



GOVERNMENT OF  
WESTERN AUSTRALIA

# Strategic Energy Initiative *Energy2031*

Building the Pathways for  
Western Australia's Energy Future

August 2012

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## Contents

|                                                                          |           |
|--------------------------------------------------------------------------|-----------|
| <b>Energy for Western Australia</b>                                      | <b>5</b>  |
| <b>1. Strategic framework for Western Australia's energy future</b>      | <b>7</b>  |
| <b>2. Overarching goals and principles</b>                               | <b>8</b>  |
| <b>3. <i>Energy2031</i> vision for Western Australia's energy future</b> | <b>9</b>  |
| <b>4. Pathways to Western Australia's energy future</b>                  | <b>12</b> |
| Pathways and goals                                                       | 12        |
| The <i>Energy2031</i> pathways                                           | 12        |
| Diverse and secure energy supply                                         | 13        |
| Pro-active energy planning                                               | 18        |
| Effective and efficient energy delivery                                  | 20        |
| Informed and responsible energy use                                      | 23        |
| Capacity building for Western Australia's energy future                  | 24        |
| <b>5. Achieving the <i>Energy2031</i> vision</b>                         | <b>26</b> |



## Energy for Western Australia



Energy is essential to our way of life and it is vital that we have affordable, secure, reliable and cleaner energy into the future. Achieving these objectives presents challenges. I am confident that we can tackle these challenges by providing well thought out and balanced solutions to all our energy needs.

The Western Australian economy, including the energy sector, faces an evolving, complex, less predictable and more globally connected environment.

The ability to adapt to these changing circumstances is of paramount significance. This, coupled with the unique characteristics of our State's energy sector, drives the need for a more strategic approach in energy policy setting.

The breadth and depth of issues that we face requires a cohesive and comprehensive strategic energy policy framework. The *Energy2031* vision covers all aspects of the energy supply chain - the supply, planning, delivery and use of energy in the Western Australian economy. *Energy2031* also recognises the importance of education, information provision and research across the supply chain. Of course, affordable, reliable, secure and cleaner energy are the end goals of this supply chain.

The *Energy2031* consultation process identified a range of issues that need to be addressed to ensure the energy sector can accomplish the goals of affordable, secure, reliable and cleaner energy supplies. While differing views were expressed on key issues, the consultation process also revealed a broad consensus on some of the longer-term challenges faced by the State.

The key issues and challenges identified by stakeholders include growing demand for energy for mineral processing and as an export commodity, with steadily increasing domestic demand for electricity.

Improvements in energy efficiency are also seen as important as this is the only mechanism to reduce energy consumption without limiting economic growth over the medium term.

Modelling work undertaken by independent consultants for the Strategic Energy Initiative shows that gas remains an important energy source for the domestic economy, with future supplies being dependent on new reserves supplying existing and new domestic gas processing facilities. Availability and cost will determine the role of gas in electricity generation.

Growth in overall energy supply sources will be supported by wind power developments and other forms of renewable energy, with coal continuing to play a key role in the State's energy mix. Development of renewable energy sources will need to focus on technologies that are able to best meet the profile of electricity demand.

Meaningful change in the transport energy sector will come from a change in both modes of transport and adoption of new technologies developed on an international scale. Liquid fuel security continues to be an important issue for Western Australia.

Energy systems will need to be adaptable to new and emerging technologies, including those involving end use of energy, transmission networks and alternative forms of electricity generation.

Energy is essential. It must be affordable for households, businesses and Government. Energy affordability and the management of customers in financial hardship will need to be addressed through targeted concession arrangements, rather than broad based subsidies.

*Energy2031* provides a range of pathways and strategies to help us address the challenges identified and make the most of the opportunities available to us.

As we move towards our vision, some of the policy decisions we make will result in gradual progress while others will be more substantial.

I look forward to establishing a roundtable of consumer and industry representatives to regularly canvass their views on how we achieve the vision of affordable, secure, reliable and cleaner energy.



HON PETER COLLIER, MLC  
MINISTER FOR ENERGY

August 2012

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# 1. Strategic framework for Western Australia's energy future

A clear strategic framework has guided the development of the Strategic Energy Initiative, *Energy2031*.

The goals and principles adopted in consultation with stakeholders in the lead up to the publication of the *Energy2031* Directions Paper have largely remained as the main reference points for the formulation of the *Energy2031* vision and the pathways to achieve it. The goals have evolved over time and in line with the challenges we are trying to address.

The *Energy2031* pathways, which largely mirror the energy supply chain, provide for a series of strategies and actions that will help us make energy supply in Western Australia more affordable, more secure, more reliable as well as cleaner.

Our ability to achieve goals in the supply, planning, delivery and use of energy will depend on our capacity to supply the energy industry with a skilled workforce and innovative solutions, and the ability of Western Australian business and consumers to make informed decisions in relation to their participation in energy markets.

In recognition of this, a capacity building pathway is included to support the implementation of strategies across the supply chain and, ultimately, the achievement of the *Energy2031* vision.

## 2. Overarching goals and principles

The policy strategies to achieve the *Energy2031* vision have been developed against four strategic goals. The strategies have also been informed by six overarching principles. These goals and principles are outlined below.

### Goals

- 1) **Affordable energy:** Western Australians have access to affordable energy that meets their needs.
- 2) **Secure energy:** Western Australia's energy supply is sufficient to meet demand over the longer term.
- 3) **Reliable energy:** Western Australia's energy supply is safe and of a consistently high quality and delivered with minimal disruption.
- 4) **Cleaner energy:** Western Australia's energy production and use demonstrates good environmental stewardship and minimises greenhouse emissions.

### Principles

- 1) Energy policy will be developed in alignment with State economic, environmental, social and development policies.
- 2) Energy policy responses to economic, social and environmental imperatives must be balanced, with *Energy2031* goals guiding consideration of any necessary trade-offs in the public interest.
- 3) Government will intervene in energy markets only to the extent necessary to ensure public safety and address social and/or environmental concerns.
- 4) Markets with efficient regulatory frameworks are the preferred mechanisms for the supply of energy and the associated infrastructure and services.
- 5) Energy policy and regulation will be sufficiently predictable to support personal and business investment decisions, while flexible enough to address the impacts of technological, social, economic, environmental and national policy changes.
- 6) State energy policy complements and enhances national energy policy settings to advance Western Australian interests.

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### 3. *Energy2031* vision for Western Australia's energy future

*Energy2031* paints a picture of the energy sector that we aim to build in the next 20 years.

This vision for Western Australia's energy future will guide Government, policy-makers, industry and the broader community in making decisions on future courses of action to meet our energy needs.

We have aligned the long-term vision with the five *Energy2031* pathways.



#### Vision for diverse and secure energy supply

By 2031, a significant and continually growing proportion of Western Australia's energy needs will be met from renewable energy sources.

The State's gas needs will be met with supplies from offshore fields and an increasing proportion of onshore fields, including unconventional onshore sources such as 'tight gas' and shale gas reserves, with appropriate management of environmental impacts. Delivery to end-users will occur through an expanding, integrated network of pipelines.

Coal will continue to supply Western Australia's electricity generation portfolio in conjunction with emissions reduction technologies.

Transport energy requirements will be met by a much greater range of fuel sources, including electricity. The improved availability and uptake of alternative fuels, combined with a shift towards the use of more efficient vehicle technologies and energy efficient modes of transport, will strengthen the resilience of the transport system in responding to the impacts of global oil prices and supply volatility.

This diverse energy mix will enhance Western Australia's economic resilience in responding to changes in global energy markets.

### Vision for pro-active energy planning

By 2031, energy infrastructure development to support the State's population and economic growth will be efficiently planned and coordinated by Government and delivered in a timely manner by both the private and public sectors. Planning for the energy needs of the regions throughout Western Australia will provide for the effective sourcing and supply of these requirements, including the use of local supply sources where it is cost effective to do so.

The State's gas and electricity transmission and distribution infrastructure will be more readily accessible to a diverse range of energy service providers.

Energy infrastructure will be built and maintained in accordance with relevant safety standards.

Critical emerging energy technologies will be identified and assessed to enable early adaptation to their introduction where it provides strong user benefits.

### Vision for effective and efficient energy delivery

By 2031, Western Australia's gas and electricity markets will operate at the highest level of efficiency and transparency achievable for the size of these markets.

Operating efficiencies in the energy industry will minimise the real cost of energy. Consumers will have access to a range of suppliers, services and price options to best meet their energy needs.

Energy pricing within the State will reflect the real cost of energy – providing users with signals for the efficient allocation of resources and the efficient use of energy.

Customers living on low incomes or facing financial disadvantage will have access to concession arrangements, assistance programs and billing practices to assist them with their energy consumption costs.

Gas and electricity markets will be more closely aligned with national markets, to the extent practical and beneficial, to improve local security and reliability of energy supply.

Western Australia will have a defined suite of energy supply reliability standards that are appropriate and cost-effective. Infrastructure, commercial mechanisms and inter-Government agreements will be in place to meet these standards.

The State will have robust, efficient and effective energy disruption emergency management plans for gas, electricity and transport fuels, such that major supply disruptions are managed in a way that minimises economic impacts and distributes the effects fairly and equitably.

#### Vision for informed and responsible energy use

By 2031, Western Australia's economic and environmental performance will be enhanced by substantially greater efficiency in the use of energy and energy infrastructure.

The energy intensity of the economy will be declining, with a significant reduction in energy demand compared with current business-as-usual projections.

#### Vision for capacity building

By 2031, Western Australia's economic and environmental performance will be supported by an energy workforce that is well educated, with skills and competencies appropriate to the adoption of new technologies.

The energy sector will be backed by a suite of research programs that will contribute to the development of a cleaner, as well as more secure and reliable energy industry that delivers affordable energy.

Information provision will be a key tool, enabling better informed energy choices by industry and the broader community.

## 4. Pathways to Western Australia's energy future

### Pathways and goals

*Energy2031* has identified five pathways to achieve the long-term vision for our energy future. Strategies and actions will be developed to help us achieve our *Energy2031* goals as follows.

#### **Diverse and secure energy supply** will lead to:

- more affordable energy, as suppliers seek to minimise the cost of supply;
- reliable, secure energy, as supply will come from multiple sources; and
- cleaner energy, because we will incorporate more renewable energy sources into our energy supply systems.

#### **Pro-active energy planning** will lead to:

- more affordable energy, as energy markets provide the right incentives for least cost supply;
- reliable energy, with infrastructure that is able to keep up with demand and is built and maintained at relevant safety standards;
- cleaner energy, with new technologies, power sources and changes in transport systems, such as electric vehicles, accommodated in planning and regulation; and
- secure energy, due to rapid adaptation to changes in both technologies and infrastructure that can provide for new sources of energy supplies.

#### **Effective and efficient energy delivery** will lead to:

- more affordable energy, as consumers have access to a larger number of options that meet their individual energy needs;
- cleaner energy, due to the smarter use of energy and more diverse fuel sources;
- reliable energy, as the network is able to allow for rapid communication and repair of faults and system imbalances; and

- secure energy, with more generation plants and supply sources connected to end-use customers.

#### **Informed and responsible energy use** will lead to:

- more affordable energy, as energy prices reflect the cost of delivery and lower usage;
- cleaner energy, with less energy use per person or unit of production;
- reliable energy, due to reduced high peaks of demand, lessening the strain on energy networks and generation; and
- secure energy, as total demand growth slows, putting less pressure on supply.

A **capacity building pathway** will provide for a continued focus on research, education and training in order to evolve towards the achievement of the *Energy2031* goals in the supply, planning, delivery and use of energy. This pathway will be particularly relevant during what is anticipated to be a dynamic period within the energy sector.

## The *Energy2031* pathways

The five *Energy2031* pathways will help us address the challenges that our energy industry faces and make the most of the opportunities available to us through the development of a series of strategies and actions. This will ultimately lead to the achievement of the *Energy2031* vision for Western Australia's energy future.

Possible opportunities, challenges, strategies and aspects of the *Energy2031* vision relevant to each pathway are presented below.

## Diverse and secure energy supply

### Vision for 2031

By 2031, a significant and continually growing proportion of Western Australia's energy needs will be met from renewable energy sources.

The State's gas needs will be met with supplies from offshore fields and an increasing proportion of onshore fields, including unconventional onshore sources such as 'tight gas' and shale gas reserves, with appropriate management of environmental impacts. Delivery to end-users will occur through an expanding, integrated network of pipelines.

Coal will continue to supply Western Australia's electricity generation portfolio in conjunction with emissions reduction technologies.

Transport energy requirements will be met by a much greater range of fuel sources, including electricity. The improved availability and uptake of alternative fuels, combined with a shift towards the use of more efficient vehicle technologies and energy efficient modes of transport, will strengthen the resilience of the transport system in responding to the impacts of global oil prices and supply volatility.

This diverse energy mix will enhance Western Australia's economic resilience in responding to changes in global energy markets.



## Opportunities and challenges

The State has a rich endowment of natural gas, which is important both as a source of energy for domestic needs and as an export commodity, helping meet energy demand in the global economy.

As an energy source, natural gas helps deliver cleaner energy, with a lower emissions intensity than coal-fired electricity generation. It is also the fuel of choice for important industrial and mineral processing users, delivering heat and electricity efficiently through the process of co-generation.

Modelling<sup>1</sup> conducted as part of the *Energy2031* process has highlighted the risks associated with future domestic gas supplies, in terms of availability to meet local requirements and the pricing of such supplies. These risks reinforce the need for the continued application of the Domestic Gas Reservation Policy.

The Government has clarified arrangements for the application of the Domestic Gas Reservation Policy. Under these arrangements gas producers will be required to demonstrate their ability to meet the Domestic Gas Reservation Policy as a condition of project approval. The State will apply the policy flexibly in accordance with the following requirements:

- LNG Producers will commit to make available domestic gas equivalent to 15% of LNG production from each LNG export project by:
  - reserving domestic gas equivalent to 15% of LNG production from each LNG export project;

- developing, or obtaining access to, the necessary infrastructure (including a domgas plant, associated facilities and offshore pipelines) to meet their domestic gas commitments as part of the approvals process; and
- showing diligence and good faith in marketing gas into the domestic market.

These efforts may be subject to independent review.

- Producers should undertake the above actions such that domestic gas is made available to coincide with the start of LNG production. This timing may, however, vary depending on project circumstances.
- Prices and contracts for domestic gas will be determined by the market.
- Producers may propose to offset their domestic gas commitment by supplying gas or other energy from an alternative source, rather than supplying gas from their LNG projects. Among other conditions, producers will have to demonstrate that the proposed offset represents a net addition to the State's domestic energy supply. The State will consult with industry to develop criteria for domestic gas offsets.
- The Policy will be reviewed in 2014-15.

Future domestic gas supplies are likely to be largely integrated with production for LNG exports from offshore fields, providing lower cost supplies than stand-alone domestic production. Many of the decisions and policies directly affecting the development of Western Australia's offshore gas resources must be jointly undertaken with the Commonwealth.

The State has greater capacity to support the development of onshore gas resources. An increase in the availability of onshore domestic gas would provide for greater diversity in the

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<sup>1</sup> ACIL Tasman 'Energy Futures for Western Australia' and SKM MMA 'WA Domestic Gas Market Analysis Report for the Strategic Energy Initiative'.

sources of supply at the same time as increasing overall supply capacity. However, the cost of exploration and investment make it unlikely that significant price reductions will result, at least in the short term.

Western Australia has considerable quantities of 'tight gas' (gas that is difficult to extract because of the porosity and permeability of host rock reservoirs). Much of the State's tight gas is in large reservoirs close to Perth.

Shale gas is another potential unconventional source of onshore gas, which may reach commercial development in the State with increasing gas prices in the future, as has happened in the United States and is anticipated in China.

While bringing unconventional gas into the market would improve the security of gas supply and contribute to meeting increasing demand, concerns have been expressed over the potential environmental impacts from processes associated with the extraction of these unconventional gas sources.

The second of our major energy sources today is coal, which supplies nearly half our electricity in the South West Interconnected System. Given the economics of coal-fired generation, coal is likely to continue to play a significant role in our generation mix, as indicated in projections developed in *Energy2031* modelling of future energy supplies.

However, coal-fired electricity generation will need to adapt to handle an increasingly variable demand profile and to respond to the requirements of reduced greenhouse emissions. Changes in technology to address emissions from generation facilities are occurring on a global scale, with current efforts mainly being directed to large scale facilities. These technologies will need to be adapted to the comparatively smaller scale facilities in our State.

Recent changes in ownership of Western Australia's coal supply sources have prompted consideration of the potential for coal as an export commodity. This additional demand could place increased pricing pressures on companies when renegotiating or contracting for additional coal supply arrangements.

With significant sources throughout the State, including solar radiation, wind, wave, geothermal and bio-energy, renewable energy is playing an increasing role in our electricity markets. There is an opportunity for renewable energy to not only meet the global and national requirements for cleaner energy, but also help diversify energy supplies, increasing future energy security and enhancing market competition.

The Commonwealth Large Scale Renewable Energy Target will remain as the primary driver for renewable energy developments in Western Australia over the medium term, complemented by the carbon pricing mechanism.

Voluntary schemes with GreenPower accreditation will also continue to provide a degree of support to the uptake of renewable energy.

As the contribution of renewable energy to the State's electricity supply increases, the intermittent nature of some renewable energy sources will need to be addressed to ensure our generation fleet can meet our patterns of consumption.

Regional and remote power generation is predominantly reliant on liquid fuels, exposing the cost of operating these facilities to international pricing pressures.

Similarly, long distances for regional travel and the need for heavy vehicles in the mining industry mean that liquid fuels will continue to be the major source of energy for transport in Western Australia.

While there appears to be growing consensus that conventional oil production will eventually peak, considerable debate remains about the timing of the peak, the rate at which production will subsequently decline, and the development and availability of alternative transport fuels.

Nevertheless, it is prudent to take actions now that will reduce Western Australia's dependence on oil, help the State respond to the challenges of a carbon constrained world and, in turn, meet future transport and stationary energy needs.

Consistent with the position outlined in the Directions Paper, the State Government does not believe that nuclear power will form part of the State's fuel mix within the *Energy2031* timeframe.

### Strategies towards a diverse and secure energy supply

#### Ensure gas supply security

Meet Western Australia's future demand for natural gas through secure supply from offshore reserves, as well as through increased development of onshore gas resources. Measures could include:

- Maintaining the application of the Domestic Gas Reservation Policy.
- Continuing to enhance the approvals system and developing strategies that encourage investment in exploration and development of onshore gas reserves.
- Continuing to enhance regulatory arrangements pertaining to the extraction of unconventional sources of gas, promoting best practice.
- Continuing to support research on the environmental impacts associated with the extraction of unconventional sources of gas.

#### Promote the development of renewable energy supplies

Position the State for the development of locally based renewable energy generation to contribute to the Commonwealth Large Scale Renewable Energy Target. Actions could include:

- Continuing to advance market reforms and refinements to enhance the capacity of the wholesale electricity market and electricity systems to manage the impacts of intermittent generation, including introducing a competitive balancing market, cost allocation for load-following services on a causer-pays basis and implementing wind-forecasting practices.
- Ensuring that any proposal for development of a constrained access model for the South West Interconnected Network gives due consideration to potential renewable energy project requirements.
- Establishing renewable energy precincts that provide essential common user infrastructure, such as network connections, to reduce the cost to develop and demonstrate the commercial viability of emerging technologies and contextualise them for the Western Australian market and conditions.
- Ensuring that market arrangements and regulatory frameworks address and facilitate the continued uptake of small-scale renewable energy generation, including resolution of consumer protection issues associated with the installation of small scale systems and arrangements for regular assessment/review of payment rates under the Renewable Energy Buyback Scheme.
- Scoping opportunities for leveraging of funding available through the Commonwealth Government, including under the Clean Energy Future Plan.
- Improving the quality of, and access to, relevant Government information available for renewable energy project developers, including improvements in the Public Utilities

Office web-based information and an interactive Geographic Information System with access to pre-competitive geoscience data, renewable energy resource data, infrastructure availability and relevant information to support project development, investment decisions and related planning approval processes.

#### **Support the uptake of low emission technologies**

Support the development and adoption of lower emissions energy technologies, for example through:

- Monitoring the development of technologies that enable cleaner power generation from traditional fossil fuel sources and assess suitable circumstances for application in Western Australia.
- Improving the quality of, and access to, relevant Government information available for cleaner energy project developers.

#### **Facilitating coal supply security**

Assist in meeting Western Australia's future demand for coal from local sources. Measures could include:

- Conducting regular coal security assessments to determine requirements for policy actions to preserve availability of local supplies.
- Preserving existing domestic coal supply obligations under State Agreements.

#### **Manage dependence on liquid fuel supply**

Manage risks associated with current dependence on liquid-fuelled transport and generation, including through:

- Developing and implementing initiatives relating to the transport energy sector, including support for the increased use of alternative fuels and energy efficient modes of transport.

- Making sure that the proposed regional energy strategies consider liquid fuel requirements in regional and remote areas and the possible use of alternative fuel/energy sources to mitigate supply risks.

#### **Promote a diverse energy supply mix**

Meet Western Australia's future energy demands through a mix of energy fuel types and sources of supply, for example by:

- Conducting regular assessments of the mix of fuel types and sources used in the major electricity grids in Western Australia to inform changes to regulatory frameworks and market arrangements to facilitate and maintain a diverse energy mix.

#### **Promote the security of energy as a commodity**

Support Western Australia being well placed to source energy as a commodity for mineral and industrial processing and export, by:

- Ensuring that regional energy strategies give consideration to infrastructure requirements for the use of energy as a commodity for mineral and industrial processing and export.

## Pro-active energy planning

### Vision for 2031

By 2031, energy infrastructure development to support the State's population and economic growth will be efficiently planned and coordinated by Government and delivered in a timely manner by both the private and public sectors. Planning for the energy needs of the regions throughout Western Australia will provide for the effective sourcing and supply of these requirements, including the use of local supply sources where it is cost effective to do so.

The State's gas and electricity transmission and distribution infrastructure will be more readily accessible to a diverse range of energy service providers.

Energy infrastructure will be built and maintained in accordance with relevant safety standards.

Critical emerging energy technologies will be identified and assessed to enable early adaptation to their introduction where it provides strong user benefits.

### Opportunities and challenges

The cost of supplying electricity to houses, businesses and industry is under increasing pressure with escalating transmission and distribution infrastructure requirements associated with growing peak and overall energy demand and the need to replace ageing infrastructure.

Planning for the safe provision of energy must be paramount.

In the case of gas infrastructure, current regulatory arrangements could provide more incentives for the development of more flexible access agreements that could assist in optimising the use of existing capacity and, in turn, minimise the need for capital investments.

In the electricity sector, network infrastructure is largely financed through State debt, while in the gas sector infrastructure is financed through private equity contributions.

As the capacity of the State to increase debt levels to service infrastructure growth is limited, there is a need for better investment planning and regulatory models that facilitate greater private sector participation. Consistent with the market based approach to facilitation of energy developments, the role of Government in infrastructure planning should include the collection and aggregation of information to aid decision making by private sector investors.

Infrastructure planning should also consider the adjustments required to regulatory frameworks to accommodate new technological developments, including smart grids, electric vehicles and photovoltaic technologies.

Clearer delineation of the locations where future load growth is expected and where sources of supply are located would facilitate strategic decisions about the timing, design and source of investment to meet the energy needs for regional

areas of the State. Such arrangements would improve potential for the consideration of non-traditional energy solutions and assessment of the energy requirements of remote and indigenous communities.

Energy strategies for regional Western Australia will need to give consideration to the close relationship between energy and water supply and infrastructure requirements, recognising the role of water in the operation of large scale electricity generation facilities and the energy requirements associated with the provision of water through desalination processes.

Access to transmission and distribution infrastructure has also been identified as a challenge. Improvements to the way in which energy market participants access energy infrastructure have the potential to drive overall economic efficiency and greater competition.

### Strategies towards pro-active energy planning

#### Planning energy infrastructure development

Integrate energy infrastructure planning, funding and augmentation with whole-of-Government strategies focused on the development of the State. This could include:

- Delivering arrangements for the improved integration of energy policy and planning into the broader State planning framework (including the State Planning Strategy) with clear decision-making responsibilities, processes and accountability.
- Developing regional energy strategies to identify options and plan for future energy supply requirements, including the needs of remote and indigenous communities. The strategies should aim to make best use of local energy resources, where cost effective and beneficial to the State, including the use of renewable energy and liquid fuel resources.

Strategies should incorporate identification of energy infrastructure needs, and the potential and locations for generation precincts and multi-utility infrastructure corridors.

- Enhancing existing network planning arrangements to provide greater transparency of both short and longer-term network development requirements, including consideration of alignment with similar processes in the National Electricity Market to the extent practical and beneficial.
- Developing a plan for the longer-term expansion of the North West Interconnected System, subject to a cost-benefit analysis and resolution of a funding and governance model.
- Developing clearer processes to guide Government investment in infrastructure, giving consideration to matters such as the impact of investment on the State's financial position and the potential for private sector investment.

#### Optimise the efficient and safe use of infrastructure

Design, augment and use essential energy infrastructure in an efficient and safe manner to promote competition and investment. Actions could include:

- Adjusting regulatory frameworks for gas pipelines to encourage pipeline owners to consider options to improve utilisation of existing capacity to reduce the need for physical expansion.
- Subject to the outcomes of a pre-feasibility study and future cost-benefit analysis, developing an appropriate constrained access model for the South West Interconnected Network and a pathway to implementation.
- Developing flexible regulatory frameworks (including customer protection requirements) and proactively conducting research and planning to accommodate technological

developments impacting on the electricity network, such as smart grids, electric vehicles, photovoltaic technologies, direct load control and potential synergies from initiatives such as the national broadband network.

- Formulating regulatory frameworks that promote and allow for the use of alternative energy solutions in network fringe-of-grid locations and facilitate decentralised models of energy production and delivery.
- Ensuring that regulatory arrangements require the safe development and use of infrastructure associated with the sourcing, generation and supply of energy.

## Effective and efficient energy delivery

### Vision for 2031

By 2031, Western Australia's gas and electricity markets will operate at the highest level of efficiency and transparency achievable for the size of these markets.

Operating efficiencies in the energy industry will minimise the real cost of energy. Consumers will have access to a range of suppliers, services and price options to best meet their energy needs.

Energy pricing within the State will reflect the real cost of energy – providing signals for the efficient allocation of resources and the efficient use of energy.

Customers living on low incomes or facing financial disadvantage will have access to concession arrangements, assistance programs and billing practices to assist them with their energy consumption costs.

Gas and electricity markets will be more closely aligned with national markets, to the extent practical and beneficial, to improve local security and reliability of energy supply.

Western Australia will have a defined suite of energy supply reliability standards that are appropriate and cost-effective. Infrastructure, commercial mechanisms and inter-Government agreements will be in place to meet these standards.

The State will have robust, efficient and effective energy disruption emergency management plans for gas, electricity and transport fuels, such that major supply disruptions are managed in a way that minimises economic impacts and distributes the effects fairly and equitably.



## Opportunities and challenges

It is an economic and social imperative that energy policy decisions result in the least cost, efficient supply of energy.

Ideally, energy markets should operate in a way that minimises the need for Government involvement and intervention. Further development of the State's energy markets will increase their efficiency, reducing barriers to entry and creating opportunities for the energy sector and consumers. This would include scope for new and existing market entrants to gain economies of scale in the provision of dual-fuel retail offerings for both electricity and gas, along with more innovation in the retail products offered.

A key prerequisite for the development of markets is cost-reflective pricing. As we move to greater cost-reflectivity, it will be important to develop policies and programs to assist consumers likely to have difficulty in meeting their energy bills.

Government faces conflicting roles in respect of its participation in energy markets as it is a regulator, policy maker and active market participant as the "shareholder" of its trading enterprises. Given these potential conflicts, it is important that the level of Government participation in energy markets is regularly reviewed.

The way in which the State interacts with the Commonwealth Government will also play a key role in the development of our energy markets and the encouragement of increased private sector investment.

It is important that a consistent approach is adopted in representing the State's interests in inter-jurisdictional forums and that adequate resources are allocated to this function.

Despite rigorous risk management plans, regulatory requirements and high quality plant

management, short-term and localised electricity outages are still relatively common. The disruption to the State's gas supplies as a result of the Varanus Island explosion in 2008 also highlighted the State's vulnerability to major, extended energy supply disruptions.

Developing strategies to prevent and manage short-term outages and larger supply disruptions will be critical to supporting the development of the State.

## Strategies towards effective and efficient energy delivery

### Optimise private sector participation in energy markets

Over time develop regulatory frameworks that minimise the need for Government involvement and intervention and promote private sector participation, for example through:

- Regularly reviewing the role of Government as an active and direct participant in the State's energy markets.
- Influencing Commonwealth regulation of taxation and other incentive arrangements to encourage increased private sector investment.
- Advocating for greater recognition of Western Australia's circumstances in Commonwealth regulatory frameworks and assistance programs.

### Provide for greater opportunities for industry and choice for consumers through market evolution which minimises costs

Enable the continued evolution of markets to increase their transparency and efficiency, reduce barriers to entry and create greater opportunities for the energy sector and consumers. Measures could include:

- Facilitating continued evolution towards transparent, effective and efficient wholesale electricity and gas markets in Western Australia.
- Aligning regulatory arrangements (including consumer protection frameworks) with those applicable to the multi-jurisdictional energy markets in Australia, to the extent practical, appropriate and beneficial given the State's energy market characteristics.
- Implementing mechanisms to drive increased efficiencies in the operation of the State Government-owned electricity corporations.
- Facilitating the move to greater cost-reflectivity in regulated retail energy prices, with phasing out of regulation over time if benefits exceed costs.
- Establishing independent price setting for regulated tariffs in retail electricity and gas markets, subject to a transparent and consistent regulatory framework based on economic principles and adequate customer protection frameworks.
- Facilitating greater contestability in the retail electricity market and more effective competition in the retail gas and electricity markets.
- Converging the gas and electricity wholesale and retail market arrangements, where benefits exceed costs.

**Facilitate universal access to essential energy supplies**

Develop policies and programs to facilitate affordable energy supplies for Western Australians by:

- Facilitating least cost, efficient supply of energy.
- Ensuring Government funded concession arrangements and assistance programs for customers living on low incomes or facing

financial disadvantage are well targeted, administratively efficient and cost-effective.

- Maintaining the uniform electricity tariff regime for small use residential and commercial customers in Western Australia with appropriate funding of the differential between efficient supply costs and regulated tariffs.

**Maintain continuity and reliability of downstream energy supply**

Develop arrangements to minimise the impact of major energy supply disruptions and ensure an appropriate balance between reliable continuity of supply and efficient cost, by considering:

- Developing reliability standards for infrastructure that accommodate the different requirements of energy systems throughout the State.
- Facilitating development of large-scale energy storage (including liquid fuel storage) and back up power supply technologies at both system and local consumer levels, where benefits exceed costs.
- Ensuring that Western Australian energy infrastructure is appropriately considered as part of any national and State energy security planning.
- Making sure that energy disruption plans are well prepared, managed and integrated across the energy industry and, where necessary, commercial agreements are in place to allow cooperative action.

## Informed and responsible energy use

### Vision for 2031

By 2031, Western Australia's economic and environmental performance will be enhanced by substantially greater efficiency in the use of energy and energy infrastructure.

The energy intensity of the economy will be declining, with a significant reduction in energy demand compared with current business-as-usual projections.



### Opportunities and challenges

The increasing cost of energy and concerns about the level of greenhouse emissions associated with high energy use mean that improving the State's energy management and energy efficiency is imperative.

The State Government's actions on energy efficiency will need to be consistent with and complementary to national policy actions for implementation of the Commonwealth Government Clean Energy Future Plan.

Improving the load profile of energy demand can also make a significant contribution towards the more efficient use of energy infrastructure, reducing future cost pressures on end use consumers.

### Strategies towards informed and responsible energy use

#### **Improve the energy management and energy efficiency of the Western Australian economy**

Deliver programs to business, industry and residential consumers to reduce or delay investment in new energy sources and associated infrastructure, through improvements in energy efficiency and the management of energy use in Western Australia, for example through:

- Developing arrangements (including those relating to national standards) to support energy efficiency improvements among residential and commercial consumers.
- Making sure that programs to improve energy use include a strong focus on more efficiently meeting the energy needs of the most vulnerable consumers.
- Working with large energy consumers, in particular the industrial and resources sectors, to unlock the significant potential for improvements in energy use, where benefits outweigh costs.

- Demonstrating Government leadership in the management of energy use, including use of Government's significant purchasing power to assist in market transformation by selecting more energy efficient products, buildings and technologies.
- Implementing initiatives within the transport energy sector to reduce energy use, including promotion of public transport and active transport (cycling and walking) supported by provision of appropriate infrastructure, and continued implementation of TravelSmart programs in workplaces, schools and households to encourage a shift to alternative modes of transport.
- Ensuring electricity market arrangements and regulatory frameworks facilitate contributions by demand side management and other technologies towards the efficient use of energy.
- Encouraging the development of market based arrangements providing price signals to facilitate improvements in energy demand profiles.

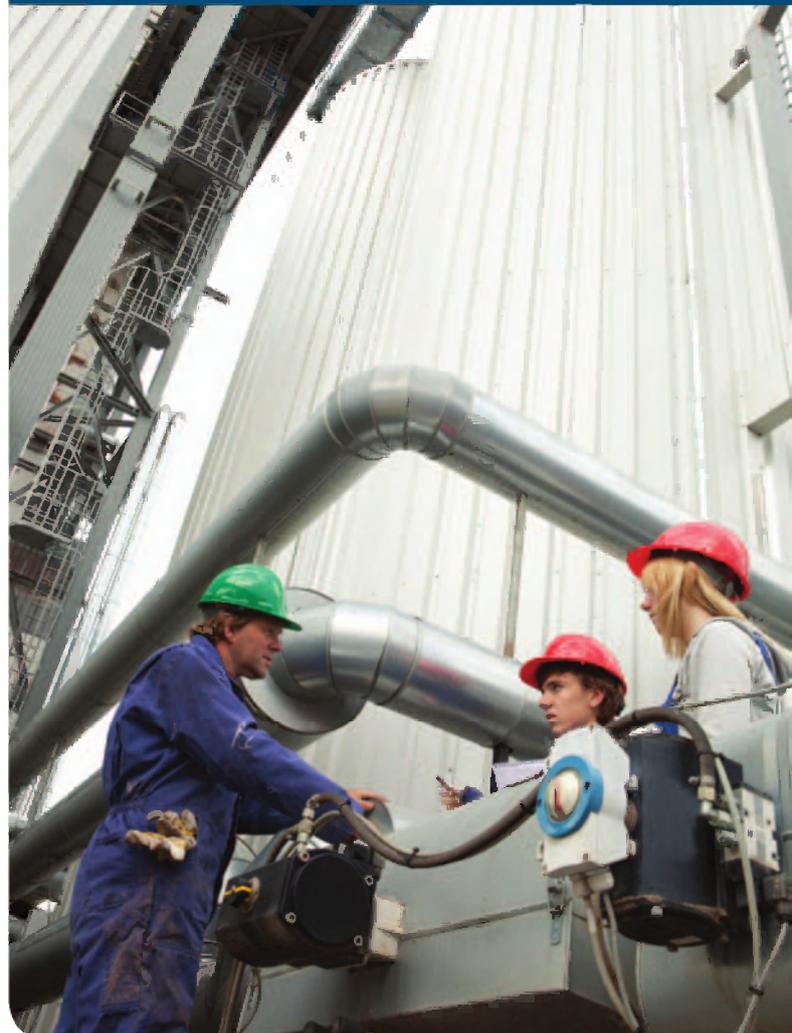
## Capacity building for Western Australia's energy future

### Vision for 2031

By 2031, Western Australia's economic and environmental performance will be supported by an energy workforce that is well educated, with skills and competencies appropriate to the adoption of new technologies.

The energy sector will be backed by a suite of research programs that will contribute to the development of a cleaner, as well as more secure and reliable industry that delivers affordable energy.

Information provision will be a key tool, enabling better informed energy choices by industry and the broader community.



## Opportunities and challenges

Growing energy demands require sufficient levels of human capital and expertise to enable development and evolution of existing and new sources of energy production.

Adaptation to cleaner energy requirements and new technologies, along with efforts to drive efficiencies in future energy production and supply also require a sufficiently skilled and educated industry workforce.

Development of forward-looking education, training and research strategies is essential to the achievement of the *Energy2031* goals. Such strategies must, however, be pursued as policy actions that are fully integrated with other strategies and measures adopted throughout the energy supply chain.

Greater participation in energy markets by end use consumers will require better information and customer education to enable informed decision-making regarding the level, type and source of their energy use.

Existing and potential industry participants are also requiring increasing levels of information to aid future decisions regarding investments in energy markets and the use of alternative technologies.

## Strategies towards capacity building for Western Australia's energy future

### Enhance the skills of the State's energy industry workforce

Make sure that the workforce is well placed to cater for the emerging needs of the energy industry, including considering:

- Creating partnerships between business, Governments and education institutions to map the current and future skill needs for the energy sector and identify parties best placed to fulfil those needs.

- Recognising the training and skills development requirements of the State's energy sector in Government policies and initiatives.
- Supporting the development of increased policy capability within the Public Utilities Office of the Department of Finance to allow for the implementation of strategies to achieve the *Energy2031* goals.

### Support research activities

Back the energy sector with a suite of research programs, by:

- Facilitating the improved coordination of research planning to determine key priorities for Government funding and enable the development of Centres of Excellence and Co-operative Research Centres.

### Develop capacity of energy consumers for more effective energy market participation

Ensure that end use energy consumers are well placed to make more effective decisions regarding the sourcing, supply and use of their energy, by:

- Educating energy consumers with targeted information provision in energy bills and through other means.
- Coordinating the expansion and development of existing and potential cross-sector portfolio initiatives aimed at consumer education towards more informed energy use.

### Develop capacity of the energy industry for more effective energy market participation

Ensure that existing and potential proponents within the energy sector are well placed to more effectively participate in energy markets, by:

- Improving the quality of, and access to, Government information related to the energy sector.
- Developing market and regulatory arrangements that promote transparency and address information asymmetry.

## 5. Achieving the *Energy2031* vision

The publication of this Strategic Energy Initiative, *Energy2031* is a significant milestone, but does not represent the end of our ambitious plan for the energy sector.

This Strategic Energy Initiative contains a series of pathways and potential supporting strategies. Over time, short and long-term policy decisions and actions will be taken by Governments against this vision for the future. The vision will be achieved through both small steps and significant reforms. The goals of affordable, reliable, secure and cleaner energy will provide strong guidance for decision-makers.

*Energy2031* has been developed through extensive consultation with industry, Government and community stakeholders, where opinions, ideas and comments have been actively sought and considered. It is important that this engagement continues into the future.

The Minister for Energy will establish a Roundtable of consumers and industry stakeholders so that he can continue to hear directly from stakeholders their views and ideas as to how to achieve Government's goal of affordable, secure, reliable and cleaner energy.



