



Submission:

Response to the Energy 2031 Directions Paper

May 2011

by the
Sustainable Energy Association of Australia
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GLOSSARY

ABARES	Australian Bureau of Agricultural and Resource Economics and Sciences
CAES	Compressed air energy storage
CCS	Carbon Capture and storage
CNG	Compressed natural gas
COAG	Council of Australian Governments
CTL	Coal to liquids
EV	Electric Vehicles
FIT	Feed in tariff
GHG	Greenhouse gas
GTL	Gas to liquids
HVAC	Heating ventilation and cooling
LNG	Liquefied Natural Gas
LREC	Large-scale Renewable Energy Certificate
MCOE	Ministerial Council on Energy
REBS	Renewable Energy Buyback Scheme
SEA	Sustainable Energy Association of Australia
SEI	Strategic Energy Initiative
STC	Small-scale Technology Certificate
ToU	Time of Use

1.0 EXECUTIVE SUMMARY

The Sustainable Energy Association of Australia (SEA) represents over 400 businesses, enterprises and professionals involved in the sustainable energy industry across the nation. As a business chamber in the energy space, we have prepared a response to the Strategic Energy Initiative Directions Paper. This response covers the key issues that SEA and its members see as impacting the energy future of the State and which SEA believes will provide a more innovative and forward thinking Strategic Energy Initiative, Energy2031

The Strategic Energy Initiative Directions Paper charts possible energy futures for WA over the next 20 years to ensure that reliable, secure, competitive and clean energy sources are available. SEA contends the Discussion Paper proposes an overly conservative, business as usual approach based on out-dated assumptions about the rapid development of renewable energy and energy efficiency in the 21st Century. It assumes little will change over the next 20 years and that our only option is to switch to natural gas. SEA is disappointed in the Directions Paper as it leaves out much recent evidence of changes in energy markets globally and in Australia, and leaves many questions in relation to potential low-emissions energy futures unasked and unanswered.

This is a pity because current global energy market investment data clearly shows that around the world renewable energy investment is now far greater in dollar terms than any other energy investment.

During our consultation with members, SEA has identified many issues within the SEI Directions Paper that must be better addressed by the final Energy 2031 strategy. Furthermore, many issues were identified with the Directions Paper itself, in the assumptions made, the information used and the conclusions then drawn. The following is a summary list of critical issues with the SEI:

1. The Direction Paper provided no plan underlying the actions, nor did it create clear and coherent targets and goals of how and when many of the suggested actions would be achieved. For example, how WA might reach 20% renewable energy by 2020 is unstated. Current scenarios suggest WA may reach 9% renewable energy generation by 2015 and so strategies that will double electricity generation from renewable sources in five years to 2020 need to be developed.
2. Data contained in the SEI DP is, in a number of cases in relation to renewable energy pricing and rapid technological innovation, out-dated or even obsolete, and as such, conclusions drawn from this data are therefore flawed. Subsequent actions then based on these conclusions are also flawed.
3. As a consequence of point 2, assumptions made regarding renewable energy are biased against the adoption of renewable energy in favour of increasing natural gas penetration and its broader use for all future energy needs in WA. Many potential energy technologies are not considered, particularly in relation to innovation in improved urban and city design, and in industrial energy efficiency, and remain unexplored; rather, there is a clear direction in increasing the use of natural gas at the expense of all other technologies.
4. There is no consideration of the removal of fossil fuel subsidies within the current energy market – rather, additional subsidies are suggested for expanding gas exploration while emerging

renewable energy technologies are discounted as requiring large subsidies to become commercial.

5. The effect of both Commonwealth and State programs for supporting conversion to greater renewable energy content must be properly assessed and understood. Full lifecycle analysis of our energy sources and the various mechanisms of support need to be fully understood, including the effect of implicit, structural subsidies that currently exist for fossil fuels in energy pricing.
6. There is no clear mechanism for creating bipartisan support for an Energy2031 strategy to negate the potential risks of future changes of government and policy. A bipartisan independent advisory committee needs to be created inclusive of business and stakeholders in order to chart out a cleaner and more sustainable energy future for WA and to assess the progress of the SEI's strategy.
7. There is no assessment of risk or contingency planning when making many assumptions about future natural gas or other energy supplies. This is particularly noticeable with the failure to address the increasingly acknowledged issue of Peak Oil and the continuously building challenge of rising oil prices.
8. Assumptions that are difficult to support are made about various technologies and 'pick winners' over others thereby creating immediate disadvantage for non-fossil fuel energy sources.
9. Economic factors are over-riding of all other considerations. This is problematic as it ignores social and environmental issues. The Directions Paper does not use the term 'sustainable' or 'sustainability' in addressing any one of these three aspects.
10. There is no clear path on how the Government will engage in a 'whole-of government' approach to implementing the strategy. This is critical considering the breadth of scope of the document.

This submission also addresses many other specific issues on the design and implementation of the Energy2031 strategy.

2.0 GENERAL COMMENTS ON THE DIRECTIONS PAPER

2.1 Background

The first initiatives to substantially reform Western Australia's energy market started in 2003 when the Labor Government of the day embarked on a program of reform to the State's electricity industry to create a competitive electricity market, encourage private sector investment, improve reliability of supply and place downward pressure on prices.

The Sustainable Energy Association of Australia (SEA), representing over 400 businesses, enterprises and professionals involved in the sustainable energy industry across the nation, was one of the most vocal on the energy market reforms that led to the disaggregation of the former agglomerated Western Power in 2006, a reform that was strongly supported by a unified business community. While these reforms have now begun to create a competitive market, the reforms are still incomplete, including those needed to complete the transition to cost-reflective pricing.

In continuing and extending reform, the business community for initiating electricity price reform for cost reflective pricing has congratulated the Barnett Government. Renewable energy advocates such as SEA, have particularly welcomes this reform as those changes will eliminate measures that delivered subsidies for the use of fossil fuel in the generation of energy, subsidies that have perversely inhibited the take up of renewable energy in Western Australia.

The Barnett Government, through the Minister for Energy, the Hon Peter Collier, has been working on a Strategic Energy Initiative, Energy2031, a plan that is to consolidate a 20-year vision for Western Australia's energy needs.

SEA, and indeed all interested in the Western Australian business community, had called for such a plan for many years, and all welcomed the announcement of the development of such a plan by Minister Collier in June 2009.

The Directions Paper has been awaited with much anticipation – Energy2031 claims to be an “ambitious and practical plan that aims to meet our energy needs over the next 20 years.”

There are a number of good elements to the document that provide necessary thought leadership in ensuring Western Australia has the energy that it needs in the coming decades, and will lead to the continued evolution of a competitive energy market in WA.

But the language of the document, while inclusive of renewable energy in its content, still conveys no strong appetite for change from current business practice. Nor is the plan welcoming of changes that will substantively enable the broad deployment of renewable energy, diversify WA's energy generation capacity and bolster regional development through harnessing indigenous energy sources.

2.2 Overview

2.2.1 Structure of the Discussion Paper

The Strategic Energy Initiative Directions Paper (SEI DP) is intended to chart the energy future over the next 20 years to ensure that reliable, secure, competitive and clean energy sources are available. However, the document proposes an overly conservative, business as usual approach, and assumes little will change over the next 20 years and that our only option is to switch to natural gas.

It is most certainly not a plan that ambitiously carries with it an imperative to create structural reforms in energy use: one that decouples our economy from carbon based energy sources; that acts to defuse any threat of a future price on carbon; and explores how we might harness Western Australia's wealth of renewable energy and contribute to a more sustainable, less inflationary domestic fuel source.

SEA is disappointed in the Directions Paper as it leaves out the ambition above and consequently leaves many questions unasked and unanswered.

Unfortunately, the SEI DP shows a lack of clear, defined objectives and goals to achieve any concrete results. For example, it does not include any indication of what the business landscape may look like in 20 years, which will be a key driver of the energy needs for our state, or what mix of energy generation is desired. Many statements of goals within the SEI do not define concrete outcomes and there are no specific goals to achieve. Without having some clear goals against which to achieve outcomes, it is not possible to determine how the SEI's success will be measured over time. To put it in the most basic terms, there is no plan.

Structurally, one key flaw that we noted was that with the many different themes, strategies and actions there is a lack of clarity on a number of points - specifically:

- How the 'goals' of Secure, Reliable, Competitive and Clean will be achieved by the different actions listed under the strategies;
- How the different themes and actions interrelate to one another;
- That many related points (e.g. on smart grids) seem to have differing time horizons to achieve mutually interdependent outcomes;
- Clear paths of progression on how related issues will be achieved and in what order; and
- Clear prioritisation of actions, recognising that many of the actions will stretch the limited resources available to undertake them.

2.2.2 Time horizons

In the context of the SEI DP, three time horizons are specified: short, medium and long. While short term indicates a time horizon of 1-5 years, there is little to indicate the real time horizons of medium and long-term goals. This is problematic in developing specific long-term plans and determining the order in which actions will be taken to achieve the SEI's desired outcomes.

One other problem related to the time horizons is that there is a lack of any nominal targets to achieve in relation to the energy mix or any plans to address deficiencies in achieving these. Industry would benefit from clear information on the potential of future energy generation mixes along with

the Government's projections on what energy efficiencies are achievable over this period to reduce business as usual (BAU) consumption.

2.2.3 External influences on the SEI

While the State is understandably desirous of not prescribing certain activities that are the responsibility of the Commonwealth, not creating separate carbon management regulations creates circumstances where there are significant deficiencies in the state's strategy. These strategic deficiencies mean that WA will always be a follower in energy policy and fail to address renewable energy opportunities beyond 2020, more than half the period of the SEI. Furthermore, failure to take advantage of the wealth of renewable energy resources available in WA can lead to circumstances of under investment in renewable energy creating financial penalties for the State. This includes the need to import renewable energy certificates, (RECS- both STC and LREC) from the Eastern States due to underinvestment in renewable energy; an unnecessary flight of capital in times where the opposite is entirely possible if WA looks to encourage investment in renewable energy.

The impact of the Federal Government's policies and laws also needs to be recognised as an issue that the SEI must address. With transportation fuels, fuel standards, taxation, fuel excise and many other matters that impact the energy market in WA being the responsibility of the Commonwealth, they cannot be directly controlled by the SEI's actions. However, WA needs to address these issues at a national level through the Council of Australian Governments (COAG) and the Ministerial Council on Energy (MCOE). The SEI DP only minimally addressed some issues, primarily in respect to tax holidays for natural gas exploration. Sadly, many other issues that affect the WA energy market and its future energy needs remain unaddressed by the SEI DP. More of these issues are found in detail in Section 2.7 and throughout this document.

2.2.4 Creating a free and fair market

The issues surrounding renewable energy and its supporting technologies seem to have been placed a distant second to the expansion of natural gas, at the cost of all other energy sources, for stationary generation. While the SEI DP attempts to remain technologically neutral, there is little in the document to identify renewable energy options and their potential deployment in the WA generation mix. By failing to address properly these options and the potential development and deployment pathways in WA, the renewable energy generation opportunities are marginalised in favour of significant expansion of fossil fuels.

While the SEI takes as a key platform cost reflective wholesale and retail energy pricing as mechanisms to manage energy demand, it does not address the issue of existing subsidies and support within the electricity generation sector and their distorting effect on market prices. Existing structural subsidies, such as diesel excise relief for coal mining in WA, and royalty and resource rent tax breaks for oil and gas exploration and production, have the effect of creating reduced costs upstream, which other energy generation sources do not have the opportunity to access. Aiming for cost reflective tariffs, while supporting structural subsidies, supports significant market distortions that disadvantage new non-fossil fuel entrants to the energy generation market.

One key platform for cost reflective pricing appears to be the introduction of time of use (ToU) tariffs, which in the context of the SEI DP, seem to be all about residential tariffs. Only in one place

does the SEI DP clarify that the previous mentions were only in respect of residential electricity tariffs and not those for business as well, including business tariff schemes. Considering the commercial industrial sector is a far larger user of energy it seems there is an unfair targeting of residential use, rather than across all users.

The following sections address the above issues and others that have been noted by SEA members. They address structural and other issues with the market that affects the development and implementation of the SEI.

2.3 Reliable, Secure, Competitive and Clean Goals

SEA recognises that there needs in some circumstances to be a compromise in achieving goals to improve the sustainable use of energy in Western Australia. However, in the SEI DP the objective of clean energy appears often to take a back seat to other aspects. For example, transport issues raised focus on fuel security, while little mention is made of how clean the alternatives might be. The examples used in coal-to-liquids and gas-to-liquids both have significant adverse environmental impacts, yet they are assumed to be preferable to alternatives.

2.3.1 Economic efficiency versus sustainability: which is the most appropriate criterion?

Throughout the document, many of the strategic points raise the issue of actions occurring only if there is an economically efficient reason or cost benefit to do so. SEA is of the view that this does not address all of the issues necessary to appreciate the full understanding of the context in which energy is generated and used, nor does it consider the opportunities across rural and regional Australia for farmers, communities, and potentially many mine sites, to be self sufficient on indigenous sources of energy from renewable sources, and so the greatest benefit to the state's economy and the community.

We recommend that in all cases where only economic criteria are used, that both environmental and social factors (inclusive of regional development, particularly through the goals of Royalties for Regions and similar existing Western Australian Government policy measures) need to be properly understood and incorporated into the decision making process. To ascribe only economic criteria is to fail the most basic concepts of developing a long term, sustainable energy market for generators and consumers in WA, and misses a broader opportunity to diversify and strengthen WA's regional economy.

Further, Western Australia's growth is being underwritten by the resources sector and we must ensure that growth is sustainable – as we develop the Pilbara and the Midwest, including Oakajee Port, Government must ensure that it is powered by energy that does not grow Australia's greenhouse gas emissions, and Energy2031 must be a key document in this ambition.

Further, in the urban context, new building regulations and green urban renewal that will increase sustainable building practices, the inclusion of energy efficiency in urban and commercial developments, and the use of renewable sources to create emissions-free energy for consumption by residents and businesses is likely to change energy consumption and demand patterns over the next two decades. With a 1% new building increment and 1% rate of building renovation, up to 40% of the state's buildings will benefit from higher energy efficiency by 2031. In addition, the

accelerated development in the past two years in lighting efficiency (especially through LED lighting) and heating ventilation and cooling (HVAC) efficiency is already providing a huge potential in saving of urban and commercial energy consumption.

While there are many examples from around the world of rapidly improving design of eco-cities improving building, precinct and city level energy efficiency, reducing energy consumption, and reducing greenhouse gas emissions, the most powerful example right now is the work in the City of Sydney that has already delivered improved energy efficiency, reduced energy consumption, saved money after short payback periods, and reduced emissions by 17%¹.

2.3.2 Gas as a clean energy source

SEA supports a sustainable energy market in WA and recognises that while natural gas is cleaner than coal-fired electricity, it must be used as a bridging fuel to transition to a more sustainable energy future. Natural gas is a limited resource. It is likely to peak and decline in the first half of this century, and production is likely to peak during the SEI's time horizon.

While natural gas is a more cleanly burning fuel than coal, the touted 50% reduction in CO₂ emissions takes into account only emissions at the stack/tailpipe. To assess how clean it really is in comparison to coal in GHG emissions, one needs to consider its lifecycle emissions. The greenhouse potential of fugitive natural gas from some drilling and extraction impacts can have a significant impact on global warming potential.

Studies in the United States have indicated that the emissions from processes such as hydraulic fracturing are not well understood and may indeed have GHG emissions well in excess of those of both petrol and diesel. One such report states:

“There is an urgent need for a comprehensive assessment of the full range of emission of greenhouse gases from using natural gas obtained by high-volume, slick water hydraulic fracturing (HVSWHF, or “hydrofracking”)... **Greenhouse gas emissions from HVSWHF-obtained natural gas are estimated to be 60% more than for diesel fuel and gasoline.** These numbers should be treated with caution. Nonetheless, until better estimates are generated and rigorously reviewed, society should be wary of claims that natural gas is a desirable fuel in terms of the consequences on global warming.” (emphasis added)²

Based on such commentary and a situation where there is little publicly available information to inform the debate, the automatic assumption that natural gas is the cleanest option to fulfil the SEI's four objectives should be treated with caution, particularly in light of the recommendations made on exploiting unconventional natural gas such as tight gas and coal seam methane.

¹ City of Sydney Energy & Emissions

<http://www.cityofsydney.nsw.gov.au/environment/EnergyAndEmissions/Default.asp>

² Howarth, RW (2010) *Preliminary Assessment of the Greenhouse Gas Emissions from Natural Gas obtained by Hydraulic Fracturing*, Online Available: <http://s3.documentcloud.org/documents/28713/cornellpaper-ghg-oglifecycle.pdf>

2.3.3 Misconceptions on renewable energy intermittency

The SEI makes strong assertions on the reliability and security of renewable energy as being neither secure nor reliable due to 'intermittency' of energy sources such as the sun and wind. While it is certain that these are not as constant as some other energy sources, a good deal of this can be overcome making use of the state's geographic diversity and size to ensure a diversity of collection points for intermittent renewables. Further, a number of existing renewable energy technologies do not suffer from the intermittency issues that wind and solar PV do. For example, dispatchable energy is deliverable through biomass energy, solar thermal technologies, geothermal energy and some wave and tidal sources. In addition, offshore wind can deliver higher consistency wind energy than onshore wind systems mitigating many of the concerns of intermittency regarding onshore wind farms. SEA recognises that offshore wind in Australia has commercial impediments due to the large amounts of relatively cheap land that is available, unlike in more densely populated international markets such in Europe.

Further, the potential of rapidly evolving technologies that will arise from the development of Smart Grids must be considered by any plan that purports to take WA to 2031. These technologies include distributed generation and integrated energy management systems across suburbs and regions, combined with the rapidly emerging potential of large-scale energy storage, which has a high probability of arriving within this decade as a consequence of plug-in hybrid vehicles and fully electric vehicles (EV) deployment, driven by peak oil and oil pricing,.

2.4 SEI DP underlying information and assumptions

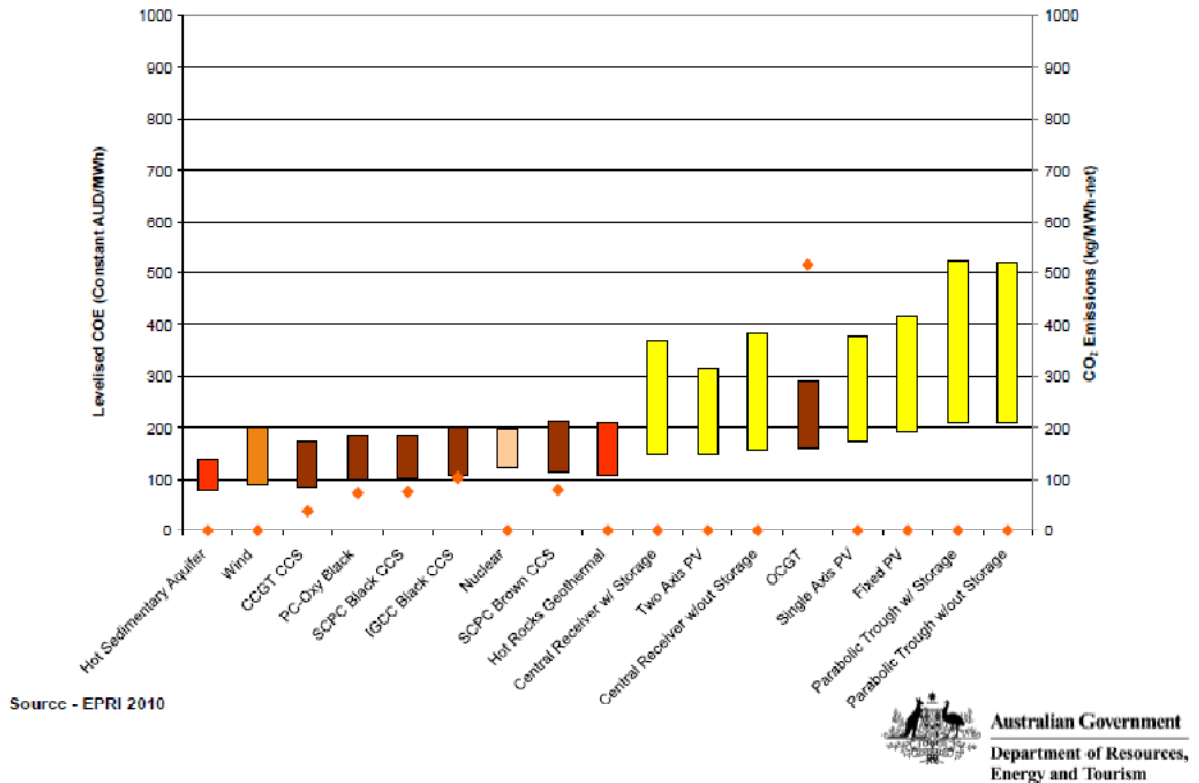
SEA has noted that the SEI DP contains many assumptions and information based on dated and in some instances obsolete data sets and a number of biased and unsupportable assumptions. The use of this information is a significant concern to the industry as it creates a bias for many conclusions that we believe do not reflect current market realities, and as such, risks creating a flawed strategy that will disadvantage WA businesses and residents in the future. The issues of obsolete data and flawed assumptions include:

- A lack or recognition of Peak Oil and its impact on the energy market, in particular diesel-fired generation and road transport in WA. The IEA recognised that Peak Oil is a real phenomenon and probably occurred in 2006. The failure of the SEI DP to recognise this and then rely on other assumptions based on this oversight is a deeply flawed approach.
- ABARES assumes that once renewable energy reaches 20% of generation capacity, there will be no further growth in uptake from 2020-2030 (p. 18). We would argue that the basis for these assumptions are flawed as the logic behind it - that the only driver for renewable energy uptake are RECs - assumes pricing on renewable energy will not change and that it will not provide a major contribution to the economy in that time. While the production of RECs will obviously be flat (in SEA's view, any new subsidies for renewable energy should logically be concluded within five years or so, though existing measures may wind down past this time), the point of RECs is to create market start-up and a competitive renewable energy market. Rapid technological development of renewable energy generation technology in other parts of the world have already significantly reduced the cost, and improved the efficiency, of these systems, and this will only continue to improve price competitiveness.

- p. 18. – ABARES assumes that there will be no change in fossil fuel consumption over the next 20 years, an unlikely scenario considering both the price of oil and related challenges from Peak Oil.
- p. 20 – There are significant assumptions supporting the gas supply model that are not accounted for in the strategies being developed within the SEI. These include:
 - That 2350 PJ of new natural gas resources will be discovered and is available for domestic consumption – this is a large quantity of natural gas to find and no one knows where it may come from as yet;
 - The consumption figures assume that there will be no substitution of transport fossil fuels with natural gas, which would significantly increase consumption rates, quite possibly well beyond the “High Supply” scenario.
 - The low supply scenario indicates that demand will exceed supply in the early 2020s assuming the modest 3.5% growth scenario – large displacement of coal by natural gas is likely to accelerate this timeframe.
- p. 23 & 24 – The map identifying geothermal resources only identifies deep hot rock opportunities where exploration has already been undertaken for the purposes of oil exploration. For example, hot sedimentary aquifers can be used for energy displacement are not included. This is a well-known and established technology used internationally and is an area supported by existing Western Australian Government funding to The University of Western Australia through the Western Australian Geothermal Centre of Excellence and the associated Premier’s Fellow, Professor Klaus Regenauer-Lieb.
- Furthermore, Figure 10 on p. 23 is used to justify a statement that renewable energy resources “..are either distant from existing electricity networks and loads, or are located at the edge of existing networks”. We would query that this is a supportable conclusion as there appear to be significant wave, wind, geothermal and biomass opportunities available across the SWIS and NWIS allowing multiple energy entry points into the grid – what is lacking are planning approaches to ensure that resources in close proximity to areas of demand can be developed.
- p. 24 & 25 – The reliance on the MMA data is misleading. This information is old and has been superseded by more recent information on the comparable levelised cost of energy (LCOE). For example, the graph below shows comparisons of energy generation sources³.

³ Department of Energy Resources and Tourism (2010) *Clean Energy Council 2010* presentation

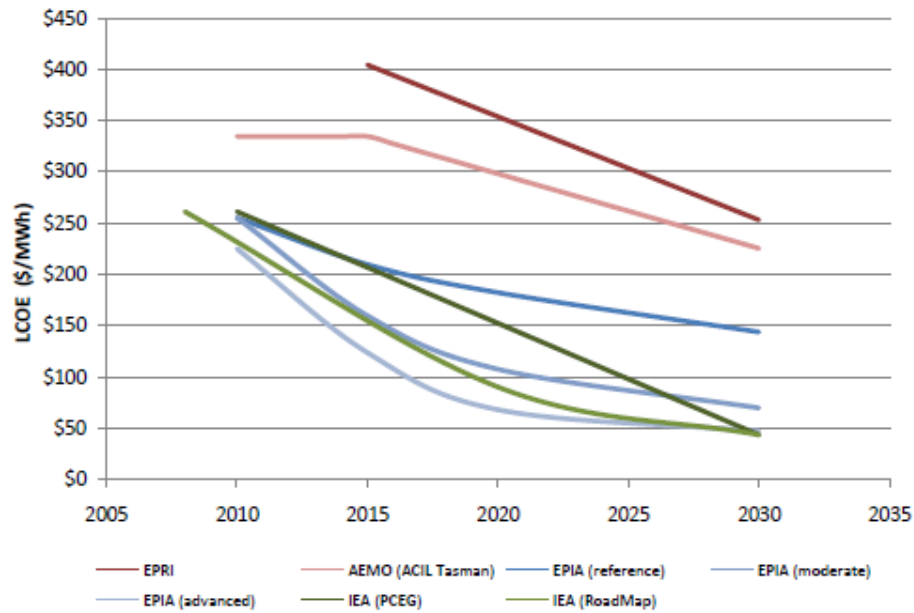
2030 Technologies Sorted by Levelised Cost Ranges with Operating Emissions Intensity



One must also recognise that there are issues with coal fired energy and CCS apart from the cost of capital and operation of these plants (which is still uncertain). These are of course the health and environmental factors which are not included in such models. The further issues with CCS and coal are addressed in Section 2.4 *Strategic Risks* below.

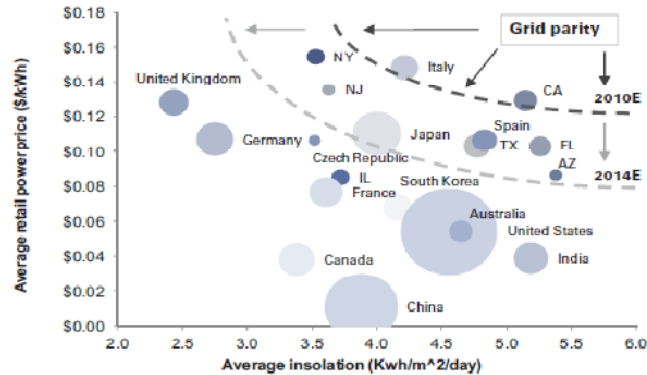
Furthermore, the EPRI data used above is not the only source of data available. For example, the Melbourne Energy Institute has recently conducted research that looks at the issue of LCOE and compares different sources of information as part of the Garnaut Review. For example, for solar PV the graph below shows different LCOE based on different assumptions.⁴ While the MEI only addressed the issues of solar PV, wind and concentrated solar thermal, we believe that it illustrates the point that the reliance on limited and dated information is a significant risk.

⁴ Hearps, P & McConnel, D (2011) Renewable Energy Technology Cost Review. Report [Online]. Available:



- p. 26 – The statement that renewable energy is more expensive than current sources of energy. While this is not disputed, assumptions that this will remain so are strongly challenged by SEA, particularly based on the assumption that “[s]ignificant subsidies will be required to establish these technologies within the energy mix at a commercial scale”. T
- he SEI DP does not appear to address future cost increases for energy along the supply chain, nor the removal of structural subsidies that currently support the WA energy generation market (discussed later). For example, for distributed generation, many countries are approaching grid parity pricing for solar PV. As this parity pricing expands, uptake will further increase, driving demand and reducing costs. Projections of grid parity pricing internationally are seen in the following figure.

Exhibit 54: ...but solar is becoming more cost competitive
Power prices (y-axis) vs. insolation (x-axis); bubbles represents size of market



Source: Energy Information Administration (EIA), National Aeronautics and Space Administration (NASA), Goldman Sachs Research estimates.

Grid price parity of solar PV⁵

2011 estimates of the falling cost of solar suggest that solar PV may hit price parity by as early as 2014 and no later than 2016.⁶

Indeed, consistent global data that suggest rapidly moving markets in energy generation, renewal in the built environment, and innovation in transport – all responding to a world hungry for integrated, whole-of-world solutions to decarbonise global economies.

One such trend is in global investments in renewables. In 2008, the world invested more in dollar terms in renewable energy than in traditional energy sources (coal, gas, nuclear and so on). Back then, while those who were sceptical that a world economic revolution was anywhere close accepted the size of the investment, they were critical that \$US165 billion had delivered only one quarter of the energy generation capacity constructed in that year.

In 2009, despite the global financial crisis, most of the world continued to invest in and build renewable energy projects. In a way, that has further surprised those convinced the world is yet to change, despite roughly the same investment, with 48 per cent of power capacity built in 2009 was renewable; a far greater capacity in renewables built for less money in one year.

The new investment numbers available for 2010 show a new surge in the cleantech spend, with global investment up 30 per cent in 2010 to \$243 billion.⁷

⁵ Extracted from a report by Goldman Sachs provided by an SEA member

⁶ Giles Parkinson, *Caught between a flood and a rising sun*, http://www.climatespectator.com.au/commentary/caught-between-flood-and-rising-sun?utm_source=Climate%2BSpectator%2Bdaily&utm_medium=email&utm_campaign=Climate%2BSpectator%2Bdaily

2.5 Strategic risks

SEA has identified a number of strategic risks arising from assumptions adopted, which affect many of the recommendations made in the SEI DP.

2.5.1 Policy certainty and bipartisan support

The single largest strategic risk in the SEI is that it will fail to have bipartisan support and that the strategy developed around the SEI will not be enabled or continued should a change of Government occur and the direction be deemed unsuitable.

The SEI is silent on the issue of sovereign risk and dealing with the development of a sustainable, long-term, bipartisan strategy. Until such risks are addressed and dealt with, there is a significant issue of uncertainty in the business environment. Such uncertainty creates significant barriers to taking any action, which may be undermined later by changes in the political environment.

SEA recommends creating a bipartisan, Advisory Board to advise the Government on key issues regarding sustainability, energy and potential futures for WA.

2.5.2 Over-reliance on a single energy source

The SEI is heavily oriented to the adoption of natural gas to fulfil many of the goals of the SEI in clean, competitive, reliable and secure energy. Yet it fails to acknowledge the risk in the adoption of this policy and placing all its eggs in a single basket. By subsidising various exploration activities and expansion of increasing natural gas use, this policy exposes WA to a commitment to consume natural gas well beyond the 2031 horizon.

This concentration on gas as the panacea to WA's energy future creates the risk of:

- Locking energy generation into a future where prices can only increase;
- Maintaining a considerable carbon footprint due to the consumption of gas, without any strategy to mitigate the GHG emissions from natural gas exploration, transport and consumption;
- Creating shortages of domestic gas in stationary generation if exploration is unable to discover the 2,350 PJ of domestically available new resources. Failure to achieve this level of additional supply will expose WA to seeking supply at global pricing levels and potentially paying a significant premium on existing prices;
- Reinforcing the power of the gas cartel in controlling the energy prices in WA. The concept of a cartel is antithetical to the concept of a competitive market;
- Incurring significant additional infrastructure costs to transport the additional gas required by a growing natural gas market; and
- Creating a situation where demand will exceed supply before the early 2020s if there is a large substitution of gas for other transport fuels, exacerbating price and security.

⁷ China Extended Lead in Making Clean Energy Investments in 2010, Pew Says.
<http://www.bloomberg.com/news/2011-03-29/china-extended-lead-in-making-clean-energy-investments-in-2010-pew-says.html>

The statement on page 21 of the SEI DP that WA will be able to fulfil its gas needs solely from local supplies over the next 20 years, is one fraught with risk. The management of this risk is only addressed by the assumption that adequate gas will be able to be sourced locally through exploration and market interventions by the Western Australian Government. Failing that, WA will become reliant on international gas resources and pay the price of global markets, including lack of availability due to international competition for natural gas and existing supply contracts which prevent supply to the domestic market.

Further, Solar PV is rapidly becoming price competitive, and will in a very short time frame be a lower cost option than liquid fuels. With the continuing increase in gas prices, solar PV may in the medium term be cheaper than natural gas. Contemporary estimates of the falling cost of solar suggest that solar PV may hit price parity by as early as 2014 and no later than 2016.

2.5.3 The adoption of CCS as a mitigation technique

SEA does not support the SEI's vision of the continued use of coal and the adoption of carbon, capture and storage (CCS) technologies as part of the future commercial energy mix. This is based on the following issues:

- Coal is not renewable and such finite resources can potentially be applied to greater value adding than combustion;
- Coal generated power in WA is extremely inefficient and a large consumer of other scarce resources such as water. The utilisation of inefficient generation technology needs to be avoided when consuming a limited resource and it greatly increases the parasitic losses that are needed to implement CCS;
- There is a large energy penalty involved in implementing CCS. US studies have indicated that parasitic energy losses are in the order of 80 -140 MWh per tonne of CO₂. Commercially, this is a very high cost of abatement.⁸
- CCS does not eliminate all CO₂ emission and any carbon pricing would add cost to the consumer; and
- CCS is a commercially unproven technology and has only been used in a limited fashion in the oil and gas industry. Reliance on CCS as a core solution to management of coal generated CO₂ emissions creates a risk that CCS as a solution is avoided due to high abatement costs involved.

One other concern regarding CCS is that while it can potentially reduce CO₂ emissions from the stacks of coal power plants by 85-90% or more, it has no effect on CO₂ emissions due to the mining and transport of coal. For example, were it only to require 25% of the coal plant's energy, it will actually

"...increase such emissions and of air pollutants per unit of net delivered power and will increase all ecological, land-use, air-pollution, and water-pollution impacts from coal mining, transport,

⁸ Jaramillo, P, Griffin, WM & Matthews, HS (2008) *Comparative Analysis of the Production Costs and Life-Cycle GHG Emissions of FT Liquid Fuels from Coal and Natural Gas*, ENVIRONMENTAL SCIENCE & TECHNOLOGY, VOL. 42, NO. 20

and processing, because the CCS system requires 25% more energy, thus 25% more coal combustion, than does a system without CCS."⁹

Considering that coal mining is also heavily dependent on diesel fuel and is subject to global oil pricing, with prices increasing in the future, it is likely that the additional cost for mining and transport of additional coal to cater for any CCS demands will also add a significant cost to the generation of coal fired electricity.

2.5.4 Missing the boat

Failing to address the rapid evolution of global renewable energy markets, will stand in the way of imperatives to create structural reforms in energy use, to decouple our economy from carbon based energy sources, and to defuse any threat of a future price on carbon.

The potential cost of delaying action on the decarbonisation of the economy also risks the introduction of new fossil fuel based generation systems, which will rapidly become obsolete, stranded assets. Where stranded assets are created through action by the Government, the issue of compensation for asset owners becomes an additional real cost to the economy.

2.6 Responsibilities of other government departments

SEA recognises that it is implicit in the SEI that there is a need for a whole-of-Government approach on many matters raised in the SEI DP due to the pervasiveness of energy in the WA economy and community. SEA has provided a number of examples where existing government policy is likely to impact on the energy mix of 2031 (housing building standards, Royalties for Regions policies), but has not been considered in the SEI DP. Unfortunately, the SEI does not envision what would be required by the government to address this need and how such an approach might be implemented to reduce regulatory and approvals barriers in some circumstances and to enable the SEI recommendations in others.

Previous State Government consultations, such as the Solar Flagships workshop, identified that there were at that time, at least *nine* government departments, agencies and corporations that would need to be somehow involved in such a project. Despite this, there remains no clear mechanism for new entrants in the market to understand and deal with this plethora of regulations, or a mechanism in the SEI DP to address this challenge.

There is a desperate need for a clear pathway for new market entrants, particularly in the renewable energy space, to understand and address regulatory needs. This is not considered in any depth within the SEI DP.

2.7 The role of COAG and the MCOE in assisting the implementation of WA's energy strategy

While this is a State-based strategy, there is little recognition of the impact of Commonwealth laws and regulations on the WA energy markets and WA's potential energy future, and the potential of COAG to contribute. In some cases, the Federal regulations are referred to only in giving concessions

⁹ <http://www.stanford.edu/group/efmh/jacobson/Articles/I/WWSEnergyPolicyPtI.pdf>

to gas exploration and development of fossil fuel generation capacity. Energy2031 needs to explicitly identify the effects, both positive and negative, that Commonwealth responsibilities have on the operation of the energy market in WA.

Furthermore, on the basis that Energy2031 is intended to create a competitive market with cost reflective pricing, the structural subsidies and barriers to adoption of greater efficiency need to be equalised where Commonwealth laws, regulation and policy create these. As such, the Government needs to address these through forums such as COAG and the MCOE. Failure to do so will ensure that market distortions will continue and that the Energy2031 outcomes will be sub-optimal.

2.7.1 Commonwealth subsidies that distort the WA energy market

SEA has identified a number of structural subsidies that distort the market in favour of existing fossil fuel generation and against renewable energy. Typically these subsidies are in the form of foregone revenue or accelerated depreciation, which can significantly impact the timing of project returns. Based on prior research by SEA and others, these structural subsidies, both within the State and nationally, dwarf those provided directly to renewable energy through mechanisms such as the RET and Feed in Tariffs (FIT).

The two key subsidy areas identified are:

- **Diesel fuel rebates** – this rebate is provided to mining operations, including coal mining, to return diesel excise payment to the company. By including coal mining in this rebate the cost benefit of cheaper operations artificially reduces the cost of coal recovery and transport. SEA does not have the information to currently model the impact of this rebate on the WA energy market, but would suggest that it amounts to many millions of dollars per year.
- **Accelerated depreciation on capital expenditure** - Upstream oil, gas and mining (coal) exploration are capital expenditures for which there is a 100% deduction available. Only recently did the Commonwealth include geothermal exploration in this regime. Unfortunately, there is no equivalent concessional tax treatment available for resource assessments and analysis for renewable energy projects such as wind, solar, wave etc. These activities are a direct equivalent to exploration for oil, gas and coal. By providing such benefits to some energy sources and not others, we contend that market price distortions will remain and that both cost comparability and cost reflectiveness of energy prices cannot be achieved.

2.7.2 Commonwealth barriers to greater efficiency and renewable energy adoption

SEA has identified a number of barriers, particularly in relation to transport, which can act as a barrier to the adoption of renewable energy and energy efficiency. These are:

- **Diesel fuel rebates for biodiesel** – Under the current fuel standards and the excise regulations, it is not possible to use pure biodiesel and biodiesel blends and receive any excise rebate. This means that it is unlikely to be a viable option for any industry that can benefit from diesel excise rebates such as mining, agriculture or road transport.
- **Fringe Benefits Tax (FBT)** – The current structure of FBT as it is applied to vehicles disadvantages more efficient vehicles with lower running costs and encourages the

maximisation of distance travelled to minimise any tax impact. This creates a perverse incentive to drive longer distances, with less efficient cars. As such, it acts as a barrier to the adoption of newer vehicles.

While not yet a major issue, this is likely to have an impact on the adoption of Electric Vehicles (EV). EV are treated as normal vehicles by the FBT rules. On the assumption that EV would cost less to operate, they could be penalised under the current FBT regime, likely to a greater degree than normal vehicles

- **Luxury Car Tax (LCT)** – The current price of EV are high due to the cost of energy storage systems required for them. Many are not normally definable as luxury cars but under the luxury car tax, market price is certainly an issue for purchasers. The LCT threshold for fuel-efficient cars is \$75,375 (inc. GST) for the 2010-11 financial year. For LCT purposes, fuel-efficient cars are cars that have a fuel consumption of seven litres per 100 kilometres or less. This issue may act as a barrier to company adoption of EV in the future. This problem will of course be defrayed as the price of EV drop in the coming decade.
- **Asset depreciation for energy efficiency** – The current tax regime and the Tax Commissioner's schedules of plant life act as a barrier for businesses to change out older, less efficient equipment for newer and more energy efficient equipment. Even under the proposed Green Building depreciation (recently postponed until 2012), it was not available for industry where a greater energy efficiency dividend in reduced energy consumption could be realised.
- **Inequality of RET application** – Currently the RET covers not only renewable energy generation but also energy displacement in the form of solar hot water systems. Unfortunately, other energy displacement technologies such as ground source heat pumps and direct use geothermal energy are not covered in this scheme. There is no indication that if a national energy efficiency scheme were introduced that these technologies would be covered. In this case, it creates a cost barrier against the uptake of these technologies due to a lack of support on pricing, which is available for other energy displacement technologies.

2.8 Previous implementation failures of energy policy

The development of a strategy and implementation of policy and administrative structures to enable that strategy is key to the success of WA's energy future. However, SEA has noted that in the past, policies have been implemented where the outcomes of this policy have been undermined by:

- A perceived lack of commitment to follow through on promises made by the Government;
- A lack of attention to detail in implementation which has created unintended consequences or perverse outcomes;
- A lack of clear communication or consultation with industry or community stakeholders; and
- The lack of a whole-of-government approach to implementation creating unintended regulatory barriers from conflicts of legislation, regulation or local government ordinances.

In respect of energy policy where SEA believes the outcomes have been suboptimal, the following serve as a number of examples where policy failures have been noted in the past.

1. **Feed in tariff implementation** – While SEA supports a FiT, we have received many complaints from both consumers and industry on the confusing nature and anomalies within the FiT. These include:
 - a. A failure to provide clear and detailed guidelines on the administration and implementation of the policy prior to it being enabled and addressing discrepancies before the start date;
 - b. Implementing an unwritten policy of all consumers as equal under the FiT, even when there are clear differences between many types of consumers. This has led to a number of perverse outcomes and issues arising from the FiT implementation;
 - c. Creating both technical barriers to FiT uptake and excluding REBS eligible customers through differences between REBS and FiT rules, although there is no reason why these should not be exactly the same. This is due to discrepancies and incompatibilities between the two schemes which were not recognised prior to implementation; and
 - d. Having situations arise where the Government has provided support for installing PV panels but created a situation where it is impossible to get the FiT due to the rules.
2. **Failure to address business self-generation needs and opportunities**
 - a. A lack of any real recognition of the potential benefits for self-generation and failure to reform regulations so that businesses can receive a return for energy fed back into the grid without a generator license;
 - b. Lack of consultation or action on a more broadly based feed in tariff to encourage businesses not to rely on peak power but to undertake self-generation;
3. **Regulatory barriers in WA for renewable energy adoption**
 - a. Lack of concrete action to remove barriers to renewable energy uptake that have been previously identified.
 - b. Maintaining market rules that distort the market in favour of large scale existing generation.
4. **Support for innovation**
 - a. Lack of any real funding for consistent and broad reaching basic and applied research and technology development in WA. This is different from many other states who have committed funds to this.
 - b. Unwillingness to provide financial or material support to the development or commitment for nationally competitive schemes to increase renewable energy generation in WA e.g. Solar Flagships etc.

2.9 SEA commentary on issues

The following chapters provide SEA's response to the issues raised in the SEI DP. This includes a broader, more general comment as well as issue-specific responses. In a number of cases, short responses have been provided such as:

- Supported – we agree with the issue and action; and
- Supported in principle – we agree with the general concept but believe that detailed actions or solutions are either not appropriate or that alternate action is possible.

In many cases we have provided specific comments to address what SEA perceives as the underlying flaws or problems with the suggested course of action.

3.0 THEME 1 - SECURITY OF ENERGY SUPPLIES

3.1 Commentary

Theme 1 covers many issues, the most critical of which is the creation of a strategy in which gas is the predominant fuel for stationary energy generation and transportation in WA over the next 20 years. SEA has addressed many of the concerns on this gas focus in Chapter 2 of this document. Furthermore, there is a significant bias against the development or adoption of renewable energy or the creation of a more sustainable energy future.

The subsidies suggested to support gas under this theme must be provided in equal levels to the development and exploitation of sustainable energy resources as well. Failure to make such commitments within the SEI for equitable market support, which is technology or energy source agnostic, would make a mockery of later actions raised to create a competitive, undistorted downstream energy market.

The regulatory structures that are currently in place actively discourage smaller scale (sub 10 MW) generation due to the costs incurred versus the economies of scale for energy production. As such, suggestions for structures such as community cooperatives and generation parks become uneconomic without financial support to set them up, or a significant revamping of the relevant regulations. For example, if a community cooperative retails electricity as well as generating it, the cooperative would need to have funding for 75 days' worth of sales and network charges on hand prior to start-up, a considerable amount of capital that any community enterprise would be unlikely to obtain easily. In addition to this, the relevant retail market would need to be contestable, and any subsidies would be available to all retail participants.

The issue of transport is only dealt with under Theme 1, a premise, which we do not necessarily agree with as transport must address all four of the SEI objectives. Transportation fuel issues and transport structures as they are addressed in Theme 1 are overly focused on short distance transport and we do not believe that the SEI properly addresses regional transport planning when one considers peak oil and oil availability issues, particularly diesel fuels, upon which much of WA's economy and regional energy generation is dependent.

SEA notes that there are a number of key unaddressed issues in relation to transport in Theme 1 and assumptions have been made regarding the future of transport in WA over the next 20 years without appropriate evidence to support the assertions made. For example:

- There is an assumption that the development of GTL and CTL technologies for transport are a good choice if economical. SEA argues that this is not the case and that the impact of GTL and CTL projects both economically and in GHG emissions, is likely to significantly exceed those for petrol.
- Inter- and intra- state transport is a significant issue in WA east – west and north – south. Currently east – west rail is becoming more unreliable with frequent derailments delaying shipments due to poor maintenance in South Australia. This creates a greater dependence on road transport into WA.

- There is no viable north – south rail corridor making all intrastate transport dependent on diesel. SEA would question the option of CNG as practical for long distance transportation to remote areas which have an issue with infrastructure and gas availability. Any possible additional costs for road transport need to be understood in the context of its impact on the cost of living and availability of goods in regional WA.
- What would happen to WA natural gas reserves based on the total replacement of the vehicle fleet over the next 20 years with LNG/CNG? This is not known but currently, as gas is constrained in WA, one assumes that massive additional infrastructure would be needed, pushing up the price of LNG/CNG for motoring. Over the next two decades, large scale electrification of road transport and motor vehicles appears more probable than large scale conversion to CNG/LNG particular because those fuels are still exposed to fossil fuel pricing volatility and a future carbon price.
- There are unanswered questions in what will happen to fuel taxes as petrol use declines and where the Commonwealth would replace this revenue from.
- There is a lack of any in depth thinking about alternative fuels, the current regulatory environment and the impact on community, amenity and the economy. Alternative fuels and energy systems are ignored in many cases to give preference to gas. Fuel / energy storage systems not addressed include hydrogen, liquid ammonia, ethanol, biodiesel, bio-crudes etc.
- If plug-in hybrids and EV are widely adopted, how will this change total power consumption of the state and how can this be provided for? What provisions would be put in place to ensure that the environmental impact of EV would be minimised with renewable energy? Globally a number of car manufacturers have already committed to have plug-in hybrid and EV options available for their whole fleets by 2015.

3.2 Specific issues

Strategy	Action	Horizon	SEA issue
Diversification			
	Develop an interactive Geographic Information System that is capable of displaying pre-competitive geoscience data, renewable energy resource data, information on potential loads and network capacity information. This tool could be used to support energy investment decisions, reducing the cost of market entry	Short	SEA supports this but this sort of preliminary “energy prospecting” needs to be made available freely to businesses and community groups.
	Encourage exploration for geothermal resources within reasonable distance of load centres through: <ul style="list-style-type: none"> a) examining royalty arrangements for the extraction of geothermal energy; b) coordinating exploration programs to provide sufficient scale of work, and facilitate cost-sharing between proponents, for drilling operators to bring equipment to Western Australia to undertake broadscale geothermal exploration; and c) reviewing legislation and regulation to remove unnecessary barriers to entry 	Short	SEA supports this proposition, however, it must not only be considered for hot dry rock (HDR) geothermal scenarios but also for the use of energy from hot sedimentary aquifers which can provide energy for the displacement of electricity generation. Such direct use technologies are well established globally and have been successfully used in WA e.g. Challenge Stadium.
	Develop training courses in State institutions to provide skilled workers in low-emission energy technologies.	Short	Supported in principle. SEA’s position is that training and education must be for renewable rather than the broader low-emission category. Low-emission includes many technologies which are not supported by SEA such as nuclear and CCS.
	Develop a targeted program to build on the Low Emissions Energy Development Fund to assist with the commercialisation of innovative low-emission electricity generation technology.	Short	Traditionally WA state government funding of commercialisation has been extremely poor for a number of years. SEA supports the development of a meaningful program in this area. However, it must not be the sole responsibility of the Office of Energy, which does not have the experience with the commercialisation of early stage technologies or the technical knowledge to be able to compare the relative merits of competing proposals.
	Commission an independent study on the economic and environmental implications of developing large-scale energy storage technology for the electricity system in Western Australia, including pumped water storage, compressed air	Short	Supported. However, distributed stationary storage solutions must also be included in any study as there is likely to be potential significant benefits for load shifting on a distributed basis i.e. domestic or

Strategy	Action	Horizon	SEA issue
	storage, and distributed storage (including EV).		commercial storage for own use. One also questions whether systems such as pumped hydro or compressed air are practical systems when compared to new and emerging technologies which include EV but also other forms of chemical, thermochemical and thermal storage.
	Support research into, and development of, mobile generation and distribution equipment that can be used for short to medium-term needs, such as mining activity, and develop appropriate regulatory frameworks.	Short	Much of this technology already exists for the mining industry. SEA assumes that this is directed towards more sustainable / renewable energy generation systems, rather than just portable diesel generator sets which are commonly available.
	Establish efficient and flexible regulatory regimes that facilitate the development of new energy resources, and are adaptable to new energy sources and technologies.	Short	Supported.
	Develop market rules that provide incentives for hybrid renewable/conventional generation facilities with the objective of improving the efficiency of conventional thermal generation plant or reducing system-balancing requirements.	Short	Supported in principle. When considering these regulatory changes, one also needs to consider all available technologies and whether thermal generation systems (we assume that you are referring to coal or gas plants) would include co- and tri-generation systems. Alternately, one might consider the tri-generation model currently being implemented in NSW that would also have application to Perth. If this is the case, it is not a hybrid renewable / conventional fuel system, it is an energy efficiency and energy displacement system.
	Develop edge-of-grid solutions to resolve issues associated with centralised supply, network support, and the cost of replacing life-expired infrastructure.	Long	Supported in principle on the assumption that these solutions improve sustainable and efficient energy delivery. However, if this is to extend beyond its normal life, expired infrastructure, we believe that expired infrastructure is better replaced with new and more efficient systems.
	Encourage distributed generation and local energy supply by: a) securing planning pre-approvals for locations where significant renewable energy resources have been identified, streamlining approvals processes and simplifying licensing obligations for smaller generation facilities; and b) working with the Commonwealth Government to ensure appropriate regulatory standards and importation requirements are in place for imported energy-related technology.	Long	Supported on the basis that the following issues are addressed: <ul style="list-style-type: none"> • Development of a single point-of-contact approach / case manager who deals with the multiple departments and organisations needed to be dealt with in any application. • Remove unnecessary financial and regulatory burdens on smaller generation proposals. • Ensure that obsolete second-hand systems that cannot meet adequate performance standards are not introduced into the WA energy sector.
	Facilitate community-based energy cooperatives to meet local	Long	Supported. However significant financial barriers face the development

Strategy	Action	Horizon	SEA issue
	demand.		of community based projects due to the current regulations and market rules in place. In particular, if the cooperative retails electricity to its members, there are significant financial commitments and guarantees required by the IMO and Western Power to cover network and retail costs.
	Support research and development into technologies and market structures to allow more embedded small-scale generation on distribution networks.	Long	This needs to commence in the short-term and be continuously funded over the life of the strategy. Delaying this to the medium and long term would defeat the purpose of undertaking it in the first place. To undertake such a support program, there would need to be clear guidelines and goals for the research on how it will meet the state energy targets.
Gas Security			
	Urge the Commonwealth Government to facilitate new entry to the domestic gas production market through: <ul style="list-style-type: none"> a) permitting exploration bids for acreage not yet surveyed by Geoscience Australia; b) making retention lease reviews more transparent and allowing comment on lessees' claims for renewal; c) limiting the number of renewals on all new retention leases; d) providing taxation and royalty concessions for development and production of domestic gas; and e) providing taxation incentives for exploration and development of unconventional gas for domestic use. 	Short	See general comments on the issue of increasing gas as an energy generation source.
	Clarify the State's Domestic Gas Reservation Policy, as part of the Department for State Development's ongoing consideration of the policy, through: <ul style="list-style-type: none"> a) ensuring there are transparent guidelines for meeting the existing commerciality test; b) placing a time limit on when domestic gas production must be available on new LNG projects, while permitting gas swaps, or release of LNG into the domestic market to meet reservation obligations; and c) ensuring all State Agreements have provisions that are as consistent as possible with the domestic gas policy. 	Short	See general comments on the issue of increasing gas as an energy generation source.
	Facilitate the development of efficient and transparent domestic	Short	See general comments on the issue of increasing gas as an energy

Strategy	Action	Horizon	SEA issue
	gas markets by: a) considering the need for, and merits of, a Short Term Trading Market for gas in Western Australia, or joining the national gas market, following a review of the first two years of operation of the planned Gas Bulletin Board and the response to the Gas Statement of Opportunities; and b) encouraging development of gas storage facilities.		generation source.
	Encourage new entry to gas production by: a) introducing royalty arrangements similar to those for tight gas to encourage exploration and development of all unconventional gas supplies; b) facilitating land access on determined and proclaimed reserved lands for on-shore gas exploration and development; and c) undertaking a study into the comparative costs of alternative entry points for the long-term delivery of gas into the South West of the State from local, national and international sources.	Short	There is no similar policy suggested for assistance levels to support the development of commercial renewable generation assets. This would provide significant structural subsidies for gas but not for renewables. This would create significant market distortions which would disadvantage renewable energy generation
	Increase the potential available gas supply through: a) investing in facilities and infrastructure that encourages common use by smaller exploration and development companies for on-shore gas; and b) facilitating approvals for and potentially supporting, where a business case can be shown, investment in common user infrastructure such as open hub processing facilities and on-shore pipeline laterals.	Long	There is no similar policy suggested for assistance levels to support the development of commercial renewable generation assets. This would provide significant structural subsidies for gas but not for renewables. This would create significant market distortions which would disadvantage renewable energy generation
Transport Energy Security			
	Develop a regulatory framework for new liquid fuel technologies such as coal-to-liquids, and facilitate related approvals processes, should the technology become a commercial proposition.	Short	Disagreed. There are significant impacts from such decisions, where alternative fuels sources are not also considered in the potential future fuel mix. In particular, one needs to consider the potential cost impact of carbon pricing on fuel pricing due to the potential for larger carbon footprints for GTL and CTL products than for standard petroleum products.
	Facilitate the development of plug-in hybrid vehicle and EV market for light vehicles, commercial vehicles, mine-site vehicles	Short	Agreed. In addition, WA has an opportunity to lead in research into networks interactions of plug-in hybrids and EVs as proposed by the

Strategy	Action	Horizon	SEA issue
	and public transport by: <ul style="list-style-type: none"> a) working with the Commonwealth Government to ensure appropriate standards are in place; b) amending the vehicle regulatory and licensing framework to provide incentives for EV use; and c) developing an appropriate regulatory framework and technical standards to manage interaction of EV with the electricity grid. 		current Sustainable Electric Transport Cooperative Research Centre (SETCRC) Bid Group. In addition to technical issues, significant work also needs to be undertaken to understand how the use of EVs in particular will change within the economy and the economic, social and environmental impacts of their use.
	Provide vocational training in State training institutions to train skilled workers to support the EV market.	Short	Agreed. However, other alternative fuel systems such as biofuels and hydrogen or liquid ammonia are also potentially available and as such need to be considered as part of the future fuels training.
	Develop a State Transport Energy Plan that considers risks associated with the State's dependence on fossil-fuelled transport. The plan must aim to maintain the viability of regional towns and develop geographically dispersed resources, in an environment of increasing dependence on imported oil, and considering the effects of oil price volatility and carbon price policies.	Short	Agreed. However, there are risks in switching as noted in the point below which will need to be considered in the Plan.
	Facilitate take-up of new transport technology to reduce dependence on petroleum products for transport fuels. This will entail: <ul style="list-style-type: none"> a) support for increased use of alternative fuels (such as biofuels and gaseous fuels) for heavy, long-range transport through vehicle registration incentives and facilitation of approvals for refuelling facilities; and b) encouragement for gas producers and shippers to provide LNG take-off points for domestic and transport use, potentially as part of the domestic gas reservation policy 	Long	SEA has identified potential strategic risks in the over-reliance on LNG / CNG based fuels in the future, particularly in the long distance transport area. This is detailed in the strategic risks section of this submission. SEA supports the development and production of biofuels for local consumption to mitigate the impact of GHG emissions, international fuel price fluctuations, remote area transportation issues and minimisation of additional infrastructure costs that will impact consumer price economics.
	Review current arrangements for back-up transport fuel supply and storage capacity in remote towns to ensure they are adequate, and develop mechanisms for addressing identified risks to supply, subject to cost benefit analysis.	Long	Supported in principle.
	Continue to encourage greater use of public or shared transport and non-motorised transport for local trips by the general community through urban design, pricing signals and public	Long	Dependent on multiple government departments committing to the strategy and following through with a whole of government approach to energy.

Strategy	Action	Horizon	SEA issue
	information.		

4.0 THEME 2 - ENSURING EFFICIENT PROVISION AND UTILISATION OF ENERGY INFRASTRUCTURE

4.1 Commentary

The infrastructure issue is critical to the future success of the SEI, however in most of this Theme, there is an excessive focus on the economic factors to the exclusion of other important factors, such as the social and environmental impact. As noted in Chapter 2, this is a key problem as it creates an unbalanced view of energy as a market that includes users and how energy is used within the broader community and economy.

SEA is a strong supporter of the Regional Energy Strategies (RES) needed to underpin the SEI and provide the support for how the State's energy goals are achieved. However, with a lack of any concrete or indicative energy consumption and generation pattern, it is difficult to see how RES might even be developed let alone implemented. Nothing in the SEI DP indicates what targets may be possible based on different regional resources or opportunities. As such, these would need to be understood prior to the development of RES to support the SEI.

One assumption made in the SEI DP was that many renewable resources are at the fringe of the grid and not easily accessible. While SEA would argue this is wrong, there is also a lack of commitment to creating infrastructure that would support fringe of grid generation to displace coal-fired energy. Examples of this lack of commitment to infrastructure include procrastination and delays to the implementation of the Perth- Geraldton 330 KV line.

One of the significant concerns regarding infrastructure is dealing with the peak load issues the SWIS faces in summer. However, with more distributed generation available, the issue of infrastructure is less problematic. Combining generation park concepts as part of the distributed energy strategy could provide some of the solution to this problem, along with load shifting through stationary energy storage on-grid and behind the meter. The issue of energy storage is also relevant to matters discussed in Chapters 5 and 6.

SEA has been involved in a number of smart grid forums and discussions over the past two years. From this, a number of issues have arisen that are unaddressed by the SEI and have the potential to affect the uptake and acceptance of Smart Grid technology. The issues identified by SEA are:

- There is a poor definition of customer value proposition for Smart Grid technology and a lack of knowledge regarding the potential benefits of it for the broader energy consuming public.
- Much of the benefit from Smart Grids is perceived as accruing to network operators, who are strong proponents of the adoption of the technology. There is little understanding of how this might translate to end user benefits or cost reduction;
- Smart Grid technologies are only a partial solution and to be fully effective, other strategies need to be combined with them to achieve optimal outcomes, including the integration of storage on the grid and behind the meter; and
- To be most effective in managing costs and reducing peak demand consumption, Smart Grids need to have ToU type tariffs as real-time price indication to encourage active energy management from end users.

Peak demand issues in the SEI are predominantly aimed at the residential market and managing the summer air-conditioning peak load. However, there is a dearth of information for residential consumers in helping them manage their energy in terms of energy performance information for appliances and

consumer electronics. In addition to this, the SEI does not address how other factors may affect managing the peak load problem including:

- Local generation, in particular how residential generation will affect the peak as solar PV penetration increases;
- How well does the solar generation peak coincide with the usage peak, focussing on summer production where PV is at its most effective; and
- Business contribution to the peak load and how this is dealt with. Business energy consumption far outstrips residential consumption and domestic users must not need to bear all of the costs, only those for which they are responsible.
- Rapidly changing market in energy efficient appliances especially in lighting and HVAC.

4.2 Specific issues

Strategy	Action	Horizon	SEA issue
State infrastructure planning and coordination strategy			
	<p>Identify the long-term network infrastructure needs of the State and plan investment to promote the efficient sizing and location of infrastructure and potentially reduce future costs of investment and barriers to entry for new market participants. In planning for the long-term network infrastructure needs of the State, options may include:</p> <ul style="list-style-type: none"> a) conducting an audit of all (regardless of ownership) significant energy, water, transport and telecommunications network infrastructure in Western Australia, with the information being made publicly available in an accessible form; b) analysing the State’s total network infrastructure requirements to 2031 and 2050, after considering alternative service provision options that do not require network expansion or extension; c) issuing a Statement of Opportunities for future electricity network infrastructure to inform discussion about infrastructure provision and the need for common use infrastructure; and d) developing a policy and regulatory framework to provide incentives for private investment in network infrastructure, including in partnership with Government, to reduce the requirement for Government funding. 	Short	Supported
	<p>Integrate land use and essential infrastructure planning through expanding and strengthening the role of the Infrastructure Coordination Committee of the Western Australian Planning Commission to:</p> <ul style="list-style-type: none"> a) include a role in the approvals function for 	Short	Supported

Strategy	Action	Horizon	SEA issue
	<p>strategic and statutory plans, and significant development proposals with major infrastructure implications;</p> <p>b) include a role in the budget development process for new significant capital expenditure proposals for network infrastructure; and</p> <p>c) include a reference group mechanism that enables input by representatives of private organisations providing infrastructure.</p>		
	Develop an agreed Government-wide cost benefit methodology to assess and prioritise the merits of strategic energy infrastructure investment proposals, which may not provide sufficient returns to attract private investment.	Short	It is unclear what this methodology is actually for and what it is meant to achieve. Will it apply to generation capacity, transmission and distribution of electricity or will it apply to other energy infrastructure such as gas pipelines?
	Develop Regional Energy Strategies for each region, or group of regions with similar characteristics, to plan for appropriate levels of energy supply to suit their energy demand profile and forecast, support their development, and make best use of local energy resources where that is cost-effective	Short	Supported in principle. However, SEA would suggest that using “cost effectiveness” is an inappropriate measure. Rather, the determining factor must be whether it is able to be sustainable and deliver, social and environmental as well as economic benefits.
	Plan for the long-term expansion of the North West Interconnected System, as a combination of gas and electricity transmission, linking towns and major mine sites, subject to demonstrated economic efficiency and resolution of a funding and governance model.	Long	Supported in principle. Similar to the comment above, economic efficiency must not be the determinant, rather sustainability metrics must be integrated into this process.
	Consider decentralised models of energy production and distribution in areas where existing centralised networks are due for large scale replacement and where local energy demand is relatively modest	Long	Supported in principle. However SEA considers that issues of “modest” demand, must not be used as an excuse for underinvestment in infrastructure as has previously been the case.
Energy infrastructure access strategy			
	Optimise major energy transmission infrastructure utilisation by: <p>a) developing a constrained network access model for the Western Power transmission network, and a pathway to implementation; and</p>	Short	The move to a constrained access network model for the SWIS is a mechanism which must be introduced carefully and with consideration of the impact on new potential entrants to the market. In this instance it shifts some financial risk to new generation but would also provide the opportunity to remove the current

Strategy	Action	Horizon	SEA issue
	b) encouraging the owners of major gas pipelines to consider options for increasing the practical capacity of their infrastructure through offering more flexible access contracts, reducing the need for physical expansion.		problematic Queuing Policy which acts as a significant barrier to new renewable energy generation. Overall, SEA see the potential benefits of such a system but existing superannuated plant must not be given preference over its potential replacement through newer and more efficient plant, preferably renewable energy generation.
	Identify suitable locations, secure land and, where cost effective, develop generation parks to encourage clustering of generation facilities to: a) maximise the efficiency of new transmission investment; and b) encourage co-location of intermittent renewable energy facilities with balancing generation facilities.	Short	Supported in principle. However, cost effectiveness determinants are again not the appropriate measure to use. Furthermore, the co-location issue is based on an assumption regarding intermittency of renewable energy, which may not be appropriate dependant on the type of renewable energy generation. Other conceptual models such as the incorporation of district HVAC systems powered by geothermal direct-use heat plants or tri-generation systems also need to be examined as mechanisms to reduce or displace electricity consumption such as the City of Sydney.
	Western Power is currently reviewing its queuing policy for transmission access.	Current	This policy acts as a significant inhibitor to uptake of new renewable energy and this review needs to alter the Policy to make the whole thing more efficient.
	Review the Electricity Network Access Code to ensure it incorporates appropriate regulatory incentives for the development of smart grid technology, including appropriate recognition of technology risk and the need to 'future-proof' investment.	Short	Partially supported. However, two points need to be raised: <ul style="list-style-type: none"> Regulatory incentives are not necessarily the best mechanism for development of smart grid technologies. Alternative mechanisms need to also be considered along with regulatory reform, rather than just a regulatory incentive. The concept of 'future proofing' is a difficult issue to deal with and appropriate scenario planning on technological developments and opportunities needs to be fully understood prior to
	Support research and development by Western Power into the smart grid design parameters that are most appropriate for the Western Australian system, including provision for electric cars, direct load control, electricity customer direct engagement with the electricity market, and the exploitation of synergies with other initiatives, such as the National Broadband Network project.	Short	Supported.

Strategy	Action	Horizon	SEA issue
	Investigate and develop customer protection regulations that recognise the additional risks and opportunities available with smart grids, particularly for some classes of customer, and that there is consistency with the National Energy Consumer Framework.	Short	Supported.
	Develop a plan and funding model for the rollout of smart grid and smart meter technology, subject to a positive benefit/cost analysis, targeted first at customers most likely to obtain immediate benefit.	Short	Supported in principle.
	Commence roll-out of smart grid infrastructure consistent with the plan.	Short	We do not believe that based on the above goals this would be realistically achievable in the short term. Planning, development and funding across the smart grid space would not realistically allow for this to be undertaken in the “short” time horizon in an effective manner.
	Install appropriate grid and meter technology across the State based on the results of the previous analysis.	Short	See point above
Peak demand reduction strategy			
	Introduce price signals through time-of-use retail tariffs that encourage customers to shift non-time-sensitive electricity use to off-peak periods.	Short	Supported in principle. However, the necessary technology for the introduction of such tariffs and information on consumption and cost needs to be readily available for the consumer to be able to take advantage of such tariffs. See also the general comments on this issue noted above.
	Develop mechanisms to ensure that network tariffs appropriately reflect the cost of providing peak capacity and that retail tariff structures are aligned.	Short	Supported in principle. Also see the general comments.
	Review the design of the electricity market to ensure market retail participants have incentives to even out daily and seasonal consumption patterns, and ensure wholesale price caps are cost reflective.	Short	Is this the responsibility of retailers as it is a networks and generation issue? Furthermore, other than price signals, what potential strategies can be used to assist retailers in this matter.
	Undertake an education campaign to make electricity consumers aware of the cost of meeting peak demand for only a small proportion of the time, and assist them to shift their demand to off-peak times.	Short	The current education campaign (“Switch the Future”) is unlikely to meet these goals. Any education campaign, needs to be more holistically developed and not just rely on advertising mechanisms currently used. In addition, the education campaign would need a significant informational component in order to change the

Strategy	Action	Horizon	SEA issue
			perception of energy consumption.
	Broaden the electricity reliability standards to recognise peak demand constraints on the electricity system.	Short	This is merely a broad policy statement. It is in many cases meaningless without related mechanisms to fully describe how reliability standards are affected by peak demand constraints and what strategies may be in place to reduce the peak impact.
	Progressively strengthen time-of-use pricing signals and develop the demand response market.	Long	Agreed in principle on the proviso that ToU tariffs are broadly applied and that real time energy consumption information is available to be acted on.
	Consider incorporating direct load control capability into building design standards.	Long	<p>We do not necessarily believe that this is an effective mechanism to reduce peak load demands without the consideration of a number of factors noted below:</p> <ul style="list-style-type: none"> • This will not necessarily deal with the existing building stock (approximately 98% of the market); • If it is only design, and not construction standards, can this be guaranteed as being implemented, particularly in commercial buildings; and • Appliances will also need to be able to be managed through direct load control without any potential business or other risk arising from direct load control. As such appliance standards would need to reflect their suitability for direct load control.

5.0 THEME 3 - IMPROVING THE ENERGY EFFICIENCY OF THE WA ECONOMY

5.1 Commentary

The SEI DP has addressed various areas of energy efficiency in its discussions. However, it has missed many areas where potential efficiency can be achieved and barriers to energy efficiency can be removed or overcome more easily. The SEI DP relies on price signalling as the primary measure to drive demand side efficiency and ignores many other potential measures to achieve these outcomes. This is a failure to utilise the SEI as a holistic mechanism to improve energy efficiency.

Energy displacement is a critical part of energy efficiency strategies in reducing electricity energy consumption and maximising energy usage. The SEI fails to address any strategies regarding energy displacement to improve the efficiency of many businesses. Typically, energy displacement includes:

- Geothermal and ground source heat pumps (GSHP);
- Co-generation and tri-generation; and
- Solar heating and cooling.

In order to reduce GHGs and meet any as yet unspecified, demand side energy efficiency targets, energy displacement technologies need to be given serious consideration and recognition as a mechanism for achieving energy efficiency.

SEA has been involved in extensive national consultation on matters of energy efficiency, particularly in the commercial and industrial sector. Based on our research there are significant gaps in the energy efficiency strategies listed in the SEI DP where action can be taken at a state level to overcome these barriers. The most critical of these is a split-incentive barrier, which is poorly addressed in the SEI. Furthermore, taxation barriers previously noted are also an issue as are barriers based on business knowledge and education of the market regarding energy efficiency for business. As an attachment to this submission, a report highlighting many of the barriers and potential solutions for barriers to energy efficiency has been included.

All energy efficiency measures noted in the SEI DP address only demand side efficiency, while ignoring issues of creating a more energy efficient supply side. Failure to address supply side efficiency is a significant gap in the SEI's strategy. Supply side efficiency measures that need to be included in the SEI include:

- Minimum energy efficiency targets for generation capacity based on the type of generation; and
- Loss minimisation targets for transmission and distribution.

One key factor not addressed in the SEI DP is the lack of any commitment by the Government to become more energy efficient. While the Energy Smart Government program is in place, other measures need to be included to ensure that the State Government is a leader in energy efficiency.

While energy efficiency must play an important role in the State's energy future, the issue of residential energy use and the poor design and layout of residential properties is ignored. This is a problem previously recognised by SEA and is a large cause of inefficient energy use in managing the home climate. Residential sub-divisions and new developments are designed to maximise the number of houses and therefore income available to the developer and financier. In some cases financiers have not wished to fund well laid out developments, which maximise the opportunity for blocks with passive solar use as they did not

maximise the number of houses. This creates a conflict between the energy benefits to the consumer and the financial return to the developer and their financier. This mirrors the split incentive problem for installing energy efficiency in buildings; in this case, the developers have no benefit for creating more energy efficiency housing opportunities from solar orientation, just maximising the return from the number of blocks created and houses built.

This problem is exacerbated by various industry groups resisting the introduction of greater energy efficiency in building standards, such as the recent decision to phase in the new 6-Star provisions. These industry groups complain that it will increase housing costs, yet many of their members offer thousands of dollars in gifts and rebates for building houses with that particular company. Again, there is no incentive for builders to introduce more energy efficiency into homes as they do not benefit from it; it is the buyer that pays the energy costs and builders are reluctant to reduce their profits to benefit the customer in long term energy prices.

While the issue of minimum energy performance standards (MEPS) is briefly covered, the statement is overly general and must be addressed in more detail. Due to the contribution of poor energy performance of many consumer electronics and white goods, and their contribution to summer peak demand, there needs to be a clear plan on how WA can contribute to improving the energy efficiency of domestic goods.

5.2 Specific issues

Strategy	Action	Horizon	SEA issue
State energy efficiency strategy			
	Develop long-term energy efficiency targets for the State, coordinated with national strategies.	Short	Supported in principle. However, energy efficiency target would need to not be looked at in isolation but also reflect the reduction of overall energy use.
	Implement the National Strategy for Energy Efficiency in Western Australia, subject to confirmation that benefits exceed costs for each measure considered.	Short	Supported in principle. The use of cost-benefits here is extremely hazy as to whose costs and benefits will be assessed. Will these cost benefits be at an individual, business, sector or economy wide basis? Furthermore such cost-benefit analysis needs to look at lifecycle costs, rather than just one aspect of costs such as capital or operating. The failure to address this issue would further ingrain the split incentive issues within industry on the cost-benefit issue. Without clearly defining how this might be assessed and implemented, such as PACE funding schemes to assist with implementation of energy efficiency measures ¹⁰ .
	Work with the Commonwealth Government to improve the national energy efficiency standards for appliances, industrial equipment, buildings and vehicles.	Short	Supported. In many cases, the lack of mandatory performance standards pose a significant cost on the end user that they are unaware of until they start receiving their energy bills. Unless mandatory minimum performance standards are introduced, there are no incentives for manufacturers to be more efficient in many cases.
	Phase out flat rate regulated tariffs in favour of a tariff model that more accurately reflects the cost of high consumption, in parallel with time-of-use pricing to maximise the effectiveness of the price signals to tariff customers.	Short	This is a demand management strategy, not an energy efficiency strategy.
	Develop and implement a range of economically efficient measures to help significantly improve energy efficiency in the State, which complement national measures and	Short	Supported in principle. The focus on economically efficient measures, fails the sustainability criteria mentioned previously. In addition, all government departments would need to lead in this area.

¹⁰ or Property Assessed clean Energy (PACE) funding is one mechanism gaining popularity globally to overcome split incentive issues. Legislation enabling such funding is already in place in New South Wales.

Strategy	Action	Horizon	SEA issue
	include a combination of mandatory measures, voluntary measures and the provision of information and incentives.		
	Require energy retailers to reflect the real cost of supply in customers' power bills with subsidies, rebates and concessions separately identified.	Short	Supported.
	Require all new dwelling units and all new commercial or industrial premises to be individually metered for electricity and gas.	Short	Supported.
	Develop legislation requiring all holders of master-meter accounts in group dwellings or commercial complexes to ensure that residents and tenants are accurately billed for the energy use of the individual premises that they occupy.	Short	Supported
	Expand the State Government's 'Travel Smart' program to further promote the uptake of public transport and other transport demand management alternatives, such as walking and cycling.	Short	Supported. However, in order to make these measures effective, other Government departments would need to ensure that the practicalities of this could be implemented.
	Require individual meters to be retrofitted progressively to all existing dwelling units and commercial and industrial premises.	Long	Supported.
	Make the real incremental cost of additional energy consumption transparent to the consumer, promoting behaviours that meet energy efficiency targets, and reducing consumption and the need for new energy infrastructure.	Long	Supported. However, this would need to ensure that specific tariff structures that allowed a decreasing unit cost to the user once a certain quantity of energy had been used to sell energy. This is particularly relevant to businesses. Furthermore, long-term energy contracts which allow unsustainably cheap energy to be sold must be reviewed.
	Provide incentives to retailers to encourage energy efficiency among their customers.	Long	Supported in principle. However, this must not be a long-term goal. If, as in Theme 2, short term price signalling is to modify behaviour, this must be addressed in the short term as well.

6.0 THEME 4 - MAINTAINING CONTINUITY OF DOWNSTREAM ENERGY SUPPLY

6.1 Commentary

SEA recognises the importance of reliable energy supply for both community and business and the development of a well-functioning state economy. In doing so, a multiplicity of issues must be addressed, but the SEI strategy relies only on fossil fuels to maintain a reliable future energy supply. Based on factors such as Peak Oil, gas risk and misperceptions of the unreliability of renewable energy previously noted, the strategy for reliability is limited in its scope.

SEA supports the strategy for increasing the availability of energy storage in on-grid, off-grid and behind the meter. In doing so, we also recognise that in this there are opportunities for energy storage, in combination with greater penetration of distributed energy, for load shifting and peak load reduction to reduce network outage and peak consumption infrastructure expenditure. While achieving these may be a long-term goal, the efforts to do so need to commence in the short term to have a long-term effect.

Considering energy storage systems as only a long-term measure fails to understand the potential benefits in the short to medium term of these systems, particularly in isolated / islanded grid systems. Hundreds of megawatts of supply side energy storage are already installed and operating globally. To hold off further action for periods greater than 10 years (long term) seems to go against the global trends in industrialised countries, particularly as they are integrated as part of smart grid trial deployments.

SEA notes that in addressing the energy storage question there is a need to look at both supply and demand side storage opportunities and the best mechanism to implement storage solutions suitable to WA's needs. In doing so the SEI needs to consider not just the options of compressed air energy storage CAES and pumped hydro (which is inappropriate for most of WA) but:

- All potential energy storage technologies available - thermal, chemical, electrical and electrochemical;
- How these technologies may play a role in managing the network;
- Where they might be deployed;
- Relative costs of network upgrades and their utilisation (capital effectiveness) versus energy storage options; and
- How might network support costs be traded off to increase the uptake by both residential and businesses to install energy storage in order to load shift and reduce network costs. This is not seen as a potential mechanism (beyond EV use) of beating the peak and reducing network stress.

6.2 Specific issues

	Action	Horizon	SEA issue
State energy continuity strategy			
	Review reliability standards to determine whether they are fit-for-purpose for application to all locations and uses.	Short	Overly general comments such as this are extremely unhelpful as they do not actually say anything about the issues around reliability standards or how such a review might be conducted.
	Review legislation and adequately fund effective audit and enforcement of maintenance standards for key State energy infrastructure.	Short	Supported on the assumption that such maintenance standards are adequate.
	Review current requirements for backup generation fuel supply and generation capacity in islanded electricity systems to ensure they are adequate and cost-effective for perceived risk level, and audited and reviewed regularly.	Short	Supported in principle, however potential non-fossil fuel reliant systems must be considered in islanded systems so that fossil fuel reserves need not be held at current levels or that current fossil fuel stocks would provide extended time for generation at that location.
	Ensure the infrastructure regulatory regime and the State budget process provide for adequate funding of network maintenance to maintain reliability standards.	Short	Supported in principle. Should it be part of the state budget?
	Ensure environmental legislation and regulation appropriately recognise the importance to the economy and the community of secure, reliable energy supply, and establish through legislation a transparent and independent mechanism to resolve conflicts between environmental and energy objectives.	Short	This is not a goal achievable in the short term based on the broad range of legislation that it must encompass. Furthermore, there is an implicit assumption that <i>only</i> environmental issues will be in conflict with energy objectives. This is biased thinking and the conflict resolution must address all potential sources of conflict e.g. heritage, native title, social etc.
	Engage the Commonwealth Government to ensure Western Australia energy infrastructure is properly considered as part of any national security plan.	Short	Supported.
	Continue the State Underground Power Program, following review and adjustment to improve cost-effectiveness.	Long	Supported.
	Encourage the development of, and investment in, energy storage and 'Uninterruptible Power Supply' technology, on both system and local consumer levels, to reduce the demand on network investment.	Long	Supported in principle. However, this must be considered as a short to medium term goal . Furthermore, with the large potential incentives only being aimed at energy security through concessions for gas exploration, it is arguable that support must be directed towards the support of these technologies and their implementation.

	Action	Horizon	SEA issue
			In addition to this, we would question the need to spend time or effort on development based in WA as there are significant, well-established and well-funded international efforts in energy storage technologies already happening. Unless there are significant advantages to WA, such as, a centre for the development of such technologies, we do not agree that this would be an optimum mechanism of funding.
State energy disruption management strategy			
	Implement the Gas Supply and Emergency Management Committee recommendations, where these are demonstrated to be cost effective and establish funding mechanisms, including: <ul style="list-style-type: none"> a) energy disruption contingency measures, including gas and liquid fuel receipt and storage facilities; b) legislation to adjust fuel standards temporarily in an emergency; c) incentives for investment in dual fuel equipped electricity generation facilities, including existing plant; and d) emergency management plans for electricity, gas and liquid fuels that are current, regularly reviewed and tested, and consistent with national standards or integrated into national plans as appropriate. 	Short	These recommendations seem predicated on the assumption that only gas is the future fuel for generating electricity in Australia and as such, making sweeping changes at an early stage assumes that this will continue. The SEI assumes that dual fuel will have a cost effective supply of alternative fuels available. Based on the globally held views of an oil supply crunch before 2014 ¹¹ , this seems to be a little bit of wishful thinking rather than a concrete plan.
	Ensure there are no legislative or regulatory impediments to the maintenance and deployment of rapid response mobile generation equipment or private back-up generation to support the network in emergencies.	Short	Supported in principle. With a changing energy mix set for 20% of renewable energy by 2020, this is likely to change the needs of back-up systems. As the renewable energy proportion of the generation mix grows, then there is a lower need for back-up generation capacity.
	Develop market rules and technical rules to facilitate effective demand response and to provide incentives to increase demand response when the system is under stress.	Short	Supported.
	Develop effective mechanisms for identifying people on home-based life support equipment and evacuating them to medical facilities or providing them with adequately sized uninterruptible power supplies in case of power disruption.	Short	Supported.
	Continue to work closely with energy supply organisations and energy network operators to ensure that disruption plans are	Long	Supported.

¹¹ Monroe, R (2010) Oil Supply Crunch: 2011-2015; Energy Bulletin [Online] Available: <http://www.energybulletin.net/node/52460>

	Action	Horizon	SEA issue
	well integrated, and that commercial agreements, where necessary, are in place to allow cooperative action.		

7.0 THEME 5 - ENSURING EFFECTIVE AND EFFICIENT DOWNSTREAM ENERGY MARKETS

7.1 Commentary

SEA supports a competitive and efficient energy market for WA. However, significant reforms are necessary to improve the market function to achieve these outcomes, primarily through the reform of market and network technical rules, which provide significant barriers to entry for new market entrants. This is most notable for smaller scale distributed energy generation.

As previously noted in Section 2.3.1, the apparent focus on economic efficiency ignores many issues. In relation to this, the regulation of the market needs to consider more than just economic factors. For example, the ERA only considers economic efficiency issues when making decisions. It does not consider all of the other matters necessary to make decisions for the long-term benefit of not only the economy but also government policy positions, the broader community and the environment. Failure to address these broader issues can lead to perverse outcomes

SEA strongly encourages the creating of an open, contestable market for energy in WA. While it is best at this time that transmission and distribution systems remain public assets, the current Government ownership of significant market participants in Verve and Synergy cause significant market distortion which disadvantages potential new market entrants.

Energy is a commodity and is therefore significantly price driven in terms of competition within the market. SEA has noted in previous chapters a number of subsidies and biases in the current market and in the strategies within the SEI that will continue or exacerbate this distortion. In order to ensure fair competition within the market, SEA proposes that current fossil fuel subsidies be removed from the system on the supply side to make a truly cost reflective price available. Furthermore, should these subsidies not be removed, then support needs to be provided for renewable energy to ensure that more rigorous competition is possible.

7.2 Specific issues

Strategy	Action	Horizon	SEA issue
Competitive energy and market development strategy			
	Support the continuation and evolution of present market arrangements, including the pursuit of competition and transparent public and market consultation.	Short	Supported
	Review the Western Australian Wholesale Electricity Market (WEM) model to determine whether it continues to suit the changing energy sector in Western Australia. A review must: <ul style="list-style-type: none"> a) investigate whether the WEM should move to a gross or net pool market, considering the associated regulatory and funding arrangements and appropriate timeframes; b) consider the extent to which a capacity market remains necessary to encourage generator investment in the South West Interconnected System, and if so, whether the current model can be improved; and consider the merits of extending the WEM to incorporate the provision of power supply in the North West Interconnected System. 	Short	Supported in principle. The issues noted on the WEM are significant structural changes to the market's operation. Considering that such changes can have a significant impact on existing asset values, there may be a case for compensation of those affected by such changes. Changes to the structure of the market must not negatively impact renewable energy generation and new renewable energy based generation capacity.
	Develop and implement a plan to extend customer choice of electricity supplier to customers using less than the current contestability threshold of 50 MWh/a, including strategies to achieve Full Retail Contestability in the electricity market.	Short	Supported.
	Consider the need for, and merits of, a Short Term Trading Market for gas in Western Australia, or joining the national gas market, following a review of the first two years of operation of the planned Gas Bulletin Board and the response to the Gas Statement of Opportunities.	Short	No comment
	Increase the transparency of the LPG market through incorporation of bottled LPG into the FuelWatch program.	Short	No comment
	Transition all regulated tariffs to cost-reflective levels for each class of customer to avoid masking of price signals, inform customer behaviour and encourage maintenance of competitive	Med	Supported in principle. However, the timing of this recommendation is inconsistent with other time-of-use tariffs and pricing signals.

Strategy	Action	Horizon	SEA issue
	services. This is to be undertaken as a precursor to phasing out regulated tariffs for each class of customer.		
	Consider providing for regional development and social equity objectives to be funded through transparent subsidies directly to customers or through retailers and infrastructure providers (for example, compensation for provision of concessions and rebates), and decouple such assistance from regulated tariffs.	Med	Supported in principle. Any such funding must not be applied in such a manner that it provides subsidies for fossil fuel based generation where alternative energy generation or displacement mechanisms would provide cost competitive or lower cost energy.
	Consider providing for the independent determination of gas tariffs through a consistent and predictable tariff-setting methodology administered by the Economic Regulation Authority.	Med	No comment
	Following the reform of the residential electricity tariff and concession structure, consider providing for the independent determination of regulated electricity tariff price points by the Economic Regulation Authority.	Med	Supported. Considering that the majority of energy used on the SWIS is commercial and industrial, then these tariffs must be set at the same time as any residential time of use tariff is. See general comments for more detail.
	At the earliest opportunity, terminate the current moratorium that prevents Synergy and Alinta from competing to offer dual fuel services (both gas and electricity) to the residential and small business customers.	Med	SEA supports more competition in the marketplace. How about opening the market on this to all participants? What would the impact be like?
	Identify the criteria that would need to be met to integrate the WEM and the National Electricity Market, and review feasibility triennially.	Long	Supported. This must be looked at in the medium term but achievable in the longer term, if that suits the WA market.
	Assess the practicality of integrating gas and electricity markets in Western Australia, in the event that the State is not incorporated into national markets that have converged electricity and gas markets into a single integrated energy market.	Long	Supported.
	Regularly review the benefits and disadvantages of the Government continuing to own electricity businesses in a competitive market, with an expectation that the Government will withdraw from energy supply when the market is operating efficiently.	Long	Supported in principle. However, the examination of this issue must be commenced in the short to medium term to plan for future changes of ownership. See also general comments.
	Consider the physical connection to national electricity and gas networks, subject to this proving to be economically efficient	Long	No comment.

8.0 THEME 6 - ENSURING UNIVERSAL ACCESS TO ESSENTIAL ENERGY SUPPLIES

8.1 Commentary

SEA supports maintaining universal access to electricity as a core part of the minimum living standards required for all West Australians. As such, we recognise that the increase in power costs will have a proportionately larger impact on low-income or disadvantaged households over time and as power becomes more expensive. In light of this, SEA supports maintaining a mechanism to provide support for energy costs for these consumers.

8.2 Specific issues

Strategy	Action	Horizon	SEA issue
Affordable energy strategy			
	Develop and introduce a residential electricity retail tariff structure that is non-regressive, equitable and efficient, and which provides appropriate price signals to customers concerning the cost of their decisions on power use, particularly to customers using large amounts of power and customers using peak-period power.	Short	SEA supports ToU tariffs but the need for real time energy information is necessary to affect energy use decisions. Furthermore, the impact of changes to tariff structures needs to be understood, not just across residential tariffs but also for business tariffs.
	Transition regulated tariffs to recover the real cost of energy supply for the relevant class of tariff customer.	Short	Supported but also mentioned elsewhere in this document -
	Ensure the retail tariff structure is mirrored in the network tariff structure to embed it in the cost framework before retail competition commences.	Short	Supported.
	Maintain regulated tariffs as a safety-net after the introduction of customer choice of supplier until the Government is satisfied there is adequate competition to ensure efficient pricing.	Med	Supported
	Review all ancillary service fees and charges imposed by energy retailers and require retailers to eliminate or amend those which result in a systemic discrimination against low-income customers.	Med	Supported.
	Use transparent, publicly funded concessions to assist people who cannot afford to pay, including atypical users (for example, large families on low incomes) whose use profile may put their marginal use on a higher tariff rate.	Short	Supported but also need to ensure that they have opportunity to become more efficient.
	Extend the current review of State concessions administration to include the coordination of the policy, funding arrangements and governance relating to the provision of State concessions, rebates and other subsidies. This coordination should aim to improve consistency of approach and reflect that the problem to be solved is family poverty rather than a flaw in the delivery of energy or other essential services.	Short	"...reflect that the problem to be solved is family poverty rather than a flaw in the delivery of energy or other essential services." This is a huge assumption there and seems to answer the question of any review before it commences.
	Review all hardship assistance programs to ensure they are well-targeted, administratively efficient and cost-effective, and are	Short	Supported.

Strategy	Action	Horizon	SEA issue
	meeting their primary objective of improving recipients' ability to pay for essential energy supply.		
	Target energy efficiency initiatives, especially towards customers who have difficulty paying their energy bills and/or who have higher than average use.	Short	Supported.
	Ensure that all new State-funded social housing is designed and constructed to the highest practical standard of energy efficiency.	Short	Supported. Furthermore, there is the need to consider the issue of fixtures and consumer goods used within the housing that affects the overall energy consumption patterns. For example, having a minimum of 4-Star rated air conditioning etc.
	Consider funding the cost of meeting regional development or regional equity objectives through transparent subsidies to recognise that these are a form of 'public good'.	Short	See previous comments regarding remote & rural subsidy.
	Develop and commence to implement, subject to funding availability, a plan to normalise energy service provision in significant settlements where these services are not currently available, including permanent Aboriginal communities, ex-mining towns and other permanent settlements (for example, Euda).	Short	Supported.
	Regularly monitor the actual cost of providing energy services to customers covered by regulated retail tariffs and ensure this cost information is conveyed to customers.	Short	Supported in principle. However, to have any real effect, people need the knowledge in a format (and timeframe) on which to act on it.
	Investigate and, where appropriate, require retailers to introduce other initiatives to improve customers' capacity to manage their energy bills, including variable billing cycles, voluntary access to pre-payment meters and customised tariff combinations.	Short	Supported.
	Adopt the National Energy Customer Framework in Western Australia, subject to maintaining at least existing State standards of customer protection.	Short	Supported.
	Progressively renovate all existing State funded social housing to incorporate the highest practical standard of energy efficiency consistent with building design and economic efficiency.	Short	Supported in principle. Failure here is to consider <i>only</i> economic efficiency.

9.0 APPENDICES

9.1 SEA background

Sustainable Energy Association of Australia SEA - the peak body for sustainable energy

SEA promotes the development and adoption of sustainable energy technologies and services that minimise the use of energy through sustainable energy practices and maximise the use of energy from sustainable sources.

SEA 2030 VISION

'On behalf of the people of Australia, the Association will vigorously promote the development and adoption of sustainable energy so that by the year 2030 more than 30% of Australia's energy use in and across all states and territories is displaced by sustainable energy practices so that energy demand is more than 30% below that measured in the year 2000, and that more than 30% of energy use is derived from sustainable sources.'

About SEA

SEA is a chamber of businesses variously promoting, developing and/or adopting sustainable energy technologies and services that minimise the use of energy through sustainable energy practices and maximise the use of energy from sustainable sources.

SEA is building relationships with businesses that aspire to be more sustainable in their own energy use, are providing the commercial solution to climate change through their products and services, or indirectly through their actions adopting more sustainable energy practices in their own business. Many businesses are acting to support the development of the best policy outcomes for the industry by becoming SEA members.

The role of governments is to build frameworks of governance that establish clear market signals for change and growth, and allow Australia's innovative businesses to respond and deliver market-based solutions. A key role of SEA is to offer policy options to governments building those frameworks.

SEA actively supports substantive action on sustainable energy in every region and in all sectors of Australia's economy.

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SEA Corporate Members



9.2 Attachments to the submission

- Regulatory barriers to Sustainable Energy in Urban Contexts in South-West Western Australia
- Value Networks Workshop: Commercial and Industrial Energy Efficiency

