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Carbon Credits (Carbon Farming Initiative) (Avoided Emissions from Diverting Legacy Waste from Landfill through a Composting Alternative Waste Technology) Methodology Determination 2013

*Carbon Credits (Carbon Farming Initiative) Act 2011*

I, Yvette D'Ath, Parliamentary Secretary for Climate Change and Energy Efficiency, make this Methodology Determination under subsection 106 (1) of the *Carbon Credits (Carbon Farming Initiative) Act 2011*.

Dated 4 March 2013

YVETTE D’ATH

Parliamentary Secretary for Climate Change and Energy Efficiency

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Part Preliminary

Name of Determination

This Methodology Determination is the *Carbon Credits (Carbon Farming Initiative) (Avoided Emissions from Diverting Legacy Waste through a Composting Alternative Waste Technology) Methodology Determination 2013*.

Commencement

This Determination is taken to have commenced on 1 July 2010.

Definitions

In this Determination:

***Act*** means the Carbon Credits (Carbon Farming Initiative) Act 2011 as in force from time to time.

***Alternative waste treatment (AWT) facility*** means a facility that converts putrescible waste to energy or any other product.

***biobased product***means a recovered resource product manufactured by the composting AWT facility and containing materials that were previously putrescible waste materials.

***CO2-e*** means the carbon dioxide equivalence.

***commercial and industrial waste***  means legacy waste generated from fixed point sources related to manufacturing, wholesale, retail, professional services and administration sectors.  
***composting AWT facility*** means an AWT facility that uses a controlled and contained process to ensure that appropriate aerobic levels are maintained to convert the putrescible eligible waste diverted from landfills into energy or any other product.

***composting digesters*** means aerated revolving drums that process putrescible waste by accelerating the composting process in combination with mechanical breakdown of materials through the drum prior to entering the compost maturation halls.

***compost maturation halls*** means aerated and enclosed halls where the compost process is completed in combination with heat and pile turning.

***composting tunnel*** means aerated and enclosed chamber to accelerate the compost process in combination with regular turning of materials prior to further compost windrowing.

***compost windrowing*** means regularly turned open air windrows used as additional conditioning of the compost if required.

***construction and demolition waste*** means legacy waste generated from construction and demolition activities both on a large scale and small scale.

***degradable organic carbon content*** has the meaning given in the NGER (Measurement) Determination.

***eligible waste*** means waste that meets the requirements set out in section 2.3 of this Determination.

***enclosed*** means, in relation to a composting AWT technology, a semi-enclosed technology where the composting process occurs within a reactor with hard walls or doors on all four sides and sits on a floor with a permanent positive or negative aeration system.

***legacy waste*** means waste physically accepted onto the premises of a waste diversion facility before 1 July 2012 that would otherwise have entered landfill.

***mixed solid waste*** means solid waste that:

(a) contains both putrescible and non‑putrescible waste; and

(b) if the waste is separated at the point of generation to form waste of a kind mentioned in (c) (non‑landfill waste)—comprises only waste that is residual after non‑landfill waste is removed.

(c) For paragraph (b), a kind of non‑landfill waste is any of the following:

(i) waste comprised of recyclable plastic, glass, metal or paper;

(ii) waste known as green waste or wood waste, comprised of garden waste, timber or similar materials from the natural environment;

(iii) organic waste from the livestock industry, for example, straw bedding and manure mixes;

(iv) any other kind of waste that is not intended for a landfill facility.

***municipal solid waste*** means legacy waste generated from the domestic sector which is collected in household garbage, recycling, garden organics and Council clean-up collections.

***NATA*** meansthe National Association of Testing Authorities, Australia (ACN 004 379 748).

***National Measurement Act*** means the National Measurement Act 1960 as in force from time to time.

***NGER (Measurement) Determination*** means the National Greenhouse and Energy Reporting (Measurement) Determination 2008 as in force from time to time.

***NGER Regulations*** means the National Greenhouse and Energy Reporting Regulations 2008 as in force from time to time.

***project period*** means the period of time from 1 July 2010 to 1 July 2012 in which the diversion of legacy waste was undertaken.

***putrescible waste*** means the organic matter contained within solid waste which is capable of being decomposed by microorganisms.

***Regulations*** means the Carbon Credits (Carbon Farming Initiative) Regulations 2011 as in force from time to time.

***residual waste***  means the material that remains at the end of processing by the composting AWT facility that is not a biobased product or any other recovered product, or that is defined within this Determination.

***restricted waste type*** means waste that is the subject of a restriction in accordance with a licence or other authorisation relating to the composting AWT facility.

***size reduction and/or screening*** means the process where putrescible waste materials are processed and/or screened into various sized fractions with various material compositions, for example, organic rich fraction.

***Solid Waste Calculator*** means the National Greenhouse and Energy Reporting Solid Waste Emissions Calculator Version 1.7, which is produced by the Clean Energy Regulator and available at http://www.cleanenergyregulator.gov.au

***unrestricted waste type*** means waste that is not a restricted waste type.

***Note*** Other words and expressions used in this Determination have the meaning given by the Act. These terms include:

***baseline***

***carbon dioxide equivalence***

***eligible offsets project***

***emission***

***greenhouse gas***

***offsets report***

***project***

***project area***

***project proponent***

***Regulator***

***reporting period***

Kind of project to which this Determination applies

***Note:*** See paragraph 106(1)(a) of the Act.

This Determination applies to a project that diverts mixed solid waste to an alternative waste treatment facility, in circumstances where:

that waste would otherwise have entered a landfill facility;

that waste is legacy waste;

the facility is a purpose built enclosed composting AWT facility; and

that waste is processed to manufacture biobased products.

Part Requirements for declaration as eligible project

***Note*** See paragraphs 27(4)(c), 35(2)(a) and 106(1)(b) of the Act and regulations 1.12 and 3.26 of the Regulations.

Eligible projects

To be declared an eligible offsets project, a project to which this Determination applies must meet the requirements in this Part.

***Note*** These requirements are in addition to those set by the Regulations for applications for a declaration.

Requirement 1—Project mechanism

The project must divert mixed solid waste to a composting AWT facility in circumstances where that waste:

would otherwise be deposited to landfill;

meets the eligible waste characteristics prescribed in section 2.3; and

is processed in accordance with section 2.4 in order to manufacture biobased products.

Requirement 2—Eligible waste characteristics

The waste must be:

mixed solid waste; and

legacy waste;

that is comprised of one or a combination of the following waste streams:

municipal solid waste;

commercial and industrial waste; or

construction and demolition waste.

Requirement 3—Processing technology

The waste mentioned in section 2.3 must be processed using a combination of the following:

composting digesters;

composting tunnels;

size reduction and/or screening;

compost maturation halls; or

compost windrowing.

***Note*** For the avoidance of doubt, a combination means at least 2 of the above technologies.

Part Requirements for operation of eligible projects

***Note*** See paragraphs 27(4)(c), 35(2)(a) and 106(1)(b) of the Act and regulation 3.26 of the Regulations.

Operation of eligible projects

An eligible offsets project must be operated in accordance with this Part.

Waste must be classified

In order to calculate the net abatement amount, waste that meets the requirements set out in Part 2 of this Determination must be classified into the following waste mix types:

municipal solid waste;

commercial and industrial waste; or

construction and demolition waste.

***Note*** The net abatement amount is calculated in accordance with Part 4 of this Determination.

Division Greenhouse gas assessment boundary

Greenhouse gases that must be accounted for

The following greenhouse gases from the following sources within the project must be taken into account when making calculations under Part 4. No other gases may be taken into account in respect of a source.

Table of gases accounted for in the abatement calculations

|  | **Project activity** | **Greenhouse gas** |
| --- | --- | --- |
|  | Emissions from the decomposition of eligible waste at a landfill site | Methane (CH4) |
|  |
|  |
|  |
|  | Emissions from the composting AWT facility | Methane (CH4) |
|  |
|  | Nitrous oxide (N2O) |
|  | Emissions from onsite fossil fuel consumption other than electricity generation for putrescible resource recovery | Carbon dioxide (CO2) |
|  | Methane (CH4) |
|  | Nitrous oxide (N2O) |
|  | Emissions from on-site electricity consumption for putrescible resource recovery  ***Note:*** These emissions are included subject to subsection 4.4 (3). | Carbon dioxide (CO2) |
|  | Methane (CH4) |
|  | Nitrous oxide (N2O) |
|  | Emissions from transport of eligible waste to landfill  ***Note:*** These emissions are included subject to subsection 4.4 (6). | Carbon dioxide (CO2) |
|  | Methane (CH4) |
|  | Nitrous oxide (N2O) |
|  | Emissions from transport of the eligible waste materials diverted from landfill to the project  ***Note:*** These emissions are included subject to subsection 4.4 (6). | Carbon dioxide (CO2) |
|  | Methane (CH4) |
|  | Nitrous oxide (N2O) |
|  | Emissions from transport of residual waste to landfill site  ***Note:*** These emissions are included subject to subsection 4.4 (6). | Carbon dioxide (CO2) |
|  | Methane (CH4) |
|  | Nitrous oxide (N2O) |
|  | Emissions from transport of biobased product to end user site  ***Note:*** These emissions are included subject to subsection 4.4 (6). | Carbon dioxide (CO2) |
|  | Methane (CH4) |
|  | Nitrous oxide (N2O) |

Part The net abatement amount

Division The net abatement amount

The net abatement amount

***Note*** See paragraph 106(1)(c) of the Act.

For an eligible offsets project to which this Determination applies, the carbon dioxide equivalent net abatement amount for the project in relation to a reporting period for the project is taken to be:

the quantity of methane emissions avoided as a consequence of the project, minus emissions from project activities;

where those quantities are calculated in accordance with Division 4.2.

Division Calculations

Subdivision Preliminary

General

In this Part:

unless otherwise specified, all calculations are in respect of activities undertaken, or outcomes achieved, during the project period for the eligible offsets project;

unless otherwise specified:

a reference to a project is a reference to an eligible offsets project that meets the requirements of Part 2;

all references to Parts, Divisions, sections, subsections, paragraphs, schedules and Equations are references to corresponding parts of this Determination;

a reference to a year means a reference to that financial year, which ends on 30 June.

If a calculation in Division 4.2 refers to a factor or parameter that is not otherwise specified in this Determination or a Schedule to this Determination, the person carrying out the calculations must apply the factor or parameter prescribed in the *NGER (Measurement) Determination* or the *NGER Regulations* in force at the time that the offsets report was required to be submitted.

Subdivision Calculating the baseline

***Note*** See paragraph 106 (4) (f) and section 107 of the Act.

Calculating the baseline

For an eligible offsets project to which this Determination applies, the baseline must be calculated as follows:

|  |  |
| --- | --- |
|  | **Equation 1** |

Where:

Eb = baseline emissions, measured in tonnes of CO2-e.

R = percentage of landfill gas that would have been captured and thermally oxidised, as prescribed in Schedule 1.

Lo = methane generation potential of the degradable organic carbon content in the putrescible eligible waste diverted from landfill, measured in tonnes of CH4 and calculated in accordance with Equation 2.

OF = 0.1, which is the oxidation factor for near surface methane in landfill.

PI = the proportion of methane generation potential that would have been released up to 2017, had the diverted eligible waste been landfilled, calculated in accordance with the Solid Waste Calculator in the manner prescribed in Schedule 4.

PR = the proportion of methane generation potential that would have been released after 2017, had the diverted eligible waste been landfilled, calculated in accordance with the Solid Waste Calculator in the manner prescribed in Schedule 4.

GWP1CH4 = 21, which is the global warming potential conversion factor for tonnes of CH4 into tonnes CO2-e for the period up to 2017.

GWP2CH4 = 25, which is the global warming potential conversion factor for tonnes of CH4 into tonnes CO2-e for the period after 2017.

Lo is calculated as follows:

|  |  |
| --- | --- |
|  | **Equation 2** |

Where:

Lo = methane generation potential of the degradable organic carbon content in the putrescible eligible waste diverted from landfill , measured in tonnes of CH4.

QWi = quantity of waste mix type *i* present in the putrescible eligible waste diverted from landfill, measured in tonnes, and calculated in accordance with Equation 3.

DOCi = degradable organic carbon value of waste mix type *i*, as prescribed in Schedule 3.

DOCFi = fraction of degradable organic carbon dissimilated for waste mix type *i*, as prescribed in Schedule 3.

MCF = 1, which is the methane correction factor for aerobic decomposition.

F = 0.5, which is the fraction by volume of methane in landfill gas.

QWi is calculated as follows:

|  |  |
| --- | --- |
|  | **Equation 3** |

Where:

QWi= quantity of waste mix type *i* present in the putrescible eligible waste diverted from landfill, measured in tonnes.

QMSW= quantity of eligible waste from municipal solid waste sources received by the composting AWT facility, measured in tonnes, in accordance with Division 5.2.

QC&D = quantity of eligible waste from construction and demolition sources received by the composting AWT facility, measured in tonnes, in accordance with Division 5.2.

QC&I = quantity of eligible waste from commercial and industrial sources received by the composting AWT facility, measured in tonnes, in accordance with Division 5.2.

QFacility = quantity of eligible waste, not including green waste separated at the point of generation to form non-landfill waste, received by the composting AWT facility, measured in tonnes in accordance with Division 5.2.

QPUT = quantity of putrescible eligible waste diverted by the composting AWT facility, measured in tonnes and calculated in accordance with subsection (5).

PMSWi = percentage of waste mix type *i* in the diverted putrescible eligible waste from municipal solid waste sources, based on the proportions of waste mix types for municipal solid waste, calculated in accordance with the default percentages prescribed in Schedule 2.

PC&Di = percentage of waste mix type *i* in the diverted putrescible eligible waste from construction and demolition sources, based on the proportions of waste mix types for construction and demolition waste, calculated in accordance with the default percentages prescribed in Schedule 2.

PC&Ii = percentage of waste mix type *i* in the diverted putrescible eligible waste from commercial and industrial sources, based on the proportions of waste mix type for commercial and industrial waste, calculated in accordance with the default percentages prescribed in Schedule 2.

Waste mix type percentages must be determined in the following manner:

for a restricted waste mix type—by using the maximum permitted tonnage of the restricted waste mix type received at the composting AWT facility, as a percentage of the eligible waste received at the composting AWT facility and adjusting the default percentages prescribed in Schedule 2 for each restricted waste mix type, in accordance with Equation 4;

for an unrestricted waste mix type—by adjusting the default percentages prescribed in Schedule 2 for each unrestricted waste mix type, in accordance with Equation 4;

for inert waste—in the manner prescribed in paragraph (a) where the maximum permitted tonnage is taken to be zero and adjusting the default percentages prescribed in Schedule 2 for inert waste, in accordance with Equation 4.

***Note*** Default percentages are set out in columns 3 and 4 of the table in Schedule 2. Waste mix types are set out in column 2 of that table.

|  |  |
| --- | --- |
|  | **Equation 4** |

Where:

Wmtuadj = the adjusted percentage for each unrestricted waste mix type.

Wmtu = the default percentage for each unrestricted waste mix type, as prescribed in Schedule 2.

Wmtr = the default percentage for each restricted waste mix type, as prescribed in Schedule 2.

Wmtrmax = the maximum percentage for each restricted waste mix type.

The following rules apply when calculating QPUT:

QPUT must include putrescible eligible waste inventory at the start of the project period and at the end of the project period, and material accepted onto the facility for processing during the project period, that is yet to be processed.

Subject to paragraph (a), QPUT must be calculated as follows:

|  |  |
| --- | --- |
|  | **Equation 5** |

Where:

QPUT = quantity of putrescible eligible waste diverted by the composting AWT facility, measured in tonnes.

QFacility = quantity of eligible waste, not including green waste separated at the point of generation to form non-landfill waste, received by the composting AWT facility, measured in tonnes in accordance with Division 5.2.

QRW = quantity of all residual waste sent to landfill from the composting AWT facility, measured in tonnes in accordance with Division 5.2.

QProductsNB,p = quantity of non-biobased products diverted from landfill of type (p), manufactured by the composting AWT facility, measured in tonnes in accordance with Division 5.2.

Subdivision Calculating project emissions (Ep)

Calculating project emissions (Ep)

EP must be calculated as follows:

|  |  |
| --- | --- |
|  | **Equation 6** |

Where:

Ep = emissions from the project, measured in tonnes of CO2-e.

QPUT = quantity of putrescible eligible waste diverted by the composting AWT facility, measured in tonnes and calculated in accordance with subsection 4.3(5).

QFacility = quantity of eligible waste, not including green waste separated at the point of generation to form non-landfill waste, received by the composting AWT facility, measured in tonnes in accordance with Division 5.2.

EFTij = emissions of gas type *j*, being carbon dioxide, methane or nitrous oxide, released from the combustion of fuel type *i* from the operation of the composting AWT facility, measured in tonnes of CO2-e and calculated in accordance with subsection (2).

EEU = emissions from electricity usage from the operation of the composting AWT facility, measured in tonnes of CO2-e and calculated in accordance with subsection (3).

Ecompost = emissions associated with the composting of diverted putrescible eligible waste (QPUT), in tonnes of CO2-e and calculated in accordance with Equation 9.

MTEProduct = material transport emissions associated with all biobased products, all residual waste and eligible waste diverted to the composting AWT facility, measured in tonnes of CO2-e and calculated in accordance with subsection (6).

EFTij must be calculated as follows:

|  |  |
| --- | --- |
|  | **Equation 7** |

Where:

EFTij = emissions of gas type *j*, being carbon dioxide, methane or nitrous oxide, released from the combustion of fuel type *i* from the operation of the composting AWT facility, measured in tonnes of CO2-e.

FTQi = quantity of fuel type *i* measured in tonnes, cubic metres or kilolitres (for solid, gas and liquid fuels respectively), used in the operation of the composting AWT facility.

FTECi = energy content factor of fuel type *i* as prescribed in the NGER (Measurement) Determination, measured in gigajoules per tonne, cubic metre or kilolitre.

FTEFijoxec = emission factor for each gas type *j* released from the combustion of fuel type *i*, measured in kilograms of CO2-e per gigajoule of fuel type *i*, calculated using the relevant emission factor prescribed in Schedule 1 of the NGER (Measurement) Determination.

Calculating emissions from electricity

Emissions from electricity (EEU) must be calculated as follows:

for the consumption of grid derived electricity that occurred between 1 July 2010 and 1 July 2012—in accordance with Equation 8; and

where the project uses grid derived electricity after 1 July 2012—EEU may be taken to be zero or calculated in accordance with Equation 8.

Subject to subsection (3), EEU must be calculated as follows:

|  |  |
| --- | --- |
|  | **Equation 8** |

Where:

EEU = emissions from electricity usage from the operation of the composting AWT facility, measured in tonnes of CO2-e.

EUQ = quantity of electricity used in the operation of the composting AWT facility, measured in kilowatt hours.

EEF = electricity emission factor for the electricity used in the operation of the composting AWT facility, as prescribed in Schedule 1 of the NGER (Measurement) Determination, measured in kilograms of CO2-e emissions per kilowatt hour.

Emissions from the composting AWT facility

Ecompost is calculated as follows:

|  |  |
| --- | --- |
|  | **Equation 9** |

Where:

Ecompost = emissions associated with the composting of diverted putrescible eligible waste (QPUT), in tonnes of CO2-e.

QPUT = quantity of putrescible eligible waste diverted by the

composting AWT facility, measured in tonnes and calculated in accordance with subsection 4.3 (5).

EFcompost = the emissions factor for compost, as prescribed in Division 5.2.6 of the NGER (Measurement) Determination.

Calculating emissions from transport

MTEProduct must be calculated as follows:

where the transport destination for eligible waste diverted from landfills, residual waste and biobased products is outside a radius of 10 kilometres in distance from the composting AWT facility—in accordance with Equation 10; or

where the transport destination for eligible waste diverted from landfills, residual waste and biobased products is within a radius of 10 kilometres in distance from the composting AWT facility—MTEProduct must be taken to be zero.

***Note*** For the avoidance of doubt, this calculation applies to each trip and in the case of biobased products, only to instances where the product is delivered to a customers site either by the operator of the composting AWT facility or by a contractor engaged by the operator of the composting AWT facility.

|  |  |
| --- | --- |
|  | **Equation 10** |

Where:

MTEProduct = material transport emissions associated with all

biobased products, all residual waste and eligible waste diverted to the facility, measured in tonnes of CO2-e.

QProduct,p = quantity of product delivered to a customer, residual or eligible waste type *p*, measured in tonnes.

ALProduct,p = average load weight for each load of product, residual or legacy type *p* that is transported from the AWT

facility, measured in tonnes.

DProduct,p = distance trip from the AWT facility, measured using a publicly available internet mapping tool, and rounded to the nearest kilometre.

FUFTi = 5.62x10-4, which is the fuel usage factor for heavy diesel trucks, measured in kilolitres per kilometre.

FTECFTi = energy content factor of fuel type *i* as prescribed in Schedule 1 of the NGER (Measurement) Determination, measured in gigajoules per cubic metre for gas or per kilolitre for liquid fuels.

FTEFijoxec = emission factor for each gas type *j* released from the combustion of fuel type *i*, measured in kilograms of CO2-e per gigajoule of fuel type *i*, calculated using the relevant emission factor prescribed in Schedule 1 of the NGER (Measurement) Determination.

Subdivision Calculating net greenhouse gas abatement

Calculating the net abatement (A)

Net abatement must be calculated as follows:

|  |  |
| --- | --- |
| A = Eb — Ep | **Equation 11** |

Where:

A = carbon dioxide equivalent net greenhouse gas abatement, measured in tonnes of CO2-e.

Eb = baseline emissions, measured in tonnes of CO2-e, calculated in accordance with Equation 1.

EP = project emissions measured in tonnes of CO2-e, calculated in accordance with Equation 6.

Calculating project abatement for a given reporting period

The net carbon dioxide equivalent abatement for the reporting period is the sum of the abatement for each year in the reporting period, in tonnes of CO2-e, determined in accordance with this subsection.

project abatement in each year must be calculated using the following formula:

|  |  |
| --- | --- |
|  | **Equation 12** |

Where:

Ak = project abatement in the kth year, measured in tonnes of CH4.

Ek,% = the proportion of emissions for each year, in tonnes of CO2-e

and determined in accordance with subsection (9) of Schedule 4.

R = percentage of landfill gas that would have been captured and thermally oxidised, as prescribed in Schedule 1.

Lo = methane generation potential of the degradable organic carbon

content in the putrescible eligible waste diverted from landfill, measured in tonnes of CH4 and calculated in accordance with Equation 2.

Ep = project emissions measured in tonnes of CO2-e, calculated in accordance with Equation 6.

OF = 0.1, which is the oxidation factor for near surface methane in landfill.

k = a number from 1 to 100 beginning from the year of project commencement.

The net abatement amount for each year must be calculated as follows:

for each year up to and including 2017— Ak must be multiplied by 21;

for each year after 2017— Ak must be multiplied by 25; and

the net abatement amount for each year must be rounded to the nearest tonne of CO2-e.

***Note*** The sum of the net abatement amounts for all years must be less than the net abatement (A) calculated in subsection 4.5 (1).

Part Monitoring, measurement, record-keeping and reporting requirements

***Note*** See subsection 106(3) of the Act.

Division General

General

For the purposes of subsection 106 (3) of the Act, a project proponent of a project to which this Determination applies must comply with the monitoring, measurement, record-keeping and reporting requirements of this Part.

Division Measuring requirements

Project measurement

A project proponent must measure the matters specified in the following table, in the manner and frequency specified, for the purposes of calculating baseline emissions and the net abatement amount.

| **Parameter** | **Description** | **Unit** | **Measurement Procedure** | **Measurement Frequency** |
| --- | --- | --- | --- | --- |
| QFacility | Quantity of eligible waste, not including green waste separated at the point of generation to form non-landfill waste, received by the composting AWT facility. | Tonnes (t) | Weighbridge protocol, as prescribed in section 5.3 | Per load and then summed for project period. |
| QProductsNB,p | Quantity of non-biobased products diverted from landfill of type (p), manufactured by the composting AWT facility. | Tonnes (t) | Weighbridge protocol, as prescribed in section 5.3. | Per load and then summed for project period. |
| QRW | Quantity of all residual waste sent to landfill from the composting AWT facility | Tonnes (t) | Weighbridge protocol, as prescribed in section 5.3. | Per load and then summed for project period. |
| QMSW | Quantity of eligible waste from municipal solid waste sources received by the composting AWT facility. | Tonnes (t) | Weighbridge protocol, as prescribed in section 5.3 | Per load and then summed for project period. |
| QC&D | Quantity of eligible waste from construction and demolition sources received by the composting AWT facility. | Tonnes (t) | Weighbridge protocol, as prescribed in section 5.3. | Per load and then summed for project period. |
| QC&I | Quantity of eligible waste received from commercial and industrial sources by the composting AWT facility. | Tonnes (t) | Weighbridge protocol, as prescribed in section 5.3. | Per load and then summed for project period. |
| EUQ | Quantity of electricity used in the operation of the composting AWT facility. | Kilowatt hours (kWh) | Invoiced amount of electricity usage. | Monthly, or as per invoice cycle, and summed for the project period. |
| FTQi | Quantity of fuel type (i), (whether solid, gas or liquid) used in the operation of the composting AWT facility. | Measured in tonnes (t), cubic metres (m3) or kilolitres (kL) - for solid, gas and liquid fuels respectively. | Invoiced amount of fuel usage, or as measured onsite use (for example, diesel from an onsite bowser). | Monthly, or as per invoice cycle, or as per onsite use requirements and summed for the project period. |
| QProduct,p | Quantity of eligible waste, residual waste and biobased products of type (p). | Tonnes (t) | Weighbridge protocol, as prescribed in section 5.3. | Per load and then summed for project period. |
| DProduct,p | Distance trip from the waste diversion facility. | Kilometres (km) | Measured in accordance with Equation 10. | Project period. |
| ALProduct, p | Average load weight of a given product type (p). | Tonnes (t) | Weighbridge protocol, as prescribed in section 5.3, and summing the weight of all loads of product type (p) and then dividing by the number of loads of product type (p). | Project period. |

Weighbridge protocol

A weighbridge must be used to collect and record the total tonnes of each of the following:

incoming eligible waste;

products sent to the end user;

other products from recovered resources;

outgoing residual waste to landfill; and

any loads rejected by the end user and sent to landfill.

Weighbridge records must be created and maintained for the following information for each load of legacy waste:

vehicle registration;

date and time received;

weight of vehicle; and

source (or provider) of the material.

Weighbridge scales must be verified in accordance with the methods prescribed in the National Measurement Act.

Any data relating to verification of the weighbridge used in the project must be recorded in accordance with section 5.7.

Any persons responsible for operating the weighbridge must be suitably qualified and/or trained in relation to weighbridge measurement systems, load classification and reporting software.

Division Monitoring and recording requirements

General

The project proponent must monitor and record the information specified in this Division.

Monitoring requirements

Project monitoring plan

The project proponent must develop a project monitoring plan that includes the following information:

a project description;

where the proponent is an organisation, an organisational description; and

operational information about the project, including:

variables in baseline emissions;

project parameters;

operations and activities requiring control to ensure abatement;

check of incoming loads;

processing to recover value and meet product specifications;

identification of risks to abatement; and

control of risks to abatement;

where sampling is used, the sampling and analysis protocol.

The project monitoring plan must include the following details in relation to any personnel who are involved in implementing the project:

required qualifications for personnel; and

personnel responsibilities for monitoring and measuring.

The project monitoring plan must also include the following:

Equipment used

information detailing the equipment used, the purpose of the equipment and calibration procedures;

information detailing calibration and testing of the weighbridge used in the project;

Project monitoring

information with respect to project monitoring including the following:

procedures for measuring and monitoring;

any estimation methods used in accordance with section 5.4;

any sampling practices;

any quality control practices; and

statistical error;

information detailing the project records required, the availability of those records and responsibility for maintaining records;

Project verification

information relating to project verification including :

timing of verification;

the process of verification; and

Other relevant information

any other information relevant to the project.

Division Record-keeping requirements

Records that must be kept

The project proponent must keep records of the following:

Project monitoring plan

the project monitoring plan developed in accordance with section 5.6 of this Determination;

General information

process flow description of the facility;

changes in process configuration;

inventory of mobile plant and equipment such as front end loaders and excavators;

any internal reports on product quality;

records of delivery of consignments of products and residuals to end users;

any independent audit records and results;

maintenance records relevant to the operation of the weighbridge;

details of any quality assurance accreditation;

Monitoring Devices

information about weighbridge calibration and testing;

Data – direct and indirect measurement

all values and calculations used to calculate the carbon dioxide equivalent net greenhouse gas abatement amount;

weighbridge records on incoming and outgoing materials;

evidence of fuel use;

evidence of electricity use; and

evidence of other input use.

Division Offsets report requirements

Report requirements

The following information is required to be included in all offsets reports:

carbon dioxide equivalent net abatement amount and number of years in the reporting period;

number of years in any previous reporting periods (as applicable);

independent audit report;

total tonnes of eligible waste accepted into the facility;

quantity of eligible waste materials diverted from landfill;

quantity of all product types produced in the processing of putrescible mixed solid waste materials diverted from landfill (including biobased product);

quantity of residual waste sent to landfill;

all values and calculations used to calculate net greenhouse gas abatement for both subsection 4.5 (1) and 4.5 (2) including a copy of the Solid Waste Calculator completed in accordance with Schedule 4;

the project monitoring plan developed in accordance with section 5.6;

quantity of waste type *i* present in the putrescible eligible waste diverted from landfill;

quantity of fuel type *i* used in the operation of the facility to process the eligible waste diverted from landfill;

quantity of electricity used in the operation of the facility;

baseline emissions calculated in accordance with Equation 1;

project emissions calculated in accordance with Equation 6; and

schedule of abatement for the project over a 100 year period calculated using the Solid Waste calculator in accordance with the instructions set out in Schedule 4 and in accordance with section 4.5.

Schedule 1 Average state or territory based landfill gas capture rates

|  |  |
| --- | --- |
| **State or Territory** | **Percentage capture rate value for R (Equation 1)** |
| ACT | 47% |
| NSW | 24% |
| NT | 25% |
| QLD | 16% |
| SA | 28% |
| TAS | 33% |
| VIC | 32% |
| WA | 27% |

Schedule 2—Percentage of waste mix types

| Item | Waste Mix Type | Municipal Solid Waste | Commercial and Industrial Waste Default (%) | Construction and Demolition Waste Default (%) |
| --- | --- | --- | --- | --- |
| 1 | Food | 35.0% | 21.5% | 0.0% |
| 2 | Paper and paper board | 13.0% | 15.5% | 3.0% |
| 3 | Garden and park | 16.5% | 4.0% | 2.0% |
| 4 | Wood and wood waste | 1.0% | 12.5% | 6.0% |
| 5 | Textiles | 1.5% | 4.0% | 0.0% |
| 6 | Sludge | 0.0% | 1.5% | 0.0% |
| 7 | Nappies | 4.0% | 0.0% | 0.0% |
| 8 | Rubber and leather | 1.0% | 3.5% | 0.0% |
| 9 | Inert waste (including concrete, metal, plastic and glass) | 28.0% | 37.5% | 89.0% |

Schedule 3—Waste mix types, degradable organic carbon content and DOCF values.

|  | | **To be used for the entire project period** | |
| --- | --- | --- | --- |
| **Item** | **Waste mix type** | **Degradable Organic Carbon value (DOCi)** | **DOCFi value** |
| 1 | Food | 0.15 | 0.84 |
| 2 | Paper and cardboard | 0.40 | 0.49 |
| 3 | Garden and green | 0.20 | 0.47 |
| 4 | Wood | 0.43 | 0.23 |
| 5 | Textiles | 0.24 | 0.50 |
| 6 | Sludge | 0.05 | 0.50 |
| 7 | Nappies | 0.24 | 0.50 |
| 8 | Rubber and Leather | 0.39 | 0.50 |
| 9 | Concrete, metal, plastic and glass | 0.00 | 0.00 |

Schedule 4—Instructions for using the solid waste calculator

The following steps must be followed when using the Solid Waste Calculator in accordance with section 4.3 of this Determination:

Open the Solid Waste Calculator at the tab labelled 'Inputs and Results';

Check that the green ‘Region Input’ Cell (Cell A8) is relevant to the state of the waste diversion facility;

***Note*** If not, click on the cell – a drop down box will appear, change to relevant state.

Insert the amount of putrescible eligible waste that is diverted from landfill in tonnes (QPUT) into the column ‘Waste Received Landfill (t)’ for each year;

***Note 1*** For example, if a waste diversion facility diverts 60,000 tonnes of putrescible eligible waste in the FY 2010 – 2011, and 40,000 tonnes of putrescible mixed solid waste in the FY 2011 – 2012: input 60,000 into ‘Waste Received Landfill (t)’ for 2011 (Cell B18) and 40,000 into ‘Waste Received Landfill (t) for 2012 (Cell B19).

***Note 2*** That the cell year is representative of FY ending that year, for example, FY2010 – 2011, is represented as ‘2011’ in the year column.

Place a zero in the remaining input waste years up to 2110 (100 years from 2011) and also place a zero in the columns ‘Qcap (CH4 only) (m3)’, ‘Qflared (CH4 only) (m3)’ and Qtr (CH4 only) (m3);

Insert the fraction of the source waste types for the diverted eligible waste as a decimal;

***Note 1*** For example [Municipal Solid Waste (MSW) {Cell P19}, Commercial and Industrial (C&I) {Cell Q19} or Construction and Demolition (C&D) {Cell R19}] into the column ‘Waste Streams (proportions of total)’ for the specified year. The total of all 3 cells will add up to 1.0.

***Note 2*** If the source of the waste diverted is 70% MSW (QMSW/QFactility), 25% C&I (QC&I/QFacilty) and 5% C&D (QC&D/QFacility), put 0.7 in cell Waste Streams – Municipal Solid Waste and year ‘2012’ (P19) and 0.25 in Waste Streams – Commercial and Industrial and year ‘2012’ (Q19); cell Waste Streams – Construction and Demolition and year ‘2012’ (R19) will input automatically as it is calculated by deduction.

Insert the fraction of waste mix type restrictions as per Wmtrmax in Equation 4. This is found as a subsection of ‘Wmtrmax–waste mix type licence restrictions (proportions of total’ (column AT to column BB)) and the respective year;

***Note*** For example, if there is no allowable non putrescible material in the diverted waste for FY2011 - 2012, then input zero into cell ‘Waste Mix Type Proportions - Inert’ and Year 2012 (Cell BB19). If there is a maximum of 5% non-putrescible material in the diverted waste for the year FY2011 - 2012, then input 0.05 into cell ‘Waste Mix Type Proportions - Inert’ and 2012 (Cell BB19).

Once input data has been inserted for the years 2011 and 2012 in accordance with subsections (1) to (6) then the Solid Waste Calculator steps are complete;

Extraction of data

From the column titled ‘Total Emissions Ei (CO2-e)’ (Column K), extract data for 100 years (100 Cells) beginning the year of first putrescible eligible waste received and paste into a new excel file.

Change the name of the column titled ‘Total Emissions Ei (CO2-e)’ (Column K), to ‘Annual Emissions Ek (CO2-e)’.

Manipulation of data

After completion of subsection (8), the following steps must be followed:

sum the annual emissions to calculate the total emissions for the 100 year period (Ek,total);

create a new column titled ‘Proportion of Emissions for each year (Ek,%)’ and do the following:

1. take the annual emissions (Ek) for each year and divide by the sum of the annual emissions (Ek,total) calculated in accordance with subsection (9) (a); and
2. express the value as a percentage called Ek,%.

calculate the net abatement amount for each year using section 4.5 of this Determination.

After completion of subsection (10), PI and PR must be calculated as follows:

create two rows under ‘Ek,total’ titled PI and PR;

calculate PI by summing the Annual Emissions (Ek) from project year zero until the year 2017;

calculate PR by summing the Annual Emissions (Ek) from the year 2018 until 100 years project completion;

express as a percentage, by dividing by the Total Annual Emissions (Ek,total); and

use PI and PR in Equation 1, as in section 4.3 of this Determination.

***Note*** For a project that commenced on 1 July 2010, the project year zero would be 2011, and the year of project completion would be 2110.