

POSITION PAPER

WASTE LEVIES: REBATE FOR THE GENERATION OF ELECTRICITY FROM LANDFILL GAS

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The Australian Landfill Owners Association (ALOA) is an incorporated entity comprising landfill owners across Australia who share a concern for the future viability of the environment and their businesses. Members of the Association receive and manage over seventy per cent of the total solid waste generated in Australia.

ALOA has formed a national position on waste levies (attached to this submission). This comprises eight points which we believe represent sound principles for the imposition of waste levies in order to encourage best practice resource recovery and to divert waste from landfill where there is a beneficial end-use for that waste.

One of the most important aspects of any waste levy is that genuine resource recovery activities that occur once waste has entered the landfill premises should not be subject to the levy. This principle is generally accepted under most schemes, but is not always well articulated. For example, waste screenings can be substituted for daily cover in some states, but not in others.

Another area where the principle is not applied is with the conversion of landfill gas electricity. ALOA believes that the generation of renewable electricity from landfill biogas represents genuine resource recovery and should be exempted from all current and future state waste levies via the same 'rebate' system used for other materials such as steel and cardboard. Our view is explained further below.

1. Landfill biogas generation and capture

When organic waste (commonly arising from municipal or commercial waste) is disposed of in a landfill it is biodegraded by bacteria over time to produce landfill gas.

This landfill gas typically contains methane, carbon dioxide and other trace gases, and is emitted to atmosphere unless collected and destroyed by flaring (or conversion to electricity).

Landfill gas can be odourous and requires capture to avoid offsite impacts. As such, flaring is an operational requirement at most landfills throughout Australia.

Capturing landfill biogas through a gas collection network and the installation of flaring and monitoring equipment requires significant capital, management and operational costs for the landfill owner or operator.

2. The use of landfill gas to generate electricity

Where gas volumes are sufficient and grid connection costs are affordable, landfill gas can be converted to electricity. This involves significant investment (additional to flaring) for the landfill operator.

As landfill gas is classified as a renewable resource, investing in this electricity generation infrastructure reduces greenhouse gas emissions by displacing emissions from coal-based electricity generation.

3. Resources recovered from the generation of electricity from landfill gas

A report prepared by Golder Associates for Veolia Environmental Services (May 2009) calculates that, for the Woodlawn Bioreactor landfill in NSW, 0.746 tonnes of waste is decomposed to produce enough landfill gas to produce one megawatt hour of electrical energy. This assumes a 36% engine efficiency and a one-to-one ratio of carbon dioxide to methane in the landfill gas, and uses basic scientific principles to correlate the electricity production to a mass of landfill gas utilised, and hence an equivalent mass of waste decomposed.

As an example, for a landfill with one generator creating 1MW of electricity continuously for one year at 95% uptime, this would equate to approximately 6,000 tonnes of waste effectively removed from the landfill in that year.

4. Implementation of a waste levy rebate for generation of electricity from landfill gas

It is ALOA's view that the removal of landfill biogas for electricity generation constitutes the recovery of waste for beneficial re-use and should be eligible for a rebate from the waste levy.

5. Measurement

The method of back-calculating the mass that is 'removed' from the landfill to produce one megawatt hour of electricity (as described in section 3 above) provides an auditable methodology for implementing a levy rebate.

Hence, it is recommended that the following process be used for the calculation of the levy rebate -

A site specific conversion factor to convert 'electricity generated' to 'waste decomposed' be established at each site, and this conversion factor be applied to the power generated, i.e.:

$$\text{MWh generated} \times \text{conversion factor} = \text{tonnes removed from landfill.}$$

For further details, contact ALOA at 03 83 999 514.

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