Waste-to-energy in Australia

Energy solution or problem?

Research report for the Smart Energy Council by Harford Consulting

July 2026

Contents

Executive Summary

Waste-to-energy is the term used to describe a range of technologies that use solid waste and recovers the energy content inherent in some of that waste, and in the process produce heat, steam and or electricity.

Waste-to-energy reduces the mass of solid wastes and also creates greenhouse gases, pollutants and a range of residual wastes.

The aim of this report is to assist the Smart Energy Council to have a better understanding of waste-to-energy and to inform on-going policy, regulatory and community debate.

The report examines waste-to-energy technologies and proposals that directly or indirectly use thermal processes such as incineration or gasification.

In Australia, waste-to-energy technologies are relatively commonplace in industrial applications such as paper mills, sugar refineries and piggeries. These applications in hundreds of facilities have used waste largely from their own processes to then provide heat or steam back to their own operations (with some such as bagasse from sugar processing generating zero emissions electricity).

However, Australia is now seeing a growing number of large-scale waste-to-energy projects that propose to use mostly household waste (municipal solid waste or MSW) for direct or indirect combustion or incineration.

At the time of writing some 15 waste-to-energy projects are in development across Australia. These projects have the total scale to process about 4 million tonnes of MSW (with some also proposing to process commercial and industrial (C&I) and construction and demolition (C&D) waste). Individual facilities range in scale from waste inputs of 150,000 tonnes of waste per year to 760,000 tonnes of waste per year.

While waste-to-energy and the incineration of MSW is not new in Australia, using it for MSW to the extent and scale of these proposed MSW facilities is.

The proposed waste-to-energy facilities in Australia are presented by proponents as an effective alternative to landfill, and a means to achieve waste reduction targets.

Proponents and some government authorities assert that waste-to-energy is a circular economy solution, that it is safe for human health and the environment and that it is renewable energy, clean energy and with low emissions.[1]

Such claims warrant closer scrutiny. Claims about environmental benefits warrant close consideration and detailed analysis on a case-by-case basis.

Waste-to-energy is not low emissions, renewable and clean energy.

[1] For example see Sustainability Victoria https://www.sustainability.vic.gov.au/grants-funding-and-investment/invest-in-victorias-circular-economy/invest-in-materials-and-infrastructure/waste-to-energy-circular-economy-opportunities and Great Southern Waste Technologies https://gswt.net.au/ and Veolia Australia https://www.anz.veolia.com/en-au/our-facilities/energy-from-waste (accessed May 2026)

While waste-to-energy facilities incinerating MSW provide some benefits, it is not a benign activity.

Some countries that embraced waste-to-energy are now finding it presents conflicting outcomes for improved waste management and the environment, and that the electricity it produces is at times undermining carbon reduction activities.[2]

For Australia as it moves to more renewable energy and lower greenhouse gas emissions in the electricity grid, waste-to-energy presents a conundrum and a challenge.

Waste-to-energy has been in development in Australia for decades but now as it is becoming reality, it's widespread application may be embedding longer-term problems.

Is waste-to-energy renewable energy, low emissions and clean energy?

No. "Renewable energy" is defined in legislation with the concept of "eligible renewable energy sources". The Renewable Energy (Electricity) Act 2000 (Cth) lists specific eligible sources, including "biomass-based components of municipal solid waste." It excludes fossil fuels and materials or waste products derived from fossil fuels.

Therefore waste-to-energy using MSW as a whole does not qualify as renewable energy under this scheme. The Act's exclusion of fossil-derived materials means a substantial share of the energy produced by waste-to-energy facilities is, by legislative definition, not renewable.

Proponents who describe waste-to-energy as "renewable energy" without distinguishing between the biogenic and fossil-derived fractions of their feedstock are making claims that are inconsistent with the federal legislative framework.

The term "low-emissions" exists in policy documents, not legislation. There is no legal definition of low emissions, but the Clean Energy Finance Corporation Act establishes a test which is whether a technology results in emissions *substantially below* the relevant baselines for the activities being undertaken – without stipulating what those baselines are.

The key measure is the amount of GHG emissions per unit of energy produced at waste-to-energy facilities, and compared to a range of sources the electricity from waste-to-energy is not low emissions.

International studies report that greenhouse gas emissions from waste-to-energy can range from about 700 g CO2-e per kWh to 1,700 g CO2-e / kWh[3].

[2] For example, see Stop, Sort, Burn, Bury? Independent Review of the Role of Incineration in the Waste Hierarchy in Scotland 2022, The climate change impacts of burning municipal waste in Scotland, Zero Waste Scotland, 2021

[3] See for example https://journals.plos.org/climate/article?id=10.1371/journal.pclm.0000100 and The Impact of Waste-to-Energy incineration on climate, Policy Briefing, Zero Waste Europe 2019 and https://zerowasteeurope.eu/2020/03/understanding-the-carbon-impacts-of-waste-to-energy/ (accessed May 2026)

Recent United Kingdom reports find the average emissions from waste-to-energy are 720 g CO2-e / kWh[4].

Reports on the waste-to-energy facility at Kwinana in Western Australia estimates it will emit 790 g CO2-e / kWh[5].

By way of comparison, open cycle gas turbines in Australia generally have emissions between 500 g and 650 g CO2-e/kWh, and the Australian National Greenhouse Accounts Factors 2025 reports that Scope 2 emissions from Australia's grid electricity is now on average 620 g CO2-e per kWh.

This indicates that greenhouse emissions from waste-to-energy are not *substantially below* the baseline. They are above the emissions intensity of the electricity grid.

As waste-to-energy facilities are expected to operate for 30 years or more, this also indicates that such facilities may be increasingly worse on emissions intensity over time. Australia's electricity grid is forecast to reduce emissions intensity as more solar, wind and other renewables come online, which will therefore make emissions from waste-to-energy higher than the baseline.

A 2024 report in England found that waste-to-energy was now the highest emissions or dirtiest form of electricity in the United Kingdom (UK)[6]. From February 2026 any new or substantially refurbished waste-to-energy facility in the UK must demonstrate "decarbonisation readiness" as a condition of environmental permitting.

The European Union (EU) has indicated it plans to include MSW waste incineration in the EU Emissions Trading System from 2028, reflecting evidence that approximately half of emissions from incinerators are fossil-derived and therefore requiring waste-to-energy facilities to offset and or reduce their emissions.[7]

Landfill emissions

Waste-to-energy facilities claim emissions reduction through avoided landfill. That is, the waste used in waste-to-energy would have gone to landfill, and that the emissions from waste-to-energy are lower than what would have been emitted from landfill.

---

[4] Burning rubbish now UK's dirtiest form of power., October 2024, BBC News. Esme Stallard, Matt McGrath, Patrick Clahane and Paul Lynch. https://www.bbc.com/news/articles/cp3wxgje5pwo

[5] The Australian 3 December 2025. Low carbon claim under fire: Kwinana waste-to-energy emissions exceed gas https://www.theaustralian.com.au/news/lowcarbon-claim-under-fire-kwinana-wastetoenergy-emissions-exceed-gas/video/4264836c712468d8c1398cf6c7837aa7

[6] Burning rubbish now UK's dirtiest form of power., October 2024, BBC News. Esme Stallard, Matt McGrath, Patrick Clahane and Paul Lynch. https://www.bbc.com/news/articles/cp3wxgje5pwo

[7] See article Will the EU finally make waste pay for its growing carbon footprint? Carbon Markets, March 2026. accessed here May 2026 https://www.climatechangenews.com/2026/03/19/will-the-eu-finally-make-waste-pay-for-its-growing-carbon-footprint/

Modelling of waste-to-energy and landfill greenhouse gas (GHG) emissions finds that waste-to-energy can result in higher direct emissions compared to landfill but the waste-to-energy emissions are lower over the full lifecycle. This is because the waste sent to landfill degrades and creates emissions over 100-125 years, whereas the waste-to-energy facility creates emissions over a 25-30 year period.[8]

Landfills employ gas capture systems to gather and concentrate landfill gases which can then be destroyed or used to fuel energy production.

Waste-to-energy proponents generally claim low landfill capture rates and apparently use the Australian average landfill gas capture of 42% as a benchmark, but in practice landfill gas capture can be as high as 83%[9]. Recent technical advice from the Australian Government on managing and accounting landfill gas capture also finds that landfills have been increasing gas capture over time.

This suggests that any claims of avoided emissions through waste-to-energy compared to landfill may in some cases be overstated, and warrant close consideration and detailed analysis on a case-by-case basis.

It is noted that under the Safeguard Mechanism administered by the Clean Energy Regulator, waste-to-energy facilities seek to be treated as grid-connected electricity producers and emitters. This effectively provides exemption from the Safeguard Mechanism and means waste-to-energy facilities do not have a compliance obligation for GHG emissions. In comparison other waste management and waste treatment facilities, such as landfills, will have a compliance obligation.

The Clean Energy Regulator defines a designated generation facility under the mechanism as a facility whose *principal activity* is electricity production[10]. Yet most waste to energy facilities principal activity is waste treatment.

Other emissions

Waste-to-energy facilities produce emissions other than GHG emissions. Pollutants, residual waste, noise, odour and traffic all need to be considered and must meet regulatory requirements.

Proposed waste-to-energy facilities in Australia generally need to meet European emissions standards. Lack of local reference facilities and no long-running MSW incinerators in Australia means permitting and environmental protection authorities rely on those European standards and reference existing overseas facilities.

The waste-to-energy facilities being built and those proposed are generally able to meet Australian EPA conditions and requirements.

---

[8] Waste to Energy Regulatory Impact Statement: Amending Regulations to Increase Waste to Energy Cap Limit, Victorian Government, March 2025

[9] ACCU Scheme Landfill Gas Methods Supporting Technical Report 2024 https://consult.dcceew.gov.au/reform-options-for-accu-scheme-landfill-gas-methods

[10] See https://cer.gov.au/markets/reports-and-data/nger-reporting-data-and-registers/electricity-sector-emissions-and-generation-data-2024-25 (accessed June 2026)

This suggests waste-to-energy facilities can adequately and appropriately control other emissions and meet Australian state and local government requirements for licensing and permitting.

While those and the European standards are being met in planning and licensing, concerned citizens note that local long-term impacts from any the low-level long-term release of pollutants are not known.[11]

Waste composition

With respect to the claims of being a low emissions or renewable energy source, it is dependent on the composition of waste for each facility and what waste-to-energy facilities are compared to.

MSW varies in composition in different areas at different times. MSW in Australia is broadly categorised as being comprised (by weight) of about 55-60% organics (food, garden waste, timber), 10-15% plastics, 10-12% paper, 2-4% glass and 3-4% metals. The other 7-10% is the leftovers of everything else people discard.[12]

Around 30% to 50% of MSW by weight is either not renewable, is mostly moisture or is inert.

Waste-to-energy proponents claim the organic proportion as a renewable energy source. For example, the East Rockingham waste-to-energy facility in Perth claims on its website that 50% of the power it produces is renewable, but the website does not provide detailed substantiation of how this claim is made.

The composition of MSW is changing particularly with respects to the biomass or biogenic proportion.

Many Councils and State and Territory Governments around Australia have been implementing separate collection and processing for food and garden organics wastes (FOGO) from households.

As such the current amount of organics in MSW is expected to decline, and this changes the potential mix going into any waste-to-energy facility, it's calorific content, composition and the amount of any renewable or non-renewable material.

Landfill availability

Waste-to-energy proponents and governments commonly cite lack of landfill or lack of landfill availability as a key motivation for establishing waste-to-energy facilities.

Australia as a whole does not have a landfill scarcity issue.

In 2009 the Australian Government assessed 16 major cities and towns and found there was sufficient physical landfill available for the short to medium

---

[11] ABC News 14 April 2026 accessed here https://www.abc.net.au/news/2026-04-14/waste-to-energy-incinerator-nsw-parliamentary-inquiry-school/106559610?utm_source=abc_news_app&utm_medium=content_shared&utm_campaign=abc_news_app&utm_content=mail

[12] See Australian standard for waste and resource recovery data and reporting, August 2021, Department of Agriculture, Water and the Environment and also Characterisation of chemical composition and energy content of green waste and municipal solid waste from Greater Brisbane, Australia, Science Direct, 2015 https://www.sciencedirect.com/science/article/abs/pii/S0956053X15002330

term, but that capacity was constrained by social, environmental and political issues[13].

Currently Sydney and Western Australia have landfill licensing and capacity constraints. The greater Sydney area is forecast to run out of licensed landfill space by 2030[14] and likewise areas of Western Australia.[15]

Other States and capital cities identify sufficient landfill capacity, with the actual availability of the landfill space sometimes dependent on licensing and permitting.

Financial impacts

Waste-to-energy facilities generate income by charging gate fees to receive and process waste, as well as through the sale of energy (electricity), the sale of recovered and recyclable materials (such as metals), and in some cases carbon credits.

Gate fees are the main financial driver for waste-to-energy facilities.

Estimates are that gate fees generate about 55-65% of the income, energy sales 20-25% and other sales about 10-15%. Energy sales are a significant revenue source but are not the financial driver.

Waste-to-energy facilities therefore need to compete with the cost of landfill and need to ensure they maintain on-going feedstock and gate fees from receiving waste materials to incinerate.

As the Australia Institute and others have observed[16], this situation means waste-to-energy facilities actively work against waste reduction and circular economy initiatives.

Waste-to-energy facilities seek exemption from landfill levies. Estimates are that in Victoria alone this reduces Government revenue by hundreds of millions of dollars or even billions over the life of any waste-to-energy facility. Government is losing revenue and private waste-to-energy facility operators are leveraging public funds, thereby enabling competition against other waste reduction and management options.

The financial viability of waste-to-energy carries inherent risks. It is dependent on being able to charge gate fees (passed on to the householder and general consumer), to be underwritten by long-term access to feedstock (potentially in conflict with waste reduction and circular economy policies) and to be exempt from waste levies (reducing Government revenues and impacting competition).

Conclusion and findings

Waste-to-energy is primarily a waste management solution, not energy generation. Energy generation is a by-product of the waste disposal and treatment technology and process.

---

[13] https://www.dcceew.gov.au/environment/protection/waste/publications/australian-landfill-capacities-future

[14] https://www.epa.nsw.gov.au/News/Media-Releases/2024/EPAMedia241101-Minns-Labor-Government-taking-action-so-Sydney-doesnt-run-out-of-landfill

[15] https://www.wa.gov.au/system/files/2024-05/state-waste-infrastructure-plan-2024.pdf

[16] Australian Quarterly September 2025, From circular economy to ecological economy: Is Circularity even possible in Australia? Nina Gbor.

Waste-to-energy is not renewable energy and is not low emissions. There are different reports and different waste compositions, but it is reasonable to categorize the greenhouse emissions of waste-to-energy as higher than renewables such as hydro, wind and solar, and in some cases comparable to a range of fossil fuel energy sources.

The current use of terms such as “renewable energy”, “low emissions” and “clean energy” for all waste-to-energy facilities is in some cases problematic.

In the context of a rapidly decarbonising electricity grid in Australia, waste-to-energy facilities will become progressively more carbon-intensive relative to the grid average. Facilities approved today will within their planned operational lifetime potentially transition from being comparable to fossil fuel generation to being high-emitting sources of electricity on Australia's grid.

As an alternative to landfill, large scale use of waste-to-energy to dispose of MSW is accepting that society will not or cannot reduce the waste being generated.

It is therefore contributing towards one national waste goal (reduced waste to landfill), while working against another (reduced waste generation).

Waste-to-energy has a proven record in Australia of being an effective solution to waste management in some limited circumstances.

Moves to install significant waste-to-energy capacity to manage MSW in Australia warrant greater transparency and consideration especially with respect to greenhouse gas emissions, circular economy goals and long-term environmental and health impacts.

Recommendations

- The Smart Energy Council should be a lead advocate informing and influencing the development of policy and regulations with respect waste-to-energy on behalf of the energy sector.

- The Smart Energy Council should engage government to ensure claims around waste-to-energy are independently tested and monitored, and that there is a consistent approach, definitions and methods for establishing waste-to-energy facilities.

- Greater transparency and accountability on emissions intensity of waste-to-energy on a case-by-case basis is needed to fully understand the short, medium and long-term impacts for greenhouse gas emissions. It is recommended that the Clean Energy Regulator be authorized to provide independent emissions-intensity assessments and public reports of proposed facilities and projects, with this being done as part of the approvals process.

- Government authorities (nationally and or at State and Territory level) should consider the appropriate use of terms such as “renewable energy”, “low emissions” and “clean energy” for all waste-to-energy facilities, and set waste-to-energy benchmarks and acceptable assumptions to ensure accuracy, including consistent and agreed approaches to definitions, carbon emissions methodology and feedstock analysis.

- The Australian Government should develop clearer definitions of renewable energy and low emissions technologies with reference to

waste-to-energy and to increase consumer and investor confidence in proposed projects, and to minimize the risk of green washing claims in the future.

- Request the Climate Change Authority to undertake a closer examination of the role of waste-to-energy in the Industry and Waste Sector Plan, and to assist in forecasting the short-, medium- and long-term impacts of greenhouse gas emissions from waste-to-energy and the role of waste-to-energy in the Australian energy market.

- Waste to energy facilities should comply with the requirements of the Australian Government Safeguard Mechanism, consistent with other waste treatment facilities. The classification of waste-to-energy facilities under the Safeguard Mechanism should be determined by the Clean Energy Regulator, based on whether their *primary purpose* is deemed to be waste treatment or electricity generation.

- The Federal Government should review and test the eligibility of waste-to-energy and incinerators to create Australian Carbon Credit Units (ACCUs), giving consideration to emissions intensity of electricity from such facilities may be at or higher than the national average emissions intensity of the electricity grid.

1 Overview

This report is to assist the Smart Energy Council to have a better understanding of waste-to-energy from a smart energy and emissions perspective, and assist the Council to inform on-going policy, regulatory and community debate.

Waste-to-energy is the term applied to a broad set of technologies and processes that are used to convert waste materials into fuel, heat or electricity.

Waste-to-energy describes technologies that reduce the mass of solid waste, recover some of the energy content inherent in that waste, and in the process can produce greenhouse gas emissions, heat, steam and or electricity. It is also called energy-from-waste.

There are several distinct waste-to-energy technologies that work differently on different wastes, these include:

(a) Thermal processes involve burning or heating waste such as:

- Incineration (direct combustion) where MSW or other waste is burned to produce steam that drives a turbine.
- Pyrolysis using a process that heats waste in the absence of oxygen to produce oils, gases, and char.
- Gasification which converts waste into a synthetic gas (syngas) using high heat and limited oxygen, and the gas can then be burned.

(b) Biological processes that involve microbial breakdown of organic waste, such as:

- Anaerobic digestion that uses bacteria to break down food waste, sewage, and agricultural waste in the absence of oxygen. It produces a biogas that is mostly methane that can be burned for electricity or heat, or upgraded to biomethane for use as a vehicle fuel or grid injection.
- Landfill gas capture is a related process as it captures methane that is produced as buried waste decomposes and destroys the methane by burning or flaring it, or uses it to drive a turbine.

(c) Chemical processes include technologies like hydrothermal liquefaction, which convert wet organic waste into bio-crude oil under high pressure and temperature.

Of focus and most interest for this study are thermal waste-to-energy technologies. The use of these technologies for MSW is currently being proposed extensively in Australia.

Thermal waste-to-energy used to process MSW can be indirect conversion or direct conversion.

Indirect conversion is achieved through processes such as creating a refuse derived fuel (RDF also called process engineered fuel or PEF) that is then burnt in a furnace or boiler or the like, or through gasification or anaerobic digestion that turns the waste into a gas that is then burnt.

Direct conversion is achieved through incineration or direct combustion where the waste is burnt at high temperatures and then the resultant heat is used as is, or it is used to create steam and drive electricity turbines.

In Australia waste-to-energy has been used in industrial applications for decades.

Paper mills, sugar refineries, piggeries and other industrial facilities have used their own and supplementary residual waste from other sources in order to create energy, mostly for use back into their own processes.

There are estimated to be four large-scale waste-to-energy facilities operating at industrial facilities in Australia (using combustion and gasification technology) and a further 200-250 small scale facilities (with the small scale all being anerobic digestion technology).

While many Australian cities had large scale incinerators for general waste (particularly for household garbage, municipal solid waste / MSW), these were closed in the 1980s and early 1990s due to health, community and environmental impacts and concerns.[17]

Many cities also allowed backyard waste incineration, but it was mostly phased out in the 1970s and 1980s.

However, Australia is now seeing a resurgence and a growing number of large-scale waste-to-energy and incineration projects that propose to use mostly household waste / MSW for direct or indirect combustion or incineration and to produce electricity.

At the time of writing there are now some 15 waste-to-energy projects underway or proposed in Australia. Facilities at Kwinana and East Rockingham, in Perth Western Australia have been constructed and are in startup, while new facilities are proposed in Melbourne, regional New South Wales and the Gold Coast in Queensland.

These facilities have the total scale to process about 4 million tonnes of MSW (with some also proposing to process some commercial and industrial and construction and demolition waste). Individual facilities range in scale from waste inputs of 150,000 tonnes of waste per year to 760,000 tonnes of waste per year.

See further details on the table below.

[17] See for example Tracing the Troubled Past of the Waterloo Incinerator in Zetland, 2023. Link https://redfernnews.com.au/tracing-the-troubled-past-of-the-waterloo-incinerator-in-zetland/(accessed May 2026)

New and proposed Waste-to-energy facilities in Australia							
Facility / Project	Location	State	Status	Capacity (tpa)	Power Output	Proponent / Developer	Status / Notes
Operational							
Kwinana Energy Recovery (KER)	Kwinana Industrial Area	WA	Operational	460,000	36–38 MW	ACCIONA (owner); Veolia (operator)	Australia's first large-scale thermal WtE plant. Opened Nov 2025; full ops Dec 2025. CEFC $400m debt; ARENA $23m grant. Keppel Seghers moving grate technology.
Under construction / commissioning							
East Rockingham Waste to Energy (ERWtE)	East Rockingham (Kwinana Industrial Area)	WA	Completing construction / commission	300,000 + 30,000 bio-solids	29 MW	Masdar Tribe; John Laing; HZI; ACCIONA (equity); Veolia (O&M)	Construction began May 2020. Boiler pressure test completed Jan 2024. CEFC $57.5m; ARENA $18m. HZI moving grate technology.
Licensed and in planning							
Maryvale Energy from Waste (EfW)	Maryvale (near Morwell, Latrobe Valley)	VIC	Cap Licence issued; planning	650,000	~35 MW	Opal Australian Paper; Veolia; Masdar Tribe Australia	First Vic cap licence issued March 2024. Geotechnical works commenced. EPC: Cobra/Babcock & Wilcox. Cap licence: 650,000 tpa. Energy to supply Opal paper mill.
Melbourne Energy and Resource Centre (MERC)	510 Summerhill Rd, Wollert, Melbourne North	VIC	Cap Licence issued; planning	760,000	~75–80 MW	Cleanaway Operations Pty Ltd	Cap licence 760,000 tpa issued Aug 2025 (largest in VIC). Capex $1–2 billion. EPC procurement underway; target completion ~2030. Significant community opposition.
Recovered Energy Laverton	Laverton North, Melbourne	VIC	Cap Licence + Existing Operator Licence	280,000	Not disclosed	Recovered Energy Australia Pty Ltd	Holds both a cap licence (280,000 tpa) and an existing operator licence. Project at feasibility/development stage.
Melbourne Water WtE Facility	Location TBC, Melbourne	VIC	Cap Licence issued	450,000	Not disclosed	Melbourne Water Corporation	Cap licence 450,000 tpa issued Aug 2025. Likely to integrate with sewage sludge/biosolids treatment. Stage of project development not publicly confirmed.
Liquid Power Co	Location TBC, Victoria	VIC	Cap Licence issued	50,000	Not disclosed	Liquid Power Co	Cap licence 50,000 tpa issued Aug 2025. Project details limited.
Zerogen Holdings	Location TBC, Victoria	VIC	Cap Licence issued	45,000	Not disclosed	Zerogen Holdings	Cap licence 45,000 tpa issued Aug 2025. Project details limited.

Knox Transfer Station	Knox, Melbourne East	VIC	Cap Licence issued	15,000	Not disclosed	Knox Transfer Station operator	Smallest cap licence (15,000 tpa) issued Aug 2025. Likely to treat residual waste at existing transfer station site.
Visy Industries Coolaroo	Coolaroo, Melbourne North	VIC	Existing Operator Licence	Not disclosed	Not disclosed	Visy Industries Australia Pty Ltd	Holds an existing operator licence under the VIC Waste to Energy Scheme. Project details not publicly confirmed.
Great Southern Waste Technologies	Dandenong South, Melbourne SE	VIC	Existing Operator Licence	100-150,000	10 MW	Great Southern Waste Technologies Pty Ltd	Holds an existing operator licence under the VIC Waste to Energy Scheme. Project details not publicly confirmed.
Woodlawn Advanced Energy Recovery Centre (ARC)	Near Tarago, ~40km S of Goulburn, Southern Tablelands	NSW	EIS lodged; under assessment	380,000	~30 MW	Veolia Environmental Services	Located in Goulburn Mulwaree Precinct (one of 4 approved NSW zones). $600m capex; EIS exhibited 2022. Amendment & submissions report expected Sept 2026. Strong local opposition.
Parkes Energy from Waste Facility	Near Parkes, Central West	NSW	Proposed; under parliamentary inquiry	700,000	~70 MW	Cleanaway + international partners	In one of 4 approved NSW zones. Subject to NSW Select Committee inquiry (est. Aug 2025, 1,400+ submissions). Strong opposition from local councils and community. Would power ~100,000 homes.
Cleanaway Western Sydney Energy & Resource Recovery Centre	Western Sydney (Minchinbury area)	NSW	Uncertain, withdrawn from planning process late 2025	500,000	~58 MW	Cleanaway	Proximity to Greater Sydney may conflict with 2022 SEPP restrictions.
Proposed and early stage							
Kalfresh Bioenergy Facility	Scenic Rim, SE Queensland	QLD	Under Construction	N/A (agricultural waste)	Not disclosed	Kalfresh (agribusiness)	Construction commenced Feb 2026. $291m capex. Converts vegetable scraps and farm waste to energy. One of Australia's first large-scale agricultural WtE projects.
Various Queensland Proposals	Queensland (multiple locations)	QLD	Early stage / concept	TBD	TBD	Multiple proponents	$45m QLD Govt funding initiative (2024–25 Budget) expected to catalyse project pipeline. No specific large-scale thermal projects publicly confirmed beyond Kalfresh.
South Australia proposals	SA (multiple)	SA	Early stage / concept	TBD	TBD	Various	No specific large-scale thermal WtE projects publicly confirmed. State government considering policy framework.

Other developed countries have had MSW waste-to-energy for many years, and globally waste-to-energy has been used extensively in Europe, Japan and the United States of America (USA). Incinerators have been widely used and grown in use especially over the last 50-plus years.

While over the period since the 1980s Australia decommissioned general waste incinerators, the USA commissioned 80 or more of them and Europe about 400 of them over the same time frame.

It is also notable that many countries that built waste-to-energy infrastructure at scale in the 1990s and 2000s now have excess capacity and are importing waste to keep plants operating or are scaling back waste-to-energy facilities.

This suggests waste-to-energy for MSW needs to be considered in coordination with other waste management, and as a complement to, rather than substitute for, recycling and circular economy ambitions.

Country / Region	No. of MSW WtE Plants	Key Features
Japan	1,000+	Strict urban planning integration; high energy recovery; 21 plants in Tokyo alone
Europe	400+	Extensive networks in Denmark, Netherlands, Germany
United States	~80	Legacy plants; newer technologies attracting renewed interest
Australia	1 operational; 1 under commissioning	Kwinana (WA) and East Rockingham (WA)

It is estimated that in the USA the 80 or more facilities operating across 23 states process more than 30 million tons of waste per year and produce 14.5 million megawatt hours. The electricity is equivalent less than half of one percent of total USA energy supply, and equivalent to the electricity used to power 2.3 million homes in the USA.

The 400 or more facilities in Europe incinerate about 250 million tonnes of solid household waste per year. In total, the plants account for 2.4% of the EU's total energy supply, with 18 million people receiving electricity and 15 million receiving heating.

In Europe, the use of heating from waste-to-energy is a major structural difference from the USA and Australia as Europe has extensive district heating networks. District heating is a centralized system distributing heat via insulated pipes to multiple buildings (residential and commercial) and in Europe is estimated to service about 70 million people across 17,000 networks.

District heating using waste-to-energy in whole or part means that those waste-to-energy facilities are not producing electricity but are using the heat and steam from the process to service the networks.

The fundamental reasons for the larger number of waste-to-energy and incineration facilities in the USA and Europe include lack of alternative waste

disposal options, demand for the heat from waste-to-energy and direct incentives through government policy and regulation.

Australia has also had extensive waste-to-energy from landfill gas capture and use.

This occurs across the country where landfills that receive putrescible or biogenic waste establish gas collection systems and then use that gas to generate energy. While landfills are sources of a range of emissions to the environment (including greenhouse gas and methane, odours and ground water), in terms of waste-to-energy landfill gas capture and use occurs at a rate of between 30 and 85%.

Recent technical reports from government on the landfill gas capture rate and outlook suggest capture rates have been steadily improving and will continue to improve.[18]

Landfill gas collection, capture and use accounts for 76% of the current energy recovery from waste in Australia[19].

Waste hierarchy

In waste management, recycling and resource recovery, the governments, policy makers, industry and environment groups and others refer to the waste hierarchy.

The waste hierarchy is an over-arching guiding principle intended to reduce the negative impacts of waste, promote sustainable resource management and advance towards a more circular economy.

While the hierarchy varies at times in different jurisdictions it is currently and generally presented and the following:

1. ***Avoid and reduce waste***
2. ***Reuse***
3. ***Recycle***
4. ***Recover (including waste-to-energy)***
5. ***Disposal***

Waste-to-energy sits in the current hierarchy as being an option after reduce, reuse and recycle, but before disposal.

It is noted that in some States and Territories in Australia, the hierarchy is used to guide waste-to-energy policy, targets, permits and licenses. For example, some State and Territories expect or require recyclable materials to be extracted

[18] Australian Government Department of Climate Change, Energy, the Environment and Water. Reform options for ACCU Scheme landfill gas emissions, supporting technical report, 2024.

[19] Australian Government Department of Climate Change, Energy, the Environment and Watse. https://www.dcceew.gov.au/environment/protection/waste/publications/national-waste-resource-recovery-reporting/energy-recovery-2024

from a waste stream before the remaining or residual waste can be used for waste-to-energy.

Government and waste-to-energy proponents make a range of claims with respect to the benefits of waste-to-energy and how it may respect and uphold the waste hierarchy.

For example, the NSW Government waste regulatory framework enables waste-to-energy that is determined to have the ability to deliver environmental benefits.[20]

Proponents such as Recovered Energy Australia (proposed facility in Laverton North, Victoria) claim their proposal to process 240,000 tonnes per annum through waste-to-energy will reduce greenhouse gas emissions equivalent to 100,000 cars and increase the recovery and recycling of metals[21] (however it is noted that the emissions from the start-up phase of the facility are not included in these assessments and claims.[22]

The waste sector generally claims waste-to-energy is primarily an energy recovery activity and that it is not waste disposal.

In contrast, the recycling sector generally claims waste-to-energy is disposal and that valuable recoverable resources are being lost from higher order economic and environmental opportunities.

European Community Framework Directive on Waste 1975
It is also notable that the waste hierarchy was formally established in the European Community's Framework Directive on Waste in 1975.

Its stated purpose and objective at commencement were relatively narrow - to guide waste management strategies by environmental preference, and to prioritise prevention and resource recovery over disposal.

In Australia the hierarchy was adopted formally under the 1992 National Waste Minimisation and Recycling Strategy, part of the National Strategy for Ecologically Sustainable Development endorsed by the Council of Australian Governments (COAG). At that time its focus was reduce, re-use and recycle and in 1996 the categories identified were:

1. ***Avoidance/prevention***
2. ***Minimisation***
3. ***Re-use/Recycling***
4. ***Treatment***
5. ***Disposal - landfill/incineration[23]***

---

[20] Protection of the Environment Operations (General) Regulation 2022

[21] See https://www.recoveredenergy.com.au/project-details (accessed March 2026)

[22] JBS&G Australia Pty Ltd T/A Strategen-JBS&G | Project No. 57965/126,551 - 21 January 2020, Laverton North Residual Municipal Solid Waste Gasification to Energy

[23] Parliament of Australia Senate Committee waste inquiry 1996, link https://www.aph.gov.au/binaries/senate/committee/ecita_ctte/completed_inquiries/pre1996/waste/02ch2.pdf (accessed May 2026)

The appropriate modern use of the hierarchy warrants consideration in the context of waste-to-energy and to determine that it is meeting its stated objectives and purpose.

The hierarchy is presented prima facie as an elementary and vital reason for widespread use of waste-to-energy, as presented in a recent submission from the Waste Management and Resource Recovery Association Australia (WMRR) to a Victorian Parliamentary inquiry.

The present-day functionality, local use and general appropriateness of the waste hierarchy has been studied and questioned[24] and its application is relevant to consideration of waste-to-energy proposals.

Landfill

As noted above, waste-to-energy sits higher on the waste hierarchy than landfill. Disposal of MSW to landfill has potential to create significant environmental risks and pollution, and Australian governments' policies and regulations have increasingly promoted, incentivized and supported diversion of waste from landfill.

Waste management and recycling in many countries – including Australia – has been moving towards a circular economy framework and approach.

A circular economy approach seeks to replace the traditional "take, make, dispose" linear system with one designed to eliminate waste, continually reuse materials, and regenerate natural systems.[25]

Circular economy places greater value of waste reduction and material recovery and there has been some concern that some elements of waste-to-energy may undermine moves to a more circular economy.[26] This includes concerns that waste-to-energy creates a perverse economic incentive to generate waste as operators need a steady fuel supply, which can undermine recycling and composting programs[27].

Waste-to-energy proponents and governments commonly cite lack of landfill or lack of landfill availability as a key motivation for establishing waste-to-energy facilities.

---

[24] Solid waste management in the context of the waste hierarchy and circular economy frameworks: An international critical review Florence Barbara Awino1 and Sabine E. Apitz, Institute for Applied Ecology, University of Canberra

[25] Ellen MacArthur Foundation see https://www.ellenmacarthurfoundation.org/topics/circular-economy-introduction/overview

[26] Zero Waste Europe, Brussels, 7 May 2026, letter to the European Commissioner for Environment, Water Resilience and a Competitive Circular Economy and joint statement calling for a precautionary approach to incineration residues

[27] Australian Quarterly September 2025, From circular economy to ecological economy: Is Circularity even possible in Australia? Nina Gbor.

Australians send some 20 million tonnes of waste to landfill every year (out of a total solid waste generation of 74-76 million tonnes meaning 25-30% of all waste goes to landfill).

There are about 1,100 operating landfills in Australia and about 40 of those accept 75% of the waste to landfill.

Waste-to-energy is cited as a solution to landfill constraints and lack of availability.

Australia as a whole does not have a landfill scarcity issue.

In 2009 the Australian Government assessed 16 major cities and towns and found there was sufficient physical landfill available for the short to medium term, but that capacity was constrained by social, environmental and political issues.

Currently Sydney and Western Australia have landfill licensing and capacity constraints. The greater Sydney area is forecast to run out of licensed landfill space by 2030 and likewise areas of Western Australia.

Other States and capital cities identify sufficient landfill capacity, with the actual availability of the landfill space sometimes dependent on licensing and permitting.

The following section details the scope and methodology used to investigate the matters raised here in this introduction and used overall for this research and report.

2 Scope and methodology

Scope

The Smart Energy Council established the scope for a research report examining the role of waste-to-energy in Australia, with a particular focus on whether waste-to-energy technologies can be appropriately classified as “clean energy” or “renewable energy”.

The research is in response to increasing policy and investment interest in projects that incinerate landfill waste to generate electricity.

Some waste-to-energy projects in Australia have received funding support from the Australian Renewable Energy Agency (ARENA), which classifies waste-to-energy as a sub-set of bioenergy, and therefore as whole or part as renewable energy.

The Clean Energy Finance Corporation (CEFC) has also supported waste-to-energy projects, describing them as a form of “reliable clean energy”.

Proponents of waste-to-energy commonly advance three core arguments:

- That landfill capacity is constrained, and incineration can reduce or eliminate the need for new landfill sites.
- That waste incineration provides clean energy by avoiding methane emissions from landfill decomposition while generating electricity.
- That converting waste into energy represents resource recovery and is therefore preferable to disposal under the waste hierarchy.

The Smart Energy Council research and report draw on existing data, reports, peer-reviewed literature, and expert advice to examine these claims and assess the evidence base underpinning them.

The research is structured around three core elements:

1. Emissions - Comparison of greenhouse gas and carbon emissions from waste-to energy with other waste management options, whether waste-to-energy can reasonably be considered a renewable energy source.

2. Economics - Comparative costs of waste-to-energy versus alternative waste management approaches.

3. Environment - Whether waste-to-energy is necessary or appropriate as a waste management response in Australia, the extent to which environmental risks and impacts are known, manageable, and regulated.

Methodology

For each of the three core elements noted above, the approach includes the following phases:

- Literature review, desktop research and assessment (gathering of data and references,
  checking and evaluation).
- Subject expert input and advice
- Identify and evaluate issues and impacts of waste-to-energy facilities
- Knowledge gaps and issues arising
- Further research and assessment
- Draft report and recommendations
- Review and feedback

- Final report

The following sections document the research findings and references in respect to the greenhouse gas emissions, general economic impacts, environmental impacts and the regulatory frameworks for waste-to-energy at this time in Australia.

3 Greenhouse gas emissions

Greenhouse gas emissions from waste-to-energy facilities are a fundamental factor in considering the effectiveness and appropriateness of such facilities.

This is inherently because waste-to-energy facilities generate greenhouse gas emissions in their operations, and they are often presented as "clean energy" or low in greenhouse gas emissions as compared to other waste management activities and energy production methods.[28]

It is therefore necessary to understand the levels of greenhouse emissions from waste-to-energy facilities, from those waste activities and energy production they are compared to, and how they are measured.

Claims of low emissions are comparative and often based on comparisons between waste-to-energy and other waste management and disposal methods, as well as other electricity generation methods.

Commonly the facilities and proponents compare waste-to-energy activity with landfill and with fossil fuel coal fired energy generation.

The emissions from a waste-to-energy facility need to be considered and compared to other waste management activities and other energy production activities but direct like-for-like comparisons are difficult.

Facilities and proponents also claim that energy production from waste-to-energy is "clean energy" and is "renewable".[29]

Waste-to-energy and greenhouse gas

The burning of MSW in a waste-to-energy facility generates and emits greenhouse gases (expressed as carbon dioxide equivalent or CO2-e) the same way burning anything does; the heat rapidly oxidizes the carbon stored in the waste material and it is released to the atmosphere.

All of the combustible MSW material used in waste-to-energy releases greenhouse gases / CO2-e.

The mix or composition of MSW that goes into waste-to-energy facilities results in greenhouse gas emissions that are generally classified as fossil-fuel derived CO2-e emissions and as biogenic CO2-e emissions.

The fossil fuel derived CO2-e emissions are from the plastics, textiles and any other waste and materials that are derived from petroleum and fossil fuel sources.

The biogenic or biomass derived CO2-e is from organic waste such as food, garden waste, paper and wood.

While all MSW materials emit greenhouse gas when incinerated, in greenhouse gas accounting terms the biogenic portion of the emissions is considered less problematic. That is because the biogenic materials absorbed CO2 while

---

[28] See examples Recovered Energy Australia accessed March 2026 at https://www.recoveredenergy.com.au/project-details and also ACCIONA Kwinana Energy Recovery accessed March 2026 at https://www.acciona.com.au/updates/news/acciona-powers-up-australias-first-energy-recovery-facility-in-western-australia

[29]

growing (trees, plants, food etc), and the release of that C02 by burning the material is part of a natural carbon cycle and is therefore effectively carbon neutral.

This view is generally accepted in international accounting guidance[30] but other studies indicate that disturbance of the natural carbon cycle still adds to the atmospheric concentrations of CO2-e and need to be reduced.[31]

Measuring greenhouse gas emissions

Greenhouse gas emissions from waste-to-energy facilities compared to other waste management or energy production activities can vary depending on what is measured and whether it is direct stack emissions, a lifecycle assessment or a lifecycle that includes discounts for avoided landfill methane emissions.

Direct stack emissions measure the greenhouse emissions that come out of the chimney per unit of energy output or electricity generated.

Studies and reports noted in this paper show that such emissions reporting range depending on geography, waste composition, and whether a plant generates electricity only or both heat and power.

Applying a lifecycle assessment (LCA) accounts for the stack emissions, construction, operations, ash disposal and more, and applies discounts or credits for avoided landfill methane emissions and displaced grid electricity. In the case of recent studies in Victoria, the LCA method has also include consideration that waste-to-energy facilities may be operational and emitting CO2-e for 30 years, but in comparison landfill emissions are for 100 years or more.

Emissions intensity

The MSW incinerators operating in Australia, and those being proposed do not yet readily report their CO2-e per kWh or mWh. Australian waste-to-energy facilities provide high level information on their potential energy / electricity production and on the amount of waste they are designed to received, but their CO2-e emissions have not yet been published or readily reported.

Looking to international references, studies show there is a range of CO2-e emissions from waste-to-energy, from 0.72 t CO2-e per mWh to 1.707 t CO2-e per mWh. Some of these higher range figures seem to include both the biogenic and fossil fuel CO2-e[32] [33]

Recent reports from the United Kingdom find the average emissions from waste-to-energy are 0.72 t CO2-e per mWh.[34]

---

[30] The climate change Impacts of burning municipal solid waste in Scotland. Kimberley Practt and Michael Lenaghan, Zero Waste Scotland, June 2021.

[31] Waste incinerators undermine clean energy goals, Neil Tangri, June 2023 PLOS Clim 2(6): e0000100. https://doi.org/10.1371/journal.pclm.0000100

[32] Ibid

[33] Prospective analysis of the optimal capacity, economics and carbon footprint of energy recovery from municipal solid waste incineration, Resources, Conservation and Recycling, June 2023

[34] Burning rubbish now UK's dirtiest form of power., October 2024, BBC News. Esme Stallard, Matt McGrath, Patrick Clahane and Paul Lynch. https://www.bbc.com/news/articles/cp3wxgje5pwo

Toxics Free Australia has done analysis on the waste-to-energy facility at Kwinana in Western Australia and estimates it will produce 0.79 t CO2-e / mWh[35].

Low-emissions definition

There is no single overarching statutory definition of "low emissions technology" in Australian federal law, but several key pieces of legislation define or describe what qualifies.

The *Clean Energy Finance Corporation Act 2012* is the primary federal legislation that operationally defines "low emissions technology."

It uses a functional description and under the Act, the Clean Energy Finance Corporation (CEFC) has authority to invest across three low-emissions and clean energy categories being:

1. *Renewable energy (wind, solar, biomass and ancillary technologies such as battery storage).*
2. *Energy efficiency (demand side response and power or fuel savings initiatives in the property, infrastructure and transport sectors) and*
3. *Low emissions technology, which includes abatement activities such as landfill methane gas capture,*

and which result in greenhouse gas emissions being substantially lower than the current average of the most relevant baseline for the activity being undertaken.[36]

The CEFC Act's operative test is a comparison, and a technology qualifies as "low emissions" or “clean energy” if it produces greenhouse gas emissions *substantially lower* than the current baseline for that or comparable activities. It is not a fixed in the same way that, for example, the *Renewable Energy (Electricity) Act 2000* works.

The Australian Government has also developed and published the Low Emissions Technology Statements (LETS) that are policy documents, not legislation, and do not carry legal definitions.

However, it is noted that the first LETS set five priority low emissions technologies with goals related to the price at which each technology becomes competitive with high-emissions incumbents and including for example electricity storage (firmed electricity under $100/MWh) and low carbon materials such as low-emissions steel under $900/tonne and aluminium under $2,700/tonne.

These statements guide funding priorities around low emissions but do not create legal definitions or enforceable actions.

---

[35] The Australian 3 December 2025. Low carbon claim under fire: Kwinana waste-to-energy emissions exceed gas https://www.theaustralian.com.au/news/lowcarbon-claim-under-fire-kwinana-wastetoenergy-emissions-exceed-gas/video/4264836c712468d8c1398cf6c7837aa7 (accessed May 2026)

[36] See link to AustLII

Landfill emissions

Waste-to-energy facilities claim emissions reduction through avoided landfill. That is, the waste used in waste-to-energy would have gone to landfill, and that the emissions from waste-to-energy are lower than what would have been emitted from landfill.

Modelling of waste-to-energy and landfill greenhouse gas (GHG) emissions finds that waste-to-energy can result in higher direct emissions compared to landfill but the emissions are lower over the full lifecycle. This is because the waste sent to landfill degrades and creates emissions over 100-125 years, whereas the waste-to-energy facility creates emissions more immediately over a 25-30 year period.[37]

The other mitigating factor is the capture of greenhouse emissions from landfill.

The Australian Government reports that the average rate of landfill gas capture is about 42%[38] and waste-to-energy proponents generally use this average landfill gas capture of 42% as a benchmark. However, in practice landfill gas capture can be as high as 85%[39].

Recent technical advice from the Australian Government on managing and accounting landfill gas capture finds that landfills that have been increasing gas capture over time[40].

The National Greenhouse Factors and Workbook 2025 establishes that MSW disposed of to landfill generates 1.6 tonnes of CO2-e per tonne of waste[41].

If the Australian average gas capture rate is used then 42% of 1.6 tonnes means 0.672 tonnes of CO2-e emissions per tonne of waste to landfill is not being captured and is being emitted, and if the best practice capture of 85% is used then only 0.24 tonnes of CO2-e per tonne of waste is being emitted from landfill.

This suggests that any claims of avoided emissions through waste-to-energy compared to landfill may in some cases be overstated and need to be examined on a case-by-case basis.

For waste-to-energy facilities it suggests that any waste going into a facility must be considered not only for its composition and the mix of biogenic and fossil fuel source material, but also for the actual landfill the MSW may have gone to and the gas capture rate at that landfill.

---

[37] Waste to Energy Regulatory Impact Statement: Amending Regulations to Increase Waste to Energy Cap Limit, Victorian Government, March 2025

[38] Department of Climate Change, Energy, the Environment and Water, Energy Recovery, December 2024, see https://www.dcceew.gov.au/environment/protection/waste/publications/national-waste-resource-recovery-reporting/energy-recovery-2024 (accessed May 2026)

[39] Efficiency of Landfill Gas (LFG) Capture Systems in Australia, NSW EPA and Hunter Joint Org

[40] Reform options for ACCU Scheme landfill gas methods Supporting Technical Report, DCCEW 2024

[41] Australian Greenhouse Accounts Factors 2025, see section 4.12 table 16

The Australian Government recent technical work noted above also highlights that most large landfills – where the bulk of MSW currently goes – have been increasing their capture efficiency at a rate of about 2% per year. This further indicates that waste-to-energy facilities relying on avoided landfill to determine any emissions saving may need to factor in declining benefits over time.

4 Renewable energy and clean energy

Claiming that something is renewable energy or clean energy can be problematic as Australia doesn't have a single overarching definition of "renewable energy" or “clean energy”.

In common use the terms “renewable energy” and “clean energy” are used interchangeably.

The Renewable Energy (Electricity) Act 2000 defines renewable energy through the concept of "eligible renewable energy sources." Under Section 17 of the Act, the following energy sources are listed as eligible renewable energy sources: hydro, wave, tide, and ocean, and the full list also includes wind, solar, geothermal-aquifer, hot dry rock, energy crops, wood waste, agricultural waste, waste from processing of agricultural products, food waste, food processing waste, bagasse, black liquor, biomass-based components of municipal solid waste, landfill gas, sewage gas, biomass-based components of sewage, and any other energy source prescribed by the regulations.[42]

Based on general composition of the different materials in MSW in Australia, about 50-60% of MSW going into to waste-to-energy may be identified as *biomass-based components of municipal solid waste* however that does not translate to 50-60% of energy from a waste-to-energy being renewable.

More specific identification and assessment of the composition of feedstock is needed and it also needs to be considered whether a portion of the bio-mass is or is not sustainable and is or is not an eligible renewable energy source.

It is noted that the objects of the Act are to encourage the additional generation of electricity from renewable sources, to reduce emissions of greenhouse gases in the electricity sector, and to ensure that renewable energy sources are ecologically sustainable.

State-level variation

Individual states and territories can have their own renewable energy legislation with potentially different or broader definitions, approaches and targets. For example, Victoria has legislated renewable energy targets of 40% by 2025, 65% by 2030, and 95% by 2035, and has also committed to offshore wind energy generation targets.

Victoria

The *Renewable Energy (Jobs and Investment) Act 2017* (Vic) uses the term "renewable energy source" and includes a mechanism by which Government can declare additional sources, referencing "renewable energy source" as an amendable concept.

The *Electricity Industry Act 2000* (Vic) takes a facility-by-facility approach, and it defines specific facility types such as "wind energy generation facility" and "hydro generation facility but doesn't define "renewable energy" as a single overarching concept.

[42] RENEWABLE ENERGY (ELECTRICITY) ACT 2000 - SECT 17 see AustLII

New South Wales

NSW's *Electricity Infrastructure Investment Act 2020* takes a technology-neutral approach and focuses on outcomes (generation, storage, firming infrastructure) and renewable energy zones rather than defining what counts as "renewable energy" and there is no single statutory definition of renewable energy in NSW legislation.

Queensland, South Australia, Tasmania, WA, and the ACT

These jurisdictions similarly rely on the federal framework for the definition of eligible renewable energy sources, while passing their own legislation to set targets or establish investment mechanisms. Queensland has a 50% renewable energy target by 2030, 70% by 2032 and 80% by 2035, while the ACT, Tasmania and Victoria have all passed legislation to enshrine their respective targets.

However, none of these states have created a fundamentally different or broader legal definition of what counts as "renewable energy" and they generally defer to the federal classification.

Waste composition and emissions

With respect to the claims of being a low emissions energy source, it of course depends on the composition of waste for each facility and what waste-to-energy facilities are compared to.

MSW in Australia is generally comprised (by weight) of 55-60% organics (food, garden waste, timber), 10-12% paper and cardboard, about 10-15% plastics, 2-4% glass and 3-4% metals. The other 7-10% is the detritus of everything else people discard.

The greenhouse gas emissions from waste-to-energy facilities arise from biogenic and fossil materials being incinerated, with the biogenic or biomass proportion being considered to be whole or in part renewable.

Waste-to-energy proponents and some government authorities consider that the biomass is a carbon neutral fuel source, and therefore should be considered as a renewable. For example, the East Rockingham waste-to-energy facility in Perth uses this approach to claim 50% of the power it produces is renewable energy.[43] Easte Rockingham states on its website that it is “50% deemed renewable energy” but further details on how this claim is substantiated could not be found on the website, but it does state that emissions data will be available when the site is operational.

The composition of MSW is changing. Notably many Councils and State and Territory Governments around Australia have been implementing separate collection and processing for food and garden organics wastes (FOGO) from households.

NSW has gone further and implemented a mandate that all households must have separate FOGO services by 2030, and that businesses and relevant premises will need to start establishing FOGO services from 2026.

[43] See website https://erwte.com.au/ (accessed May 2026)

As such the current average of organics in MSW is expected to decline. This changes the mix going into any waste-to-energy facility, is calorific content and the amount of any renewable or non-renewable material.

While this has impacts for waste-to-energy facilities, it also has impacts for landfill and therefore to the greenhouse gas emissions from landfill that are used as a basis to claim benefits from waste-to-energy.

The Australian Government Department of Climate Change, Energy, the Environment and Water (DEECW) does not yet place a figure on the changes to landfill emissions but notes its impacts on reducing carbon credits.[44]

It is noted that this DEECW technical report also finds that State and Territory Government net zero targets and waste targets should increase waste reduction and diversion and therefore reduce emissions from landfill and related activities.

[44] Australian Government Department of Climate Change, Energy, the Environment and Water. Reform options for ACCU Scheme landfill gas emissions, supporting technical report, 2024.

5 Revenues

Waste-to-energy facilities are an investment in significant infrastructure that is intended to have long-term use for processing waste and energy production, and therefore long-term financial viability needs to be understood and managed.

Costs to build current and currently proposed facilities range from $250 million to $1.5 billion, depending on the size, location and type of facility.

Return on the investment and on-going financial viability for waste-to-energy facilities is dependent on being paid gate fees for receiving waste, on getting long-term contracts to receive waste, sale of electricity, sale of other products and also on direct or indirect receipt of public funding.

Waste-to-energy facilities main revenue is for being paid to take waste.

Estimates are that about 60% of the revenue that facilities receive is from gate fees, with about 25% of revenue from electricity sales and the 15% from the sale of recovered metals and other recyclables.

Gate fees are generally not published. Industry personnel questioned for this research reported that gate fees range widely for waste-to-energy facilities and may vary from $150 to $250 per tonne of waste received.

The following table is an indicative example of revenue from a waste-to-energy facility showing a 300,000 tonne facility at $150 and $250 per tonne gate fee.

Low gate fee		Percentage of total revenue
Gate fee per tonne	$150.00	
Tonnes in	300,000	
Revenue from gate fee	$45,000,000	54%
Electricity capacity (MW)	28	
Electricity generated per annum (MWh)	241,920	
Average wholesale electricity price	$90.00	
Revenue from electricity sales	$21,772,800	26%
Revenue from other product sales	$16,000,000	19%
Total revenue	$82,772,800	
High gate fee		Percentage of total revenue
Gate fee per tonne	$250.00	
Tonnes in	300,000	

Revenue from gate fee	$75,000,000	67%
Electricity capacity (MW)	28	
Electricity generated per annum (MWh)	241,920	
Average wholesale electrcity price	$90.00	
Revenue from electricity sales	$21,772,800	19%
Revenue from other product sales	$16,000,000	14%
Total revenue	$112,772,800	
Revenue from other product sales	$16,000,000	12%
Total revenue	$129,014,720	

The above table uses a high average electricity wholesale sale price of $90 per MWh whereas Australian prices generally range from $40 to $90 per MWh.

As the table illustrates, electricity sales are 20-25% of total revenue and gate fees make up the bulk of the revenue for waste-to-energy operations.

Landfill levies

All Australian States have landfill levies in place which are an amount paid to Government for every tonne of waste disposed to landfill.

Levies are presented as being a price signal providing an incentive to reduce waste being sent to landfill, and to encourage resource recovery, reuse and recycling.[45]

Levies vary across States and regions, see the following examples.

Australian landfill levy rates 2025–26

General/municipal solid waste, per tonne (AUD, exc. GST unless noted). Effective 1 July 2025.

State / Territory	Metropolitan rate	Regional / rural rate	Change from 2024–25	Notes
NSW	$171.20/t	$94.00/t	+$7.00/t (Metro)	Adjusted annually by CPI. MLA covers Sydney, Illawarra, Hunter & parts of Central/North Coast.
	Metropolitan Levy Area	Regional Levy Area	+CPI (Regional)	

[45] See New South Wales for example https://www.epa.nsw.gov.au/Your-environment/Waste/waste-levy

VIC	$169.79/t Municipal & industrial	$84.78/t Municipal (rural) $149.33/t Industrial (rural)	+$40.52/t Metro (+31%)	Largest single-year increase in Victoria's history. Priority/hazardous waste rates can exceed $288/t. Rates set via EPA fee units annually.
QLD	$125.00/t Metro zone (general waste)	~$88–$124/t Regional zone (indexed)	+$10.00/t (Metro)	Metro rate rises by $10/t each year until it reaches $145/t on 1 July 2027, then indexed. Household waste offset by government rebate. GST applies when passed on to customers.
SA	~$168/t* Metropolitan Adelaide	~$84/t* Non-metropolitan	+CPI (~3–4%)	*Estimated based on CPI indexation from 2024 rates; confirm current rates at epa.sa.gov.au.
WA	$85.00/t Metro area	$85.00/t Regional (same rate)	Stable (increased from ~$70 in July 2024)	First increase since 2018 was in July 2024, lifting to $85/t. A five-year rolling schedule of future rates is published. Rate applies state-wide.
ACT	Priced via gate fees (ACT Government owns the landfill)	—	N/A	ACT sets disposal fees directly rather than a separate levy, as the government owns the landfill facility. No traditional levy structure.

NT	No levy	No levy	No change	Northern Territory does not impose a landfill levy. Circular Economy Strategy 2022–27 is in place, but no levy mechanism yet.
TAS	$70.50/t	$70.50/t	Up	Progressively raised from 2022-2026

Sources: EPA NSW, EPA Victoria, Qld Dept of Environment, WA Govt, SA EPA and Inside Waste (2025). Rates shown are for general/municipal solid waste. Regulated, hazardous, or special waste categories attract higher levies.

Under certain circumstances, government agencies provide exemptions, discounts and waivers to the landfill levy. These exemptions and waivers can be introduced because waste is going to a recovery and recycling facility or other reasons such as the waste being sourced from a disaster situation.[46]

The cost of the landfill levy is passed through to the generators of waste, including households through local government rates and waste charges.

A significant proportion of the revenue from landfill levies has historically been directed to support better waste management and to improve resource recovery and recycling. Some States do not do this explicitly and the levy money goes into consolidated revenue, but some States overtly direct all or part of the levy to investment in environmental projects.[47]

As noted earlier, waste-to-energy facilities generate income by charging gate fees to receive and process waste as well as through the sale of energy (electricity), any recovered and recyclable materials (such as metals), and is some cases carbon credits.

The capital cost of waste-to-energy facilities of course varies; Kwinana in Perth WA was budgeted at AUD$680 million but reportedly cost more than AUD$1 billion and has capacity to process 400,000 tonnes, whereas the proposed facility in Parkes NSW is forecast to cost AUD$1.5 billion to process 600,000 tonnes.

Waste-to-energy facilities therefore need to compete with the cost of landfill, and need to ensure they maintain on-going feedstock of material to incinerate.

[46] See South Australia for example https://www.epa.sa.gov.au/business_and_industry/waste-levy

[47] See Queensland for example https://www.qld.gov.au/environment/waste-reduction-recycling/disposal-levy/about/overview

As the Australia Institute and others have observed[48], this means waste-to-energy facilities actively work against waste reduction and circular economy initiatives.

Public investment

Waste-to-energy facilities often seek exemption from landfill levies, arguing that they are not landfills and are not waste disposal facilities.

Estimates are that in Victoria alone this reduces Government revenue by hundreds of millions of dollars or even billions over the life of any waste-to-energy facility. Government is losing revenue and private waste-to-energy operators are subsidised to compete against other waste reduction and management options.

The Victorian example is documented in a recent Regulation Impact Statement (RIS)[49] and is instructive as it estimates that landfill levies will decrease by $453 million a year or about $11 billion over a 25 year time frame.

The Victorian RIS also suggests that gates fees for waste-to-energy facilities will be about $250 per tonne, whereas the modelling estimates landfill gate fees will be about $70 per tonne (noting that landfill gate fees then add the landfill levy so would total about $240 per tonne).

It is not discussed in the RIS where this extra gate fee cost is to be borne but as MSW is from households it can be assumed the increased fees will be from local government and households.

The financial viability of waste-to-energy is therefore dependent on being able to charge gate fees (which are ultimately passed on to the householder and general consumer), to be underwritten by long-term access to feedstock (which undermines the circular economy), to be exempt from waste levies (which reduces Government revenues) and to avoid emissions liability (by being exempted from the Safeguard Mechanism by claiming to be an electricity generator).

[48] Australian Quarterly September 2025, FROM CIRCULAR ECONOMY TO ECOLOGICAL ECONOMY: Is Circularity even possible in Australia? Nina Gbor.

[49] Waste to Energy – Regulation Impact Statement: Amending Regulations to Increase Waste to Energy Cap Limit, April 2025

6 Environment and health

Waste-to-energy and waste incineration are generally considered safe and with appropriate controls and operating conditions can meet stringent environment and human health guidelines.

Modern facilities have reduced risks and manage the risks through technological development.

Permitting and regulation has established tougher benchmarks and requirements on operational performance.

Modern facilities use combustion control, flue gas treatment, ash management and real time monitoring to manage risk of pollution. Proper combustion at high temperature destroys hazardous organic pollutants and multi-stage gas cleansing removes potential pollutants before anything is vented via a stack.

However, waste-to-energy and incineration of waste does create potentially significant environmental and health risks including:

Air Pollution & Emissions

Toxic gases and particulate matter released to the environment present serious ecological and health concerns that are commonly associated with burning mixed waste and waste to energy.

In particular dioxins and furans are of concern as they can be generated when any chlorine containing materials are burnt, and they are persistent in the environment and can enter the food chain.

The materials and waste matter being burnt that can give rise to dioxins and furans are some plastics used in packaging and other products, some treated papers as well as residual household hazardous waste and chemicals. Other materials such as PVC, some electrical wastes, treated timber and residual chemicals can also give rise to pollution and most waste-to-energy

Heavy metals including mercury, lead, cadmium, and arsenic are commonly released when burning waste as the elements are vaporized and volatilized in the direct incineration and combustion processes and can generate and escape as fine particulates or gases.

Particulate matter and especially ultra-fine particles (called PM2.5) have potential to penetrate deep into lungs and enter the bloodstream, linked to cardiovascular and respiratory disease.
Nitrogen oxides (NO_x) and sulfur dioxide (SO_2) — contribute to smog, acid rain, and respiratory irritation. Carbon monoxide is also a risk and may occur as a byproduct of incomplete combustion.

Outputs and residual waste

Waste-to-energy facilities reduce waste by 90% or more[50] by volume and 70-80% by weight.

In terms of the weight of residual materials that come from waste-to-energy, about 15% is bottom ash and about 5% is fly ash (also called air pollution control residue) that needs disposal.

Therefore, for every tonne of waste that goes into a waste-to-energy process, about 100kgs is residual waste of which 85 kgs is bottom ash and 15kgs is fly ash.

Further resource recovery is possible with used metals in the bottom ash able to be extracted and recycled. The remaining material from the bottom is ash is considered inert by some proponents and is promoted as being able to used in road base and other aggregate applications.[51]

However there is concern in some European organizations that bottom ash still contains hazardous substances, should be classified as toxic and should not be reused.[52] These organisations also argue that the use of any residual waste from incineration is not consistent with circular economy principles and regulations.

Fly ash (air pollution control residue) is the residual material captured from flue and contains concentrated heavy metals and dioxins, and usually requires disposal in hazardous waste landfills, or other treatment to ensure stablisation.

Communities living within a few kilometres of incinerators have concerns about the elevated risks of health effects from incinerators. While in Europe some waste-to-energy facilities have been located adjacent and close to commercial centres and residential areas, in Australia there has been significant community concern about some proposed waste-to-energy facilities.[53]

Some community concerns are with respect to deposition to soil and water which are potential long-term effects. Dioxins and other pollutants deposited on soil and water are taken up by plants and animals, bioaccumulating up the food

---

[50] East Rockingham Waste to Energy claims a 95.8% landfill diversion rate, see https://erwte.com.au/ (accessed May 2026)

[51] Veolia and the proposed Maryvale Facility in Victoria and bottom ash uses, see https://www.anz.veolia.com/en-au/newsroom/newsroom/veolia-voice-turning-waste-resource accessed May 2026

[52] Zero Waste Europe, Brussels, 7 May 2026, letter to the European Commissioner for Environment, Water Resilience and a Competitive Circular Economy and joint statement calling for a precautionary approach to incineration residues

[53] See for example Sunbury residents fear waste-to-energy proposal risks health and environment, ABC News, 16 November 2025, see here https://www.abc.net.au/news/2025-11-16/sunbury-waste-to-energy-incinerator-hiq-bulla-landfill/106006600 accessed May 2026 and also Inquiry hears Parkes school expects to lose students if waste incinerator is built, ABC News, 14 April 2026, see herehttps://www.abc.net.au/news/2026-04-14/waste-to-energy-incinerator-nsw-parliamentary-inquiry-school/106559610 (accessed May 2026)

chain meaning fish, livestock, and humans at the top may receive concentrated doses.

Modern waste-to-energy facilities use scrubbers, electrostatic precipitators, activated carbon filters, and continuous emissions monitoring to reduce but not altogether eliminate any release of pollutants.

7 Legislative and regulatory frameworks

Australia's waste-to-energy sector is governed across multiple layers of national, state/territory, and local government interventions, with no single national framework.

At the national level the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) is the primary federal environmental law and large waste-to-energy projects may trigger an assessment if they have significant impacts on matters of national environmental significance.

The National Greenhouse and Energy Reporting Act 2007 (NGER Act) requires corporations above certain thresholds to report greenhouse gas emissions, including those from combustion of waste. Waste-to-energy operators are likely reporting entities.

With regards to the Clean Energy Regulator and Australian Carbon Credit Units (ACCUs), waste-to-energy projects may generate ACCUs under the Emissions Reduction Fund (ERF) if they displace grid electricity or avoid landfill methane. The relevant methodology is the Landfill Gas method which is under review and reform, and dedicated waste-to-energy methodologies are still developing.

As discussed earlier, the classification of electricity from waste-to-energy as "renewable" is considered under the Renewable Energy (Electricity) Act 2000, only the biomass fraction of mixed waste qualifies for Large-scale Generation Certificates (LGCs) and any fossil-derived fraction does not.

At the Federal level, the Australian Government has provided financial support for waste-to-energy through two key agencies: the Australian Renewable Energy Agency (ARENA) and the Clean Energy Finance Corporation (CEFC).

Both the Kwinana and East Rockingham facilities in Perth received combined grants and concessional debt funding from these bodies.

The National Waste Policy Action Plan 2019 set a target of an 80% average resource recovery rate from all waste streams by 2030.

The Circular Economy Framework, released in 2023, provides the national strategic vision for transitioning from linear to circular economic models, emphasising design-for-reuse, sustainable procurement, and improved resource recovery. While waste-to-energy is not central to the Framework, it is acknowledged as a tool for managing genuinely residual material that cannot otherwise be further recovered.

In 2024, the Government launched its Environmentally Sustainable Procurement Policy, directing government spending toward greener outcomes which is a mechanism that may further incentivize waste-to-energy over landfill as an end-of-life option for residual waste streams.

With respect to the States and Territories, the respective EPA's manage licenses and impose emissions limits on pollutants including dioxins/furans, NOx, SO_2, particulates, and heavy metals — broadly aligned with EU Industrial Emissions Directive benchmarks, though not uniformly standardised across states.

All waste-to-energy projects require development and planning approval, often involving environmental impact assessments and public consultation. Large facilities typically constitute "State Significant Development" or equivalent.

With respect to the States and Territories the following table summarises specific current waste-to-energy approaches and frameworks.

Jurisdiction	Policy Position	Key Mechanism	Projects
Western Australia	Strongly supportive	ARENA/CEFC funding; no waste-to-energy caps	2 plants (1 operational, 1 under construction)
Victoria	Structured support with safeguards	Waste to Energy Scheme; cap licences; 2.5m tpa cap (proposed)	Multiple cap licences issued; projects at feasibility/planning
Queensland	Supportive	$45m budget initiative; EfW Policy	Emerging pipeline; bioenergy emphasis
New South Wales	Restricted outside 4 zones	SEPP Amendment 2022; ban in Greater Sydney	Parkes proposal; Woodlawn ARC; active inquiry
South Australia	Cautious / considering	No specific waste-to-energy	Early-stage proposals
ACT	Prohibited	Indefinite ban on thermal waste-to-energy (extended May 2025)	None
Tasmania / NT	Limited activity	No specific WtE framework	Minimal

Waste regulation is primarily a state and territory responsibility and the frameworks vary considerably.

Western Australia has a dedicated waste-to-energy framework with the Waste-to-energy Policy for Western Australia (2019) and associated Waste-to-energy Regulations 2021 under the Waste Avoidance and Resource Recovery Act 2007.

New South Wales regulates waste-to-energy under the Protection of the Environment Operations Act 1997 (POEO Act) and the Environmental Planning and Assessment Act 1979. The NSW Government updated planning policy in 2023 to facilitate waste-to-energy facilities only in specific areas and zones. In NSW the Waste and Sustainable Materials Strategy 2041 also guides broader waste management policy.

In Victoria the Environment Protection Act 2017 (commenced 2021) overhauled Victoria's EPA framework and covers emissions and licensing for waste to energy facilities. Planning approvals fall under the Planning and Environment Act 1987. Waste-to-energy is permitted but subject to strict hierarchy requirements under Recycling Victoria: A new economy (2020).

Queensland uses the Environmental Protection Act 1994 to govern environmental licensing and waste-to-energy facilities are categorised as Environmentally Relevant Activities (ERAs) and require development approval under the Planning Act 2016. Queensland's Waste Management and Resource Recovery Strategy positions and supports waste-to-energy within the common waste hierarchy.

South Australia is governed by the Environment Protection Act 1993 and the Environment Protection (Air Quality) Policy 2016. The Green Industries SA Act 2004 provides strategic direction and has been cautious on large-scale waste-to-energy but allows smaller-scale and biogas operations.

The ACT, Tasmania, and NT have less developed waste-to-energy specific policy but apply equivalent environmental protection and planning legislation.

There is currently no harmonised national waste-to-energy standard which creates regulatory inconsistency.

8 Key projects and infrastructure

Western Australia

The Kwinana Energy Recovery facility is located in the City of Kwinana approximately 40 kilometres south of Perth and is Australia's first and only fully operational large-scale thermal MSW waste-to-energy facility.

The project took about six years to build and had been in planning and development for about 20 years. The project was budgeted at AUD$680 million but reports are the final cost was more than $1 billion.[54]

Kwinana Energy Recovery	
Owner	ACCIONA
Operator	Was Veolia (25-year Operation and maintenance contract) however now ACCIONA
Technology	Keppel Seghers moving grate combustion (2 lines)
Capacity	Up to 460,000 tonnes of waste per annum
Power output	36–38 MW
Homes powered	~55,000–58,000 WA households
Commissioning	First waste received July 2024; officially opened November 2025; full operations from December 2025
CO_2 abatement	Claims potential reduction of 460,000 tonnes CO_2-e per year through avoided landfill
Metal recovery	10,000+ tonnes of metals recovered for recycling annually
Key funders	Clean Energy Finance Corporation ($400m debt); Australian Renewable Energy Agency ($23m grant); Macquarie Capital / Dutch Infrastructure Fund (equity)

In its first three months of full operation, the facility claimed to have avoided approximately 90,000 tonnes of CO_2-equivalent emissions — a figure that is based on avoided landfill emissions and demonstrates the scale of landfill methane displacement being claimed when residual waste is thermally treated rather than buried.

The City of Canning became one of the first local governments to commit waste to the facility from December 2024 onwards. The costs of the facility to councils are reportedly comparable to traditional landfill costs in Perth.

The East Rockingham Waste to Energy project is Australia's second large-scale MSW waste-to-energy facility currently under construction at a site approximately 40 kilometres south of Perth.

East Rockingham Waste to Energy	Detail
Owner	Was owned by Masdar Tribe Energy, John Laing, Acciona Concesiones, and Hitachi Zosen Inova (HZI). Late 2025 project was in receivership awaiting a new owner.

[54] See https://en.wikipedia.org/wiki/Kwinana_Energy_Recovery (accessed May 2026)

Technology	HZI moving grate combustion
Capacity	300,000 tonnes per annum (residual waste) + 30,000 tpa bio-solids
Power output	~29–35 MW
Homes powered	~36,000
Capital cost	A$511 million
Key funders	Clean Energy Finance Corporation ($57.5m debt); Australian Renewable Energy Agency ($18m grant); equity from John Laing, Masdar, HZI, ACCIONA
Operator	Veolia (as per East Rockingham Waste to Energy company website June 2026)
Claimed CO_2 abatement	>300,000 tonnes CO_2-e per year

The project commenced construction in May 2020, with an originally planned commissioning date of late 2022 that has been pushed back to 2025-2026.

Victoria

Victoria has taken a structured regulatory approach to waste-to-energy through its Waste to Energy Scheme, established under the Circular Economy (Waste Reduction and Recycling) Act 2021. The scheme requires thermal waste-to-energy operators to hold both an environment protection licence and a 'cap licence' issued by Recycling Victoria, which limits the total volume of permitted waste that can be processed to ensure waste-to-energy does not undermine recycling investment.

The initial cap was set at 1 million tonnes per annum — widely criticised by industry as too low — and by March 2025 the Victorian Government had initiated consultation on raising the cap to 2.5 million tonnes per annum. In August 2025, Recycling Victoria announced a suite of cap licences for approved projects:

Proposed waste-to-energy facilities in Victoria	
Licensee / Project	Capacity Licenced (tpa)
Melbourne Energy and Resource Centre (Wollert)	760,000
Opal Australian Paper / Veolia — Maryvale (Latrobe Valley)	650,000
Melbourne Water Corporation	450,000
Recovered Energy Laverton	280,000
Liquid Power Co	50,000
Zerogen Holdings	45,000
Knox Transfer Station	15,000

Recycling Victoria has noted that many projects are still at a feasibility stage; a cap licence is just one of several regulatory approvals needed before a facility can be built. Projects must still obtain planning approval and an EPA environment protection licence, including an Environmental Impact Statement and Human Health Risk Assessment.

The Maryvale project — a partnership between Opal Australian Paper (a tissue and packaging manufacturer) and Veolia — is the most advanced, with the site at the former Australian Paper Mill in the Latrobe Valley providing existing industrial infrastructure. At 650,000 tpa, it would be one of Australia's largest waste-to-energy facility if built.

New South Wales

New South Wales presents a somewhat complex and contested waste-to-energy policy environment. In 2022, the NSW Government introduced the State Environmental Planning Policy (Transport and Infrastructure) Amendment (Thermal Energy from Waste) 2022, which banned thermal waste-to-energy development across Greater Sydney and restricted environmental protection licences to four nominated regional activation precincts outside the metropolitan area.

This followed significant community opposition and resulted in the abandonment of several planned projects, including the proposed Matraville incinerator. However, the legislation created a pathway for development in nominated regional areas, and several proposals have since emerged in those zones.

The most significant proposed project is a 700,000 tpa facility near Parkes in the Central West, backed by Cleanaway and international partners, which would generate approximately 70 MW of electricity — enough to power around 100,000 homes. As of early 2026, the project was the subject of a NSW Parliamentary Select Committee inquiry and had attracted substantial community and council opposition in the surrounding region.

Veolia is also developing the Woodlawn Advanced Energy Recovery Centre (ARC) in the Southern Goulburn Mulwaree Precinct — one of the four nominated regional areas — and submitted to the NSW inquiry in October 2025 drawing on its global experience operating more than 65 waste-to-energy facilities worldwide.

Queensland

Queensland has adopted a proactive stance toward waste-to-energy as part of its waste diversion strategy, with a stated ambition to divert 90% of waste from landfill by 2050. The 2024–25 Queensland Budget allocated $45 million to encourage waste-to-energy plant construction across the state.

Queensland's Energy from Waste Policy reflects a preference for higher-value outputs such as solid or liquid fuels over electricity generation, and emphasises the precautionary principle and the importance of appropriate siting. The policy was updated in December 2021 and continues to guide project approvals.

In February 2026, Queensland-based agribusiness Kalfresh commenced construction of a $291 million bioenergy facility in the Scenic Rim region — one of Australia's first large-scale 'paddock-to-power' initiatives, converting agricultural waste (including vegetable scraps) into renewable energy.

Other jurisdictions

South Australia and the Northern Territory have various proposals under consideration, though no large-scale projects are under active construction. The ACT has maintained a ban on thermal waste-to-energy incinerators (extended as recently as May 2025) reflecting the territory's commitment to recycling and

waste avoidance and that its small population size makes large-scale waste-to-energy economically impractical.

Tasmania and other smaller jurisdictions have limited waste-to-energy activity, though anaerobic digestion for organic waste and landfill gas capture continue to be used more broadly across all states.

9 Findings and conclusion

While waste-to-energy proponents and some in the waste sector claim that waste-to-energy is not waste disposal, it mainly is.

The facilities are generally not built because the energy that is produced is demanded. Major energy companies are not (at this time) involved in developing waste-to-energy facilities.

MSW waste-to-energy is being proposed and built in Australia as an alternative to landfill.

Waste-to-energy is primarily a waste management solution. The energy generation is a consequence of the method of waste disposal and treatment.

Waste-to-energy is not renewable energy and is not low emissions.

There are different reports and different waste compositions, but it is reasonable to categorize the emissions intensity of electricity from waste-to-energy to be greater than the current Australian national electricity grid average and, as international reports show, in the range of a coal fired power station. This is higher than renewables such as hydro, wind and solar.

As an alternative to landfill, large scale use of waste-to-energy to dispose of MSW is accepting that society will not or cannot reduce the waste being generated.

It is therefore contributing towards one national waste goal (reduce waste to landfill), while working against another (reduce waste being generated).

Waste-to-energy greatly reduces the volume of waste by about 90% but still generates waste through the ash from incinerators and waste from scrubbing systems that require disposal.

Waste-to-energy has a proven record in Australia of being an effective solution to waste management in some circumstances.

However, moves to install significant waste-to-energy capacity to manage MSW in Australia warrant greater transparency and consideration especially with respect to greenhouse gas emissions, circular economy goals and long-term environmental and health impacts.

Recommendations

- The Smart Energy Council should be a lead advocate informing and influencing the development of policy and regulations with respect waste-to-energy on behalf of the energy sector.

- The Smart Energy Council should engage government to ensure claims around waste-to-energy are independently tested and monitored, and that there is a consistent approach, definitions and methods for establishing waste-to-energy facilities.

- Greater transparency and accountability on emissions intensity of waste-to-energy on a case-by-case basis is needed to fully understand the short, medium and long-term impacts for greenhouse gas emissions. It is recommended that the Clean Energy Regulator be authorized to provide

independent emissions-intensity assessments and public reports of proposed facilities and projects, with this being done as part of the approvals process.

- Government authorities (nationally and or at State and Territory level) should consider the appropriate use of terms such as “renewable energy”, “low emissions” and “clean energy” for all waste-to-energy facilities, and set waste-to-energy benchmarks and acceptable assumptions to ensure accuracy, including consistent and agreed approaches to definitions, carbon emissions methodology and feedstock analysis.

- The Australian Government should develop clearer definitions of renewable energy and low emissions technologies with reference to waste-to-energy and to increase consumer and investor confidence in proposed projects, and to minimize the risk of green washing claims in the future.

- Request the Climate Change Authority to undertake a closer examination of the role of waste-to-energy in the Industry and Waste Sector Plan, and to assist in forecasting the short-, medium- and long-term impacts of greenhouse gas emissions from waste-to-energy and the role of waste-to-energy in the Australian energy market.

- Waste to energy facilities should comply with the requirements of the Australian Government Safeguard Mechanism, consistent with other waste treatment facilities. The classification of waste-to-energy facilities under the Safeguard Mechanism should be determined by the Clean Energy Regulator, based on whether their *primary purpose* is deemed to be waste treatment or electricity generation.

- The Federal Government should review and test the eligibility of waste-to-energy and incinerators to create Australian Carbon Credit Units (ACCUs), giving consideration to emissions intensity of electricity from such facilities may be at or higher than the national average emissions intensity of the electricity grid.

About and Contacts

About the Smart Energy Council

The Smart Energy Council is the independent body for the Australian smart energy industry and a vital voice for renewables that actively connects the smart energy industry across Australia, building momentum and unlocking barriers to a future built on renewables.

As an independent voice accelerating Australia's clean energy future, the Council ensures smart energy solutions remain central to national policy. This leadership supports decarbonisation and grid resilience, unlocking billions in investment and thousands of secure jobs across the country.

The Council is driven by members from across the smart energy industry and provide tailored solutions and practical help to meet their individual needs.

The Smart Energy Council believes the world is changed by those who show up. A not-for-profit organisation, it is driven by 500+ members from across the smart energy industry, including Australian and international businesses of all sizes.

About Harford Consulting

Harford Consulting is an environment and sustainability consulting firm that helps organisations understand and improve environmental performance for overall development and to enhance cost control, compliance and reputation.

Working across private, government, industry groups and not-for-profits, the company provides a range of technical, research, strategic, communications and compliance support and advice, with expertise and services range across:

- Research and environmental assessments
- Greenhouse and carbon reporting and strategy
- Recycling and resource efficiency
- Regulatory compliance, accreditations and certification

Operating nationally, the company has a small team of associates and contractors providing hands-on focused advice and support. The group has extensive experience as sustainability professionals working across technical waste and recycling matters, product stewardship and environmental management systems.

Of note for this report for the Smart Energy Council, the company has direct experience in the development, licensing and operation of waste-to-energy facilities. Company principal Nick Harford has worked on four waste-to-energy projects including industrial facilities and MSW incineration and gasification.

Harford Consulting Pty Ltd ■ ABN 24 666 808 117 ■ Email: nick@harfco.com.au ■ Phone: 0419 993 234