



# A CLEAN ENERGY ROADMAP FOR WA

## A 100% RENEWABLE JOB RICH FUTURE

*The Greens' alternative for the new economy in Western Australia*

The Western Australian electricity system is in bad shape. Under the Barnett Government, power bills have skyrocketed, and we have missed huge opportunities to save energy and transition to a jobs rich and highly skilled, new economy. WA is in the best position of all states in Australia to harness our sun, wind and wave power – It's time we got started.

The debate is over. Renewable energy is proven and reliable, and it is not the technology that is lacking but the political will. Wind is now cheaper than fossil fuels in producing electricity in Australia. WA has the best solar resources in Australia, if not the world. A renewable future provides at least three times as many jobs as the current number employed in coal, oil and gas extraction in WA.

Instead of embracing the clean energy jobs rich future, the old parties are digging faster into an expensive and polluting path. The old parties also have a history of penalising Western Australians who have installed renewable energy systems, and signed up to green power smart power schemes. WA electricity users deserve better – not to be punished every time the old parties need to plug a revenue gap in the electricity system or balance State Government's revenue.

Meanwhile under the Barnett Government, power bills have skyrocketed, partly because of unnecessary expenditure on infrastructure to deal with peak demand. Around a quarter of any power bill you pay goes to infrastructure that caters to peak demand for just 40 hours a year<sup>i</sup>. Huge opportunities to save energy and reduce peak electricity demand have been ignored.

The number of WA households needing help to pay rising electricity prices is set to soar by almost 70,000 to 323,000 in total in the next four years, according to State Budget. It comes amid forecasts that electricity tariffs, which increased 4% this year, will rise a further 22.5% over the next three years<sup>ii</sup> and comes off the back of electricity prices rising in WA by 57% between 2007-2012.

The situation has been made worse by the Barnett Government blowing \$330 million on the Muja coal debacle – a colossal waste of taxpayers' money that is yet to deliver one unit of electricity. For the same investment the government

could have installed solar panels on 165,000 roof tops, generating the equivalent of 247.5 MW at peak times, exactly when needed. This is as much as a coal or gas fired power station<sup>iii</sup>.

### > THE GREENS PLAN FOR WA

The Greens Clean Energy Roadmap for WA will:

- **Aim for 100% renewable energy by 2029 in WA** and increase the national Renewable Target to 90% by 2030.
- **Increase the financing available to the Clean Energy Finance Corporation to \$30b over ten years.** Renewable energy proponents wishing to develop in WA are in an extremely good position to attract investment finance through the Clean Energy Finance Corporation.
- **Pay solar panel owners a fair price through the creation of an Energy Savings Agency.** This would mean Barnett's cuts to the feed in tariff could never happen again, and an independent body would determine the fair price to pay – not a government intent on paying as little as possible to people doing the right thing.
- **Create a new Connecting Clean Energy Task Group responsible for mapping, planning and funding the connection of Renewable Energy Zones to the electricity grid.** A strong focus is on involving local communities in consultation and planning their energy future. \$2 billion would be allocated nationally, and WA would benefit through a coordinated effort in the federal energy department to unlock the vast renewable energy resources and jobs in WA. Regional WA would also benefit through the extension of high-voltage transmission to regional areas with high-quality renewable energy resources.



## > PART ONE: 100% RENEWABLE ENERGY IN WA BY 2029

The Australian Energy Market Operator recently published a report that confirmed 100% renewable energy is technically achievable.<sup>iv</sup> Many other studies have reached the same conclusion. Two new studies have also confirmed reaching 100% renewable energy would produce electricity prices at an amount similar to business as usual if there is at least some global action on climate change. These are the AEMO 100% renewable energy study<sup>v</sup> and independent analysis from the Centre for Energy and Environmental Markets at the University of NSW<sup>vi</sup>.

Senator Scott Ludlam has released **Energy 2029 – The Greens 100% Renewable Stationary Energy Plan for WA**. Using conservative technology cost forecasts and a significant overbuild to allow for a safety-first approach to capacity requirements, the study found the levelled cost of electricity in the two renewable scenarios ranges from \$208/MWh to \$221/MWh by 2029. The levelled cost of electricity in the Business As Usual (BAU) case is not much cheaper – \$203/MWh. While it has lower up front capital costs, the balance of the BAU scenario bill will be paid in fuel costs, as well as a number of significant additional costs including replication of the Dampier to Bunbury pipeline and expensive maintenance of existing plant.

**In the six months since Energy 2029 was released the cost of electricity produced by large scale solar thermal plants has come down by 25%.**

Specifically, in March CST with storage was estimated to cost AU\$187/MWh in 2025, but Solar Reserve's 110MW Crescent Dunes plant now under construction in Nevada has been announced at US\$135/MWh (~AU\$140/MWh at the time). The Crescent Dunes plant is the first of its size and so there is strong reason to expect prices to keep decreasing as the technology scales up to mass production.

The debate is over. Renewable energy is reliable and the argument that it is intermittent and unreliable has always been a gross over-simplification peddled by those with vested interests in slowing investments in renewable. Our state government is the worst offender, hell bent on pursuing a polluting, environmentally destructive pathway to fracking and oil drilling rather than embracing the cleaner, more job rich renewable pathway that is possible in WA.

**The question the Greens are asking is if it's no more expensive than business as usual, why wait any longer?**

## > PART TWO: INCREASE FUNDING TO THE CLEAN ENERGY FINANCE CORPORATION

The Clean Energy Finance Corporation (CEFC) is a world-leading, independent group of experts tasked with commercialising emerging clean energy. It needs the capacity for greater investment if we are to reach a higher renewable energy target faster. The problem the CEFC was introduced to solve is that there are a range of financial barriers to commercialising and deploying cleaner energy technologies.

The Greens will increase the guaranteed funding for the CEFC from \$10 billion over five years to \$30 billion over ten. This would increase spending to \$3 billion a year.

## > PART THREE: A FAIRER PRICE FOR SOLAR POWER

The Greens will establish an independent **Energy Savings Agency** which would work to fix WA's energy network, and those across Australia. It will provide independent information, analysis, advocacy and financial support for solutions, and will make Western Australia's energy system fairer and cheaper.

The Energy Savings Agency will:

- **Ensure a guaranteed fair price is paid to people who generate their own power for example from rooftop solar systems** – to support Western Australians doing the right thing and ensure the cuts proposed by Premier Barnett recently to the feed in tariff never happen again; and
- **Bring down power bills by achieving \$1 billion in energy savings nationwide every year** – through a more efficient network and peak demand management

### **Paying a fair price to Western Australians for their solar power**

The Greens Energy Savings Agency will be tasked to ensure accountability and transparency in all electricity pricing, and will recommend fair and guaranteed prices that electricity retailers should offer for distributed power generation. State Governments, including in Western Australia, will then be required to either compel electricity retailers such as Synergy to offer *at least* the rate recommended by the Agency, or publish a comprehensive statement of reasons why they have failed to do so.

The Greens know that Western Australians who install solar panels or other renewable energy systems **reduce** the demand on the grid – particularly at peak times - and reduce the need for expensive infrastructure upgrades. The Greens also know the popularity of solar PV has created excess capacity to



generate electricity in WA largely due to the state government underestimating its uptake.

The popularity of solar panels therefore should be rewarded by governments, and should also create less expensive, not more expensive power bills.

Instead we have seen the opposite.

### **Barnett's Betrayal: the old parties cannot be trusted**

Premier Barnett's recent plan to slash the feed-in tariff is clear evidence of this. In effort to claw back revenue from falling electricity demand the government targeted the people doing the right thing. Between 2010 and 2011, 75,000 Western Australian households installed solar panels with the understanding the State Government would pay them a fixed price per unit of electricity exported to the grid for ten years.

Those households briefly faced having that feed-in tariff cut from 40 cents per unit to 20 cents as part of the bizarre state Budget announcement, before the overwhelming response from the community of 'solar citizens' rightly saw the decision overturned.

The Greens believe the tariff should be increased to more fairly reflect the contribution household solar panels make to the state, and the feed-in tariff reintroduced for new solar panel installations.

In 2013 it is unacceptable that solar power generators are punished and demonised by the Barnett government for doing the right thing, while it carries on with expensive and out-dated construction and refurbishment of fossil fuel power plants.

### **Bringing down power bills by reducing demand**

The Greens' Energy Savings Agency will also provide a national framework to ensure greater efficiency across all electricity networks and reduce growth in peak electricity demand by negotiating ambitious Peak Demand Management targets with all electricity network businesses. This agency will work to a target of \$1 billion per annum nationally in energy savings

## **> PART FOUR: WA'S RENEWABLE ENERGY ZONES**

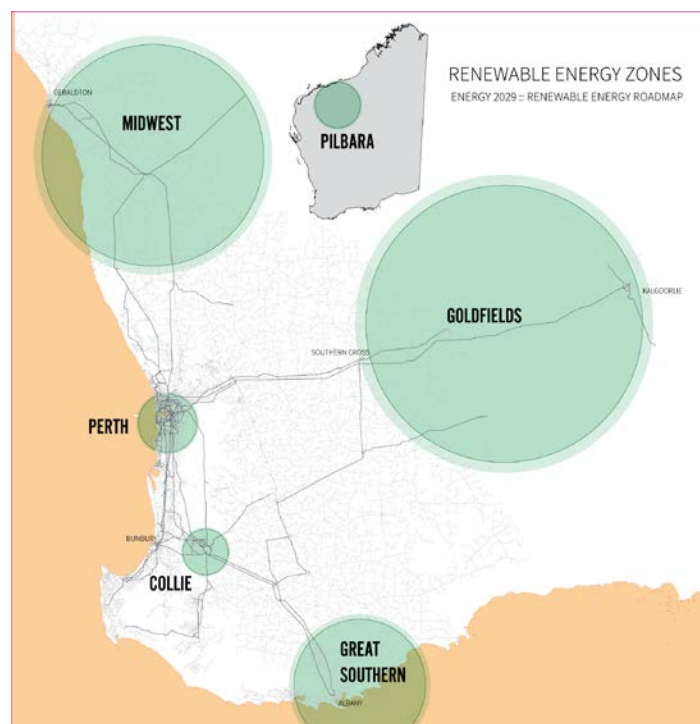
There has been significant effort into mapping Australia's renewable energy resources, including by CSIRO and Geoscience Australia. Australia's four best renewable electricity sources, with significant untapped potential, are solar, wind, hot rock geothermal and biomass from sustainable sources such as oil mallee. The regions where these prime resources overlap have great promise for large-scale renewable energy development and would therefore warrant public investment in grid infrastructure.

The key steps for the Task Group would be:

1. Map the renewable energy resource areas of Australia to determine the Renewable Energy Zones
2. Bring together all levels of government, communities and renewable energy developers in consultation and to streamline the planning process
3. Plan and fund connection of the Zones to the electricity grid, and
4. Reform the national energy market to enable transmission lines to be built to accommodate future clusters of renewable energy generators in remote areas.

### **We've identified six Renewable Energy Zones in WA (Figure 1):**

- Greater Perth metropolitan area
- Mid-West and Geraldton
- Solar Goldfields
- The Central Pilbara
- The Great Southern
- Collie Region



**Figure 1: WA's six indicative Renewable Energy Zones**

### **GREATER PERTH**

The Perth Metropolitan Area hosts nearly 80% of the population of Western Australia and is by far the largest single source of demand in the State. It is also, at the time of writing, the largest renewable energy installation in WA. Australia hit the milestone of 1 million solar rooftops in March this year<sup>vii</sup> compared with



just 20,000 systems in 2008. More than 134,000 West Australian households now have solar on their roofs, generating 310MW and accounting for up to 10 per cent of generation at certain hours on sunny days<sup>viii</sup>. About 2,500 households in WA are applying to install solar each week.

The large number of homes in the Perth metropolitan with rooftop PV mean Perth itself is a renewable energy zone, and one of the best in the whole country. Five of Perth's suburbs are in the top twenty solar postcodes in Australia, with Mandurah coming first, and Canning Vale / Ashby 8<sup>th</sup>, Hocking 9<sup>th</sup>, Atwell 17<sup>th</sup> and Bibra Lake 20<sup>thix</sup>.

If 1.5kW solar panels were installed on one quarter of the WA homes currently supplied by Synergy, this would create 230MW of electricity, comparable to one of the larger WA coal-fired power stations. There are already seven suburbs in Perth's greater metro area that have hit just under 25% homes with solar pv including Pinjarra and Ellenbrook. (Table 2).

**Table 2: Top ten WA postcodes with the highest solar pv uptake**

| Rank | Postcode | Locality and Federal Electorate                                  | % homes with PV |
|------|----------|--|-----------------|
| 1    | 6208     | Pinjarra, Oakley, Blythewood, Ravenswood ( <b>CANNING</b> )      | 24.7%           |
| 2    | 6069     | Ellenbrook, Brigadoon, The Vines ( <b>PEARCE</b> )               | 23.8%           |
| 3    | 6155     | Canning Vale, Willetton ( <b>TANGNEY</b> )                       | 19.7%           |
| 4    | 6065     | Ashby, Madeley, Sinagra, Wangara ( <b>COWAN</b> )                | 19.2%           |
| 5    | 6233     | Australind, Binningup, Leschenault, Parkfield ( <b>FORREST</b> ) | 18.7%           |
| 6    | 6210     | Dawesville, Falcon, Halls Head, Wannanup ( <b>CANNING</b> )      | 18.0%           |
| 7    | 6164     | Atwell, Banjup, Hammond Park, Yangebup ( <b>FREMANTLE</b> )      | 17.0%           |
| 8    | 6280     | Ambergate, Busselton, Jindong, Kaloorup ( <b>FORREST</b> )       | 15.7%           |
| 9    | 6109     | Maddington, Orange Grove ( <b>HASLUCK</b> )                      | 15.7%           |
| 10   | 6111     | Canning Mills, Champion Lakes, Karragullen ( <b>PEARCE</b> )     | 15.7%           |

Perth has been identified as a renewable energy zone as the Energy 2029 study identified a number of reliable, utility-scale dispatchable plants would need to be built in the area in order to guarantee voltage stability.

### MID WEST AND GERALDTON REGION

This zone has the best combination of wind, wave, sun and biomass resources in the state. The City of Greater Geraldton has released a ground-breaking 100% renewable energy plan, and there is strong community, industry and local Government support for a zero-emissions electricity system. A 330kW interconnector is under construction to connect the region to the SWIS, from Cataby to Greenough, providing much-needed network capacity for new renewable energy stations

### GREAT SOUTHERN

The wheat belt in this region is also WA's finest wind belt, and has significant biomass potential. The wave resources off the coast of Esperance are some of the best in the world, and the long operating experience of wind energy at Esperance and Albany have well and truly demonstrated the potential of the industry.

### CENTRAL PILBARA

This region has one of the best solar resources in the world and this huge hotspot for CST has been identified in international studies. The sparse and poorly connected nature of the North-West Interconnected System is in urgent need of upgrade to provide the basis for a transition to a large-scale solar industry.

### SOLAR GOLDFIELDS

The Goldfields region has an abundance of sunlight, a growing demand for electricity and is connected to the South-West Interconnected System. A number of studies have identified the region as one of the best in the world for large scale solar power. In The Goldfields, the solar industry has strong community, business and Council support, but no major projects have come to fruition despite many years of hard work. We believe it is time to get behind this industry and promote the natural advantages of the Goldfields as the Clean Energy Finance Corporation considers where to invest its money.

### COLLIE REGION

The community of Collie will require a high degree of support in order to make the transition to a local renewable energy economy after a century of dependence on coal mining and combustion. Both Energy2029 scenarios envisage a major installation of renewable energy capacity in Collie (principally biomass, utility-scale PV and wind) for the simple reason that decades of investment in transmission capacity endow a huge competitive advantage on the region.

## > A JOBS-RICH FUTURE

Because Australia's best clean energy resources are in rural and regional areas and our plan would bring investment and thousands of jobs to our regions, many of which are struggling with the decline in the number of people employed in agriculture.

Many studies including Energy 2029 have shown that renewable energy technologies create more jobs per unit of energy and by dollar investment than coal and natural gas<sup>x</sup>.

- **More than 26,200 new jobs would be created nationally through the current 20% RET and carbon pricing** and most of these would go to regional areas.





- Based on conservative government figures **between 22,000 – 26,860 new jobs would be created in WA in construction alone** through a move to 100% renewable energy by 2029<sup>xi</sup>.

This includes:

- 2000-2700 in rooftop PV
- 8000- 18,000 in solar thermal farms
- 930 in fixed solar pv farms
- 700 – 900 in wind
- 700 in geothermal
- 480 in wave
- 650 – 1700 in biomass facilities
- 2500 in energy storage
- 40 in energy efficiency

**By contrast, jobs in coal, oil and gas mining are very low in WA.**

There are about 1020 jobs in coal (1% of WA’s total mining employment) and another 7145 in oil and gas mining in WA<sup>xii</sup>.

A renewable future provides **at least three times as many jobs** as the current number employed in coal, oil and gas in WA. There are a number of gas-fired power stations in WA that have no staff at all.

According to the ABS across the entire Australian economy on average 4.9 jobs are created directly for every million dollars spent – compared to just 1.4 for mining<sup>xiii</sup>. A study by the University of Massachusetts found fossil fuels created the lowest number of jobs for every \$1m invested compared to renewable energy, building retrofits and mass transit and freight rail<sup>xiv</sup>. (Table 1)

| Industry                    | Jobs created per \$m invested |
|-----------------------------|-------------------------------|
| Natural gas                 | 5                             |
| Coal                        | 7                             |
| Smart grid                  | 12                            |
| Wind                        | 13                            |
| Solar                       | 14                            |
| Biomass                     | 16                            |
| Building Retrofits          | 17                            |
| Mass Transit / Freight Rail | 22                            |

In WA about 7% of our population (87,000 people) are employed in the Mining sector. Another 11% (137,500 people) are employed in Construction, with a large proportion in mine site construction<sup>xv</sup>. As the construction phase of the mining boom is now winding down, it’s now more important than ever to have a transition plan in place for these workers to transfer their skills and work in more permanent employment.

## > THE BENEFITS TO THE REGIONS

The number of farmers in Australia has been declining for many decades as small farmers sell up to larger scale operations, and fewer young people take over family farms. Since the 2006 census there were 19,700 fewer farmers in Australia – a fall of 11% in just five years. In the 30 years to 2011 the number of farmers declined by an average of 294 farmers every month<sup>xvi</sup>.

Around 11,000 Western Australians worked in agriculture in 2009-10.

The farming population in Western Australia is ageing with the median age now being 53. There is also a growing skill shortage with fewer young people choosing to stay in farming or related skill areas. In addition, mining and onshore gas extraction is threatening important agricultural areas, either directly or by damage to water sources. This has put additional strain on farming communities.

WA needs a resilient agricultural sector that supports farmers to remain on the land and earn a healthy return on their produce. That’s why the Greens are campaigning for renewables to be part of the mix, and for safeguarding of prime agricultural land from extractive industries including unconventional coal and gas mining.

**Renewable energy is another crop in rotation. It provides a new source of income for WA farmers struggling with low farm-gate prices, rising costs of fuel and fertilisers, competition from imported produced, and a drying climate and a series of poor seasons.**

## > THE OTHER PARTIES

At the federal level both parties have repeatedly undermined the renewable energy sector. They have back flipped on promises, failed to implement programs, tinkered with existing measures and refused to introduce stable, long-term nationally consistent support policies. The result has been a boom and bust rollercoaster for renewable energy investors.

This is why during the negotiations on the carbon pricing mechanism and associated policies, the Greens insisted on the creation of two independent statutory authorities – the \$10 billion Clean Energy Finance Corporation and the \$3.2 billion Australian Renewable Energy Agency (ARENA). Their task is to depoliticise support for renewable energy research, development and commercialisation. The Greens are pleased that both agencies are already proving their worth, but we were angry to see in the last budget the Government broke its agreement with the Greens by cutting \$159 million from ARENA’s budget and deferring \$370 million of funding until after 2020. Labor has also never said no to a coal mine expansion or



coal seam gas project, and has no plan to increase the Renewable Energy Target beyond 2020.

The ALP promised to implement a \$1 billion Connecting Renewable Energy program at the 2010 election but it appears not a dollar was spent by the time this funding was rolled into the newly established Australian Renewable Energy Agency in 2011.

As bad as Labor has been, the Coalition is far worse.

The 20% Renewable Energy Target is a successful tripartisan policy that provides investment certainty and is helping investors build wind, solar and more. But it ruins out in 2020, and Tony Abbott's Coalition has refused to commit to retaining the 20% target of 41,000 Gigawatt hours. Coalition MPs have also attended extreme anti-wind power rallies. The renewable energy industry expects that if the Coalition wins the election they will try to reduce the target and investment in large scale renewables projects has been virtually stalled for many months as investors wait for policy certainty. The Coalition also has no policy on expanding the electricity grid to facilitate renewable energy development.

**Here in WA there has been a long history of similar betrayals.**

- In 2007, the Labor Carpenter Government increased the cost of Synergy's green power product (NaturalPower) and time-of-use differential pricing product (SmartPower), while keeping coal and gas powered ('black') power prices the same by using a legal loophole to claim that NaturalPower and SmartPower were additional products and therefore not part of a State Government agreement to not raise electricity prices.
- In 2009, the Liberal Barnett Government slugged customers of Synergy's NaturalPower, EasyGreen and Earth Friendly power with a price rise over and above general price rises, claiming without justification that green power had become more costly.
- In 2012, the Liberal Barnett Government imposed a carbon price charge on NaturalPower, EasyGreen and EarthFriendly customers, despite Synergy previously claiming these products were carbon-free.
- In July 2013, Liberal Energy Minister Mike Nahan announced he planned to increase the fixed cost of electricity, unfairly penalising Western Australians embracing solar panels and energy efficiency.
- In August 2013 as described earlier, as part of the 2013-14 Budget, the Liberal Barnett Government renege on its promise to solar PV owners to pay a

fixed price per unit of electricity exported to the grid for ten years.

- We understand WA Energy Minister Nahan has also called for a review of renewable energy on the basis it is not cost effective, despite making a recent statement that local gas will increase in price by 100% in forward contracts beyond 2016. Given 46% of the SWIS is gas, we expect prices to go up at least 50%.

**The Australian Greens are the only party you can trust to drive the rollout of 100% renewable energy in Australia – the only party with the political will to drive and develop the policy frameworks to make it happen.**

<sup>i</sup> [http://www.greens.org.au/sites/greens.org.au/files/energy\\_savings\\_agency\\_-\\_briefing.pdf](http://www.greens.org.au/sites/greens.org.au/files/energy_savings_agency_-_briefing.pdf)

Over the past four years the cost of electricity has risen by around 70 per cent nationally.<sup>ii</sup> 'Power cost rises to add to hardship'. The West Australian. Friday August 16, p14.

<sup>iii</sup> Based on 1.5kW systems costing \$2000 each; Cockburn gas power station is 240 MW; Collies's coal fired power station is 300MW and the [Collgar Wind Farm](#) is 206 MW with 111 wind turbines.

<sup>iv</sup> <http://www.climatechange.gov.au/reducing-carbon/aemo-report-100-renewable-electricity-scenarios>

<sup>v</sup> <http://www.climatechange.gov.au/reducing-carbon/aemo-report-100-renewable-electricity-scenarios>

<sup>vi</sup> Dr Jenny Riesz, Ben Elliston, Assoc. Prof Iain MacGill, Assoc. Prof Mark Diesendorf (2013). Submission on 100 per cent Renewables Study – Draft Modelling Outcomes Report. Centre for Energy and Environmental Markets University of NSW.

<sup>vii</sup> Clean Energy Regulator at <http://reneweconomy.com.au/2013/solar-milestone-1000000-pv-systems-installed-in-australia-44201>

<sup>viii</sup> <http://reneweconomy.com.au/2013/wa-solar-shocker-could-be-foretaste-of-an-abbott-government-65081>

<sup>ix</sup> <http://reneweconomy.com.au/2012/coodanup-the-working-class-solar-capital-of-australia-75258>

<sup>x</sup> Wei, M., Patadia, S. & Kammen, D.M. "Putting Renewables and energy efficiency to work: How many jobs can the Clean Energy industry generate in the US?" Energy Policy 38 (2010): 919-931.

<sup>xi</sup> Bureau of Resource and Energy Economics (BREE) *Australian Energy Technology Assessment* 2012; The Climate Institute Clean Energy Jobs methodology table (jobs per MW multipliers) 2011; Greenpeace 'Energy Revolution, A Sustainable Australia Energy Outlook' 2008

<sup>xii</sup> May 2011 Report from DMP:

<http://www.dmp.wa.gov.au/documents/StatsDigest2010a.pdf>

<sup>xiii</sup> The Australia Institute (2012) The use and abuse of economic modelling in Australia

<sup>xiv</sup> Political Economy Research Institute at the University of Massachusetts at <http://www.peri.umass.edu/136/>

<sup>xv</sup> WA's Mining sector (7%, 86900 people) is larger than the Australian average (2%) but is **smaller** than WA Construction, Retail, Professional/Scientific, Education, and Health Care industries. It's **on par** with Manufacturing and just a bit larger than Hospitality (5.7% - accommodation and food services). Source: ABS 2010

at <http://www.abs.gov.au/ausstats/abs@.nsf/Products/788845E95CEACAC1CA25781D000D69AA?opendocument>