcoming some of the NEM electricity network grid access barriers identified by Godden and Kallies.⁵³⁹

C Background to FiT Schemes in Australia

This Section discusses FiT schemes in Australia more generally to provide some background for the following consideration of legislative FiT schemes in South Australia and the other NEM jurisdictions.

1 FiT Schemes in Australia

In Australia, there is no single national or harmonised FiT scheme in operation. Instead, as this Chapter shows, FiT schemes exist at the NEM jurisdiction sub-national level in Australia, covering a broad range of FiT rates amongst other elements. As this Chapter shows, the level of FiT rate received by a renewable energy generator can depend on when that generator joined the respective FiT scheme. In the early days of FiT schemes in the NEM, the cost of, for example, purchasing, installing and maintaining small-scale solar photovoltaic systems was generally higher compared to present day costs.⁵⁴⁰ The earlier renewable energy technology was also not as efficient or as reliable compared to more recent renewable energy technologies. As discussed below, some of the NEM jurisdictions' FiT schemes helped to support the early adopters of these small-scale renewable energy technologies in meeting the costs incurred through payment of a 'premium' FiT.

COAG decided in 2012 that all 'premium' FiT schemes were to be closed to new entrants by 2014. COAG's decision was made in recognition of the fact that, in some cases, premium FiT recipients were receiving FiT payments in excess of the value of the electricity they were exporting to the electricity network grid.⁵⁴¹ COAG's decision provided that all small-scale

⁵³⁸ NREL, above n 490, 11.

⁵³⁹ Godden and Kallies, above n 66.

⁵⁴⁰ Diesendorf, above n 63, 89-90.

⁵⁴¹ COAG, *National Principles for Feed-in Tariff Arrangements* (2012) 1.

renewable energy generators were to receive a ‘fair and reasonable’ value for electricity they exported to the electricity network grid.⁵⁴² COAG’s decision is an illustration of the challenges experienced by some NEM jurisdictions in setting the level of FiT rates.⁵⁴³

As a result, as discussed below, the NEM jurisdictions have progressively closed their respective ‘premium’ FiT schemes. Some of the NEM jurisdictions, for example, Victoria and Tasmania, offered transitional FiT schemes to ‘grandfather’ recipients of premium FiT rates onto more ‘standardised’ FiT rates.⁵⁴⁴

In 2018, the ACCC recommended that premium solar FiT schemes should be funded by State governments for the remainder of their duration rather than electricity consumers to reduce the burden on ‘non-solar households and businesses’.⁵⁴⁵ At the time of writing this thesis, the Commonwealth Government had not yet responded to this particular recommendation.

2 Summary

Section B has provided an introduction to FiT schemes, looking at particular scheme design features and considering the advantages and disadvantages of FiT schemes. Section C has provided some background to FiT schemes in Australia more generally.

The examination of academic and policy research in Section B above has identified a range of key design features of FiT schemes to include appropriately set FiT rates overseen in some capacity by an independent economic regulatory body, certainty of scheme duration, a scheme cap in some form in order to control scheme administration and cross subsidy costs, a requirement to pay FiTs to renewable energy generators and a requirement to allow access to the electricity network grid by generators. The above examination has also shown that net FiT schemes appear to be more effective than gross FiT schemes in changing electricity customers’ energy consumption behaviours which is particularly relevant in the context of reducing GHG emissions.

Against this backdrop, the next two Sections examine and compare the NEM jurisdictions’ FiT schemes, identifying similarities and differences between South Australia and the other NEM jurisdictions, and considering the policy and legislative insights arising from the comparison.

⁵⁴² Ibid.

⁵⁴³ Ibid.

⁵⁴⁴ See Section E of this Chapter for a discussion of Victoria and Tasmania’s FiT schemes.

⁵⁴⁵ ACCC, above n 518, recommendation 25, 220.

The next two Sections set out a series of tables that compare key features of the NEM jurisdictions' FiT schemes. The analysis that follows, both of South Australia as the 'target' jurisdiction and of the comparison with the other NEM jurisdictions, will draw upon and elaborate on the information contained in these tables.

D *FiT Schemes in South Australia – 'Target' Jurisdiction*

This Section analyses South Australia's FiT scheme, looking at the types and levels of FiTs, scheme coverage in terms of sources of renewable energy and classes of renewable energy generators captured and the scheme constraints in place. This Section also considers the scheme requirements in place to allow renewable energy generators access to the electricity network grid and for payment to be made to generators for electricity fed into the grid.

1 *FiT Rates*

South Australia currently has two net FiT schemes under the SA FiT Act, a distribution network operator⁵⁴⁶ premium FiT rate of 44 cents per kWh⁵⁴⁷ and an electricity retailer FiT rate.⁵⁴⁸ The distribution network operator premium FiT formed part of South Australia's original FiT scheme which commenced operation on 1 July 2008.⁵⁴⁹

The amount of the electricity retailer FiT rate depends on the retailer chosen by the electricity customer. Examples of current electricity retailer FiT rates include those offered by Origin

⁵⁴⁶ A distribution network operator is an electricity entity that holds a licence under section 23 of the SA FiT Act authorising the operation of a distribution network.

⁵⁴⁷ SA FiT Act, section 36AE(1)(b). The distribution network operator FiT rate attaches to the solar photovoltaic system installed at the address of the system and cannot be transferred to another property (SA FiT Act, section 36AE(6)). This limitation was introduced into the SA FiT Act by the *Electricity (Miscellaneous) Amendment Act 2011* (SA). At the time the original premium FiT scheme was introduced into the South Australian Parliament, the premium rate of 44 cents per kWh reflected a doubling of the price of electricity standing contract tariffs predicted to apply over the lifetime of the scheme together with an allowance for normal increases in the retail price of electricity (South Australia, *Parliamentary Debates*, House of Assembly, 12 September 2007, 772 (Michael O'Brien, Minister for Energy)).

⁵⁴⁸ SA FiT Act, section 36AD(1)(a). An electricity retailer is an electricity entity that holds a licence under section 24 of the SA FiT Act authorising the retailing of electricity. The electricity retailer FiT scheme was inserted into the SA FiT Act in 2011 by the *Electricity (Miscellaneous) Amendment Act 2011* (SA). Also at the time of introduction into the South Australian Parliament, the South Australian Government was hopeful that electricity retailers would offer an additional amount over and above the distributor network operator premium FiT rate. In 2007, two electricity retailers, AGL and Origin, were already offering a 'net-metering arrangement' to their customers (South Australia, *Parliamentary Debates*, above n 547, 773). Following the introduction of the original premium FiT scheme, TruEnergy offered an additional 20 cents per kWh on top of the distribution network operator premium FiT rate of 44 cents per kWh (Ashiabor, above n 491, 173. See also South Australia, *Parliamentary Debates*, House of Assembly, 4 June 2009, 3059 (Williams)).

⁵⁴⁹ The original FiT scheme was inserted into the SA FiT Act by the *Electricity (Feed-in Scheme – Solar Systems) Amendment Act 2008* (SA).

Energy (8 cents per kWh),⁵⁵⁰ AGL (10.2 cents per kWh)⁵⁵¹ and Energy Australia (12.5 cents per kWh).⁵⁵²

Electricity consumers receive both the distribution network operator premium FiT rate and the electricity retailer FiT rate for connections approved between 1 July 2008 and 30 September 2011.⁵⁵³ Depending on the electricity retailer chosen, based on the electricity retailer FiT rates outlined above, this means that some electricity consumers in South Australia receive a FiT income of approximately 52 to 56.5 cents per kWh.

In 2011, the SA FiT Act was amended to also include a mandated minimum electricity retailer FiT to be determined by the ESCOSA,⁵⁵⁴ South Australia's independent economic regulator.⁵⁵⁵ The electricity retailer FiT rate was a minimum 'prescribed amount' set by the ESCOSA or an amount set by the electricity retailer that exceeded the prescribed amount.⁵⁵⁶

When setting the minimum 'prescribed amount', the ESCOSA is required to have regard to the 'fair and reasonable value' to an electricity retailer of electricity fed into the electricity network grid by renewable energy generators amongst other factors.⁵⁵⁷ The ESCOSA is also required to have regard to the factors set out in the *Essential Services Commission Act 2002* (SA) such as the need to consider the particular circumstances of the electricity industry, the financial implications of the ESCOSA's determination and any other factor the ESCOSA considers relevant.⁵⁵⁸

However, as of 1 January 2017 onwards, the ESCOSA no longer sets a minimum amount for the electricity retailer FiT scheme. Following the South Australian Government's de-regulation of electricity retail prices in 2013, the ESCOSA's view is that the practice of setting a minimum

⁵⁵⁰ <<https://www.energymadeeasy.gov.au/offer/944197?postcode=2000&fuelType=E&customerType=M&solarPanels=Y&pool=N&smartMeter=Y&distributor-E=11&provider-E=notSure&electricityUsage=N>>.

⁵⁵¹ <<https://www.energymadeeasy.gov.au/offer/944197?postcode=2000&fuelType=E&customerType=M&solarPanels=Y&pool=N&smartMeter=Y&distributor-E=11&provider-E=notSure&electricityUsage=N>>.

⁵⁵² <<https://www.energymadeeasy.gov.au/offer/902165?postcode=2000&fuelType=E&customerType=M&solarPanels=Y&pool=N&smartMeter=Y&distributor-E=11&provider-E=notSure&electricityUsage=N>>.

⁵⁵³ SA FiT Act, sections 36AD and 36AE.

⁵⁵⁴ SA FiT Act, section 35A. The 2011 amendments to the original FiT scheme also included a proposal to increase the distribution network operation FiT rate from 44 cents per kWh to 54 cents per kWh (South Australia, *Parliamentary Debates*, House of Assembly, 6 April 2011, 3240 (Michael O'Brien, Minister for Energy). This was rejected by the Legislative Council (see South Australia, *Parliamentary Debates*, Legislative Council, 23 June 2011, 3282 onwards).

⁵⁵⁵ The Essential Services Commission of South Australia ('ESCOSA') was established under section 4 of the *Essential Services Commission Act 2002* (SA).

⁵⁵⁶ SA FiT Act, section 36AD(1)(a).

⁵⁵⁷ SA FiT Act, section 35A(2a).

⁵⁵⁸ *Essential Services Commission Act 2002* (SA), section 25(4).

electricity retailer FiT rate no longer served the ‘best interests of consumers’.⁵⁵⁹ Instead, each electricity retailer is required to determine the FiT rate they will pay to their customers. Electricity retailers are required to demonstrate publicly how their offers provide benefits to their customers.⁵⁶⁰

The ESCOSA maintains a monitoring role in this area and has indicated that if this change does not serve the ‘long-term interests of consumers’, it retains its powers under the SA FiT Act to set new minimum prescribed electricity retailer FiT amounts.⁵⁶¹

2 Classes of Renewable Energy Generators Captured

The SA FiT Act captures small-scale renewable energy generators, these being residential and business customers with an annual energy consumption of less than 160 MW per year, using a single generating system of up to between 10 kilovolt-amperes⁵⁶² (‘kVA’) and 30 kVA.⁵⁶³

3 Sources of Renewable Energy Captured

The SA FiT Act captures solar photovoltaic systems. At the time the original premium FiT scheme was developed, the South Australian Government decided not to include the generation of electricity from wind on the basis that wind generation in South Australia was considered to be a ‘mature’ technology that could ‘already be deployed efficiently on a large scale with the support of the [Commonwealth MRET]’.⁵⁶⁴

4 Scheme Constraints – Scheme Duration and Cap on Installed Generation Capacity

South Australia’s premium FiT scheme has a planned duration of 20 years and will expire on 30 June 2028.⁵⁶⁵

⁵⁵⁹ <<https://www.escosa.sa.gov.au/consumers/energy/solar-feed-in-tariff-scheme>>; ESCOSA, *Retailer feed-in tariff – Review of regulatory arrangements* (2016) 1.

⁵⁶⁰ Ibid 2.

⁵⁶¹ Ibid 5.

⁵⁶² A kilovolt-ampere is a unit used to measure the apparent power in an electrical circuit.

⁵⁶³ Customers are required to have their systems connected to a distribution network that supplies 10,000 domestic customers or more (SA FiT Act, section 36AC(1), definition of ‘excluded network’). The minimum threshold of 10,000 domestic customers or more was inserted into the SA FiT Act in recognition of the fact that the South Australian distribution network operator was servicing smaller electricity customer groups in remote areas where the costs of the premium FiT scheme might outweigh the value of the scheme to those groups (South Australia, *Parliamentary Debates*, above n 547, 772).

⁵⁶⁴ South Australia, *Parliamentary Debates*, above n 554, 3239.

⁵⁶⁵ SA FiT Act, section 36AE(8). The original FiT scheme legislation introduced into the South Australian Parliament provided that the scheme would conclude on 30 June 2013. This was amended to 30 June 2028 as a result of amendments put forward in the Legislative Council (South Australia, *Parliamentary Debates*, Legislative

When introducing the original premium FiT scheme into the South Australian Parliament, the South Australian Government indicated that it would review the scheme after the first two and half years or when the installed generating capacity of small-scale solar photovoltaic systems reached 10 MW.⁵⁶⁶ This was in reflection of the fact that this was ‘a new policy of this kind for Australia’ at the time.⁵⁶⁷

In May 2010, the 10 MW threshold was reached, triggering a review of the original premium FiT scheme.⁵⁶⁸ The review made a number of recommendations including implementing a scheme cap and reducing eligible system capacity size from 30 kVA to 10 kVA.⁵⁶⁹ The South Australian Government considered that enforcing the recommended 10 kVA capacity limit would be difficult to achieve in practice; it decided instead to limit the payment of the distribution network operator premium FiT rate of 44 cents per kWh to the first 45 kW of electricity exported per day.⁵⁷⁰

The South Australian Government indicated in April 2011 that, as of 1 October 2011, the distribution network operator premium FiT scheme would be closed to new entrants.⁵⁷¹ This was in response to the review’s recommendation that the scheme be capped.⁵⁷²

In line with the observations made by Martin and Rice above regarding governments’ obligations to monitor such schemes, the above demonstrates a level of monitoring by the South Australian Government of the operation and scheme administration costs of the SA FiT Act.

5 Requirement to Allow Renewable Energy Generators Access to the Electricity Network Grid

The SA FiT Act requires the distribution network operator to allow customers to feed-in their excess electricity into the electricity network grid.⁵⁷³ This requirement takes the form of a condition of their licence.⁵⁷⁴

Council, 13 November 2007, 1231 (Mark Parnell). One of the reasons cited for the amendment was that the duration of the FiT scheme needed to be longer to provide certainty for people purchasing solar panels.

⁵⁶⁶ South Australia, *Parliamentary Debates*, above n 547, 773.

⁵⁶⁷ Ibid.

⁵⁶⁸ South Australia, *Parliamentary Debates*, above n 554, 3239.

⁵⁶⁹ Ibid.

⁵⁷⁰ Ibid. See also SA FiT Act, section 36AE(2).

⁵⁷¹ South Australia, *Parliamentary Debates*, above n 554, 3239. See also SA FiT Act, section 36AE(9).

⁵⁷² South Australia, *Parliamentary Debates*, above n 554, 3239.

⁵⁷³ SA FiT Act, section 36AE(1)(a).

⁵⁷⁴ Ibid.

Under the SA FiT Act, if a distribution network operator contravenes the conditions of their licence, they may be liable for a maximum penalty of \$1,000,000.⁵⁷⁵ If the offence is prosecuted as a summary offence, the maximum penalty that may be imposed is \$20,000.⁵⁷⁶ If a body corporate is guilty of an offence, each director is liable to the same penalty that is prescribed for the principal offence when committed by a natural person.⁵⁷⁷

6 Requirement to Provide a Credit to Renewable Energy Generators

The SA FiT Act requires the distribution network operator and the electricity retailer to provide a credit to customers for excess electricity they feed into the grid which is offset against any electricity supply charges payable by the customer.⁵⁷⁸ This requirement takes the form of a condition of the licences held by the distribution network operator and the electricity retailer.⁵⁷⁹

Under the SA FiT Act, if a distribution network operator or an electricity retailer contravenes the conditions of their licence, they may be liable for a maximum penalty of \$1,000,000.⁵⁸⁰ If the offence is prosecuted as a summary offence, the maximum penalty that may be imposed is \$20,000.⁵⁸¹ If a body corporate is guilty of an offence, each director is liable to the same penalty that is prescribed for the principal offence when committed by a natural person.⁵⁸²

Where a customer is receiving the electricity retailer FiT and there is an outstanding credit balance, the customer is entitled to payment of the outstanding balance.⁵⁸³ This will be either at the end of the applicable billing period or not later than one year after the end of the applicable billing period; this is at the discretion of the electricity retailer.⁵⁸⁴

7 Summary

The examination of academic and policy research in Section B above has identified a range of key design features of FiT schemes. As discussed in this Section, these key design features appear in the SA FiT Act, these being appropriately set FiT rates overseen in some capacity by an independent economic regulatory body, certainty of scheme duration, a scheme cap in some

⁵⁷⁵ SA FiT Act, section 25(1).

⁵⁷⁶ SA FiT Act, section 25(2).

⁵⁷⁷ SA FiT Act, section 93.

⁵⁷⁸ SA FiT Act, sections 36AD(1) and 36AE(1).

⁵⁷⁹ Ibid.

⁵⁸⁰ SA FiT Act, section 25(1).

⁵⁸¹ SA FiT Act, section 25(2).

⁵⁸² SA FiT Act, section 93.

⁵⁸³ SA FiT Act, section 36AD(2).

⁵⁸⁴ SA FiT Act, section 36AD(3).

form in order to, amongst other things, control scheme administration and cross subsidy costs, a requirement to pay FiTs to renewable energy generators and a requirement to allow access to the electricity network grid by generators. This supports the selection of South Australia as the ‘target’ jurisdiction for the purposes of this thesis’ comparative exercise. The extent to which these key design features also appear in other NEM jurisdictions’ FiT schemes is explored in the next Section.

E FiT Schemes in the Other NEM Jurisdictions

This Section explores how the key design features of FiT schemes identified in Section B appear in the other NEM jurisdictions’ legislative FiT schemes in comparison with South Australia.

1 FiT Rates

Similarly to the SA FiT Act, as shown in Table 8 below, Queensland currently offers a net premium FiT rate of 44 cents per kWh payable by a distribution entity under the Queensland FiT Act.⁵⁸⁵ Like South Australia, albeit at a slightly higher rate, the ACT Premium FiT Act offers an electricity retailer premium FiT rate of up to 45.7 cents per kWh for ‘micro’ and ‘medium’ renewable energy generators.⁵⁸⁶ This is payable by electricity retailers in different percentages depending upon the size of the renewable energy generating system and the date of system installation.⁵⁸⁷ The ACT premium FiT scheme is however a gross FiT scheme which is a point of difference with South Australia.⁵⁸⁸ Similarly to South Australia, albeit at a higher rate, in Victoria, the premium FiT scheme currently in operation under the Victorian FiT Act offers a FiT rate of 60 cents per kWh.⁵⁸⁹

Like South Australia, the Queensland FiT Act also offers a FiT rate payable by electricity retailers. As Table 8 below shows, the current regional electricity retailer FiT rate is

⁵⁸⁵ Queensland FiT Act, section 44A. This scheme is also known as the Solar Bonus Scheme. A distribution entity is an entity who holds a distribution authority (Electricity Regulation 2006 (Qld), regulation 30AA). A distribution entity is the equivalent to a distribution network operator under the SA FiT Act. The distribution entity FiT rate attaches to the original customer who installed the system at the premises; a new owner of the premises is not able to receive the distribution entity FiT rate (Queensland FiT Act, section 335).

⁵⁸⁶ Electricity Feed-in (Renewable Energy Premium) Rate Determination 2011 (No 1) (ACT), clause 4.

⁵⁸⁷ ACT Premium FiT Act, section 8. The ACT Premium FiT Act uses the term ‘NERL retailers’ to refer to electricity retailers. NERL retailers are the equivalent to electricity retailers in South Australia.

⁵⁸⁸ ACT Premium FiT Act, section 8.

⁵⁸⁹ Victorian FiT Act, section 40FA. The distributor provides a credit at the premium FiT rate to electricity retailers who then pass this on to electricity consumers (Victorian FiT Act, sections 40FH(2) and (2A)). A distributor under the Victorian FiT Act is the equivalent to a distribution network operator in South Australia.

Table 8 – FiT Schemes – Current Legislated FiT Schemes and Rates

| | South Australia – ‘Target’ Jurisdiction | Queensland | NSW | ACT – Large- scale FiT Act | ACT – Premium FiT Act | Victoria | Tasmania |
|------------------|---|--|--------------------------|--|--|--|---|
| FiT Rates | Distribution network operator premium FiT rate (closed to new entrants) – 44 cents per kWh Electricity retailer FiT rate – varies between retailers ⁵⁹⁰ | Distributor entity premium FiT rate (closed to new entrants) – 44 cents per kWh Electricity retailer regional FiT rate – 7.842 cents per kWh for 2019-20 ⁵⁹¹ | No legislated FiT scheme | Distributor FiT ‘support payment’ calculated in accordance with payment formula under the Act ⁵⁹² | Premium FiT rate (closed to new entrants) – 45.7 cents per kWh ⁵⁹³ payable in different percentages based on size of generator and date on which contract for installation entered into | Premium FiT rate (closed to new entrants) – 60 cents per kWh Electricity retailer general single FiT rate – 12 cents per kWh Electricity retailer time-varying FiT rate – off-peak (9.9 cents per kWh), shoulder hours (11.6 cents per kWh) and peak (14.6 cents per kWh) ⁵⁹⁴ | Electricity retailer transitional FiT rate (until 31 December 2019) – 5 cents per kWh ‘top up’ Electricity retailer standard FiT rate – 9.347 cents per kWh ⁵⁹⁵ |

⁵⁹⁰ SA FiT Act, sections 36AE(1)(b) and 36AD(1)(a).

⁵⁹¹ Queensland FiT Act, sections 44 and 55DBA. See also Queensland Government Gazette, 31 May 2019, Vol 381 No 30.

⁵⁹² ACT Large-scale FiT Act, section 18.

⁵⁹³ Electricity Feed-in (Renewable Energy Premium) Rate Determination 2011 (No 1) (ACT), clause 4.

⁵⁹⁴ Victorian FiT Act, section 40FA(2); Essential Services Commission, *Minimum electricity feed-in tariffs to apply from 1 July 2019* (2019).

⁵⁹⁵ Tasmanian FiT Act, section 44E and Tasmanian Economic Regulator, *2019 Regulated Feed-in Tariff Rate Determination* (2019).

7.842 cents per kWh.⁵⁹⁶ However, a point of difference with South Australia is that the legislated electricity retailer FiT scheme is a regional FiT rate payable by certain electricity retailers only.⁵⁹⁷

Since the introduction of full retail competition in 2007, electricity customers in South East Queensland have been able to choose their electricity retailer and consequently, their FiT rate. However, competition in regional Queensland is more limited and most electricity customers are supplied by the one entity, Ergon Energy. This is because Ergon Energy receives a subsidy to ensure that electricity consumers in regional Queensland pay similar prices for electricity as electricity consumers in South East Queensland. Other electricity retailers are not able to match offers by Ergon Energy as they do not receive this subsidy.⁵⁹⁸ As a result of this more limited competition, the Queensland Government has provided for a legislated electricity retailer FiT scheme for regional Queensland.

Similarly to South Australia, in Victoria, there is also an electricity retailer general FiT of 12 cents per kWh and an electricity retailer time-varying FiT with three different FiT rates as set out in Table 8 above.⁵⁹⁹ Like South Australia, in Tasmania, there is one net FiT scheme currently in operation, a standard FiT rate payable by electricity retailers.⁶⁰⁰ As shown in Table 8, the standard FiT rate is currently 9.347 cents per kWh.⁶⁰¹

Unlike South Australia, the ACT has developed a legislative FiT scheme designed to attract large-scale renewable energy generation. The ACT Large-scale FiT Act sets out the legislative framework that governs the ACT's renewable energy reverse auctions.⁶⁰² Under the ACT Large-scale FiT Act, the Minister can award FiT 'entitlements' up to a scheme capacity cap of 650 MW.⁶⁰³ A FiT entitlement is a right for the holder to receive a FiT 'support payment' for

⁵⁹⁶ Queensland Government Gazette, 31 May 2019, Vol 381 No 30.

⁵⁹⁷ Queensland FiT Act, section 55DBA.

⁵⁹⁸ <<https://www.qca.org.au/Electricity/Further-Info/Retail-Electricity>>.

⁵⁹⁹ See above n 594.

⁶⁰⁰ Tasmanian FiT Act, section 44E.

⁶⁰¹ Tasmanian Economic Regulator, *2019 Regulated Feed-in Tariff Rate Determination* (2019).

⁶⁰² The ACT Large-scale FiT Act is designed to promote large-scale renewable energy generation facilities with a capacity of more than 200 KW from a range of renewable energy sources in the ACT and 'other places' (ACT Large-scale FiT Act, sections 5 and 6). The Act seeks to promote the development of the renewable energy generation industry in the ACT and in Australia more broadly (ACT Large-scale FiT Act, section 5). The Act's objects also include reducing the ACT's GHG emissions and addressing 'the need for urgent action to be taken to reduce reliance on non-renewable energy sources while minimising the cost to electricity consumers' (ACT Large-scale FiT Act, section 5).

⁶⁰³ ACT Large-scale FiT Act, section 9.

the holder's 'eligible electricity'.⁶⁰⁴ Under the ACT Large-scale FiT Act, the Minister can release capacity through either a competitive reverse auction process⁶⁰⁵ or by way of a direct grant.⁶⁰⁶ Renewable energy generators can be located anywhere in the NEM as well as in the ACT.⁶⁰⁷

The ACT Large-scale FiT Act provides for a FiT support payment payable by the ACT electricity distributor to the holder of a FiT entitlement.⁶⁰⁸ The amount of the FiT support payment is calculated according to a payment formula specified in the Act that takes into account the FiT rate specified in the FiT entitlement holder's grant, the quantity of eligible electricity supplied to the electricity network and the 'spot price value'.⁶⁰⁹ This is also known as the 'contract for difference' approach; this approach was selected so that electricity consumers in the ACT, rather than the FiT entitlement holders, would benefit from any reduced costs arising through any future increases in wholesale electricity prices.⁶¹⁰

⁶⁰⁴ ACT Large-scale FiT Act, section 8. For electricity to be eligible, it must be generated from renewable energy sources by a large-scale renewable energy generator connected to the NEM and sold through the NEM or directly to a market participant (ACT Large-scale FiT Act, section 17). The electricity must also be electricity for which large-scale generation certificates are registered under the Commonwealth RET scheme. The existence of the large-scale generation certificates provide proof that the electricity fed into the NEM is generated from renewable energy sources. A grant of FiT entitlement is conditional upon the proponent meeting detailed conditions and milestones set out in a deed of entitlement between the proponent and the ACT Government (ACT Large-scale FiT Act, section 12). A holder of a FiT entitlement can apply to the Minister to have the entitlement transferred to another person (ACT Large-scale FiT Act, section 15).

⁶⁰⁵ There are also non-legislated reverse auction schemes operating in the NEM jurisdictions. The Victorian Government has established the Victorian Renewable Energy Auction Scheme, a reverse auction scheme, to achieve Victoria's RETs (<<https://www.energy.vic.gov.au/renewable-energy/victorian-renewable-energy-auction-scheme>>). The successful projects, three wind farms and three solar projects, are located in Victoria and, collectively, will provide 929 MW of generation capacity. The Victorian Government anticipates all six projects will be operational during 2020. Queensland is also in the process of undertaking its renewable energy reverse auction scheme, Renewables 400, with 10 projects having been shortlisted out of 100 applications. The Renewables 400 reverse auction will see up to 400 MW of renewable energy as well as 100 MW of energy storage (<<https://www.business.qld.gov.au/industries/mining-energy-water/energy/renewable/projects-queensland/renewables-400>>).

⁶⁰⁶ ACT Large-scale FiT Act, section 10. To date, the Minister has made six capacity release determinations since 2012 totalling 641 MW of capacity with four renewable energy reverse auctions conducted. There have been 11 successful renewable energy projects including seven located outside of the ACT in NSW, Victoria and the Hornsdale Wind Farm in South Australia (309 MW). The two main renewable energy technologies supported have been wind and solar. For example, see the Electricity Feed-in (Large-Scale Renewable Energy Generation) Feed-in Tariff Capacity Release Determination 2012 (No 1) (ACT) and the Electricity Feed-in (Large-Scale Renewable Energy Generation) Feed-in Tariff Capacity Release Determination 2016 (No 2) (ACT). For a detailed discussion of the ACT Large-scale FiT Act, see Greg Buckman, Jon Sibley and Richard Bourne, 'The large-scale solar feed-in tariff reverse auction in the Australian Capital Territory, Australia' (2014) 72 *Energy Policy* 16.

⁶⁰⁷ ACT Large-scale FiT Act, section 10(2).

⁶⁰⁸ ACT Large-scale FiT Act, section 18. In the ACT Large-scale FiT Act, the ACT electricity network distributor is referred to as the 'distribution network service provider'.

⁶⁰⁹ ACT Large-scale FiT Act, section 17A. The 'spot price value' is the amount that would have been paid for the electricity by the AEMO if the electricity had been sold on the 'spot market' in the NEM (ACT Large-scale FiT Act, section 17A). See above n 62 for a brief explanation of the 'spot market'.

⁶¹⁰ Buckman and others, above n 606.

Similarly to the function originally undertaken by the ESCOSA in South Australia, the independent economic regulators of Queensland, the ACT, Victoria and Tasmania all play a role in determining electricity retailer FiTs. Queensland regional electricity retailer FiT rate is determined by the QCA, Queensland's independent economic regulator,⁶¹¹ for each financial year.⁶¹² Similarly to the monitoring role of the ESCOSA, the Queensland Government has directed the QCA to monitor and report on electricity retailer FiTs in the South East Queensland area.⁶¹³ Under the ACT Premium FiT Act, the Minister is required to seek the advice of the ICRC,⁶¹⁴ the ACT's independent economic regulator, when determining the premium rate payable by electricity retailers.⁶¹⁵ In Victoria and Tasmania, the standard electricity retailer FiT rate are determined by the ESC and the Economic Regulator,⁶¹⁶ Tasmania's independent economic regulator, respectively.⁶¹⁷

When deciding the regional electricity retailer FiT rate, the QCA is required to consider the effect of the FiT on competition in the Queensland retail electricity market and any other matter stated in the Minister's direction.⁶¹⁸ This requirement can be considered as a functional equivalent to the principles set out in the SA FiT Act and the *Essential Services Commission Act 2002* (SA), for example, the need to consider the particular circumstances of the electricity industry, the financial implications of the ESCOSA's determination and any other factor the ESCOSA considers relevant.⁶¹⁹

Similarly to the principles set out in the SA FiT Act which the ESCOSA has to have regard to, the ACT Premium FiT Act sets out a range of factors the Minister is required to give priority to. These include considering the 'desirability of costs....impacting equitably on all electricity users' and the 'desirability of [electricity customers] being able to recoup investment on renewable energy generators within a reasonable time'.⁶²⁰ However, a point of difference with

⁶¹¹ The Queensland Competition Authority ('QCA') was established under section 7 of the *Queensland Competition Authority Act 1997* (Qld).

⁶¹² Queensland FiT Act, sections 92-4.

⁶¹³ Queensland FiT Act, section 253AA. The most recent QCA report found that residential solar FiT rates ranged from six to 20 cents per kWh and business solar FiT rates ranged from six to 16.1 cents per kWh in 2017-18 (QCA, *Monitoring report: Solar feed-in tariff report 2017-18* (2018), 3-5). This shows that there is a considerable breadth in monetary terms in the FiT rates offered by electricity retailers in the South East Queensland area.

⁶¹⁴ ACT Premium FiT Act, section 10(3). A copy of this advice must be tabled in the ACT Parliament (section 10(4)).

⁶¹⁵ The Independent Competition and Regulatory Commission was established under section 5 of the *Independent Competition and Regulatory Commission Act 1997* (ACT).

⁶¹⁶ Victorian FiT Act, section 40FBA; Tasmanian FiT Act, section 44G.

⁶¹⁷ The Economic Regulator is appointed under section 9 of the *Economic Regulator Act 2009* (Tas).

⁶¹⁸ Queensland FiT Act, section 93(3).

⁶¹⁹ *Essential Services Commission Act 2002* (SA), section 25(4).

⁶²⁰ ACT Premium FiT Act, section 10(3).

South Australia is that these factors include some more environmentally slanted factors including the need to encourage renewable energy generation, the need for GHG emissions reduction and the need to reduce the ‘likely effects of climate change’.⁶²¹ This scheme design difference may be due to the fact that at the time the ACT Premium FiT Act was introduced, the ACT did not have its climate change legislation.

Similarly to the principles set out in the SA FiT Act which the ESCOSA had to have regard to, the Victorian FiT Act expressly provides that in determining a rate, the ESC must have regard to the wholesale prices of electricity in the NEM and any distribution and transmission losses avoided in Victoria by the supply of small-scale renewable energy generation electricity.⁶²² A point of difference with South Australia is that the Victorian FiT Act also provides that the ESC must also have regard to the avoided ‘social cost of carbon’.⁶²³ The ‘social cost’ of carbon represents the estimated external economic costs associated with an increase in CO₂, measured per tonne of carbon in a given year.⁶²⁴ This includes costs to health, the environment and other flow on economic costs that are attributable to GHG emissions, such as reduced costs for heating and increased costs for air conditioning.⁶²⁵ This scheme design feature was introduced in 2017, making the Victorian FiT Act a reflection of contemporary approaches to climate change mitigation compared to the earlier SA FiT Act.

The objectives of the Tasmanian Economic Regulator include protecting the interests of electricity consumers.⁶²⁶ Similarly to the SA FiT Act, the Tasmanian FiT Act sets out a range of principles the Regulator must take into account when determining a FiT rate.⁶²⁷ Like South Australia, these have a somewhat economic slant including considering the ‘fair and reasonable value’ and ‘net financial benefit’ to electricity retailers of the electricity being supplied by the FiT customer and that a FiT should not have the effect of customers cross-subsidising other customers.⁶²⁸ This economic slant is reflected in the Tasmanian Government’s *Energy Strategy* which commits to ‘securing a *stable and sustainable price path* for power’ (emphasis added).⁶²⁹

⁶²¹ Ibid.

⁶²² Victorian FiT Act, section 40FBB(3).

⁶²³ Ibid. This provision was introduced into the Victorian FiT Act by the *Energy Legislation Amendment (Feed-in Tariffs and Improving Safety and Markets) Act 2017* (Vic).

⁶²⁴ Explanatory Memorandum, *Energy Legislation Amendment (Feed-in Tariffs and Improving Safety and Markets) Bill 2017* (Vic) 3-4.

⁶²⁵ Ibid.

⁶²⁶ Tasmanian FiT Act, section 6(2)(d).

⁶²⁷ Tasmanian FiT Act, section 44G.

⁶²⁸ Tasmanian FiT Act, section 44H.

⁶²⁹ Ibid.

Another example of a FiT scheme where the FiT rate and scheme administration costs proved high is the now abolished NSW Government subsidised Solar Bonus Scheme. The NSW Solar Bonus Scheme commenced operation in January 2010 and provided for a gross premium FiT rate of 60 cents per kWh for small-scale solar photovoltaic systems with a generating capacity of up to 10 KW.⁶³⁰ The Scheme was intended to be reviewed once 50 MW of installed generation capacity had been reached.⁶³¹ The Scheme had three key goals: to support investment in local and ‘more socially responsible’ renewable energy, to enable the creation of more ‘green jobs’ in NSW and to increase the ‘visibility of [renewable energy] technology and encourage community investment.’⁶³²

Following commencement of the NSW Solar Bonus Scheme, there was a notable increase in the installation rate of small-scale solar photovoltaic systems with the result that, by the end of June 2010, over 28,500 renewable energy generators had installed small-scale solar photovoltaic systems, totalling approximately 53 MW of generation capacity.⁶³³ Independent modelling conducted at the time suggested that the Scheme might achieve over 1,000 MW of installed small-scale solar photovoltaic generation capacity at a cost of approximately \$2.7 billion.⁶³⁴

In response, in October 2010, the premium FiT rate of 60 cents per kWh was retrospectively reduced to 20 cents per kWh for the remainder of the scheme duration by the NSW Government and an announcement made by the NSW Government that the premium FiT rate of 60 cents per kWh rate would only continue to be available to those who had lodged an electricity network grid connection application before mid-November 2010.⁶³⁵ Following the NSW Government’s announcement, approximately 38,000 renewable energy generators purchased

⁶³⁰ *Electricity Supply Act 1995* (NSW), sections 15A(2) and (5) (repealed). The Solar Bonus Scheme also applied to small-scale wind turbines (*Electricity Supply Act 1995* (NSW), section 15A(2) (repealed)). Electricity customers must have been consuming less than 160 MW per year (*Electricity Supply Act 1995* (NSW), section 15A (repealed)).

⁶³¹ Martin and Rice, above n 516, 699. See also *Electricity Supply Act 1995* (NSW), section 195(2) (repealed).

⁶³² Ibid. See also *Electricity Supply Act 1995* (NSW), section 15A(1) (repealed).

⁶³³ Martin and Rice, above n 516, 700.

⁶³⁴ Ibid.

⁶³⁵ *Electricity Supply Act 1995* (NSW), section 15A(5) as amended by the *Electricity Supply Amendment (Solar Bonus Scheme) Act 2010* (NSW) (repealed). The reduction of the premium FiT rate took effect the day after the day on which the legislation was introduced into the NSW Parliament.

or leased small-scale solar photovoltaic systems and lodged applications for electricity network grid connection in order to reach the mid-November 2010 cut-off deadline.⁶³⁶

As a result of continued investor interest in the NSW Solar Bonus Scheme, the NSW Government closed the Scheme in April 2011 to new entrants.⁶³⁷ The NSW Solar Bonus Scheme expired on 31 December 2016.⁶³⁸ An audit by the NSW Auditor-General found that the NSW Government had ‘grossly underestimated’ the number of potential applicants and the costs of the NSW Solar Bonus Scheme with no cost-benefit analyses being undertaken prior to commencement or amendment of the Scheme.⁶³⁹ The NSW Auditor-General estimated that the total costs of the NSW Solar Bonus Scheme would range from \$1.05 billion to \$1.75 billion, considerably more than the NSW Government’s initial estimate of \$362 million.⁶⁴⁰

Shortly afterwards, the NSW Government foreshadowed clawing back some of the NSW Solar Bonus Scheme cost overrun through increasing the levy amount paid to the NSW Climate Change Fund by electricity consumers over the period 2010 to 2017.⁶⁴¹ Additionally, the IPART, NSW’s independent economic regulator, indicated that electricity retailers would pay a financial contribution to the NSW Solar Bonus Scheme cost overrun.⁶⁴² This has meant that whilst the NSW Solar Bonus Scheme was a success in developing the extent of small-scale solar photovoltaic system installations in NSW and the State’s renewable energy industry, this success came at a price to the NSW community with the costs of the Scheme exceeding the NSW Government’s projected costs by approximately 300%.⁶⁴³

Unlike South Australia, NSW does not have a legislated FiT scheme currently operating. Electricity retailers can choose whether to voluntarily offer a solar FiT and the level of FiT rate they offer to electricity customers. To guide NSW electricity retailers and customers, the IPART, NSW’s independent economic regulator, sets a benchmark range for FiT rates.⁶⁴⁴ The

⁶³⁶ Martin and Rice, above n 516, 700.

⁶³⁷ Ibid.

⁶³⁸ *Electricity Supply Act 1995* (NSW), section 15A(9) (repealed).

⁶³⁹ <<https://www.audit.nsw.gov.au/media/solar-bonus-scheme>>; NSW Auditor-General’s Report, *Special Report – Sola Bonus Scheme* (2011) 4.

⁶⁴⁰ NSW Auditor-General’s Report, above n 639, 3.

⁶⁴¹ Martin and Rice, above n 516, 703. See above n 266 for information about the NSW Climate Change Fund.

⁶⁴² Ibid.

⁶⁴³ Ibid 704.

⁶⁴⁴ *Electricity Supply Act 1995* (NSW), section 43ECA.

IPART is required to set a FiT rate that will not lead to increased electricity prices or require any additional funding from the NSW State Budget.⁶⁴⁵

2 Classes of Renewable Energy Generators Captured

Similarly to the SA FiT Act, as Table 9 below shows, the Queensland FiT Act, the ACT Premium FiT Act, the Victorian FiT Act and the Tasmanian FiT Act all apply to small-scale renewable energy generators.

However, the ACT Premium FiT Act and the Victorian FiT Act are dissimilar to the SA FiT Act in that they also apply to larger-scale renewable energy generators, these being ‘medium’ generators of between 30 KW and 200 KW and generators of up to 100 KW respectively. The ACT Large-scale FiT Act is also markedly different to the SA FiT Act in that the former Act is specifically designed to promote large-scale renewable energy generators.

This difference makes the ACT and Victorian FiT schemes considerably more flexible compared to the SA FiT Act in that they can capture a far broader scale of renewable energy generators.

3 Sources of Renewable Energy Captured

Similarly to the SA FiT Act, as shown in Table 10 below, the Queensland FiT Act, the ACT Premium FiT Act, the Victorian FiT Act and the Tasmanian FiT Act all apply to solar photovoltaic installations.

However, unlike the SA FiT Act, the ACT Premium FiT Act and Large-scale FiT Act also expressly apply to wind generated electricity⁶⁴⁶ and to other types of renewable energy technologies determined by the Minister.⁶⁴⁷

The Victorian FiT Act and the Tasmanian FiT Act are also dissimilar to the SA FiT Act in that they apply to a broader range of renewable energy technologies. For example, the Victorian FiT Act applies to renewable energy generators operating wind, hydro and biomass energy generation facilities as well as solar. Under the Victorian FiT Act, the Governor in Council

⁶⁴⁵ <<https://www.ipart.nsw.gov.au/Home/Industries/Energy/Reviews/Electricity/Solar-feed-in-tariffs-201819>>. This is possibly a result of the NSW Government’s experience with the NSW Solar Bonus Scheme.

⁶⁴⁶ ACT Premium FiT Act, section 5B, meaning of ‘renewable energy source’.

⁶⁴⁷ ACT Premium FiT Act, definition of ‘renewable energy source’ in section 5B and ACT Large-scale FiT Act, definition of ‘renewable energy source’ in section 6.

Table 9 – FiT Schemes – Classes of Renewable Energy Generators Captured

| | South Australia – ‘Target’ Jurisdiction | Queensland | New South Wales | Australian Capital Territory – Large-scale FiT Act | Australian Capital Territory – Premium FiT Act | Victoria | Tasmania |
|---|--|--|-----------------|---|--|---|---|
| Class of Renewable Energy Generator Captured | Customers with annual energy consumption of less than 160 MW using a single solar photovoltaic system up to 10 kVA capacity for a single-phase connection and up to 30 kVA for a three-phase connection ⁶⁴⁸ | Customers with an annual consumption of less than 100 MW per year using a single solar photovoltaic system up to 5 KW ⁶⁴⁹ | N/A | Large-scale renewable energy generating facilities with a capacity of more than 200 KW ⁶⁵⁰ | ‘Micro’ generator – not more than 30 KW capacity ‘Medium’ generator – more than 30 KW but not more than 200 KW capacity | Customers with annual consumption of 100 MW hours or less who generate electricity from their principal place of residence using a solar photovoltaic system of 5 KW or less Customers who operate wind, solar, hydro or biomass energy generation facilities with a capacity of less than 100 KW ⁶⁵¹ | Small customers within the meaning of the National Energy Retail Law (Tasmania), these being residential customers and small businesses using a single generation system with capacity of up to 10 kVA for single-phase connection and up to 30 kVA for three-phase connection ⁶⁵² |

⁶⁴⁸ SA FiT Act, definition of ‘small customer’ in section 4 and definitions of ‘qualifying customer’, ‘qualifying generator’ and ‘small photovoltaic generator’ in section 36AC. See also regulation 8 of the Electricity (General) Regulations 2012 (SA). Customers’ system must be connected to a distribution network that supplies more than 10,000 domestic customers.

⁶⁴⁹ Queensland FiT Act, definitions of ‘qualifying customer’ and ‘small photovoltaic generator’ in Schedule 5. Note though the provisions in the Electricity Regulation 2006, regulation 225A, setting the maximum generation capacity at 30 KW.

⁶⁵⁰ ACT Large-scale FiT Act, section 6(1), definition of ‘large renewable energy generator’.

⁶⁵¹ Victorian FiT Act, section 40F(1), definitions of ‘qualifying customer’, ‘qualifying solar energy generating facility’, ‘relevant generator’ and ‘small renewable energy generation facility’.

⁶⁵² Tasmanian FiT Act, sections 44B, 44C and 44E.

Table 10 – FiT Schemes – Type of FiT and Source of Renewable Energy Captured

| | Type of FiT | Source of Renewable Energy Captured |
|---|-------------|---|
| South Australia – ‘Target’ Jurisdiction | Net | Solar ⁶⁵³ |
| Queensland | Net | Solar ⁶⁵⁴ |
| New South Wales | N/A | N/A |
| Australian Capital Territory – Large-scale FiT Act | Net | Solar and wind ⁶⁵⁵ |
| Australian Capital Territory – Premium FiT Act | Gross | Solar and wind ⁶⁵⁶ |
| Victoria | Net | Wind, solar, hydro and biomass energy generation and other facilities or classes of facility generating electricity as a small-scale renewable energy generation facility specified by the Governor in Council ⁶⁵⁷ |
| Tasmania | Net | Solar, wind and water ⁶⁵⁸ |

may also specify other facilities or classes of facility generating electricity as a small-scale renewable energy generation facility.⁶⁵⁹

This difference makes the ACT and Victorian FiT schemes in particular considerably more flexible compared to the SA FiT Act in that they can more readily be made to apply to emerging new renewable energy technologies.

4 Scheme Constraints – Scheme Duration and Cap on Installed Generation Capacity

Like South Australia, Queensland’s premium FiT scheme has a planned duration of 20 years and will expire on 1 July 2028.⁶⁶⁰ Similarly to the duration of South Australia’s premium FiT scheme, under the ACT Premium FiT Act, the premium FiT for the financial year in which a renewable energy generator is connected to the ACT electricity distributor’s network (and

⁶⁵³ SA FiT Act, definition of ‘small photovoltaic generator’ in section 36AC.

⁶⁵⁴ Queensland FiT Act, definition of ‘small photovoltaic generator’ in Schedule 5.

⁶⁵⁵ ACT Large-scale FiT Act, definition of ‘renewable energy source’ in section 6.

⁶⁵⁶ ACT Premium FiT Act, definition of ‘renewable energy source’ in section 5B.

⁶⁵⁷ Victorian FiT Act, section 40F(1), definitions of ‘qualifying solar energy generating facility’ and ‘small renewable energy generation facility’.

⁶⁵⁸ Tasmanian FiT Act, sections 44E and 44B.

⁶⁵⁹ Victorian FiT Act, section 40F(2).

⁶⁶⁰ Queensland FiT Act, section 44A(5).

remains connected to that network) applies for 20 years after the date of connection.⁶⁶¹ In the same way to the duration of South Australia's premium FiT scheme, the maximum duration of a FiT entitlement under the ACT Large-scale FiT Act is 20 years.⁶⁶² Compared to South Australia, the Victorian premium FiT scheme has a shorter planned duration of 15 years, expiring on 30 June 2024.⁶⁶³

Like South Australia, at the time of introduction of the original premium FiT scheme into the Queensland Parliament, the Queensland Government indicated that there would be a review of the scheme; the scheme would be reviewed after 10 years or when the installed generation capacity reached 8 MW, slightly lower than the original South Australian scheme cap (10 MW).⁶⁶⁴ In the early years of Queensland's original premium FiT scheme, Queensland saw a 'phenomenal' growth in the rate of uptake of solar photovoltaic systems.⁶⁶⁵ Queensland went from having an installed generation capacity of 3.2 MW in June 2008 to 165 MW in June 2011.⁶⁶⁶ One reason for this is that Queensland's original premium FiT scheme was aimed at renewable energy generators of up to 30 KW, higher than the class of renewable energy generators targeted by South Australia's premium FiT scheme (up to between 10 kVA and 30 kVA which is approximately equivalent to 8 to 24 KW). Against this backdrop, in 2011, the Queensland FiT Act was amended to retrospectively restrict the distribution entity premium FiT scheme to solar photovoltaic systems of up to 5 KW.⁶⁶⁷

Similar to the SA FiT Act, the distribution entity premium FiT rate of 44 cents per kWh was closed to new entrants as of 10 July 2012.⁶⁶⁸ New electricity consumers who connected to the electricity network grid on and from 10 July 2012 only received a distribution entity premium FiT rate of 8 cents per kWh until 30 June 2014, considerably less than the original distribution

⁶⁶¹ ACT Premium FiT Act, section 11.

⁶⁶² ACT Large-scale FiT Act, section 10(2)(b).

⁶⁶³ Victoria, *Parliamentary Debates*, Legislative Assembly, 12 March 2009, 789 (Peter Batchelor, Minister for Energy and Resources).

⁶⁶⁴ Queensland, *Parliamentary Debates*, 29 April 2008, 1241 (Geoff Wilson, Minister for Energy).

⁶⁶⁵ Queensland, *Parliamentary Debates*, 15 June 2011, 1844 (Stephen Robertson, Minister for Energy).

⁶⁶⁶ Ibid.

⁶⁶⁷ This amendment was made by the *Electricity Price Reform Amendment Act 2011* (Qld). At the time, there was a growing number of electricity customers installing systems up to 30 KW for investment purposes. The Queensland Government indicated that the purpose of the amendment was to ensure that the distribution entity premium FiT scheme was not being utilised by investors at the 'expense of all Queensland electricity consumers'. This amendment took effect only some four weeks after the Queensland Government announced the new restriction (Queensland, *Parliamentary Debates*, above n 665, 1844).

⁶⁶⁸ Electricity Regulation 2006 (Qld), regulation 30AA. This amendment was announced at the time the *Water Legislation (Dam Safety & Water Supply Environment) & Other Legislation Amendment Act 2012* (Qld) was introduced into the Queensland Parliament.

entity premium FiT rate.⁶⁶⁹ These amendments were made by the Queensland Government in 2012 in order to try and reduce the overall costs of the premium FiT scheme; in 2011, the costs of the premium FiT scheme were estimated to be in the region of \$1.8 billion due to the rapid uptake of the scheme.⁶⁷⁰

Following ‘significant concerns about the potential long-term impacts on low-income and other vulnerable ACT households’, in early 2009, the ACT Government introduced retrospective amendments to the ACT Premium FiT Act to effectively cap the scheme at a total installed generating capacity of up to 30 KW, described as ‘stage 1’ of the ACT Government’s FiT scheme.⁶⁷¹ These amendments came into operation on 2 March 2009.⁶⁷²

In 2011, the *Electricity Feed-in (Renewable Energy Premium) Amendment Act 2011* (ACT), a private member’s bill introduced by the ACT Greens Party, made a series of amendments to the ACT Premium FiT Act as a result of the ‘overheating’ of the ACT solar photovoltaic industry in the first half of 2011.⁶⁷³ This overheating was attributed to the closure of the NSW Solar Bonus Scheme and the Commonwealth Government’s changes to the Commonwealth RET.⁶⁷⁴

One outcome of this was that the cap of 15 MW imposed in 2010 on ‘micro’ renewable energy generators was reached far quicker than had been anticipated. At the time the 15 MW cap was imposed, it was thought that the ‘micro’ renewable energy generator scheme would continue for another 18 to 24 months before reaching the cap.⁶⁷⁵ In practice, the 15 MW cap was reached in only three to four months following implementation, meaning that the ACT small-scale solar photovoltaic industry effectively had very little time in which to prepare for a potential reduction in orders.⁶⁷⁶

The 2011 amendments made to the ACT Premium FiT Act applied a cap of 30 MW to ‘micro’ renewable energy generators, effectively rolling in the 15 MW cap on ‘medium’ renewable energy generators into the 15 MW cap on ‘micro’ generators.⁶⁷⁷ The uptake of the premium

⁶⁶⁹ Queensland, *Parliamentary Debates*, 12 September 2012, 1844 (Mark McArdle, Minister for Energy and Water Supply). See also Electricity Regulation 2006 (Qld), regulation 30AA(b) (revoked).

⁶⁷⁰ Ibid.

⁶⁷¹ ACT, *Parliamentary Debates*, Legislative Assembly for the ACT, 12 February 2009, 709-10 (Simon Corbell, Minister for Energy).

⁶⁷² See *Electricity Feed-in (Renewable Energy Premium) Amendment Act 2009* (ACT).

⁶⁷³ ACT, *Parliamentary Debates*, Legislative Assembly for the ACT, 22 June 2011, 2206 (Shane Rattenbury).

⁶⁷⁴ Ibid. See the discussion on the NSW Solar Bonus Scheme in Section C above.

⁶⁷⁵ Ibid.

⁶⁷⁶ Ibid.

⁶⁷⁷ Ibid 2210.

FiT scheme by ‘medium’ renewable energy generators had been lower than that by ‘micro’ generators partly due to the higher costs associated with ‘medium’ sized generating systems.⁶⁷⁸

At the time of introducing the premium FiT scheme into the Victorian Parliament, the Victorian Government indicated that the scheme’s installed generation capacity would be capped at 100 MW, considerably higher than the original South Australian scheme cap (10 MW).⁶⁷⁹ Similarly to South Australia, the Victorian Government also indicated that the premium FiT scheme would be subject to a future review.⁶⁸⁰ The premium FiT scheme installed generation capacity cap of 100 MW was reached by 29 December 2011 at which date the scheme was closed to new entrants.⁶⁸¹ The Victorian Government indicated that this was ‘well ahead of what was anticipated in 2009’ when the premium FiT scheme commenced operation.⁶⁸²

In 2012, the Victorian Competition and Efficiency Commission (‘VCEC’) inquiry, *Power from the People*, recommended that the three Victorian FiT schemes in operation at the time, the premium, transitional and general (old)/standard FiT schemes, be made market based as soon as practicable in order to make them ‘sustainable, predictable and free from cross subsidies’.⁶⁸³ As a result, in 2013, the Victorian FiT Act was amended to insert the current general ‘efficient and fair’⁶⁸⁴ electricity retailer FiT which is determined by the ESC.

At the time of introduction of the original FiT schemes into the Tasmanian Parliament, the Tasmanian Government was exploring ways to limit the ongoing eligibility of the transitional FiT scheme; the Government advised this was ‘necessary to manage the costs of the transitional arrangements, which [were] already estimated to be significant’.⁶⁸⁵ The Tasmanian Government indicated that the costs of funding the transitional FiT scheme, estimated at the time the original FiT schemes were introduced into the Tasmanian Parliament to be in the

⁶⁷⁸ Ibid 2209.

⁶⁷⁹ Victoria, *Parliamentary Debates*, above n 320, 1013.

⁶⁸⁰ Ibid.

⁶⁸¹ Victoria, *Parliamentary Debates*, Legislative Assembly, 12 October 2011, 3674 (Michael O’Brien, Minister for Energy and Resources).

⁶⁸² Ibid.

⁶⁸³ Victorian Competition and Efficiency Commission (‘VCEC’), *Power from the People: Inquiry into Distributed Generation* (2012) xxi.

⁶⁸⁴ Victoria, *Parliamentary Debates*, Legislative Assembly, 20 March 2013, 1011 (Nicholas Kotsiras, Minister for Energy and Resources). VCEC considered that ensuring access to an ‘efficient and fair price’ for exported electricity was the most relevant objective underpinning any future FiT arrangement (VCEC, above n 683, xxx).

⁶⁸⁵ Tasmania, *Parliamentary Debates*, House of Assembly, 19 September 2013, Part 2, 24-115 (Bryan Green, Minister for Energy and Resources).

region of \$9 million per annum over five years, would be absorbed as a cost to the State owned electricity business, Aurora Energy.⁶⁸⁶

In 2018, the Tasmanian Government undertook a review of its transitional FiT scheme with the outcome being that all electricity customers with installed solar photovoltaic systems will transition onto the standard electricity retailer FiT by the end of 2019.⁶⁸⁷

All NEM jurisdictions' premium FiT schemes have now closed to new entrants; the closure effectively acts to cap the scheme administration and cross subsidy costs of those premium FiT schemes.

The above demonstrates a level of monitoring and action by the Queensland, ACT, Victorian and Tasmanian Governments in relation to the operation and scheme administration costs of their respective FiT schemes that is comparable to South Australia.

5 Requirement to Allow Renewable Energy Generators Access to the Electricity Network Grid

Similarly to the SA FiT Act, the Queensland FiT Act and the ACT Premium FiT Act require distribution entities to allow electricity customers to connect a generator to the electricity network grid.⁶⁸⁸ This is a condition of the Queensland distribution entity's distribution authority and the ACT electricity distributor's licence.⁶⁸⁹ Unlike the SA FiT Act however, the requirement in the Queensland FiT Act is subject to the caveat that such access is granted as far as it is 'technically and economically practicable'.⁶⁹⁰ Somewhat differently to South Australia, in Victoria, the Electricity Distribution Code requires that if a renewable energy generator seeks access to the electricity network grid, the distributor, as well as the renewable energy generator, must 'negotiate in good faith'.⁶⁹¹ The Electricity Distribution Code is a code of practice for the electricity industry made by the ESC under the *Essential Services Commission Act 2001* (Vic).⁶⁹²

Unlike the SA FiT Act, the Queensland FiT Act, the ACT Premium FiT Act and the Victorian FiT Act and Electricity Distribution Code are silent in terms of the consequences if a

⁶⁸⁶ Ibid.

⁶⁸⁷ See above n 352.

⁶⁸⁸ Queensland FiT Act, section 44A(1)(a); ACT Premium FiT Act, section 6(2).

⁶⁸⁹ Queensland FiT Act, section 44A(1); ACT Premium FiT Act, section 6(2).

⁶⁹⁰ Queensland FiT Act, section 44A(1)(a).

⁶⁹¹ Essential Services Commission, *Electricity Distribution Code* (2018), clause 7.1.2.

⁶⁹² *Essential Services Commission Act 2001* (Vic), Part 6.

distribution entity breaches a condition of their distribution authority or licence or fails to grant electricity network grid access to a renewable energy generator. In Queensland, this scheme design feature may be a reflection of the fact that the Queensland distribution entities are both State-owned entities, not private corporate entities.⁶⁹³

Unlike the SA FiT Act, the ACT Large-scale FiT Act does not contain an express obligation on the ACT electricity distributor to allow renewable energy generators access to the electricity network grid. However, this may be a reflection of the much larger-scale renewable energy generators targeted by the ACT Large-scale FiT Act and the need for the ACT electricity distributor to be able to more tightly control access to the electricity network grid compared to small-scale renewable energy generators. This may also be a reflection of the fact that large-scale renewable energy generators may be more likely to hold a greater commercial bargaining position with the ACT electricity distributor compared to small-scale renewable energy generators such as individuals and families.

Unlike the SA FiT Act, the Tasmanian FiT Act does not contain an express obligation on the distributor to allow renewable energy generators access to the electricity network grid. This scheme design feature may be a reflection of the fact that the Tasmanian distributor, TasNetworks, is owned by the Tasmanian Government rather than a private corporate entity.

6 Requirement to Provide a Credit to Renewable Energy Generators

Similarly to the SA FiT Act, the Queensland FiT Act, the ACT Premium FiT Act, the ACT Large-scale FiT Act, the Victorian FiT Act and the Tasmanian FiT Act require distribution entities and electricity retailers to provide a credit to electricity customers for electricity they feed into the electricity network grid.

The Queensland FiT Act requires distribution entities to provide a credit to electricity customers eligible to receive the premium FiT rate for electricity they feed into the electricity network grid. This is a condition of the distribution entity's distribution authority.⁶⁹⁴ The credit is offset against any customer connection service charges payable by the electricity customer.⁶⁹⁵

⁶⁹³ Energy Queensland Ltd Annual Report 2017-18, *Energising Queensland Communities – Annual Report 2017-18* (2018) 4 (<https://www.energyq.com.au/_data/assets/pdf_file/0004/691123/Annual-Report-COMplete.pdf>).

⁶⁹⁴ Queensland FiT Act, section 44A(1).

⁶⁹⁵ Queensland FiT Act, section 44A(1)(b).

The Queensland FiT Act requires certain electricity retailers to provide a credit to certain qualifying electricity customers for electricity they feed into the network.⁶⁹⁶ These particular electricity retailers are ‘local area retailers’⁶⁹⁷ who operate in regional Queensland and outside of the distribution area overseen by Energex, the South East Queensland area.⁶⁹⁸ The ‘certain qualifying customers’ are customers who are not already entitled to receive the distribution entity premium FiT rate.⁶⁹⁹

Under the Queensland FiT Act, the electricity retailer must reduce the electricity supply charges payable by the electricity customer by the FiT amount. Where the FiT amount is more than the electricity supply charges payable by the electricity customer, the electricity retailer must reduce the charges payable by the customer for the next supply period by the unused FiT amount.⁷⁰⁰ Similarly to South Australia, if at the end of 12 months there remains an outstanding credit balance, the electricity retailer must pay this amount to the customer.⁷⁰¹

The ACT Premium FiT Act requires the electricity retailer to pay ‘eligible entities’, for example, the owner of premises on which a renewable energy generator is located, for the total amount of electricity generated by the renewable energy generator. These payments are made quarterly in arrears.⁷⁰²

Under the ACT Large-scale FiT Act, the FiT support payment is paid to the FiT entitlement holder in arrears within 30 days of the FiT entitlement holder providing the ACT electricity distributor any information reasonably required for the distributor to work out the FiT support payment.⁷⁰³ If a FiT entitlement holder’s grant specifies a maximum quantity of eligible electricity, the ACT electricity distributor is not required to pay the holder a FiT support payment for electricity in excess of the maximum quantity specified.⁷⁰⁴

⁶⁹⁶ Queensland FiT Act, section 55DBA.

⁶⁹⁷ Local area retailers are electricity retailers nominated in the National Energy Retail Law (Queensland) Regulation 2014 (Qld) for the purposes of section 11 of the National Energy Retail Law (Qld). The nominated retailers are Origin Energy and Ergon Energy Retail.

⁶⁹⁸ Queensland FiT Act, sections 89A and 92. Electricity retailers operating in the South East Queensland area voluntarily offer FiTs for customers with solar photovoltaic systems.

⁶⁹⁹ Queensland FiT Act, section 55DBA(1)(b).

⁷⁰⁰ Queensland FiT Act, section 55DBA(2)(a) and (b).

⁷⁰¹ Queensland FiT Act, section 55DBA(2).

⁷⁰² ACT Premium FiT Act, sections 6(3) and 8.

⁷⁰³ ACT Large-scale FiT Act, section 18.

⁷⁰⁴ ACT Large-scale FiT Act, section 18. The ACT Large-scale FiT Act also contemplates a scenario in which a FiT support payment is a negative amount. In this scenario, the ACT electricity distributor may offset this amount against a future FiT support payment or require the FiT entitlement holder to pay the amount to the ACT electricity distributor within 30 days of the distributor’s request (ACT Large-scale FiT Act, section 19). If the FiT entitlement

The Victorian FiT Act requires electricity retailers to publish premium and general renewable energy feed-in terms and conditions comprising an offer under which they will purchase either solar energy generation electricity or renewable energy generation electricity as the case may be.⁷⁰⁵ Once an electricity customer accepts an electricity retailer's offer, the retailer is then required to pay the relevant FiT credit against the charges payable by the customer to the retailer for electricity supplied during the same period. If there is an excess credit, it is carried forward to the next billing period.⁷⁰⁶

Unlike the SA FiT Act, under the Victorian FiT Act, any excess premium FiT credit is extinguished 12 months after the day on which it first arises, the day on which the electricity supply contract ceases or on 31 July 2028, being the last day of the premium FiT scheme period.⁷⁰⁷ Similarly to the premium FiT scheme, the standard FiT is credited against the charges payable to the electricity retailer by the electricity customer and any excess carried forward to the next billing period.⁷⁰⁸ In contrast to the premium FiT scheme, any excess is extinguished only on the day the contract for the supply of electricity comes to an end.⁷⁰⁹

The Tasmanian FiT Act requires electricity retailers to pay the 'feed-in billing amount', if any, to electricity customers with qualifying systems in respect of a billing period in relation to their premises.⁷¹⁰

Like the SA FiT Act, if the ACT electricity distributor does not pay the FiT support payment to a FiT entitlement holder under the ACT Large-scale FiT Act, the distributor may be liable for a fine of up to 50 penalty units (\$8,000).⁷¹¹ Also similarly to South Australia, the Tasmanian FiT Act imposes a fine of up to 100 penalty units (\$14,000) on electricity retailers for a failure to pay 'feed-in billing amounts' to electricity customers.⁷¹²

Unlike the SA FiT Act, the Queensland FiT Act, the ACT Premium FiT Act and the Victorian FiT Act are silent in terms of the consequences if the distribution entity or electricity retailer fails to provide the required credit to the electricity customer. The Queensland FiT Act is also

holder fails to pay this amount to the ACT electricity distributor, the holder may be liable for a fine of up to 50 penalty units (\$8,000 (*Legislation Act 2001* (ACT), section 133(2)) (section 20).

⁷⁰⁵ Victorian FiT Act, sections 40FA(1) and 40FB(1).

⁷⁰⁶ Victorian FiT Act, sections 40FA(2)(c) and 40FB(2)(c).

⁷⁰⁷ Ibid.

⁷⁰⁸ Victorian FiT Act, section 40FB(2).

⁷⁰⁹ Ibid.

⁷¹⁰ Tasmanian FiT Act, section 44E(2).

⁷¹¹ ACT Large-scale FiT Act, section 20 and *Legislation Act 2001* (ACT), section 133(2).

⁷¹² Tasmanian FiT Act, section 44E(2) and Penalty Units and Other Penalties Order 2014, clause 3. The Order is made under the *Penalty Units and Other Penalties Act 1987* (Tas).

silent as to what happens if the credit owing to the electricity customer exceeds the amount of customer connection service charges payable by the customer. This scheme design feature may be a reflection of the fact that the Queensland distribution entities are both State-owned entities, not private corporate entities.⁷¹³

F *Discussion of Similarities and Differences*

This Chapter's examination of the NEM jurisdictions' FiT schemes has revealed a 'patchwork quilt' of schemes in the NEM with a range of similarities and differences.

On balance, the SA FiT Act and the Queensland FiT Act are quite similar in terms of their levels of premium FiT rates, the oversight role played by their respective independent economic regulators in setting or monitoring those rates and the length of scheme duration. They are also similar in terms of their application to small-scale renewable energy generators with small-scale solar photovoltaic systems. Both the SA FiT Act and the Queensland FiT Act set out requirements to pay FiT amounts to renewable energy generators and to allow access to the electricity network grid by generators. However, a key difference is that the Queensland FiT Act is silent on the consequences should these requirements not be complied with.

The South Australian and Queensland premium FiT schemes commenced operation at the same time in 2008. At the time of legislating these FiT schemes, the South Australian and Queensland Governments were the Rann and Bligh Labor Governments respectively which may explain some of the similarities between these two FiT schemes. When introducing its original premium FiT scheme into the Queensland Parliament, the Bligh Labor Government indicated that its scheme was intended to operate in the same way as the South Australian premium FiT scheme in the interests of 'national consistency'.⁷¹⁴

A key difference however between these two FiT schemes is the reasoning behind their introduction. The South Australian Rann Labor Government saw the introduction of its premium FiT scheme as a key tool to achieve a sizeable reduction in GHG emissions through the use of renewable energy and to develop the South Australian renewable energy industry. The South Australian Rann Labor Government's approach was likely influenced by the

⁷¹³ See above n 693.

⁷¹⁴ Queensland, *Parliamentary Debates*, above n 664, 1241.

proactive stance it was taking at the time to mitigate climate change through, amongst other things, achieving sizeable reductions in the State's GHG emissions.⁷¹⁵

In contrast, the Queensland Bligh Labor Government's approach to achieving a reduction in GHG emissions was through promoting greater energy efficiency rather than the use of renewable energy.⁷¹⁶ Queensland's original premium FiT scheme was inserted into the Queensland FiT Act by the *Clean Energy Act 2008* (Qld). One of the other suites of amendments made by this Act was to increase the 13% Gas Scheme target to 15% in 2010.⁷¹⁷ The 13% Gas Scheme created more than \$1.2 billion worth of incentives for investment in gas fired power stations in Queensland and saw an increase in Queensland's gas fired generation capacity from 900 MW in 2000 to over 2000 MW in 2008.⁷¹⁸ This can be contrasted with the 8 MW cap on installed generation capacity contemplated at the start of the premium solar FiT scheme. The Queensland Bligh Labor Government's approach at the time of introducing its original premium FiT scheme was likely influenced by the historical dominance of its resources and mining sectors.

Introduced in 2009, reasonably shortly after the SA FiT Act, the ACT Premium FiT Act is quite similar to the SA FiT Act in terms of its level of premium FiT rate, the oversight role played by the ACT's independent economic regulator in providing advice on the setting of the FiT rate and its length of scheme duration. It is also similar in terms of requirements to pay FiT amounts to renewable energy generators and to allow access to the electricity network grid by generators. However, a key difference is that the ACT Premium FiT is silent on the consequences of those requirements not being met.

Additionally, the higher installed generation capacity cap and broader scheme application in terms of renewable energy technologies and renewable energy generator size of the ACT Premium FiT Act make it different to the SA FiT Act. Another difference is in the range of factors the ICRC is required to take into account when determining FiT rates in that some of those factors are more environmentally slanted compared to South Australia. Additionally, the ACT's premium FiT scheme is a gross FiT scheme which is a notable difference to the SA FiT Act.

⁷¹⁵ South Australia, *Parliamentary Debates*, above 565, 1231.

⁷¹⁶ Queensland, *Parliamentary Debates*, above n 664, 1241.

⁷¹⁷ *Ibid.*

⁷¹⁸ *Ibid.*

The Victorian Brumby Labor Government also introduced its premium FiT scheme in 2009. There are some similarities between the SA FiT Act and the Victorian FiT Act in that the ESC, similar to the ESCOSA's original function, plays an oversight role in determining FiT rates. The Victorian FiT Act also contains similar requirements to the SA FiT Act to pay FiT amounts to renewable energy generators and to allow access to the electricity network grid by generators. However, a key difference is that the Victorian FiT Act is silent on the consequences of those requirements not being met. The considerably higher level of the Victorian premium FiT rate, its shorter scheme duration, higher scheme cap and larger scale scheme application in terms of renewable energy technologies and renewable energy generator size also sets the Victorian FiT Act apart from the SA FiT Act.

The reasons cited by the Stanhope and Brumby Labor Governments for the introduction of their respective legislated FiT schemes share a common theme with the South Australian Rann Labor Government of seeking to achieve sizeable reductions in GHG emissions and the development of their respective renewable energy industries.

The ACT Large-scale FiT Act is a particularly notable difference to the SA FiT Act in that it is primarily designed to target large-scale renewable energy generators through the use of renewable energy reverse auctions.

Compared to the SA FiT Act, the Tasmanian FiT scheme is a relative late comer in that it was only introduced in 2014 by the Giddings Labor Government. The SA FiT Act and the Tasmanian FiT Act only share some of the same key design features, these being oversight by the Tasmanian Economic Regulator of FiT rates and the requirement to pay FiT amounts to renewable energy generators accompanied by a penalty for failure to meet this requirement. A key difference between the SA FiT Act and the Tasmanian FiT Act is the lack of a requirement to allow access to the electricity network grid by renewable energy generators. The Tasmanian FiT Act has also not provided for the same level of 'premium' FiT rate as the SA FiT Act. This is most likely due to the historical dominance of hydro in Tasmania removing the need for the Tasmanian Government to support early movers in the uptake of costly untried renewable energy technologies.

The NSW Solar Bonus Scheme is an illustration of the particular need in Australia to harmonise and co-ordinate changes in Commonwealth and NEM jurisdiction level renewable energy

policies in order to achieve ‘optimal outcomes’ and ‘maintain investor confidence’.⁷¹⁹ Martin and Rice have observed that, during the course of the NSW Solar Bonus Scheme’s operation, the Commonwealth Government announced a substantial reduction in the number of small technology credits available under the Commonwealth RET for small-scale solar photovoltaic systems.⁷²⁰ Martin and Rice have suggested that this change in the Commonwealth’s renewable energy policies may have encouraged renewable energy generators in NSW to bring forward their small-scale solar photovoltaic system installations in order to ‘secure larger savings’.⁷²¹

The NSW Solar Bonus Scheme is also an illustration of the need for harmonisation and co-ordination of changes in NEM jurisdiction level renewable energy policies. As discussed in Section E of this Chapter, the issues experienced with the NSW Solar Bonus Scheme contributed to an ‘overheating’ of the ACT renewable energy industry. This resulted in the ACT Government making a range of amendments to the ACT premium FiT scheme in order to try and mitigate the impacts on its domestic renewable energy industry.

G Conclusion

This Chapter has examined and compared the NEM jurisdictions’ FiT schemes. Based on the examination of academic and policy research in Section B, FiT schemes should include a range of key design features such as appropriately set FiT rates overseen in some capacity by an independent economic regulatory body, certainty of scheme duration, a scheme cap in some form in order to control scheme administration and cross subsidy costs, a requirement to pay FiTs to renewable energy generators and a requirement to allow access to the electricity network grid by generators. The above examination has also shown that net FiT schemes appear to be more effective than gross FiT schemes in changing electricity customers’ energy consumption behaviours which is particularly relevant in the context of reducing GHG emissions.

⁷¹⁹ Martin and Rice, above n 516, 700.

⁷²⁰ Ibid. At the commencement of the NSW Solar Bonus Scheme, the purchase of small-scale solar photovoltaic systems generated 31 small technology credits for the first 1.5 KW of generating capacity under the Commonwealth RET. Those credits had a five times multiplier applied and held a Commonwealth Government guaranteed value of \$40 per credit if sold through the Commonwealth Government’s small technology credits clearing house. In December 2010, the Commonwealth Government decided to reduce the five times multiplier to a four times multiplier on 1 July 2011 followed by a reduction factor of one per year until a one times multiplier was achieved on 1 July 2014. This multiplier reduction process was in the end brought forward by almost 18 months with the one times multiplier being achieved on 1 January 2013 (Martin and Rice, above n 516, 700).

⁷²¹ Ibid.

This Chapter has shown that South Australia, the ‘target’ jurisdiction has some of these key design features, these being appropriately set FiT rates monitored by the ESCOSA, an independent economic regulatory body, certainty of scheme duration and a scheme cap in terms of installed generating capacity and the 45 kWh limitation on payment of the premium FiT rate. The SA FiT Act also contains a requirement on the State’s distributor to pay FiTs to renewable energy generators and a requirement on the State’s distributor to allow access to the electricity network grid by generators, accompanied by penalties for failure to meet these requirements.

Compared to South Australia, as discussed above, the other NEM jurisdictions’ FiT schemes all only share one of the same key design features as South Australia’s FiT scheme, this being oversight by their respective independent economic regulators in setting or monitoring FiT rates. The extent to which the other NEM jurisdictions’ FiT schemes share other key design features with South Australia’s FiT scheme varies quite considerably.

Chapman and others have found that over time Australian State and Territory-level FiT schemes, including the NEM jurisdictions’ FiT schemes, have influenced the rate of installation of small-scale solar photovoltaic systems more so than the Commonwealth RET.⁷²² The NEM jurisdictions’ FiT schemes are an illustration of the critical sub-national role that the NEM jurisdictions can play to promote the increased supply of and demand for renewable energy in the NEM.

As discussed in the previous Chapter, RET schemes often work closely with other complementary measures. Following on from this Chapter’s examination of FiT schemes, the next Chapter analyses other specific legislative measures in the NEM that promote the supply of and demand for renewable energy generation. These measures are RDC measures, and the use of voluntary sector agreements and GHG emission reduction pledges.

⁷²² Chapman and others, above n 515, 1278.

V OTHER SPECIFIC RENEWABLE ENERGY RELATED LEGISLATIVE MEASURES IN THE NEM JURISDICTIONS

A Introduction

The previous two Chapters examined and compared the NEM jurisdictions' RET schemes and FiT schemes. Against the backdrop set out in Chapter II, this Chapter analyses and compares other specific legislative measures in the NEM jurisdictions that promote the increased supply of and demand for renewable energy.

Specifically, this Chapter aims to demonstrate the critical sub-national role played by the NEM jurisdictions in promoting the increased uptake of renewable energy technologies through legislated RDC measures and supporting initiatives. This Chapter also aims to demonstrate the critical sub-national role played by the NEM jurisdictions in encouraging 'grass roots' action on renewable energy by different sectors within each jurisdiction through the use of legislated secondary or subordinate tools, these being voluntary sector agreements and GHG emissions reduction pledges.

With this in mind, Section B analyses the NEM jurisdictions' legislated RDC measures, focusing on three specific examples of supporting initiatives, these being measures that promote research and development programs in existing and new renewable energy technologies, renewable energy specific government funding measures and measures that promote the increased uptake of new renewable energy technologies including renewable energy storage batteries. Section B analyses legislated RDC measures and supporting initiatives in South Australia, the 'target' jurisdiction, followed by a comparison with the other NEM jurisdictions' functionally equivalent measures. Section C explores the use of voluntary sector agreements in South Australia followed by a comparison with the other NEM jurisdictions' functionally equivalent measures, including GHG emissions reduction pledges. Sections B and C also include a summary of findings for each Section. Section D concludes this Chapter.

B *RDC Measures*

As discussed in Chapters I, III and IV, there is a range of regulatory, technical, economic, political and social barriers to increasing the supply of and demand for renewable energy in the NEM and more generally.⁷²³ The following sub-section examines how RDC measures can help to overcome technical barriers such as the ability of renewable energy generators to connect to the NEM electricity network grid, for example, grid connection proximity, and the grid's capability to cope with intermittencies in the flow of electricity generated from renewable energy sources.⁷²⁴

1 Benefits of RDC Measures

The current NEM electricity network grid infrastructure is largely a product of the electricity industry during the time of the State-owned vertically integrated companies prior to the 'unbundling' and in some cases, privatisation, reforms that took place in the 1990s.⁷²⁵ The development of the electricity network grid infrastructure was historically primarily driven by 'public service provision objectives' and a desire for 'nation building' at the cost of the public purse.⁷²⁶ This together with the historical reliance upon fossil fuel-based electricity generation has resulted in a degree of grid infrastructure 'lock-in' in relation to the existing electricity network grid and its technical capability to accommodate new forms of energy generation such as renewable energy.⁷²⁷

Large-scale renewable energy generators are required to undertake costly electricity network grid connection assessment studies and substantial infrastructure investment to enable connection to the grid.⁷²⁸ As new network grid infrastructure is extremely costly, investment in new renewable energy generation has tended to be based on the proximity of the renewable energy source to the grid rather than, for example, the quality of the renewable energy source.⁷²⁹

⁷²³ Godden and Kallies, above n 66; Byrnes and others, above n 52; Duncan and Sovacool, above n 51.

⁷²⁴ Kallies, above n 55, 1566.

⁷²⁵ Godden and Kallies, above n 66, 293 and 304. Detailed discussion of the Australian electricity market reforms is outside the scope of this thesis. For further discussion of these reforms, see Godden and Kallies, above n 66 and Kallies, above n 55.

⁷²⁶ Godden and Kallies, above n 66, 294.

⁷²⁷ Kallies, above n 61, 156.

⁷²⁸ Kallies, above n 55, 1566-7. As well as the technical aspects of connecting to the NEM electricity network grid infrastructure, large-scale renewable energy generators also have to contend with navigating the complexities of the NEM regulatory framework which in some respects is not designed to favour renewable energy in the same way as, for example, the legislative and regulatory framework in Germany. Detailed discussion of this aspect is outside the scope of this thesis. For further discussion see, for example, Godden and Kallies, above n 66 and Kallies, above n 61.

⁷²⁹ Byrnes and others, above n 52, 718.

Some types of renewable energy projects need to be located in low population density areas, for example, large-scale wind and solar farms, due to the need for space (particularly in the case of large-scale solar farms) and public safety considerations. This can result in large-scale projects being located some distance from the nearest NEM electricity network grid access point.⁷³⁰

Additionally, the intermittency of electricity generated from renewable energy sources such as wind and solar presents ‘flow management’ challenges for the NEM electricity network grid.⁷³¹ Electricity is transported to the end user by way of high voltage transmission lines that convey the electricity over long distances and low voltage distribution lines that convey the electricity to the end user.⁷³² Electricity is not able to be stored once it is dispatched into the network grid; essentially, it needs to be consumed at the same time it is produced which results in a need to constantly balance the supply of and demand for electricity in order to avoid damage to transmission and distribution lines.⁷³³ The intermittency of some forms of renewable energy generated electricity in the network grid has created some additional technical complexities in managing this balancing act.⁷³⁴

One benefit of promoting research in, and the development and commercialisation of, renewable energy technologies is that this can offer a means of ultimately overcoming barriers to the increased uptake of renewable energy in the NEM such as the two technical barriers described above. For example, RDC measures promoting programs of research and development in renewable energy technologies can facilitate the development of alternatives for large-scale remotely located wind and solar farms to connect to the NEM electricity network grid through the use of microgrids.⁷³⁵

⁷³⁰ Godden and Kallies, above n 66, 304.

⁷³¹ Kallies, above n 55, 1566.

⁷³² AEMO, above n 57, 3.

⁷³³ Kallies, above n 55, 1566.

⁷³⁴ Some forms of renewable energy have fewer issues with intermittency, for example, tidal energy. See, for example, Duncan and Sovacool, above n 51, 287.

⁷³⁵ Microgrids can operate through connection to a mainstream electricity grid such as the NEM electricity network or on their own. An example of a microgrid related RDC measure is Action 21 of the Victorian Government’s *Renewable Energy Action Plan* which explains that the Victorian Government will invest \$15.8 million in, amongst other things, microgrid demonstration projects (above n 316, 34). Action 21 also explains that the Victorian Government will provide additional support for research in, and the development and commercialisation of, new electricity grid management through microgrid pilot demonstrations.

RDC measures promoting programs of research and development in, and encouraging the community's increased uptake of, innovative new renewable energy technologies such as 'virtual power plants' and renewable energy storage batteries,⁷³⁶ can assist with supporting the NEM electricity network grid's technical capability to manage intermittency issues in the flow of electricity from renewable energy sources.⁷³⁷

Renewable energy storage battery technology in particular is considered to be the next major technological development in renewable energy technologies.⁷³⁸ Renewable energy storage batteries are considered to be a 'vital complementary technology' to renewable energy that will enable Australia to make the transition to a 'clean, reliable, affordable' electricity network grid.⁷³⁹ In Australia, there were 6,750 new household renewable energy storage batteries installed in 2016; it is anticipated that there were over 20,000 such installations in 2017, a tripling in size from 2016.⁷⁴⁰

Another benefit of encouraging the increased supply of and demand for renewable energy technologies such as household-scale renewable energy storage batteries is that the higher the volume of such renewable energy technologies being produced, the more likely it is that economies of scale will eventuate, making these technologies cheaper and more accessible to individuals, families and small businesses.⁷⁴¹ An illustration of this is the reduction in costs of lithium-ion renewable energy storage batteries; these costs have decreased by 80% since 2010 and it is anticipated that they may halve again by 2025.⁷⁴²

Cheaper and more accessible renewable energy technologies can ultimately assist with increasing the supply of and demand for renewable energy through, for example, encouraging

⁷³⁶ Energy storage comprises many forms including chemical (batteries), thermal (molten salts) and potential energy (pumped hydro). Energy storage can be attached to a generation source or be located remotely to a generation source (<<https://www.environment.act.gov.au/energy/cleaner-energy/next-generation-renewables>>).

⁷³⁷ It is anticipated that technological advances in the development of energy storage batteries will result in energy storage batteries replacing gas power stations currently being used to meet peak electricity demand as a 'cleaner' alternative to coal fired power stations (see above n 736).

⁷³⁸ See above n 736.

⁷³⁹ Climate Council, *Fully Charged: Renewables and Storage Powering Australia* (2018) III.

⁷⁴⁰ Ibid II. The emerging global renewable energy storage battery market is anticipated to be worth \$400 billion by 2030 (see above n 736).

⁷⁴¹ Diesendorf, above n 63.

⁷⁴² Climate Council, above n 739, II. Another illustration of this is the reduction in costs of small-scale solar photovoltaic installations over the past decade or so (IRENA, *Renewable Power Generation Costs in 2018* (2019), 9). This has been reflected in the rate of solar photovoltaic installations that has occurred in Australia in recent years with Australia going from approximately 516 KW of installed capacity in 2001 to nearly 13 m KW of installed capacity (<<https://pv-map.apvi.org.au/analyses>>).

more individuals, families and small businesses to participate in FiT schemes. The resulting increase in the uptake of renewable energy can in turn facilitate the achievement of a RET.

When a government demonstrates they are prepared to make substantial investment in RDC measures through, for example, providing dedicated funding for research programs and grants and subsidies for the community, this sends a strong signal to the renewable energy industry, technology innovators, the community and investors of the importance that government places on developing new and existing renewable energy technologies. In particular, this promotes certainty for the renewable energy industry, an industry that has experienced considerable volatility in Australia in the past decade, partly as a result of the renewable energy policy vacuum at the Commonwealth Government level.⁷⁴³ This certainty in turn can assist to drive jobs creation and technological innovation in the industry.⁷⁴⁴

RDC measures are an essential complement to RET schemes and FiT schemes for fostering the increased supply of and demand for electricity generated from renewable energy sources in the NEM. The NEM jurisdiction governments have a critical role to play as sub-national actors in supporting appropriate regulatory frameworks to attract and enable sound research and development programs, and to encourage the commercialisation of renewable energy technologies.

Against this backdrop, the next two sub-sections examine and compare three specific examples of legislated RDC measures and supporting initiatives in the NEM jurisdictions, these being measures that promote research and development programs in existing and new renewable energy technologies, renewable energy specific government funding measures and measures that promote the increased uptake of new renewable energy technologies including renewable energy storage batteries. The examination of the NEM jurisdictions' RDC measures and supporting initiatives considers similarities and differences between South Australia, the 'target jurisdiction', and the other NEM jurisdictions. This examination also considers the policy and legislative insights arising from the comparison.

2 RDC Measures in South Australia – 'Target' Jurisdiction

The following sub-section analyses South Australia's legislative RDC measures, focusing on three specific examples of supporting initiatives, these being measures that promote research

⁷⁴³ Prest, above n 83, 44.

⁷⁴⁴ IRENA, above n 390, 50.

and development programs in existing and new renewable energy technologies, renewable energy specific government funding measures and measures that promote the increased uptake of new renewable energy technologies including renewable energy storage batteries.

(a) Legislative Drivers for RDC Measures

The objects of the SA CC Act include promoting research in and development of renewable energy technologies and the commercialisation of those technologies.⁷⁴⁵ The SA CC Act requires the Minister to develop GHG emissions reduction policies that include policies encouraging innovations supporting the increased generation and use of renewable energy in the State.⁷⁴⁶

(b) Programs and Other Initiatives Promoting Research and Development in New and Existing Renewable Energy Technologies

RenewablesSA is one example of the South Australian Government's initiatives promoting the increased uptake of renewable energy technologies. RenewablesSA has a number of focus areas including, relevantly for this Chapter, promoting partnerships between the industry and research sectors in low carbon technologies.⁷⁴⁷

The Universities of Adelaide and South Australia, and Flinders University, are all undertaking major renewable energy technology related research.⁷⁴⁸ For example, research by the University of Adelaide has contributed to the testing of renewable energy storage batteries in the State's electricity network grid, distributed generation technologies and wind, wave and tidal power research.⁷⁴⁹

The University of South Australia has two renewable energy technology related commercialisation arms, the Innovation and Collaboration Centre and UniSA Ventures. The Innovation and Collaboration Centre is a partnership between the University of South Australia, the South Australian Government and DXC Technology, a global 'end to end' information technology services company,⁷⁵⁰ that supports technology 'incubation'.⁷⁵¹ UniSA

⁷⁴⁵ SA CC Act, section 3(1)(e).

⁷⁴⁶ SA CC Act, sections 14(1)(a) and (b).

⁷⁴⁷ <<https://www.renewablesa.sa.gov.au/about>>.

⁷⁴⁸ <<https://www.renewablesa.sa.gov.au/topic/investor-information/investor-guides-resources/researchanddevelopment>>.

⁷⁴⁹ Ibid.

⁷⁵⁰ <<https://www.dxc.technology/>>

⁷⁵¹ <<https://icc.unisa.edu.au/>>.

Ventures ‘facilitates the translation’ of research outcomes into commercial products and services that ‘have a positive impact on society’.⁷⁵²

Two other forms of renewable energy attracting new interest in South Australia are geothermal generation and wave energy. One wave energy project underway is site testing along the Limestone Coast with the view to building a 50 MW wave energy power station.⁷⁵³ This shows that the South Australian Government is actively pursuing new innovative renewable energy technologies.

(c) Government Funding for Promoting the Increased Uptake of Renewable Energy Technologies

The South Australian Government’s *Low Carbon Investment Plan for South Australia*, released in 2015, sets an investment target of \$10 billion in low carbon energy generation by 2025. To date, South Australia has invested approximately \$7.3 billion in the renewable energy industry.⁷⁵⁴ The scale of this investment target represents a significant investment in renewable energy on the part of the South Australian Government.

The South Australian Government established its \$150 million Renewable Technology Fund as one of the key components of its *Our Energy Plan*.⁷⁵⁵ The Fund is intended to accelerate the deployment of renewable energy technologies that can provide system security measures such as enhancing peak generation capacity and ‘firm’ dispatchable energy supplies, and bring about community benefits such as affordability improvements and jobs creation.⁷⁵⁶ The Fund has released \$75 million in grants and \$75 million in loans to eligible projects.⁷⁵⁷

In November 2018, the South Australian Government also committed \$50 million for the establishment of the Grid Scale Storage Fund; the Fund will facilitate the development of a range of new grid scale energy storage technologies, including renewable energy battery

⁷⁵² <https://unisa.edu.au/siteassets/unisa-ventures/documents/unisaventuresipbrochure_print-copy.pdf>.

⁷⁵³ <<https://www.renewablessa.gov.au/topic/investor-information/investor-guides-resources/existing-installations>>.

⁷⁵⁴ Department for Energy and Mining, South Australian Government, *SA Energy Plan Renewable Technology Fund Investment Guidelines* (2017) 2.

⁷⁵⁵ The Renewable Technology Fund is administered by the Low Carbon Economy Unit in the South Australian Department of Premier and Cabinet with oversight by the Energy Plan Implementation Committee. The Unit was established to ‘maximise economic opportunities from decarbonising the State’s economy’ (Department for Energy and Mining, South Australian Government, above n 754, 2).

⁷⁵⁶ Department for Energy and Mining, South Australian Government, above n 754, 2.

⁷⁵⁷ Ibid 6.

storage, to address the intermittency of South Australia's electricity supply.⁷⁵⁸ The Fund is technology neutral; eligible technologies include pumped hydro energy storage, natural gas storage as well as renewable energy storage batteries.⁷⁵⁹

(d) Promoting the Increased Uptake of New Renewable Energy Technologies including Renewable Energy Storage Batteries

In 2017, the previous Weatherill Labor Government announced that a solar thermal⁷⁶⁰ power plant would be built at Port Augusta at a cost of \$650 million. The 150 MW power plant was anticipated to be operational by 2020 and intended to supply 100% of the South Australian Government's energy needs.⁷⁶¹ Similarly to the proposed new gas fired power station (see Chapter II) and the Tesla renewable energy storage battery (see below), it was expected to assist with the State's electricity network grid stability and emergency power needs.

The project received financial support from both the South Australian and the Commonwealth Government.⁷⁶² However, SolarReserve, the company behind the project, was unable to secure commercial funding for the remainder of the project's costs by the required deadline in 2019 and is now proposing to sell the project to a third party.⁷⁶³ If the project proceeds, it is likely to be the world's largest solar thermal power plant and consequently, another example of the South Australian Government pursuing innovative new renewable energy technologies.

One of the first investments by the South Australian Government's Renewable Technology Fund was in the 100 MW Tesla renewable energy storage battery, the world's largest lithium-ion storage battery, which was built by Neoen, a company owned by Tesla, in 2017 at the Hornsdale Power Reserve, Jamestown.⁷⁶⁴ The Tesla renewable energy storage battery stores energy generated by the nearby Hornsdale Wind Farm and is capable of injecting electricity

⁷⁵⁸ <https://energymining.sa.gov.au/energy_implementation/grid_scale_storage_fund>.

⁷⁵⁹ Ibid.

⁷⁶⁰ Solar thermal technology uses mirrors to concentrate sunlight onto towers that heat molten salt. The heat created is used to generate steam.

⁷⁶¹ 'Solar thermal power plant announced for Port Augusta 'biggest of its kind in the world'', *ABC News* (online), 14 August 2017, <<https://www.abc.net.au/news/2017-08-14/solar-thermal-power-plant-announcement-for-port-augusta/8804628>>.

⁷⁶² Stephanie Anderson, David Lipson and Louise Yaxley, 'Government strikes deal with Nick Xenophon to pass company tax cuts', *ABC News* (online), 31 March 2017, <<https://www.abc.net.au/news/2017-03-31/company-tax-cuts-federal-government-nick-xenophon/8404538>>.

⁷⁶³ 'Port Augusta solar thermal power plant scrapped after failing to secure finance', *ABC News* (online), 5 April 2019, <<https://www.abc.net.au/news/2019-04-05/solar-thermal-plant-will-not-go-ahead-in-port-augusta/10973948>>.

⁷⁶⁴ Department for Energy and Mining, South Australian Government, above n 754, 3-4.

into the State's grid within a fraction of a second, far quicker than coal, gas and hydro.⁷⁶⁵ The Tesla energy storage battery was built partly in response to the blackout experienced by South Australia in September 2016 (see Chapter II).

In 2018, the South Australian Government commenced its Home Battery Scheme, a \$100 million subsidy scheme for the installation of home renewable energy storage batteries.⁷⁶⁶ Subsidies will be capped at \$6,000 per application.⁷⁶⁷ Participating households can also apply for finance through the Commonwealth Clean Energy Finance Corporation to assist with payment of the balance of installation costs.⁷⁶⁸ It is anticipated that renewable energy storage batteries installed under this scheme may form part of a 'virtual power plant' in the future.⁷⁶⁹

In July 2018, the South Australian Government commenced the largest home storage battery scheme in the world, the Tesla 'virtual power plant' of solar photovoltaic systems and Tesla Powerwall home storage batteries.⁷⁷⁰ Tesla is developing a network of up to 50,000 solar photovoltaic systems and Powerwall battery systems which, when combined, will form a 'virtual power plant' of up to 250 MW.⁷⁷¹ The scheme is currently in the trial phase with solar photovoltaic systems and Powerwall battery systems being installed at 1,100 SA Housing Trust properties.⁷⁷² It is anticipated that the full scheme will be rolled out later in 2019 to an additional 49,000 properties including private households.⁷⁷³

(e) Summary

As the above discussion shows, South Australia has led the way in fostering research and development in new and existing renewable energy technologies and encouraging the increased uptake of renewable energy technologies, particularly in relation to large-scale and small-scale renewable energy storage batteries. The extent of research and development programs for new renewable energy technologies in South Australia demonstrates the attraction of South Australia to the renewable energy industry, investors and technological innovators. As

⁷⁶⁵ AEMO, *Initial Operation of the Hornsdale Power Reserve Battery Energy Storage System* (2018), 5.

⁷⁶⁶ <<https://premier.sa.gov.au/news/sa-government-collaborates-with-clean-energy-finance-corporation-on-home-battery-scheme>>; <https://www.energymining.sa.gov.au/energy_implementation/home_battery_scheme>; <<https://homebatteryscheme.sa.gov.au/about-the-scheme>>.

⁷⁶⁷ Ibid.

⁷⁶⁸ Ibid.

⁷⁶⁹ Ibid.

⁷⁷⁰ <<https://premier.sa.gov.au/news/first-100-housing-sa-homes-to-get-energy-bill-relief>>.

⁷⁷¹ <<https://virtualpowerplant.sa.gov.au/virtual-power-plant>>.

⁷⁷² Ibid.

⁷⁷³ Ibid.

discussed in Chapter II, the comparative stability of South Australian climate change and renewable energy politics and policies has likely contributed to this attraction.

The above examples also illustrate that South Australia is moving forwards with developing a broader portfolio of renewable energy technologies. This is advantageous in that a broader portfolio of renewable energy technologies may assist with ‘future proofing’ the South Australian electricity network grid in relation to grid stability and provide access to more cost-effective electricity through the availability of a wider range of renewable energy sources. A broader portfolio of renewable energy technologies in South Australia may also benefit the NEM through, for example, the dissemination of shared experience in the research in and development of innovative new technologies.

The next section analyses the extent to which functionally equivalent measures exist in the other NEM jurisdictions, and the similarities and differences between those measures and South Australia’s.

3 RDC Measures in the Other NEM Jurisdictions

The following sub-section analyses the extent to which the above discussed legislated RDC measures of South Australia appear in the other NEM jurisdictions.

(a) Legislative Drivers for RDC Measures

Similarly to South Australia, the objects of the ACT CC Act and the Victorian RET Act include the promotion of RDC measures in the ACT and Victoria. The ACT CC Act specifically references the ACT Government’s development of policies and programs to meet the targets under the Act, including the ACT’s RET,⁷⁷⁴ and the promotion of research in, development and ‘commercialisation, generation and use’ of renewable energy.⁷⁷⁵ The Victorian RET Act refers to increasing the proportion of Victoria’s electricity generated from large-scale renewable energy generation facilities (facilities that generate more than 100 KW) and supporting the development of renewable energy generation initiatives to encourage ‘investment....and technology development’.⁷⁷⁶

The SA CC Act predates both the ACT CC Act and the Victorian RET Act. In some respects, the ACT CC Act is almost a ‘carbon copy’ of the SA CC Act, indicating that parts of the ACT

⁷⁷⁴ ACT CC Act, sections 5(a), (b) and (c). See Chapter III for a discussion of the ACT’s RET scheme.

⁷⁷⁵ ACT CC Act, sections 14(1)(h) and (i).

⁷⁷⁶ Victorian RET Act, sections 5(a) and (c).

CC Act were very much modelled on the earlier SA CC Act. A possible reason for the similarity between South Australia, the ACT and Victoria is that at the time of legislating their respective RDC measures, the South Australian, the ACT and Victorian Governments were the Rann, Gallagher and Andrews Labor Government.⁷⁷⁷

In both cases, it is likely that the similarity in legislative measures is also due to observing the South Australian Government's success over the past decade or so with renewable energy technologies. The ACT and Victorian Governments are actively seeking to further develop their respective renewable energy technology industries (see below) and to aggressively reduce their GHG emissions.⁷⁷⁸

Unlike the SA CC Act, the *Climate Change (State Action) Act 2008* (Tas), Tasmania's climate change legislation, does not expressly provide for RDC measures. A likely reason for this key difference between South Australia and Tasmania is that Tasmania's renewable energy industry is already well established due to the historical dominance of hydro in Tasmania's energy mix.⁷⁷⁹

Unlike South Australia, Queensland and NSW do not have legislative RDC measures in place. Unlike South Australia, both Queensland and NSW do not have climate change legislative frameworks containing RDC measures. NSW also does not have a renewable energy legislative framework, for example, a legislated FiT scheme, which would also be another potential source of such measures. Both States, particularly Queensland, have historically been dominated by the mining and resources sectors which explains in part the slower pace with which renewable energy technologies have been implemented in these States over the past decade or so.

The Queensland and NSW Governments are however increasingly supporting a range of programs promoting research in and development of renewable energy technologies through policy measures. For example, the *Queensland Climate Transition Strategy* indicates the Queensland Government's intention of seeking to identify opportunities for engagement with innovators through initiatives such as Climate-KIC⁷⁸⁰ and the Global Business Challenge⁷⁸¹ to

⁷⁷⁷ See Chapter II for an overview of South Australia, the ACT and Victoria's political cycles.

⁷⁷⁸ See Chapter II for an overview of the ACT and Victoria's GHG emissions reduction targets.

⁷⁷⁹ See Chapter II for an overview of Tasmania's energy profile.

⁷⁸⁰ See above n 188.

⁷⁸¹ The Global Business Challenge ('GBC') was established in 2014 as the G20 Global Business Challenge. The GBC is managed by the Queensland University of Technology and the Queensland and Commonwealth Governments. The GBC has seed funding of \$500,000 per year to encourage innovation in 'real world' solutions. The GBC 2017 challenge is to identify innovative solutions that lower the cost and/or reduce the risks associated

promote zero net GHG emissions innovation in Queensland.⁷⁸² The Queensland Government's \$650 million Advance Queensland initiative supports diversification of the State's economy through the development of new industries and technologies such as renewable energy and the State's solar photovoltaics industry by providing grants to businesses developing next generation renewable energy technologies.⁷⁸³ There are also a number of comparatively small-scale renewable energy storage battery trials underway in Queensland, for example, a solar and battery storage pilot across 33 households in Townsville.⁷⁸⁴ Whilst encouraging, these initiatives are all on a much narrower scale compared to similar initiatives in South Australia.

In October 2018, the NSW Government announced a new program, *Emerging Energy Program*, to support the commercialisation of new large-scale projects that use new 'dispatchable' technologies and contribute to GHG emissions reductions.⁷⁸⁵ The Program has received \$30 million over four years in funding.⁷⁸⁶ The Program however may not include some wind and solar photovoltaic technologies due to the Program's focus on dispatchable technologies.⁷⁸⁷ This suggests that NSW's Program has a narrower focus on encouraging fossil fuel alternatives compared to similar large-scale renewable energy initiatives in South Australia.⁷⁸⁸

The Tasmanian Government envisages Tasmania becoming the 'renewable energy battery' for Australia.⁷⁸⁹ To achieve this, the Tasmanian Government is looking at ways to boost the

with transitioning from fossil fuel-based energy to renewable energy (Department of Environment and Heritage Protection, Queensland Government, above n 196, 28).

⁷⁸² Ibid 27. The Strategy also indicates the Queensland Government's intention of developing a Workforce Development and Skills Plan in collaboration with the industry and community sectors to create opportunities for jobs in low and zero carbon industries; the Plan will amongst other things seek to maximise skills development and training in renewable energy construction (Department of Environment and Heritage Protection, Queensland Government, above n 196, 37).

⁷⁸³ <<https://www.business.qld.gov.au/industries/mining-energy-water/energy/renewable/project-development/grants-support/research>>. Two Advance Queensland projects include research fellowships looking at the maximisation of renewable energy penetration through the use of smart inverter deployment and control and Advance Queensland Ignite Ideas which includes looking at optimisation of wind energy technology through advanced modelling to improve wind energy harnessing (Department of Environment and Heritage Protection, Queensland Government, above n 196, 27). As part of the Advance Queensland initiative, the Queensland Government has developed an innovation hub, The Precinct, which provides co-working spaces and networking opportunities for technology innovators <<https://advance.qld.gov.au/precinct>>).

⁷⁸⁴ <<https://www.ergon.com.au/about-us/news-hub/talking-energy-blog/technology/battery-storage-the-future-for-electricity-networks>>.

⁷⁸⁵ <<https://energy.nsw.gov.au/sites/default/files/2018-10/DPE8811%20EmergingEnergy-WEB.pdf>>.

⁷⁸⁶ NSW Government, *Budget Estimates Papers 2019-20*, Volume 4, 3.

⁷⁸⁷ See above n 265.

⁷⁸⁸ Department of Trade and Investment, NSW Government, *Renewable Energy Action Plan* (2013). CSIRO has established the Energy Transformed Flagship in Newcastle which acts as a centre of excellence for large-scale solar photovoltaic technologies and renewable energy integration amongst other things.

⁷⁸⁹ Department of Premier and Cabinet, Tasmanian Government, above n 337, 11.

amount of hydro generated in Tasmania⁷⁹⁰ and to improve the efficiency of Tasmania's hydro in order to, amongst other things, increase the potential for Tasmania to become a net exporter to the NEM.⁷⁹¹ This involves examining how Tasmania's hydro-electric power system can be augmented with pumped hydro energy storage.⁷⁹²

(b) Programs and Other Initiatives Promoting Research and Development in New and Existing Renewable Energy Technologies

Similarly in part to South Australia, the ACT Government's *Renewable Energy Industry Development Strategy* supports the implementation of the *ACT Renewable Energy Local Investment Framework* by bringing together existing renewable energy related initiatives of the ACT Government, ACT research and education institutions and the renewable energy industry.⁷⁹³ Twenty-five organisations across the industry, government, research and training sectors have signed up as inaugural partners to the Strategy including EvoEnergy, the ACT electricity network grid operator, the Australian National University's Energy Change Institute, Canberra Institute of Technology and Neoen.⁷⁹⁴ However, the ACT's initiative appears to be somewhat broader than South Australia's functional equivalent in that it covers a broader range of sectors including commercial/industry organisations like the ACT's electricity network grid operator and Neoen.

Like South Australia's universities, the Melbourne Energy Institute at the University of Melbourne works with the community, industry and government sectors in undertaking 'inter-

⁷⁹⁰ Actions 33 and 34 of Tasmania's *Energy Strategy* indicate the Tasmanian Government's intention to assess the impacts of increasing levels of renewable generation and to identify the necessary pre-conditions for increasing Tasmania's hydro generation output by 10% in collaboration with Hydro Tasmania (Department of State Growth, Tasmanian Government, above n 334, 40). According to Hydro Tasmania, approximately 400 MW of 'latent' dispatchable capacity could be unlocked with no new generation investment and this additional capacity would be available during the summer months when demand is lowest in Tasmania. Hydro Tasmania considers that additional interconnection would 'unlock the full potential of Tasmania's existing hydropower' and stimulate investment in wind generation (Hydro Tasmania, *Battery of the Nation: Unlocking Tasmania's energy capacity* (2018), 4-5). ARENA provided funding for the report as part of ARENA's Advancing Renewables Program.

⁷⁹¹ Department of Premier and Cabinet, Tasmanian Government, above n 337, 10. See the discussion on Tasmania in Chapter II.

⁷⁹² Hydro energy uses the force of moving water to turn turbines and create electricity. Historically, storage systems such as dams have relied on gravity to drive water through the turbines. Pumped hydro energy takes water from storage systems and pumps it to a higher storage point which enables it to be sent through turbines for electricity generation. Pumped hydro energy uses fuel such as natural gas which means this technology is not GHG emissions neutral. Pumped hydro energy storage acts as a large storage battery. Water is pumped into an upper storage system using electricity, for example, at low peak times or when there is an excess of renewable energy generated electricity in the grid. This offers a means to balance the intermittency and surge issues associated with renewable energy sources like wind and solar.

⁷⁹³ Environment, Planning and Sustainable Development Directorate, ACT Government, above n 293, 2.

⁷⁹⁴ <<https://www.environment.act.gov.au/energy/growth-in-the-clean-economy>>.

disciplinary research on sustainable energy, and on the challenges of transitioning towards a low carbon energy system'.⁷⁹⁵ Victoria, however, does not appear to have the same extent of renewable energy related research and innovation initiatives promoting collaboration between the research and industry sectors and the development of renewable energy technologies as South Australia.⁷⁹⁶

A key difference to South Australia is that Victoria may become the first Australian jurisdiction to have an off-shore wind farm. Offshore Energy Pty Ltd has presented the Commonwealth and Victorian Governments with a proposal for a 2000 MW offshore wind farm off the Gippsland coast in Victoria's east. If successful, the wind farm could potentially provide 18% of Victoria's electricity needs.⁷⁹⁷ In March 2019, the Commonwealth Government granted an exploration licence to Offshore Energy Pty Ltd which will enable a feasibility study including assessment of wind resources and sea-bed conditions.⁷⁹⁸ The site has been selected partly due to its proximity to the transmission network infrastructure in the Latrobe Valley where Victoria's coal-fired electricity is produced.⁷⁹⁹

(c) Government Funding for Promoting the Increased Uptake of Renewable Energy Technologies

Similarly to South Australia's Renewable Technology Fund, the ACT Government's Renewable Energy Innovation Fund, developed under the *ACT Renewable Energy Local Investment Framework*, will allocate \$12 million over five years to focus areas such as developing the renewable energy related research services capability of ACT's research institutions and demonstration of new innovative renewable energy related technologies.⁸⁰⁰ This Fund is smaller in scale compared to South Australia's Renewable Technology Fund however this is likely due to the fact that the ACT is a smaller less populous jurisdiction compared to South Australia.

⁷⁹⁵ <<https://energy.unimelb.edu.au/#home>>.

⁷⁹⁶ In this context, it is noteworthy that the NSW Office of the Environment and Heritage publications '*NSW Government: Research Partnerships Strategy 2017-20*' and '*Knowledge Strategy – 2013-17*' make no specific reference to renewable energy related initiatives.

⁷⁹⁷ Stephanie Corsetti, 'Offshore wind farm proposed for waters off Victoria's Gippsland', *ABC News* (online), 2 June 2017, <<https://www.abc.net.au/news/2017-06-02/victoria-plans-to-build-australias-first-offshore-wind-farm/8582652>>.

⁷⁹⁸ Jarrod Whittaker, 'Ocean off Victoria's Gippsland could be home to first offshore wind project', *ABC News* (online), 30 March 2019, <<https://www.abc.net.au/news/2019-03-29/australia-first-wind-project-gets-exploration-licence/10953598>>.

⁷⁹⁹ Ibid.

⁸⁰⁰ Environment, Planning and Sustainable Development Directorate, ACT Government, above n 293.

The Victorian Government has identified the ‘new energy technologies’ sector as one of its six key priority sectors for economic growth and jobs creation potential.⁸⁰¹ The Victorian Government has established the \$20 million New Energy Jobs Fund to support the implementation of its *New Energy Technologies – Sector Strategy*. Similarly to South Australia’s Renewable Technology Fund albeit on a smaller scale, the Fund’s objectives include, amongst other things, promoting the increased supply of and demand for renewable energy and driving innovation in new energy technologies.⁸⁰² The Fund has provided funding for a range of projects including the development of light towers with solar panels to replace diesel fuelled light towers.⁸⁰³

Comparable to South Australia’s Grid Scale Storage Fund but on a smaller scale, the Victorian Government has developed a \$25 million Energy Storage Initiative to support the integration of large-scale renewable energy storage batteries in the Victorian electricity network grid⁸⁰⁴ and the development of clean energy technologies.⁸⁰⁵

In part similar to South Australia, in 2018, the Victorian Government launched its \$1.3 billion Solar Homes Program, a ten year program offering Victorian households rebates for the installation of solar photovoltaic panels, solar hot water systems and renewable energy storage batteries.⁸⁰⁶ The Program will also eventually offer a zero interest loan to complement the rebates on offer.⁸⁰⁷ Rebates are capped at \$2,225 for solar panels, \$1,000 for solar hot water systems and \$4,838 for renewable energy storage batteries. The Victorian Government aims to provide approximately 770,000 rebates over ten years. The renewable energy storage batteries component of the Program is currently under trial with only 1,000 rebates being made available

⁸⁰¹ Department of Environment, Land, Water and Planning, Victorian Government, *New Energy Technologies – Sector Strategy* (2016) 4.

⁸⁰² <<https://www.business.vic.gov.au/support-for-your-business/grants-and-assistance/future-industries/newenergy-technologies>>. The New Energy Jobs Fund is a component of the Victorian Government’s \$200 million Future Industries Fund.

⁸⁰³ <https://www.business.vic.gov.au/data/assets/pdf_file/0003/1803774/New-Energy-Jobs-Fund-Round3.pdf>.

⁸⁰⁴ Department of Environment, Land, Water and Planning, Victorian Government, *Renewable Energy Action Plan* (2015), 30.

⁸⁰⁵ <<https://www.energy.vic.gov.au/batteries-and-energy-storage>>.

⁸⁰⁶ ‘Victorians to get half-price solar panels under State Government scheme’, *ABC News* (online), 19 August 2018), <<https://www.abc.net.au/news/2018-08-19/victorians-to-get-half-price-solar-panels-in-governmentscheme/10137484>>; Richard Willingham and Stephanie Anderson, ‘As battle for power heats up, Victoria Labor pledges more for solar’, *ABC News* (online), 20 August 2018, <<https://www.abc.net.au/news/2018-08-20/as-battle-for-power-heats-up-labor-pledges-more-for-solar/10139032>>; Richard Willingham, ‘Victorian Government promises half-price solar batteries if re-elected’, *ABC News* (online), 11 September 2018, <<https://www.abc.net.au/news/2018-09-10/vic-govt-pledges-solar-battery-subsidy-for-households/10223550>>.

⁸⁰⁷ ‘Victorians to get half-price solar panels under State Government scheme’, *ABC News* (online), 19 August 2018), <<https://www.abc.net.au/news/2018-08-19/victorians-to-get-half-price-solar-panels-in-governmentscheme/10137484>>.

during the period 2019-20.⁸⁰⁸ The Program is similar to South Australia in that it takes in renewable energy storage batteries. However, the breadth and monetary scale of the Program in relation to renewable energy storage batteries is smaller in scale compared to South Australia's equivalent offering.

(d) Promoting the Increased Uptake of New Renewable Energy Technologies Including Renewable Energy Storage Batteries

From the ACT Government's perspective, low cost 'smart' renewable energy storage batteries are the 'vital missing link' in the transition of the NEM to 100% renewable energy.⁸⁰⁹ The ACT Government views renewable energy storage batteries as being a means of addressing renewable energy intermittency issues and facilitating the retirement of ageing fossil fuel intensive power stations.⁸¹⁰ The ACT Government is positioning the ACT to be a 'launching pad' for national and international businesses in the emerging global renewable energy storage battery market.⁸¹¹

Like South Australia albeit on a smaller scale, in 2016, the ACT Government commenced the Next Generation Energy Storage Program, one of the world's largest household renewable energy storage battery schemes.⁸¹² The \$25 million scheme will provide up to 36 MW of 'smart' solar battery storage to 5,000 households and businesses by 2020.⁸¹³ Approximately 1,100 systems have been installed to date.⁸¹⁴ One likely reason for the ACT Government's Program being on a smaller scale compared to South Australia's Home Battery Scheme is that the ACT has a smaller population compared to South Australia.

Similarly to South Australia, one of the actions outlined in the Victorian Government's *Renewable Energy Action Plan* is supporting integration of large-scale renewable energy storage batteries in the Victorian electricity network grid.⁸¹⁵ Under the Energy Storage Initiative (see above), two large-scale lithium-ion storage battery systems totalling 55 MW of

⁸⁰⁸ <<https://www.solar.vic.gov.au/en>>.

⁸⁰⁹ Environment, Planning and Sustainable Development Directorate, ACT Government, *Canberra 100% Renewable: Leading Innovation with 100% Renewable Energy by 2020* (2018) 2.

⁸¹⁰ Ibid.

⁸¹¹ Ibid.

⁸¹² Ibid.

⁸¹³ Climate Council, above n 101, 23; Climate Council, *Territory Trailblazer: How the ACT became the renewable capital of Australia* (2018) III. See also Environment, Planning and Sustainable Development Directorate, ACT Government, above n 809, 2.

⁸¹⁴ See above n 809.

⁸¹⁵ See above n 804.

storage are now operational, one of which was constructed by Tesla.⁸¹⁶ The Victorian Government's \$25 million funding for the \$70 million storage battery systems is being matched by funding from the Australian Renewable Energy Agency.⁸¹⁷

4 Discussion of Similarities and Differences

The comparison of legislative RDC measures and supporting initiatives in South Australia and the other NEM jurisdictions has shown a number of similarities and differences.

Out of all the NEM jurisdictions, South Australia, the ACT and Victoria are leading the way in terms of promoting RDC measures. South Australia continues to lead the field in terms of the scale of the South Australian Government's investment in renewable energy. Additionally, compared to the other NEM jurisdictions, South Australia has a much longer history of consistently promoting RDC measures since 2007. However, the above examination shows that the ACT and Victoria are rapidly catching up.⁸¹⁸

The similarities between South Australia, the ACT and Victoria can most likely be attributed to the fact that all three jurisdictions share similarly ambitious legislated GHG emissions reduction targets (equal to or less than 40% of 1990 levels by 2050 in the case of South Australia (supplemented by a policy commitment to legislate a target of net zero by 2050),⁸¹⁹ and net zero by 2045 and 2050 in the case of the ACT and Victoria respectively). They also share reasonably ambitious legislated RETs with the ACT's RET being the most ambitious out of all three (100% by 2020).

Whilst Chapter II shows that both Queensland and NSW have the highest amount of proposed new wind and solar projects in the NEM, both States are considerably behind South Australia, the ACT and Victoria in terms of the scale and breadth of RDC measures as well as lacking legislative measures supporting such initiatives. This is reflected in the Climate Council's

⁸¹⁶ These are the Gannawarra Energy Storage System (25 MW) which is co-located with the Gannawarra Solar Farm, and the Ballarat Energy Storage System (30 MW), both in Western Victoria. The Gannawarra Energy Storage System is the largest pairing of a solar farm and energy storage battery in Australia (<<https://reneweconomy.com.au/teslas-and-victorias-second-big-battery-completed-at-gannawarra-solar-farm-46361/>>). The Ballarat Energy Storage System is unique in Australia in that it is located in a network terminal as opposed to a wind farm or solar farm (<<https://reneweconomy.com.au/victoria-officially-opens-states-first-big-battery-at-ballarat-93671/>>). The System is sited at the junction of four major transmission lines.

⁸¹⁷ <<https://www.premier.vic.gov.au/delivering-more-large-scale-battery-storage-for-victoria/>>.

⁸¹⁸ This was also the finding of the Climate Council in its latest report, *Renewables Ready: States Leading the Charge*, above n 101.

⁸¹⁹ See above n 147.

recent report on the States and Territories' progress on renewable energy.⁸²⁰ This is likely due to NSW having no legislated GHG emissions reduction target or RET. Queensland has only comparatively recently set a policy RET of 50% by 2030.⁸²¹

As discussed above, Tasmania is exploring how its hydro-electric power system can be augmented with pumped hydro energy storage. However, as observed by the Climate Council, the GHG emissions associated with such energy storage technology is not ideal.⁸²² Additionally, Tasmania is not exploring as broad a range of renewable energy technologies as South Australia. It is possible that this reliance on hydro and pumped hydro energy storage could potentially result in difficulties in the future should Tasmania experience consistent low storage dam levels, for example, similar to that experienced in 2016.

Unlike South Australia, Tasmania has not yet pursued household-scale renewable energy storage battery schemes. As discussed above, this is likely due to the Tasmanian Government's focus on exploring the use of pumped hydro energy storage and the dominance of hydro in Tasmania's energy profile.

The key difference from a legislative perspective between Queensland, NSW and Tasmania, and South Australia, the ACT and Victoria, is that the latter States and Territory have specific legislated RDC measures. The key benefit of legislating such measures is the strong signal this sends to the renewable energy industry, investors and technological innovators of the importance being placed on renewable energy technology research and innovation.

C Subordinate Agreements and Pledges – Voluntary Sector Agreements and Greenhouse Gas Emissions Reduction Pledges

In addition to broad-scale government policy and legislative tools such as RET schemes and FiT schemes, another mechanism for 'operationalising' action on renewable energy in a more targeted fashion at a 'grass roots' level is through the use of secondary or subordinate tools such as voluntary sector agreements and GHG emissions reduction pledges. The following subsection looks at the design and functions of voluntary agreements to form the basis of the comparative exercise undertaken in this Section.

⁸²⁰ Ibid 23.

⁸²¹ See above n 226.

⁸²² Climate Council, above n 101, 28.

1 Voluntary Agreements

(a) Design and Functions of Voluntary Agreements

A voluntary agreement has been defined to be ‘a contract between....government and industry, or negotiated targets with commitments and time schedules on the part of all participating parties’.⁸²³ As Chen and others have observed, parties tend to enter into voluntary agreements due to environmental concerns and social norms.⁸²⁴ This is dictated to a degree by, for example, individuals’ levels of household income, education, moral motivation and altruistic motives.⁸²⁵

Globally, voluntary agreements differ in terms of, for example, their legal status, structure, provisions and enforceability.⁸²⁶ A study by the Organisation for Economic Co-operation and Development (‘OECD’) in the 1990s revealed a broad range of voluntary approaches in OECD countries at the time. These ranged from public voluntary programmes, being commitments devised by environmental agencies in which individual entities were invited to participate, negotiated agreements developed through bargaining between public authorities and industries, and unilateral commitments, for example, set by an industry to govern a particular activity.⁸²⁷

Voluntary agreements hold a number of key advantages over, for example, less flexible, ‘one size fits all’ tools such as legislative schemes. The flexibility of voluntary agreements means they can be tailored to specific parties, sectors and the particular outcomes being sought. Voluntary agreements can be quicker and easier to update compared to, for example, a legislative scheme that requires amendments to be approved by a parliament or other legislature.⁸²⁸

Voluntary agreements also hold the advantage of being a ‘softer’ tool compared to, for example, legislative or other regulatory tools. The OECD study found that voluntary

⁸²³ UNEP, *Handbook for Drafting Laws on Energy Efficiency and Renewable Energy Resources* (Earth Print Limited, 2007) 37.

⁸²⁴ Chi-Feng Chen, Chung-Ming Liu and Ming-Long Liou, ‘Designing a voluntary green electricity program under mandatory legislation’ (2016) 11:9 *Energy Sources, Part B: Economics, Planning and Policy* 778. See also Anna Bryden, Mark Peticrew, Nicholas Mays, Elizabeth Eastmure and Cecile Knai, ‘Voluntary agreements between government and business – a scoping review of the literature with specific reference to the Public Health Responsibility Deal’ (2013) 110 *Health Policy* 192.

⁸²⁵ Chen and others, above n 824, 778.

⁸²⁶ Silvia Rezessy and Paolo Bertoldi, ‘Voluntary agreements in the field of energy efficiency and emission reduction: Review and analysis of experiences in the European Union’ (2011) 39 *Energy Policy* 7121; Organisation for Economic Co-operation and Development (‘OECD’), *Voluntary Approaches for Environmental Policy: An Assessment* (OECD, 1999).

⁸²⁷ OECD, above n 826, 9-10.

⁸²⁸ Rezessy and Bertoldi, above n 826, 7127 and Bryden and others, above n 824, 191.

agreements were ‘likely to generate significant ‘soft effects’ in terms of dissemination of information and awareness-raising’.⁸²⁹ In this way, the use of voluntary agreements can, in some instances, offer a means of achieving a target or objective that might otherwise be difficult to legislate, for example, a particularly ambitious sector-based RET.⁸³⁰ Depending on the requirements of a voluntary agreement, the implementation of the agreement may result in a lower regulatory burden for the parties compared to, for example, the implementation of a new legislative or regulatory framework.⁸³¹

Voluntary agreements can have valuable longer-term impacts, for example, fostering a greater understanding by a party’s workforce or customers of the GHG emissions reduction benefits of renewable energy, potentially leading to longer-term behavioural change, and promoting the opportunity of a closer interaction or dynamic between a government and other parties that might not have otherwise arisen.⁸³² Voluntary agreements can also have the benefit of providing greater recognition by governments of actions undertaken by parties that might otherwise have not occurred.⁸³³

Voluntary agreements may afford governments the opportunity to use the experience gained in the implementation of an agreement to inform potential legislative amendments.⁸³⁴ Similarly, the use of voluntary agreements may assist business and industry sector parties with preparing for more robust obligations, for example, a mandatory requirement to source a specific portion of electricity from renewable energy sources.⁸³⁵ Participation in voluntary agreements can lead to improved public image benefits for industry and business sector parties.⁸³⁶

A difficulty with voluntary agreements is that of establishing additionality, in other words, the additional benefit that the agreement’s outcomes have delivered over what would have occurred anyway, for example, an increased supply of and demand for renewable energy over and above what would have occurred in the absence of the agreement. It can be difficult to establish the additionality achieved through the implementation of voluntary agreements when

⁸²⁹ OECD, above n 826, 11.

⁸³⁰ Rezessy and Bertoldi, above n 826, 7127.

⁸³¹ Bryden and others, above n 824, 191.

⁸³² UNEP, above n 823, 37.

⁸³³ Bryden and others, above n 824, 192

⁸³⁴ Ibid 191.

⁸³⁵ Ibid 192.

⁸³⁶ Ibid 192.

such agreements form part of a ‘policy mix’; it can be difficult to ‘isolate the effect of...different instruments’ in the mix.⁸³⁷

The OECD’s 2004 study of voluntary approaches observed that there was a divergence of views on the usefulness of voluntary approaches for achieving environmental targets. The OECD observed that

Some see such approaches as offering a chance to address environmental problems in a flexible manner at a low cost, based on consensus-building between the different stakeholders. Others believe such approaches provide few environmental improvements beyond what would have occurred anyway, while both administrative and abatement costs could be greater than using other instruments.⁸³⁸

Rezessy and Bertoldi have observed that for voluntary agreements to be most effective, they should be set in the context of a ‘proper institutional framework’, for example, an ‘ambitious but realistic’ GHG emissions reduction target or RET set in legislation or policy that extends beyond ‘business-as-usual’ measures and which is over a ‘reasonable timescale’.⁸³⁹ The OECD study recommended that voluntary agreements should include ‘clearly defined [quantitative] targets’ and the setting of ‘interim objectives’ to enable the parties to the agreement to identify implementation issues at an early stage.⁸⁴⁰ Targets should be determined by reference to a ‘business as usual’ baseline.⁸⁴¹ A ‘fit for purpose’ voluntary agreement should be for a clearly specified duration.⁸⁴²

To ensure that voluntary agreements are being implemented adequately and achieving the desired outcomes, they should also provide for ‘credible and reliable monitoring’ to help the parties to an agreement keep track of performance, including monitoring by an independent third party where appropriate or required.⁸⁴³ To promote transparency of the parties’ actions and foster mutual trust, voluntary agreements should require parties to undertake regular and public reporting on the implementation and outcomes of the agreement.⁸⁴⁴ Rezessy and Bartoldi have pointed out the need for adequate allocation of human and financial resources by

⁸³⁷ Rezessy and Bertoldi, above n 826, 7126.

⁸³⁸ OECD, *Voluntary Approaches for Environmental Policy: Effectiveness, Efficiency and Usage in Policy Mixes* (2004), 10.

⁸³⁹ Rezessy and Bertoldi, above n 826, 7128.

⁸⁴⁰ OECD, above n 838, 134.

⁸⁴¹ Ibid 16.

⁸⁴² Bryden and others, above n 824, 192 and 194.

⁸⁴³ OECD, above n 838, 134.

⁸⁴⁴ Rezessy and Bertoldi, above n 826, 7125.

parties to a voluntary agreement in order to ensure that appropriate ‘reporting, monitoring and evaluation’ activities can be undertaken.⁸⁴⁵

A concern with voluntary agreements identified by Rezessy and Bertoldi is that of asymmetrical information sharing between parties. For example, an industry sector party may have ‘more or better information’ than a public authority party which can lead to an ‘imbalance of power’.⁸⁴⁶ In practice, this might arise through, for example, misreporting of progress by the industry sector party. To overcome this, Rezessy and Bertoldi suggest the use of independent third parties to verify information being provided by parties and for public authorities to consider conducting ‘spot-checks’.⁸⁴⁷

(b) Summary

The examination of policy and academic research in the section above has identified a range of key design features of voluntary agreements to include clearly defined targets set in the context of, for example, a RET, a clearly defined duration, the inclusion of interim objectives, the inclusion of a credible and reliable monitoring regime and provision for reporting and transparency mechanisms.

The next two sub-sections examine the use of voluntary sector agreements, identifying similarities and differences between South Australia and the other NEM jurisdictions, and considering the policy and legislative insights arising from the comparison. The next two sub-sections also present an examination of GHG emissions reduction pledges in Victoria, being a key and interesting point of difference with South Australia’s voluntary sector agreements regime.

2 Legislative Measures Supporting the Use of Subordinate Agreements or Pledges in South Australia – ‘Target’ Jurisdiction

The SA CC Act enables the Minister to enter into sector agreements with individuals or entities for the purpose of, for example, facilitating strategies to meet targets, including the RETs, set under the Act.⁸⁴⁸ Sector agreements are formal co-operative agreements between the South Australian Government and other parties.

⁸⁴⁵ Ibid.

⁸⁴⁶ Rezessy and Bertoldi, above n 826, 7126.

⁸⁴⁷ Ibid.

⁸⁴⁸ SA CC Act, section 16(1).

Sector agreements under the SA CC Act are voluntary⁸⁴⁹ and may provide for, amongst other things, strategies to promote the use of renewable energy and to promote research and development in GHG emissions reduction technology which could include renewable energy technology.⁸⁵⁰

The SA CC Act requires that sector agreements include provisions for reviewing and reporting on the operation of the agreement.⁸⁵¹ The Minister is required to maintain a public register of sector agreements to provide for the independent assessment of those agreements.⁸⁵²

Since the SA CC Act commenced operation, the South Australian Government has entered into over 25 sector agreements⁸⁵³ dealing with, for example, improving energy efficiency, promoting renewable energy and supporting innovative technologies and practices.⁸⁵⁴ Sector agreements have been used as a means of ‘formalising alliances and clarifying roles, objectives and actions for regions’ in climate change response planning.⁸⁵⁵

According to the South Australian Government’s online register of sector agreements, there are currently nine sector agreements in place. An analysis of these sector agreements reveals a number of common themes. This analysis has also revealed that the majority of parties entering into sector agreements with the South Australian Government have tended to be from the local government sector.

A number of sector agreements include statements of co-operation and collaboration, for example, that the parties will ‘collaborate and work in partnership with a range of stakeholders’, follow ‘principles of inclusiveness and transparency’ and ‘engage with industry, community and other partners’.⁸⁵⁶ A number of sector agreements provide for the South Australian Government to explore ‘funding opportunities’ and ‘share State-wide learnings’.⁸⁵⁷

⁸⁴⁹ Ibid.

⁸⁵⁰ SA CC Act, section 16(2).

⁸⁵¹ SA CC Act, section 16(3)(b).

⁸⁵² SA CC Act, section 16(6). The register of sector agreements can be found at <<https://www.environment.sa.gov.au/topics/climate-change/climate-change-legislation/sector-agreements>>.

⁸⁵³ Department for Environment and Water, South Australian Government, *Report on the review of the Climate Change and Greenhouse Emissions Reduction Act 2007* (South Australia) (2018) 10.

⁸⁵⁴ Ibid 22.

⁸⁵⁵ Ibid 10.

⁸⁵⁶ For example, see *Adapting Northern Adelaide Region Sector Agreement* (2016), clause 1.3; *Sector Agreement for Climate Change Adaptation for the Adelaide Hills, Fleurieu Peninsula and Kangaroo Island Region* (2017), clause 2; *Carbon Neutral Adelaide ('CNA') Sector Agreement* (2015), clause 1.

⁸⁵⁷ For example, see *Adapting Northern Adelaide Region Sector Agreement* (2016), clause 4.1.1; *Sector Agreement for Climate Change Adaptation for the Adelaide Hills, Fleurieu Peninsula and Kangaroo Island Region* (2017), clause 5.3.2.

Some sector agreements include statements explaining that they ‘complement and support existing policies and programs’, for example, the South Australian Government’s Climate Change Strategy.⁸⁵⁸ Some sector agreements illustrate how regional policies link with the broader State-wide policies set by the South Australian Government.⁸⁵⁹

A number of sector agreements provide for the establishment of specific steering groups, for example, the Northern Adelaide Region sector agreement provides for the establishment of a steering group to ‘provide strategic direction for the implementation of [the agreement] and oversee the objectives’ of the agreement.⁸⁶⁰ The Eyre Peninsula Sector Agreement contains a particularly detailed governance structure with both a steering group and an executive working group.⁸⁶¹

Steering committees include members nominated by the parties to the sector agreement including the South Australian Government.⁸⁶² The role of steering committees includes reviewing the progress of sector agreements on a regular basis. The South Australian Government representative is to provide regular briefings to the steering committee on government policy developments and inform the Government of the ‘strategic direction and work steered by the group’.⁸⁶³

A number of sector agreements provide for information and advice to be given to the South Australian Government regarding the progress and development of initiatives under sector agreements including annual progress reports.⁸⁶⁴ Some sector agreements provide for a rolling

⁸⁵⁸ For example, see *Adapting Northern Adelaide Region Sector Agreement* (2016), clause 1.5; *Sector Agreement for Climate Change Adaptation for the Adelaide Hills, Fleurieu Peninsula and Kangaroo Island Region* (2017), clause 1.6 (noting that this sector agreement refers to South Australian Government policies that are no longer current). Similarly, the *South Australian Water Corporation (‘SAWC’) Sector Agreement* (2015) was prepared in the context of the South Australia Strategic Plan and the two previous climate change strategies which are no longer in force.

⁸⁵⁹ For example, see *Eyre Peninsula Regional Sector Agreement*, clause 1.8; *Limestone Coast Sector Agreement*, clause 1.7.

⁸⁶⁰ *Adapting Northern Adelaide Region Sector Agreement* (2016), clause 5.1.

⁸⁶¹ *Eyre Peninsula Regional Sector Agreement* (2015), clauses 5 and 6.

⁸⁶² For example, see *Adapting Northern Adelaide Region Sector Agreement* (2016), clause 5.2; *Sector Agreement for Climate Change Adaptation for the Adelaide Hills, Fleurieu Peninsula and Kangaroo Island Region* (2017), clause 4.1.

⁸⁶³ For example, see *Adapting Northern Adelaide Region Sector Agreement* (2016), clause 5.5; *Sector Agreement for Climate Change Adaptation for the Adelaide Hills, Fleurieu Peninsula and Kangaroo Island Region* (2017), clause 4.6; *CNA Sector Agreement* (2015), clause 6.1.5.

⁸⁶⁴ For example, see *Adapting Northern Adelaide Region Sector Agreement* (2016), clause 6.3; *Sector Agreement for Climate Change Adaptation for the Adelaide Hills, Fleurieu Peninsula and Kangaroo Island Region* (2017), clause 7.3.

time-bound action plan to be prepared with the aim of guiding parties' activities towards achieving the intended outcomes of the agreement.⁸⁶⁵

Some sector agreements provide for the South Australian Government to expressly publicly recognise the achievements of the parties to the sector agreement, for example, to 'promote and showcase' achievements as a 'template for other regions across South Australia'.⁸⁶⁶

Some sector agreements provide for a dispute resolution mechanism including referral of disputes to, for example, the Chief Executives of the Department of Environment, Water and Natural Resources and the other parties.⁸⁶⁷ If the referred issue remains outstanding, there is the option of referring it to the Minister or the Lord Mayor (or equivalent) for final determination.⁸⁶⁸

Relevantly for this Chapter, there are four sector agreements that expressly seek to promote the supply of and demand for renewable energy; these are with the Cities of Salisbury and Playford in the Northern Adelaide region, the South Australian Water Corporation ('SAWC'),⁸⁶⁹ the Eyre Peninsula and the Adelaide City Council in relation to the Carbon Neutral Adelaide ('CNA')⁸⁷⁰ initiative.⁸⁷¹

The Northern Adelaide Region sector agreement indicates the Cities of Salisbury and Playford's commitment to actively promote 'emission abatement opportunities' including the use of renewable energy related to council activities, supporting the transition of street lighting to renewable energy use and raising 'community awareness of emerging renewable

⁸⁶⁵ For example, see *Adapting Northern Adelaide Region Sector Agreement* (2016), clause 3.2; *Eyre Peninsula Regional Sector Agreement* (2015), clause 1.3; *Limestone Coast Sector Agreement* (2016), clause 1.4.

⁸⁶⁶ For example, see *Sector Agreement for Climate Change Adaptation for the Adelaide Hills, Fleurieu Peninsula and Kangaroo Island Region* (2017), Schedule 1, item 9; CNA Sector Agreement (2015), clause 6.1.8; *Sector Agreement for the Resilient East Regional Climate Change Adaption Plan* (2017), Schedule 1, Table A.

⁸⁶⁷ CNA Sector Agreement (2015), clause 8.1.

⁸⁶⁸ For example, see CNA Sector Agreement (2015), clause 8.2; *Eyre Peninsula Regional Sector Agreement* (2015), clause 10.

⁸⁶⁹ The SAWC Sector Agreement provides that it is for a duration of two years. However, it has been referenced as still continuing to exist which suggests that it may have been extended in some form.

⁸⁷⁰ The CNA Sector Agreement provides for a duration of five years, ending on 30 June 2018. It is not clear whether this agreement has been extended in some form.

⁸⁷¹ The South Australian Government has indicated in its *Climate Change Strategy* that it is to consider using sector agreements under the SA CC Act to establish partnerships with key stakeholders including major emitters to develop net zero GHG emissions action plans (Department of Environment, Water and Natural Resources, South Australian Government, above n 147, 27).

energy and storage options, and facilitate the further supply of and demand for renewable energy'.⁸⁷²

The South Australian Government and the Cities of Salisbury and Playford commit to encouraging green and low carbon industries in the Northern Adelaide region to be 'nationally and internationally' recognised as part of a 'green industries region'.⁸⁷³ This includes 'fostering partnerships and alliances' for the research, innovation and development in renewable energy technologies.⁸⁷⁴ Similarly, the CNA Sector Agreement indicates the parties' aspiration that Adelaide is a 'local, national and global leader in taking climate change action...and becomes a showcase city for the supply of and demand for renewables'.⁸⁷⁵

The objectives of the SAWC⁸⁷⁶ sector agreement include implementing 'practical and cost-effective' actions that seek to increase the use of renewable energy sources. The SAWC Sector Agreement refers to the increasing use of desalination water and associated electricity being offset by 100% accredited renewable energy. The SAWC Sector Agreement explains that 'accredited renewable energy' means renewable energy accredited via the GreenPower scheme. This helps to readily establish the additionality of SAWC's actions under the SAWC Sector Agreement.

Under the SAWC Sector Agreement, SAWC commits to continue to purchase accredited renewable energy and/or expand self-generation of electricity. SAWC's renewable energy target is a clear measurable target of at least 20% by 2020. The SAWC Sector Agreement provides for these targets to be included in SAWC's performance statements. Under the SAWC Sector Agreement, SAWC also commits to supporting the development of the renewable energy industry.

⁸⁷² For example, see *Adapting Northern Adelaide Region Sector Agreement* (2016), clause 4.1.2; CNA Sector Agreement (2015), clause 1.5.

⁸⁷³ *Adapting Northern Adelaide Region Sector Agreement* (2016), clause 4.1.3.

⁸⁷⁴ *Adapting Northern Adelaide Sector Agreement* (2016), clause 4.1.3.

⁸⁷⁵ CNA Sector Agreement (2015).

⁸⁷⁶ The SAWC is wholly owned by the South Australian Government. It provides water and wastewater services to 1.5 million people in South Australia. This makes it one of the State's largest service providers; consequently, this means that the achievement of targets and objectives set out under the SAWC Sector Agreement will have a potentially large impact.

In the 2019-20 Budget, SAWC received \$390 million over four years for its Zero Cost Energy Future program which will see the installation of solar photovoltaics and renewable energy storage batteries to enable SAWC to achieve zero net electricity costs from 2020.⁸⁷⁷

In exchange for fulfilling its commitments under the SAWC Sector Agreement, the agreement provides that SAWC will be afforded an ‘effective means of communications’ with the Premier’s Climate Change Council and RenewablesSA, the South Australian Government’s assistance in profiling SAWC’s achievements and successes and the South Australian Government’s assistance with, for example, facilitating a whole of South Australian Government response on issues relating to the sector agreement.⁸⁷⁸

The EP sector agreement flags that RenewablesSA plays a lead role in identifying and expanding opportunities in the renewable energy industry in South Australia. The objectives of the EP sector agreement include identifying and promoting low carbon economic opportunities in the energy sector, and growing community engagement and industry participation in programs designed to promote behaviour change.

Similarly to the SAWC Sector Agreement, the South Australian Government commits to providing public acknowledgement of the EP’s achievements and facilitating a similar whole of South Australian Government response on issues relating to the sector agreement.⁸⁷⁹ Like the SAWC and EP sector agreements, the South Australian Government commits to provide public acknowledgement of the ACC’s achievements with the CNA initiative.

With respect to the elements of effective voluntary agreements discussed above, the sector agreements currently in place incorporate some but not all of those elements. The sector agreements operate within the context of the SA CC Act, a legislative framework that sets an ambitious GHG emissions reduction target and a relatively ambitious RET (noting the more recent policy RET of 50% by 2020 set by the previous Weatherill Labor Government). The elements most consistently found in the analysis of current sector agreements are those of regular reporting and monitoring of progress. Most of the current sector agreements do not contain clear, measurable targets; objectives are instead drafted with reference to aspirational statements and actions.

⁸⁷⁷ Department of Treasury and Finance, South Australian Government, *2019-20 Budget Debates, Budget Overview*, 7.

⁸⁷⁸ SAWC Sector Agreement (2015), clause 7.

⁸⁷⁹ Eyre Peninsula Regional Sector Agreement (2015), clause 7.1.

Some of the sector agreements indicate they are a re-establishment of previous sector agreements which suggests that for some parties, sector agreements have resulted in a successful productive partnership with the South Australian Government.

Submissions to the 2011 report on the operation of the SA CC Act suggested that sector agreements could be used to encourage the greater supply of and demand for renewable energy through supporting GreenPower.⁸⁸⁰ The continued use of sector agreements was supported by South Australia's Low Carbon Economy Expert Panel, the Premier's Climate Change Council and the community consultation that occurred on the development of the Climate Change Strategy.⁸⁸¹

3 Legislative Measures Supporting the Use of Subordinate Agreements or Pledges in the Other NEM Jurisdictions

Similarly to South Australia, the ACT CC Act provides for the establishment of sector agreements with entities. Sector agreements are voluntary and have the key aims of assisting with GHG emissions reduction and meeting the various targets set out in the Act.⁸⁸² Entities agree to introduce strategies to, amongst other things, increase the use of renewable energy sources.⁸⁸³

The objects of the ACT CC Act also include, like South Australia, encouraging private entities to take climate change action through, for example, the establishment of sector agreements, and recognition of those entities.⁸⁸⁴

Sector agreements may include provisions about the goals of the agreement in relation to GHG emissions reduction and strategies for the entity to achieve the goals including, similarly to South Australia, strategies for supporting research and development on reducing GHG emissions which could include renewable energy technology.⁸⁸⁵

⁸⁸⁰ Department of Environment and Natural Resources, South Australian Government, *2011 Review of the Climate Change and Greenhouse Emissions Reduction Act 2007: Submissions Received* (2011) 7.

⁸⁸¹ Department of Environment, Water and Natural Resources, South Australian Government, *Report on the operation of the Climate Change and Greenhouse Emissions Reduction Act 2007* (2015) 12.

⁸⁸² ACT CC Act, section 23(1).

⁸⁸³ ACT CC Act, section 23(1)(b).

⁸⁸⁴ ACT CC Act, section 5(d).

⁸⁸⁵ Climate Change and Greenhouse Gas Reduction Regulation 2011 (ACT), regulation 5(b).

Like South Australia, entities are required to review and report on the operation of sector agreements.⁸⁸⁶ Also similarly to South Australia, the Minister is required to keep a register of sector agreements which must be available for public inspection.⁸⁸⁷

As discussed earlier in this Chapter, the ACT CC Act is almost a ‘carbon copy’ of the earlier SA CC Act. The decision to model the ACT CC Act on the SA CC Act is thought to have been influenced by the fact that the ACT Government at the time was the Gallagher Labor Government similar to the then South Australian Government (the previous Rann Labor Government).

To date, the ACT Government has not entered into any sector agreements. The 2016 review of the ACT CC Act observed that the ACT Government had sought to enter into sector agreements with two entities but ultimately those entities selected other programs that were funded or otherwise supported.⁸⁸⁸ This means that it has not been possible for this thesis to undertake a full assessment of the use of voluntary sector agreements in the ACT.

Similarly to South Australia, the Victorian CC Act provides for a type of secondary or subordinate tool, GHG emissions reduction pledges, to promote GHG emissions reduction which would include increasing the supply of and demand for renewable energy. There are three types of pledges – whole of government,⁸⁸⁹ sector⁸⁹⁰ and Council pledges.⁸⁹¹ A key point of difference however between the SA CC Act voluntary sector agreements and the Victorian CC Act GHG emissions reduction pledges is that two types of GHG emissions reduction pledges, whole of government and sector pledges, are mandatory.

Pledges were introduced into the Victorian CC Act as a result of recommendations made by the Independent Review Committee in their review of the *Climate Change Act 2010* (Vic). The Committee recommended that the Victorian CC Act adopt the ‘bottom up’ approach of the UNFCCC’s pledge and review model in the *Paris Agreement*.⁸⁹² The use of pledges in the

⁸⁸⁶ ACT CC Act, section 23(2)(b) and the Climate Change and Greenhouse Gas Reduction Regulation 2011 (ACT), regulation 5(a).

⁸⁸⁷ ACT CC Act, sections 24(1) and (2).

⁸⁸⁸ Environment and Planning Directorate, ACT Government, above n 458, 20.

⁸⁸⁹ Victorian CC Act, section 41.

⁸⁹⁰ Victorian CC Act, section 43.

⁸⁹¹ Victorian CC Act, section 46. Council pledges are voluntary statements setting out the actions to be undertaken by a Council that are reasonably expected to contribute to the reduction of GHG emissions caused by local government operations and activities. The first Council pledge may be made after 1 August 2020 and every five years thereafter. Examination of the local government sector is outside the scope of this thesis.

⁸⁹² Martijn Wilder, Anna Skarbek and Rosemary Lyster, *Independent Review of the Climate Change Act 2010* (2015) 6.

Victorian CC Act helps to establish a link between the GHG emissions reduction targets set out in the Act and action by the government and other sectors of the economy.⁸⁹³ The pledges also aim to foster a ‘shared ownership’ across the government sector on GHG emissions reduction action and collaborative sharing of learnings.⁸⁹⁴

Whole of government pledges are mandatory statements setting out the actions to be undertaken by government bodies, for example, government departments, that are reasonably expected to contribute to the reduction of GHG emissions caused by government operations and activities.⁸⁹⁵ This could include the use of electricity from renewable energy sources. The first whole of government pledge is required to be made by 1 August 2020 and every five years thereafter.⁸⁹⁶ The Victorian TAKE2 pledge scheme is the precursor to the whole of government pledge scheme under the Victorian CC Act.

Sector pledges are mandatory statements by nominated Ministers setting out actions to be undertaken by the Victorian Government that are reasonably expected to contribute to the reduction of GHG emissions from a prescribed category of GHG emissions and renewals.⁸⁹⁷ Similarly to the above, this could include the use of electricity from renewable energy sources. The first sector pledge is required to be made by 1 August 2020 and every five years thereafter.⁸⁹⁸

As the whole of government and sector pledges are not yet operational, it has not been possible for this thesis to undertake a full assessment of the use of GHG emissions reduction pledges in Victoria.

Unlike the SA CC Act, the Victorian RET Act does not provide for secondary or subordinate tools such as voluntary sector agreements for promoting the supply of and demand for renewable energy. However, it is likely this would be achieved by the GHG emissions reduction pledges under the Victorian CC Act, making these a functionally equivalent measure located in an alternative legislative scheme.

⁸⁹³ Alannah Calabro, Stephanie Niall and Anna Skarbek, ‘The Victorian Climate Change Act: A Model’ (2018) 92 *Australian Law Journal* 814.

⁸⁹⁴ *Ibid* 817.

⁸⁹⁵ Victorian CC Act, sections 41 and 42.

⁸⁹⁶ Victorian CC Act, section 41.

⁸⁹⁷ Victorian CC Act, sections 43 and 44. To date, no regulations have been made under the Victorian CC Act prescribing categories of GHG emissions and removals.

⁸⁹⁸ Victorian CC Act, section 43. The Victorian Government’s *Climate Change Framework* states that when making sector pledges, the Victorian Government will pursue the most ‘efficient and effective’ measures for driving GHG emissions reductions.

Unlike South Australia, at present, Queensland, NSW and Tasmania do not have legislative schemes providing for the use of secondary or subordinate agreements or equivalent to promote the supply of and demand for renewable energy. It is likely that in the case of Queensland and NSW, this is due to both States not having a climate change legislative framework in place. In the case of Tasmania, given the historical dominance of hydro energy and Tasmania's low GHG emissions, it is likely that the Tasmanian Government has seen little need to introduce a secondary or subordinate tool enabling it to develop partnerships with, for example, local governments covering specific regions of Tasmania.

4 Discussion of Similarities and Differences

The comparison of legislative measures promoting the use of sector agreements and GHG emissions reduction pledges in South Australia and the other NEM jurisdictions has shown a number of similarities and differences.

South Australia, the ACT and Victoria are the only NEM jurisdictions who have legislative measures supporting the use of sector agreements or GHG emissions reduction pledges. The similarities between South Australia, the ACT and Victoria can be attributed to the fact that all three share similarly ambitious legislated GHG emissions reduction targets (equal to or less than 40% of 1990 levels by 2050 in the case of South Australia (supplemented by a policy commitment to legislate a target of net zero by 2050),⁸⁹⁹ and net zero by 2045 and 2050 in the case of the ACT and Victoria respectively). They also share reasonably ambitious RETs (see Chapter III).

Queensland, NSW and Tasmania do not have similar legislative measures promoting the use of voluntary sector agreements or GHG emissions reduction pledges. It is likely that this is due to Queensland and NSW not having a climate change legislative framework in place. In the case of Tasmania, given the historical dominance of hydro energy and Tasmania's low GHG emissions, it is likely that the Tasmanian Government has seen little need to develop partnerships with, for example, local governments.

D Conclusion

This Chapter has examined other specific legislative measures in the NEM jurisdictions that promote the supply of and demand for renewable energy, these being RDC measures and the

⁸⁹⁹ See above n 147.

use of voluntary sector agreements and GHG emissions reduction pledges as tools to encourage ‘grass roots’ action on renewable energy. This Chapter has shown that South Australia, the ‘target’ jurisdiction, has both these mechanisms as do the ACT and Victoria and that Queensland, NSW and Tasmania do not have either of these mechanisms.

As Section B has shown, the key benefit of legislating RDC measures is the strong signal this sends to the renewable energy industry, investors and technological innovators of the importance being placed on renewable energy technology research and innovation. RDC measures can lead to the development of better, cheaper and more accessible renewable energy technologies. In this way, RDC measures can act as a complementary mechanism supporting the achievement of RETs and the implementation of FiT schemes through helping to facilitate the increased uptake of electricity generated from renewable energy sources. This Chapter has demonstrated that South Australia, the ‘target’ jurisdiction, continues to lead the field in terms of the scale of the South Australian Government’s investment in renewable energy. This Chapter has also demonstrated that the ACT and Victoria are catching up in this respect.

The examination of policy and academic research in Section C has identified a range of key design features of voluntary agreements to include clearly defined targets set in the context of, for example, a RET, a clearly defined duration, the inclusion of interim objectives, the inclusion of a credible and reliable monitoring regime and provision for reporting and transparency mechanisms. Section C also explored some of the advantages and disadvantages of voluntary agreements, for example, their flexibility and ‘softer approach’ in achieving a desired outcome and the difficulty of establishing additionality when they form part of a ‘policy mix’.

This Chapter has demonstrated that South Australia has a range of voluntary sector agreements in place which include some of the key design features outlined above. This Chapter has also demonstrated that the ACT has a voluntary sector agreement regime which is not being utilised at present. This Chapter has shown that Victoria’s climate change legislative framework has a similar secondary or subordinate tool to South Australia that could be utilised to encourage ‘grass roots’ level action on renewable energy, this being GHG emissions reduction pledges. However, there are some key differences between these pledges and South Australia’s voluntary sector agreements including the fact that two of the three types of pledges, those addressed to the Victorian Government sector, are mandatory in nature. Voluntary sector agreements and GHG emissions reduction pledges can act as a complementary mechanism to

the achievement of RETs and the implementation of FiT schemes through encouraging ‘grass roots’ action on increasing the uptake of electricity generated from renewable energy sources.

The next Chapter concludes this thesis by analysing how this thesis has answered the Key Research Questions set out in Chapter I.

VI CONCLUSION

A Introduction

This Chapter brings together the findings of the previous Chapters to demonstrate how this thesis has addressed the four Key Research Questions introduced in Chapter I. Section B outlines the contributions made by this thesis. Section C explains how the findings of this thesis have addressed the four Key Research Questions and outlines a number of areas in which further research could be undertaken. Section D concludes this Chapter and this thesis.

B Contributions made by Thesis

As discussed in Chapter I, the primary aim of this thesis is to contribute a greater understanding of Australian sub-national action on climate change through an analysis of key current and historical renewable energy related legislative measures in the NEM jurisdictions (Australian sub-national actors).

The NEM was chosen as the focus of this thesis as it comprises multiple jurisdiction participants with a broad range of historical and current renewable energy policy and legislative measures. This has provided a rich source of research data for this thesis' analysis of Australian sub-national action in promoting the increased supply of and demand for electricity generated from renewable energy sources.

As discussed in Chapter I, there is a range of literature by government agencies, academics and stakeholders on renewable energy policy and legislation in Australia including works by Bradbrook and Wawryk, Hodgkinson and Garner and Prest. In achieving its primary aim, this thesis has sought to build on those latter works through providing a recent (as at 31 August 2019) and detailed examination of key current renewable energy policy and legislative measures in the NEM jurisdictions, drawing on historical renewable energy policy and legislative measures where relevant. This thesis has also expanded on those works through drawing on complementary climate change policy and legislative measures where relevant and analysing key notable aspects of the historical and political contexts in the NEM jurisdictions

to help explain the existence (or non-existence) of renewable energy policy and legislative measures. A distinctive contribution of this thesis is the bringing together of a close examination and comparison of key design features and functions of particular types of Australian sub-national renewable energy legislative measures, and a drawing on international and national policy and academic research for guidance as to best practice design features. This has enabled the identification of a range of policy and legislative insights in relation to the role Australian sub-national policy and legislative measures can play in increasing the uptake of electricity from renewable energy sources (discussed below in Section C).

This thesis' comparison of renewable energy policy and legislative measures in the NEM jurisdictions is based on a functional comparative law method. Using a functional comparative law method has provided a structured framework within which to compare a wide, and sometimes disparate, range of renewable energy policy and legislative measures. The need to consider policy measures as well as legislative measures provided a mechanism through which to undertake a deeper analysis of the NEM jurisdictions' renewable energy legislative measures. This thesis has also demonstrated an innovative application of functional comparative law through using the approach of comparing one 'target' jurisdiction against a 'collective' of jurisdictions that all form part of the same legal system.

This thesis has demonstrated the inherent complexity in renewable energy policy and legislation through its examination of particular legislative measures. This thesis has shown that an NEM jurisdiction's success in increasing the supply of and demand for electricity generated from renewable energy sources depends on a complex interaction between a broad range of factors including, for example, the availability of high quality renewable energy sources, the availability of suitable transmission networks, the cost of electricity from competing energy sources such as fossil fuels, local political appetite and consumer/community sentiment.

This thesis has shown that all the NEM jurisdictions have played, and continue to play, a valuable and critical sub-national role in promoting the increased uptake of electricity from renewable energy sources albeit at different times and to differing extents.

C Discussion of Similarities and Differences

Chapter I introduced the four Key Research Questions this thesis set out to address. These are:

- (a) What renewable energy policy and legislative measures currently exist (or do not exist) in each of the NEM jurisdictions?
- (b) What are the similarities and differences between particular renewable energy legislative measures in South Australia and the other NEM jurisdictions?
- (c) What do these similarities and differences reveal about the effectiveness of those particular renewable energy legislative measures in South Australia and the other NEM jurisdictions?
- (d) What are the policy and legislative insights of these findings in relation to the role Australian sub-national policy and legislative measures can play in increasing the supply of and demand for electricity generated from renewable energy sources?

This Section analyses how this thesis has addressed the four Key Research Questions.

1 What renewable energy policy and legislative measures currently exist (or do not exist) in each of the NEM jurisdictions?

As part of the functional comparative law method outlined in Chapter I, Chapter II provided a high-level overview of the key current and historical renewable energy policy and legislative measures in each of the NEM jurisdictions, drawing on complementary climate change policy and legislative measures where relevant. Chapter II also examined key notable aspects of the historical and political contexts of each of the NEM jurisdictions as a means by which to offer an explanation of the different ways in which the NEM jurisdictions' renewable energy policy and legislative measures have evolved. Additionally, Chapter II examined the fuel mix profiles of the NEM jurisdictions, drawing on energy related data and statistics compiled since 2007. This analysis included consideration of each NEM jurisdiction's rankings in terms of, for example, number (by MW capacity) of currently operating fossil fuel power stations and renewable energy generation together with proposed new fossil fuel and renewable energy generation.

The key findings of this thesis show that there is a 'patchwork quilt' of renewable energy policy and legislative measures across the NEM jurisdictions. There is a broad range of historical and political factors that have influenced the evolution of the NEM jurisdictions' renewable energy policy and legislative measures.

For example, in the case of South Australia, a comparatively poor supply of local coal, a relatively high dependence upon the use of natural gas for electricity generation and comparatively high electricity prices saw some of the earliest explorations into renewable energy in the NEM.⁹⁰⁰ More recently, concerns over climate change and a desire to enhance the security and stability of the State's electricity network grid following the September 2016 blackout has seen the South Australian Government pursue a sustained expansion of renewable energy in South Australia.⁹⁰¹ South Australia is notable for having particularly high quality wind resources due to the State's proximity to the 'Roaring Forties'.⁹⁰²

Reflecting the historical dominance of the mining and resources sectors and the associated implications for jobs, the Queensland Government's early focus was on the development of 'clean coal' technologies and use of natural gas rather than renewable energy.⁹⁰³ In recent years however, Queensland has become the renewable energy 'construction capital' of Australia with the highest number of proposed new large-scale solar projects in the NEM.⁹⁰⁴ This recent expansion of renewable energy in Queensland has been partly driven by concerns over climate change. Queensland is notable for its particularly high quality solar resources.⁹⁰⁵

In some respects, the NSW Government was an early pioneer in climate change and renewable energy policy and legislative measures. However, despite this, NSW is home to the highest number of coal fired power stations in the NEM.⁹⁰⁶ NSW will see the closure of two key coal fired power stations over the next two decades requiring the NSW Government to explore alternatives means of electricity generation.⁹⁰⁷ NSW is notable for the fact that it is the only NEM jurisdiction that does not have either a legislated or policy RET with its renewable energy policies instead placing an emphasis on the need to support the achievement of the Commonwealth RET.⁹⁰⁸ There are high quality solar resources available in NSW.⁹⁰⁹

The ACT Government's ambitious renewable energy policy and legislative measures have in part been driven by the fact that the ACT, the smallest of the NEM jurisdictions, has only

⁹⁰⁰ See above n 142 and 143.

⁹⁰¹ See above n 153 and 170.

⁹⁰² See above n 190.

⁹⁰³ See above n 203 and 204.

⁹⁰⁴ See above n 233.

⁹⁰⁵ See above n 190.

⁹⁰⁶ See Table 3.

⁹⁰⁷ See above n 247.

⁹⁰⁸ See above n 260.

⁹⁰⁹ See above n 190.

limited renewable energy resources within the Territory.⁹¹⁰ This has prompted the ACT Government to look elsewhere for renewable energy generated electricity and in doing so, to be as competitive as possible in order to attract renewable energy generation to the Territory. The ACT has also pioneered the use of renewable energy reverse auctions for large-scale renewable energy generation.

The Victorian Government is a similar story to the NSW Government in that it was, in some respects, an early mover in relation to climate change and renewable energy policy and legislative measures.⁹¹¹ The closure of one key coal fired power station and the scheduled closure of another three key coal fired power stations within the next two decades has seen a recent drive by the Victorian Government to increase the State's renewable energy capacity and to promote the creation of jobs in the renewable energy sector.⁹¹² Similarly to South Australia, the South West region of Victoria is notable for its particularly high quality wind resources due to its proximity to the 'Roaring Forties'.⁹¹³

Compared to South Australia and the other NEM jurisdictions, Tasmania has historically had comparatively high levels of renewable energy and low levels of fossil fuel use due to the dominance of the Tasmanian Hydro in the State.⁹¹⁴ Additionally, Tasmania's GHG emissions are the lowest in the NEM, reaching less than net zero in 2015-16.⁹¹⁵ The Tasmanian Government has therefore not had as much incentive or need to pursue renewable energy as an alternative to fossil fuels for the generation of electricity compared to, for example, South Australia.

2 What are the similarities and differences between particular renewable energy legislative measures in South Australia and the other NEM jurisdictions? What do these similarities and differences reveal about the effectiveness of those particular renewable energy legislative measures in South Australia and the other NEM jurisdictions?

Table 11 below sets out a summary of the particular Australian sub-national renewable energy legislative measures examined in this thesis.

⁹¹⁰ See above n 282.

⁹¹¹ See Chapter II, Section C.

⁹¹² See above n 317.

⁹¹³ See above n 190.

⁹¹⁴ See above n 334.

⁹¹⁵ See above n 357.

Table 11 – Summary of NEM Jurisdictions’ Renewable Energy Legislative Measures Examined in this Thesis

| | Legislated Greenhouse Gas Emissions Reduction Target | Legislated Renewable Energy Target | Legislated Feed-in Tariff Scheme | Legislated Voluntary Agreement Scheme |
|-------------------------------------|--|--|--|--|
| South Australia | Yes – equal to or less than 40% of 1990 levels by 31 December 2050 (Policy commitment to net zero GHG emissions by 2050) | Yes – 33.3% by 2020 | Yes | Yes – sector agreements under the SA CC Act |
| Queensland | No (Policy commitment to 30% below 2005 levels by 2030 and net zero GHG emissions by 2050) | No (Policy commitment of 50% by 2030) | Yes – regional electricity retailer FiT scheme (Voluntary electricity retailer FiT scheme) | No |
| New South Wales | No (Policy commitment to net zero GHG emissions by 2050) | No | No (Voluntary electricity retailer FiT scheme) | No |
| Australian Capital Territory | Yes – ranging from 50-60% below 1990 levels by 2025 to net zero GHG emissions by 2045 | Yes – 100% by 2020 | Yes – both small and large-scale renewable energy installations | Yes – sector agreements under the ACT CC Act but not being utilised |
| Victoria | Yes – net zero GHG emissions by 2050 | Yes – 25% by 2020 and 40% by 2025 (Policy commitment of 50% by 2030) | Yes | Yes – GHG emissions reduction pledges under the Victorian CC Act |
| Tasmania | Yes – at least 60% below 1990 levels by 2050 (Policy commitment to net zero GHG emissions by 2050) | No (Policy commitment to RET of 100% by 2022) | Yes – closes on 31 December 2019 (Voluntary electricity retailer FiT scheme) | No |

Based on the examination of academic and policy research in Chapter III, RET schemes should include a range of key design features. These include a durable and appropriately ambitious RET, the ability to vary and set interim and sector-based RETs, and the ability to accommodate emerging new renewable energy technologies.⁹¹⁶ RETs should also be established on the basis of solid knowledge that takes into account political, institutional and economic aspects.⁹¹⁷ To be fully effective, RET schemes should be accompanied by other complementary mechanisms such as FiT schemes and RDC measures.⁹¹⁸

The legislative RET scheme in South Australia, the ‘target’ jurisdiction, has these key design features. As well as demonstrating a decrease in the use of fossil fuels and an increase in the use of renewable energy for electricity generation since 2007, South Australia is notable for the fact that it has consistently ‘ratcheted upwards’ its RET and exceeded its increased RET a number of years early.⁹¹⁹

Compared to South Australia, out of the other NEM jurisdictions, the ACT and Victoria are the only two other jurisdictions that have legislated RET schemes in place.

The ACT and Victoria’s RET schemes have most of the same key design features as South Australia’s RET scheme. The ACT’s RET scheme does not include an ability to set sector-based RETs however this may be due to the fact that the ACT’s economy may not have ‘sectors’ in the same way as South Australia’s, for example. The Victorian RET scheme also does not include an ability to vary or set interim or sector-based RETs. This may have been a political decision at the time of developing the Victorian RET Act to guard against the possibility of a future Victorian Government ‘watering down’ the Act. Additionally, the Victorian RET Act does not provide for the same extent of independent monitoring as South Australia’s RET scheme which goes to the transparency of the scheme.

The examination of RET schemes has revealed a broad range of ambition in the level of RETs set with Victoria’s 2020 RET of 25% at one end of the spectrum and the ACT’s 2020 RET of 100% at the other end of the spectrum. Queensland, NSW and Tasmania are different to South Australia in that they do not have legislated RET schemes in place. However, both Queensland

⁹¹⁶ See Chapter III, Section B.

⁹¹⁷ Ibid.

⁹¹⁸ Ibid.

⁹¹⁹ See Chapter II, Section B and Chapter III, Section C.

and Tasmania have policy RETs of 50% by 2030 and 100% by 2022 respectively.⁹²⁰ NSW is notable for the fact that it is the only NEM jurisdiction that does not have a RET at all.⁹²¹

Given the findings of the Climate Council and Green Energy Markets that South Australia, the ACT and Victoria are leading the way in terms of their progress in increasing the supply of and demand for electricity generated from renewable energy sources, this suggests that legislated RET schemes can be a valuable and effective tool in NEM jurisdictions' suites of renewable energy policy and legislative measures.

Based on the examination of academic and policy research in Chapter IV, FiT schemes should include a range of key design features. These include appropriately set FiT rates overseen in some capacity by an independent economic regulatory body, a certainty of scheme duration, a scheme cap in some form in order to control scheme administration and cross subsidy costs, a requirement to pay renewable energy generators for electricity fed into the electricity network grid and a requirement to allow access to the grid by generators.⁹²² Net FiT schemes appear to be more effective than gross FiT schemes in changing electricity customers' energy consumption behaviours which is particularly relevant in the context of reducing GHG emissions.⁹²³

The premium and electricity retailer FiT schemes in South Australia, the 'target' jurisdiction, have some of these key design features, these being appropriately set FiT rates monitored by the ESCOSA, an independent economic regulatory body, in the case of the electricity retailer FiT, a certainty of scheme duration (the premium FiT scheme has a duration of 20 years) and a scheme cap (the premium FiT is only payable for the first 45 kW of electricity exported each day).⁹²⁴ The SA FiT Act also contains a requirement on the South Australian distribution network operator and electricity retailers to pay renewable energy generators for excess electricity fed into the electricity network grid.⁹²⁵ The SA FiT Act also includes a requirement on the South Australian distribution network operator to allow access to the electricity network grid by renewable energy generators.⁹²⁶

⁹²⁰ See Chapter III, Section D.

⁹²¹ Ibid.

⁹²² See Chapter IV, Section B.

⁹²³ Ibid.

⁹²⁴ See Chapter IV, Section D.

⁹²⁵ Ibid.

⁹²⁶ Ibid.

The Queensland premium and electricity retailer FiT schemes are on balance similar to South Australia's premium and electricity retailer FiT schemes in that they have comparable levels of premium FiT rates, oversight of electricity retailer rates provided by their respective independent economic regulators, similar scheme caps and a similar scheme duration.⁹²⁷ They are also similar in terms of requirements to pay renewable energy generators for excess electricity fed into the electricity network grid and to allow access to the grid by generators.⁹²⁸ However, Queensland has not had the same experience as South Australia in reducing the use of fossil fuels and increasing the uptake of renewable energy for the generation of electricity.

The ACT, Victorian and Tasmanian premium and electricity retailer legislative FiT schemes have some of the same key design features as South Australia's premium and electricity retailer FiT schemes, these being oversight of electricity retailer rates by their respective independent economic regulator and a fixed scheme duration in relation to the premium FiT schemes.⁹²⁹ Compared to South Australia however, the ACT and Victorian legislative FiT schemes also have greater flexibility in that they can be made to apply to a broader range of renewable energy technologies.⁹³⁰ They also have a much broader application in terms of the size of renewable energy generator captured, particularly the ACT Large-scale FiT Act. The latter Act is a notable difference to South Australia.⁹³¹

Compared to South Australia, out of the other NEM jurisdictions, NSW is the only jurisdiction that does not have a legislated FiT scheme currently operating. Given the NSW's experiences with its Solar Bonus Scheme, this is perhaps not surprising.

All the NEM jurisdictions experienced a rapid take up of their respective legislated premium FiT schemes such that all jurisdictions had to undertake some form of scheme constraint, for example, retrospective scheme capacity caps in the case of Queensland and the ACT, and closure altogether in the case of NSW. This indicates that legislated FiT schemes can be effective in encouraging, for example, community participation in increasing the uptake of electricity generated from renewable energy sources.

The key benefit of legislating RDC measures is the strong signal this sends to the renewable energy industry, investors and technological innovators of the importance being placed on

⁹²⁷ See Chapter IV, Section E.

⁹²⁸ Ibid.

⁹²⁹ Ibid.

⁹³⁰ Ibid.

⁹³¹ Ibid.

renewable energy technology research and innovation.⁹³² RDC measures can lead to the development of better, cheaper and more accessible renewable energy technologies.⁹³³ In this way, RDC measures can act as a complementary mechanism supporting the achievement of RETs and the implementation of FiT schemes through helping to facilitate the increased uptake of electricity generated from renewable energy sources.⁹³⁴

South Australia, the ‘target’ jurisdiction, continues to lead the field in terms of the scale of the South Australian Government’s investment in renewable energy. The ACT and Victoria’s RDC measures demonstrate an increasing focus on encouraging a greater uptake of renewable energy technologies. Whilst Queensland, NSW and Tasmania have a range of initiatives underway, they are not underpinned by legislative measures nor are they on the same scale as South Australia’s.

The examination of policy and academic research in Chapter V identified a range of key design features of voluntary agreements to include clearly defined targets set in the context of, for example, a RET, a clearly defined duration, the inclusion of interim objectives, the inclusion of a credible and reliable monitoring regime and provision for reporting and transparency mechanisms.⁹³⁵ Chapter V also explored some of the advantages and disadvantages of voluntary agreements, for example, their flexibility and ‘softer approach’ in achieving a desired outcome and the difficulty of establishing additionality when they form part of a ‘policy mix’.⁹³⁶

South Australia has a range of voluntary sector agreements in place which include some of these key design features. The ACT has a voluntary sector agreement regime which is not currently being utilised. Victoria’s climate change legislative framework has a similar secondary or subordinate tool to South Australia that could be utilised to encourage ‘grass roots’ level action on renewable energy, this being GHG emissions reduction pledges. A key difference between these pledges and South Australia’s voluntary sector agreements is that two of the three types of pledges aimed at the Victorian Government sector are mandatory in nature. Victoria’s climate change legislative framework is more recent than South Australia’s climate change legislation; this suggests that the use of mandatory subordinate tools to address GHG

⁹³² See Chapter V, Section B.

⁹³³ Ibid.

⁹³⁴ Ibid.

⁹³⁵ See Chapter V, Section C.

⁹³⁶ Ibid.

emissions at the State government level may be a more contemporary approach in climate change mitigation.

Voluntary sector agreements and GHG emissions reduction pledges can act as a complementary mechanism to the achievement of RETs and the implementation of FiT schemes through encouraging ‘grass roots’ action on increasing the uptake of electricity generated from renewable energy sources. South Australia, the ‘target’ jurisdiction, has this mechanism as do the ACT and Victoria. Queensland, NSW and Tasmania do not have these mechanisms in place.

As only South Australia has pursued the development of sector agreements and the whole of government and sector GHG emissions reduction pledges are not yet operational in Victoria, it has not been possible for this thesis to undertake a full assessment of the effectiveness of sector agreements and GHG emissions reduction pledges in promoting the increased uptake of electricity from renewable energy sources. However, one key benefit of utilising such ‘grass roots’ agreements and pledges is the breadth and flexibility this can add to NEM jurisdictions’ suites of policy and legislative measures for promoting the increased uptake of renewable energy.

Based on the above, this thesis has found that, in addition to South Australia, the other NEM jurisdictions, particularly ACT and Victoria, have also demonstrated tangible sub-national action in promoting the increased uptake of electricity generated from renewable energy sources in their respective jurisdictions. Since 2002, sub-national action by the NEM jurisdictions has taken place at different times and to differing extents. On balance, out of all the NEM jurisdictions, South Australia has been the most consistent in its actions on promoting the increased uptake of electricity generated from renewable energy sources. It has also demonstrated a progressive reduction in the dominance of fossil fuels and a consistent upwards trajectory in the uptake of electricity generated from renewable energy sources since 2002.

3 What are the policy and legislative insights of these findings in relation to the role Australian sub-national policy and legislative measures can play in increasing the supply of and demand for electricity generated from renewable energy sources?

One of the key findings of this thesis is that there is a ‘patchwork quilt’ of renewable energy policy and legislative measures in the NEM jurisdictions. This has made it particularly

challenging to examine and compare the NEM jurisdictions' various renewable energy policy and legislative measures.

One reason for the development of this 'patchwork quilt' of renewable energy policy and legislative measures is the flexibility the NEM jurisdictions have to tailor measures to suit their own particular circumstances. However, a key disadvantage with this 'patchwork quilt' of measures is the lack of a consistent minimum 'floor' or target across the NEM for, amongst other things, the amount of renewable energy generation capacity to be achieved. This carries with it the risk that some NEM jurisdictions' renewable energy policy and legislative measures will be less ambitious than others.

Chapter I explained that a range of authors have identified a number of different barriers to the increased uptake of renewable energy in the NEM and more generally.⁹³⁷ These barriers include regulatory, technical, economic, political and social barriers.⁹³⁸ Chapters III to V have demonstrated how the legislative measures examined by those Chapters can offer a means to overcome some of these barriers in some way.

For example, one of the key benefits of legislating RETs is the strong 'political' signal this sends to the community, the renewable energy industry, investors and other governments of the importance being placed on the generation of electricity from renewable energy sources. The implementation of FiT schemes can help overcome economic barriers to the increased uptake of small-scale renewable energy technologies by individuals, families and the community. RDC measures can help overcome technological barriers to the increased uptake of electricity generated from renewable energy sources through encouraging the development of better, cheaper and more accessible renewable energy technologies. Voluntary agreements and GHG emissions reduction pledges can act as complementary measures to RET schemes, FiT schemes and RDC measures through encouraging 'grass roots' action on increasing the uptake of renewable energy.

Ideally, to maximise the NEM jurisdictions' sub-national action on promoting the increased uptake of electricity from renewable energy sources, there would be a level of harmonisation of measures across the NEM with a consistent set of minimum targets and scheme design features. For example, based on the findings of this thesis, all the NEM jurisdictions could have

⁹³⁷ See Chapter I, Section B.

⁹³⁸ Ibid.

a legislated RET scheme accompanied by complementary mechanisms such as electricity retailer FiT schemes, RDC measures and secondary tools such as voluntary agreements.

As discussed in Chapter I, a number of authors have suggested that it is feasible to have 100% of the electricity in the NEM come from renewable energy sources.⁹³⁹ A potential target across the NEM jurisdictions could therefore be to achieve 100% renewable energy, noting the particular need for some NEM jurisdictions, for example, Queensland, NSW and Victoria, to be able to transition away from the use of fossil fuels for electricity generation in a staged orderly fashion.

Given the current similarities in fossil fuel dominance in their fuel mix profiles, Queensland and NSW could look to Victoria for learnings regarding potential policy and legislative approaches to increasing the uptake of electricity from renewable energy sources in their respective States. For example, NSW could consider introducing a policy RET to complement its support of the Commonwealth RET in encouraging the increased supply of and demand for renewable energy. This would also bring NSW more in line with the other NEM jurisdictions.

Harmonisation of policy and legislative measures across the NEM could be achieved through, for example, pursuing ‘co-operative federalism’ in the COAG forum. In relation to potential harmonisation of legislative measures, under the Australian Constitution, the Commonwealth Parliament may make laws with respect to matters referred to it by any state or states.⁹⁴⁰ There has been a broad range of referrals and adoptions supporting Commonwealth laws over the years. Referrals may be expressed broadly by reference to a subject matter on which the Commonwealth would as a result be authorised to legislate. States are however ‘fairly cautious about providing blank legislative cheques’ with referrals tending to be limited to the text of a proposed law.⁹⁴¹ As well as referral arrangements, there are examples of arrangements providing for ‘common-form Commonwealth and state laws’ forming a single regime, either

⁹³⁹ Ibid.

⁹⁴⁰ Australian Constitution, section 51(xxxvii).

⁹⁴¹ Robert French, ‘Executive and Legislative Power in the Implementation of Intergovernmental Agreements’ (2018) 41(3) *Melbourne University Law Review* 1388. Detailed discussion of co-operative federalism and intergovernmental agreements is outside the scope of this thesis.

nationally or for part of the nation.⁹⁴² The Australian Energy Market Agreement⁹⁴³ and the National Electricity Law⁹⁴⁴ are prime examples of this.⁹⁴⁵

Another important mechanism for facilitating co-operative federalism is the ‘intergovernmental agreement’.⁹⁴⁶ Intergovernmental agreements ‘involve an exchange of solemn political promises to enact legislation or to make administrative arrangements, or both, in order to give effect to some common purpose’.⁹⁴⁷ The key political forum for facilitating intergovernmental agreements is the COAG.⁹⁴⁸ A ‘cooperative federalism philosophy’ has influenced the way in which the Commonwealth Government has undertaken its role in relation to environmental matters.⁹⁴⁹ From time to time, the Commonwealth Government has been ‘prepared to take a more preemptive role’, for example, in relation to the carbon pricing scheme introduced in 2011.⁹⁵⁰

As French has said, ‘[c]o-operation on the part of the Commonwealth and states may well achieve objects that could be achieved by neither acting alone’.⁹⁵¹ However, the Australian experiences with energy related policy discussions between the Commonwealth and the states and territories serves to shine a spotlight on ‘the ultimate federalism dilemma of who, exactly, should have the final say over policy content’.⁹⁵² As Ryan has said, ‘[e]nvironmental law is uniquely prone to federalism discord because it inevitably confronts the core question with which federalism grapples – *who gets to decide?...*’.⁹⁵³ The most successful environmental governance is achieved through ‘processes of consultation, compromise and coordination that engage stakeholders at all levels of jurisdictional scale’.⁹⁵⁴

⁹⁴² Ibid.

⁹⁴³ The Australian Energy Market Agreement was entered into by the Commonwealth and the State and Territory governments on 30 June 2004.

⁹⁴⁴ Above n 58.

⁹⁴⁵ The other national law made pursuant to the Australian Energy Market Agreement was the National Gas Law.

⁹⁴⁶ Above n 941, 1386.

⁹⁴⁷ Above n 941, 1397.

⁹⁴⁸ Above n 941, 1393. COAG members include the Commonwealth Prime Minister and the premiers and chief ministers of the States and Territories.

⁹⁴⁹ Robert Fowler, ‘The Australian experience with environmental federalism: constitutional and political perspectives’ in Kalyani Robbins (ed), *The Law and Policy of Environmental Federalism: A Comparative Analysis* (Edward Elgar, UK, 2015) 271.

⁹⁵⁰ Ibid 272.

⁹⁵¹ Above n 941, 1394.

⁹⁵² Erin Ryan, ‘Environmental federalism’s tug of war within’ in Kalyani Robbins (ed), *The Law and Policy of Environmental Federalism: A Comparative Analysis* (Edward Elgar, UK, 2015) 356.

⁹⁵³ Ibid 358.

⁹⁵⁴ Ibid 359.

Achieving a greater level of harmonisation in renewable energy policy and legislative measures across the NEM could thus assist with reinforcing to the community, the renewable energy industry, investors and other governments the importance being placed on accelerating the deployment of renewable energy for electricity generation. This in turn could assist with encouraging, for example, more investment in new and emerging renewable energy technologies and further change in consumer choices and behaviours.

Expanding on the concept of sub-national action by the NEM jurisdictions to help address climate change, supporting the increased uptake of electricity from renewable energy sources in the South West Interconnected System and the Wholesale Electricity Market in Western Australia and in the Interim Northern Territory Electricity Market in the Northern Territory could help to supplement the actions already being undertaken by the NEM jurisdictions.

Building on the research undertaken in this thesis, further research into policy learnings across the NEM jurisdictions, Western Australia and the Northern Territory could be undertaken to assist with, for example, any potential future harmonisation of renewable energy policy and legislative measures in the NEM and across Australia more broadly.

Another potential area of research would be to assess and compare the impact the Commonwealth RET has had on the increased uptake of electricity generated from renewable energy sources in the NEM against the impact of the NEM jurisdictions' own sub-national renewable energy policy and legislative measures. Such research could help to more accurately identify the contributions being made by the Commonwealth Government and the NEM jurisdictions' measures.

D Conclusion

As discussed in Chapter I, Australia's economy and unique biodiversity are particularly vulnerable to the impacts of climate change⁹⁵⁵ It is vital that Australia steps up its action on mitigating the impacts of climate change.

In 2020, at the next *UNFCCC* Conference of Parties, it is anticipated that Australia will need to demonstrate whether it has met its GHG emissions reduction targets set a decade ago under the *Kyoto Protocol* and its GHG emissions reduction targets under its NDC. In light of the UNEP's recent findings that the current NDCs of the *UNFCCC* Parties are inadequate to

⁹⁵⁵ See Chapter I, Section B.

achieve the *Paris Agreement*'s goal of limiting the increase in the average global temperature to 2°C, it is also anticipated that Australia will be asked to demonstrate how it proposes to step up its efforts to meet the goals set under the *Paris Agreement*.⁹⁵⁶

Encouraging continued and more ambitious sub-national action by the NEM jurisdictions in promoting the increased uptake of electricity generated from renewable energy sources is one means by which Australia can achieve, and possibly even exceed, its GHG emissions reduction obligations under the *Paris Agreement*.

⁹⁵⁶ See above n 29.

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