

ENERGY FROM WASTE SUSTAINABILITY PROJECT

NOTES FROM THE ADELAIDE STAKEHOLDER WORKSHOP

Held: Wednesday 24 October 2002

Time: 9.00 am until 12.00 pm

Venue: Radisson Playford Hotel

120 North Terrace, Adelaide

For more information on the Energy from Waste Sustainability Project please visit the project website:

www.wmaa.asn.au/efw/home.html

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This project is an initiative of the:

***Energy from Waste Division of the
WASTE MANAGEMENT
ASSOCIATION OF AUSTRALIA***

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Australian Greenhouse Office supports this project.*



Introduction

There are a number of issues and concerns associated with energy from waste projects. On the positive side, recovering energy from waste can generate renewable electricity, reduce the amount of waste disposed of to landfill and reduce greenhouse gas emissions. However, there are also potential negative environmental and human health effects associated with energy from waste projects.

The Energy from Waste Division of the Waste Management Association of Australia, with assistance from Commonwealth funding through the Australian Greenhouse Office, initiated the process of developing a Sustainability Guide to resolve these issues. Part of this process was a national series of eleven stakeholder workshops.

The purpose of the stakeholder workshops was to ensure that all of the positive and negative factors associated with Energy from Waste (EfW) projects were identified and then incorporated and resolved within a Sustainability Guide for EfW. It is intended that the Guide will be used to ensure that Energy from Waste projects maximise benefits and minimise negative impacts in a way that supports the sustainable development of Australian society.

Below are the issues that were identified at the Adelaide Stakeholder Workshop. These issues will be integrated into a final report, representing all of the issues raised by workshop participants at this and the other ten national workshops.

The issues identified at the workshop will be used as a “yardstick” against which the Sustainability Guide will be measured, both to ensure that all issues have been addressed in the Guide, and to ensure that the philosophical basis of the Guide is correct.

Round Table Discussion

There were 32 participants at the Adelaide Stakeholder Workshop. (A participant list is included as Appendix 1). Participants were seated around five tables to discuss issues related to Energy from Waste. The summary of the discussion from these five tables was recorded onto over-head transparencies and is presented below exactly as scribed.

A catalogue of issues recorded by participants onto flash-cards is included as Appendix 2. These issues are also presented exactly as scribed. The colour of the flash-cards was used to differentiate between tables.

Orange Table

1. ECONOMIC

- Eco Evaluation (long term) when integrating into existing waste/resource hierarchy.
- Investment versus returns.
- Locking in resources to long term contracts.

2. COMMUNITY

- Perceptions
 - Emissions
 - Use of Resources (cure all?)
- Transparency of all costs and issues
- Reversal of community practices and behaviour (kerbside recycling)
- Need for accurate, technical, social and economic information.

3. SOCIAL/POLICY

- Impacts on community
- Acceptance and understanding
- Community consultation and transparency
- “Hijacking” of the agenda
- Resource policy development
 - Need for EfW?
- Need for accurate technical and social information

4. SUSTAINABILITY

- Triple bottom line
 - Economic
 - Environmental
 - Social
- Determining best use of resources
 - Comparative assessments of emerging versus current technologies
- LCA

Yellow Table

1. CAUTION

- Message to community?
- May require > separation
- Flexibility? Changes from
 - Government
 - Community
 - Markets

2. POSITIVE ROLE (EfW)

- Increase landfill life
- Option for isolated location
- Option for biowastes
- Requirement for E in SA
- Less reliance on source separation
- Real option for IWM

3. EVALUATION CRITERIA

- Environmental
- Financial
- Superior technologies
- Community
- Planning
- Risk management

Red Table

1. SOCIAL

- Public perception
 - Positive
 - Education regarding issues
 - Job creation

- Energy capture
 - Minimise GH gases.
- Negative
 - NIMBY
 - Unknown outputs
- Legislation
 - Positive
 - Establishes standards
 - Negative
 - Dislike of authority
 - Cost factor?
- Safety
 - Of outputs, etc....
- Short term versus long term outcomes
 - (what time frames are used?)
- Who is gatekeeper/decision maker
- May discourage zero-waste strategies

2. ENVIRONMENT

- Outputs
 - Known/unknown effects
 - Improved GH effects
 - Incineration -> fallout -> buffer zones.
- Inputs
 - Who determines
 - How regulated/policed
- Impacts
 - Visual
 - Noise from transport

- Odour
- Nuisances
- How much space is required?
- Location

3. ECONOMIC

- Jobs and investment
- Capital costs -> private or public?
- Subsidies/levies
- Location (function of cost)
 - Transport to plant
 - Transmission of energy
- Potential for GH credits
- Impacts on competing industries for raw materials
- Can centralise collection/processing plant locations
- Loss of re-usable resources.

Blue Table

1. STATE GOVERNMENT

- State government to provide strategy for EfW into state.
- LCA of EfW
 - Transport
 - Resource use
 - GHG
 - Energy offset
 - Compost/landfill.
- Suitability of EfW to local situations
- Site suitability
- Clear regulation/policy for EfW.
- Evaluation of technologies.

2. TECHNOLOGY

- Emissions
- Residual volumes and reuse
- Toxicity of residuals
- Feedstock contaminations
- Technology development over time/term of contracts.

3. LOCAL GOVERNMENT

- Impact on source separated collection.
- Best use of resource in the waste.
 - Environmental
 - Economic
- Impact on MRF operations
- Responsibility for introduction of technologies
 - LGA
 - State government
 - Industry

4. COMMUNITY

- Human health for
 - Householders
 - Workers
- Why the need for EfW
- Should proponents provide waste education
- Historical baggage of community perception
- Unsurty of technology

Green Table

Sustainability – umbrella to all categories

1. POLICY AND REGULATION

- Enforcement of a code of practice
- Verification or audit of the life-cycle assessment.

2. COSTS AND ECONOMICS

- Economics of scale
- Transportation of waste consumes energy
- Transmission of energy
- Triple bottom line
- Distributed versus centralised processing facilities
- Regional versus metropolitan
- Evaluation of alternatives
- Infrastructure requirements plus impact on existing
- Externality of costs and benefits

3. ENVIRONMENTAL AND EMISSIONS

- Replacement of existing facilities causing environmental harm
- Improving gas recovery from existing landfills
- Minimisation of energy waste
- Identification and sorting of appropriate materials and streams

4. COMMUNICATIONS

- Public perceptions
- Education and change take time
- Consistency of messages

5. CHANGE

- What factors and issues are to be included in the guidelines
- Current impediments to distributed energy recovery
 - Regulatory and commercial
- Matching changing attitudes technology and policy with investment cycles.

Results of Citizen's Jury

These are listed in the table below.

Table	Strongly No EfW has no role to play in any form	Contingent EfW has a role to play but that role is determined on case by case issues	Strongly Yes EfW always has a role to play in any form
Orange	0	4	1
Yellow	0	4	2
Red	0	100% (6)	0
Blue	0	5	2
Green	0	6	0
Totals	0	25	5

General comments from the tables regarding energy from waste

Orange Table

No comments.

Yellow Table

- Both positive aspects and negative so hard to take any position but that of contingent.
- EfW always has role in resource protection

Red Table

- Landfill gas seen as appropriate
- Other technologies less certain
- Need education to help manage perceptions/provide information
- Real issue about costs of alternatives
- Need legislative control

Blue Table

2 Govt

2 industry

2 local

1 R/D

- Government to provide leadership/strategy on waste management at which EfW is an important subset.

Green Table

- Case by case
- It already occurs where accounting return
- Need to have appropriate LCA and allocation of costs/benefits

Appendix 1 – Adelaide Workshop Participants

<i>Name</i>	<i>Organisation</i>
Fraser Bell	Finlayson Lawyers
John Blumson	SA EPA
Marino Bolzon	Energy SA
Kerry Brown	City of Onkaparinga
Don Chambers	C4ES
Graham Copley	Adelaide Hills District
Chris Cornish	Brightstar Environmental
Dean Davey	Rodenburg Davey & Associates
Jeff Easley	Jeffries Group
Mark Glover	Renewed Fuels P/L & Chairman of the Energy from Waste Division
Warren Godson	Environment Analyst
Rod Harvey	City of Campbelltown
Ian Harvey	EPA
Jo Hendrikx	KESAB Environmental Solutions
Trevor Hockley	WastecareSA
Bruce Lang	City of Unley
Paul Lightbody	Tonkin Consulting
Charles Ling	Flinders Bioremediation
Kevin O'leary	Planning SA
William O'Regan	City of Onkaparinga
John Phillips	KESAB Environmental Solutions
Robert Rodenburg	Rodenburg Davey & Associates
John Rolls	Energy SA
Sharon Stott	City of Onkaparinga
Toby Terlet	Collex Pty Ltd
Lyall Thomas	City of Salisbury

Name	Organisation
Matthew Warnken	Warnken I.S.E. P/L - Project Manager and Workshop Facilitator
Geoffrey Webster	HDS Australia
Cip Wingrove	URS Australia
Allistair Ray	Golder Associates
Gemma Carter	Golder Associates
Nava Zadeh	Maunsell Australia Pty Ltd

Appendix 2 – Catalogue of Issues Identified at the Adelaide Workshop

Orange Table

- Decision makers lacking accurate technical and social information on individual technologies.
- Determining need for EfW.
- Where does EfW fit in government (SA) (Federal) policy on waste management?
- Preventing “hijacking” of the debate.
 - One way or the other.
- Community perception
 - NIMBY
 - NOTE
- Ensuring transparency of all costs and issues
- Lack of community input into discussion
- Overcoming public perceptions of the technologies
- Community awareness of the positives and negatives associated with emerging technologies
- Community acceptance and understanding
- Social cost
- If EfW is adopted, it may restrict other/better uses of some materials.
- Economic evaluation when integrated with existing waste processing systems
- Economic evaluation (long term) supporting EfW options
- Best use of resources
- Economic issues current primary driver
 - Not triple bottom line assessment.
- Issue
 - High capital investment with EfW technology requires long term supply arrangements.
 - How does this take account of future higher value resource consideration?

- Issue
 - What constitutes “residual” MSW depends upon kerbside collection system in place.
 - Concern: potential loss of resources due to existing collection arrangement.
- Issue
 - Commercial outcomes influence resource “highest benefit” issues.
- Determining best use of resources
- Issue
 - How does EfW exert influence on producers of waste to minimise creation of waste?
- Ecological sustainability
 - Economic
 - Social
 - Environmental
- Environmental impact
- Sustainable use of resources
- Comparative ecological assessments (social, economic, environmental) of emerging technologies versus current technologies.

Yellow Table

- Possible Advantages
 - Increase life of landfills
 - Option for isolated locations
 - Option for biowaste and intractables
 - Use for what today is “waste”
 - Conforms to “integrated waste management”
 - Requirement for E in SA.
- Evaluation of impacts required
 - Financial
 - Environmental

- To “justify”/rationalise capital intensity for long term investment/commitment
- As EfW requires major capital
 - How do we accommodate rapidly changing and potentially superior technologies?
- Community understanding a perception
 - Need to engage and understand community opinion
- Planning Issues
 - Can EfW be locally sited?
- Risk management
- Source separation of waste
 - Opportunity for less reliance on source separation
 - Does this send the wrong message and/or perhaps divert potentially/recyclable material for less valuable use?
 - To operate effectively may required increased source separation.
 - If less does this remove community conscience
 - Uncertainty of impacts upon source separation? impacts upon LE collection.
- 1. Evaluation criteria
 - Environmental
 - Financial
 - xxx¹
 - Superior technologies
 - Community
 - Planning
 - Risk management
- 2. Advantages
 - Increase life landfills
- positive
 - 1. Need for E in SA
 - 2. Role for E in ISWM

- negative
 - 1. EfW trends
 - 2. Current education/belief in recycling.
- Evaluation Criteria for best sustainability outcome (“highest” and “best” use). (Whole of process)
 - Resource protection rather than just \$.
- Evaluation should be based on resource protection rather than \$.
- The degree of source separation required to maintain the selected waste to energy technology
- How can we be sure that maximum reuse/recycling will be maintained?
- EfW encourages waste separation (or so “they” say).....but on the other hand it’s being touted as the “saviour” for mixed waste?
 - Giving mixed message?
- Source separation seems likely to be less or even disappear.
 - Does this send wrong message to community?
- Digestion of organic wastes (eg. restaurant etc wastes)
 - Separation of waste required.
- We are already a wasteful society.
 - The nation of EfW across the board will “unleash” industry to produce useless material which we will happily/lazily toss out in the warm and fuzzy glow of our newfound waste being converted to energy.
- Education Community
 - Positive role for E in.
- May have potential to reduce electricity supply issues in SA?
 - (In a small xxx²)?
- Education xxx³ processes
 - Collection
 - Combustion
- Option for country/isolated locations (rather than subsidise transport of recyclables)
 - More cost effective

- Increase landfill life
- Clearly EfW has a role in some biowastes and in dealing with intractables in the absence of alternative technologies.

Red Table

- Location
 - Needs to be collection source to reduce transport costs.
- (-) Discourages 'zero waste' and waste reduction strategies for general public and industry.
- (+) Job creation in new industries for plants and R&D (negative outputs, collection, etc....)
- (+) Reduce number of collection and processing systems
- (+) Conserve resources (natural)
- (-) Who and how will the practical value of materials be assessed.
- (+) Reduction amount of waste to landfill
- (positive)
 - New technologies -> future technologies improving environment
 - Jobs
- => Legislation
 - Reluctant community in general
- => Balance between short term gain and long term gain
- (-) Unknown effects on environment/humans
- (+) Fuel source wasted
- (-) Safety issues for staff in EfW plants
 - What are outputs
 - Toxin levels etc.
 - What research has been done?

- (positive or negative)
 - Air emissions
 - Greenhouse gas production
 - Other gases
- (+) Limited landfill capacity
- (-) Classifying waste streams design of abatement equipment.
- (+) Treatment of contaminated soils prior to disposal/render less toxic
 - Sewage sludge.
- (-) Emissions
 - Odour, pollutants (dioxins etc)
- (-) NIMBYISM
 - Public perception of waste
- (+) Reduced use of resources
- (-) May discourage other elements of waste minimisation hierarchy
- (+) Stabilisation of wastes pathogens etc.
- (negative) WA
- (-) Require legislation
- (-) Recoverable material will be destroyed
- (+) Collection of energy from wastes currently landfilled
 - Question how much E is collected?
 - Are costs of plants \geq E converted?
- (-) Question of re-usable resources
 - (Can't be excavated if incinerated!)
- (+) Reduction in volume of non-usable wastes
 - Question what is percentage of residual left from EfW technologies?
- (-) EfW use of resources that could be re-processed to form other products
 - eg. compost, plastics, mulch
 - (how much can be removed before EfW treatment?)
- (+) Value adding to waste

- (-) Public perception incineration
- (-) Threat to other recyclables industry eg. composting
- (+) Reduce landfills dependency
- (-) If cheaper than recycling, will society still recycle?
- (+) Revenue from sale of electricity
- (-) High cost?
- (negative or positive)
 - Initial cost but will it be long term gain (decrease cost to consumers/producers)
- (negative)
 - Impacts on other industries
 - Taking materials from recycling on one extreme and landfill on the other.
- (negative)
 - Expensive infrastructure (capital costs)
- (negative)
 - Incineration
 - Pollution
 - Heavy metals -> dioxins xxx¹
- (negative)
 - Health impacts
 - Localised
 - Wider area
- (positive)
 - Reduction in waste to landfill
 - Less space required for landfill?
- (negative)
 - Public perceptions
 - eg. incineration
 - People's views are of stacks spewing out smoke

- (+) Consistent with greenhouse challenge
- (-) Cost unknown subsidy based.
- (positive)
 - Methane conversion to CO₂.

Blue Table

- (+) Use of residual fraction.
- (+) Reduction green house gases?
- (+) Long term solution
- (+) No landfill?
- (+) Reduction in residual waste volume
- (-) All eggs in one basket
 - Highest risk
 - Higher technology
 - Technology problems?
- (-) Economics of recycling (pressure to convert to EfW over time)
- (-) Environmental uncertainty (wind power, solar energy)
- (-) Increased transport costs?
- (-) \$ Initial capital investment?
- (+) Potentially simplify collection systems
- (-) Siting issues (NIMBY)
- (-) Could become too easy (loose waste hierarchy)
 - Encourage "system" to be more wasteful
- (-) Community perception
- (-) Less incentive to recover material in future
- Unsurty of technology
- Community emissions issues.
 - Historical as baggage in community perception
- Should proponents provide waste minimisation avoidance education?

- What drives the need to provide EfW?
- Human wealth associated.
 - Separation at
 - Home
 - Worker
 - Emissions
- Technology developments over term of contracts.
- Feedstock contamination
- Volumes of residuals.
 - Do residuals have to go landfill
 - Is there further resource value in residuals?
- Toxicity of residuals
- Who is responsible for introduction of technology?
 - LGA
 - Government
 - Individual councils
- Feedstock competition for composters and EfW
- Source separation of wastes
 - Energy usage for collection
 - Energy used for non source separated
- Impact on MRF economics
 - Current/future
- Government to provide leadership.
 - Strategy on waste management government state at which EfW is a important subset.
- Best use of resources
 - Environmental value
- Evaluation of EfW proposals
 - Who is responsible for scientific approach

- Is current EPA regulation policy Australian best practice
 - Site location
 - Air emissions
- EPA to be more proactive in planning for regulation of EfW
- Site location of facilities
- Evaluation of
 - GHG reduction
 - Fossil fuel offset
- Is EfW the best suited solution for the local area? Need for:
 - Energy
 - Compost
- LCA of WFE in total collection disposal
 - Impact on waste to compost
 - Waste to landfill
 - Etc.
- Government strategy for EfW fit into state

Green Table

- (Comm) Public perception
- (Comm) Potential for
 - Pollution
 - Community
- (E) Environmental benefits versus cost benefits
 - Are the environmental benefits so strong that there can be a justification of using a system that costs more?
- (E) Assessment of environmental impact against other form of waste management.
- (E) Emissions

- (E) Identify the most appropriate materials for EfW
 - Separate any suitable material composition so as the treatment is more effective
- (E) Waste incineration
 - Negative from waste to energy projects
 - Environmental
- (E) Biogas and from landfill use as a bioface
- (Env) Replacement of facilities causing environmental harm
- (Cost) Lifecycle assessment (including benefits)
- (Cost) Cost
- (cost) Infrastructure requirements
- (Cost) Infrastructure costs
 - Woodwaste positive
 - Recovery - from landfill
 - Use for electricity generation
- (Cost) Assessment against other options (\$)
- (Cost) Investigate the introduction of local EfW centres in suburbs
- (Cost) cost versus gain both financial and environmental
- (cost/Ec) Size of EfW generation plants
 - Able to sell power to grid
- (Cost) Waste (energy) is produced close to locations with high energy demand but if facilities for conversion are distant
 - Energy is consumed in transport.
- (CE) Infrastructure embodies energy
- Sustainability
- Are environmental benefits strong enough to justify costs
 - Sorting/xxx¹/sorting
 - Local EfW centres
 - Emissions
 - E xxx² a xxx³

- Sustainability
 - Guide priorities
- COP
 - Enforcement
- Size
 - Transfer of power/export of power > 30MW
 - (xxx⁴ generation)