



Bioenergy Australia is an alliance of organisations
fostering biomass for energy and products

Newsletter

June 2001

Bioenergy Australia Membership¹ Update

The Bioenergy Australia membership now includes 44 organisations, with recent new members being the Queensland EPA (Sustainable Industries), Enecon Pty Ltd, BioForest Ltd and the Forest Products Commission of WA. Bioenergy Australia wishes to further expand its membership and invites interested organisations to contact the Bioenergy Australia Manager, Dr Stephen Schuck on tel/fax (02) 9416 9246 or email: sschuck@bigpond.net.au if your organisation is interested in joining this bioenergy forum. Bioenergy Australia recently set up a new membership tier to cater for universities and organisations with an annual turnover of less than \$2 million per annum.

Bioenergy Australia 2001 Conference

Following its very successful inaugural conference in December 2000, Bioenergy Australia is planning to hold another conference, again on the Gold Coast, Queensland, from 3-4 December, with an optional technical tour on 5 December. If you would like to provide a paper and presentation, a poster, sponsor the conference, or participate in the trade exhibition, please contact Steve Schuck, Bioenergy Australia Manager. Tel/Fax: (02) 9416 9246, Email: sschuck@bigpond.net.au.

Bioenergy Australia 2000 Conference Proceedings Available

Bioenergy Australia has a few sets of the Proceedings from the December 2000 two day Bioenergy Australia 2000 conference available for sale. These are being sold for AUD \$110 (including GST, postage within Australia and handling) each. If you are interested in purchasing a set, please contact Steve Schuck on tel/fax (02) 9416 9246. Email: sschuck@bigpond.net.au.

IEA Bioenergy Participation by Australia

Bioenergy Australia is the vehicle for Australia's participation in the International Energy Agency's (IEA) Bioenergy program. Bioenergy Australia is providing Australia's annual membership fees and other support for five current Tasks:

- Task 30-*Short Rotation Crops for Bioenergy Systems*

¹ Founding members: RIRDC and the Australian Greenhouse Office. Membership now also includes DISR, BRS, CSIRO Div of Energy Technology & Div of Forestry and Forest Products, FPA of NSW, Pacific Power, Delta Electricity, Macquarie Generation, Waste Service NSW, Brightstar Environmental & BEST, SEDA, SPM/CPM, Forestry Tasmania, State Forests of NSW, Western Power Corporation, Alstom Power, Western Sydney Waste Board, Stanwell Corporation, CS Energy, NRE - Forest's Service, the Northern Sydney Waste Board, AFFA, Tarong Energy, Great Southern Energy, Rio Tinto R&TD, QFRI, Babcock and Brown, CVC REEF, ForestrySA, Renewable Energy Corp Ltd, CALM, Auspine Ltd, Gunns Forest Products, CSIRO Sustainable Ecosystems, Carter Holt Harvey, Metasource, Primergy, Sugar Research Institute, Queensland EPA (Sustainable Industries), Enecon Pty Ltd, BioForest Ltd, Forest Products Commission of WA.

- Task 31-*Conventional Forestry Systems for Sustainable Production of Bioenergy*
- Task 32-*Biomass Combustion & Co-firing*
- Task 36-*Energy from Integrated Solid Waste Management Systems*
- Task 38-*Greenhouse Gas Balances of Biomass & Bioenergy Systems*

These Tasks run from 2001-2003. Subgroups from the Bioenergy Australia membership have formed to participate in these Tasks, with each Task selecting a National Team Leader to co-ordinate involvement. National Team Leaders are: Task 30- Dr Tom Baker, Centre for Forest Tree Technology (NRE), Task 31- Dr John Raison, CSIRO Forestry and Forest Products; Task 32- Peter Coombes, Delta Electricity; Task 36- Paul Wootton, Brightstar Environmental; and Task 38- Dr Annette Cowie, State Forests NSW.

Should you or your organisation wish to obtain information on IEA Bioenergy or participation in its Tasks, please contact Steve Schuck, the Bioenergy Australia Manager and Australia's representative on the Executive Committee of IEA Bioenergy. Tel/fax: (02)-9416-9246, or email: sschuck@bigpond.net.au. IEA Bioenergy has its home page at URL: <http://www.ieabioenergy.com> which provides links to the IEA Bioenergy Task sites and information such as its Annual Report, Strategic Plan and newsletters. With sufficient additional support, Australia could expand its participation to other Tasks, such as the Liquid Fuels Task and the Gasification Task.

IEA Bioenergy Meetings in Australia

Task 38, *Greenhouse Gas Balances of Biomass and Bioenergy Systems* held a very successful international workshop and study tour from 26-30 March 2001 in Canberra. The workshop title was 'Accounting Methods, Emissions Trading, and Cop6 Negotiations Related to Bioenergy, Wood Products and Carbon Sequestration'. March 26 & 27 was the technical tour, which included a visit to the Visy pulp and paper mill, which is nearing completion at Tumut, NSW. Twenty-one formal papers were presented within four sessions entitled:

- Carbon accounting for forestry and land use
- Carbon accounting of wood products and biofuels
- Managed forests for wood products, carbon sequestration and/or bioenergy; their role in greenhouse gas policy (COP negotiations)
- Trading in carbon credits from bioenergy and sequestration projects.

For further information contact the Task 38 National Team Leader, Dr Annette Cowie on Tel: (02) 9872 0138.

Task 36- *Energy from Integrated Solid Waste Management Systems* is planning to hold a meeting in Australia in May 2002. The Executive Committee of IEA Bioenergy is also scheduled to hold a future meeting in Australia in May 2003.

Mandatory Renewable Energy Target

The Federal Government's Mandatory Renewable Energy Target commenced operation on 1 April 2001. The underpinning legislation, the Renewable Energy (Electricity) Act 2000, the Renewable Energy (Electricity) Charge Act 2000, and the Renewable Energy (Electricity) Regulations 2001 require the generation of an additional 9,500 GWh per year renewable electricity by 2010. Information on the Mandatory Renewable Energy Target and the legislation may be found on the Australian Greenhouse Office's website at: www.greenhouse.gov.au/markets/2percent_ren.

A number of amendments to the Regulations are now being proposed, and industry and members of the public are now being invited to make written submissions before 10am 6 July

2001 to the Office of the Renewable Energy Regulator. The proposed amendments include changes to the definition of *native forest* and *plantation* and are on the web site of the Office of the Renewable Energy Regulator (ORER) at: <http://www.orer.gov.au>. Queries should be directed to the ORER on tel: (02) 6274 2192.

Greenhouse Gas Abatement Program (GGAP) Round One Ethanol Projects

The outcome of Round One of the \$400 million GGAP program has been announced by the Federal Government. Two ethanol projects will receive grants:

- \$7.35 million for an ethanol plant in north Queensland. The funding will support the Douglas Shire Council and the Mossman Central Mill in a \$33.91 million project that will include the development of an ethanol plant using by-products from the sugar mill, and stepping up the level of production using sweet sorghum in later years. The ethanol will be used as a renewable transportation fuel. The project will also include processing of waste from the sugar mill, and elsewhere, into liquid fertiliser, and the planting of 3,000 hectares of trees on marginal grazing land. As well as producing biodiversity benefits, the plantation will produce thinnings for use in the production of renewable energy and saw logs.
 - \$8.8 million to BP Australia Ltd to distribute ethanol-based fuel for Queensland's east-coast market. The project will include a feasibility study to allow BP to upgrade its Bulwer Island refinery to blend ten percent ethanol with petrol. The full \$50-\$60 million project would involve installing infrastructure needed for storing, blending and delivering ethanol-based fuel. BP plans to call tenders for the long-term supply of ethanol derived from biomass.
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Greenhouse Gas Abatement Program (GGAP) Round Two

The second round of GGAP has opened, with the Australian Greenhouse Office now accepting proposals from incorporated bodies located in Australia for this \$400 million program. Proponents were required to register before 8 June to submit a proposal, as only registered proposals will be assessed for funding. Final proposals must be submitted prior to 2 July 2001. The Web site is: <http://www.greenhouse.gov.au/ggap/round2add.html>

NSW Agricultural Waste Resource Study

The Sustainable Energy Development Authority of NSW (SEDA) has completed a study assessing the availability of agricultural waste biomass in NSW. The study, entitled "The Potential for Electricity Generation Using Dry Agricultural By-products in New South Wales" was undertaken by consultants URS Australia. The study used agricultural production data to map the quantities and distribution of agricultural by-products across the State, and includes concentrated wastes such as cotton gin trash, and distributed residues, such as straws. The study includes analysis and discussion of the different agricultural industries and resource types, comprehensive maps, and a detailed project model. The model includes different technology and cost scenarios and financial modelling. Ten case studies are selected from the study data for examination using the model.

Copies of the study are available on CD-ROM from SEDA, at a cost of \$110. Contact SEDA for an order form on tel: (02) 9249 6100, or email: seda@seda.nsw.gov.au.

Bioenergy Projects Receive SEDA Funding

The NSW Minister for Energy, Kim Yeadon, announced the fifth round of funding under SEDA's Renewables Investment Program in April, 2001. Four of the successful seven renewable energy projects are bioenergy projects. SEDA is offering a total of over \$3.5 million for the seven renewable energy projects. Bioenergy projects and recipients being offered funding are:

- Wagga Koorinal Sewage Treatment Plant Cogeneration Micro-Turbine, Harris Energy Solutions (\$25,000 grant).
- Leeton Rice Mill Waste-to-Energy Project, Thiess (\$1 million grant).
- Bulk Transfer System of Sugar Cane Waste to Energy, NSW Sugar Milling Co-op (\$1 million loan).
- Nowra Green Waste Power Plant, Energy Equipment (\$750,000 grant).

For more information on the Renewables Investment Program, or how to apply, call SEDA on 9249 6100 or email seda@seda.nsw.gov.au.

Queensland Sustainable Energy Innovation Fund

The Queensland Sustainable Energy Innovation Fund (QSEIF) is calling for project proposals for its fourth round of funding, which closes on 31 August 2001. Proposals are being sought which would lead directly to commercialising new sustainable energy products or technologies by Queensland based businesses, would create employment, lead to export and value-adding opportunities, lead to the adoption of sustainable energy technologies and practices in Queensland, and improve energy efficiency, utilise renewable energy sources, reduce greenhouse gas emissions and contribute to sustainability objectives.

Bioenergy related projects that have been funded in previous rounds are:

- Bagasse Management at Sugar Mill – Development of technology for storing, handling and dewatering bulk bagasse so that sugar mills can optimise power generation and export to the grid. Mackay Sugar Cooperative Association. Funding from QSEIF: \$80,000.
- Biogas for Boiler Fuel at Meatworks – Modification of boiler at a meatworks to use biogas collected by new recovery system installed on anaerobic waste pond. Quantum Power Pty Ltd. Funding from QSEIF: \$91,000
- Methanol production from biogas – Development of a pilot scale reactor to convert biogas from landfill into methanol (for motor fuel or chemical use), and trial the unit at a landfill site. University of Queensland. Funding from QSEIF: \$94,500.
- Municipal waste for energy production – Feasibility study into using Rockhampton City Council's "green waste" in a process which produces carbon products and energy (electricity and/or steam). Rockhampton City Council. Funding from QSEIF: \$61,000
- Ethanol project at CSR's Sarina sugar mill, where 15 percent ethanol will be emulsified with diesel and used to power trucks and locomotives that haul sugar cane and sugar products. Funding from QSEIF: \$75,000.

Inquiries should be made to Dr Martin Gellender at the Sustainable Industries Division of the Queensland EPA. Tel: (07) 3224 8606 or email: martin.gellender@env.qld.gov.au

Macquarie Generation Bioenergy 'Green Warrants' International Sale

Bioenergy Australia member, Macquarie Generation has announced the first international sale of Green Warrants arising from its biomass co-firing program at Liddell and Bayswater Power Stations, in the upper Hunter Valley, NSW. Japanese companies, Chubu Electric

Power Company and Tomen Corporation have purchased the equivalent of 2000 tonnes of carbon dioxide savings created by the co-firing program pioneered in Australia at Liddell Power Station in 1999.

Chubu Electric Power Company is Japan's third largest electricity supplier and Tomen Corporation is headquartered in Tokyo with major international interests including the Bulga/Saxonvale coal operation in the Hunter Valley.

Biomass co-firing uses waste wood as a supplement for coal, to produce the steam that drives the turbo-generators. In 1999-2000, Macquarie Generation produced more than 60,000-megawatt hours of electricity from the biomass component of co-firing. In 2000-2001, Macquarie Generation has targeted the production of 200,000-megawatt hours of biomass-fired electricity from their Liddell and Bayswater Power Stations.

Since 1999, Green Warrants have been sold to domestic electricity retailers in response to greenhouse gas reduction measures initiated by the NSW Government by the NSW Electricity Supply Act.

For further information contact: Jim Devine, Public Affairs Manager, Macquarie Generation. Phone: (02) 4968 7499, Email: jim.devine@macgen.com.au

10 MW Rice Husk Bioenergy Plant for Deniliquin, NSW

Stanwell Corporation Limited has announced it proposes to develop a \$26 million 10 MW rice husk fired power plant at Ricegrower's Cooperative Limited's Deniliquin mill in NSW's Riverina district. Stanwell Corporation conducted a detailed feasibility study in late 2000 – early 2001. The power plant will operate year round, powering the rice mill and exporting excess electricity to the electricity grid. The plant will generate more than 78,000 MWh annually, and will combust more than 110,000 tonnes rice husks per year, or 14 tonnes per hour. The Deniliquin Rice Mill is the largest in the southern hemisphere.

For more information contact Mark Sinclair of Stanwell Corporation on tel: (03) 9249 9611 or email: msinclair@stanwell.com.

Auspine Announces 60 MW Bioenergy Cogeneration Plant

Bioenergy Australia member, Auspine has announced it plans to construct a \$90 million, 60 MW bioenergy plant at Tarpeena in southeast South Australia. The plant will proceed upon completion of a feasibility study and finance raising, with the plant scheduled to become operational by summer 2003. Auspine is a fully integrated plantation products company, with its primary business being sawmilling, timber preservation and woodchip export to Japan. Auspine is currently the world's largest exporter of softwood plantation woodchips. The power plant will be fueled from wood residues from Auspine's harvesting operations and externally sourced biomass. The bioenergy plant would be Australia's largest single renewable energy site. Auspine is considering the development of an energy park adjacent to the Tarpeena mill to enable new industry to take commercial advantage of the heat and electricity generated at the power station. Auspine is also considering plans to complement the biomass plant by adding a natural gas-fired co-generation power plant, given existing plans for a natural gas pipeline from Victoria to Adelaide.

Primergy Secures UK Renewable Business and Technology

Primergy Limited has announced that it has purchased two UK-based renewable energy companies, securing interests in 70 MW of 'green power' project opportunities and ownership of an advanced biomass thermal gasification technology. Ambient Energy Limited and ESD-Ventures Limited will now form the basis of *Primergy Europe*, with the acquisitions also providing new technology options for Primergy's Australian operations.

Ambient Energy delivers Primergy a portfolio comprising 70 MW of biomass, wind and hydro renewable energy project opportunities, with power purchase agreements guaranteed under long term NFFO (Non Fossil Fuel Obligation) contracts held directly with the UK Government. Planning approval has been granted for the first project, a 5.5 MW biomass energy plant at Suffolk, with approval for a second 5.5 MW plant at North Wiltshire pending. Acquisition of ESD-Ventures gives Primergy ownership of an advanced thermal gasification technology, now being demonstrated in the UK. Primergy and its partners are developing their waste-to-energy *Re-Organic Conversion Centres* or *Re-OCC* with projects reported to be under active consideration by municipalities and waste authorities in four States.

On 7 June Primergy announced it had successfully completed a significant capital raising through fellow Bioenergy Australia member, CVC Renewable Energy Equity Fund Ltd (CVC REEF). This capital raising was approved at the company's Annual General Meeting on 31 May 2001. For further information see: www.primergy.com.au

Biofact

All plant biomass has a similar composition of approximately 50% Carbon, 44% Oxygen and 6 % Hydrogen.

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 previous thirteen issues of the Bioenergy Australia newsletters. These lists are consolidated as electronic links on Bioenergy Australia's web page at www.users.bigpond.net.au/bioenergyaustralia

Ethanol from Cellulose

http://www.daviesand.com/Perspectives/Forest_Products/Ethanol/

Western Australian Technology & Industry Advisory Council (TIAC)report, "Biotechnology West: Strengths, Weaknesses and Opportunities"

www.wa.gov.au/tiac

Conversion and Resource Evaluation Ltd.

<http://www.care.demon.co.uk/>

Solar Energy Systems prospectus

<http://www.sesltd.com.au>

Sustainable energy industry egroup

<http://www.egroups.com/group/SustainableEnergyIndustry>

Spore reference to Bioenergy Australia

http://www.agricta.org/Spore/spore88/spore88_links.html

Ethanol – make your own book

<http://buffalo-creek-press.com/alcohol.htm>

Mallee Sustainable Farming Project

<http://www.msfp.org.au>

Pure Energy Corporation (oxygenated diesel)

<http://www.pure-energy.com>
FAO 1985 Industrial charcoal Making Report
<http://www.fao.org/docrep/X5555E/x5555e00.htm> - Contents
Corporation For Future Resources (anaerobic digestion of *Leucaena* – energy crop)
<http://CorpFutRes.com>
Resource Development Associates
www.biogasworks.com
Detroit Stoker hydrograte in Argentina for burning sunflower hulls and peanut hulls
<http://www.unitedindustrial.com/media/UICAR98.pdf>
Bioenergy International newsletter
<http://www.bioenergyinternational.com>
Future Energy Resources Company (FERCO) projects
<http://www.future-energy.com/Projects.asp>
Great Lakes Regional Biomass Energy Program publications
<http://www.cglg.org/projects/biomass/pub/index.html>
The Manual for the Home and Farm Production of Alcohol Fuel
http://journeytoforever.org/biofuel_library/ethanol_manual/manual_ToC.html
ISES Solar World Congress in Adelaide
www.unisa.edu.au/ises2001congress/home.html
Junk mail to energy briquettes in Journal of Chemical Innovation Feb 2001 issue
<http://pubs.acs.org/subscribe/journals/ci/31/i02/html/02mcdougal.html>
AFDC - Alternative Fuel News - Vol. 5, No. 1.
http://afdc3.nrel.gov/documents/altfuelnews/5_1contents.html
Biodiesel – home made processor
http://home.swbell.net/scrof/Biod_Proc.html
Bioenergy International
<http://www.bioenergyinternational.com/>
Lessons Learned from Existing Biomass Power Plants Report
<http://www.westbioenergy.org/lessons/>
AWARE (Australians Working for Alternative and Renewable Energy)
www.awareonline.org
Guardian article on Industrial Hemp
<http://www.guardianunlimited.co.uk/science/story/0,3605,488409,00.html>
CREST Bioenergy List archive
<http://www.crest.org/discussion/bioenergy/current/>
Web-agri search engine
<http://www.web-agri.com/>
Ministry for Agriculture, Fisheries and Food (MAFF) - Energy Crops
Scheme - UK government support scheme for establishing energy crops
<http://www.maff.gov.uk/erdp/guidance/energydet/energyindex.htm>
Department of Trade and Industry (DTI) - £100m for renewable energy
<http://www.dti.gov.uk/ministers/speeches/hain200301a.html>
Wood waste
<http://www.wood.wasteboards.nsw.gov.au>
Journey to Forever Biofuels library
http://journeytoforever.org/biofuel_library.html
Greenhouse Gas Abatement Program Round 2
<http://www.greenhouse.gov.au/ggap/round2add.html>
UNSW energy seminar presentations (e.g. Outhred)
<http://energy.ee.unsw.edu.au/>
American Bioenergy Association (ABA)
<http://www.biomass.org>
Association of Diesel Specialists
<http://www.diesel.org>
Australian Biodiesel Power
<http://www.bio-diesel.com.au/>

National Biodiesel Board (USA)
<http://www.nbb.org/>

Biodiesel and Petroleum Diesel Life Cycles Overview
<http://www.ott.doe.gov/biofuels/docs/lifecycle.html>

Biodiesel Facts
<http://www.biofuels.nrel.gov/pdfs/biodiesl.pdf>

Biodiesel Resource
<http://www.webconx.com/biodiesel.htm>

Pacific Biodiesel
<http://www.biodiesel.com/>

Pure Energy Corporation
<http://www.pure-energy.com/>

Southern States Power Co
<http://www.sspowerco.com/>

University of Idaho's Biodiesel Information
<http://www.uidaho.edu/bae/biodiesel/>

World Energy Alternatives (biodiesel, ethanol products and services)
<http://www.worldenergy.net/>

Australasian Virtual Engineering Library
<http://avel.edu.au>

Technology Review on microturbines and fuel cells
<http://www.technologyreview.com/magazine/may01/fairley.asp>

USDA Biobased Products
<http://www.usda-biobasedproducts.net/>

New Uses Council
<http://www.newuses.org>

IEA Bioenergy Sept 1999 Task 17 Auburn USA Meeting Proceedings
<http://bioenergy.ornl.gov/pubs/international.html>

Wood Fired Turbine (on SMEC-HGM site)
<http://www.smechgm.com.au>

New York Power Authority fuel cell using sewage gas
<http://www.nypa.gov/html/research.htm>

NYPA to Begin Testing Clean-Power Micro-Turbine Generator
<http://www.nypa.gov/press/2000/000417b.htm>

BBI International (ethanol)
<http://www.bbiethanol.com>

NEMMCO Statement of Opportunities 2001 – Executive Summary
<http://nemmco.com.au/publications/soo/410-0011.pdf>

WebConX (links to biodiesel, ethanol, methane and biomass technologies and issues)
<http://www.webconx.com/2000/biofuel/biofuel.htm>

CADDET Renewable Energy Technical Brochure 134, Batch Anaerobic Digestion of Green Waste in a BIOCEL Converter (Netherlands)
<http://www.caddet-re.org/assets/no134.pdf>

CADDET Renewable Energy Technical Brochure 136, A Multi-Purpose Bioenergy Plant Producing Electricity, Heat and Biopellets (Sweden)
<http://www.caddet-re.org/assets/no136.pdf>

CADDET Renewable Energy Technical Brochure 137, New Energy-fro-Waste Plant in Dundee, Scotland, (UK)
<http://www.caddet-re.org/assets/no137.pdf>

CADDET Renewable Energy Technical Brochure 139, Installation of a Biomass-fuelled Boiler at a Coal-fired CHP Plant (Denmark)
<http://www.caddet-re.org/assets/no139.pdf>

BioGas Works (P Lusk – anaerobic digestion)
<http://www.biogasworks.com>

Association for the Advancement of Industrial Crops (AAIC)
<http://www.aaic.org/>

USDA Web-based workshop: "Opportunities in Agriculture: A Vision for USDA's Food and Agricultural Research in the 21st Century"
http://nationalacademies.org/banr/active_projects/agopps

Burlington, Vermont gasifier
<http://news.excite.com/news/pr/010516/ga-ferco-biomass-here>

'Biogas Technology - Solution in Search of Its Problem, A Study of Small-Scale Rural Technology Introduction and Integration' thesis.
<http://www.he.gu.se/dot>

Whole tree 50 MW plant feasibility study (13pp)
http://www.doa.state.wi.us/depb/boe/publications/pdf_files/wtefinal.pdf

Purdue University Center for New Crops and Plant Products
<http://www.hort.purdue.edu/newcrop>

"Harvesting Clean Energy for Rural Development - Ethanol" Report
<http://climatesolutions.org/Harvesting/EthanolReport.pdf>

Oregon Department of Energy's *Oregon Cellulose-Ethanol study*
<http://www.energy.state.or.us/biomass/study.htm>

ENVIRO 2002 conference - Melbourne 7–12 April 2002
<http://www.enviroaust.net>

Olive industry summary report
<http://www.rirdc.gov.au/reports/NPP/00-187sum.html>

Olive industry full report
<http://www.rirdc.gov.au/reports/NPP/00-187.pdf>

Report and Development Handbook for the Thailand Biomass-Based Power Generation and Cogeneration Within Small Rural Industries Project
<http://www.nepo.go.th/encon/index.html>

Black Liquor steam reforming and pulsed combustion
<http://www.oit.doe.gov/forest/pulscomb.shtml>

BHP's Centre for Metallurgy and Resource Processing Sustainable Technology Centre-Sustainable Steelmaking Using Renewable Forest Energy report
<http://www.sustainabletechnology.com.au>

FAO Forest Energy Forum
<http://www.fao.org/forestry/FOP/FOPW/ENERGY/cont-e.stm>

23rd Symposium on Biotechnology for Fuels and Chemicals
http://www.nrel.gov/biotech_symposium/program.html

Wood-Ethanol Report - Technology Review, Environment
<http://www.pyr.ec.gc.ca/ep/wet/section16.html>

Association for the Advancement of Industrial Crops (AAIC)
<http://www.aaic.org/>

United States Combined Heat and Power Association
<http://www.nemw.org/uschpa/>

Biodiesel bowser in San Francisco
http://www.worldenergy.net/biodiesel_at_the_pump.htm

Waste Gas Technologies (rotating retort gasification system)
<http://www.wgtuk.com>

Hedeselskabet Denmark
<http://www.hedeselskabet.dk>

National Green Power scheme
<http://www.greenpower.com.au>

Soil and Water Conservation (US) 'Growing Carbon: A New Crop that Helps Agricultural Producers and the Climate Too' report (7pp)
http://www.swcs.org/f_pubs_education.htm

Queensland Environmental Protection Agency
<http://www.env.qld.gov.au>

New Integrated Ethanol-Feedlot-Methane System Under Development in South Dakota, USA

An ongoing feasibility study is being conducted in the USA to develop a US \$40 million highly integrated, innovative agricultural processing complex to convert corn and beef cows into value-added products. The new system, under development by PRIME (Pierre Renewable Integrated Meat & Energy) Technologies, LLC, will integrate an enclosed custom cattle feedlot, an anaerobic digester, and a modified ethanol unit.

The PRIME complex will be a “closed-loop” system that produces beef, fuel ethanol, methane, and biochemical fertilisers. Each of the component technologies proposed for use is well proven on a “stand-alone” basis. However, none have previously been combined to fully capture their economies of scope through process integration.

PRIME’s first generation complex will consist of an ethanol plant with a capacity of 57 million litres of ethanol per year, an adjoining feed yard holding 25,000 head of cattle with a closed manure collection system, and an anaerobic digester. The anaerobic digester will produce methane for use by the ethanol plant and biochemical fertilizers for use by the participant farmers (who grow the ethanol feedstock and animal feed). The PRIME complex is reported to have the opportunity to substantially reduce energy and material inputs.

PRIME complexes are reported to be economically attractive with an estimated Internal Rate of Return (IRR) that exceeds 25%. This is achievable because of economies of scope and scale. A PRIME complex could reduce commodity transportation costs, reduce ethanol plant capital and operating costs because it is no longer necessary to dry the distillers grains, permit the co-utilisation of facilities, equipment and personnel, and allow for the reuse of energy, water and nutrients throughout the system.

For additional information on PRIME, contact Vic Schlesinger, PRIME Project Director, 10906 North 61st Street, Omaha, NE 68152-4234; phone 0011 1 402 572 5649.

Thailand Bioenergy Generation and Cogeneration within Small Rural Industries Project

Black & Veatch have completed a comprehensive study of biomass power generation and cogeneration for the National Energy Policy Office (NEPO) of Thailand. The study investigated the opportunity for small-scale (less than 20 MW) biomass power in Thailand. Ten feasibility studies examined a diverse range of agro-industrial residues at existing rural industry sites in Thailand. Fuel sources included rice husks, wood chips, oil palm residues, corncobs, bagasse, and coconut husks. The comprehensive studies included examination of technical, financial, ecological, juridical, socioeconomic, and other aspects of the proposed developments. In addition to the feasibility assessments, the overall study included a survey of biomass resource availability in Thailand, an overview of available conversion technologies, and discussion of the Thailand Small Power Producers (SPP) program. As a result of the study and other investigations, NEPO recently solicited bids for 300 MW of renewable energy.

The Final Reports and Development Handbook, covering the study period 1997-2000 are now available on the Web from <http://www.nepo.go.th/encon/index.html>.

Georgia-Pacific and the US DOE Partners in Black Liquor Gasification Project

Georgia-Pacific Corp. and the US Department of Energy (DOE) have entered into a cooperative agreement to install the first full-scale, commercial application of black liquor gasification, a new technology. Through this agreement, DOE has agreed to fund 49.8% or about US\$4.5 million of the first budget period for this project. The gasification technology will replace the Big Island, Virginia, mill's existing smelters and also significantly reduce its air emissions. Gasification will reduce most air emissions 90 percent from the current source, which is significantly better than with the current recovery boiler technology. An on-line fact sheet on the DOE's research into black liquor gasification, is on the Web at:

<http://www.oit.doe.gov/forest/pulscomb.shtml>

US Department of Agriculture Approves Four Biomass Pilot Projects

The USDA announced four pilot project locations to grow energy crops for power, energy, heat and fuel production in Iowa, Minnesota, New York, and Pennsylvania. The Iowa Chariton Valley Project will grow switchgrass to cofire with coal for the generation of 35 megawatts (MW) of electric power at Alliant Energy's Ottumwa Generating Station. The Minnesota pilot project will grow hybrid poplar trees to produce energy in a 50 MW whole tree energy power plant in St. Peter, Minnesota. The New York project will grow willow and switchgrass to co-fire at two coal burning power plants and a small university central heating facility. The fourth project, the Pennsylvania Switchgrass Energy and Conservation Project will grow switchgrass for a local cooperative's coal-fired fluid-bed combustors. The press release is at <http://www.fsa.usda.gov/pas/FullStory.asp?StoryID=137>

USA's 23rd Symposium on Biotechnology for Fuels and Chemicals

From May 6-9, 2001, the Department of Energy's National Renewable Energy Laboratory and Oak Ridge National Laboratory hosted the 23rd Symposium on Biotechnology for Fuels and Chemicals, in Breckenridge, Colorado. The DOE's Office of Fuels Development and the Office of Industrial Technologies were the meeting's primary sponsors. The symposium series focused on technology development for improving the economics of biobased products, fuels, and chemical production from sustainable resources. The latest research breakthroughs and results in biotechnology were highlighted in over 250 presentations and posters. The conference contained six plenary sessions and two special topics. The six session topics included: advances in biomass production and processing; enzyme and microbial biocatalysts; bioprocess research and development; blending oil and ethanol; emerging biorefinery opportunities; and commercialisation of biobased products. The titles of the two special topic sessions were Lignin, An Untapped Resource and GM Issues - Is Compromise Possible? Link to the program and list of presentations at:

http://www.nrel.gov/biotech_symposium/program.html

Forthcoming Events

- *Bioenergy Australia 2001* conference is being planned for the Gold Coast, Queensland, 3-5 December 2001. 5 December will be technical tours of local biomass and bioenergy facilities. Contact: Steve Schuck (02) 9416 9246, email: Schuck@bigpond.net.au
- *Community Technology 2001*. Murdoch University, Perth, Western Australia, 5 & 6 July 2001. Website: <http://www.concon.com.au>, tel: 08 9242 2232.

- "SUSTAINABLE ENERGY DAY - 2001", Wednesday 11 July 2001, Monash University, Clayton Campus. For full details please check: <http://www.ecse.monash.edu.au/prof/sustenergyday/index1.html>
- ESAA *Renewable Energy and Remote Areas Power Supply Conference*, 27-29 August 2001, Cairns, Queensland. Contact The Meetings Manager, 02 9241 2955. Email meetings@tmm.com.au
- 24th *International Society of Sugar Cane Technologists Congress*. 16-21 September 2001, Brisbane. Web: www.ccm.com.au/issct, fax: 07 3369 3731.
- 6th World Congress of Chemical Engineering, Melbourne, 23 to 27 September 2001 www.chemengcongress.com
- *Second National Recycled Organics Conference and Trade Expose*, University of Queensland Grattton College, 25-27 Sep 2001. Web www.recycledorganics.com.au. Contact Denise Hart, ROC Operations Manager, Tel: 07 5460 1518, or email: dhart@recycledorganics.com.au
- *ISES 2001 Solar World Congress*, 'Bringing Solar Down to Earth', 25 November – 2 December 2001, Adelaide Convention Centre. Web: <http://www.unisa.edu.au/ises2001congress>
- ENVIRO 2002 conference, Melbourne 7–12 April 2002. 600 word abstracts are being sought. Email quitz@bigpond.net.au or contact Stephen Hancock on Tel (03) 9279 2888. Web www.enviroaust.net.
- *2001 International Fuel Ethanol Workshop and Trade Show*. Radisson Hotel Riverfront, St Paul, Minnesota, USA. 19-22 June 2001. Web: www.bbiethanol.com.
- Cellulases and Cellulosomes, Andover, New Hampshire, USA. 29 July –3 August, 2001. <http://www.grc.uri.edu/programs/2001/cellul.htm>
- Sixth National Green Power Marketing Conference, Portland, Oregon, USA 30 July - 1 August 2001 <http://www.eren.doe.gov/greenpower/conference>
- Future Transportation Technology Conference, Costa Mesa, California, USA. 20-22 August 2001 <http://www.fttec.com>
- Sixth International Conference on Carbon Dioxide Utilization, Breckenridge, Colorado, USA 9-14 September 2001 <http://www.nrel.gov/iccduvi>
- *Fifth Biomass Conference of the Americas*, Orlando, Florida. 17-21 September 2001. Web: <http://www.fsec.ucf.edu/bioam/>
- IEA Bioenergy Task 31, *Conventional Forestry Systems for Sustainable Production of Bioenergy*, will be holding its first annual workshop in the Veluwe Area, Gelderland, The Netherlands from 17 to 21 September 2001. This workshop will focus on Bioenergy from urban forestry- principles and practice. An optional 3-day post-workshop tour in the Netherlands will follow. Web: www.ieabioenergy.com
- *1st International Congress on Biomass for Metal Production & Electricity Generation*. Congress and Exhibition Centre, Belo Horizonte, Brazil 8 - 11 October 2001. Web: <http://www.issbrazil.org/congress1.asp>
- *World Fuel Ethanol Congress & Expo*, 28-31 October 2001, Beijing, China. The organizers of the *Congress* are BBI International, USA, and BioEnergy Technologies, Hong Kong in conjunction with Tsinghau University, Beijing. Contact: Kathleen Bryan, BBI International. Ph: (0011 1) 719-942-4353, Email: Kathy@bbiethanol.com website: www.bbiethanol.com
- COGEN Europe's 9th Annual Conference, 7-9 November 2001. Europa Intercontinental Hotel, Brussels, Belgium. Email: Info@cogen.org.
- 5th USA National Symposium, *New Crops & New Uses: Strength in Diversity*, 10-13 November 2001, Omni Hotel at CNN Center, Atlanta, Georgia USA. Hosted by the Association for the Advancement of Industrial Crops (AAIC), Purdue University Center for New Crops and Plant Products, The Jefferson Institute and the New Uses Council. Abstracts are due 15 July 2001 for oral and poster sessions. Details and Preliminary program can be found at <http://www.aaic.org/>. See also: <http://www.hort.purdue.edu/newcrop> <http://www.newuses.org>

- 12th European Conference and Technology Exhibition on Biomass for Energy, Industry and Climate Protection. 17-21 June 2002, Amsterdam, The Netherlands. Email: biomass.conf@etaflorence.it Fax: (0015 39) 055 57 34 25.
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Residues

- The Bioenergy Australia Manager, Dr Stephen Schuck gave presentations at: a SEDA (Sustainable Energy Development Authority of NSW) *Regional Sustainability Seminar* at Port Stephens on 13 March, at the Queensland EPA's *Harvesting Business Opportunities Through Environmental Management* seminar on 16 March, at the Australian Ecogeneration Association's annual conference in Melbourne 28-29 March, and at an IBC Conference on *Renewable Energy Generation and Certificate Trading* in Sydney 28-29 May. He also gave a one hour lecture at an ESAA cogeneration short course on bioenergy on 30 May.
- Steve Schuck had a letter published in the Newcastle Herald on 6 March providing information on the life cycle emissions of bioenergy and countering assertions the carbon dioxide performance of biomass was five times worse than coal fired generation.
- During a recent meeting of the International Energy Agency's Bioenergy Executive Committee in York, UK, the Bioenergy Australia Manager, Steve Schuck had the opportunity of visiting the ARBRE 10 MW_e biomass integrated gasification combined cycle power plant undergoing commissioning at nearby Eggborough. The plant produced its first biomass derived gas on the eve of the visit. Web information on this plant is at <http://www.arbre.co.uk/tech.htm>.
- The next meeting of IEA Bioenergy's Biomass Combustion and Co-firing Task 32 (renewed Task 19) will be held in Switzerland from the 27 to 30 of June 2001. Bioenergy Australia will be represented by Wes Stein of the CSIRO at this meeting.
- The Proceedings of the IEA Bioenergy Task 17 *Short Rotation Crops for Bioenergy* meeting held in Auburn, Alabama, USA in September 1999 are now available on the web at: <http://bioenergy.ornl.gov/pubs/international.html>. Included in the Proceedings is a paper from Bioenergy Australia entitled 'Prospects for bioenergy from short-rotation crops in Australia'.
- A substantial report, *BIOMASS ENERGY- State of the Technology –Present Obstacles & Future Potential*, prepared for the United States Department of Energy, Conservation and Renewable Energy, Office of Energy Related Inventions, and prepared by Larry Dobson of Northern Light Research & Development (USA) may be downloaded from the web site: <http://www.stiltman.com/DOE-report.htm>
- The New York Power Authority has been trialing a fuel cell running on sewage gas at the Yonkers Municipal Waste Treatment facility. It has been running for approximately two years. For more information see <http://www.nypa.gov/html/research.htm>
- Detroit Stoker company reports installing one of their hydrogrates in Argentina for burning sunflower hulls and peanut hulls. <http://www.unitedindustrial.com/media/UICAR98.pdf>
- The Rural Industries Research and Development Corporation's report *Plantations, Farm Forestry and Water - Water and Salinity Issues in Agroforestry No. 7* (01-20) is available on the web:
Full report (870 kbs) - <http://www.rirdc.gov.au/reports/AFT/01-20.pdf>
Summary (10 kb) - <http://www.rirdc.gov.au/reports/AFT/01-20sum.html>
- The UK Ministry of Agriculture, Fisheries and Food (MAFF) is providing \$35 million for energy crop development in the UK. See Web at <http://www.maff.gov.uk/>
- *Power to the People* is the title of a review article in the May issues of *Technology Review* on microturbines and fuel cells. See article on the Web at: <http://www.technologyreview.com/magazine/may01/fairley.asp>
- A new online newsletter *Bioenergy International* is on the Web at <http://www.bioenergyinternational.com>. It is an interactive site where you can submit

bioenergy news items online to the editor. It was launched at the Sustain 2001 conference in Amsterdam in May.

- A new computer model developed by the US Agricultural Research Service aims to allow farmers to choose management practices that store carbon in the soil. The new computer model, called CQESTR (pronounced sequester) takes user defined tillage practices and time periods, and computes how much organic matter would be stored in - or lost from - the soil for a given scenario. More information about carbon storage and its potential economic implications appears in *Agricultural Research* magazine <http://www.ars.usda.gov/is/AR/archive/feb01/bank0201.htm>. (source EcoCarbon)
 - The following articles have been added to the Minnesotans Energy Efficient Economy's Ethanol and Biofuels Resources Page: <http://www.me3.org/issues/ethanol/>
 - Renewable Fuels Act of 2001 (S.670) - introduced by Sen. Daschle, March 30, 2001.
 - Costs and Benefits of a Biomass-to-Ethanol Production Industry in California - prepared by Arthur D. Little Inc., April 2001.
 - British Association for Biofuels and Oils.
 - Ethanol's Role in Mitigating the Adverse Impact of Rising Energy.
 - Costs on U.S. Economic Growth - AUS Consultants, February.
 - The US Department of Agriculture has launched its new biobased industrial products web site. Although under construction, the site presently has five informational resources: Executive Orders/Federal Register, biobased lubricants and functional fluids, contacts, related links, and vendor registration for entering biobased products into the electronic source book. Link to the web site at <http://www.usda-biobasedproducts.net>
 - As part of the USA agriculture vision process, the renewable bioproducts industry has developed the [*Technology Roadmap for Plant/Crop-Based Renewable Resources 2020*](#) (PDF 753KB) to identify critical pathways for the R&D necessary to achieve the goals outlined in the [*vision*](#) (PDF 590KB). The resulting roadmap sets research priorities for the industry in four broad categories:
 - Plant science (functional genomics, metabolism and constituents, plant design and breeding)
 - Plant/crop production (land use and crop types, agronomy and yield, harvesting methods)
 - Processing (post-harvest handling, conversions, separation and purification, infrastructure, rural development)
 - Utilization (functionality, current system, new materials, new system)
- See Web at <http://www.oit.doe.gov/agriculture/page4.shtml>
- On 16 May 2001, Future Energy Resources Corporation (FERCO) announced key successes from its SilvaGas™ biomass-waste-to-energy gasifier at the McNeil Generating Plant in Burlington, Vermont, USA. Recent accomplishments from tests include gasifier throughput exceeding 175% of the original design. More than 400 tonnes/day forestry and agricultural byproducts can be gasified, as compared to the 225 tonnes/day originally estimated. Further, the heating value of the product gas has proven to be constant regardless of the moisture content of the feedstock. The constant heating value allows SilvaGas to be used as a substitute for natural gas. Link to the FERCO press release at: <http://future-energy.np.def6.com/NewsDetails.asp?NewsID=35>
 - *Wood-Ethanol Report: Technology Review*, from Environment Canada (1999) provides a good overview of various wood to ethanol conversion paths. See Web at <http://www.pyr.ec.gc.ca/ep/wet/section16.html>
 - Following the introduction of jute-based door panels in the Mercedes E class car five years ago, fibre usage in the German car industry has risen from 4,000 tonnes in 1996 to 15,500 tonnes in 1999 and consumption is predicted to double over the next five years. The web site below provides a good article on biobased products for the car industry. <http://www.guardianunlimited.co.uk/science/story/0,3605,488409,00.html>
 - Climate Solutions, has produced a 16pp report, "Harvesting Clean Energy for Rural Development - Ethanol." The report is available on the Climate Solutions website as a pdf file. <http://climatesolutions.org/HarvestingEthanolReport.pdf>

- The USA Oregon Department of Energy's *Oregon Cellulose-Ethanol* study is summarised on web page: <http://www.energy.state.or.us/biomass/study.htm>. A copy of the full report may be obtained by emailing the Oregon Office of Energy from this web page.
- Wood products and wood waste generates 4,865 MW_e in 130 facilities in 13 southeastern US states. Of these about 106 are at pulp and paper mills. (source Tom Miles)
- A report, *Lessons Learned from Existing Biomass Power Plants* by George Wiltsee for the USA's Western Regional Biomass Energy Program is on the Web at <http://www.westbioenergy.org/lessons/>. The Table of Contents and bioenergy plants covered by this comprehensive study are:
 - Executive Summary
 - Cover Page Photos
 - Bay Front Station, Ashland, Wisconsin
 - [Kettle Falls Station, Kettle Falls, Washington](#)
 - [McNeil Generating Station, Burlington, Vermont](#)
 - [Wheelabrator Shasta Plant, Anderson, California](#)
 - [San Joaquin Valley Energy Partners, Chowchilla, El Nido, and Madera, California](#)
 - [Boralex Stratton Energy, Stratton, Maine](#)
 - [Tracy Biomass Plant, Tracy, California](#)
 - [Tacoma Steam Plant No. 2, Tacoma, Washington](#)
 - [Colmac Energy, Mecca, California](#)
 - [Grayling Generating Station, Grayling, Michigan](#)
 - [Williams Lake Generating Station, British Columbia, Canada](#)
 - [Multitrade Project, Hurt, Virginia](#)
 - [Ridge Generating Station, Auburndale, Florida](#)
 - [Greenidge Station, Dresden, New York](#)
 - [Camas Cogeneration Plant, Camas, Washington](#)
 - [Snohomish County PUD/Kimberly-Clark Corp., Everett, Washington](#)
 - [Okeelanta Cogeneration Plant, South Bay, Florida](#)
 - [Lahti Gasification Cofiring Project, Lahti, Finland](#)
- Ultimate Masonry Australia (UMA), manufacturers of hollow lightweight blocks using power station flyash, have announced that they issued a \$400,000 convertible note to Brightstar Environmental, a subsidiary of the Energy Developments Ltd (EDL). EDL subsidiary, Brightstar Environmental has also approved \$150,000 funding for research and development to be undertaken by UMA over 3 months. This R&D work could pave the way for UMA block plants being situated at Brightstar Environmental's future SWERF plants. Instead of using flyash, the blocks could be produced using some of the inert residue that is left after Brightstar Environmental's SWERF has converted household rubbish into green electricity.
- A thesis 'Biogas Technology - Solution in Search of its Problem, A Study of Small-Scale Rural Technology Introduction and Integration' is available on-line at the web address: www.he.gu.se/dot. The thesis concerns the Indian biogas program; the history and design of the national biogas program as well as the use of the technology in the rural context. There are over 3 million biogas digesters installed in India.
- A step-by-step e-book on alcohol fuel manufacture, "Makin' It on the Farm: Alcohol Fuel is the Road to Independence" costs US \$10 and takes about 2 minutes to download from the web. The CD version is US \$12.95 plus shipping. Full details are at <http://buffalo-creek-press.com/alcohol.htm>
- The USA's first pure biodiesel (B100) bowser accessible to the public was launched on 23 May 2001 at a San Francisco service station at 2690 3rd Street. For media release see: http://www.worldenergy.net/biodiesel_at_the_pump.htm
- A 13 page feasibility study (November 2000) for a 50 MW 'whole tree' bioenergy plant can be accessed on the Web at: http://www.doa.state.wi.us/depb/boe/publications/pdf_files/wtefinal.pdf
- Manitowoc Public Utilities of Wisconsin USA have available a report on co-firing pyrolysis bio-oil from an Ensyn flash pyrolysis unit with coal. The report describes the

successful trial of co-firing a 20 MW coal fired stoker unit with pyrolysis oil at a ten percent biomass level. The report, including colour photos is downloadable from the Web at: www.ensyn.com/docs/manitowoc/manitowoc.htm.

- The Corporation For Future Resources (USA) has a 7 page report on their proprietary process for generating methane and anaerobic organic fertilisers from *Leucaena*, a woody, semi-tropical, giant legume energy crop. The report is at: <http://CorpFutRes.com>

Opportunities Corner

The Bioenergy Australia Manager would like to assist and facilitate biomass and bioenergy projects and businesses by providing information and industry contacts to link project developers, resource managers, energy companies, and sources of finance. If you or your organisation are interested in such assistance, please contact Steve Schuck for a free listing.

- European company setting up operations in Australia seeks manufacturing partner for the construction of large scale plant to convert biomass and waste to energy. Companies experienced in the fabrication and installation of complex processes, such as in the oil refining, power, and chemical processing industries, should make initial enquiries through Steve Schuck, the Bioenergy Australia Manager.
- Universal Carbon Exchange Limited (www.ucx.com.au) announced on 4 June that over \$1 billion in debt and equity funding was currently available to fund approved 'Green Energy' projects. The funding facility of between \$10 million an to over \$500 million is available per project. For further information contact Stuart Beil on (02) 8220 8058.
- Professional, highly experienced salesperson, with all the skills, and the commitment to clean energy, seeks opportunity to sell the energy sources of the future. Contact Kevin Meagher tel: (02) 95503484 or cambio@mpx.com.au

Back Issues of Bioenergy Australia Newsletters – Downloadable from the Bioenergy Australia homepage: <http://www.users.bigpond.net.au/bioenergyaustralia>

The Bioenergy Australia Newsletter is a complimentary service provided by Bioenergy Australia to stimulate interest in biomass and bioenergy in Australia. Email is the preferred way of distributing these newsletters. **Should you have received your copy by post, and you have email, it would be appreciated if you would inform Steve Schuck** (email: sschuck@bigpond.net.au) **of your email address.**

Editor:	Dr. Stephen Schuck, Bioenergy Australia Manager
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Any comments, suggestions, articles and feedback are welcome. The views expressed in this newsletter are not necessarily those of the member organisations. Bioenergy Australia may be contacted at:

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