



Submission:

**Public Transport Plan 2031**  
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by the  
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## Public Transport 2031 Overview

The Sustainable Energy Association of Australia (SEA) is a supporter of efficient and clean public transport opportunities as a mechanism to reduce road congestion, reduce greenhouse gas (GHG) emissions and to promote fast, economic and reliable mass transport. Furthermore, a well-designed public transport system can provide the assets and infrastructure for economic development, increased employment opportunities and an increase in more energy efficiency in the transport sector.

While the Public Transport Plan (PTP) Consultation Draft shows improvements to expand and increase the potential for public transport use in Perth and it is laudable in doing so; it raises a number of issues that need to be addressed across the various elements of the plan set out in the discussion paper.

The plan itself is a highly conservative document and fails to ask or answer significant questions about public transport in WA.

1. What will help drive the growth of public transport in WA?
2. Do the modeling predictions stack up with the potential future changes?
3. How will the future energy and fuel mix and pricing affect public transport choices?
4. Does the plan address the goal of the decarbonisation of the WA economy?
5. What modalities of transport will achieve more than just moving people/
6. Costs and benefits are addressed but are all accounted for?
7. What is the likely economic impact of the PTP and how will this affect people?

SEA's following submission attempts to address these questions in the light of the PTP Consultation Draft.

## Drivers for adoption of public transport

SEA agrees that there are significant drivers for the increasing adoption of public transport in Perth that will see growth of the need for new and improved public transports services over the next 20 years. SEA has identified a number of key drivers for public transport adoption / use including:

- Utility and equity for all citizens and non-citizens (foreign students, visitors etc.) regardless of car ownership;
- Convenience to the user and avoidance of the 'peak hour' traffic issues;
- Increasing overall cost of car ownership and use (bowser price of fuel) recognising that there is a significant disconnect between commodity oil prices, browser prices and exchange rates;
- Cost of parking in CDB and other business localities where there is insufficient parking at business premises;
- Increasing coverage of public transport in terms of both area and frequency of service; and
- An increase in the proposed number of transport oriented developments within the Perth metropolitan area.

Of the above factors, the believes the likely trajectory of fuels costs in the future has not been properly considered within the PTP Consultation Draft is that of current fuel costs and. SEA argues this to be one of the most significant drivers in the future for the adoption of public transport. In the most recent International Energy Agency (IEA) *World Energy Outlook*, it identifies that conventional oil production peaked effectively in 2006. While 'unconventional' oil sources are projected to maintain availability, these will come at an increasing to cost to the end user as well as having a significantly greater (5-15%) increase in GHG emissions.<sup>1</sup>

These increasing costs and Australia's reliance on imported oil to drive the transport fleet and core export oriented mining businesses indicate that these businesses and the whole economy is likely to be significantly affected in the future. Private transport which is unlikely to benefit from long-term fuel purchase agreements that businesses can benefit from, are likely to be the most significantly impacted by future oil price changes.

## Decarbonizing the public transport system.

The PTP is highly reliant on various energy sources to operate the system and the plan needs to address how the potential options of buses / bus rapid transit (BRT) and light rail transport (LRT) might be applied to decarbonise the future public transport system.

The key issue here is the selection of vehicle options that minimise the reliance on fossil-based fuel systems and shift to low or zero-emissions vehicles. The selection of transportation options that minimise GHG and other pollution emissions (NOx, carbon monoxide, ozone, hydrocarbons, particulates) needs to be a priority within the transportation plan.

While the increased use of public transport will have a positive effect in the reduction of pollution from private vehicle use, there is no reason not to then minimise the potential impact from public transport as well.

Decarbonisation of the public transport fleet can be achieved through:

- The utilisation of electric drive trains through direct transfer from poles and wires or storage in battery / fuel cell type power sources (including hydrogen and ammonia based fuel cells);
- Utilisation of hybrid liquid fuel- electric systems;
- Utilisation of alternative liquid fuel sources from sustainable sources (biodiesel from algae and non-food crops, cellulosic ethanol).

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<sup>1</sup> International Energy Agency (2010) *World Energy Outlook 2010*, Executive Summary.

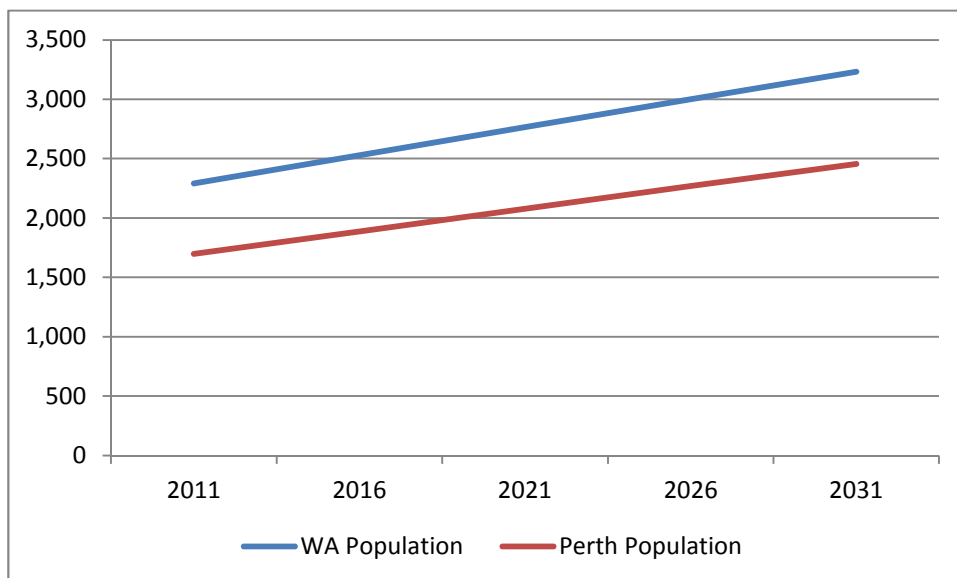
SEA recognizes that in some cases liquefied or compressed natural gas may be required as a bridging fuel for public transport as a lower emission alternative to diesel fuel. However, in the Strategic Energy Initiative PTP Consultation Draft released earlier this year, it identified a potential supply – demand issue in the early 2020’s without the increase in local supplies of LNG/CNG of a minimum of 2350 PJ of domestic supply. This point must be recognised as a potential fuel availability / price risk in the use of this fuel source in the latter stages of the plan.

### Predicting future demand

The utilisation of a transport planning model, no matter how well referenced and validated to reflect past demographics and other changes has its limitations that are not apparent when one reads the PTP Consultation Draft. Rather than indicating what future transport scenarios might look like under different conditions, the model appears to just make a number of assumptions that things will go on as before and that the planning process should then reflect this outcome. This process is in some ways arguably flawed as the PTP does not reflect future significant changes wrought by the energy and carbon targets in Australia, and WA’s contributions to these. Model-based simulations have a significant role in determining possible future outcomes and what scenarios they occur under but they are far from predicative as appears to be the approach taken in the PTP Consultation Draft.

From feedback from SEA members and other stakeholders, SEA has identified that the future planning assumptions made in the PTP Consultation Draft are based on overly conservative growth predictions. Furthermore, without accurately reflecting a case-based analysis of the options under different growth scenarios, there is a significant risk that the current plan is insufficient in its scope to cope for the current boom growth in Perth’s population. For example, the ABS in June 2011 predicted that by 2031 WA’s population will be 3.231 million<sup>2</sup>. It is likely that the majority of this population will reside in the greater Perth region, with a slow but incremental increase in the capital city population over the past 10 year period from 73.2% in 2000 to an estimated 74% by 2010. There is no reason to believe that this trend will reverse in the near future and the ABS predicts that that the level of capital city urbanization will reach 76% by 2031.

The graph below shows the predicted patterns of WA and more specifically the Perth population over the next 20 year period based on the ABS estimates.



<sup>2</sup> ABS (2011) cat. no. 4102.0, *Australian Social Trends*, Data Cube - Population

## Does the planned 2031 scenario look right?

During SEA's consultation with its members and various stakeholders, a number of issues with the concept and execution of the plan were raised. To summarise these points:

- The use of conceptual maps within the document rather than providing any detail on the routes:
  - Makes it difficult to see the potential impact of these proposed routes;
  - Without more detail, some of these routes seem counterintuitive (how does one get from UWA to Canning Bridge without crossing the Narrows?); and
  - It is not possible to determine how the PTP effectively utilises existing infrastructure such as arterial roads and road reserves to facilitate greater uptake of LRT options;
- The Perth Airport public transport corridor needs to be a higher priority;
- That with Perth's significant growth that the conservative position taken and low estimated growth rates put forward mean that the proposed 2031 needs will be met earlier and the plan does not account for this eventuality;
- The long lead times for lateral expansion of the public transport system to avoid over-reliance on the CBD as the only transport hub do not alleviate one of the largest concerns of public transport;
- The current light rail plans are merely spurs to the CBD;
- Over-reliance on BRT does not address the energy, emissions and oil pricing issues noted above, which is an overall failing of the plan; and
- There needs to be improved peak hour public transport services to major commercial / industrial sectors to support businesses and transport affordability for workers e.g. Kwinana strip – and these need to be a higher priority.

## Choices and priorities in modes of public transport

The choice for different public transport modalities in the future is significantly impacted by the current planning and choices being made now. With a bus fleet where the life of a vehicles is 20 years, means that the buses purchased today will still be on the road in 2031, although approaching retirement. In making the current selections in our public transport solutions, it would, for example take 5 years to replace only 25% of the current bus fleet (excluding new purchases), which would still leave a 'long tail' in the replacement of other aging transport assets without a significant impact on the potential reduction of GHG and other emissions. That is if these changes started in 2011, delays in acting on developing a future transport fleet, will only further delay the opportunity to enact substantial change.

There is an acknowledged problem in the introduction of additional heavy rail assets into many high traffic flow areas of the Perth metro area due to the lack of space, the high costs and issues of the geology of Perth which make this choice impractical other than is the areas identified. However, then there are essentially 2 potential choices for the expansion of mass transit in Perth: light rail and buses.

While buses do not require additional capital expenditure on infrastructure such as rail and electrification systems, they are significantly more likely to be negatively impacted by rising fuel prices, have a higher emissions profile (unless electrified) and have higher operating costs in cents per kilometer. While buses certainly must maintain a significant role in public transport to move people short distances to main transport corridors, the focus should shift to LRT over BRT systems with the scope of the 2031 plan.

Without electrification of the drive trains of buses, LRT offers the significant benefit of potentially reducing the majority of Western Australian public transport to zero emissions through the use of renewable energy. Furthermore, by insulating the public transport system from the potential

exposure to international commodity pricing, a greater certainty of containing energy costs can be achieved. In addition to this, the potential lifespan of light rail vehicles will exceed that of buses and therefore lifecycle costs savings can be achieved.

The most significant failure of the Public Transport Plan 2031 would be to fail to address the assessment of costs incurred in a life-cycle assessment, rather than just on capital costs. This issue is discussed further below in the section *Costs and benefits of public transport*.

Buses still a very necessary part of the public transport mix, however, it's arguable that heavy investment in BRT will actually improve / fix the issues of road congestion as well as decarbonisation of the public transport system.

### **Infrastructure, Integration and consideration of other transport modes.**

The infrastructure needs of the options of BRT and LRT need to be more significantly addressed and the acceptance that in many cases the decision will need to be one or the other. Once in place, the transit system will be effectively 'locked in' and the cost of switching to the alternate modality will be very high. Those who may argue "*we can start with BRT and then switch later*" are pursuing a fallacious argument. Considering the total lifecycle costs of the options, change part way through the cycle would be financially and economically unsound and unsustainable due to the considerable initial capital investment in infrastructure and vehicles.

One area not covered in the plan is the energy infrastructure needed to operate these different transit modes. For example, LRT requires an appropriate electricity infrastructure to support its operation while BRT requires appropriate depots for refueling and the concomitant fuel storage.

The infrastructure needs for the execution of the PTP and the additional infrastructure for public transport beyond just the transit corridor needs to be considered. As identified in the PTP Consultation document, additional infrastructure of many types would be needed, however, the integration of new or planned transit routes should also be heavily reliant on the influence of transit oriented design (TOD) projects.

Identifying the main infrastructure and energy logistics of different modalities, the whole of the plan seems predicated on maintaining the CBD as the hub of all Perth's transport needs, while not considering that in the 20 year time horizon, there could be a radical shift in development of other hubs which can be connected to the CBD. Overreliance on the CBD as the central transport hub devalues the various initiatives being planned for the future development of Perth. Potential public transport centers may also include:

- Stirling City Centre;
- Leederville;
- Canning Bridge;
- Cockburn coast;
- Curtin redevelopment;
- Murdoch precinct; and
- Fremantle.

The current plan as set forth in the discussion paper does not adequately address planned TOD within the Perth metropolitan area.

Adequate integration of the public transport system with existing transport infrastructure is an area of significant concern. Currently, SEA sees this in:

- Over reliance on car transport to rail / bus hubs e.g. Park & Ride;
- Suitable integration of LRT to future transport hubs (mentioned above);
- A lack of adequate local route bus services to meet transit center needs.

One area of concern that has been brought to our attention is the lack of integration of or ability for public transport to cope with bicycle users and to have adequate and suitable facilities for safe and efficient storage or transport of bicycles on the Perth public transport system. Anecdotal information points to the increase of bicycle use in Perth and this should be appropriately accommodated for in the integration into public transport options.

## Costs and benefits to public transport

It is obvious that the introduction of an expanded public transport system will incur additional capital and operational costs to the Government and / or operators of the system. These costs need to be clearly defined and budgeted for. However, SEA is concerned that the proposed expenditure plan is insufficient to meet the expansion needs of the public transport system over the next 20 years. The estimated capital and vehicle / rolling stock costs of \$2.9 billion and \$1.2 billion respectively is a very conservative figure based on a very conservative plan, with many of the needed lateral (east-west) routes not being implement until late into the plan or until after 2031. Unfortunately this is a problem of leaving many of the worst problems until last and underinvesting in the necessary infrastructure to meet Perth's future needs.

The PTP Consultation Draft lists a number of potential benefits from the adoption of additional public transport; it does not address potential economic benefits of greater use of public transport. SEA recognises the difference between the cost-benefit analysis and the economic impact assessment methods, but to fail to include any form of economic impact analysis, there is a 'hole' in capturing the full effect of an improved public transport system.

The issue surrounding the potential economic benefits to businesses from better public transport services underlies a number of the potential funding models discussed in the following section. Recent reports by the Centre for Transit Oriented Development in the US indicated that there are benefits in terms of both employment and regional economic development through the use of public transport for businesses and employees.<sup>3, 4</sup> These factors need to be accounted for in the analysis of costs and benefits to fully capture the benefits of improved public transport and TOD projects.

Furthermore, through the expansion of public transport operations, one must also consider the increase in employment opportunities and economic benefits of increasing the system's capacity. With the increase in system capacity, there is likely to be additional employment opportunities and therefore a positive flow on effect in the economy.

In respect of the cost benefit analysis itself, other aspects of the cost-benefit calculations can and should be addressed including:

- Roadway Facilities - The public expenditures on roadway facilities.
- Roadway Land Value -The amount of land devoted to roads, the value of this land, and how this cost can be allocated to road users.
- Traffic Services The costs of public services for vehicle traffic, including law enforcement, emergency services and street lighting.
- Transportation Diversity - The value of transportation diversity and the costs of reduced transport options. Transportation diversity provides efficiency, equity, option value and resilience benefits.
- Resource Consumption - The external costs of resource consumption (particularly petroleum and other forms of energy), and therefore the benefits of conservation and increased efficiency.

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<sup>3</sup> Center for Transit oriented Design (2011) *Transit and Regional Economic Development*

<sup>4</sup> Center for Transit oriented Design (2011) *Transit-Oriented Development (TOD) and Employment*

- Barrier Effect - The barrier effect (also called “severance”), which refers to delays that roads and traffic cause to non-motorized travel.<sup>5</sup>

## Funding Perth’s future public transport needs

In assessing the potential options for funding the future of public transport in Perth, SEA recognises that the current model of operation of the Perth public transport systems is functional and viable and does not need to change. The model of Government capital, private operation and seamless ticketing across different transit modes (bus, rail, ferry etc.) is not unique to Perth from a global perspective but is certainly effective in delivering these services.

Ultimately, it must be recognised that the public transport services provided by government are an essential service for many in the community and the cost structures surrounding the funding of acquisition and operation need to reflect this. To this end SEA sees that the longer term funding of the PTP may be problematic beyond the 5 year time horizon for government funding.

The key to developing appropriate and sustainable funding within the scope of the PTP recognises that there is a need to provide public as well as private funding for the plan. However, the mechanisms for this funding are vague and uncertain. In looking at this aspect, one may initially assume that it will be in the form of a public-private partnership (PPP) or similar mechanism which has been used by various Government’s both in Australia and overseas to support infrastructure development. However, the PPP model has sometimes been beset by well publicized problems with their execution and operation leading to the requirement for a government takeover of the project from the private partner(s). Common reasons for failure of the traditional PPP model have included:

- a. Poor legal framework and enforcement;
- b. Weak institutional capacity and PPP strategy;
- c. Unrealistic revenue and cost estimations;
- d. Lack of thorough financial and economic analysis;
- e. Inappropriate sharing of risks;
- f. Lack of competitive procurement
- g. Public resistance (willingness to pay not assessed)<sup>6</sup>

SEA suggests that the limited funding options put forward in the PTP Consultation Draft are only a few of the possible funding models. Recent research indicates that there are alternate mechanisms being used globally to assist in the funding of public transport infrastructure other than the traditional PPP model or the suggestions put forward in the transport plan. The novel / alternative financing models identified in this research include:<sup>7</sup>

### 1. Benefit Assessment Districts

A Benefit Assessment District (BAD) is an instrument that is applied to a particular area by way of a new and special levy on properties that will benefit from the provision of new or upgraded public transit. This tax on properties (or sometimes businesses) is based on the identified economic or property value uplift that would accompany a proposed public investment in the area within which the properties are located.

### 2. Tax Increment Financing

Tax increment financing (TIF) is a tool sometimes used in the United States to provide up-front capital for new transit infrastructure, or maybe for related interventions that make

<sup>5</sup> Victoria Transport Policy Institute (2009) *Transportation Cost and Benefit Analysis Techniques, Estimates and Implications*, 2<sup>nd</sup> Ed Available: <http://www.vtppi.org/tca/>

<sup>6</sup> World Bank (2008) *Successes and Failures of PPP projects* .  
[http://siteresources.worldbank.org/FINTECAREGTOPTRANSPORT/FResources/FDay1\\_Pres2\\_SuccessesandFailuresPPPprojects15JUN08.ppt](http://siteresources.worldbank.org/FINTECAREGTOPTRANSPORT/FResources/FDay1_Pres2_SuccessesandFailuresPPPprojects15JUN08.ppt)

<sup>7</sup> Miller, M & Hale, C (2011) *Innovative Finance for New Rail Infrastructure*  
[www.atrf11.unisa.edu.au/Assets/Papers/ATRF11\\_0136\\_final.pdf](http://www.atrf11.unisa.edu.au/Assets/Papers/ATRF11_0136_final.pdf)

providing transit in a particular area easier (such as land assembly, decontamination, land acquisition, pedestrian linkages to future transit, and other aspects). TIFs function differently to benefit assessment districts – in that they work on identification of taxation revenue streams from the value that new transit creates without an alteration of the actual taxation or charges structure.

### **3. Transit Oriented Development & Joint Development revenues**

The concept of transit oriented development is not new and many cities across the world have historically been developed on the basis of access and proximity to public transport. This old/new paradigm appears to be an attractive alternative to the suburban sprawl which as predominated over the last 60 years. Increasingly, governments and transit agencies are also recognising that transit infrastructure plays a critical role in the end value of development projects, and are starting to take advantage of opportunities to share in the value uplift that comes with strong transit infrastructure provision.

### **4. Effective utilisation of development charges or impact fees**

United States and Australian authorities with the legislative power to implement development charges do so with different intentions in mind. The Australian scenario sees infrastructure charges legislated by the State but valued, charged and collected by the local authority. Using Brisbane City as an example, these charges extend to five areas, including; community infrastructure, water infrastructure, sewer Infrastructure, transport Infrastructure (including a nominal allocation to transit), and waterways. While some sections of the development industry are totally opposed to infrastructure charges at current levels, the user-pays mentality is generally supported in most cases. However, a consistent problem with infrastructure charges as they apply in Brisbane City appears to be that payments go into consolidated revenue and not into a fund that would specifically invest in transit infrastructure at the location of development.

### **5. Bond financing**

The issue of bonds as a means of resourcing transit expansion and infrastructure upgrades has long been a popular form of financing for US transit projects. Municipal bonds, for example, are best described as a debt security issued by a city or county to finance capital projects. A critical aspect is the ability of the raiser to provide a recurrent and sustainable income stream to make the bonds attractive to the market and acceptable to constituents and other stakeholders as a responsible financial strategy. The provision of an income stream for servicing bonds financing new transit infrastructure up-front is often delivered via one or a combination of the mechanisms outlined above. For example, the San Francisco Transbay Transit Centre, which is a \$US4.2 billion new multi-modal transit centre in downtown San Francisco, will be financed via a TIF and a special assessment district

Novel and different financing mechanisms need to be considered in the assessment of options for the funding of the new infrastructure required under the PTP and the above options should be included in the consideration set.

## **Broader policy issues**

When considering the other broader policy issues in respect of the PTP, SEA has identified the following key issues that the plan needs to critically address:

1. Demand management and public transport uptake
  - a. Like the electricity system, there is a need for the system to be able to cope with peak capacity and this must be recognised within the PTP and that costs must reflect the maximum infrastructure capacity;
  - b. A well designed system can maximise the daytime business personnel transport through a convenient and efficient transport system that operates more efficiently than cars

- c. A better and more frequent service are more likely to be considered as an alternative to private car travel in shoulder / off peak times but cutting services due to underutilization create a poor experience and is more likely to be avoided by those who can, even if there is a cost penalty to them personally.
- 2. Purchasing and acquisition / investment in new assets for public transport
  - a. The issue has been raised with SEA about the restrictiveness of current transportation legislation and regulations becoming problematic issues for future development, particularly in selection and planning of future options. There needs to be a rigorous examination of the legislative and regulatory barriers to implementation of an effective public transport system.
  - b. Purchasing and utilisation targets for investment in vehicles / rolling stock need to be examined to determine whether these are in fact appropriate and whether current practices can be changed to result in improvements in passenger comfort and safety, which can then lead to improved uptake.
- 3. Consultation with Local Government Authorities and the community
  - a. While ultimate control of the public transport system needs to remain in the hands of the state Government, there are significant roles for LGAs to contribute and assist in the development of the system.
  - b. Stakeholder consultation, in all aspects of the plan and its implementation needs to ensure that all stakeholders are consulted. These stakeholders include, but are not limited to: communities, LGAs, local business operators, private land and housing developers, other Government departments and industry groups representing other interested businesses.
  - c. In undertaking the necessary consultation, there needs to be discussions issues and implementation issues are not “off the table” before the discussions start
- 4. Future planning issues
  - a. There is a need to ensure that for the PTP to be effective it is necessary to integrate the various transport corridors / reserves with the planning processes currently in place for both greenfield and brownfield developments – particularly for urban infill projects which are being proposed.
  - b. Further develop and enhance the planning structures to facilitate and support the creation of a greater range and scope of TOD.

## About the 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 supports action on sustainable energy in every region and in all sectors of Australia's economy.

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### SEA Corporate members

