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MEDIA RELEASE

\$12M low emissions lignite R&D to power Victoria's economy

Brown Coal Innovation Australia (BCIA) today announced funding for five research and development projects which will target improved efficiency and significantly reduced carbon emissions from brown coal power generation in Victoria and throughout the world.

Victorian Minister for Energy and Resources Russell Northe said "Victoria has a great opportunity to capitalise on projects such as this with its abundant reserves of brown coal which, with the right measures in place for making brown coal an efficient and sustainable industry, has great potential for boosting the economy."

"That is why the Victorian Government is supporting and investing in projects that can deliver real outcomes for innovating the industry, creating jobs and delivering a sustainable energy source for future demand," Mr Northe said.

BCIA Chief Executive, Dr Phil Gurney, said: "Our 2013/14 R&D funding round demonstrates there is substantial international and domestic commercial interest in securing a sustainable future for Victoria's vast and unique brown coal resource; one of the largest and lowest cost lignite coal resources to be found anywhere in the world.

"The latest report from the Intergovernmental Panel on Climate Change (IPCC) acknowledges the urgent need for low emission energy technologies – including fossil fuel plants equipped with carbon capture and storage (CCS) – and highlights the critical role that CCS must play in mitigating the impacts of global warming. The projects we are announcing today will accelerate efforts to deliver sustainable energy from brown coal by reducing carbon emissions from coal-fired power and cutting the cost of carbon capture technologies," Dr Gurney said.

"The involvement in our research program of significant international and local industry players not only shows a recognition of the world-class research being undertaken in Australia, but will also enable the innovative technologies developed here to be commercially adopted as quickly as possible. The commercial success of such technologies would secure Victoria's - and indeed Australia's - future economic prosperity by enabling the continuation of low cost power generation while also creating valuable new industries and employment opportunities in the State's Latrobe Valley."

BCIA awarded \$2.45 million in R&D funding for the five R&D projects selected and announced today as part of the company's 2013/14 competitive funding round for low emissions brown coal power generation technologies. When the current funding round allocation is finalised, the leveraged value of BCIA's new portfolio of low emissions R&D projects will total nearly \$12 million including research institute, industry and State and Commonwealth Government (via Australian National Low Emissions Coal R&D) contributions.

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BCIA awarded \$1M in funding for a CSIRO project that plans to trial high efficiency power generation using Victorian brown coal processed into a water-based slurry and directly injected into a large adapted diesel engine. The Direct Injection Carbon Engine (DICE) project is targeting a step-change in fuel cycle efficiency enabling a 50 per cent reduction in CO₂ emissions intensity compared with Victoria's existing brown coal-fired power plants.

Successful completion of a stage one risk assessment will facilitate a new three year research program. This is a significant progression of earlier BCIA-funded research and will inform development plans for commercial production of the first direct injection carbon engine powered by water-based lignite slurry. The project will include a world-first trial of 20 tonnes of micronised refined carbon fuel from Victorian brown coal in a large stationary diesel engine, to be specially adapted in Japan by leading international engine manufacturer; MAN Diesel & Turbo.

Previous research in a laboratory-scale prototype direct injection carbon engine proved that the lignite slurry can make a high quality fuel. The new CSIRO research project will help to determine if DICE technology can deliver Australia's lowest cost, low emissions power generation from brown coal; providing an option for the staged replacement of existing brown coal power plants.

The direct injection carbon engine also offers the potential of increased operational flexibility to support peak load electricity demand and supply from intermittent renewable energy; thereby supporting a higher penetration of renewable energy supplies in both Australia and developing countries throughout the world. CSIRO scientists also believe successful development of the technology will create valuable new export markets for brown and black coal.

In addition, BCIA allocated a total of \$850,000 for funding of two research projects submitted by Victoria's Monash University. Both of the Monash projects significantly extend earlier BCIA-funded research - including the first known study of chemical looping combustion (CLC) and gasification of Victorian brown coal - as an emerging alternate technology for the capture of CO₂ at a significantly lower energy and cost penalty. A targeted focus of this research project is to advance the commercial prospects of this emerging technology.

The second Monash project is a continuation of earlier BCIA-funded research (via ANLEC R&D) and is expected to accelerate the deployment of oxy-fuel combustion for Victorian brown coal; thereby improving power generation efficiency and significantly reducing CO₂ capture costs. Oxy-firing technology is a process for the combustion of coal in a mixture of high-purity oxygen and recirculated flue gas; the resultant high purity CO₂ requires minimal additional treatment and can be stored almost directly deep underground in geological formations or used in other conversion processes.

The other two research projects announced today were awarded a total of \$600,000 in BCIA funding. One of these, a second CSIRO project, also builds upon earlier BCIA-funded research and aims to achieve significant reductions - up to \$200 million for a 550MW plant - in the capital costs for retrofitted post combustion capture (PCC) of CO₂ from coal-fired power stations. This research program is targeting a 50 per cent reduction in PCC capital costs by integrating the removal of sulphur (SO₂) and carbon (CO₂) in PCC with a CSIRO-developed solvent.

The final research project announced today aims to improve the efficiency of brown coal-fired power stations by using state-of-the-art tuneable laser sensors to measure oxygen (O₂) and carbon monoxide (CO) in power station flue gases prior to emission. Project trials will determine whether novel Tuneable Laser Diode Spectroscopy (TLDS) instrumentation, used successfully in the oil and gas industry, can optimise the burning of brown coal in existing Latrobe Valley power stations; thereby improving power plant efficiency and simultaneously reducing CO₂ emissions.

Dr Gurney said: "The significant industry investment in this R&D round shows that Australia is recognised as a leader in low emissions technology innovation. Each of the research projects announced today will contribute to the global push for clean energy and commercialisation of these technologies will create new industries and employment and export opportunities for our country from low emissions brown coal utilisation."

More information:

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