



# Biomass Taskforce

April 1999

Number: 8

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## **Biomass Taskforce Membership<sup>1</sup> Update**

The Biomass Taskforce membership has increased to 20 organisations, with recent new members being ABB Power Generation Ltd, Western Sydney Waste Board and Stanwell Corporation Ltd. The Biomass Taskforce wishes to expand its membership and invites interested organisations to contact the Biomass Taskforce Manager, Dr Stephen Schuck on Tel/Fax 02 9416 9246 or email: [Steve.Schuck@bigpond.com](mailto:Steve.Schuck@bigpond.com)

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## **IEA Bioenergy – Australian Participation Formalised**

As previously related in this newsletter, the Biomass Taskforce has been successful securing funding from the Joint Venture Agroforestry Program for participation in IEA Bioenergy Task 17, *Short Rotation Crops for Bioenergy*. A group consisting of the Western Australian Department of Conservation and Land Management, Victoria's Centre for Forest Tree Technology (Department of Natural Resources and the Environment), Forest Products Association of NSW, CSIRO Division of Forestry and Forest Products, State Forests of NSW and Queensland's Department of Primary Industry and convened by the Biomass Taskforce will be participating in this program from 1999. To foster this information exchange program, the Biomass Taskforce will be providing the Australian annual fee to the IEA Bioenergy Executive Committee. For administrative reasons, Stephen Schuck and Associates Pty Ltd has entered into the contract with RIRDC to administer this project on behalf of the Biomass Taskforce, and has been designated as the Contracting Party for the Australian Government for the IEA Bioenergy Agreement. Stephen Schuck, the Biomass Taskforce Manager will be representing Australia on the Executive Committee of IEA Bioenergy and will be attending the next ExCo meeting in Norway 26-28 May.

A future step is to gain support for participation in a number of other Tasks of IEA Bioenergy (see previous newsletters for list of IEA Bioenergy Tasks).

Should you wish to obtain information on this program and participation in other Tasks, please contact Steve Schuck on tel/fax: 02-9416-9246, or email [Steve.Schuck@bigpond.com](mailto:Steve.Schuck@bigpond.com). The IEA Bioenergy has its home page at URL: <http://www.fri.cri.nz/ieabioenergy/home.htm> where the latest annual report has recently been posted.

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**Back Issues of Biomass Taskforce Newsletters** – Available on the Biomass Taskforce's homepage: <http://www.users.bigpond.com/steve.schuck/abt>

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<sup>1</sup> Founding members: ERDC (replaced by DISR), RIRDC, Environment Australia (now Australian Greenhouse Office), GRDC, BRS. Membership now also includes CSIRO Div of Energy Technology & Div of Forestry and Forest Products, FPA of NSW, Pacific Power, Delta Electricity, Macquarie Generation, Waste Service NSW, EDL, SEDA, SPM/CPM, Forestry Tasmania, State Forests of NSW, Western Power Corporation, ABB Power Generation Ltd, Western Sydney Waste Board and Stanwell Corporation Ltd.

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## **NSW SERDF Funding for Biomass Projects**

The NSW Government announced in March the outcome of project proposals submitted to the Sustainable Energy Research and Development Fund in response to a public call in late 1998. The Fund is administered by the NSW Department of Energy. Over \$2 million is being provided to support 14 sustainable energy projects, including five biomass projects. The recipients and biomass energy projects are:

- Biomass Energy Services and Technology Pty Ltd – Direct conversion of forestry waste to densified charcoal.
- BHP Research & Technology, Newcastle Laboratories and State Forests of NSW – Sustainable steelmaking using renewable forest energy.
- NSW Sugar Milling Co-Operative – Cane trash bulk collection systems.
- Enecon Pty Ltd – Renewable energy and industrial charcoal from wood.
- CSIRO Division of Energy Technology – Properties of biomass ash.

For further information contact: Dr David Hemming, NSW Department of Energy,  
Tel: 02-9901 8836.

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## **NSW Greenhouse Gas Methodology Reviewed**

As related in the January 1999 issue of the Biomass Taskforce Newsletter, the Biomass Taskforce provided a submission to the New South Wales Department of Energy for the Methodology Review relating to greenhouse gas emissions under the Electricity Supply Act 1995. Under the previous methodology, biomass co-firing with coal in utility boilers was not encouraged, with greenhouse gas reduction benefits from plants over 30 MW being distributed to the 'pool' and not credited directly to those investing in co-firing projects.

The Methodology has been reviewed and approved by the NSW Minister for Energy, and now those engaging in such projects will gain the direct benefit of the reduced greenhouse gas emissions from their projects. The new Methodology workbook is available on the NSW Department of Energy's web site at <http://www.doe.nsw.gov.au>.

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## **Renewable Energy Commercialisation Program Projects Announced**

The Federal Government has announced the outcome of the first round of funding under the Renewable Energy Commercialisation Program (RECP) which is administered by the Australian Greenhouse Office. RECP is a five year, \$30 million competitive grants program that supports the demonstration and commercialisation of innovative energy equipment, technologies, systems and processes to foster the Australian renewable energy industry.

Grants totalling \$5.9 million for eight projects were announced on 7 April. Of these, two are for biomass energy projects.

- \$1 million has been allocated to a group led by Western Power Corporation, which includes the Oil Mallee Company, the WA Department of Conservation and Land Management and Enecon Pty Ltd. An Integrated Wood Processing demonstration plant will be built at Narrogin to produce 1 MW of renewable energy for the local grid. The

feed stock will be locally grown mallee, and co-products of eucalyptus oil and activated carbon will be produced. Special harvesting equipment is being developed to harvest the biomass on a short rotation basis. The contact is Adrian Chegwiddden of Western Power Corporation, Tel: 08 9326 4902.

- Biomass Energy Services and Technology Pty Ltd and Reneco Engineering Pty Ltd jointly received a grant of \$850,000 to install two briquetting plants; one at the Mugga Lane landfill site and the other at the Reneco sawmill. One plant will provide clean burning fuel for a cogeneration plant to produce up to 300 kW of renewable energy for sale to ACT customers. The other plant will produce a high quality fuel for domestic heating, barbecue and power markets. Contact: Stephen Joseph, BEST, Tel: 02 4340 4911, Tony Esplin, Reneco Engineering, Tel: 0419 264 001.

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## **Renewable Energy Commercialisation Program**

As noted above, the successful projects under round 1 of this \$30 million program were announced on 7 April 1999. Round 2 of this program closed on 13 April, with Round 3 to open on 7 September and close on 19 October 1999.

Grants under RECP are normally expected to be in the range of \$100,000 - \$1 million. The Australian Greenhouse Office is encouraging intending applicants to contact the Renewable Energy Team and to submit draft applications prior to making formal submissions. The current application form is available on the AGO's web site [www.greenhouse.gov.au](http://www.greenhouse.gov.au).

Further information is available from the Australian Greenhouse Office. Contact Gillian McDonald, Program Manager, Renewable Energy Grants Programs, telephone 02 6274 1376.

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## **Co-firing Trial at Macquarie Generation's Liddell Power Station**

Macquarie Generation has announced a six-week co-firing trial at the Liddell Power Station in the Hunter Valley. Sawdust from cypress pine mills at Gunnedah and Baradine will be blended with coal at levels of one to five percent to validate co-firing and gauge emission levels. The trial is being conducted in close consultation with the Macquarie Generation Community Consultative Group and the EPA. See Web <http://www.macgen.com.au/>

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## **'2% Renewables Target in Power Supplies – Potential for Australian Capacity to Expand to Meet the Target' Report**

The Australian Greenhouse Office commissioned Redding Energy Management to assess Australian capability to meet the target of an additional two percentage points of renewable energy and to examine scenarios for its introduction. The study examines a range of technologies, including biomass and energy from wastes, and looks into issues associated with the measure's introduction.

This report is available on the Australian Greenhouse Office's web site at URL: <http://www.greenhouse.gov.au>. For further information contact: Dr Stephen Bygrave at the AGO on tel: 02 6274 1199.

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## BioFacts

- Consider the processing of putrescible waste and the merit of composting vs anaerobic digestion. Composting generates carbon dioxide and consumes between 50 and 75 kWh/tonne of energy (mainly from fossil fuels). Anaerobic digestion of these wastes on the other hand produces a combustible gas (methane) and produces 75 – 150 kWh of energy.
  - Rule of thumb for producer gas (gasified biomass)
    - 1 m<sup>3</sup> gas (5 MJ/Nm<sup>3</sup>) will produce approximately:
      - 1.5 kWh thermal energy
      - 300 Wh electricity
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## Biomass on the Internet

The Internet provides a valuable source of information on biomass and allied topics. Below are some Internet addresses to supplement the addresses given in the six earlier issues of the Biomass Taskforce newsletters. These lists are provided as electronic links on the Biomass Taskforce's web page at [http:// www.users.bigpond.com/Steve.Schuck/ABT](http://www.users.bigpond.com/Steve.Schuck/ABT)

Australian Greenhouse Office

<http://www.greenhouse.gov.au/>

RIRDC/LWRRDC/FWPRDC Joint Venture Agroforestry Program

<http://www.rirdc.gov.au/programs/aft.html>

Integrated Bio-Systems Forum

<http://segate.sunet.se/archives/et-w1.html>

BIOTEK (anaerobic digestion)

<http://www.bioscan.dk/>

Internet Conference on Integrated Bio-Systems Proceedings

<http://www.ias.unu.edu/proceedings/icibs/>

Transnational Technology (Jim Arcate) articles on charcoal energy

<http://www.techtp.com/projects/index.htm> and

<http://news.poweronline.com/feature-articles/19981116-3544.html>

Thermogenics biomass gasifiers

<http://www.thermogenics.com>

Used equipment (including boilers- USA)

<http://www.vernsusedequipment.com>

Caddet article on Converttech's technology (see Opportunities Corner below)

<http://www.caddet-re.org/html/198art1.htm>

DK-TEKNIK (Denmark)

<http://www.dk-teknik.dk>

Danish Centre for Biomass Technology (network of 4 technological institutes)

<http://www.sh.dk/~cbt>

Gasification processes for MSW report

<http://eren.doe.gov/biopower> then search for TP-430-21612

or <http://www.doe.gov/bridge/home.html>

Trigen-Cinergy Solutions (wood cogeneration)

<http://www.trigen.com>

European Media Marketing (organisers of the World Sustainable Energy Fair)

<http://www.emml.com>

Northern Ireland Centre for Energy Research & Technology

<http://www.nics.gov.uk/irtu/>

Sustainable Minnesota's Biomass Information Resources page

<http://www.me3.org/issues/biomass/>  
 Sustainable Minnesota's ethanol and Biofuels page  
<http://www.me3.org/issues/ethanol>  
 NREL's biomass Life Cycle Analysis (LCA)  
[http://www.eren.doe.gov/biopower/life\\_cycle.html](http://www.eren.doe.gov/biopower/life_cycle.html)  
 Western Sydney Waste Board  
<http://www.wswaste.nsw.gov.au>  
 Tata Energy Research Institute (India, biomass gasification at 1 MWe scale)  
<http://www.teriin.org>  
 IEA Bioenergy Task 25  
<http://www.joanneum.ac.at/iea-bioenergy-task25>  
 Pinnacle's web site (wheat straw based plastics)  
<http://www.pinnaclet.com>  
 Western Regional Biomass Program  
<http://www.westbioenergy.org>  
 Alternative Agricultural Research and Commercialization Corporation  
<http://www.usda.gov/aarc>  
 Biofuels Information Center (Alternative Fuels Data Center)  
<http://www.afdc.nrel.gov>  
 Industrial Agriculture – USA Clearinghouse (Kansas Technology Enterprise Corporation)  
<http://www.ia-use.org>  
 Kansas Technology Enterprise Corporation (technology development network)  
<http://www.ktec.com>  
 NREL Report TP-580-24772 'An Overview of Biodiesel and Petroleum Diesel Life Cycles'  
<http://www.biofuels.doe.gov/rdbriefs/lifecycle.html>  
 Allied Business Intelligence (study on distributed generation)  
<http://www.alliedworld.com>  
 Australian Biotechnology Association  
<http://www.aba.asn.au>  
 Fluidyne photos of gasifier (NZ)  
<http://powerlink.co.nz/~graeme/dougspictures.html>  
 Brazilian Society for the Environment - BIOSFERA  
<http://biosfera.com.br>  
 American Bioenergy Association (new address)  
<http://www.biomass.org/>  
 American Methanol Institute  
<http://www.methanol.org/>  
 International Fuel Cells  
<http://www.internationalfuelcells.com/>  
 Financial Times energy newsletters and reports  
<http://www.ftenergy.com>  
 Lund University, Biotechnology Department  
<http://www.biotek.lu.se>  
 University of Wisconsin Forest Products Laboratory (bioenergy)  
<http://www.calvin.biotech.wisc.edu/jeffries>  
 ORNL biomass power for rural development  
<http://www.esd.ornl.gov/bfdp/bfdpmosaic/rural.html>  
 Solstice – biomass fired cogeneration plant case study (Michigan)  
<http://solstice.crest.org/renewables/dc-cogen/>  
 Union of Concerned Scientists  
<http://www.ucsusa.org/energy>  
 German agency for renewable raw materials (FNR)  
<http://www.dainet.de/fnr/>  
 PRM Energy Systems & Primenergy  
<http://www.prmenergy.com>

<http://www.primenergy.com>

Biodiesel sites

- <http://www.webconx.com/biodiesel> (Output Technologies NYC)
- <http://www.elsbett.com>
- <http://www.nopec.com>
- <http://www.biodiesel.org/overview.html>

Tigney Technology Incorporated (organic material refinery)

- <http://www.compusmart.ab.ca/tigney/>

Millenium Debate (Energy education – UK)

- <http://millennium-debate.org>

MP Corporation for the Development of Alternative Energy (Indian gasification site)

- <http://www.mprenewable.com>

Television for the Environment

- <http://www.tve.org/>

ARBRE project

- <http://www.arbre.co.uk/>

MAFF (three UK bioenergy gasification projects)

- <http://www.maff.gov.uk/farm/acu/Acuren-4.htm>

Foster Wheeler

- <http://www.fwc.com/industries/>
- <http://www.fwc.com/products/>

Agrilectic

- <http://www.agrilectric.com>

BUN-INDIA

- <http://cgpl.iisc.ernet.in/~mukunda/home.html>

Carbohydrate Economy Clearinghouse (Institute for Local Self Reliance)

- <http://www.carbohydrateeconomy.org/>

Charcoal making burner (test results)

- [http://www.ikweb.com/enuff/public\\_html/emissions/emissions.htm](http://www.ikweb.com/enuff/public_html/emissions/emissions.htm)

Caddet article on Converttech technology

- <http://ww.caddet-re.org/html/198art1.htm>

Land and Water Resources R&D Corporation

- <http://www.lwrrdc.gov.au>

Stanwell Corporation

- <http://www.stanwell.com>

AMCOR Ltd (9 paper mills)

- <http://www.apg.com.au>

CHP Association (UK)

- <http://www.chpa.co.uk>

PB Power

- <http://www.pbpower.net>

International Cogeneration Alliance

- <http://www.localpower.org>

US DOE co-firing projects

- <http://www.fetc.doe.gov/products/gcc/index.html>

Dynamotive Technologies (pyrolysis and bio-oils)

- <http://www.dynamotive.com>

IEA Bioenergy – Task 22, Techno-economic assessment

- <http://www.vtt.fi/ene/bioenergy/>

#### **Venture Capital Web Sites:**

- <http://www.abol.net> (then click on Business Opportunities)
- <http://ideas.on.theweb.net>
- <http://www.businessangels.com.au>

<http://www.avcal.au> (Australian Venture Capital Association)  
<http://www.asx.com.au/e.m> (ASX Enterprise Market)

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## **Renewable Energy Industry Database**

One of the renewable energy measures announced by the Prime Minister in November 1997 was the establishment of a high profile Renewable Energy Internet Site (REIS), to be developed by the Australian Greenhouse Office. This database is now being developed for the Australian Greenhouse Office and service and product providers are being asked to provide information for this database. Responses are being requested prior to 3 May so the database can be completed in time for the launch of REIS. Biomass technology, resources, and applications information is being sought. This information can be filled in on the Internet at [www.greenhouse.gov.au/renewable.form.html](http://www.greenhouse.gov.au/renewable.form.html), or on a form obtainable from Graham Anderson, tel: 02 6260 6444.

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## **Ethanol Plant to Use Rice Straw as Feedstock**

US company Arkenol is set to commence construction on a two million litre per year ethanol plant near Sacramento, California. What makes this US plant unusual is that the feedstock will be rice straw instead of using grain. 120,000 t/a will be used as feedstock, with the plant expected to be operational by April 2000. The plant is to be located in a major rice growing area where up until now vast quantities of rice straw were burned in the open, resulting in air pollution. New pollution regulations now eliminate burning as a disposal option, posing problems for farmers. Arkenol will be using its proprietary concentrated acid hydrolysis process to convert the straw to ethanol and other byproducts such as citric acid and zeolites. Further information on Arkenol's web site at <http://www.arkenol.com>

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## **Rice Husk Fuelled Power Plants in The USA**

According to 'A Study of the Market for Rice Husk-to-Energy Systems and Equipment' from the Agricultural Center, Louisiana State University, (to order call Brett Craig 0011-1-225-388-8349) there are five rice husk plants that generate power into the grid in the USA. These are:

- 10.5 MW Agrilectric Power plant at Lake Charles, Louisiana in service since 1984
- 1.5 MW Agrilectric Power plant at Lake Charles, Louisiana in service since 1995
- 5.5 MW Cargill plant at Greenville, Mississippi ("recently commissioned")
- 28.7 MW United America Energy Corporation at Williams, California
- 28.0 MW Woodland Biomass Power at Woodland, California (10% rice husks)

For information on the Agrilectric plants see <http://www.agrilectric.com>

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## **Briquetting Machinery Suppliers**

A compilation of suppliers, their addresses and technical information from 44 manufacturers of briquetting machinery worldwide has been compiled by the Department of Agricultural Research for Northern Sweden, Swedish University of Agricultural Sciences. Contact: Jan Burvall at the University's Laboratory for Chemistry and Biomass, email: [Jan.Burvall@njv.slu.se](mailto:Jan.Burvall@njv.slu.se), Fax: +46 90 786 9494.

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## **Bioenergy '98 Conference Proceedings**

As reported in the previous Biomass Taskforce Newsletter, the Biomass Taskforce Manager attended BioEnergy '98, which took place in Madison, Wisconsin, 4-8 October, 1998. The conference drew 500 participants from around the world, featured dozens of expert workshops and tours, and produced 152 technical papers (1350 pages) on a range of biomass energy topics.

The web site for the conference, <http://www.cglg.org/bioenergy98>, has been updated to include:

- Abstracts and table of contents for all conference papers
- The ability to order the conference proceedings online (CD-ROM)
- Photos from the conference, the trade show and the tours
- Audio recordings of speeches by DOE Assistant Secretary Dan Reicher and R. James Woolsey, former director of the CIA.

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## **IEA Bioenergy Position Paper**

A position paper prepared by IEA (International Energy Agency) Bioenergy, outlining the role of bioenergy in greenhouse gas mitigation is available on the web at <http://www.joanneum.ac.at/iea-bioenergy-task25>. The Summary of this four page document reads "Biomass can play a dual role in greenhouse gas mitigation related to the objectives of the UNFCCC, i.e. as an energy source to substitute for fossil fuels and as a carbon store. However, compared to the maintenance and enhancement of carbon sinks and reservoirs, it appears that the use of bioenergy has so far received less attention as a means of mitigating climate change. Modern bioenergy options offer significant, cost-effective and perpetual opportunities toward meeting emission reduction targets while providing additional ancillary benefits. Moreover, via the sustainable use of the accumulated carbon, bioenergy has the potential for resolving some of the critical issues surrounding long-term maintenance of biotic carbon sinks. Finally, wood products can act as substitutes for more energy-intensive products, can constitute carbon sinks, and can be used as biofuels at the end of their lifetime".

Steve Schuck, the Biomass Taskforce Manager and the Australian representative on IEA Bioenergy has available copies of this position paper.

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## **IEA Bioenergy Overview of 'Greenhouse Gas Balances of Bioenergy Systems'**

IEA Bioenergy has produced an eight page document that describes the scope, objectives, methodologies, and outputs of IEA Bioenergy's Task 25, *Greenhouse Gas Balances of Bioenergy Systems*. This document is may also be downloaded from the Task 25 internet site at <http://www.joanneum.ac.at/iea-bioenergy-task25>. Alternatively, contact Steve Schuck for a hard copy.

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## **ARBRE Project**

Construction has commenced on the 8MWe EU-Thermie sponsored ARable Biomass Renewable Energy (ARBRE) project in Eggborough, Yorkshire, as reported in the January 1999 issue of the Biomass Taskforce Newsletter. The fuel will be forestry wastes and purpose grown willow and poplars harvested in a three-year cycle and will use TPS

gasification technology. Alstom has won a \$6.5 million dollar contract for the supply of a Typhoon gas turbine generating set and associated equipment. The gas turbine will run on low calorific value gas wood gas having an approximate heating value of 5.4 MJ/Nm<sup>3</sup>. The plant is due to become operational by November 1999. Information on the ARBRE project can be found on the web at URL: <http://www.arbre.co.uk/>

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### **Sydney's Landfill Gate Charges**

The gate charges at the seven transfer stations and four landfills controlled by Waste Service NSW vary according to waste type and location. Some landfill charges are:

Mixed waste (with or without food)	\$70.80/t (Belrose)
Mixed waste containing paper (over 25% non-recyclable)	\$97.40/t (Belrose)
Untreated timber and garden matter	\$35.00/t (Eastern Creek)
Tree trunks and roots (>150mm diameter)	\$84.80/t (Lucas Heights)
Tyres (shredded)	\$55.45/t (Jacks Gully)
Tyres (unshredded)	\$144/t (Jacks Gully)

(Source Recycling and Solid Waste Disposal-Guide & Charges from July 1998, Waste Service NSW)

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### **Co-Firing Biomass and Coal in Power Station Boilers**

The Australian Geographical Survey Organisation's (AGSO) Minerals and Energy Program has released the above report, authored by Ron Sait and David Rossiter (now Australian Greenhouse Office). This 13 page report (including excerpts from web pages) provides an overview of and background to co-firing, description of technology, co-firing tests in the USA, estimated costs in Australia, recent proposals in Australia, conclusions, recommendations, references, and appendices containing energy costs and greenhouse gas performance.

The report is available from the Australian Geological Survey Office Sales Centre. Contact <http://www.agso.gov.au/> or tel: 02 6249 9519, fax: 02 6249 9999.

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### **Co-firing Case Studies**

A series of EU-THERMIE case studies to promote the commercial application of co-firing biomass and waste derived fuel are available at no charge from ETSU in the UK. The series of case studies were produced by ETSU in conjunction with VTT Energy (Finland) and Sydkraft Konsult AB (Sweden). The case studies are:

- Slough Trading Estate CHP plant, UK (waste derived fuel and coal)
- Tekniska Verken CHP plant, Sweden (biofuel, rubber and coal)
- Stora Fors Paper Mill, Sweden (biomass and coal)
- Stora Hylte Paper Mill, Sweden (biomass and coal)
- Idbacksverket CHP Plant, Sweden (biofuel and coal)
- Kymijarvi CHP Power Plant, Finland (wet biomass and coal)
- Rauhalhti Power Plant, Finland (peat, wood fuels and coal)

In addition, ETSU has produced a Technology Status Report entitled 'Co-Utilisation of Coal and Biomass/Waste' (TSR004), dated July 1997. Contact: Richard Archer of ETSU on email: [richard.archer@aeat.co.uk](mailto:richard.archer@aeat.co.uk).

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## Energy Market Reform and Greenhouse Gas Emission Reductions Report

In mid 1998 the Department of Industry, Science and Resources -DISR (formerly the Department of Primary Industries and Energy) commissioned The Allen Consulting Group and McLennan Magasanik Associates to examine the implications of energy market reform for greenhouse gas emissions. This analysis report was released on 19 March and is available on the DISR web site. The key messages from the report are that the current electricity and gas market reforms, while increasing greenhouse gas emissions in the short term, will achieve sizeable reductions in the growth of greenhouse gas emissions in the longer term. Greater reductions might be possible if the pace of reform is accelerated, and major benefits realised if a convergent national energy market is achieved. Whilst the report is only an analysis document at this stage, and has not been considered by Federal, State and Territory governments, it does have implications for greenhouse gas policy, as the Government has been relying on energy market reform to deliver greenhouse gas reductions to enable Kyoto targets to be met. In preparing the report, a number of stakeholders were consulted, including the Biomass Taskforce.

The report is available under 'Resources' on the ISR website at <http://www.isr.gov.au>.

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### Forthcoming Events

- Fourth Biomass Conference of the Americas. *Biomass: A Growth Opportunity In Green Energy and Value Added Products*. 29 August – 2 September 1999. Oakland Marriott City Center, Oakland, California. Web <http://www.nrel.gov/bioam>.
- Second Olle Lindstrom Symposium on Renewable Energy, Bioenergy 9-11 June 1999, Royal Institute of Technology, Stockholm, Sweden. Internet site: [http://www.ket.kth.se/O\\_L\\_Symposium.html](http://www.ket.kth.se/O_L_Symposium.html)
- 1999 International Fuel Ethanol Workshop and Trade Show, Cedar Rapids, Iowa, USA, 22-25 June 1999. Contact: Tel: 0011-1-719-942-4353, Email: [etoh85@aol.com](mailto:etoh85@aol.com).
- Second International Symposium on Anaerobic Digestion of Solid Waste, Barcelona, Spain, 15-18 June 1999. Information at <http://www.II-ISAD-SW.ub.es>
- 21st Symposium on Biotechnology for Fuels and Chemicals, Fort Collins, Colorado, USA, 2-6 May 1999. Information at [www.nrel.gov/biotech\\_symposium](http://www.nrel.gov/biotech_symposium). Contact Mark Finkelstein, NREL, email: [mark\\_finkelstein@nrel.gov](mailto:mark_finkelstein@nrel.gov), tel: 0011-1-303 275 3884.
- *Sustain '99 - World Sustainable Energy Fair*, Amsterdam, Netherlands, 25-27 May 1999. Allied conferences in Amsterdam are:
  - Implementing Renewable Energy*, 26-27 May (NOVEM and ALTENER)
  - CHP and Biomass – Realising the Potential*, 25 May (Cogen Europe)
  - The Future of Waste*, 26th May (ISWA).Information: European Media Marketing Ltd, PO Box 259 Bromley, Kent, BR1 1ZR, UK. Fax: +44 181 289 8484. Web: <http://www.emml.com> or contact Stephen Schuck.
- *Combustion Canada '99*, Calgary, Alberta, Canada, 26-28 May 1999. Information: Tel: + (613) 236 6222, Fax: + (613) 236 6850, Email: [info@deia-acie.ca](mailto:info@deia-acie.ca)

- 5th International Conference on Thermochemical Biomass Conversion, Tyrol, Austria, 21-26 May 2000. Main topics to be covered are: Feedstock Preparation, Pretreatment, Conversion, Products, Applications, and Systems. Deadline for one page abstracts 30 September 1999. Contact: Prof. Tony Bridgewater, Bio-Energy Research Group, Aston University, Birmingham, B4 7ET, UK. Fax: +44 121 359 6814, Email: a.v.bridgewater@aston.ac.uk.
- Bureau of Transport Economics Transport *Colloquium 99*, 24-27 May 1999, Canberra. Contact: Ms Karen Subasic, Tel: 02 6274 7413, Email: ksubasic@email.dot.gov.au
- 99-ICAE, 99 International Conference on Agricultural Engineering, 14-17 December 1999, Beijing, P.R. China. Mail: ICAE, P.O. Box 101, East Campus, China Agricultural University, Qinghua Donglu, Beijing 100083, China. Email: icae@bjaeu.edu.cn. Web: <http://www.lib.bjaeu.edu.cn/icae/index.htm>

## Residues

- Dr Stephen Schuck, the Biomass Taskforce Manager delivered a presentation on behalf of the Biomass Taskforce at the Australian Cogeneration Association's conference *COGEN '99*, 24 & 25 March 1999 in Sydney. The title of the paper was 'Distributed Generation Using Biomass Residues and Resources'.
- The Electricity Supply Magazine of the Electricity Supply Association of Australia featured an article *New Projects Boost Biomass in Energy Mix* in its April 1999 issue. The article stemmed from an interview with Steve Schuck and provides an overview of some recent Australian developments in bioenergy in Australia.
- ECOS, the CSIRO quarterly magazine reporting on scientific research related to the environment, featured a five page article *Biomass Beckons* in its January-March 1999 issue. The article was based on information provided by the Biomass Taskforce Manager, and profiles the biomass energy option for Australia.
- Stephen Schuck, the Biomass Taskforce Manager has had a paper accepted for the Fourth Biomass Conference of the Americas (see Forthcoming Events) entitled 'The Role of the Australian Biomass Taskforce in Bioenergy Development'. Papers from this conference will be published by Elsevier Science of England.
- The Australian Cogeneration Association has produced its Who's Who in Australian Cogeneration 1999. Copies can be ordered from FLIS Training Pty Ltd, 27 Kasouka Road, Camberwell, Victoria 3124. Tel: 03 9813 3323, Fax: 03 9882 4274. Cost is \$45 for ACA members and \$59 otherwise.
- A recent US study of gasification processes for municipal solid waste entitled 'Evaluation of Gasification and Novel Thermal Processes for the Treatment of Municipal Solid Waste' can be accessed on the web at URLs:  
<http://eren.doe.gov/biopower> then search for TP-430-21612  
or <http://www.doe.gov/bridge/home.html>.  
Hard copies can be purchased from the US National Technical Information Service, US Department of Commerce, 5285 Port Royal Road, Springfield, VA 22161, USA. Product identification is DE96013093.
- Green Energy News reports that Trigen-Cinergy Solutions and District Energy St Paul in the USA have launched a wood waste biomass cogeneration project with Northern States Power to generate 25 MW electricity in Minnesota. The US\$52 million plant will be the largest of its kind in the US, displacing 110,000 tons of coal each year.
- Northern Ireland company, B9 Energy Services Ltd, has demonstrated a small scale downdraft gasifier operating on wood and wood waste. The 200 kW plant was

commissioned in early 1998. Contact details: Michael Harper, email: O&M@b9energy.co.uk.

- Another Northern Ireland gasification company is Rural Generation Ltd. Their 100 kW plant has been generating electricity for the N Ireland grid since early 1998, operating on wood and wood waste. Contact: John Gilliland, Brook Hall Estate, 67 Culmore Rd, Londonderry, BT48 8JE Northern Ireland. Tel +44 1504-354635.
- Wellman Process Engineering Ltd of the West Midlands, UK has developed a 500 kW updraft gasifier with a catalytic cracker for use with internal combustion engines. It is at the pilot stage for electricity and operates on wood and wood wastes. Contact: Mr R McLellan, email: wellman.process@dial.pipex.com.
- Marick Gasification Ltd, of Cheshire in the UK offers biomass gasification plant in the range of 30 kW up to 350 kW. A current project is the installation of a 150 kW gasification plant with combined heat recovery in a pallet manufacturing plant. Heat recovered from the engine is to be used in a dehumidification chamber. Contact is: Dr Donald Patrick, Fax: +44 1925-71 1155, email: donaldp@marick.u-net.com.
- There are more than five million small (6-10 cubic metres) biodigesters in rural China, operating on various agricultural and human wastes.
- Small-scale, low cost (\$500) farm digesters – read the article in Livestock Research for Rural Development 9 (No.2) 1997, on the web at <http://www.cipav.org.co/irrd/irrdhome.html>.
- Kafus Environmental Industries of the US is working with Ford to jointly develop natural fibre composites for use in motor vehicles. Kenaf (relative of hibiscus) fibres are being used in moulded components, replacing glass fibres, and making vehicles more energy efficient. Fibreglass is not considered to be recyclable. Web address: <http://www.kafus.com/> (Source – Green Energy News).
- A report ‘Critical Factors for Bioenergy Technology Implementation’ which considers five case studies of bioenergy of bioenergy markets in the USA, Sweden and Austria (ref ER 30:19998) can be ordered by email from [forlaget@nutek.se](mailto:forlaget@nutek.se)
- Dr Michael J. Antal’s US patent 5,551,958 Antal, Jr. Sept 3, 1996, Process for Charcoal Production from Woody and Herbaceous Plant Material can be found on the web at: <http://www.uspto.gov/patft/index.html>
- The University of Technology Vienna, Institute of Chemical Engineering, Fuel and Environmental Technology, maintains the BIOBIB database of over 300 different fuel types, mainly biomass fuels. Information includes heating values, ultimate analysis, proximate analysis, ash composition and behaviour. Web access is at URL: [http://edv1.vt.tuwien.ac.at/ag\\_hofba/biobib/biobib.htm](http://edv1.vt.tuwien.ac.at/ag_hofba/biobib/biobib.htm)
- Australian Independent Power, the magazine of the Australian Cogeneration Association reproduced a full page of excerpts from the January 1999 issue of the Biomass Taskforce Newsletter in its Jan-Feb 1999 issue. The Australian Cogeneration Association has a reciprocal associate membership arrangement with the Biomass Taskforce.
- Western Australia’s Alternative Energy Development Board (AEDB) provides funding grants twice per year to promote renewable energy in Western Australia via a competitive process. Funding applications need to be made on the official AEDB form, available from the WA Office of Energy. The closing dates for applications are the last Fridays in February and August each year. Grants are usually in the range \$10,000 - \$50,000. Contact AEDB on Tel: 08 9321 1477, Fax: 08 9321 1474, Email: [aedb@energy.wa.gov.au](mailto:aedb@energy.wa.gov.au)
- PRM Energy Systems (licensee Primenergy) installed an 80 t/day gasification system operating at Ricegrowers Cooperative, Griffith in 1985. PRM/Primenergy now offer systems from 200 – 1,000 t/d. Web sites: [www.prmenergy.com](http://www.prmenergy.com) & [www.primenergy.com](http://www.primenergy.com).
- Entec, an Austrian provider of anaerobic digester technology is represented in Australia by M<sub>2</sub>O Consulting Pty Ltd. Contact Dr Richard Moosbrugger, Tel: 02 9972 9858, Email: [richard.moos@bigpond.com](mailto:richard.moos@bigpond.com), Web: <http://www.users.bigpond.com/richard.moos>.

- SEDA, the New South Wales Sustainable Energy Development Authority is appointing a specific Program Manager for Bioenergy. This follows on SEDA conducting two bioenergy studies; one on wet wastes and the other on forestry residues. These reports are expected to become publicly available in May.
- The Joint Venture Agroforestry Program's Farm Forestry Newsletters may be obtained free from RIRDC. To receive this biannual newsletter, last published in January 1999 (8pp) contact Annie Boutland, Tel: 02 627 3736.
- Energy Developments Limited is building two waste minimisation/energy plants at Whytes Gully Waste Disposal Depot near Wollongong, south of Sydney. The projects are: Green Waste to Electricity and Solid Waste to Energy Recycling Facility (SWERF). These were launched on 24 March with the unveiling of a large artist impression of the plant and by commencement of site construction. The projects will use the Brightstar Synfuel gasification technology, acquired by EDL. The larger SWERF project received a \$2 million Renewable Energy Showcase grant from the Federal Government (AGO), while the Green Waste to Electricity project is being supported by SEDA.
- The USA produced a record 1.4 billion US gallons of fuel ethanol in 1998, mainly from corn. There are currently 51 ethanol plants in 19 states, with 6 more plants expected to be commissioned by 2000. Canada has six ethanol plants that produce over 52 million gallons of ethanol per year.
- For information on biomass co-firing in the USA, see Renewable Energy Technology Characterisations, Biomass Co-Firing (PDF file 229 kB) at URL: <http://www.eren.doe.gov/utilities/techchar.html>.
- Looking to convert units of measure? Try: <http://users.ntr.net/~jpresley/> and <http://chemengineer.miningco.com/library/weekly/aa041398.htm?terms=standard&COB=home>
- Capstone microturbines are set for world wide release during 1999. The turbine is currently on the market in the US in limited quantities, presently running on high pressure gas. It produces 28 kWe at 26% efficiency. Development is now aimed at allowing it to use low pressure gas, liquid fuel and eventually biogas. To date between 30-40 units have been produced. Fletcher Challenge Energy is a shareholder in Capstone Turbine Corporation. See web at: <http://www.capstoneturbine.com>.

## Opportunities Corner

- Business Victoria (Department of State Development) recently released a report 'Orbost Renewable Power Project – Feasibility Study into Power Station Costs', conducted by Sinclair Knight Merz. The Study provides a costing and feasibility study, and assesses environmental issues for a 10-50 MW wood-fuelled power station for the Orbost area of eastern Victoria. Business Victoria is seeking interested parties to develop this wood-fuelled power station. A next step is to conduct a detailed feasibility study, to be part funded by Business Victoria. Interested parties should contact Craig Eyes of Business Victoria, tel: 03 9651 9518, fax: 03 9651 9360, email: [craig.eyes@dsd.vic.gov.au](mailto:craig.eyes@dsd.vic.gov.au).
- Converttech of Christchurch New Zealand are seeking Australian licensees for their steam hydrolysis technology which is set to produce biomass based chemicals and energy. Converttech have operated a single loop prototype plant at the Burham military base outside Christchurch, and are now moving to commercialise this technology, which has been supported by Federal government funding. Information on the technology is available on web site <http://www.southpower.co.nz/conver.htm>. Contact is Converttech's General Manager, Ian Bywater, tel: intl + 64-3-379 3301, fax: +64-3-379 3303, email: [bywateri@converttech.co.nz](mailto:bywateri@converttech.co.nz).

