

# CEFC financing first for major Western Australian waste-to-gas project

**Up to \$50 million CEFC co-finance to convert municipal, commercial and industrial waste into energy using world-leading Australian technology**

## SUMMARY

The Clean Energy Finance Corporation (CEFC) will provide up to \$50 million in senior debt finance for development of Western Australian waste-to-gas facilities by New Energy Corporation (New Energy), using world-leading, Australian designed technology.

New Energy has two major waste-to-gas projects in advanced stages of development, one at Port Hedland (Boodarie) in the Pilbara and a second at Rockingham, near Perth, which will use the Australian developed world-leading ENTECH™ waste-to-gas gasification technology. The Boodarie project would recover and process up to 225,000 tonnes of municipal, industrial and commercial

waste per annum from across the Pilbara. It will improve recycling rates, reduce waste to landfill and generate base load renewable power.

ENTECH™ technology has been widely deployed and commercially proven overseas in facilities that help solve the growing waste management problem by converting non-recyclable municipal, commercial and industrial waste to base load energy and a lower emissions outcome than current grid electricity sources.

The CEFC's finance for New Energy will assist in developing what is the first municipal waste-to-energy gasification project within Australia, and help facilitate access to private sector funding for other waste-to-energy facilities in the future.

"Waste management is a complex sustainability challenge for our modern society. Taking waste, which is a cost, and turning it into energy makes a lot of business sense and represents a win for the environment."

**Oliver Yates**  
CEO, Clean Energy Finance Corporation



The Pilbara plant is proposed to have a capacity of 16.6 MW, enough to power the equivalent of 21,000 homes and save about 135,000 tonnes CO<sub>2</sub>-e per annum. The majority of energy produced will qualify as renewable energy.

The company's other proposed project, at Rockingham south of Perth, will utilise non-recyclable waste from construction and demolition recycling operations and seek waste from councils in the area. The generated power will be sold to a Western Australian energy retailer.

The Rockingham plant is proposed to have a capacity of 16.9 MW and save about 215,000 tonnes CO<sub>2</sub>-e per annum. The majority of energy produced will qualify as renewable energy.

While both projects will be eligible for Australian Renewable Energy Certificates (RECs) for the majority of the energy produced, their financial viability is not reliant on RECs.

New Energy also has a number of other projects in development in Australia as well as a range of projects overseas, with significant potential to export the utilisation of this Australian developed technology, expanding the export of Australia's environmental services to the Asia Pacific region and beyond.



## PROJECT IMPACT

### Solving the waste management problem

Waste management has been a growing issue in Australia for all levels of government. Waste generation has been increasing and the nature and content of the waste stream has become more complex for waste management authorities. Levels of recycling have remained fairly constant, making Australia increasingly dependent on landfill. Nearly half (48 per cent) of all waste is disposed to landfill in Australia, compared to countries like Germany, Sweden, Belgium and Denmark, which dispose less than 20 per cent of their municipal waste in landfill.

In particular, Western Australia's geography and rapidly growing economy and urban areas also create some special challenges due to the high reliance on landfill for waste disposal.

The current waste management infrastructure in the Pilbara Region is stressed, with severe capacity constraints, creating a challenge with the continued expected population growth and economic development of the region.

New Energy's proposed Pilbara project is the first project of its kind to have received EPA approval in Australia. It has also received Development Approval to proceed from the local government authority.

Existing landfills are unlined, with accompanying environmental concerns, and waste tyres are a significant problem.

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### *Project Impact continued...*

Currently, 57 per cent of waste generated in the area is disposed in landfill and 12 per cent transported for treatment in Perth or elsewhere.

The New Energy project will have a major impact, reducing the quantity of waste going into landfill in the region or being shipped to Perth. According to the Western Australia EPA, the introduction of the Boodarie Waste to Energy Project and Materials Resource Facility should significantly improve waste management in the region by diverting waste from unlined landfills, increasing recycling rates, recovering energy, and reducing greenhouse gas emissions.

The facility will have the capacity to process over 75 per cent of all municipal, commercial and industrial waste generated by Port Hedland and East Pilbara council areas and convert non-recyclable components of this waste to base load renewable energy. In addition, the plant offers a solution for end-of-life tyres, which are currently being buried on mining sites or stored in dangerously high numbers on the four council run landfills in the Pilbara.



### **Generating energy and reducing emissions**

The Pilbara plant is to have a capacity of 16.6 MW of base load power exported to the grid, of which the majority of energy produced will qualify as renewable energy. The project will save 135,000 tonnes CO<sub>2</sub>-e per annum with annual electricity output forecast at 122,068 MWh per annum based on 90 per cent availability.

The Rockingham plant is proposed to have a capacity of 16.9 MW of base load power exported to the grid, of which the majority of energy produced will qualify as renewable energy. The project will save 215,000 tonnes CO<sub>2</sub>-e per annum with annual electricity output forecast at 133,240 MWh per annum based on 90 per cent availability.

This includes both the reduction in carbon emissions resulting from generating lower emissions energy and the reduction in greenhouse gases emitted into the atmosphere from the methane generated by landfills.

### **Developing Australia's technology**

New Energy has a number of projects in discussion in Australia and is also developing a range of projects overseas, having identified significant opportunities to expand export of Australia's environmental services to the region and elsewhere.

The innovative ENTECH™ technology which forms the basis of these projects was developed in Perth. It has been successfully deployed in over 40 projects in overseas markets. Development of this patented

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### *Project Impact continued...*

innovative technology over 20 years brought it to full commercialisation, now on a global scale.

New Energy has exclusive rights to the ENTECH™ technology throughout the world (excluding the Americas) and has an option to purchase the ENTECH company.

New Energy's implementation of its initial Australian projects will use the build, own operate and manage (BOOM) model to provide a basis to further expand, invest in R&D and create new job opportunities locally and new export opportunities.

The Pilbara facility will require about 30 full-time employees when fully operational and create about 150 jobs during construction.

### **Demonstrating the potential**

The CEFC's finance for New Energy will assist in developing the first waste-to-energy gasification project within Australia. It will utilise an Australian developed technology which has been widely and successfully employed overseas. These projects will have a major benefit; demonstrating their environmental and commercial potential will help facilitate access to private sector funding in the future.

The CEFC's finance will encourage further development of waste-to-energy facilities across the country that can play a substantial role in addressing the waste management challenges in many regions while also generating cost competitive, base load energy and a lower emissions outcome than current grid electricity sources.

## THE TECHNOLOGY

The ENTECH™ technology is a world-leading technology that incorporates a pyrolytic gasification chamber in an integrated system. It converts waste from its solid form to syngas (a methane like gas) using a low temperature gasification process, for firing to generate renewable energy into the grid. It is proven technology with multiple installations internationally for municipal solid waste and refuse-derived fuel.

"This finance from the CEFC is critical to New Energy's success and our future development of this cleaner energy technology to its full potential. It demonstrates the opportunity in Australia for these kinds of waste-to-gas projects to realise commercial success and benefits that other financiers can follow."

**Enzo Gullotti**  
*Chairman, New Energy*

The ENTECH™ technology meets European Union waste-to-energy standards which are considered the most stringent globally. It is also successfully operating within the rigorous environmental regulatory criteria of the South Coast Air Quality Management District, California. The Pilbara plant has already achieved environmental approval by the Western Australia EPA and the EPA notes that the plant would satisfy the European Union Best Available Technology – Energy Efficiency Regulation (EU, 2005).

New Energy will continue R&D of the technology and has indicated there may be potential to improve the system's energy efficiency by up to 30 per cent.

### FINANCE

CEFC financing will be for about one quarter of the total project cost and will be supplemented by a similar level of financing from another bank, with the balance of half the project cost funded through equity.

No concessionality applies.

“We need to capitalise on Australian innovations like this and make sure they benefit our country: both directly through their application and indirectly through the export opportunities it provides.”

**Oliver Yates**

*CEO, Clean Energy Finance Corporation*

**New Energy Corporation (New Energy)** is an Australian, privately-owned company established in Western Australia in 2009 to develop innovative projects to make waste management and energy production more sustainable. The company partners with industry and local government to recover energy from waste streams that would otherwise go to landfill. By doing this, the environmental impact from waste is greatly reduced, with the benefit of producing clean and renewable energy.

New Energy has licensing rights to the ENTECH™ low temperature gasification technology which was developed in Western Australia and has been successfully deployed at sites in Europe and Asia. In 2013, New Energy became the first Australian company to have a waste-to-gas project of this kind to be approved by a government environmental protection authority.

New Energy has an option to purchase ENTECH Renewable Energy Technologies Pty Ltd and plans to develop further waste-to-gas projects both in Australia and overseas.

### **ENTECH Renewable Energy Technologies**

**Pty Ltd (ENTECH)** is a privately owned Australian company that commenced operation in 1990 after its senior management developed a basic and crude gasification system. The original system was successfully applied to waste sources to produce syngas and fire boilers and other energy generating plants. ENTECH is a business solely dedicated to its technology and has developed its relatively unique low temperature gasification technology application base through R&D, product development and product refinement.

ENTECH has over 15 years' experience in the successful application internationally of its waste-to-gas technology for a wide variety of wastes and fuels. It has provided a sustainable solution for waste utilisation and landfill diversion via waste recycling and conversion to renewable energy, having installed over 40 projects internationally.





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The Clean Energy Finance Corporation (CEFC) invests using a commercial approach to overcome market barriers and mobilise investment in renewable energy and lower emissions technologies. These investments are improving energy productivity and lowering energy costs for businesses across Australia, and helping to develop local industries and new employment opportunities.

In 2013, the CEFC's investments of \$536 million mobilised on average \$2.90 of private sector investment for every \$1 of CEFC investment and will achieve abatement of 3.88 million tonnes of CO<sub>2</sub>e per annum. These investments will deliver a positive return to the CEFC, with a cost of abatement in the order of negative \$2.40 per tonne CO<sub>2</sub>e.

The CEFC operates under the CEFC Act 2012. More information is available on our website [www.cleanenergyfinancecorp.com.au](http://www.cleanenergyfinancecorp.com.au)

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