

Discussion Paper



Going for zero: State decarbonisation strategies for prosperity in a zero-emission world

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Decarbonisation is a megatrend

Across the world, governments at all levels are implementing policies to reduce carbon emissions, address local air pollution, improve energy productivity, grow new industries and address energy security concerns. While these initiatives are as yet insufficient to avoid dangerous climate change or achieve the internationally agreed goal of avoiding 2°C warming above pre-industrial levels, the trend is clear.

What is also clear is the ultimate destination or strategic objective that these policies need to have: the progressive phase-out of emissions to reach net zero levels, or 'decarbonisation'. The OECD, World Bank and latest IPCC report have warned that avoiding irreversible and severe climate change impacts will require the global economy to be decarbonised before the end of the century.¹⁻³ This requires energy systems, particularly electricity, to decarbonise well before then.⁴⁻⁵

Private sector actors are also moving forward. Leading multinational business groups and corporate leaders have called for action to achieve net zero global emissions by 2050.⁶⁻⁸ The financial sector is increasingly aware of the risks of 'stranded assets' resulting from both global decarbonisation efforts and the physical impacts of climate change.⁹⁻¹⁰

In Australia recent political and policy turmoil saw state governments retreat from many past climate policy initiatives. However some governments are now reconsidering their position and the risks posed to their economies and communities should they be left behind by this global trend toward decarbonisation. This paper explains why states should have a decarbonisation strategy and explores these key policy elements:

1. **Setting binding emission limits on major emitting facilities**
2. **Incorporating carbon considerations into policy and planning processes**

3. **Using procurement and management policies to help build markets for lower emission goods and services**
4. **Continuing to develop and link energy efficiency policy frameworks**
5. **Providing assistance: funding, technical, regulatory, training**

State governments' role: policy innovation and strategic economic transformation

Australian state governments have in the past played leadership roles in developing and implementing climate change policies. The NSW government introduced the world's first mandatory carbon market—the NSW Greenhouse Gas Reduction Scheme—in 2003. State-based energy efficiency and renewable energy policies have been important test beds for other states and for national policy development.

Sub-national governments are very active in this sphere in other countries. For example, in the United States, 29 states have binding renewable energy targets, 10 participate in emission trading, and 20 have energy efficiency obligations. In Canada, provincial governments have phased out coal power (Ontario), established international carbon trading (Quebec) and launched the first revenue-neutral carbon tax in North America (British Columbia).

The implementation of national carbon pollution limits and pricing under the Clean Energy Future Act was used as a pretext to remove many state-based policies. Although this might be justified in the context of a strong investment signal created by a stable and growing carbon price, it was premature in light of the subsequent repeal of the legislation. The federal government has also wound back a range of other national climate and energy policies and institutions.

This has created an opportunity for state governments to again play more important roles in Australia's emission reduction and decarbonisation efforts. It is in

state governments' own interests to do so, for several reasons:

- + Given the threat climate change poses to state populations and economies, decisions made by state governments ought to reduce rather than increase climate risks and costs.
- + Decarbonisation is driving innovation across technologies, services and business models that offer significant economic benefits to jurisdictions that enable investment in these areas. Technological and commercial advances domestically and internationally are producing clean energy goods and services at increasingly competitive prices. States that facilitate development of these new products, markets and business models will reap the benefits in terms of growth, revenue and employment opportunities.
- + Waiting for decarbonisation efforts to advance further elsewhere before deciding what to do about them can leave governments, economies and industries very poorly prepared to adapt to the pace and scale of changes that are already emerging. Delayed action does not prevent the disruption of existing economies and business models. Instead it risks saddling state governments and economies with stranded assets such as obsolete energy infrastructure and exposes communities to significant job losses and economic uncertainty.

In light of uncertainty regarding federal policies, state-based initiatives become more important in both advancing decarbonisation and preventing losses to investment, employment and revenue. For example, NSW and South Australia would each lose over \$2 billion in renewable energy investment if the Renewable Energy Target (RET) is reduced in line with current federal government proposals. Victoria and Queensland would lose over \$1 billion.¹¹

Decarbonisation strategies are vital to maximise effectiveness

It is worth noting that state efforts in emission reduction and decarbonisation can, if poorly done, lead to policy overlaps and counter-productive investment signals. For example, over-generous state feed-in tariffs for solar PV panels, in combination with the federal Solar Multiplier, created disincentives for large-scale renewable investment and boom-bust cycles. Policies relating to energy, in particular, have been characterised by continual adjustments over the last decade, creating ongoing instability for market participants.

Grounding state policies in a long-term decarbonisation strategy can help reduce the risks of future changes and misallocated investment.

This paper suggests elements that could be included within a comprehensive strategy to incentivise decarbonisation and clean-tech investment. This does not include any discussion of state governments' responsibilities in addressing the physical risks of climate change. While there are some positive steps in this area, a coherent effort to improve Australia's resilience to physical climate risks remains elusive.

Measures to drive decarbonisation

Decarbonisation is a policy and practical priority that can be advanced across state responsibilities ranging from energy and environmental regulation, planning and building decisions, to management of government services and operations. Priority areas include limiting emissions from major sources such as power generation and industrial processes; creating demand for clean technologies and services by using procurement power; and incorporating carbon costs into policy and planning processes.

A state-wide decarbonisation strategy should consider the following measures and their role in advancing decarbonisation.

- 1. Setting binding emission limits on major emitting facilities**
- 2. Incorporating carbon considerations into policy and planning processes**
- 3. Using procurement and management policies to help build markets for lower emission goods and services**
- 4. Continuing to develop and link energy efficiency policy frameworks**
- 5. Providing assistance: funding, technical, regulatory, training**

1. Set binding emission limits on major emitting facilities

Emission targets and limits directly tackle the sources of carbon pollution. The 'safeguard mechanisms' to be established by the federal government will apply only to entities producing 100,000 tonnes of carbon pollution annually, will not operate until 2016, and are not likely to constrain emissions to the extent required to drive decarbonisation.¹² In the absence of national obligations on emission intensive facilities, state

regulators should require major emitters to reduce their carbon pollution.

State-based targets for emission reduction can drive decarbonisation if they are set at sufficiently ambitious levels and underpinned by binding obligations on emitters. Without direct emission constraints on major emitting facilities, state-based emissions targets are aspirational at best.

Emissions constraints may be established through direct regulation (e.g. emission performance standards for power stations) or market-based mechanisms (e.g. emission trading schemes). In choosing the appropriate measure, consideration should be given to its timeliness, breadth, potential for expansion to other jurisdictions and role in strengthening rather than conflicting with national policies.

For example, state-based emission trading can cover many emission sources and allows more flexibility in compliance; on the other hand it may require a lengthy implementation period, be more difficult to expand and risk conflict with future national emission trading. Sector-specific regulation may be more straightforward to develop, implement and expand as its focus is narrower, and can act as a backstop rather than a competitor to future national policy. Existing legislation governing pollutants can be used for this purpose.¹³

Priority areas for sector-specific regulatory policy include power stations, industrial processes and resource extraction. Electricity is responsible for one-third of NSW emissions, about half of Victorian emissions, and 30 per cent of Queensland emissions.¹⁴ Resource extraction is a fast-growing source of fugitive emissions. Some industrial processes, such as cement production or ammonium nitrate production, offer significant scope for emission reductions.¹⁵

State governments should:

- + Implement emission constraints on major emitting facilities consistent with net zero emissions by 2050
- + Explore the relative merits of emission trading (state or sectoral), regulatory standards or a combination of both to best meet emission limits.

2. Incorporate carbon considerations into policy and planning processes

Policies set by the state government may have significant emission impacts. For example, transport infrastructure strategies can lock in emission-intensive activity for decades. To avoid such lock-in, policy design and evaluation should explicitly account for the costs of carbon pollution and/or the benefits of emission reduction resulting from the policy. This can be done either through use of the 'social cost of carbon' or of the 'carbon value' derived from

achievement of a 2°C-consistent long-term emission goal.¹⁶

The social cost of carbon (used for example by the United States and Canada¹⁷⁻¹⁸) represents the present value of the marginal damage from emitting an additional ton of greenhouse gases, as derived from modelling of many (but not all) potential impacts of climate change.¹⁹ Carbon values (as defined by the UK Treasury) are derived from modelling of the investments required to reach a long-term emission goal.²⁰ Incorporating one of these methods into policy appraisal avoids implicitly assigning a zero value to emission reductions, and thereby removes a significant distortion common in Australian policy analysis practice.

State governments are also the primary consent authority for many developments with significant carbon pollution implications, including those relating to water, energy, transport, land-use planning, environmental protection and agriculture.

Allowing carbon-intensive developments to proceed instead of lower carbon alternatives can impose significant environmental risks. By effectively ignoring the probability of strong future mitigation policies, it also risks higher future costs to state citizens and businesses, and thereby represents a risk to the state economy. It is important that the assessment and approval process for these developments includes robust consideration of their exposure to carbon and climate risks. It is also important that approval processes and conditions do not needlessly delay or obstruct emission reduction and clean energy projects that drive decarbonisation.

The government of NSW is looking to privatise publicly held electricity assets such as electricity generation and networks. The government will naturally seek to maximize the price it receives. It is important that the conditions of sale avoid terms that entrench existing high carbon-emitting participants, create barriers to new lower emitting entrants such as renewable generators, or discourage or block lower emission options. Any privatisation program should include a publicly available assessment of the potential carbon emissions, role in decarbonisation and climate resilience of all options under consideration. Any relevant restrictive conditions should be made public.

State governments should:

Require calculation of greenhouse emissions across all three scopes²¹ for all new developments and proposals

- + Use emissions and their costs as metrics to assess the merits of different alternatives, for example relating to different transport options or land-use practices

- + Remove arbitrary limits on clean energy as well as low and zero emission developments
- + Incorporate the costs of emissions or the benefits of emission reduction in policy appraisal and project approvals
- + Require major state and regional developments – such as large urban and infrastructure developments – to meet best practice relating to energy and water use
- + Ensure privatisation deals do not create barriers to decarbonisation and emission reduction
- + Include in project approvals assessment of exposure under key climate change scenarios: the internationally agreed goal to avoid 2°C warming and projections of climate change based on the current global emissions trajectory (i.e. 4°C or more). For large urban and infrastructure developments the interdependencies of energy, water, transport and other infrastructure sectors should be explicitly considered.²²

3. Use procurement and management policies to build markets for lower emission goods and services

State governments are large procurers of goods and services. State purchasing of renewable energy, energy efficient and/or electric vehicles for government fleets, energy efficient equipment, and energy management services and technologies across the full range of government-run facilities and operations has the potential to significantly reduce energy use and emissions. It also helps drive down costs and grow demand for such goods.

Support for renewable and other clean energy¹ development requires stable, long-lived purchasing arrangements, due to the level of predictability required for investment. Dedicated offtake agreements for all or part of the output of a renewable energy project will be more effective than Green Power purchases, for example, in encouraging new renewable projects and attracting investment and jobs.

The national *Renewable Energy (Electricity) Act* precludes state governments from implementing a mandatory renewable energy target on retailers.²³ However states can implement alternatives such as contracts for difference or feed-in tariffs. These may require the state government to take a view on future market conditions so must be carefully managed to avoid distortions. Another option is to include

¹ Here clean energy is defined as electricity generation with an emissions intensity of less than 0.2 t CO₂/MWh. This would include, for example, a coal or gas-fired power station with full carbon capture and storage.

renewable energy requirements within approval conditions for major developments. This has already been done in isolated cases, such as the Barangaroo development, and could be expanded.

Effective energy management is not limited to the purchase of energy efficient goods. Recent research has found that the key factors to maximising corporate energy savings are regular analysis of energy data, senior management accountability, and the inclusion of energy efficiency in corporate policies and operational guides.²⁴

In some cases the upfront cost of purchasing these goods and services might appear substantially higher than for higher-emission alternatives. Procurement policies should be based on long-term costs (although appropriate time periods will differ across goods), including unpriced externalities like carbon pollution. Shadow carbon pricing/use of the social cost of carbon should be incorporated into procurement and energy management decisions.

State governments should:

- + Incorporate long-term values of emission reduction (eg. social cost of carbon analysis) into procurement and management policies
- + Include energy management KPIs within relevant SES contracts
- + Consider requiring major infrastructure projects to derive a minimum share of their power supply from clean energy sources.

4. Continue to develop existing energy efficiency policy frameworks and link where possible

Australia needs to improve the productivity of its energy use for several reasons: energy has become more expensive, high carbon energy will incur growing costs in future, and, as other countries invest in boosting their own energy productivity, Australia risks losing competitiveness. The Australian Alliance to Save Energy, with support from business groups including the Ai Group and Australian Chamber of Commerce and Industry, is leading efforts to double Australia's energy productivity by 2030. This is roughly equivalent to the effort being undertaken by the US government over the same timeframe.

Australia's energy efficiency policy framework is patchy, with some significant policy gaps. Despite the financial benefits of improved energy productivity barriers to energy savings persist, and much of Australia's energy use remains inefficient. For example, research has shown energy savings of more than 50%

can be achieved in commercial buildings with a net economic benefit.²⁵

Better transparency and knowledge of energy efficiency opportunities and benefits can drive improvements. The abolition of the federal Energy Efficiency Opportunities scheme leaves a gap in disclosure of energy efficiency options and activity among the country's largest energy users. Disclosure of the energy efficiency of buildings is mandatory for certain commercial buildings nationally, but not required for other building types except in ACT.

States should consider extending disclosure regimes to encompass large energy users (as was done through, for example, Victoria's 2008-13 Environment and Resource Efficiency Plan) and multiple building types. Better disclosure enables companies, building purchasers or tenants to make more informed investment decisions.

Overarching energy saving targets can also help drive efforts to remove barriers. These targets should be ambitious but achievable, and may benefit from being regularly reviewed to take into account developments in energy efficiency technologies and activities.

Several state governments have established energy saving certificate schemes in order to reduce power demand and consumers' bills. Due in part to rapid changes of technology and consumer behaviour in recent years, the operation of these schemes has been imperfect, particularly regarding to the management of eligibility of activities and estimates of energy saved. Nonetheless the variety of approaches within the schemes offers useful lessons for administrators. Harmonisation of existing schemes can create more efficient and liquid markets, but should be drive broader best practice rather than lowest common denominator approaches. States without energy saving schemes could consider linking to an existing scheme or establishing other mechanisms to achieve similar or greater energy savings.

State and federal governments had agreed to upgrade energy efficiency standards for commercial buildings in the National Construction Code. The new regulations would have been introduced in 2016, but have been dropped. State governments should put this back on the COAG agenda and reinvigorate efforts to upgrade standards.

Compliance with existing standards is also a problem: CSIRO analysis indicates that many buildings are not meeting the required standards and building certifiers are not properly checking that standards are met.²⁶

States are responsible for ensuring compliance through proper monitoring and auditing of building certifiers. States can also provide leadership on retrofitting existing commercial buildings through financing (e.g. environmental upgrade finance).

State governments should:

- + Develop an energy efficiency strategy to optimise the contribution of energy saving opportunities to long-term decarbonisation
- + Harmonise energy efficiency policies at the highest level of practice
- + Support ongoing improvement of national energy efficiency standards
- + Improve regimes for ensuring compliance with energy efficiency standards.

5. Provide assistance: funding, technical, regulatory, training

State governments can improve the environment for carbon-reducing investment by providing businesses with assistance in various forms. Interaction with state regulators or other agencies can be made more efficient and user-friendly. Funds can be provided directly to companies or to build capacity on which companies can draw. Ensuring that the government itself is appropriately knowledgeable about emerging technologies and industries helps avoid or remove regulatory barriers.

Establishing a dedicated decarbonisation advocate or taskforce within government can help businesses and communities navigate relevant programs and processes, and help government readiness for emerging technologies. The NSW renewable energy advocate and the regional coordinators of the Regional Clean Energy Program are positive examples of roles that could be expanded.

State governments could consider:

- + Direct funding for research, development and commercialisation of new technologies
- + Smoothing administration, by streamlining planning and approval processes
- + Establishing dedicated decarbonisation capacity
- + Encouraging timely development of an appropriately skilled workforce, for example through provision for relevant TAFE courses.

Appendix: Overview of possible state-based policy initiatives for facilitating decarbonisation

Policy	Benefits	Risks
<i>Set binding emission limits on major emitting facilities</i>		
Regulate emission standards	<p>Clear, effective signals if sufficiently ambitious</p> <p>As backstop to market mechanism, provides additional predictability</p>	<p>Can be difficult to find the right balance of ambition and costs</p> <p>Can be inflexible to external economic circumstance or future emission goals</p>
Establish market mechanism	<p>Highly flexible, lowest-cost means of achieving emission reductions</p>	<p>Complex, lengthy establishment process.</p> <p>Price signal vulnerable to scheme adjustments and likely to be weak until market matures</p>
<i>Incorporate carbon considerations into policy and planning processes</i>		
Use emissions and their costs as metrics in assessing new developments and proposals	<p>Ensures carbon costs are explicit and considered in development design and approval</p> <p>Drives lower emission development</p> <p>Reduces exposure of state consumers, businesses and economies to impacts of future carbon prices/limits.</p>	<p>Methods of calculating carbon costs can significantly underestimate carbon reduction benefits:</p> <ul style="list-style-type: none"> - social costs of carbon estimates are not comprehensive. Can be addressed by using ranges, as done by the United States. - Goal-derived carbon values need to be derived from a stable and sufficiently ambitious long-term goal.
Mandate best practice in energy and water use for major developments	<p>Ensure efficient use of energy and water by major users of both.</p>	<p>May increase regulatory burden for major development proponents</p>
Incorporate carbon costs in policy design and appraisal	<p>Helps ensure carbon costs are accounted for in policymaking</p>	<p>Methods of calculating carbon costs can significantly underestimate carbon reduction benefits (see above)</p>
Include estimates of climate impacts in major project assessments	<p>Reveals exposure to climate change</p> <p>Encourages climate risk management by developers and government</p>	<p>Complex analysis may be poorly performed, and misinterpreted.</p>
<i>Use procurement and management policies to help build markets for lower emission goods and services</i>		
State government procurement policies favour less emissions intensive goods and services	<p>Bring down costs and grow markets for lower emission goods and services.</p> <p>Reduced exposure to future emissions pricing/limits</p>	<p>Some procurement costs may increase</p> <p>Energy unit costs may increase in the short term</p>
Management roles include high-priority focus (e.g. KPIs) on energy productivity	<p>Energy savings should reduce state energy costs</p> <p>Reduced exposure to future emissions pricing/limits</p>	
Investigate feed-in tariffs, offtake agreements or contracts for difference for additional clean energy generation	<p>Provide investment-grade policy for additional clean energy generation</p> <p>Reduce exposure to future emission pricing/limits</p>	<p>Exposure to changes in market conditions must be managed</p> <p>Interaction with other policies could result in distortions</p>

<i>Continue to develop and link energy efficiency policy frameworks</i>		
Expand disclosure mandates beyond large commercial buildings	Improve consumer choice and financial incentive for energy efficient investments.	Increased regulatory burden Consumers may not initially understand or value information.
Set and review ambitious state energy saving targets, including for state government operations	Can focus policy efforts.	Weak targets will be ineffective Poorly-designed targets could incur costs and trigger backlash.
Improve and link energy saving schemes	Develop energy services sector Improve market efficiency and liquidity	Harmonisation needs to ensure high standards to maximise effectiveness
Upgrade NCC standards and improve compliance	Significant energy savings	Increased costs of ensuring compliance
<i>Providing assistance: funding, technical, regulatory, training</i>		
Provide direct funding for RDD	Attracts innovation and opportunities to state and positions state to benefit from industry development Reputational benefit	Cost to state budget Return on investment may be uncertain and difficult to measure May crowd out private financing
Streamline planning and approval processes, remove barriers	Lowers costs for business; may lower costs for state	Should not preclude thorough social and environmental impact assessments
Establish dedicated decarbonisation advocacy base within government	Improve communication between government and industry Improve government knowledge of emerging issues, opportunities	Advocacy base could be under-resourced or sidelined in decision-making processes
Encourage workforce development by providing training	Improve state's capacity to leverage economic opportunities	Poor understanding of workforce needs could result in wasted training resources

ENDNOTES

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- ²¹ A facility's scope 1 emissions are those emitted as a direct result of an activity (e.g. coal combustion at a power plant). Scope 2 emissions are those indirectly emitted through consumption of purchased electricity, heat or steam. Scope 3 are indirect emissions resulting from other activities such as the extraction and production of purchased materials and fuels. See Greenhouse Gas Protocol, www.ghgprotocol.org.
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