ENVIRONMENT AND RESOURCES COMMITTEE

Paper No. 2 **May 2010**

GROWING QUEENSLAND'S RENEWABLE ENERGY ELECTRICITY SECTOR

Aim of this Paper

This paper provides background information and flags issues that the committee would like people to comment on in submissions.

The Committee

The Environment and Resources Committee is a select committee of the Queensland Parliament appointed to monitor and report on issues in the policy areas of environmental protection, climate change, land management, water security and energy.

Inquiry Terms of Reference

The committee has resolved to examine and report on the opportunities and challenges for the Queensland Government associated with increasing the proportion of electricity generated from renewable energy sources in Queensland. For this inquiry, the committee will consider, and make recommendations on:

- the value for money from the Queensland Government's investments in renewable energy projects for electricity generation;
- whether the Queensland Government should adopt a target for increasing the proportion of the state's electricity generated from renewable energy sources, and if so, what form the target should take; and
- actions the Queensland Government should take to encourage investment by government-owned energy companies and the private sector in producing more electricity from renewable energy sources.

Inquiry Scope

In this inquiry, the committee will consider opportunities to generate and co-generate[1] electricity from all forms of renewable energy. Renewable energy technologies that are currently used, or under consideration, to produce electricity in Queensland include hydro, biomass, wind, photovoltaic, solar thermal, geothermal, wave/ocean power and co-generation.[2]

For the inquiry, the committee has defined 'renewable energy' as:

> *… energy harvested from inexhaustible resources such as wind, tide, solar, biomass, geothermal and hydro energy as opposed to non-renewable energy from fossil fuels (eg coal, oil, natural gas, petroleum, and uranium for nuclear energy). Renewable energy sources are naturally replenishing.*[3]

This is the definition used by the Queensland Government in its key renewable energy policy, *The Queensland Renewable Energy Plan* (QREP).[4] The committee will consider grid-connected systems designed to export electricity back to the grid as well as stand-alone, off-grid systems. Solar water heating and uses of renewable energy that do not produce electricity are outside the scope of this inquiry.

Why Switch to Renewable Energy Sources for Electricity?

This inquiry complements the committee's previous inquiry into energy efficiency improvements completed in February 2010. From that work, the committee identified the enormous potential for Queensland households, businesses and industry to realise savings in energy costs and associated greenhouse emissions through energy efficiency improvements.

Reducing greenhouse emissions from the generation of electricity is a key climate change mitigation strategy for Australia and Queensland. In late 2007 the Federal Government committed Australia to cutting greenhouse emissions by 60 per cent from 2000 levels by 2050 in line with international moves to mitigate global emissions and climate change risks.

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1 'Co-generation' or combined heat and power (CHP) are terms used to describe the joint production of heat (often in the form of steam) and power (usually electricity).

2 Fact sheets about these technologies are available from the Clean Energy Council at www.cleanenergycouncil.org.au.

3 Office of Clean Energy, 2009, *The Queensland Renewable Energy Plan*, Department of Employment, Economic Development and Innovation, Queensland, p.7, viewed 10 December 2009, http://www.cleanenergy.qld.gov.au/zone_files/Renewable_Energy/oce_rep_11_web_final.pdf.

4 Office of Clean Energy, p.7.

In 2007 stationary energy (mainly electricity generation) was responsible for 38 per cent of Queensland's greenhouse emissions. As the nation's most energy-intensive and fastest growing state, Queensland's demand for electricity is predicted to grow by around half to 69,000 gigawatt hours (GWh) by the end of this decade.[5]

With the introduction of the Federal Government's Renewable Energy Target (RET) there is greater incentive for Queensland to position itself to capture a significant share of investment in the generation of electricity from renewables. The Queensland Government hopes to leverage up to $3.5 billion in new investment if the implementation of its Renewable Energy Plan is successful.[6]

Reducing dependence on electricity generated from the burning of fossil fuels through expansion of the state's renewable energy sector, would deliver further significant reductions in greenhouse emissions whilst providing the state with energy resources for the future that are inexhaustible, produce zero or negligible greenhouse emissions and are environmentally sustainable.

According to the Queensland Government, renewable energy for electricity generation will also help to slow the growth of energy consumption, take the pressure off peak demand and help to avoid costly network upgrades.[7]

FOR COMMENT

1. Should the Queensland Government aim to expand the use of renewable energy sources to generate electricity?

Renewable Energy in Australia

According to the Clean Energy Council, Australia has abundant clean energy resources including:

- some of the best and most reliable winds on earth;
- a natural abundance of geothermal resources that have the capacity to supply 8 per cent of Australia's total energy needs by 2030; and
- enough bioenergy potential to provide 73 terawatts of electricity generation per year to 2050.[8]

Despite the huge potential reserves, renewable energy provides only around 18,300 GWh or 7 per cent of Australia's electricity. This 7 percent is made up of 4.5 per cent from hydroelectricity, 1.5 per cent from wind and solar, and 0.9 per cent from biomass and biogas.[9]

In its RET scheme, the Federal Government has pledged that, by 2020, 45,000 GWh or 20 per cent of Australia's electricity supply will come from renewable sources. According to the Federal Government, the RET scheme could provide up to $12 billion in investment in renewable energy by 2020.

The RET scheme is complemented by the $4.5 billion Clean Energy Initiative which supports the research, development and demonstration of low-emission energy technologies such as industrial scale carbon capture and storage, and solar energy. The Clean Energy Initiative includes:[10]

- the $1.5 billion Solar Flagships Program;
- the $100 million Australian Solar Institute; and
- the Australian Centre for Renewable Energy which manages funding to promote the development, commercialisation and deployment of renewable energy technologies.

Increased investment in renewable energy was announced in the Federal Government's 2010-2011 budget of $652.5 million over four years to establish a Renewable Energy Future Fund. The Fund will promote commercialisation of renewable technologies.

Renewable Energy in Queensland

While the Federal Government's programs and initiatives will play the major role in funding and driving Australia's renewable energy future, the decisions and policies of state and territory governments will be critical to the shape, timing, implementation and viability of key renewable energy projects.

The Queensland Renewable Energy Plan (QREP) sets out the Queensland Government's strategies to support and expand the state's renewable energy sector. The primary objective of QREP, administered by the Office of Clean Energy, is to increase the deployment of renewable energy infrastructure in Queensland. In 2008 around 6 per cent (almost 750 megawatts (MW) of Queensland's installed electricity generating capacity used renewable energy: 415 MW from biomass cogeneration, such as sugar mills and landfill gases; 160 MW from hydroelectricity; 12 MW from wind; 6 MW from solar photovoltaic and 0.08 MW from geothermal.

Should Queensland achieve a 20 per cent share of the national RET, it would equate to around 2,635 MW of electricity capacity from renewables by 2020, effectively a 250 per cent increase on the state's present electricity from renewable energy capacity. The figure over the page shows the current and future renewable energy mix for Queensland if this level of investment is achieved.

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5 Office of Clean Energy, p.7; and the Office of Climate Change website, viewed 4 May 2010, http://www.climatechange.qld.gov.au/whats_being_done/queensland_climate_change_strategy/toward_a_greener_queensland_-_sectoral_strategies/energy

6 Office of Clean Energy, p.4.

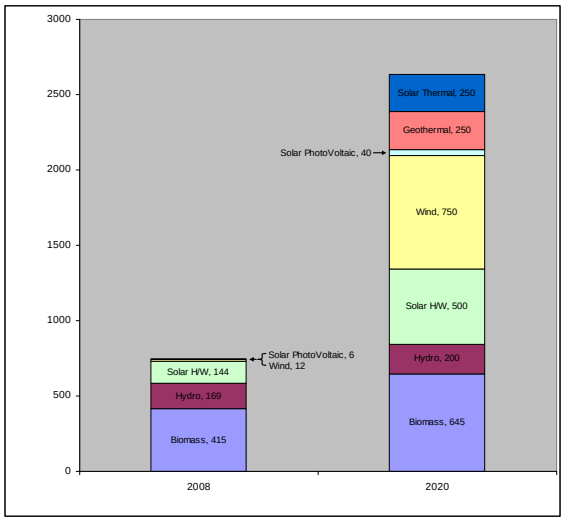
7 Office of Clean Energy, p.1.

8 Lustman, R., 2009, *Renewables and Clean Energy Council, A powerful argument,* Sustainability Magazine, January 29 2009, p.3, viewed 4 May 2010, http://www.sustainabilitymagazine.com.au/energy/a-powerful-argument/

9 Minister Ferguson, personal correspondence dated 31 March 2010.

10 Further details on each of the CEI components can be found on the Department of Resources, Energy and Tourism website: www.ret.gov.au

Queensland's Renewable Energy Mix,
2008 and 2020 (projected), by type and output (Megawatts).



Source: Compiled from data contained in *The Renewable Energy Plan,* 2009**.**

From the figure, Queensland's solar photovoltaic capacity would increase by almost 250 per cent, the state's wind energy sector by 6,100 per cent (ie duplicating the state's existing wind generated electricity capacity more than sixty times) and biomass generating capacity would rise by 55 per cent.

Initiatives by the government flagged in QREP to expand the renewable energy sector include:

- encouraging small-scale solar thermal plants in regional Queensland and undertaking a large-scale solar thermal feasibility study;
- introducing geothermal legislation to allow geothermal exploration in certain areas of Queensland;
- establishing small-scale renewable systems in remote networks to transition communities from reliance on diesel generation;
- government-owned electricity generators working with industry to identify renewable energy solutions;
- promoting energy conservation in communities including renewable energy solutions in growth hot spots;
- a regulatory reform package to simplify the business, regulatory and planning environment for renewable energy projects;
- amending the *Land Act 1994* to enable lessees to sublease to wind farms and other renewable energy projects;
- mapping Queensland's solar, wind and geothermal resources; and
- creation of a Queensland Priority Industry Sector, supported by a *Renewable Energy Industry Development Plan* that will include:
  - a Clean Energy Jobs Policy, which aims to create 3,500 jobs by 2020;
  - Pilot Renewable Energy Priority Zones;
  - Renewable Energy Incentives Package; and
  - a Renewable Energy Technology and Innovation Strategy.[11]

[11] Queensland Government, 2009, *Renewable Energy Plan Fact Sheet.*

FOR COMMENT

2. What are the barriers to increased use of renewable energy for generating electricity and associated investment in Queensland?
3. What have the Queensland Government's own investments in renewable energy projects for the generation of electricity achieved to date, and at what cost?
4. What are the priority issues the Queensland Government should address to encourage investment in renewable energy for the generation of electricity?

Renewable Energy Targets

A key feature of the Federal Government's approach to renewable energy policy is its target of 20 percent of electricity sourced from renewable energy sources nationally by 2020. Nationally, to achieve this goal, an additional 60,000 GWh of renewable energy electricity generating capacity will need to be deployed by 2020. Governments in over 73 countries have set similar renewable energy policy targets.

Targets have been used to set objectives in other areas of government policy to drive key reforms and galvanise agencies into action. Whilst the Queensland Government is signatory to the national renewable energy target, it has not agreed to an explicit state target.

The Victorian Government has set a target of 10 per cent of electricity to be generated from renewables by 2016, and South Australia has committed to 20 per cent by 2014. These targets reflect a number of factors that determine energy demand and the energy mix such as population and population density, the presence of energy intensive industries and the close proximity of renewable energy resources.

Having a single output target may also be too simplistic. It may be more useful to set regional or industry targets for the sourcing of electricity from renewable energy sources, or to have different targets for different regions of the state.

FOR COMMENT

5. Should the Queensland Government set a state target, or targets, for the proportion of electricity generated from renewable energy sources?
6. If so, what should the target/s be, and what form should it/they take?

Encouraging Investment in Renewable Energy

There is a small but growing renewable energy sector in Queensland working with government on key projects. As noted above, the Queensland Government hopes to expand this sector by leveraging up to $3.5 billion in new investment in renewable energy in Queensland by 2020.[12]

[12] Office of Clean Energy, p.4.

These investments could include:

- attracting international renewable energy companies to Queensland;
- construction of large scale renewable energy plants;
- investment by businesses in mid-sized renewable energy projects;
- investment by electricity consumers in co-generation systems to meet their electricity needs, and export surplus power to the grid; and
- investment in renewable energy research and development.

Generating electricity from renewables is a business. Like other businesses, investment decisions will depend on:

- market demand and pricing;
- competition;
- expected returns on investments, and timeframes;
- the level of risk associated with these returns;
- the certainty of supply of raw materials;
- the availability of skilled staff;
- the cost and availability of capital;
- the level of government support; and
- access to transport.

The committee will be exploring approaches adopted in other jurisdictions to support renewable energy projects. The following options are of interest to the committee:

- assisting renewable energy projects to gain access to the grid;
- financial incentives such as payroll tax offsets;
- feed-in tariffs for exporters of renewable energy electricity;
- assisting businesses to commercialise their emerging renewable energy technologies;
- using long-range strategic plans to signal future renewable energy priorities;
- regulatory reforms to cut red tape for renewable energy projects;
- streamlining local government approval processes;
- support for local research, development and manufacturing of renewable energy equipment; and
- working with the finance sector to free-up capital for renewable energy electricity projects.

FOR COMMENT

7. What actions should the Queensland Government take to encourage investment in the generation and co-generation of electricity from renewable energy sources?

How to Get Involved

Public participation is an important and necessary ingredient in the committee's work and provides an opportunity to take part in the work of the Queensland Parliament. You can get involved in the inquiry by:

- contacting the secretariat to subscribe to receive email updates about the inquiry;
- providing a written submission that addresses some or all of the Terms of Reference;
- participating in the committee's hearing; or
- by learning more about renewable energy from this inquiry and through your own research.

Inquiry Timetable

Subject to further work from the House which must take precedence over this inquiry, the committee's proposed timetable for the inquiry is as follows:

Closing date for submission	30 June 2010
Brisbane public hearing	26 July 2010
Report to the House	25 November 2010

Brisbane Public Hearing

The committee will hold a public hearing on 26 July 2010 in the Parliamentary Annexe in Brisbane to clarify issues raised in submissions and other advice for the inquiry. Members of the public are welcome to attend. The committee will advertise the hearing details in *The Courier Mail* and *Queensland Country* Life on Saturday, 17 July 2010.

Making a Written Submission

Guidelines on making submissions, including confidential submissions are available from the committee's website or from the secretariat staff.

Submissions close Wednesday, 30 June 2010

Written submissions should be sent to:

Research Director
Environment and Resources Committee
Parliament House
BRISBANE QLD 4000

OR by facsimile to 07 3406 7070

OR by email to: erc@parliament.qld.gov.au (attach document)

OR electronically via the committee's website at www.parliament.qld.gov.au/erc

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