

Position Paper on Energy from Waste (EfW)

Introduction

Energy from Waste (EfW) also known as Waste to Energy (WtE) describes the technologies and treatment processes used to process residual materials to generate energy in the form of electricity, heat and fuels. The combustion of residual materials in thermal treatment to create heat or the processing of organic materials to generate gas both of which add to Australia's base load power supply are well established technologies globally especially in Europe, the UK, North America and Asia

In alignment with the waste hierarchy NWRIC advocates EfW is an important resource recovery solution and will play a key role in enabling Australia to achieve National Waste Policy Action Plan Target 3 (to achieve 80% resource recovery by 2030) and Target 6 (achieving a 50% reduction in organic waste to landfill) along with reducing greenhouse gas emissions, providing fuel sources to generate reliable 24/7 electricity whilst operating in co-existence in our sustainable communities where our waste is generated.

The lack of a nationally cohesive and consistent policy and regulations across the states and territories is hindering the planning and investment for this important waste management and resource recovery solution and associated infrastructure which have significant planning, funding, approval and construction phases before they can commence resource and energy recovery operations.

Scope

The two main technologies covered by this Paper are thermal treatment of residual waste including direct combustion, gasification and pyrolysis and biological processing of biodegradable waste. These technologies include combustion to produce heat, gasification to produce a combustible syngas, pyrolysis to produce syngas, oil or char, biological processes such as anaerobic digestion (AD) or fermentation to produce biogas (in enclosed processing facilities) and the co-combustion as a fuel source (along with fossil fuels) to power plants, brick works and cement kilns.

The Council has members who can provide all or many of these technologies however the primary purpose of this Paper is to accentuate the Councils support for increasing the level of thermal treatment and biological processing facilities as key solutions for the resource recovery and processing of residual material from Australia's waste volumes and decrease the overall volume of waste that is currently landfilled each year

The generation of gas from landfills is not within scope of this Paper as the capture, flaring or use of gas generated from landfills is well established across Australia.

State / Territory Regulations

EfW policy frameworks exist in New South Wales, Victoria, Queensland, South Australia and Western Australia and not currently in the Northern Territory or Tasmania whilst the ACT expressly prohibits the thermal treatment of waste. Of the States with policy positions some of these are definitive and restrictive which are a barrier to the planning, development and viability of new thermal EfW facilities, for example: NSW with limited designated precinct zones outside of the Greater Sydney area and non-alignment with European Union best practice and best available technology and Victoria with its 1 million tonnes per annum cap on thermal treatment processing in a state where in 2021, 6 million tonnes of waste were landfilled.

Other States have a wider policy framework within their over-arching waste and resource recovery strategies which enables proponents to undertake proposal evaluations within the framework of

global best practice for the technology including residual materials only as inputs, energy efficiency and output measures and realistic expectations in respect of community engagement.

NWRIC accepts that EfW in the form of thermal treatment and biological processing will require development approval and licensing where the proponents will need to demonstrate that the siting, design, construction and operation of the EfW facilities will be in accordance with Best Available Technology (BAT) and incorporate best practice measures for the protection of the community land, water and air environments as well as for energy efficiency and greenhouse gas emissions management.

However, NWRIC advocates that the policy direction of NSW and Victoria are too restrictive. This includes the requirements for initial and ongoing cost benefit analysis to demonstrate that EfW is the best management option for the residual waste where further resource recovery is either not practical or financially viable to do so. For large scale EfW facilities contracting the foundation volumes to achieve financial and operational thresholds is essential to investor approvals and ongoing viability. Contracted volumes should not be discouraged by government policy and regulatory changes, specifically where there is a higher order use above landfilling residual waste.

EFW – a key technology for the future and key issues for growth:

The Victorian EPA states in a recent response to public and industry consultation in respect of Victoria's proposed Waste to Energy Scheme that ***"Experience from overseas shows that well-regulated waste to energy facilities can operate safely within urban communities."***

With the growth of waste generated in Australia and residual waste (largely being disposed to landfill) continuing and fuelled by ongoing population increases and consumption (despite the recognised expansion of recycling and resource recovery across Australia) the time is now for urgent action to provide EfW proponents, investors and financiers with a clear national framework to enable best practice facilities that meet viability, environmental and community engagement requirements to achieve development and licensing approval to proceed in a timely manner.

In NSW alone waste is forecast to increase from 21 million tonnes in 2021 to 37 million tonnes in 2041 with landfills accepting putrescible waste in the Greater Sydney area expected to reach capacity within 15 years and non-putrescible landfills to reach capacity by 2028. The NSW Energy from Waste Infrastructure Plan recognises the need for either extra landfills, resource recovery facilities or new energy from waste facilities but the same plan limits development of large scale EfW facilities that will replace landfills to four waste priority infrastructure areas (precincts) outside the Greater Sydney area where most of NSW's waste is generated and where increased and replacement resource recovery / residual disposal volume capacity is needed.

NWRIC advocates that we don't need to over-regulate the emergence and development of thermal treatment and bio-logical processing facilities as NSW and Victoria have done. Local and State government development assessment processes for waste management and resource recovery facilities generally have sufficient measures and requirements upon proponents to meet environmental conditions and undertake initial and ongoing community engagement with State call in processes to expedite projects of state significance and need.

The growth in waste volumes and declining landfill airspace underpins the need for EFW solutions and the benefits these technologies bring in reducing greenhouse gas emissions in the conversion of landfilled volumes to increased and best practice emission capture along with increased resource recovery (established at the front end of EfW facilities or in separate refuse derived fuel facilities) to be a major contributor to attaining National Waste Policy Targets and importantly to contribute to base load electricity. EfW facilities are acknowledged globally as a provider of reliable 24/7 electricity, heat or gas to generate electricity at a time when replacing fossil fuel energy sources and reduction of associated CO₂-e are a major policy of the federal, state and territory governments.

EfW facilities also play a key role in reducing emissions relative to current disposal methods such as landfill and other non-renewable sources of energy. The use of well-established and proven best practice emissions treatment technologies and real time monitoring provides high levels of processes, controls and reporting to meet the compliance requirements of EfW facilities.

Integrated EfW facilities co-located with extensive front-end resource recovery processes and / or biological processing facilities in the same industrial precinct in or in close proximity to capital or regional cities provide strong benefits to waste generators, collectors, recyclers and local governments with large volumes and declining landfill airspace. The residual bottom ash from the EfW process can also be re-purposed into roading and construction materials to divert such from landfill and co-location in a precinct with C&D recyclers is beneficial for this re-use activity.

NWRIC recognises the need for education of the wider community to understand the benefits, operations and safeguards of EfW facilities and especially the public consultation and ongoing communication of benefits and performance to local communities where industrial precincts are based. This education responsibility for best practice technology and operational information should be bi-partisan and shared between governments and the EfW industry participants to reduce community misconceptions.

Summary

Placing restrictive and onerous regulation on EfW proposals over and above what applies to other waste management and resource recovery facilities is prolonging the critical introduction of EfW thermal treatment infrastructure in Australia and reduce reliance on landfills and increase resource recovery across Australia. The lack of urgency by regulators and the current long timelines to obtain development / licencing approval for EfW facilities are key factors that all jurisdictions must address to provide investment certainty and confidence to meet current and future resource recovery and disposal facility capacity shortfalls.

NWRIC advocates that the well-recognised and established benefits of biological waste processing such as AD plants will play a significant part in obtaining National Waste Target 6 to halve organic waste to landfill by 2030. Biological waste processing plants are a key component to process the increased level of Food Organic and Garden Organics (FOGO) kerbside collection services being gradually introduced by Local Government across Australia.

Also, the establishment of an increased level of EfW thermal treatment plants will provide major benefits in generating energy, reducing greenhouse gases, replacing landfills and providing long term resource recovery solutions in co-existence with local communities.

States must recognise the impact on industry development, essential service and critical waste management infrastructure to meet existing needs magnified with population and industry growth if onerous regulation, assessment timelines and conditions constrains EfW proponents from obtaining suitable sites and approvals / licences, operating efficiently whilst meeting capital investment return criteria and achieving a sustainable level of contracted waste volumes.

NWRIC calls for the Federal Government to provide a national cohesive policy framework, an industry development driver for EfW and public benefit education to enable the facility infrastructure for thermal treatment and biological processing to become a key part of the Australian waste management, resource recovery and energy generation landscape to reduce our reliance on our diminishing landfill infrastructure and lack of resource recovery and organic processing capacity.

Acknowledgments

1. EPA Victoria – Guideline: Energy from Waste and Response to questions from Victoria’s Waste to Energy Scheme Open Briefing Session 13 June 2023
2. NSW Government – Energy from Waste Infrastructure Plan 2041, NSW EPA Energy from Waste Policy Statement and NSW EPA Guide to the NSW Energy from Waste framework
3. Queensland Government Energy from Waste Policy – Dec 2021
4. South Australia EPA – Thermal energy from waste (EfW) activities - Position Statement – April 2020
5. Government of Western Australia – Waste Authority – Position statement on waste to energy – Sept 2020
6. National Waste Report 2022 prepared by Blue Environmental for the Dept of Climate Change, Energy, Environment and Water.