power to you

18 Brodie Hall Drive
Technology Park
Bentley WA 6102
PO Box 1066 Bentley DC WA 6983
Telephone (08) 6310 1000
Facsimile (08) 6310 1010
www.horizonpower.com.au

Our Ref: DMS#3381178
Enquiries: Eli Bernstein
Telephone: 6310 1862

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Lyndon Rowe, Chairman
Economic Regulation Authority
Level 6, 197 St Georges Terrace,
PERTH WA 6000

By email: publicsubmissions@erawa.com.au
CC: Chris Brown

REVIEW OF PROHIBITION AND RESTRICTION ON SYNERGY AND VERVE ENERGY

The Economic Regulation Authority released an issues paper on 25 January 2011 titled *Prohibition and restriction on Synergy and Verve Energy under the Electricity Corporations Act 2005*. The key issue raised relate to a review of sections 38(1) and 47(1) of the Electricity Corporations Act 2005 which respectively restricts Verve Energy from the direct sale of electricity to consumers and prohibits Synergy from generating electricity for a designated period. The period under review is 1 April 2013 to 1 April 2016.

Horizon Power wishes to make no comment on this issue of prohibition and restriction within the SWIS. As for some of the other market power mitigation measures imposed on Verve Energy and Synergy, Horizon Power is of the opinion that at this point in time they are effective and should remain in place. Specifically, we refer to the following measures (section 2.3.2 of the issues paper):

- Section 37 of the Act which limits Verve Energy to generate, purchase, or otherwise acquire and supply electricity in the SWIS (other than the generation and supply of electricity from renewable sources).
- Section 46 of the Act which limits Synergy to the SWIS with regards to the function of supplying electricity to consumers (amongst its other principle functions set out in section 44 of the Act).

While we note the above is beyond the purview of the current review, we submit that the following factors be considered before any future consideration of amendments to sections 37 and 46 of the Act.

1. **Lack of appropriate market frameworks**

   Horizon Power supports the effective development of competitive free markets but cautions against short-term policy responses which may give the appearance of a market without sound economic frameworks in place to provide sustainable outcomes. Horizon Power is concerned that the regional energy market is not yet ready for the removal of all restrictions relating to the government-owned utilities, and that such a proposal would ultimately stifle competition in the long term[1].

   - In the North West Interconnected System (NWIS), Horizon Power has long advocated for the development of an appropriate governance framework for all network participants. The entry of a large player prior to the development of such a framework would be counter-productive in its effect on competition[2].
   - In the non-interconnected systems (NIS), current IPP contractual arrangements do not allow for more than one player to be involved in the supply of electricity.

2. **Competing government interests**

   There is little sense in having two government-owned corporations competing in the same area:

   - As long as Horizon Power and Synergy are principally supplied from the legacy gas supply contract, any short-term competition that would emerge is likely to necessitate a reduction in profit margins and is unlikely to yield positive results to our common shareholder. This form of competition would lead to lower government returns and hence increase the burden on the Tariff Equalisation Funding (TEF)[3].
   - A duplication of overhead costs in having a few entities servicing the same region would result in inefficiencies for the market as a whole.

3. **Regional service provision could be compromised**

   Horizon Power was created to deal with the unique challenges entailed in the provision of essential services to remote and regional WA. In introducing the Electricity Corporations Bill, the then premier suggested that in creating Horizon Power, the government was "endeavouring to ensure that there is greater face-to-face contact between the corporation and the public in the centres that will be serviced by the

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[1] We note that this is consistent with the view expressed by Horizon Power to the Minister of Energy on 28 October 2008 when it opposed proposed legislative changes to amend gas supply arrangements for electricity corporations.

[2] We note that though the NWIS is not a covered network, Horizon Power does operate its share of the network on an open access basis, thus facilitating new market entrants.

[3] We also note that such a proposal would place the Minister of Energy in a position whereby he will be pressured by competing subsidiary interests.

regional corporation" (Hansard, 30/Jun/2005 - p3773-3778). This was the basis for the decentralised district business model that Horizon Power adopted and which has resulted in consistent high levels of customer satisfaction.

- The introduction of a player with a large centralised metro-based model would ultimately allow for the sacrifice of service for profit and if kept unchecked could lead to reduced service levels in regional WA.
- Horizon Power's footprint poses significant challenges and few opportunities. The entry of a large player with no service level obligations would ultimately hamper Horizon Power's ability to internally cross subsidise its loss-making residential customers from its profitable commercial customers. This in turn would lead to a higher cost of service and an increasing reliance of TEF.
- Similarly, service level obligations coupled with an obligation to connect small-use customers imposed on Horizon Power, and not shared by other players, will distort the market and be detrimental to long-term competition.

In light of the above, it is therefore our position that the conditions are not yet ripe for the entry of either Synergy or Verve into the regional market. The growth of regional markets may at some stage in the future warrant full and detailed consideration of the benefits of some form of competition in some sectors of the energy supply value chain.

Until such point in time, Horizon Power would welcome further investigation of proposed amendments to electricity supply arrangements in a manner that ensures a proper process with the same rigorous analysis as the original disaggregation process, a solution that ensures adequate service provision in regional WA; a quid pro quo that is fair to all players; and a market that is safeguarded to promote genuine long term competition. Needless to say, any future contemplated changes to sections 37 and 46 of the Act should be conducted in line with changes to section 52 of the Act, which restricts the area in which Horizon Power may operate.

I attach for your reference our submission to the Strategic Energy Initiative and note that sections 1.4, 4.1 and 4.2 deal with the role of markets and competition.

Should you have any queries regarding this submission, please do not hesitate to contact myself or Eli Bernstein on 6310 1862.

Yours sincerely

STEVE DEVON
GENERAL MANAGER
STRATEGY AND BUSINESS DEVELOPMENT

HORIZON POWER

Energy 2030

A submission by Horizon Power on the Strategic Energy Initiative's issues paper

March 2010

Contents

Overview

The Strategic Energy Initiative (SEI) and the renewed focus on long term infrastructure planning is recognised as a positive development for the state. We stand today at the convergence of many trends, all of which point to a fundamental shift in the way we produce, transport and consume energy in the years to come.

Running in parallel to the state initiative are a number of federal developments in the area of long term planning leading to a nationalisation of key aspects of energy policy in Australia. Horizon Power's experience and view is that the energy needs, challenges, development paths and optimal solutions for the varied geographic regions differ. While the benefits of harmonisation of policies are acknowledged, we submit that a one-size-fits-all approach cannot be applied. This also holds true within the state itself. The rules, structures and frameworks that suit the South West Interconnected System cannot be applied in isolated communities and are not ideally suited for developing energy and resource hubs.

The Strategic Energy Initiative identified four goals, namely the provision of secure, reliable, competitive and cleaner energy. The four strategic goals, while all important, represent a series of trade-offs as each of these goals comes at an economic, social or environmental cost. Government has a vital role in meeting the desires of its citizens – as taxpayers, electricity consumers and beneficiaries of a prosperous state – in a manner that provides an optimal (albeit imperfect) mix of the four goals.

Energy security is achieved via investment across a number of elements in the energy value chain – diversity in energy source and fuel type, fallback options for failures in the delivery infrastructure, and redundancy in energy delivery. As such, investment in energy security is a form of insurance. The key questions for the state are firstly, what is the optimal mix of premium cost and acceptable risk? – and secondly, who should pay for the risk premium?

The State's dependence on gas, and the lack of associated market and infrastructure diversity have been identified as key risks to energy security. We suggest the following would facilitate the goal of 'secure energy':

- Introduce scenario planning to quantify acceptable risk levels and the cost of mitigating unacceptable risks.
- Encourage diversity across the value chain from the primary energy mix through to the core gas infrastructure, market characteristics and contracting arrangements.
- Encourage the development of a more efficient gas market.
- Facilitate access to capacity on gas pipelines.
- Invest in appropriate transmission infrastructure and system design that supports energy security.
- Encourage energy efficiency to reduce energy dependence and improve productivity.

Reliable energy is a product of the investment made in security combined with the investment made in the service model enabling restoration of supply after an outage. In Horizon Power's experience, simple urban versus rural and remote cost comparisons in reliability standards place undue focus on costs per kilowatt rather than generate a more substantive discussion on a sensible series of trade-off. We suggest the following would facilitate the goal of 'reliable energy':

- Introduce tiered reliability standards depending on the location, size and type of customer.
- Consider non-quantitative impacts of service provision.
- Allow greater flexibility for owners of dual-fired plant.
- Blur the edge of grid and introduce an "edge of grid zone" to allow for non-transmission solutions.

Competitive Energy should be defined as the lowest total cost of energy delivered to Western Australian consumers. Horizon Power is of the view that market mechanisms are a means to the end of competitively-priced energy. Where the conditions are not ripe for deregulation, regulated monopolies or industry self-regulation can often achieve better cost efficiencies.

Horizon Power, with its experience in the Pilbara, has observed that a focus on short term marginal cost leads to poor long term outcomes; that individual competitive behaviour often overrides the good of the whole ; and that there is a need for an effective, unbiased system planner and operator in a multi-user system.

We suggest the following would facilitate the goal of 'competitive energy':

- Support a uniform tariff policy that achieves statewide cost-reflectivity.
- Encourage an industry-led governance framework in the NWIS to achieve system wide benefits.
- Create a specific energy policy for industrial, energy and resources hubs.

Cleaner Energy is achieved where fuel, technology or process ensures the supply of energy in a manner that results in lower emissions intensity. The transition to a carbon-constrained economy is a key driver in the introduction of renewables and the introduction of smart grid and smart meter applications. We note that nuclear power will also experience a resurgence in the coming decades.

We suggest the following would facilitate the goal of 'competitive energy':

- Government should be cautious about picking winners, but rather define a key problem and allow industry to develop solutions.
- Solutions that help end-users control their production and consumption of electricity independently should be encouraged.
- Energy efficiency represents the logical step towards a low-carbon economy.
- All technology options should be fairly considered, including nuclear power.

Getting the fundamentals right and balancing the four goals in a pragmatic and uniquely Western Australian manner are desirable for all participants within the energy industry, and, most importantly, the public.

Horizon Power welcomes the opportunity to engage in this important process and hopes it receives bi-partisan support and becomes the foundation of energy policy for the years to come.

1. Introduction

Energy has played a central role in advancing the living conditions and prosperity of civilisations from the earliest of days. We stand today on the verge of the next great leap forward in the way we create and consume energy. This will affect the manner in which society and industry develop over the coming century. It is therefore imperative that government takes a long-term view to ensure that energy policy aligns with state development objectives.

Despite the significance of energy to the state, the last time the State Government articulated a long-term vision for energy policy in the state was 1979. Given the changes, challenges and pressures which have developed and will continue to develop in regard to energy, the Strategic Energy Initiative (SEI) is recognised as a very positive development, which we hope will enjoy bipartisan political support and become the basis for decisions relating to energy provision made over the next two decades.

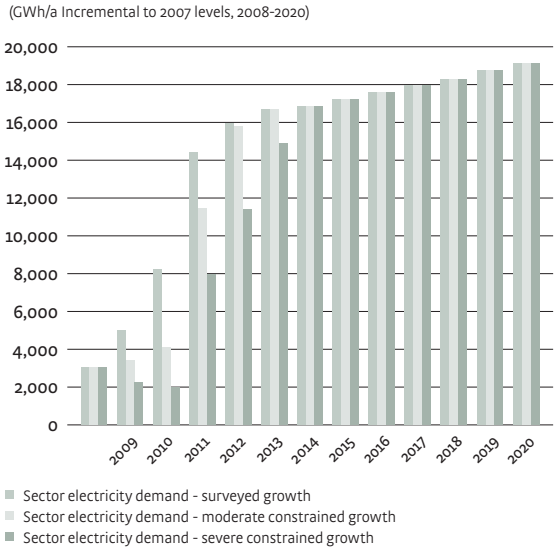
1.1 Growing Energy Demand

Energy and resources amount to one third of the state's overall economic output and two thirds of the state's exports. Accordingly, energy plays a dual role as both a valuable sales commodity in itself as well as a direct fuel input into the rest of the economy including the strategic minerals industry.

The continuing economic rise of China and India, over the period to 2030, will ensure continued demand for the state's energy and mineral resources. Western Australia, with its abundant energy resources and proximity to Asia, is well positioned to play a key role in supplying the region's burgeoning energy needs.

Domestically, residential energy requirements for WA will also grow quickly. The Third Intergenerational Report[2] indicated the significant population growth expected nationally to 2050, and current trends suggest that parts of Western Australia may experience some of the fastest population growth rates in Australia.

Incremental minerals and energy sector electricity demand



Source: *CME*[1].

State plans for the development of Pilbara Cities of the North, along with the further development of economic and population hubs in the Pilbara, Midwest and Kimberley, will affect energy demand in Horizon Power's service area.

In Western Australia, meeting growing energy demand is made more difficult by the tyranny of distance and historical patterns of demographic, as well as industrial, dispersion. Horizon Power knows this tyranny all too well. It serves the regional areas of Western Australia, with a land area of over two million square kilometres. Despite this, its customer base is low, currently less than 50,000 customers.

[1] Chamber of Minerals and Energy, 2008, Developing a Growth Outlook for WA's Minerals and Energy Industry

[2] Intergenerational Report 2010, Australia to 2050: Future Challenges, Treasurer of the Commonwealth of Australia, January 2010

1.2 National & International Considerations

The SEI is being drafted at the same time as key aspects of energy policy in Australia are being nationalised. With the introduction of the Renewable Energy Target and a possible price on carbon, many decisions affecting Western Australia are now being made in Canberra.

Whilst there are many areas in which National consistencies and harmonisation will create efficiencies that may not be achieved through an individual state approach, the circumstances in Western Australia offer market characteristics and challenges that will not be solved through the application of theories, practices and policies developed to meet the needs of the National Electricity Market.

Horizon Power's experience and view is that the energy needs, challenges, development paths and optimal solutions for the varied geographic regions differ, sometimes significantly. The type of approaches and mechanisms required to meet the needs of a rural/agricultural area such as Esperance are significantly different to those required for rapidly developing industrial Pilbara let alone the suburban outskirts of Sydney. A one-size-fits-all approach is doomed to fail.

WA's energy portfolio will be affected by international demand for minerals and hydrocarbons, exchange rates, a global cost of carbon, and developments in technology. How domestic growth is managed and balanced against international trends will influence the availability and cost of energy to the citizens and industry of Western Australia.

1.3 Overarching State Policy and SEI

The four strategic goals of the SEI, while all important, represent in practice a series of trade-offs. Given current and prospective technologies it is fair to say that the greater the security, reliability and "cleanness" of our energy, the higher its cost.

If the objective of competitive energy is to ensure that the price we pay for our energy maintains our competitiveness with other regions, state energy

strategy objectives ought to drive our energy solutions over time to achieve the optimal balance of the four stated outcomes of secure, reliable, competitive and clean energy.

The SEI and our energy objectives should really be viewed as a subset of overall state aspirations. The structures, mechanisms and policy settings including market structures, the role of government and government trading entities (GTEs) is itself a further derivative of the SEI. The hierarchy of priorities is summarised as follows:

Strategic State Policy
state development | population strategy

Strategic Energy Initiative
secure | reliable | competitive | clean energy

Market Structure & Policy Instruments
market structure | regulation | funding | ownership

Horizon Power's submission reflects this hierarchy of priorities and puts a range of options forward for consideration.

This hierarchy of priorities must to be achieved in a manner that best meets the desires of citizens – as residents, taxpayers, electricity consumers and beneficiaries of a prosperous state. Government plays an essential role in balancing the desires of the community with the needs of the state.

1.4 The Role of Government

The issues paper highlights the tension between government intervention (through ownership and regulation) and free market theory. Free market theory dictates that the best efficiencies are created in a competitive market structure and as such the role of government should be minimised. It is generally accepted, however, that market intervention is necessary to ensure the following objectives:

1. Externalities are appropriately costed

In The Wealth of Nations (1776)[3], Adam Smith stated, "It is not from the benevolence of the butcher, the brewer, or the baker, that we expect our dinner, but from their regard to their own interest". But what if their self-interests do not align with the public good; what if relevant externalities have not been appropriately considered: if the butcher does not consider the health and safety of his employees or customers; if the brewer pollutes the environment; or if the only baker in town affects the economy and social welfare through exorbitant pricing?

Here, in the void left by self-interest, lies a role for government.

Government corporations, like private-sector corporations, are required to return value to their shareholder. They are, however, differentiated in the manner by which value is ascribed by their respective shareholders. With Government as its shareholder, a government corporation must attribute value to non-economic factors such as environmental and social good. As such, they can act as agents for government policy.

2. Public works are erected and maintained

Government also bears responsibility for "erecting and maintaining those public institutions and those public works, which, though they may be in the highest degree advantageous to a great society, are, however, of such a nature that the profit could never repay the expence to any individual" (Smith, 1776)[4]. The provision of public goods, that is the infrastructure necessary for facilitating state and regional development may be best managed by the State.

3. Markets develop without distortion.

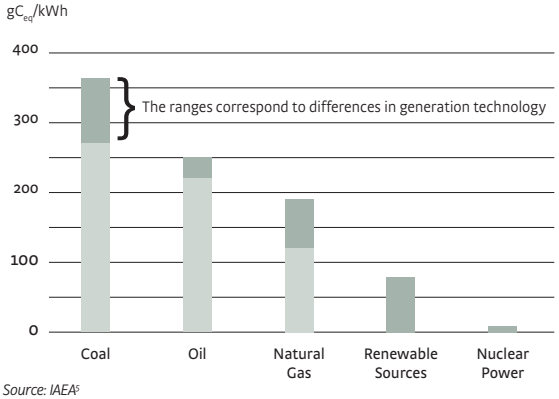
Finally, Government, through its regulatory agents, must ensure that markets operate efficiently without being hindered by monopolistic behaviour and self-interest. Thus, while it is the role of markets to ensure that industrial development occurs, it is the role of government to ensure that where the private sector's incentives do not align with the public interest, the latter prevails for the long-term benefit of the community and state.

1.5 Nuclear Power

We note that nuclear power has been specifically excluded from the scope of this paper. We suggest that this exclusion carries a significant risk to achieving the goals of secure, reliable, cost-effective and clean energy in the state.

If governments and the community at some point come to the conclusion that Nuclear generation technology is to play a role in meeting the future national energy challenges, the practical development of Nuclear Energy in Australia will have a very long lead time. Whilst we note some very interesting developments in nuclear technology occurring internationally, particularly smaller scale technologies (see panel below), Horizon Power is yet to form a view on the viability of application to a Western Australian context. We submit, however, that the longer we defer debate, discussion, technical understanding and engagement, the longer we defer any possible deployment should the technologies develop to a point where they could play a vital role in low emission generation of energy.

Greenhouse Gas Emissions from electricity generated by Different Sources



Source: IAEA[5]

[3] Smith, A (1776), 'Of the Principle which gives Occasion to the Division of Labour", in *An Inquiry into the Nature and Causes of the Wealth of Nations, Volume 1, page 15*

[4] Ibid, Of the Expence of Public Works and Public Institutions, Volume 2, Page 305

[5] Spadaro JV, Langois L and Hamilton B, 2000, 'Assessing the Difference: Greenhouse Gas Emissions of Electricity Generation Chains', The IAEA Bulletin, Volume 42, Number 2

Nuclear power is now experiencing a global renaissance. It will increasingly power China and India's industrial expansion and play a large role in the long term energy mix in the United States.

This paradigm shift in the acceptance of nuclear power occurs as some major trends converge:

- Nuclear generation is getting smaller and safer, with micro-nuclear options presenting nuclear solutions at the sub-megawatt level. The town of Galena in Alaska is installing the Toshiba 4S ("super safe, small and simple") nuclear power system that would enable supply of about 10 MW of electrical power for 30 years without any new fuel. Estimates suggest a significant reduction in the cost of supply.
- A modular approach to nuclear power plant construction will significantly reduce the construction phase of nuclear power plants and consequently (as the time gap between expenditure and earnings narrows) lower the heavy burden of capital costs.
- Advances in waste management and storage technology (such as Posiva's solution in Finland) will, with time, allay community concerns relating to environment and safety.
- More research and development is occurring in the use of safe nuclear fuels such as thorium and spent fuel (such as Bill Gates' Terrapower project).
- An international framework with a cradle-to-grave approach to the manufacture, use and handling of the entire civil nuclear life cycle would allay proliferation concerns.
- A carbon-constrained environment will favour nuclear generation over the coming years, as it offers a known zero-emissions solution to baseload generation. (This was reinforced in US President Barack Obama's State of the Union address and in recent announcements).

1.6 Observations

We make the following observations:

- *Getting the fundamentals right and balancing the four SEI goals in a pragmatic and uniquely Western Australian manner are desirable for all participants within the energy industry, and, most importantly, the public.*
- *We recommend that the State develops a vision for itself in 2050; this timeframe would reflect the lifespan of infrastructure assets now in development.. Strategic Development Plans prepared by Government agencies and corporations should incorporate a (non-financial) section to ensure alignment with the overall state development and population strategies.*
- *Energy policy is entwined with the state's plans for water, transport, industrial and population centres. We recommend that as the state develops and clarifies its vision for Pilbara Cities and key growth areas (as well as for areas in decline) utilities and service providers be engaged in infrastructure requirements at the earliest stage of planning.*
- *While the scenarios presented in the discussion paper are generally in line with conventional thinking today, we note that long-term decisions made for energy assets and market rules must include agility to deal with "unknown unknowns".*
- *We recommended that Government promote a bi-partisan debate on the subject of nuclear power, allowing all costs and benefits – including social and environmental – to be fairly considered.*

2. Secure energy

Horizon Power considers that "secure energy" means that:

- Sufficient levels of demand can be met, subject to the consumer or society as a whole being willing to pay for the cost of providing such supply.
- The quality of energy supply meets minimum requirements of customers.
- A reasonable level of diversity exists both in the mix of primary energy sources being used as well as the physical and market makeup of the energy supply chain.

2.1 Overarching Position:

Security objectives need to be defined – it is quite possible to reduce the risk of major periods where energy demand can't be met to negligible levels. To do so requires investment across a number of elements in the energy value chain – diversity in energy source and fuel type, fallback options for failures in the delivery infrastructure, and redundancy in energy delivery to consumers. The combination of the level (capacity) and layers (how many alternate fallbacks) across these elements determines energy security.

The investment in energy security is a form of insurance. We pay a premium for reducing the impacts of things which may or may not occur in the future. The decision for investing in energy security is thus a product of our assessment of the likelihood of risk and our valuation of the consequences of failure versus the cost of the premium. The issue of who pays the premium and funds the necessary infrastructure to achieve the desired security is then a secondary matter.

Gas as the major security risk

Horizon Power is of the view that at present the greatest risk to energy security for the state as a whole lies in the developing dependence and limitations, both market and physical, on natural gas as a fuel source.

> *Western Australia is the most energy and gas-dependent economy in Australia. Natural gas supplies half of the State's primary energy requirements and fuels 60% of the State's electricity generation. In contrast, natural gas supplies 19% of the primary energy needs of Australia as a whole*[6] .

Gas plays a very important role in Western Australia's energy mix. This dependence will increase in the period to 2030 as we transition to a carbon-constrained economy. Provision of gas from well head to end consumer therefore needs to be as secure as possible.

Horizon Power's view of the WA gas market is that although it has developed and matured somewhat over the years, it remains quite opaque and falls well short of the economic ideal of a perfectly competitive market. There are only two principal suppliers, only one major transmission pipeline, inadequate gas storage facilities and few aggregators. There is a lack of financial hedging instruments and to date there has been no properly working spot market.

Horizon Power considers it imperative to address these deficiencies to allow the gas market to develop further. We submit that some of the "low hanging fruit" would be to look at improving gas storage facilities and encourage development of a spot market. Horizon Power is encouraged by activities currently being pursued by industry participants in these areas.

In its recent decision to allow joint selling for the Gorgon joint venturers, the Australian Competition and Consumer Commission (ACCC) highlighted that the lack of liquidity and storage options in WA were key consideration influencing its decision.

[6] DomGas Alliance, "Western Australia's Domestic Gas Security", 2009 Report

This, however, has led to informational asymmetry and a duopoly structure that skews competitive advantage towards suppliers. We suggest that once the market progresses to address these concerns (e.g. following the start up of Macedon, Reindeer and the domestic phase of Gorgon), joint selling arrangements should be revisited.

Horizon Power believes it is important that the WA gas market becomes more transparent and liquid to ensure that any demand, including significant step changes in demand arising from mineral projects, can be supplied in a timely and efficient fashion.

Moreover, physical constraints such as transport arrangements represent a bottleneck that endangers energy security and represents a significant barrier to the development of resources and energy-intensive industry.

To achieve secure energy for the state, we recommend that the following be considered:

1. ***Introduce scenario planning***

   In order to come to a decision on how secure our energy should be and what price we are willing to pay for such security, the discussion needs to be very well informed by a number of planned and costed scenarios around alternate levels of security. Those scenarios should be defined by the alternate durations and scope of potential system failures we are willing to contemplate. Once the total value of failure in economic and social terms can be ascertained, system planning work could be done to determine the technical solutions and relevant costs required to achieve the requisite level of system security.

2. ***Encourage diversity***

   Diversity should be encouraged to mitigate risk. Firstly, the mix of primary energy sources being used should be less reliant on gas and include all other feasible options (such as renewables, 'clean coal' and nuclear). Secondly, core gas infrastructure should be duplicated to achieve security. Thirdly, the concentration of upstream ownership in the gas sector should be addressed through support to multiple producers / suppliers; aggregators; pipeline owners / operators; and storage providers. Lastly, policy should encourage diversity in contracting arrangements with a mix of long term, medium term and short term commitments (supported by financial hedging instruments).

3. ***Encourage the development of a more efficient gas market***

   Efficient market development is significantly impeded by the lack of domestic supply and demand certainty, the circular interrelationship between demand and supply (as gas fields are developed only once off take is secured), and the relatively small size of the market. This in turn limits the ability of the market to forecast price or develop the instruments necessary to hedge against price volatility.

   We believe that in addition to the direct market driven changes referred to above, changes to key policies relating to retention leases, the reservation policy and joint marketing could facilitate a more efficient market.

4. ***Facilitate access to capacity on gas pipelines***

   State Government, either directly or through industry players, could elect to take a more active role by taking positions in gas in lieu of royalties; by securing spare capacity in transport; by facilitating storage; and by acting as a short-term trader. This form of interference in market forces may be necessary for some period to ensure spot market emerges, which ultimately leads to increased competition, smoothes volatility, reduces the impact of supply interruptions and supports state development objectives.

5. ***Invest in appropriate transmission infrastructure and system design that supports energy security***

   The role of infrastructure in achieving energy security should not be underestimated. In an electricity context, an efficient transmission system significantly reduces spinning reserve requirements; allows efficient generation to develop on the network; supports the connection of generation (including renewables); and allows for power to be sourced from online generators in the case of supply interruption. There should be an adequate capacity margin in

both gas and electricity transmission systems to ensure efficient connection of new loads. Owner of transmission infrastructure would need to be adequately compensated for providing the capacity margin on the system.

6. ***Encourage energy efficiency***

Increasing productivity (i.e. highest output per unit of input) and reducing demand for energy along the demand chain is a cost-effective manner of achieving both supply security and reductions in carbon emissions.

2.2 Responses

Upstream

2.2.1 *What are the current Commonwealth and State regulatory impediments to investment in upstream energy resources and infrastructure necessary to supply our domestic economy?*

2.2.2. *What changes and/or adjustments are required to Commonwealth and State taxation arrangements (e.g. royalty and production taxes, depreciation provisions) to provide incentives for the development of primary fuels and investment in infrastructure?*

Inconsistencies between Commonwealth and state regulatory regimes should be minimised to ensure companies are not incentivised to keep gas from coming onshore, so as to avoid state royalties, regulations and the reservation policy. A harmonisation of state and federal regulatory processes will minimise 'jurisdiction shopping' and reduce the distortionary effects of policy on financial investment decisions.

The streamlining of the approvals process for resources and infrastructure projects would ensure that additional supply gets to market in a timely fashion. Further streamlining should also make it more attractive for potential investors to consider projects in Western Australia ahead of projects elsewhere.

2.2.3. *What changes (if any) are required to current policies to facilitate the development of energy resources and facilities?*

The actions taken here should be driven towards the creation of a perfect market with information symmetry and transparency and with as many buyers and sellers that can be introduced into the market. Through the period of transition, policies allowing joint marketing and the reservation of gas for the domestic market may be necessary.

- ***joint marketing arrangements*** *between producers for the sale of domestic gas;*

Joint marketing arrangements generally reduce competition and are only allowed following an assessment on a case by case basis by the ACCC. Recently, the Gorgon Joint Venture (JV) partners were successful in their application to the ACCC to market their domestic gas jointly.

One of the main arguments of the JV partners to allow joint selling is that there is an absence of effective borrowing and balancing mechanisms in the WA gas market which would place unmanageable risks on the JV partners if they had to market separately. Current market indications suggest that borrowing and balancing can be executed effectively and as such the risk of a gap between demand and supply position for any one owner is adequately managed. Once some tangible progress has been made on the other issues identified by the ACCC, such as lack of liquidity and physical storage, joint marketing should be reconsidered as it is an impediment to an efficient market.

- *adoption of* ***domestic gas commitments*** *under specific state agreements; application of the State's Domestic Gas Reservation Policy;*

The reservation policy represents one instance where market forces ought to be tampered with in the interest of state development. This policy should be applied equally at state and federal levels

The reservation policy requires amendments to ensure that the development of domestic gas from new supply sources is not timed to ensure maximum returns to developers but rather is developed and delivered in a time frame to suit the WA domestic supply /

demand balance.

Suppliers should be allowed to swap their obligation of domestic supply amongst themselves or satisfy their obligation through an equivalent supply of electricity in lieu of gas – both of which would allow for aggregation and efficiency in domestic energy production and distribution.

- *the **Commonwealth Retention Lease System** for off-shore oil and gas;*

Government should apply a more critical approach when renewing retention leases. A "use it or lose it" approach will require companies to make an investment decision within a given timeframe or risk having resources opened up to interest from companies that are prepared to commit to development.

The assessment of renewal of retention leases should be by personnel with the capabilities (both technical and financial) to critically examine such applications. Further, the process should be made as transparent as possible. Currently, third parties cannot gain a full understanding of the process and the basis of decision making, thus preventing a challenge to the case put forward by lease holder.

- *structure and design of **downstream energy markets** (especially gas and electricity);*

We consider that lack of liquidity is the main barrier to further development of the WA gas market. Liquidity can only be adequately addressed through a physical connection to a larger market, such as a DC link or a gas pipeline to the Eastern States market. Without such a development, which seems a remote possibility at the moment, the size of the WA market is likely to remain relatively modest for the foreseeable future.

- ***onshore petroleum and gas exploration.***

There should be minimal gaps between policies relating to offshore exploration and onshore exploration (e.g. reservation policy) to ensure that offshore exploration is not favored

for jurisdictional grounds and that decisions are made on financial and technical merit alone.

2.2.4. *How can regulatory systems affecting investment in, and protection of energy infrastructure be improved to ensure the availability of energy for downstream markets?*

See sections 2.2.1 - 2.2.3

2.2.5. *Western Australia's economy has traditionally been dependent on imported oil, natural gas from the north-west and coal from the south-west to meet its primary energy needs. What are the feasible alternative sources of primary energy? What are the barriers to their development and how can these barriers be overcome?*

While WA is still set to rely heavily on natural gas for the period to 2030, the development of alternative energy sources is promising. The state has hydro, tidal, wave, wind, solar and geothermal resources, the latter having the potential to replace base load generation. Biomass should be considered where it poses no risk to food supply or other externalities. The development of intermittent generation is limited by network capacity and the limitations of storage technologies to date.

Further, while WA is blessed with rich renewable resources, it is vexed by the tyranny of distance, resulting in large distances between renewable sources and load centres, requiring long distance transmission solutions. Appropriate incentives should be put in place to deal with these large, up-front network requirements. These challenges will need to take into account legacy assets and the appropriate regulatory frameworks and ensure transparency and incentives that are congruent with state objectives.

2.2.6. What technologies may be employed by the upstream sector to reduce its carbon footprint? What are the specific initiatives that either State or Commonwealth governments can implement to promote the uptake of carbon abatement?

The Gorgon JV has incorporated plans for carbon capture and storage. State support through the approvals process and regulatory mechanism is critical at this early stage of the technology's development.

Downstream

2.2.7. What are the current Commonwealth and State regulatory impediments to investment in downstream energy infrastructure?

See section 1.9

2.2.8. What are the current impediments to the development of alternative energy and low emission technologies?

At present, a confusing mix of policy settings is exacerbating the inherent difficulties of major technology transitions and slowing the effective development and deployment of new energy technologies.

Horizon Power submits that the first key element in accelerating such a large scale technology shift is to provide broad market incentives to create determined focus on the issue. The uncertainty relating to a price signal for the long term cost of carbon is diverting and diluting not only industry focus but also community focus. The uncertainty demonstrably promotes a lack of investment certainty that in turn impedes on the development of alternative energy and low emission technologies.

We believe there are then four subsidiary policy areas which should be clearly focused on:

1. Development of clear incentives for both consumers and the right participants in energy markets to promote end use energy efficiency.
2. Development of clear technology research and development funding programs. Our experience is that those programs which have identified a clear problem and then seek bids from industry that offer the best potential gains on the target problem (such as the Federal Government's Renewable Remote Power Generation Program) have stimulated significant technology innovation and development.
3. Deployment policies utilising broad market incentives appear to be effective solutions but only where government does not create unpredictable market distortions by "fast-tracking" deployment of a particular technology .
4. The barriers and disincentives for network businesses to encourage alternate and low emission technologies onto the systems must be systematically addressed.

2.2.9. What are the current problems with the energy supply systems serving industry and communities in the north-west, mid-west and remote communities? What options should be considered to ensure that any expansion of existing energy supply systems serves the interests of all businesses and members of our community?

The development of Western Australia's natural resources is a critical component of state strategy and will provide a key element of the State's economy over the period to 2030. For that to occur, the development of efficient and effective energy solutions are critically important. Without affordable and effective energy supply, many new projects cannot proceed to development. This in turn affects the competitiveness of the end commodity with a ripple effect on the West Australian economy.

Horizon Power's experience is that a laissez-faire approach to infrastructure development in these hubs will result in inefficient overall results for the participants and the state. Individual companies will be guided by their self-interest rather than the interest of the community and the state as a whole. They will focus on short or even long run marginal cost of their components of the energy system as

it emerges, rather than on the long run cost or net benefit of the system as a whole. The Pilbara presents a case in point.

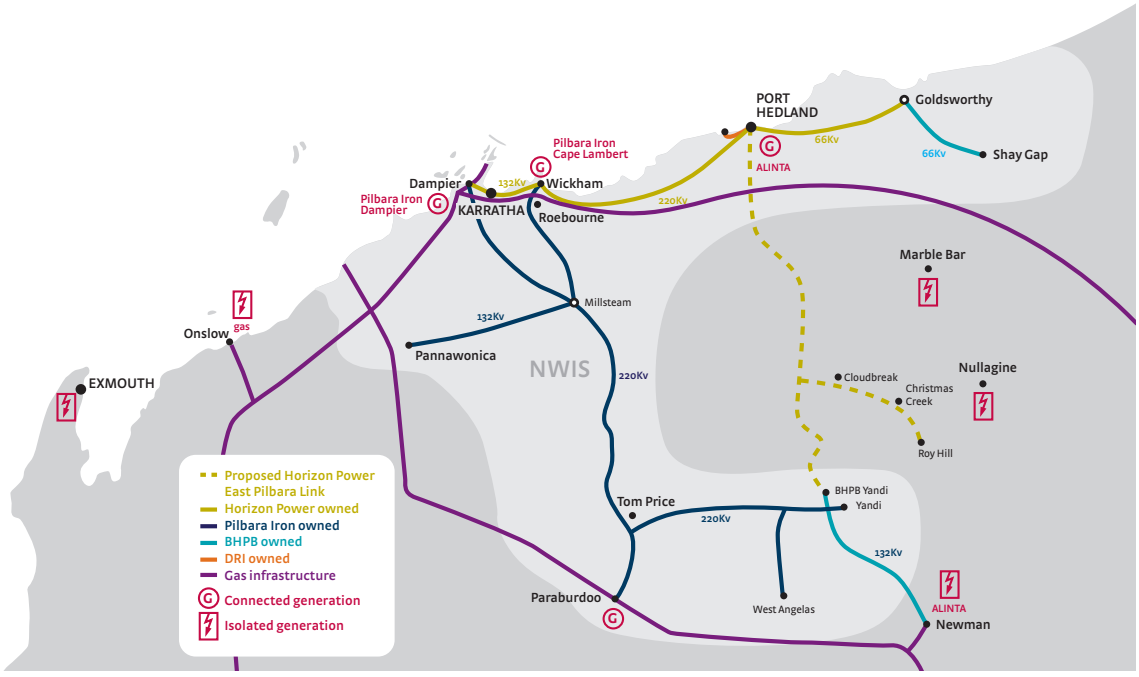
Transmission in the Pilbara is largely serviced by the North West Interconnected System (NWIS), though much generation in the region is isolated. The NWIS is the largest system in Australia to function in an uncoordinated manner. At this scale, the lack of system planning and control has led to uncoordinated development, inefficiency in plant and operation and compromise of system security. These problems have been identified in various studies commissioned by government, with a recent study[7] (appended) concluding that:

> *The lack of proper interconnection and integration of the NWIS is a key issue for the sustainability of power supply to the region, and the resulting problems and risks from this lack of integration are expected to increase over time with system growth... The recommended solution to resolve the energy supply issues in the NWIS is investment in an integrated transmission network together with the creation of an effective governance framework.*

[7] Allens Consulting, 2009, Power for the Pilbara Region

The lack of appropriate transmission and pipeline infrastructure in the Pilbara combined with no governance framework or enforceable technical rules poses a growing and considerable threat to energy security and reliability in the state's economic engine. In the absence of policy or governance structures in the NWIS, the following characteristics are observed:

- investments to date have been driven by individual strategic self-interest rather than common good interests;
- investments are based on Short Run Marginal Costs rather than Long Run Marginal Cost;
- the competitive nature of the iron ore industry has prevented cooperation and the development of suitable governance arrangements;
- major generation and transmission investment decisions are being finalised at present by players in the Pilbara that could undermine the future viability of a more optimal long term system and development of multi user infrastructure; and
- system security in the NWIS is currently under threat.



The Pilbara Energy Grid

Horizon Power's experience is that:

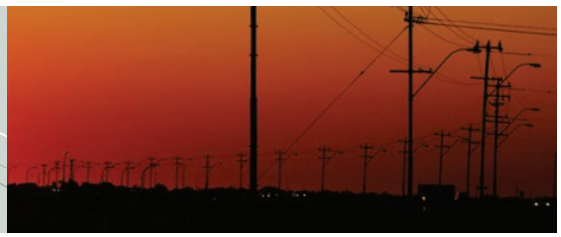
- a focus on short-term least cost energy solutions leads to poor infrastructure development required to support longer term requirements resulting in higher costs over the long term.
- as load centres develop there is a natural efficient evolution from a centralised and highly coordinated monopoly system to strucutures which facilitate the coordination of multiple players and then towards market type structures.

Lessons learnt from the situation which has developed in the Pilbara should ensure that the same mistakes are not repeated in the newly developed hubs of the state. See section 4.2.13 for further discussion.

3. Reliable energy

Horizon Power considers that "reliable energy" means:

- Energy delivered in a manner that does nothing to compromise safety.
- Energy delivered at acceptable standards when accounting for location, technical parameters and cost of supply.



3.1 Overarching Position

Achieving consistent reliability standards across the state incurs a cost, depending on the location and relative isolation of electricity assets. Under any public or private arrangements, this will be more expensive in remote and regional Australia.

Reliability is essentially a factor of the investment made in security combined with the investment made in the service model enabling restoration of supply after an outage. Reliability and quality requirements are a major factor in determining the cost structure of energy service provision. These factors have a major influence on asset design and standards as well as the service provision model. Horizon Power believes that consideration of service standards in close consultation with the customer base offers opportunities to adjust the net benefit equation.

Consistent, reliable electricity has been introduced only recently to many of the places where Horizon Power operates. When this occurs, there is usually a direct impact on living standards, other quality-of-life issues as well as the economy of the town.

Horizon Power is developing evaluation metrics beyond cost/benefit analysis for delivering essential services to remote communities. Moving away from a narrow definition of reliability toward the total economic benefit for the community could help frame questions around service delivery and standards, which include such metrics as life expectancy and health. A major piece of work applying this methodology to regularisation of remote indigenous communities has been completed and can be made available through the SEI process.

Simple urban versus rural and remote cost comparisons in reliability standards place undue focus on Horizon Power's costs, especially costs per kilowatt, rather than generate a more substantive discussion on a sensible series of trade-offs.

To achieve reliable energy in the state and particularly for regional and remote areas and towns, we recommend that the following be considered:

1. ***Introduce tiered reliability standards.***

   We recommend that government consider setting reliability requirements in a tiered fashion, depending on the location, size and type of customer – such that different standards could be set for urban, regional, remote and isolated population centres. Naturally, this must be done with caution and in consultation with all relevant stakeholders.

   As reliability and security are very closely linked, we recommend that the process of determining appropriate standards of reliability follow the process outlined in section 2.1.

2. ***Consider non-quantitative impacts of service provision***

   We submit that a more holistic approach to determining whether the provision of essential services represent "good value" start to be developed and adopted potentially for use across WA government departments.

3. ***Allow greater flexibility for owners of dual-fired plant***

   We recommend that liquid fuel plans for emergencies address current environmental restrictions to provide more flexible options to plant operators, so as to allow fuel switching without a "system emergency" having to be declared.

4. *Blur the edge of grid*

The boundary of the SWIS should be blurred to allow for embedded generation solutions to compete with transmission solution. We propose the creation of an "edge of grid zone" where current SWIS regulatory restrictions are relaxed to allow for alternate solutions.

3.2 Responses

3.2.1. What is the level of reliability that customers expect and what are they prepared to pay for increased reliability? Will customers be prepared to trade off a lower level of reliability with a decreased cost or vice versa?

Consumer perceptions of electricity service represent a major challenge for the electricity industry. Better service raises expectations and thereby capital expenditure requirements, which strains operating budgets. Examples include:

- *Population growth in the Pilbara, originating primarily from migration from major towns and cities, will lead to expectations of service that compares to that in established cities and towns; and*
- *With the successful expansion of electricity to remote and isolated communities, the minimum expected standard of electricity service is increasing quickly.*

In most of Horizon Power's services area, customers are not paying the full cost of service provision. Therefore, reductions in service levels leading to cost reductions will not result in lower bills to the end user but in a lower burden on the Tariff Equalisation Fund (TEF). That said, Horizon Power is of the view that there is room for consultation regarding adjustment of service levels. As expressed above we believe that different standards should be set for urban, regional, remote and isolated population centres.

3.2.2. How can the State ensure that its energy supply systems have adequate backup or redundancy to meet end-user expectations, while also ensuring that the price of energy remains competitive?

Many of Horizon Power's systems are built to withstand disruption by cyclones, flooding, and harsh conditions. This explains in part why Horizon Power has a different cost structure than other utilities.

As the Varanus Island incident illustrated, vulnerable supplies and failure of critical infrastructure means that short-term, uneconomic decisions must be made today to ensure for the provision of backup infrastructure to safeguard future security of supply. This is primarily a concern in the NWIS or where gas is sourced from the gas pipeline. Any additional storage of meaningful supplies of gas will incur a cost.

One of the essential difficulties of electricity supply is that the supplier rarely faces the full economic cost of disruption of supply. If this were not the case, the price of energy would be prohibitive. Notwithstanding, investment in regional emergency supply is complicated by this factor.

3.2.3. What feasible solutions can customers employ to mitigate energy supply disruptions?

Mature battery (including UPS) technology will be a positive development for dealing with supply disruptions and managing intermittent renewable generators, though this remains unlikely to take place in the short to medium term. Distributed battery capacity has a number of benefits including system stability, lower environmental impact, deferral of capital works, and integration of large-scale renewables. These benefits should be balanced by the higher unit cost.

Where a total economic life cycle argument can be made, appropriate regulatory and consumer incentives for rollout of battery technology should be encouraged. The introduction of electric vehicles could see car batteries be used for the purposes of supply security.

A close eye should be kept on improving battery technology, as its costs are expected to come down in the next ten years, and consumers should be provided with adequate and accurate information about the features and benefits (economic and environmental) of batteries over other solutions like rooftop solar panels.

3.2.4. Is it possible to enlist or adjust end-user responses to mitigate demand or substitute with alternative fuels in response to emergency events? What are the limits on this kind of response?

Electricity providers can help reduce demand at certain times and manage crises with existing technology. Limiting factors include:

- the economic drivers for utilities (i.e. what are the benefits, other than delaying capital expansion for providing smart infrastructure, to allow consumers to tailor their energy usage?) and;
- the motivations for consumers to alter their behaviour (i.e. savings/penalties for changing usage patterns).

Over the next 20 years, a number of new technologies and techniques for reducing demand will emerge, especially for isolated and remote systems. Where demand reduction is economically sensible, utilities will be motivated to select and underwrite the best solutions for consumers without the need for prescriptive choices and incentives from Government.

3.2.5. What options are available to the State to maintain liquid fuel supply reliability?

Horizon Power needs liquid fuels to operate its islanded systems. Sufficient availability of Diesel fuel during a gas shortage is a matter of concern. Similarly, one problem noted during the Varanus incident was a lack of truck drivers, which disrupted the supply chain. Large distances place a high degree of reliance on the road infrastructure.

Dual fuel generation offers a higher level of reliability. However, moving from gas to diesel also involves an array of licenses and Environmental Protection Agency requirements. Currently, switching fuels must be preceded by a "system emergency" being declared.

3.2.6. What options are feasible to manage the rapid fluctuations in supply from intermittent generation sources and how can the input from these generators better match demand characteristics?

Horizon Power has experience managing the integration of intermittent renewables with conventional fossil fuel generation.

Without effective management, intermittency in the NWIS and to a greater extent in isolated systems is problematic; moreover, the lack of scale adds to the costs of system support, load-following capacity and operations, all of which may actually offset any environmental gains.

Solar hot water systems, which actually reduce demand and do not cause fluctuations, may be the preferred choice for isolated systems up to certain levels. Government incentives ought to take this into account.

3.2.7. What options are available to improve the reliability of power supplies to remote and 'edge of grid' industries and communities?

Edge-of-grid servicing is costly within the SWIS. This is important to note, as even in the confines of the SWIS, there is significant cross-subsidisation to outer areas, as well as to some communities located closer to larger loads and generation sites.

Expanding the grid made for an expensive asset base, which then emphasised the role of networks in solving edge-of-grid problems. This is now embedded in regulatory settings.

One option available to policymakers is to view the edge of grid as an artificial delineation where connection to a larger grid is not always the cheapest, most reliable or efficient solution.

In practical terms, this could be done by reviewing publicly what is now the "edge of grid" to determine whether the internal SWIS cross-subsidisation is the most efficient form of providing capacity. In the meantime, an "edge-of-grid zone", rather than a line on a map, could allow communities to consider the costs and benefits of options. This could see some areas become contestable for provision of supply. Expensive network solutions need only be

completed where they are beneficial, or there is an official growth corridor or industrial expansion. In this process, there needs to be differentiation between areas that may be depopulating and those that are expanding as population centres or mineral zones.

4. Competitive energy

Horizon Power considers that "competitive energy" means:

- The provision of acceptable service at the lowest total life cycle cost to the state.
- Promoting any mechanism, whether market-based or otherwise, that delivers energy most efficiently.

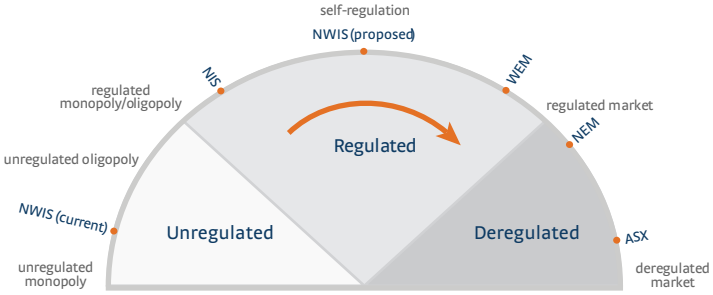
4.1 Overarching Position

Horizon Power supports this component of the SEI but cautions against short-term policy responses which may give the appearance of a market without sound economic frameworks in place to provide sustainable outcomes. Accordingly, we view that where one or more of the ingredients of "perfect market" are lacking (such as the presence of many buyers and sellers; customer choice; price transparency; market liquidity and the availability of financial instruments), the pursuit of a market approach is very likely to result in sub-optimal outcomes. This point was recently highlighted in the Verve Energy Review[8].

> *It is often argued that cost efficiency in generation and retail operations is best promoted by competition. The argument has merit if the market promotes genuine competition – although in theory a well run monopoly or dominant provider can achieve high levels of operating efficiency if subject to very effective regulation supported by strong performance management frameworks.*

It is for this reason competitive energy should be defined as the lowest total cost of energy delivered to Western Australian consumers.

In the areas in which Horizon Power operates, many of which are at an early stage of development, the commercial self-interest of any single participant will not necessarily provide incentives to deliver effective and efficient services to consumers. With this in mind, over the period between 2010 and 2030, there will be varying degrees of market characteristics in the NWIS, and almost no-market characteristics in the isolated systems. As load centres develop, getting larger and with more players, there is a natural evolution from a centralised and highly coordinated monopoly system towards coordination of multiple players towards market type structures.



Sound economic frameworks, which provide transparent pricing signals through identification of market opportunities by public dissemination of sector and site-specific subsidies, must be established to provide a foundation for the evolution to competitive electricity markets. This will necessarily differ between isolated systems, the NWIS and greenfield industrial hub zones.

[8] Oates P, 2009, Verve Energy Review

Horizon Power has observed the following through its experience:

- *A focus on short term marginal cost leads to poor long term outcomes including the development of an ineffective and inflexible generation mix and a network that does not stand the test of time.*
- *Individual self-interest often overrides the broader public good. Similarly, competitive behaviour between parties leads to a lack of appropriate and economically beneficial cooperation.*
- *Markets cannot design energy systems. Market participants can be very effective at the delivery of preplanned elements of a system but there is a need for an objective and unbiased independent system planner and operator in all transmission systems to ensure an optimal system will develop over time.*

To achieve competitively-priced energy in the state, we recommend that the following be considered:

1. ***Support a uniform tariff policy that achieves statewide cost-reflectivity.***

   Statewide cost-reflective pricing (reflecting the overall total cost of providing electricity to all Western Australian consumers), through a uniform price tariff, is an important first step in providing the foundation of a competitive market environment. This would make options for competitive service provision of electricity delivery to small, isolated systems possible and also continue the practice of statewide equity by ensuring consistent electricity tariffs for all consumers. Tariff-setting may be required to be conducted by an independent body to achieve this aim.

2. ***Encourage an industry-led governance framework in the NWIS to achieve system wide benefits***

   Government should encourage and facilitate agreement between existing players in the NWIS on a common network approach to an access regime, investment mechanism, integrated planning and system operations, with the aim of developing self-regulation.

   Failing that, government must consider a regulatory framework that takes into account the peculiarities of the energy market in the Pilbara. It is recognized that while self-regulation and industry cooperation may be desirable in the short- to medium-term, a true market structure could evolve thereafter, once the Pilbara energy market matures.

3. ***Create a specific energy policy for industrial, energy and resources hubs***

   Regional development in the regions of the Pilbara, Kimberly (west and east) and the Midwest must occur in a planned manner. The SEI should take a clean sheet approach to existing delineations between SWIS and non-SWIS areas. The creation of industrial hub zones on greenfield sites, and potentially newer brownfield areas, not bound by existing boundaries, would serve as an important vehicle to fast track development of appropriate plans and structures to drive the development of appropriate core infrastructure to support the economic development of those zones.

4.2 Responses

General

4.2.1. What are the major impediments to increasing competition in upstream (e.g. domestic gas production) and downstream (e.g. electricity, gas and liquids) energy markets in Western Australia?

4.2.2. How can energy markets be better integrated (especially gas and electricity) to deliver more efficient and competitive market outcomes with improved reliability?

4.2.3. What are the policies, regulations and frameworks that the State Government could put in place to increase competition in upstream and downstream energy markets?

See section 2.2.3.

The North West Interconnected System

Many of the problems in the NWIS arise because there are no commonly agreed technical rules, and the system has been managed on a basis of goodwill between parties, with services delivered on a generally cooperative, but sometimes unaccountable and unreliable way. While this has provided a workable solution in the past, it has been recognised as sub-optimal by various parties, and is becoming less acceptable as the system grows and as additional users seek access to the power system.

Within the NWIS and the larger regional hubs, the generation sector is not a natural monopoly. Increases in the generation technologies available and improvements in interconnected transmission networks would enable further competition in this sector. However, this will be staggered for the period 2010-2030. Any policies which facilitate agreement between the existing players in the NWIS on a common network approach to integrated planning, investment and system operation should be encouraged, especially if this leads to self-regulation.

This approach should not discriminate against future entrants but appropriately price risk and provide a suitable rate of return for existing, as well as new, investments.

Introducing further competition in the NWIS will require several key components to be in place. Firstly, industry participants must have equal and fair access to transmission and distribution systems and transparent pricing to enable them to deliver their energy efficiently to the customer. Secondly, other important policy concerns such as system reliability must be maintained or improved. Lastly, monitoring actual levels of competition over time, free from the misuse of market power, will be required.[9]

Focusing on the institutional framework, with a particular emphasis on the formalisation of the unofficial role of the System Operator function in the NWIS, is an important first step in providing the basis for competition. In this process, several key issues will need to be considered to develop an appropriate framework between the parties and not necessarily directly involve government. The most critical issue is to determine a mutually agreeable pricing approach which is able to effectively allocate the large fixed costs of the network to different users. Such an approach must pursue a number of complementary objectives:

- *Allowing sunk investment costs to be recovered (financial sufficiency);*
- *Providing adequate incentives for future long-term investment (long-term efficiency);*
- *Providing adequate signals for efficient network operation (short-term efficiency);*
- *Avoiding discrimination among users of transmission (competitive neutrality); and*
- *Promoting simplicity and transparency.*

[9] General competition law has direct application in the NWIS. Under the prevailing resources and industry structure and the oligopolistic conditions prevailing in the electricity generation sector, competitive behaviour should continue to be monitored. Similarly, rights of access to critical infrastructure will require close monitoring. We note however that the federal regulatory regime for the monitoring of National Competition Policy is already well established, with the electricity supply industry being only one marketplace to be monitored by the Australian Consumer and Competition Commission in the NWIS. It should therefore not be necessary for electricity industry regulators and policy makers to duplicate National Competition Policy within the localised industry regulations. To do so would be contrary to achieving an efficient regulatory regime

Horizon Power notes that these objectives can practically be delivered either by self-regulation through mutual agreement by industry participants or through government regulation, as is currently in place in the SWIS. Whatever means are eventually progressed, it is critical that the balanced set of outcomes (as outlined above) is kept clearly in mind and that the transaction costs incurred are not so substantial that any benefits of industry reform are lost in the process.

Non-Interconnected Systems

Horizon Power believes that a successful regulatory policy for regional Western Australia should be founded on long-run net benefit maximisation – ie value for money across all points in the value chain, giving due focus to security and reliability of supply, environmental benefit, social and community benefit and safety.

In the context of remote, non-interconnected regions, competition has been attempted through the independent power procurement process promoted by government. The results have been varied with no evidence to suggest that this process yielded long term reductions in cost versus those that a regulated monopoly could have achieved (and some evidence to suggest the contrary).

We hold the view that it is considerably more effective and more efficient to have one firm build and operate the power system on a town-by-town basis, as such a firm is clearly accountable for the performance of the value chain and controls the levers for problem solution. As there would only be one market player in any location, competition theory is unworkable. Instead, a regulatory regime that is directed to ensure that service is delivered at the desired levels of performance coupled with a regulated pricing regime is appropriate.

Regional Hubs

In the long-term, it may be worthwhile for the state government to consider creating a specific energy policy for industrial hub zones. Similar to the "generation park" concept proposed by Western Power, this could create optimal electricity solutions to concentrations of energy intensive industry and address the emerging issue of needing to clarify non-SWIS queuing policies. Industrial hub zones could also facilitate private investment many times the size of public involvement. The possibility of creating such zones with clear and effective governance mechanisms would serve as an important vehicle to promote and enable the coordinated development and appropriate public and private investment in the provision of electricity supply and infrastructure provision.

4.2.4. What are the adjustment costs to facilitate this process and how would government manage them?

Government can consider the benefits of investing in a process, mechanism or infrastructure which will facilitate an open access regime as it will deliver the dual benefit of state development and tolling charges. Adam Smith in the Wealth of Nations (1776)[10] stated:

> *The expence of maintaining good roads and communications is, no doubt, beneficial to the whole society, and may, therefore, without any injustice be defrayed by the general contribution of the whole society. This expence, however, is most immediately and directly beneficial to those who travel or carry goods from one place to another, and to those who consume such goods....The greater part of such public works may easily be so managed as to afford a particular revenue sufficient for defraying their own expense, without bringing any burden upon the general revenue of the society.*

This is as true for electricity transmission networks as it is for roads. In most cases, infrastructure costs incurred by the State can be recovered directly through tolling charges and market mechanisms. However, this type of direct funding by government should only occur after sound economic governance frameworks are established so that government action does not distort the market, or displace private participants from making the same investments.

[10] Smith, A (1776), 'Of the Principle which gives Occasion to the Division of Labour", in *An Inquiry into the Nature and Causes of the Wealth of Nations, Volume 1, page 403*

4.2.5. How should the role of government change in response to the development of a market driven energy sector?

See section 1.4

4.2.6. What are the implications for government policy of unintended social and environmental impacts of facilitating a market driven environment for energy?

See section 1.4

Energy Price Regulation

4.2.7. The State Government has maintained control of both gas and electricity retail tariffs. Is it appropriate for this to continue?

Given the nature of the state's population spread and electricity infrastructure a pure move to unregulated cost reflective pricing by location would have massive impacts on the viability of regional areas. If state objectives require population centres in those areas, government must place appropriate controls to ensure that the costs, like the benefits, of regional developments are spread across the state.

4.2.8. If gas and retail price regulation is required in the future, what is the appropriate process that can be put into place to ensure that consumers are protected and that suppliers are able to earn a commercial return?

See section 4.1

4.2.9. What is the appropriate way to provide assistance to remote or socially disadvantaged groups in our community (e.g. uniform tariffs, rebates, concessions, flat rate tariffs etc.)? How should they be funded?

Social objectives, including universal service, support to disadvantaged consumers or equalisation of tariffs can be promoted in a more competitive context, provided they are made explicit. Achieving these objectives, nonetheless, generally distorts electricity prices and therefore there is a limit to what electricity markets can contribute to social objectives without suffering significant loss of economic performance. General policies, rather than sectoral electricity policies are more efficient in achieving social objectives.

We suggest the following principles be applied:

- Tariff pool should reflect the total true cost of supply for the state
- True cost reflective pricing needs to be applied right across the State (within and outside of the SWIS) or alternatively we accept the principle of cross-subsidisation across regions Providing adequate signals for efficient network operation (short-term efficiency);
- Government policy provides appropriate levels of direct assistance to protect the disadvantaged

4.2.10. How can we maximise the benefits of introducing cost reflective energy tariffs, especially in terms of promoting energy conservation; reducing peak demand; and promoting better utilisation of energy infrastructure?

Statewide cost-reflective pricing (reflecting the overall total cost of providing electricity to all Western Australian consumers), through a uniform price tariff, would be an important first step in providing the foundation of a competitive market environment. This provides options for competitive service provision of electricity delivery to small, isolated systems possible and also continues the practice of statewide equity by ensuring consistent electricity tariffs for all consumers.

Where the objective is to smooth the demand profile for electricity consumption, a time based price signal is necessary. Though a clear and strong price signal is necessary to alter consumer behaviour, it is not necessary for that signal to reflect the full cost of service provision to each particular customer. Naturally, this price signal ought to be supported by appropriate metering and billing systems.

Electricity

4.2.11. What specific reforms could be made to the Wholesale Electricity Market to improve the efficiency of the market (e.g. promote transparency, liquidity, risk management tools)?

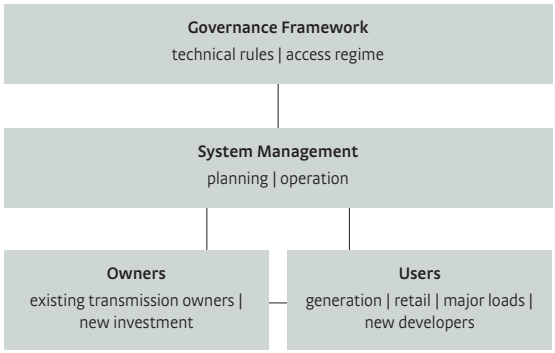
4.2.12. Is it appropriate for the State Government to maintain ownership in the longer term of major energy corporations - Verve Energy (south west generator), Synergy (south west retailer), Western Power (south west network operator), Horizon Power (Integrated north west and regional electricity provider) while it is facilitating the development of competitive markets?

This question can really only be answered once the strategy objectives of government are clear, and the theory, policies and preferred mechanisms have been defined to pursue those objectives. The roles, structure and appropriate ownership of GTEs should then be designed to most effectively support those objectives and strategy. That said, the tension between the government's role as an asset owner and as a regulator is acknowledged (though it can be addressed through privatisation, disaggregation, or ring fencing').

4.2.13. What options are available to the State Government to further develop the energy supply systems of the State's north-west and remote areas?

We support the development of the physical network and governance framework which are urgently required in the NWIS. It is proposed that government support the Pilbara Vision through the development of a governance framework and the facilitation of further infrastructure investment. We support the view that an industry-led governance framework should be established and that immediate investment in multi-user infrastructure is necessary.

One proposal sees that establishment of a governance framework, agreed upon by industry participants, that incorporates technical rules and an access regime. An independent (or 'ring-fenced') body will manage system operation and planning and facilitate interaction between users and owners.



The benefits of a co-ordinated approach to power development follow:

- **Ensures System Security:** System reliability and security will increase following the completion of a ring main and the implementation of a governance framework.
- **Reduces Energy Requirements:** When compared to a gas pipeline (combined with isolated generation), a transmission system reduces energy needs by over 75 PJ per annum (equating to an annual economic benefit of over $500 million and 2 million tonnes in CO_2 reductions).
- **Encourages Resource Development:** The construction of the East Pilbara Link (transmission infrastructure between Port Hedland and Newman) would enable small to medium mining projects that could not economically justify isolated power generation, particularly in a capital-constrained environment.
- **Supports Regional Development:** The development of the Pilbara into an industrial hub that can sustain energy intensive industry (e.g. downstream processing) and the establishment of a Pilbara city both require a reliable, cost effective electricity solution that transmission offers.
- **Facilitates Large scale generation:** Develop more efficient generation including combined cycle and solar thermal generation which maximises the utility of the region's natural resources (piped gas; on-site dirty gas; solar; coastal water).

4.2.14. Only customers who use more than 50 megawatt-hours per annum can choose their electricity supplier. What are the impediments to introducing Full Retail Competition (FRC) in electricity? How can these impediments be overcome?

See section 4.2.7

Gas

4.2.15. The GSEMC recommended implementing a Gas Statement of Opportunities (GSOO) and a Gas Bulletin Board to facilitate investment and increased short-term trading. Are there any additional measures that should be put in place to improve the transparency and liquidity of the gas market?

Currently, there are not the appropriate incentives for excess capacity to be built into pipeline and for storage to be built as owners are unwilling to risk the capital investment in unsold capacity. Government can play a role in underwriting such capacity or change the economic regulations and incentives so as to make investment in excess capacity attractive to infrastructure owners. The benefits of such a policy are multi-fold:

- New industrial developers would face lower barriers to entry and would be assumed to compensate the government for their investment to date in holding capacity.
- Such capacity coupled with a private-public partnered investment in storage could allow the state to better manage the peak and troughs of demand and better manage emergencies.
- A spot market could develop if transport capacity was guaranteed by government. The bulletin board would have likely succeeded if transport arrangement were able to be coupled with the underlying trade.

4.2.16. While there is currently FRC in the gas market, how can competition be further promoted in the retail gas market?

The Western Australian retail market is, at present, too small a market for full retail contestability to attract newcomers. The industry is heavily regulated; the tariffs are fixed and billing system requirements and a home-grown regulatory regime create barriers to entry. That said, the winter peak associated with gas retail could be attractive for a corporation with a matching summer peak, such as an electricity utility.

5. Cleaner energy

Horizon Power considers that "cleaner energy" means that:

- Fuel, technology or process that ensures the supply of energy in a manner that results in the production of energy with lower emissions intensity than the state's current levels
- Less energy is required for the same level of output (i.e. energy efficiency)

5.1 Overarching Position

We stand at the convergence of a number of global trends that all point towards step-changes in the way our power is generated, transported and stored. Trends relevant to the provision of cleaner energy include:

- The energy needs of the future will keep on rising. We live in a society that is increasingly dependent on electronic technology for every facet of daily living, and this trend shows no sign of waning. Additionally, as the middle classes in China and India grow, energy dependence will become a reality for many more people.
- Increasing environmental awareness and political trends in OECD countries will lead to a cost of carbon, implicit or explicit.
- The emergence of new technologies in power generation and storage, including cost-effective renewable and nuclear technologies, will significantly alter the fuel mix that supplies our energy beyond 2030.
- The convergence of power and data services will see a smarter, more efficient grid with greater automation and user interaction.
- Networks will be required to support (and be supported by) a mass rollout of electric vehicles.
- The integration of new technologies that will shift the current generation mix remains some years away, requiring energy efficiency measures to make the major short-term contribution.
- As electricity generation and grid technologies will change rapidly, it is imperative that Government and infrastructure owners be able to respond to change in a planned, yet agile manner.

To achieve cleaner energy for the state, we recommend that the following be considered:

1. ***Government should not pick winners.***

   In developing the technologies that will shape our future, Government should be cautious about picking winners. It should rather define the key problem areas that require action and fund research and development and early deployment. In mass deployment, the market is best suited to pick winners.

   We observe that utilities, either state-owned or private, have always, and should continue, to play a vital role in working with Universities and industry in the development and early deployment of new technologies.

   Integration and optimisation of existing technologies are likely to play the biggest role in reducing fossil fuel use. By 2030, some of the initial attempts to encourage cleaner energy may turn out to be seen as well-intended, but essentially misguided. Where schemes fail to achieve their goal, or are surpassed by technology, there should be an ability for government to move on. We are grappling with a vast and new set of challenges. If we don't take some false paths we probably wont be trying hard enough.

2. ***Power to the people***

Solutions that help end-users control their production and consumption of electricity independently should be encouraged.

3. ***The low-hanging fruit***

Many energy efficiency measures are "cost-negative" (as illustrated in the McKinsey Abatement Model)[11], making them the first logical step towards a low-carbon economy. The introduction of tougher standards on housing design, refrigeration, air-conditioning and heating appliances would serve this interest.

4. ***All options should be fairly consideredt***

Finally, we contend that nuclear power should not have been omitted from the scope of this study, as it remains an important option for exploration and consideration, particularly as smaller scale technologies emerge. While it is acknowledged that current power economics in Western Australia are unlikely to make nuclear power an option for the short term, it is important to establish a planning and technical capacity to integrate nuclear power for the period beyond 2030, particularly as new technologies will make next-generation plants more environmentally and economically attractive. Waiting for 2030 to start considering planning and regulatory issues may be too late.

5.2 Responses

5.2.1. What are the technical, regulatory and market barriers to the introduction of renewable energy projects in Western Australia?

The primary barriers to the introduction of renewable energy projects are capital costs, lack of certainty around the future cost of carbon, the distance between load and energy resource, and unresolved issues pertaining to intermittency.

5.2.2. How can these barriers be overcome while ensuring that all generation projects are treated equally within market and regulatory frameworks?

As previously noted, there may be a case for considering scaled down versions of the "generation parks" Western Power has proposed in some of its public submissions. Designating a connection opportunity at a specific place (potentially offered through a bidding process) can make for a more managed integration of renewable generation.

5.2.3. What are the technical, regulatory and market barriers for the introduction of distributed generation technology?

Distributed generation has its place in the network of the future offering clean generation, edge-of-grid support and line loss reductions. It does, however, come at a significant cost to the owner and the utility (as additional capacity must support the evening load). Distributed storage solutions, such as electric vehicles, offer a likely solution to the utility's concerns.

5.2.4. How can the State Government ensure adequate investment by electricity distributors in 'smart grid' technology?

As smart grid infrastructure becomes cheaper, the right economic signals need to be sent to both utilities and consumers to adopt these technologies. As with all relatively new technologies, a combination of experimentation and lesson learning from other locations is necessary. In Western Australia, opportunities should be taken to incorporate large scale deployments of smart grid technologies alongside other infrastructure redevelopment programs (such as the Pilbara undergrounding) in a controlled manner so that benefits can be identified and quantified and an assessment be made of how smart grid technologies provide the best benefit.

[11] Gorner, Stephen et al. "An Australian Cost Curve for Greenhouse Gas Reduction." McKinsey & Company, 2008

Furthermore, encouraging smart meters must be linked to time-variable tariffs and other mechanisms if they are to be attractive to consumers. Other considerations include:

- Government should ensure a level of open-source standards and protocols are developed to ensure the market is not locked in to one provider.
- Government should consider using the rollout of the national broadband network as an opportunity to upgrade to a 'smart grid'

5.2.5. What are the benefits and costs associated with installing advanced metering in customer premises?

5.2.6. How can the State Government facilitate the deployment of advanced metering for energy customers and maximise the benefits?

Advanced metering allows for the provision of regular, real-time power consumption data, which form the foundation for demand-side management.

It offers consumers services such as remote billing, remote connection and disconnection, and real-time energy consumption data.

It offers utilities demand side management capability, that is, the ability to manage peak load through load shedding. It further enables remote monitoring and control of switching and metering devices in regional systems, providing real-time control of networks from a central location and reducing travel and maintenance costs.

Advanced metering is unlikely to bring about a significant change in behaviours without being accompanied by a matching pricing policy. Time-of-use pricing can be used to encourage customers to alter their behaviour.

5.2.7. Does the State Government need to put in place programs to encourage end-use efficiency?

The State could do more to ensure energy and water-saving measures are used in urban planning and building codes. Efficient land use, building density, and the orientation and location of structures and facilities must be built into planning process early and on a wide scale.

5.2.8. What incentive programs for renewable energy and energy efficiency should the State Government consider?

The promotion of renewable energy was discussed in depth in section 2.2.8.

Government needs to encourage technology development through problem oriented Research and Development (R&D) funding, deployment of technologies through market incentive mechanism such as RET and provide regulatory or financial incentives to network businesses to actively encourage and support renewable generation.

Energy efficiency measures remain the best "bang for buck" solution to reducing carbon emissions. Government should facilitate these initiatives by encouraging development and deployment of smart grid infrastructure as discussed above; by enforcing common energy standards and communication protocols in all energy-intensive appliances (such as air-conditioners, refrigerators, boilers and heaters); by subsidising energy-efficient appliances (with energy ratings) and building products (insulation) or incentives (audits); and by offering attractive interruptible supply arrangements to households and industry.

5.2.9. What role should the State Government have in facilitating cleaner energy projects?

Government has a role in supporting the development of unproven technologies, provided that it is done in a manner that is cautious about picking winners. As such, it can provide funding and perhaps platforms for collaborative R&D to address key hurdles in the development of a carbon constrained economy.

Government, through its Trading Enterprises, is uniquely positioned to take on a role in deploying projects that investors would otherwise reject, such as energy efficiency applications (the underlying principle of commerce being to sell more, not less) or in instances where the risk-return ratio is unpalatable to the market. As a shareholder, Government can recoup the rewards of successful technological application, resulting in a more sustainable approach to funding.

It should be noted that any allocation of funds

will distort market forces (as was recently demonstrated with the affects of solar rebates on the RECs market). Where Government does so, as a shareholder of its own enterprises, distortion is effectively minimised.

5.2.10. What role should the State Government have in facilitating cleaner energy projects?

Institutional and regulatory frameworks that favour market-driven decision making will by and large deliver the most efficient investment mix across a range of technologies. Policies and frameworks that narrowly pick winners, by contrast, can skew the energy mix to technologies that don't suit existing systems and therefore cannot deliver energy in the most reliable, secure, and economically-efficient fashion. Where government is involved in setting policy and making investments, it should be very predictable, follow a long-term plan, and seek not to distort market prices and signals. An understanding of the nature of the energy industry, characterised by large and lumpy investments with long lead time, is fundamental to rational regulatory systems. This will be particularly important as newer renewable energy sources are commercialised.

Where government intervenes by subsidising a new technology, it should do so higher up in the supply chain so as to deliver a reduction in the cost of the technology rather than subsidise end-users. Additionally, utilities, either state-owned or private, could play a role in facilitating government investment where appropriate.

Administration Centre

18 Brodie Hall Drive
Technology Park
Bentley WA 6102

PO Box 1066 Bentley DC WA 6983

Telephone (08) 6310 1000
Facsimile (08) 6310 1010
www.horizonpower.com.au