

INSTRUCTION MANUAL

Instructions for using container deposit scheme models

*Prepared for
NSW Office of Local Government*

5 April 2018

Instructions

The CIE has developed two tools in Microsoft Excel to assist councils in understanding the impacts of the Container Deposit Scheme.

- A verification tool that allow a council to estimate the amount of CDS refund revenue available from their council area
- A scenario tool that allows a council to estimate the financial performance of their MRF under difference scenarios.

This manual provides instructions on how to use these models.

Verification tool

The verification tool has the purpose of allowing a council to estimate the amount of container refund revenue from its kerbside collections.

To use the model a council should (chart 1):

- input the amount of its kerbside collections each quarter (i.e. January to March). It should also input the eligible container factors that will be reported by the EPA for each material type
- make choices about whether the council inputs to a MRF include or excludes paper and cardboard, and whether MRF specific information is known or not
- set the CDS refund share for the council.

1 Screenshot for inputs

Reconciliation of MRF revenue and council refund provided

Enter as reported by NSW EPA

NSW EPA eligible container factors	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Weighted average
Aluminium	60000	60000	60000	60000	60000
Glass	2000	2000	2000	2000	2000
Mixed plastic - all	8000	8000	8000	8000	8000
Separated plastics					
HDPE	4000	4000	4000	4000	4000
PET	20000	20000	20000	20000	20000
Mixed plastic remainder	4000	4000	4000	4000	4000
Council input tonnes per quarter	2500	2500	2500	2500	10000

Does council input tonnes above include paper and cardboard?
Use state average or own MRF composition

Yes
State-wide

Choose options

Enter from council records

Composition of MRF outputs by tonnes

	Specific MRF for period % of outputs	State-wide for period % of outputs	Used % of outputs
Aluminium		0.7%	0.7%
Glass		33.8%	33.8%
Mixed plastic - all		6.1%	6.1%
Separated plastics			
HDPE			0.0%
PET			0.0%
Mixed plastic remainder			0.0%
Paper and cardboard		47.4%	47.4%
Other metals		2.3%	2.3%
Waste/residual		9.7%	9.7%
Total (should equal 100%)	0.0%	100.0%	100.0%

Choose CDS refund share

Refund per container (cents)	10
Exchange for Change administration costs (% of CDS revenue)	5%
Council refund share (% of revenue returned to MRF)	50%

Data source: The CIE.

The tool will then report on the CDS refund revenue from the council area and the amount that a council will receive given a particular refund share entered by a council (chart 2). Note that this reports on the CDS refund revenue for a council and a MRF only from that council's inputs, rather than the MRF's refunds from all sources.

2 Outputs from the verification model

Council refund

	\$m, for period
Estimated total CDS revenue from council materials	1.56
CDS revenue after removing Exchange for Change costs	1.48
CDS revenue for council	0.74
CDS revenue for MRF	0.74

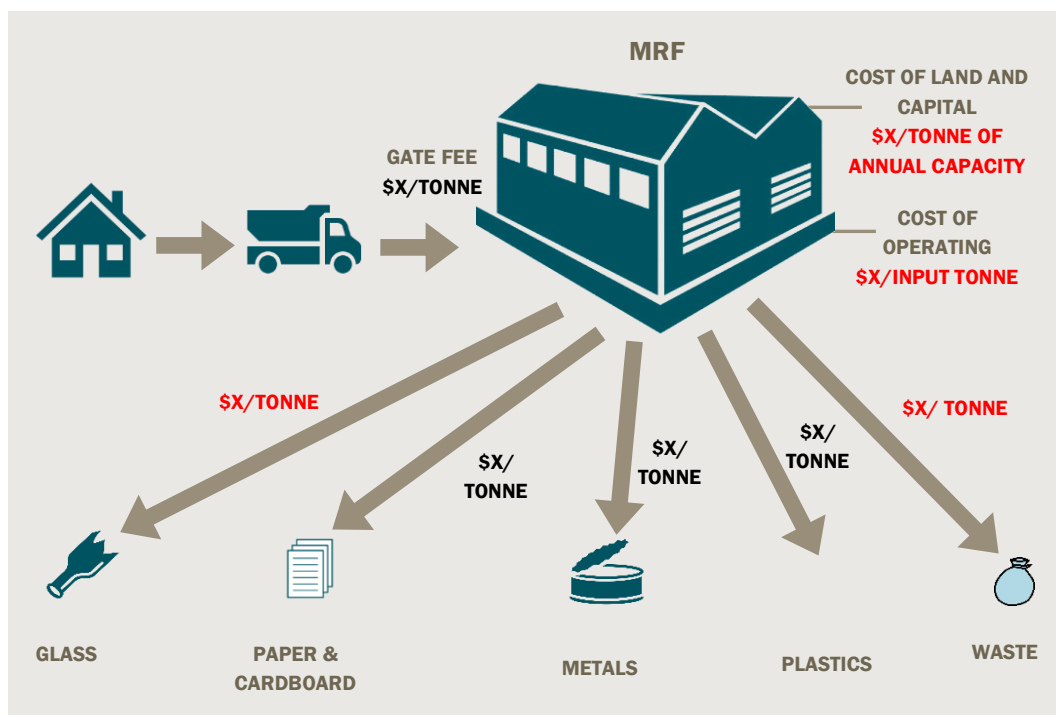
This tool is named "Reconciliation for council refund revenue.xlsm"

Scenario tool

The scenario tool is a simplified financial model of a Material Recovery Facility (MRF).

A schematic of the model is shown in chart 3, with red items being costs for a MRF and black being revenues for a MRF.

3 Revenues and costs of a MRF



Data source: The CIE and APC.

Using the model

To use this model:

- 1 Open the model named “Scenario model for impacts on a MRF.xlsm”
- 2 Make sure Macros are enabled. See <https://support.office.com/en-us/article/enable-or-disable-macros-in-office-files-12b036fd-d140-4e74-b45e-16fed1a7e5c6>

- 3 In the 'MRF Inputs' worksheet enter the best inputs you can about your MRF.
 - The model has defaults for inputs based on a typical MRF from consultations with industry, but these may not be accurate for your MRF, as MRFs have different processes and operate in different locations.
 - This could be undertaken with your MRF.

MRF Inputs

Product	Share of material outputs from a MRF	Prices received or paid at factory gate	Prices received or paid at factory gate at time of contract start
	Per cent	\$/tonne	\$/tonne
paper and cardboard	47.4%	50	150
aluminium	0.7%	1200	1200
other metals	2.3%	40	40
glass	33.8%	-70	-70
plastics - mixed	6.1%	200	250
plastics - hdpe	0.0%	300	430
plastics - PET	0.0%	300	380
other	0.0%	100	100
waste	9.7%	-200	-200

Note: we have applied the same material shares for residential and commercial

Gate fee (\$/input tonne)	\$/tonne
Residential	50
Commercial	100

Operating and maintenance costs (excluding transport and waste)	\$/input tonne
Total annual volume	Input tonnes/yr 80000
Total MRF volume from council kerbside collections	Input tonnes/yr 60000
Commercial volume	Input tonnes/yr 20000
Capacity	Input tonnes/yr 90000
Implied average capacity use	Per cent 89%

Volume of individual council (input tonnes per year) 9000

CDS costs		
New machinery - capital	\$/once off	0
New machinery - operating	\$/annual	0
General CDS administration and reporting	\$/annual	25000
Independent Assurance Report	\$/annual	100000
Compliance with audits		
management time	\$/annual	9600
extra administrative time not covered by FTE	\$/annual	2400
Software upgrade	\$/once off	0
Software upgrade	\$/annual	0
Total annual cost	\$/annual	137,000

Note: Upfront costs are amortised over 10 years using a 7% real interest rate

- 4 In the 'Scenarios' worksheet choose the scenario settings that you want to run.

Scenario assumptions

MRF and modelling assumptions

Choices	
Revenue share to MRFs - for Scenario 4	50%
Use mixed plastics - segregated or total	Total
Share of operating costs that are variable, excluding waste disposal and transport costs (%)	50%
Commercial MRF activities	
Include in analysis	No
Allow commercial rates to adjust in response to CDS	Yes
CDS refund to MRFs (cents/container)	10
CDS refund to MRFs (cents/container, after subtracting R	9.5

Container Deposit Scheme Impacts

Material flows	Share of output materials	Share of containers diverted from MRF	Change in commodity price because of CDS
	Per cent	Per cent	\$/tonne
paper and cardboard	47.4%	0%	0
aluminium	0.7%	20%	0
other metals	2.3%	0%	0
glass	33.8%	20%	0
plastics - mixed	6.1%	20%	0
plastics - hdpe	0.0%	20%	0
plastics - PET	0.0%	20%	0
other	0.0%	20%	0
waste	9.7%	0%	0

- 5 Click on the teal and red boxes to run the model.

CLICK to
Update Refund Share for Profit
Neutrality (Scenario 3)

CLICK to
Run Sensitivity Analysis

6 The key outputs are shown to the right in the ‘Scenarios’ worksheet

Key results

Impact on MRF of CDS (annual, \$m unless noted otherwise)

	Base case (1)	With all CDS refunds going to a MRF (2)	Profit neutral, with 1.3% of CDS refunds going to a MRF (3)	50% of CDS refunds going to a MRF (4)
	\$m	\$m	\$m	\$m
Revenue	4.3	11.5	4.3	7.9
Operating costs	-7.2	-7.2	-7.2	-7.2
Operating profit	-2.9	4.4	-2.9	0.7
Profit as a share of operating cost (%)	-40%	61%	-40%	10%
Tonnes processed per year (000)	60.0	57.3	57.3	57.3
CDS to MRF as a gate fee equivalent (\$/input tonne)		128	2	64
Note: CDS revenue assumes all CDS eligible materials are recycled				
	\$m	\$m	\$m	\$m
CDS revenue to all councils served by MRF	0.0	0.0	7.2	3.7
CDS revenue to specific council	0.0	0.0	1.1	0.5
Revenue share that leaves MRF profits equal				1.3%

Examples of scenarios that can be run using this model

There are a number of aspects of the CDS that are uncertain. The model allows for these by running scenarios. Scenarios that could be useful for councils include the following.

- Choosing different refund shares for a council and MRF and testing the financial impacts on a MRF – this is achieved by changing cell D7 in the ‘Scenarios’ worksheet
- Testing the impacts of a change to gate fees on a MRF. This is done by changing the gate fee in cell D20 of the ‘MRF Inputs’ worksheet
- Testing the impact of changes in the amount of CDS eligible materials diverted away from kerbside recycling. This can be done by changing cells J8:J14 in the Scenarios’ worksheet.

To give an example, suppose a council wants to test the financial performance of a MRF if the gate fee is \$100 higher and with a 50 per cent CDS share. Then it would:

- 1 Increase the gate fee by \$100 in the ‘MRF Inputs worksheet’.

MRF inputs

Product	Share of material outputs from a MRF	Prices received or paid at factory gate	Prices received or paid at factory gate at time of contract start
	Per cent	\$/tonne	\$/tonne
paper and cardboard	47.4%	50	150
aluminium	0.7%	1200	1200
other metals	2.3%	40	40
glass	33.8%	-70	-70
plastics - mixed	6.1%	200	250
plastics - hdpe	0.0%	300	430
plastics - PET	0.0%	300	380
other	0.0%	100	100
waste	9.7%	-200	-200

Note: we have applied the same material shares for residential and commercial

Gate fee (\$/input tonne)	\$/tonne
Residential	150
Commercial	100

Increase gate fee by \$100

2 Set the refund share to 50 per cent.

Scenario assumptions
MRF and modelling assumptions

Choices

Revenue share to MRFs - for Scenario 4
Use mixed plastics - segregated or total 50%

Share of operating costs that are variable, excluding waste disposal and transport costs (%) 50%

Commercial MRF activities

Include in analysis No

Allow commercial rates to adjust in response to CDS Yes

CDS refund to MRFs (cents/container) 10

CDS refund to MRFs (cents/container, after subtracting R 9.5

Container Deposit Scheme Impacts

Material flows	Share of output	Share of containers	Change in commodity
	Per cent	diverted from MRF	price because of CDS
paper and cardboard	47.4%	0%	0
aluminium	0.7%	20%	0
other metals	2.3%	0%	0
glass	33.8%	20%	0
plastics - mixed	6.1%	20%	0
plastics - hdpe	0.0%	20%	0
plastics - PET	0.0%	20%	0
other	0.0%	20%	0
waste	9.7%	0%	0

Set to 50%

3 Click on the teal and red boxes to run the model.

CLICK to
Update Refund Share for Profit
Neutrality (Scenario 3)

CLICK to
Run Sensitivity Analysis

4 Look at the results in the 'Scenarios sheet' for Scenario 4. For example, this shows a MRF profit as a share of operating costs of 90% for the MRF below.

Key results

Impact on MRF of CDS (annual, \$m unless noted otherwise)

	Base case (1)	With all CDS refunds going to a MRF (2)	Profit neutral, with 1.3% of CDS refunds going to a MRF (3)	50% of CDS refunds going to a MRF (4)
	\$m	\$m	\$m	\$m
Revenue	10.3	17.2	10.0	13.6
Operating costs	-7.2	-7.2	-7.2	-7.2
Operating profit	3.1	10.1	2.9	6.4
Profit as a share of operating cost (%)	44%	141%	40%	90%
Tonnes processed per year (000)	60.0	57.3	57.3	57.3
CDS to MRF as a gate fee equivalent (\$/input tonne)		128	2	64
Note: CDS revenue assumes all CDS eligible materials are recycled				
	\$m	\$m	\$m	\$m
CDS revenue to all councils served by MRF	0.0	0.0	7.2	3.7
CDS revenue to specific council	0.0	0.0	1.1	0.5
Revenue share that leaves MRF profits equal		1.3%		

Look at costs and revenues



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