

# Renewable Electricity in WA: The Role of Government

## Introduction

Four of the six coal-fuelled electricity generators in WA will reach their end-of-design life by 2019 – so it is the right time to explore the alternatives.

Volunteers for Sustainable Energy Now (SEN) have modelled various options for providing future electricity needs in WA's South West Interconnected System (SWIS). A comprehensive range of technologies was assessed, and the optimum scenario is to replace the aging coal plants with solar PV and wind energy.

Over the next 15 years, WA can transition to a 100% renewable electricity (RE) grid, with RE shortfalls met by multi-fuelled, rapid-response gas turbines. Over time, these will be fuelled by biofuels from an emerging, sustainable oil-mallee biomass industry.

This is significantly less expensive than replacing WA's aging coal-fired generators. For more details, see SEN's "Economic Argument" Briefing Note.

There are also significantly more jobs in wind, solar PV and biomass than in coal (see SEN's "Jobs Revolution" Briefing Note). Many of these jobs can be in the Collie region, by developing a RE manufacturing industry and a biomass/ biofuel industry, and locating wind and solar PV facilities in the region.

The Briefing Note you are reading lays out what SEN sees as the responsibilities of the WA State Government in managing this transition to RE.

## Transition Plan

The key to a just transition towards renewable electricity in WA is to develop a coordinated transition plan which addresses employment and retraining issues in advance.

Of course, the transition plan also needs to consider technical issues, to ensure a complementary mix of generation and storage and supporting transmission infrastructure that can lead to an integrated and stable renewable electricity-powered grid.

The Government has a clear role in managing this plan to ensure that consumers have access to reliable electricity supplies at the lowest cost.



## Government Actions

Government should recognise the need to avoid community shocks from upcoming renewable disruption, through proactively developing a Renewable Electricity Transition Plan that:

- \* outlines long term objectives, targets and measures
- \* fosters a positive investment climate for renewable electricity
- \* enables a just transition from coal-fired electricity to renewable electricity for the Collie community and other affected regions
- \* sets the parameters for local renewable electricity manufacturing and biomass/ biofuel industries

The Government should re-establish the Office of Renewable Energy to:

- \* oversee the Renewable Electricity Transition Plan
- \* design and co-ordinate adjustment programs for a transition to renewable electricity
- \* establish a flexible and forward-looking regulatory environment to incentivise the transition while ensuring energy security
- \* coordinate strategies and measures for achieving this transition, including retraining opportunities for affected workers
- \* liaise with relevant state and local governments, businesses, education facilities, and community groups
- \* encourage the combined application of 'time of use' tariffs, smart meters and smart appliances to assist in balancing supply and reducing overall electricity costs

WA should set a State Renewable Energy Target to come in line with most other states in Australia and act as an incentive to investment.

## Grid Management

SEN's view is that Western Power should remain in government hands. As the SWIS grid is a monopoly infrastructure, it is critical that it is planned and operated in a way which benefits all users. For example:

- \* Retailer access to a public network can be planned and controlled for the benefit of grid stability, security and sufficiency
- \* From a technical balance aspect, public ownership should be more transparent and secure
- \* Private ownership may cause blame to be unjustly placed upon renewable electricity for grid failures
- \* Scrutiny of network-related matters is more transparent if publicly owned

## Power Generation

SEN's view is that a mix of public and private ownership of power generation capacity is appropriate.

Balancing generators (multi-fuelled, rapid-response gas turbines) and utility-scale storage should be owned by the Government (Synergy), to prevent price gouging during shortfall periods by independent power producers.

On the other hand, new renewable electricity generation capacity is sensibly provided by the open market. Up-front capital costs are high for renewable electricity, but ongoing operations and maintenance costs are low and predictable. This makes renewable electricity investments attractive long-term 'fortress assets' for superannuation funds and other investors.

In this way, much of the investment needed for the transition to renewable electricity can be provided by the private sector.

## Energy Security will be Stronger

With these measures in place, and with best-practice engineering, a wholly renewable grid can be more secure and respond more rapidly to grid instabilities.

Renewable Energy alone can meet expected demand for most of the year. During lull periods, shortfalls in demand can be met by rapid-response, dual-fuelled gas turbines, and storage such as batteries, pumped hydro and molten salt.



Ongoing technological advances and economies of scale in renewable electricity technologies, which are free of fuel costs, will reduce and stabilize future wholesale electricity costs.

With many smaller wind and PV units, large reserve capacity (as provided by the existing standby coal units) is not needed. Loss of units due to failure is manageable, reducing cost of generation. Further details are provided in the "Energy Security" Briefing Note.

## Conclusion

SEN's electricity modelling shows that Western Australia can transition from its aging coal generation capacity to a renewable energy future. Change in the electricity generation and supply market is inevitable, but Government intervention is needed to ensure a smooth transition. Continuing with 'business as usual', with the current electricity market system, will not enable a stable, just transition to clean energy.

A further benefit of the transition to renewable electricity is that it will provide thousands of construction and manufacturing jobs, and 1,300 ongoing operations and maintenance jobs.

A coordinated approach from Government, based on international best practice, is needed to enable a seamless transition to renewable electricity, which ensures that consumers have access to reliable electricity supplies at the lowest cost.

SEN is a signatory of the RenewWA joint consensus statement about climate change



## SEN's Modelling

SEN's Integrated Renewable Energy Network (SIREN) software was developed to model renewable power and storage technologies. SIREN uses NASA weather data, Geographical Information System data and the US Dept. of Energy technology models. SIREN accuracy has been verified against existing wind and solar PV generation on the SWIS.

A variety of scenarios were modelled using SIREN. These include the cost of new transmission lines. Conservative assumptions have been made about the costs of renewables, which are continually decreasing. Future changes in prices will influence the optimum mix of wind and solar PV.

Sustainable Energy Now (SEN) is a voluntary group of some 200 members and associates, many of whom are professionals in the engineering, science, educational, business and IT fields. Its goal is to promote renewable energy in Western Australia.