EXPLANATORY STATEMENT

Carbon Credits (Carbon Farming Initiative) Act 2011

Carbon Credits (Carbon Farming Initiative—Aggregated Small Energy Users) Methodology Determination 2015

Background: Emissions Reduction Fund

The *Carbon Credits (Carbon Farming Initiative) Act 2011* (the Act) enables the crediting of greenhouse gas abatement from emissions reduction activities across the economy. Greenhouse gas abatement is achieved either by reducing or avoiding emissions or by removing carbon from the atmosphere and storing it in soil or trees.

In 2014, the Australian Parliament passed the *Carbon Farming Initiative Amendment Bill 2014*, which establishes the Emissions Reduction Fund (ERF). The ERF has three elements: crediting emissions reductions, purchasing emissions reductions, and safeguarding emissions reductions.

Emissions reduction activities are undertaken as offsets projects. The process involved in establishing an offsets project is set out in Part 3 of the Act. An offsets project must be covered by, and undertaken in accordance with, a methodology determination.

Subsection 106(1) of the Act empowers the Minister to make, by legislative instrument, a methodology determination. The purpose of a methodology determination is to establish procedures for estimating abatement (emissions avoidance or sequestration) from eligible projects and rules for monitoring, record keeping and reporting. These methodologies will ensure that emissions reductions are genuine—that they are both real and additional to business as usual.

In deciding to make a methodology determination the Minister must have regard to the advice of the Emissions Reduction Assurance Committee (ERAC), an independent expert panel established to advise the Minister on proposals for methodology determinations. The Minister must not make or vary a methodology if the ERAC considers it inconsistent with the offsets integrity standards, which are set out in section 133 of the Act. The Minister will also consider any adverse environmental, economic or social impacts likely to arise as a result of projects to which the determination applies.

Offsets projects that are undertaken in accordance with the methodology determination and approved by the Clean Energy Regulator (the Regulator) can generate Australian Carbon Credit Units (ACCUs), representing emissions reductions from the project.

Project proponents can receive funding from the ERF by submitting their projects into a competitive auction run by the Regulator. The Government will enter into contracts with successful proponents, which will guarantee the price and payment for the future delivery of emissions reductions.

Further information on the ERF is available on the Department of the Environment website, www.environment.gov.au/emissions-reduction-fund.

Application of the Determination

The *Carbon Credits (Carbon Farming Initiative—Aggregated Small Energy Users) Methodology Determination 2015* (the Determination) sets out the detailed rules for implementing and monitoring offsets projects that reduce emissions of greenhouse gases associated with the consumption of grid electricity or natural gas by a large group of small energy users.

The Determination reflects the requirements of the Act's offsets integrity standards and helps to ensure that emissions reductions are real and additional to business as usual. The offsets integrity standards require that an eligible project should result in carbon abatement that is unlikely to occur in the ordinary course of events and is eligible carbon abatement under the Act. In summary, the offsets integrity standards also require that:

- amounts are measurable and capable of being verified;
- the methods used are supported by clear and convincing evidence;
- material emissions which are a direct consequence of the project are deducted; and
- estimates, assumptions or projections used in the determination should be conservative.

Reducing the energy consumption of ***small energy users*** such as households and small businesses can reduce emissions associated with electricity generation and fuel combustion and help energy users to save money on their energy bills. Consumption of electricity sourced from the grid is the primary source of emissions from households and small businesses. Natural gas is also widely consumed by small energy users, primarily for space and water heating in buildings.

Improving the energy efficiency of small energy users can reduce greenhouse gas emissions by reducing consumption of electricity and natural gas. The Determination applies to projects where goods, services and information designed to reduce greenhouse gas emissions from energy consumption are offered to a large number of small energy users.

The Determination is technology and activity neutral, providing flexibility for project proponents to determine what activities are most appropriate for their project. Activities that could be undertaken to reduce greenhouse gas emissions from energy consumption by small energy users under the Determination may include but are not limited to:

- changing behaviour associated with energy use by, for example, changing space heating and cooling settings or limiting shower length to reduce hot water usage;
- upgrading equipment that uses energy such as lighting, water heating, space heating and cooling, as well as appliances and whitegoods; and
- changing building elements that influence energy use, including changes to the building shell such as windows and insulation.

Projects could involve facilitating changes of this kind directly, for example by installing new equipment, or indirectly, by providing information to small energy users on the benefits of energy-saving activities. For example, an eligible project under the Determination could involve an energy retailer sending advice on how to reduce energy consumption to a group of its customers.

Given that projects using this method are likely to target a large number of households, low-cost emissions reduction activities such as information campaigns are expected to be promoted. Low and middle income households are expected to particularly benefit from

projects under this method because they typically do not have funds available to purchase energy efficient equipment with longer-term payback periods. Even though low and middle income households will not directly participate in the ERF under this method, they could enjoy savings from reduced energy consumption as a result of project activities.

The Determination uses a randomised control trial approach to quantify emissions reductions. A ***population*** of small energy users is randomly allocated to ***control*** and ***treatment groups***. The treatment group is then offered goods and services designed to reduce greenhouse gas emissions from their energy consumption, referred to in the Determination as the ***treatment***. The control group, which is not targeted with the treatment, is used to establish a baseline for the abatement calculation, providing an estimate of what the emissions of the treatment group would have been had the treatment not occurred. If, during the project, the emissions of the treatment group are lower than those of the control group by a statistically significant amount, then the project proponent receives credits representing the difference.

The control and treatment model provides strong assurance that the emissions reductions being credited would not have arisen in the ordinary course of events, in line with the offsets integrity standards outlined in section 133 of the Act. Any factor not related to the treatment that drives emissions reductions in the population would be expected to affect the control group as well as the treatment group, and so these emissions reductions would effectively be cancelled out when the difference in emissions between the two groups is taken.

Proponents may choose from three ***sub-methods*** to calculate the net abatement amount. Statistical techniques are employed in each sub-method to test whether any difference in emissions between the control and treatment groups could reasonably be said to have arisen from the treatment and not simply from the underlying variation across sites in the population. Table 1 summarises the three sub-methods and their different data requirements; the sub-methods are described in more detail in the discussion of Part 4 of the Determination.

Table 1: Summary of sub-methods and data requirements

Sub-method	**Data requirements to calculate abatement (for a single measurement period and population)**
Sub-method 1 – time-aggregated emissions in measurement periods	• Energy consumption data for measurement period *This method is suitable for proponents who do not have access to data for all sites from before the commencement of the project (pre-treatment data).*
Sub-method 2 – time-aggregated emissions in measurement periods and pre-treatment periods	• Energy consumption data for measurement period • Energy consumption data for pre-treatment period *By including pre-treatment data, this method controls for factors unrelated to the treatment that affect emissions at sites.*
Sub-method 3 – regression modelling	• Energy consumption data for measurement period • Energy consumption data for pre-treatment period • Data corresponding to proponent-selected explanatory variables (if any) *This method includes the greatest controls on variation in emissions among sites not arising from the treatment. It controls for pre-treatment emissions, any seasonal or other impacts of attrition on site emissions, and any other variables associated with site emissions (other than the treatment) chosen by the proponent.*

All sub-methods include detailed statistical analysis, and proponents are advised to seek advice from a suitably qualified statistician before commencing an aggregated small energy users project.

Project proponents who could use the Determination include energy retailers, energy distribution networks, aggregators with access to metering or billing data, or a combination of these. The Determination is well suited to activities where energy savings are small on a site-by-site basis, as these savings are aggregated over a large number of sites in the treatment group. The Determination also allows emissions reductions from multiple populations to be aggregated within a single project.

The Determination is based on a similar method under the New South Wales Energy Savings Scheme.[1] In line with advice from stakeholders, the Department has sought to maintain consistency with the New South Wales method. However, there are a number of differences between the New South Wales method and the Determination due to differences in overall scheme design and coverage. For example, the Determination covers natural gas as well as electricity because the purpose of the ERF is to reduce emissions from a range of sources, while at the time the New South Wales method was introduced, the aim of the Energy Savings Scheme was to reduce electricity consumption in New South Wales. The Determination consequently includes requirements to ensure that decisions on the energy sources to include in a project do not affect the robustness of the net abatement calculation.

Project proponents wishing to implement projects under the Determination must make an application to the Regulator under section 22 of the Act. They must also meet the general eligibility requirements for an offsets project set out in subsection 27(4) of the Act, which include compliance with the requirements set out in the Determination, and the additionality requirements in subsection 27(4A) of the Act. The additionality requirements are:

- the newness requirement;
- the regulatory additionality requirement; and
- the government programme requirement.

Subsection 27(4A) of the Act provides that a methodology determination may specify requirements in lieu of the newness requirement or the regulatory additionality requirement. The Determination does not specify any requirements in lieu, and so the general requirements apply to eligible aggregated small energy users projects.

Public consultation

The Determination has been developed by the Department of the Environment in collaboration with a technical working group of experts from the built environment and energy efficiency sectors and the Regulator. The technical working group reviewed draft versions of this methodology prior to the release of an exposure draft Determination for public consultation.

The exposure draft of the Determination was published on the Department's website for public consultation from 14 November 2014 to 12 December 2014. Five submissions were received. Details of the non-confidential submissions are provided on the Department's website: www.environment.gov.au.

[1] New South Wales Energy Savings Scheme Rule of 2009, Metered Baseline Method, Aggregated Metered Baseline (clause 8.9), accessible in 2015 at http://www.ess.nsw.gov.au/files/3b4bc901-796f-40cd-bace-a35000e9d4f5/ESSRule2of2014.pdf.

Determination details

Details of the Determination are at Attachment A. Numbered sections in this explanatory statement align with the relevant sections of the Determination. The definition of terms highlighted in ***bold italics*** can be found in the Determination.

For the purpose of subsections 106(4), (4A) and (4B) of the Act, in making this Determination the Minister has had regard to, and agrees with, the advice of the Emissions Reduction Assurance Committee that the Determination complies with the offsets integrity standards and that the proposed Determination should be made. The Minister is satisfied that the carbon abatement used in ascertaining the carbon dioxide equivalent net abatement amount for a project is eligible carbon abatement from the project. The Minister also had regard to whether any adverse environmental, economic or social impacts are likely to arise from the carrying out of the kind of project to which the Determination applies and other relevant considerations.

A Statement of Compatibility prepared in accordance with the *Human Rights (Parliamentary Scrutiny) Act 2011* is at Attachment B.

Attachment A

Details of the Methodology Determination

Part 1 Preliminary

1 Name

Section 1 sets out the full name of the Determination, which is the *Carbon Credits (Carbon Farming Initiative—Aggregated Small Energy Users) Methodology Determination 2015*.

2 Commencement

Section 2 provides that the Determination commences on the day after it is registered on the Federal Register of Legislative Instruments.

3 Authority

Section 3 provides that the Determination is be made under subsection 106(1) of the Act.

4 Duration

Under subparagraph 122(1)(b)(i) of the Act, a methodology determination remains in force for the period specified in the determination. The Determination will remain in force for the duration set out in this section unless revoked in accordance with section 123 of the Act or section 42 of the *Legislative Instruments Act 2003*.

Section 4 provides that the Determination will be in force from its commencement (as provided for in section 2) until the day before it would otherwise be repealed under subsection 50(1) of the *Legislative Instruments Act 2003*.

Instruments are repealed under that provision on the first 1 April or 1 October following the tenth anniversary of registration on the Federal Register of Legislative Instruments. In accordance with subparagraph 122(1)(b)(i) of the Act, paragraph 4(b) of the Determination sets out the time that the Determination would expire.

If the Determination expires in accordance with section 122 of the Act or is revoked under section 123 of the Act during a crediting period for a project to which the Determination applies, the Determination will continue to apply to the project during the remainder of the crediting period under sections 125 and 127 of the Act. Project proponents may apply to the Regulator during a reporting period to have a different methodology determination apply to their projects from the start of that reporting period (see section 128 of the Act).

Under section 27A of the Act, the Emissions Reduction Assurance Committee may also suspend the processing of applications under a determination if there is reasonable evidence that the methodology determination does not comply with one or more of the offsets integrity standards. This does not impact applications for declaration already received by the Regulator before such a suspension or declared eligible offset projects which apply the determination.

5 Definitions

Section 5 defines a number of terms used in the Determination.

Generally, where terms are not defined in the Determination but are defined in section 5 of the Act, they have the meaning given by the Act.

Under section 23 of the *Acts Interpretation Act 1901*, words in the determination in the singular number include the plural and words in the plural number include the singular.

Key definitions in section 5 of the Determination include those set out below.

Control group refers to the group of sites in the population for which energy consumption is monitored in order to estimate what the treatment group's emissions would have been without the treatment. Energy users at sites in the control group must not be informed of their role in baseline setting for the project to ensure that the control group's energy use remains an accurate reflection of what the treatment group's emissions would have been in the absence of the project.

Explanatory variable is a concept used in sub-method 3, where proponents may choose variables to include in regression analysis with the aim of more accurately isolating the effect of the treatment. There must be a possibility that the variable may influence energy use at a site and there must be no expected causal relationship between the treatment and the variable. For example, temperature over a year or at a particular time of the year may be predictive of the amount of energy consumed at a site. The value the variable takes at each site must also be capable of being accurately measured.

Measurement period refers to a period over which abatement for a population in an aggregated small energy users project is calculated, based on the consumption of natural gas or grid electricity measured at sites in the control and treatment group.

Measurement periods are contiguous, and each measurement period must be equal to, or wholly contained within, a reporting period. A measurement period must run for one year, with the exception of the final measurement period in the project, which may run for between one and two years. This is to allow for circumstances where the first measurement period starts after the beginning of the crediting period for the project and so the measurement periods together could not cover a whole number of years without terminating before the end of the crediting period.

The restriction on the length of measurement periods to one year is intended to control for the influence of seasonal variation in emissions reductions. The effect of an aggregated small energy users project may be to increase emissions in a particular season while reducing emissions overall. As the method for calculating the net abatement amount does not allow for increases in emissions in one measurement period to be deducted from abatement in the next, allowing measurement periods of less than one year could lead to over-crediting in certain circumstances.

The Act and subordinate legislation provide for flexible reporting periods between six months and two years in duration. This means that a reporting period may consist of a single measurement period or two one-year measurement periods.

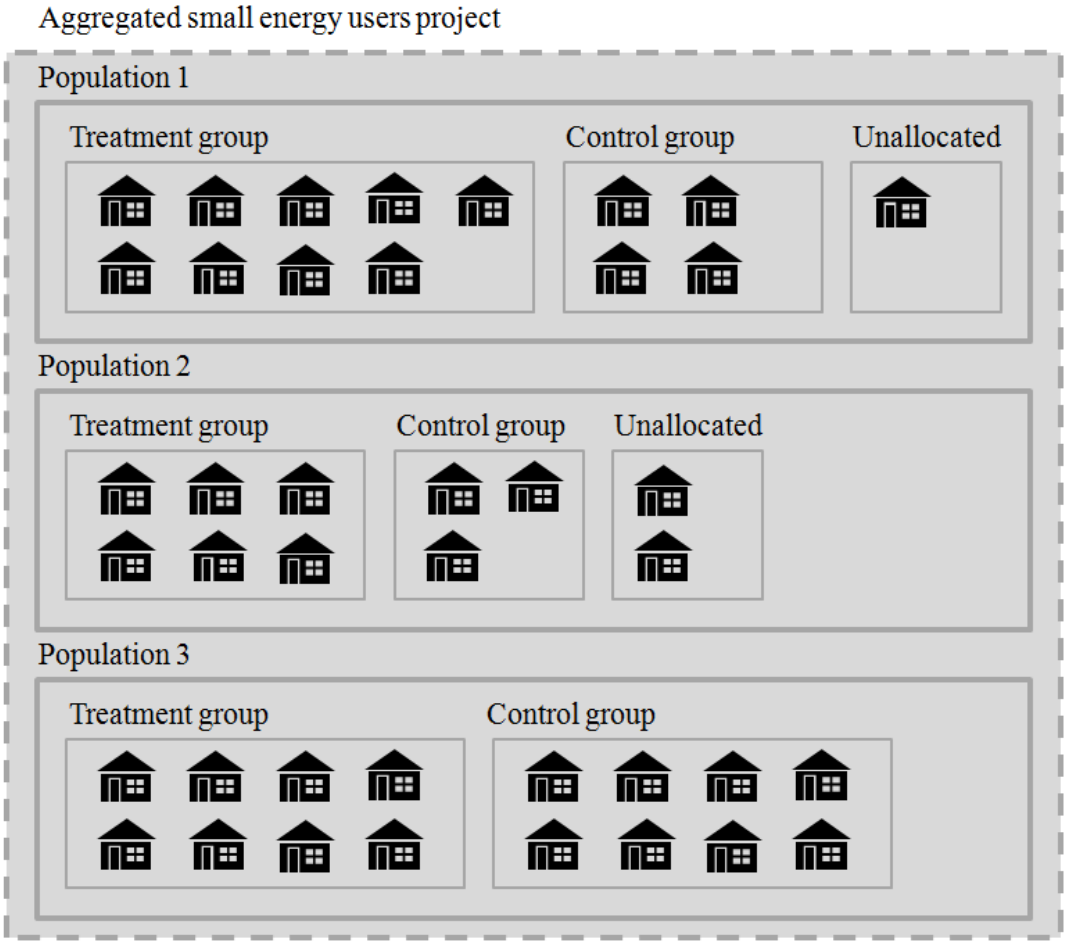
Different populations may run on different measurement period timelines, which has implications for the way in which abatement from measured energy consumption may be included in a reporting period for the project. Where there is more than one population in the project, under section 77A of the Act the proponent may choose to split a project into separate populations to report and apply for emissions reductions separately.

While the delivery of goods or services as part of the treatment may only be for a portion of the crediting period, the nature of the treatment will likely result in emissions reductions from energy savings being delivered over the duration of a crediting period. For example, a project to encourage site occupants to change their energy consumption habits would be expected to have an impact on energy consumption for months or years although the treatment (disseminating information on energy efficiency) was only delivered over a short period of time.

Population refers to a group of sites from which one control group and one treatment group are drawn. The Determination allows for multiple populations within a single project. The Determination allows a population to be defined either by enumerating all its members, or by specifying a characteristic that unambiguously defines the population (discussed in more detail in section 14).

Figure 1 illustrates the relationship between populations, control groups, treatment groups and sites within a project. This example project includes three populations of different sizes. Within each population, sites have been allocated to control and treatment groups in different ratios, and in two populations there are some sites that have not been allocated to either control or treatment groups (see discussion of section 15, *selecting sites for a control group or treatment group*, for more detail).

Figure 1: Groupings within the Determination



Random selection method refers to a method of selecting sites from a population where each site in the population has an equal chance of being selected. One kind of random selection method that proponents may wish to use to help ensure balance between the control and treatment groups is a restricted random selection method where the population is first stratified according to a variable (such as site pre-treatment data) that influences energy use.

As long as the control and treatment groups are selected using a random allocation method, the two groups do not need to be the same size. This means that a larger proportion of the population can be part of the treatment group, increasing potential abatement from an aggregated small energy users project.

Site is any premises in Australia occupied by a small energy user for which the consumption of grid electricity, natural gas or both can be measured in accordance with the ***monitoring requirements*** for the Determination.

Small energy user refers to a household or small business or another energy user with similar energy consumption to a household or small business, for example a small community organisation. The Determination does not specify maximum energy consumption levels in the definition of small energy user; however, proponents are advised that using a population of sites with large differences in energy consumption among sites may make it more difficult to demonstrate the statistical significance of any treatment effect under Part 4 of the Determination.

Treatment group refers to the group of sites in a population to which the treatment may be targeted. Note that this is not the group of sites that elect to receive the goods and services offered as part of the treatment; treatment group sites that do not take up the offer of goods and services are required to be maintained in the treatment group for the purposes of calculating the net abatement amount so that the statistical balance between the control and treatment groups is maintained. Also, if a site selected for the treatment group is not targeted with the treatment, for example if it is missed when information on energy efficiency is posted or emailed, it must still be included in the treatment group for the purposes of the calculations. This is to prevent deliberate interference with the membership of the control and treatment groups after they have been randomly selected.

6 Meaning of *measured energy consumption*

Section 6 defines measured energy consumption in a measurement and pre-treatment period. Measured energy consumption in the measurement period refers to the amount of natural gas or grid electricity consumed at a site in the measurement period, monitored in accordance with the requirements set out in the monitoring requirements.

Energy consumption in a pre-treatment period is likely to have been measured before the commencement of the project, so the monitoring requirements do not directly apply. Rather, measured energy consumption in the pre-treatment period refers to the amount of natural gas or grid electricity consumed at the site, where the quantity was measured in accordance with the standards set out in the monitoring requirements.

7 Meaning of *treatment*

Section 7 defines treatment, a concept that is used in Part 2 in describing the kind of offsets project to which the aggregated small energy users Determination applies. Treatment is the offering, promoting, providing, or facilitating the providing of, goods or services to site

occupants for the purposes of the project. Section 7 includes a list of categories of goods and services that may be included in the treatment, such as information on opportunities to reduce emissions from energy consumption or the installation of new equipment at the site.

The Determination does not prevent proponents from providing goods and services that are included in the treatment to a control group site. For example, if an energy customer in a control group becomes aware that their neighbour is receiving discounts on energy efficient products from their retailer and requests the same, the retailer may wish to provide the discounts for reasons of customer retention. Goods and services provided to a control group site would not meet the definition of treatment given in section 7, as they are not provided to the site for the purposes of the project. Sites selected for the control group must be included in the control group when calculating the net abatement amount, except under the specific circumstances described in section 16. This means that offering goods and services included in the treatment to control group sites could reduce abatement for the population as the difference between control and treatment group emissions is reduced.

8 References to factors and parameters from external sources

The calculation of the net abatement amount in the Determination includes factors taken from other sources, such as the emissions factor for natural gas from the ***NGER (Measurement) Determination***. The Determination specifies that such factors or parameters should be taken from the version of the external source that is current at the end of the reporting period unless the Determination specifies otherwise.

The requirement to use versions of referenced documents current at the end of the reporting period does not apply if sections in the Determination specify otherwise, such as for the emissions factor for electricity. The Determination states that the relevant emissions factor for electricity must be derived from the ***National Greenhouse Accounts (NGA) Factors document*** in force on the day the project is declared an eligible offsets project. The electricity emissions factor is discussed in more detail in section 45.

Part 2 Aggregated small energy users projects

9 Aggregated small energy users projects

The effect of paragraphs 27(4)(b) and 106(1)(a) of the Act is that a project must be covered by a methodology determination, and that the methodology determination must specify the kind of offsets project to which it applies.

Section 9 provides that the Determination would apply to a project that satisfies the following conditions:

- it involves targeting ***treatment*** (defined in section 7) to small energy users;
- it involves a control group and a treatment group, with the control group used to quantify the impact of the treatment on the emissions of the treatment group; and
- each good or service included in the treatment could reasonably be expected to result in eligible carbon abatement.

The Determination defines this kind of project as an ***aggregated small energy users project***.

Part 3 Project Requirements

Division 1 Operation of this Part

10 Operation of this Part

The effect of paragraph 106(1)(b) of the Act is that a methodology determination must set out requirements that must be met for a project to be an eligible offsets project. Under paragraph 27(4)(c) of the Act, the Regulator must not declare that a project is an eligible offsets project unless the Regulator is satisfied that the project meets these requirements.

Part 3 of the Determination specifies requirements that must be met in order for a project to be an eligible offsets project.

Division 2 General requirements

11 Information to be included in application for declaration

Section 22 of the Act provides that a person may apply to the Regulator for a project to be declared an eligible offsets project. Declaration as an eligible offsets project is a necessary condition for a project to receive credits for abatement under the ERF.

The application for declaration of an aggregated small energy users project must include a description of the treatment to be offered and a description of sites, or types of sites, to be included in populations for the project. The Determination allows for populations to be added to a project after the commencement of the project; in such cases it may not be possible for proponents to provide a detailed description of the individual sites to be included in those populations at the time of application. Section 11 would permit descriptions of the kinds of sites that future populations may be drawn from, for example households in a particular region.

12 Legal right to access and use data about energy consumption

To undertake an aggregated small energy users project, the proponent must have a legal right to access and use energy consumption data for each site, and to use that data in the manner described in the Determination in order to calculate the net abatement amount.

Section 12 includes a note clarifying the intent of the provision. If there are multiple project proponents, it is not the case that every proponent must have the legal right to access the energy consumption data used to calculate the net abatement amount in order for the project to be an eligible offsets project.

13 Project proponent not to be actively involved in decision-making

The project proponent must not be a person that can make decisions about how much energy is consumed at sites in the project, or about the installation or replacement of energy-consuming equipment or elements of the building shell that influence energy use. This is included to prevent circumstances where energy use at control group sites is varied to artificially inflate emissions. For example, if the project proponent had the ability to delay planned upgrades to inefficient heating and air conditioning systems at control group sites, it could not be guaranteed that abatement at treatment group sites being credited would not have occurred in the ordinary course of events.

Exceptions to the requirement for a project proponent not to be actively involved in decision-making are targeting the treatment to a site in the treatment group, and any activities associated with supplying energy to a site. For example, this section would not prevent an energy retailer with the power to disconnect an energy service due to non-payment or vary the supply of energy to a site to deal with peak demand or network maintenance from undertaking an aggregated small energy users project. Note that other requirements in this Part place limits on what proponents may do as part of supplying energy to a site; for example, section 23 prevents proponents from withholding goods and services that would normally be offered to energy customers.

Division 3 Making choices for the project

This method requires proponents to make choices about populations, calculation methods, time periods and the coverage of energy sources at specific points over the course of the project. These choices are then locked in for the duration of the project. The proponent is required to make a record of the decision and the time it was taken (Part 5) and to apply the decision in the calculation of the net abatement amount (Part 4).

Subdivision A Populations and selecting sites

14 Choosing populations

The proponent must choose at least one ***population*** before the project commences, and before other choices described in Division 3 that relate to a specific population can be made.
A population is a set of sites, which can be defined either by listing all the sites in the set or by describing a characteristic that all sites in the set have and all sites not in the set do not have.

An example of this latter approach is, "household customers of energy retailer X located within the state of Queensland". The description used must be unambiguous, so that for any given site at any time it is clear whether or not it is a member of the population.

The proponent may not change a population after it is chosen, except under the specific circumstances described in section 16. If the proponent has defined the population by listing all the member sites, new sites may not be added to the list and sites may not be removed from the list (subject to section 16). If the proponent has defined the population by description, they may not change the description; a site can enter or leave the population as it meets, or ceases to meet, the definition of a site in the population (subject to section 16).

A proponent may add new populations to the project after the commencement of the crediting period for the project. The new population must be chosen before the first measurement period for that population begins. Note that the Determination does not require abatement for all populations to be calculated over the same measurement periods (see Part 6 for details on how a project may be divided). Note also that other sections in this Division describe choices that must be made in relation to a population before the first measurement period for that population commences, such as the energy sources to be measured at sites in the population and the selection of the control and treatment groups.

15 Selecting sites for a control group or treatment group

Before the commencement of the first measurement period for a population, proponents must select sites from the population for the control and treatment groups using a random selection method. The control group and the treatment group do not need to be the same size. An ***accredited statistician*** must certify that a random selection method was correctly used.

Project proponents may allocate all sites in the population at that time to control and treatment groups by using a random selection method to choose sites for one group and then selecting the remaining sites for the other. Alternatively, they may leave some sites in the population unallocated by using a random selection method to choose sites for one group from the population then applying the method again to select sites for the other group from the remaining sites in the population.

After the project has commenced, proponents may add sites from the population to the control and treatment groups so long as this occurs at the start of a measurement period. This approach may only be taken if there are unallocated sites in the population at that time, and sites must be selected for control and treatment groups using a random allocation method and in the same ratio as the ***initial selection***. That is, if the proponent initially selected 5,000 sites for the control group and 10,000 sites for the treatment group, the subsequent allocation of sites to the control and treatment group must be in the ratio of 1:2. An accredited statistician must certify all allocations of sites to control and treatment groups, not just the initial selection.

Proponents must retain a site that has been selected for the control or treatment group in that group for the purposes of calculating abatement for the project unless the Determination specifically permits its exclusion. For example, sites ***affected by attrition*** must be excluded from the population, as described in section 16. Where a site has been selected for the treatment group but site occupants decline the offer of the goods or services included in the treatment, the site must be maintained in the treatment group for the purposes of calculating the net abatement amount even though the goods and services are not delivered to that site. This requirement is included to maintain the representativeness of the control group as a baseline for the treatment group. If sites electing not to receive the goods and services were excluded from the treatment group but similar sites (sites that are disposed to decline such offers) were still present in the control group, any difference in emissions between the two groups may be caused by the removal of sites from the treatment group rather than the project activities.

The other choices in this Division, such as selecting the energy sources to be measured at sites in the population, must be made before the allocation of sites to control and treatment groups. This is to ensure that these choices are not influenced by sites' membership of the control and treatment groups. For example, requiring energy sources to be chosen before the selection of the control and treatment groups means that proponents will not be able to choose to measure gas and electricity at control group sites for the purposes of the project but measure only gas at treatment group sites to artificially increase the difference between the two groups.

Role of accredited statistician

The random allocation of sites to control and treatment groups is critical for the robustness of the abatement calculation. It will not always be possible for an auditor to verify after the fact that the selection has been performed without bias. For this reason, the Determination requires an accredited statistician to certify that a random allocation method was correctly used.

Proponents are advised to seek advice from a statistician on other aspects of their project to provide assurance that their planned use of the Determination is sound. In particular, a statistician may be able to provide advice on the size of control and treatment groups so that a difference in energy use between the two groups arising from the treatment can satisfy the tests of statistical significance included in the calculations.

16 Sites affected by attrition

Section 16 defines a site as ***affected by attrition*** if:

- a metered gas or grid electricity account is terminated at the site and that energy source was being measured at the site for the purposes of the project;
- for a reason outside the control of the project proponent, the site occupant requests in writing that data relating to their energy consumption is not used for the project; or
- for a reason outside the control of the project proponent, the proponent no longer has a legal right to access and use energy consumption data for an energy source that was being measured at the site for the purposes of the project; or
- the population was defined as a set of sites of a particular type (rather than all sites in the population being listed), and the site ceases to meet the definition of a site in the population.

The Determination requires sites to be excluded from the population from the time they are affected by attrition until the end of the crediting period. This means that such a site must not be selected for a control or treatment group and, if already in a control or treatment group, must not be included in the calculation of the net abatement amount from the time it is affected by attrition. Note that section 35 provides flexibility for proponents in performing the calculations by allowing them to exclude sites affected by attrition during a measurement period from the calculations for the whole measurement period.

If a site occupant requests that their data not be used for the project, the definition of attrition is only satisfied if the request arises for a reason outside the proponent's control. If, for example, a proponent encourages low-emitting sites in the control group to submit such requests, those sites would not meet the definition of attrition and could not be excluded from the population. This is intended to prevent the attrition provisions in the Determination being used to manipulate the composition of the control or treatment groups.

Where both electricity and natural gas are being measured at a site for the project and the proponent loses access to consumption data for only one of those energy sources, the site meets the definition of being affected by attrition. Therefore it should only be included in the populations on days for which data for both energy sources is available. Also, if a site is affected by attrition because it ceases to meet the definition of a site in the population and then later in the crediting period starts to meet the definition again, under section 16 it must remain excluded from the population.

Subdivision B Measurement periods and pre-treatment periods

17 Choosing the start day for the first measurement period

The start day of the first measurement period for a population is chosen by the proponent. The Determination restricts measurement periods to 12 months, except for the last measurement period in the crediting period, and measurement periods must be contiguous. This means that

choosing the commencement date of the first measurement period defines the start date of every other measurement period. The first measurement period must not start before the beginning of the crediting period for the project.

Note that proponents are permitted to pro-rata energy consumption data for the purposes of the calculations if the data does not cover exactly the same dates as a measurement period. This means that the Determination does not require meter readings to be taken on the first day of the measurement period if this is not practical.

18 Choosing start day and end day for pre-treatment periods

Sub-methods 2 and 3 require the use of energy consumption data from before the first measurement period of the project, referred to as the pre-treatment period. This provides a further control, beyond the use of the random selection method, on variation between the control group and treatment group arising from underlying differences among sites.

If the proponent will use sub-method 2 or 3 to calculate abatement for a population, section 18 requires them to choose, before the initial selection for the population, the pre-treatment periods that they will use. The requirements for pre-treatment periods are different depending on whether sub-method 2 or 3 will be used for the population.

Sub-method 2

- The same pre-treatment period must be used when calculating abatement for all measurement periods that run for 12 months, and this pre-treatment period must also run for 12 months.
- Section 5 allows for the final measurement period for a population in the crediting period to run for more than 12 months. The pre-treatment period chosen for such a measurement period must cover the same dates (in earlier years) as the measurement period, and must include the start day of the pre-treatment period that will be used for the 12-month measurement periods for the population.

Sub-method 3

- The same pre-treatment period must be used when calculating abatement for a measurement period that runs for 12 months. There are no restrictions on the length of this pre-treatment period.
- For a measurement period of more than 12 months, proponents may either use the same pre-treatment period as for the other measurement periods or choose a different pre-treatment period.

Subdivision C Sub-methods and explanatory variables

19 Choosing a sub-method and explanatory variables

Before the initial selection for a population, the proponent must choose the sub-method that will be used to calculate abatement for that population for the duration of the project. Where a proponent has chosen to use sub-method 3, they must specify which, if any, additional explanatory variables they wish to use. Part 4 requires the sub-method and explanatory variables chosen under this section to be used to calculate abatement for the population in each reporting period, so the proponent may not change the sub-method or explanatory variables chosen for a population during the project.

Subdivision D Sources of energy

20 Choosing energy sources

By the time of the initial selection for a population in the project, the proponent must have chosen for each site whether gas, grid electricity or both will be measured for the purposes of the project so that the choice has been made for each site that may become a member of the control or treatment group. The proponent may make a different choice for different sites.

If the proponent undertakes a subsequent selection, the proponent must have chosen for each site whether gas, grid electricity or both will be measured for the purposes of the project. Proponents will thus be required to make new choices about coverage of energy sources if new sites have joined the population since the initial selection.

The Determination prevents proponents from making a choice that is conditional on the sites' future membership of the control or treatment group. For example, a decision rule that states that if a site is selected for the control group, gas and electricity will be measured at that site would not meet the requirements of this section.

Division 4 Treatment and activities of the project proponent

Subdivision A Dealing with control group and treatment group differently

21 Dealing with control group and treatment group differently

To preserve the integrity of the randomised control trial approach and allow abatement attributable to the treatment to be calculated accurately, the proponent must not deal with the control group differently from the treatment group if this is likely to have an effect on the net abatement amount that is not minor or trivial. An important exception to this requirement is the goods and services included in the treatment. Proponents need not provide these equally to both groups, as the purpose of the control group is to indicate what treatment group emissions would have been in the absence of the treatment.

This requirement also does not apply to the provisions in Subdivision B that relate to only one of the control or treatment group. For example, the requirement in section 26 that sites in the control group not be informed of their membership of the control group is not extended to sites in the treatment group by section 21.

The subsequent sections in Subdivision A are specific cases of the general rule expressed in section 21. Section 21 is intended to capture circumstances not covered by the subsequent sections, including but not limited to applying different account management or network operation procedures to the two groups.

22 Offering goods or services to cause higher energy consumption at sites in control group

The project proponent must not offer, or cause to be offered, goods or services to the control group under the following circumstances:

- those goods or services are likely to increase energy consumption at control group sites; and
    - the goods or services are offered to a greater proportion of sites in the control group than the treatment group; or

- the goods or service are offered to the same proportion of sites in the control group and treatment group but the basis for choosing which sites they are offered to is different between the two groups.

This final condition prevents the proponent from targeting the offer of goods or services to control group sites that are more likely to take it up.

An example of how this section would apply is that it would prevent energy-intensive appliances being promoted to control group sites in order to increase energy consumption at those sites, where the appliances were not equally promoted to sites in the treatment group.

These requirements are intended to ensure that the control group's energy usage is not influenced in a way that would artificially increase the difference in emissions between the control and treatment groups. If this occurred, then the abatement credited under the methodology may not correspond to genuine emissions reductions resulting from the project.

23 Offering goods or services to control group that would usually be offered

The project proponent must not withhold, or cause to be withheld, goods or services that would ordinarily be offered as part of the usual business practice of supplying energy to a site. For example, if customers of an energy retailer are usually sent a brochure on energy efficiency with their energy bill, the proponent must continue to send these brochures to control group sites.

This is intended to maintain the representativeness of control group emissions as a baseline for the treatment group. It is also intended to prevent circumvention of the Act's newness requirement by withholding good and services that have previously been offered to the control group while continuing to offer them to the treatment group other than as part of the project.

24 Promoting government programs disproportionately to treatment group

Section 24 defines ***government program or scheme*** with reference to legislative rules made under sub-paragraph 27(4A)(c)(ii) of the Act. Programs or schemes identified in the legislative rules, either directly or by reference to activities that must not be included in an eligible offsets project, fall within the definition of a ***government program or scheme*** for the purposes of this section.

Section 24 states that the project proponent must not offer goods or services funded under a government program or scheme or the ERF (other than the aggregated small energy users project itself), advise on or facilitate the uptake of other ERF projects or other government programs or schemes, or cause the offer, advice or facilitation to be given, to sites in the population under the following circumstances:

- the offer may have the effect of reducing energy consumption at treatment group sites and either:
    - this offer or advice is directed to a greater proportion of treatment group sites than control group sites; or
    - the offer is directed to the same proportion of sites in each group but the basis for choosing which sites receive the offer, advice or facilitation is not the same for treatment and control groups.

The requirement is intended to prevent the project proponent from being issued credits for emissions reductions resulting from activities that are not due to the aggregated small energy users project.

25 Measuring energy consumption

Section 25 specifies that the method used to monitor energy consumption at sites under Part 5 and the metering arrangements for monitoring energy consumption cannot be changed if:

- the change is likely to increase measured energy consumption at control group sites or decrease measured energy consumption at treatment group sites relative to what would otherwise have occurred, and
    - the method is changed at a greater proportion of sites in one group; or
    - the proportion of sites at which the method is changed is the same, but the basis for choosing the sites at which a change is made is different between treatment and control groups.

This requirement is included to prevent crediting apparent emissions reductions that arise solely from changing the method of measurement.

An exception to this requirement is that treatment under the project may include replacing an existing meter with a different type of meter, for example replacing existing meters with smart meters at treatment group sites. In such a case, there would be no requirement to install smart meters at an equal proportion of control group sites.

Subdivision B Other requirements

26 Occupants of sites in control group not to be informed of their role

Occupants of sites in the control group must not be informed of their role in baseline setting for the project. This requirement is included to ensure that the control group's energy usage is not influenced, and that it remains an accurate estimate of what the treatment group's emissions would have been in the absence of the project.

This section does permit an occupant of a control group site to be informed of their role if that occupant requests information about the use of their energy consumption data, or if the disclosure is otherwise required by law. These provisions are included so that project proponents can meet their obligations relating to the handling of personal data without their aggregated small energy users project becoming ineligible.

27 Promoting to treatment group the switch to using different energy source

The proponent must not promote fuel switching to a non-renewable energy source other than natural gas or grid electricity. This is intended to prevent overestimating abatement, where the decrease in emissions from one energy source is measured but a corresponding increase in emissions from another source is not.

The proponent may only promote switching from using electricity to natural gas, or vice versa, if they have chosen under section 20 to measure both electricity and natural gas consumption at all sites in the population. For example, if the project promotes reducing emissions from energy consumption by switching to natural gas water heating from electric water heating, then the proponent is not permitted to measure only electricity at a site in the

control or treatment group. This is also intended to prevent overestimating abatement in cases where there is an increase in emissions from an unmonitored energy source.

This requirement means that if a proponent believes that their project may involve promoting switching between electricity and natural gas, they need to secure access to data on the consumption of both electricity and gas at all sites in the relevant population, including where the site occupant purchases gas and electricity from different retailers. Proponents should consider this requirement when choosing populations for projects that may involve the promotion of fuel switching.

28 Increase in energy prices for treatment group

The project proponent must not increase, or cause an increase in, grid electricity or natural gas prices at treatment group sites if it can reasonably be concluded that a reason for increasing the price is to increase the net abatement amount for the project.

This requirement, along with the similar provision in section 29, is not intended to prevent pricing changes arising from the standard operation of energy retailers within energy markets.

29 Decrease in energy prices for control group

The project proponent must not decrease, or cause a decrease in, grid electricity or natural gas prices at control group sites if it can reasonably be concluded that a reason for decreasing the price is to increase the net abatement amount for the project.

30 Disposing of removed or replaced energy-consuming equipment

Section 30 applies if the project proponent, their agent, or another person contracted by the project proponent removes equipment at a site as part of treatment under the project, or delivers, installs or facilitates the installation or delivery of appliances or other equipment at the site. The project proponent, their agent, or the other person contracted by the project proponent must take reasonable steps to ensure that equipment that is removed or replaced is disposed of and not refurbished, reused or resold. This requirement prevents leakage into the secondary market, where replaced, inefficient appliances could remain in use with no overall reduction in emissions.

The requirement not to refurbish, re-use or sell replaced equipment does not prevent the energy-consuming equipment being broken down into components and those components being recycled. The Determination allows equipment to be sold to a third party in order to be broken down and recycled.

This section of the Determination only applies in cases where the project proponent or their agent is involved in the removal or installation of equipment. In many cases, it will not be possible to require replaced equipment to be disposed of. For example, if a household decided to buy energy efficient appliances as the result of an aggregated small energy users project information campaign, the project proponent would have no control over the replaced appliances and would not be required to oversee disposal.

Part 4 Net abatement amount

Division 1 Preliminary

31 Operation of this Part

Paragraph 106(1)(c) of the Act provides that a methodology determination must specify how to calculate the carbon dioxide equivalent (CO_2-e) net abatement amount for the project in relation to a reporting period. Part 4 sets out these rules.

32 Overview of gases accounted for in abatement calculations

Section 32 provides a summary of the greenhouse gas sources that are assessed in the Determination in order to determine the net abatement amount. The emissions sources which may be taken into account when calculating abatement for the project, subject to the choices made under Part 3 on sub-methods and the coverage of energy sources, are set out in Table 2.

Table 2: Overview of gases accounted for in the abatement calculations

Greenhouse gases and emissions sources		
Relevant emissions calculation	**Emissions source**	**Greenhouse gas**
Pre-treatment emissions for a site	Natural gas consumption	Carbon dioxide (CO_2) Methane (CH_4) Nitrous oxide (N_2O)
Pre-treatment emissions for a site	Electricity consumed from an electricity grid	Carbon dioxide (CO_2) Methane (CH_4) Nitrous oxide (N_2O)
Measurement period emissions for a site	Natural gas consumption	Carbon dioxide (CO_2) Methane (CH_4) Nitrous oxide (N_2O)
Measurement period emissions for a site	Electricity consumed from an electricity grid	Carbon dioxide (CO_2) Methane (CH_4) Nitrous oxide (N_2O)

For the purposes of the Determination, only emissions associated with grid electricity or natural gas are included. Emissions at a site in the project may comprise scope 1 emissions from natural gas combustion, scope 2 emissions from grid electricity consumed at the site, or both.

Division 2 Requirements relating to calculating net abatement

33 Operation of this Division

Division 2 lists requirements relating the data and methods that may be used in the calculation of the net abatement amount.

34 General requirements

Section 34 allows proponents to choose not to include a population in the calculation of the net abatement amount for a measurement period. This provision could be used, for example,

to reduce compliance costs if it is known that the treatment targeted at a treatment group has not been successful and abatement for that population, if calculated, would be zero. While an entire population may be excluded for a measurement period, this section does not permit the exclusion of particular sites in a population for which abatement is being calculated.

Part 3 of the Determination requires proponents to make choices about populations, calculation methods, time periods and the coverage of energy sources at specific points over the course of the project. Section 34 states that proponents must conform to these decisions in calculating the net abatement amount. For example, the proponent must use the sub-method chosen for a population under paragraph 19(a) to calculate the net abatement amount for that population in all measurement periods.

This section permits pro-rataing of energy consumption data where needed to align site data to measurement and pre-treatment periods for the population. Where energy consumption data for a site monitored in accordance with the monitoring requirements does not coincide with a measurement period, proponents may pro-rata that data provided that the time periods fully cover the measurement period. That is, proponents may not extrapolate outside time periods covered by metering or billing data. Pro-rataing is also permitted for pre-treatment periods, subject to the same requirement that the time periods fully cover the pre-treatment period.

Where a site is included in the population for only part of the measurement period because it is affected by attrition, under section 16 it must not be included in the calculation after it is affected by attrition. This means that energy consumption data covering only part of a measurement period may be required, and in these circumstances proponents may pro-rata energy consumption data based on the number of days in the measurement period for which the site is being included in the calculations.

35 Excluding sites affected by attrition from the beginning of measurement period

A site is defined as being affected by attrition if a metered gas or grid electricity account is terminated at the site, if the project proponent no longer has a legal right to access and use energy consumption data at that site, or if a site ceases to meet the definition of a site in the population. Under section 16, sites affected by attrition must be excluded from the population from the time they are affected by attrition.

Proponents have two options for how to treat sites affected by attrition during a measurement period when calculating abatement for that measurement period:

- the site may be included in the calculations from the beginning of the measurement period until the last day before the site is affected by attrition, as required by section 16; or
- section 35 allows the site to be excluded from the calculations for the entire measurement period.

For example, if a site is affected by attrition because the electricity account for the site is terminated three months after the beginning of a measurement period, the proponent may either:

- include the site in the calculations for the first three months of the measurement period, using energy consumption data covering those three months to calculate emissions at the site; or
- exclude the site from the calculations for the entire measurement period.

Under both options, the site would be included in the calculations in the measurement periods before the measurement period in which the account was terminated (provided that it was in the control or treatment group at that time), and excluded from the calculations for all measurement periods after the measurement period in which the account was terminated.

The Determination requires proponents to choose one of the two options to apply to all sites affected by attrition. That is, they may not exclude some sites affected by attrition from the calculations altogether and include others for a portion of the measurement period.

If the first option above is taken, the value D_s (the number of days for which data for measured energy consumption for the site is being used for the purposes of calculating abatement) in the calculations will be lower than for sites that are not affected by attrition. If sub-method 3 is used and the attrition variables $W_{s,t}$ are included, $W_{s,t}$ will take the value zero for some sites in some time periods in the partition.

36 Requirements for sub-methods 2 and 3

Sub-methods 2 and 3 make use of energy consumption data from pre-treatment periods before the first measurement period for the population. For each site, this data must cover the same energy sources (gas, electricity or both) as chosen to be covered in the measurement periods for the population.

Division 3 Method for calculating net abatement amount

37 Summary

The net abatement amount for the project for a reporting period is calculated by adding abatement for all populations in the project and each measurement period within the reporting period.

38 Carbon dioxide equivalent net abatement amount

In section 38, the net abatement amount is calculated as the sum of abatement across populations in the project and measurement periods in the reporting period (**equation 1**).

Different sub-methods may be used for different populations (the three sub-methods are described in Divisions 4 to 6 of this Part). Abatement for a population in a measurement period is set to zero if the null hypothesis under the relevant sub-method cannot be rejected.

If the null hypothesis can be rejected, abatement for the population in the measurement period is given by:

- equation 3 if sub-method 1 is being used to calculate abatement for the population;
- equation 8 if sub-method 2 is being used to calculate abatement for the population; and
- equation 14 if sub-method 3 is being used to calculate abatement for the population.

The hypothesis test for each sub-method is one-sided, so the null hypothesis can only be rejected if the treatment group's mean daily emissions are lower than those of the control group. In the event that the treatment group's emissions are higher, the null hypothesis cannot be rejected and abatement is zero.

Division 4 Time-aggregated emissions in measurement periods—sub-method 1

Subdivision A Summary

39 Summary

In sub-method 1, average daily site emissions of the control group and treatment group are compared using a statistical hypothesis test. If average daily emissions of the treatment group are found to be lower than those of the control group by a statistically significant amount, the abatement is calculated by taking the difference in average daily emissions between the two groups and multiplying this difference by the number of days of energy use data at sites in the treatment group. If it is found that the treatment group's emissions are not lower than the control group's by a statistically significant amount, abatement for the population in the measurement period is zero in accordance with section 38.

Subdivision B Calculating abatement for a population

40 Difference between control group emissions and treatment group emissions

Section 40 outlines a hypothesis test (**hypothesis test 1**) to establish whether the difference in mean daily emissions between the control and treatment group is statistically significant, and not simply a result of underlying variation among sites in the population.

The null hypothesis is that mean daily emissions for treatment group sites under a ***counterfactual scenario*** in which no sites receive the treatment are the same as actual mean daily emissions in the treatment group during the measurement period. The control group mean is used to estimate mean daily emissions for the entire population of sites under a counterfactual scenario in which no sites receive the treatment. The 'untreated treatment group' is a subset of this population, so its mean can be predicted from the population mean. The two step process in estimating the counterfactual treatment group mean is reflected in the formula for the t-statistic, which adjusts for the fact that the population mean and standard deviation are estimated from a sample (the control group) and then the mean and standard deviation for a subset of the population are predicted from the population values.

If the null hypothesis can be rejected, the control group mean is sufficiently higher than the treatment group mean to conclude that treatment group sites would have higher mean daily emissions than were actually observed in the treatment group, had these sites not been targeted with the treatment. That is, it can reasonably be concluded that treatment group emissions are lower than they would have been had the project not occurred.

41 Standard deviation of mean daily emissions for control group

Section 41 sets out the formula for the control group standard deviation (**equation 2**) to be used in hypothesis test 1. To account for the possible impact of attrition, the calculation of mean daily emissions in sections 43 and 44 is effectively a weighted average of mean daily emissions at each site, weighted by the number of days in the measurement period for which data for the site is included in the calculations. For this reason, in the standard deviation used to calculate the t-statistic, mean daily site emissions are also weighted by the number of days in the measurement period for which the site is included in the calculations.

42 Abatement for a population in a measurement period

Abatement for a population in a measurement period is calculated by finding the difference between mean daily site emissions for the treatment and control groups, then multiplying this amount by the total number of days for which there is measured energy consumption at sites in the treatment group (**equation 3**). Note that this latter value is not simply the number of days in the measurement period, but rather the sum across all sites in the treatment group of the number of days that each site has energy consumption data. If, for example, the measurement period ran for 365 days and for each day there was data for 1,000 sites, the total number of days for the purposes of this calculation would be 365,000.

Under section 38, abatement calculated using equation 3 is only used in the calculation of the net abatement amount if the null hypothesis in hypothesis test 1 can be rejected.

Subdivision C Calculating mean daily emissions for a group

43 Mean daily emissions for control group

Mean daily emissions for sites in the control group are calculated using **equation 4**. Total emissions for the measurement period are added across all sites in the control group, then this amount is divided by the total number of days covered by energy consumption data for sites in the control group.

44 Mean daily emissions for treatment group

Mean daily emissions for sites in the treatment group are calculated using **equation 5**. Total emissions for the measurement period are added across all sites in the treatment group then this amount is divided by the total number of days covered by energy consumption data for sites in the treatment group.

Subdivision D Calculating site emissions

45 Site emissions in a measurement period

The emissions at a site in the measurement period are calculated using **equation 6**. Energy consumption for the site, determined in accordance with the monitoring requirements, is multiplied by the relevant emissions factors and emissions from natural gas and electricity are then added together. Where a site has been affected by attrition and is only included for part of the measurement period, the energy consumption data will cover the period before the site is excluded from the population.

The electricity emissions factor to be used refers to scope 2 emissions from the electricity grid to which the site is connected, and is to be taken from the ***NGA Factors document*** published by the Department from time to time. If the site is connected to an electricity grid for which there is an emissions factor included in the NGA Factors document, then proponents will apply that emissions factor from the NGA Factors document, as in force on the day the project is declared an eligible offsets project. If the site is connected to a grid other than one of the electricity grids for which emissions factors are included in the NGA Factors document, then the proponent will apply the factor for off-grid electricity published in the NGA Factors document as in force on the day the project is declared an eligible offsets project. The NGA Factors document will clearly identify the table of emissions factors relevant to this definition.

The emissions factors for natural gas combustion are taken from Schedule 1 to the ***NGER (Measurement) Determination*** to calculate emissions in tonnes CO_2-e. Section 8 of the Determination requires this to be the version of the NGER (Measurement) Determination in force at the end of the reporting period.

Division 5 Time-aggregated emissions in measurement periods and pre-treatment periods—sub-method 2

Subdivision A Summary

46 Summary

Sub-method 2 can be used where the project proponent has access to energy use data for the population from before the first measurement period for that population. The approach is similar to sub-method 1, but it is the change in average daily emissions between the pre-treatment period and the measurement period that is compared between the control group and the treatment group. If the difference in results for the control group and treatment group is found to be statistically significant, the net abatement amount is calculated by multiplying the difference between control and treatment group results by the number of days of measured energy use at sites in the treatment group. If it is found that the change in the treatment group's emissions is not lower than the control group's by a statistically significant amount, section 38 specifies that abatement is zero.

The alternative hypothesis in the hypothesis test for this sub-method is that the change in emissions between the pre-treatment and measurement period is lower for the treatment group than if the project had not occurred (estimated using the change in the control group's emissions). The change in treatment group emissions is lower than the change in control group emissions if:

- the treatment group's emissions have increased over time by a smaller amount than the control group's emissions have increased; or
- the treatment group's emissions have decreased over time by more than the control group's emissions have decreased.

Subdivision B Calculating abatement for a population

47 Difference between change in control group emissions and change in treatment group emissions

The hypothesis test outlined in section 47 (**hypothesis test 2**) is the same in structure as the hypothesis test used in sub-method 1. However, the quantities being compared are the change in mean daily emissions between the pre-treatment period and the measurement period of the control group and treatment group.

The null hypothesis is that there is no difference in the change in emissions from the pre-treatment period to the measurement period between the (known) treatment group and the treatment group under a counterfactual scenario in which treatment group sites do not receive the treatment. If the null hypothesis can be rejected, it can be reasonably concluded that the difference between pre-treatment and measurement period mean daily emissions would have been higher in the treatment group had the treatment not occurred; that is, the treatment group emissions have increased by a smaller amount over time than they would have done without the treatment, or decreased by a larger amount.

48 Standard deviation of change in mean daily emissions for control group

Section 48 sets out the formula for the standard deviation of the change in mean daily emissions in control group sites (**equation 7**) to be used in hypothesis test 2. As required in sub-method 1, the standard deviation is weighted by the number of days in the measurement period for which the site is included in the calculations.

49 Abatement for a population in a measurement period

Abatement for a population in a measurement period is calculated using **equation 8**, by finding the difference between the change in mean daily emissions between the pre-treatment and measurement periods for the control group and the treatment group. This difference is then multiplied by the total number of days for which measured energy consumption data is being used for sites in the treatment group.

Subdivision C Calculating the change in emissions between periods for a group

50 Change in mean daily emissions for control group

The change in mean daily emissions between the pre-treatment period and the measurement period for the control group is calculated using **equation 9**. The change in emissions between the pre-treatment and measurement periods for all sites in the control group (calculated for each site using equation 11) are added together, then this amount is divided by the total number of days for which energy consumption data is being used for sites in the control group.

51 Change in mean daily emissions for treatment group

The change in mean daily emissions between the pre-treatment period and the measurement period for the treatment group is calculated using **equation 10**. The change in emissions between the pre-treatment and measurement periods for all sites in the treatment group (calculated using equation 11) are added together, then this amount is divided by the total number of days for which there is energy consumption data is being used for sites in the treatment group.

Subdivision D Calculating the change in site emissions between periods

52 Change in site emissions

The change in emissions at a site between the pre-treatment period and the measurement period is worked out using **equation 11**. The change is found by subtracting emissions in the pre-treatment period from emissions in the measurement period, after adjusting pre-treatment period emissions for any difference in the number of days covered by the data for the two periods. For example, if the pre-treatment period ran for a year but the site was only included in the calculations for six months of the measurement period due to attrition, pre-treatment period emissions would be multiplied by 0.5 before being subtracted from measurement period emissions.

Subdivision E Calculating site emissions

53 Site emissions in a measurement period

Emissions at a site in the measurement period are calculated using **equation 12**. Energy consumption for the site, determined in accordance with the monitoring requirements, is multiplied by the relevant emissions factors and emissions from natural gas and electricity are then added together.

54 Site emissions in a pre-treatment period

Emissions at a site in the pre-treatment period are calculated using **equation 13.** Energy consumption for the site is multiplied by the relevant emissions factors and emissions from natural gas and electricity are then added together.

Division 6 Calculation of abatement from regression modelling—sub-method 3

Subdivision A Summary

55 Summary

Sub-method 3 introduces regression analysis, with variables to control for factors unrelated to the treatment that may influence differences in energy use among sites. If the estimated treatment effect is statistically significant, then abatement is calculated by multiplying the negative of the estimated treatment effect by total number of days covered by energy consumption data for treatment group sites.

The sequence of steps involved in the regression analysis set out in this part is as follows:

1. Create a data set with one observation for each site in the control and treatment groups consisting of the following variables:
    a. mean daily emissions at the site in the measurement period;
    b. a treatment variable taking the value zero or one, depending on whether the site is in the control group or treatment group respectively;
    c. mean daily emissions at the site in the pre-treatment period;
    d. variables to capture the effect of attrition on mean daily emissions at the site, if chosen to be included by the proponent, which take the value zero or one depending on whether the site was affected by attrition during the relevant time period; and
    e. other variables, if chosen by the proponent, that may influence consumption of grid electricity or gas at the site.
2. Define a linear equation relating mean daily emissions at a site in the measurement period (the dependent variable) to the independent variables listed above.
3. Using least squares regression with data for all sites in the control and treatment group, weighted by the number of days for which there is measured energy consumption data for the site in the measurement period, estimate the values of the coefficient for the treatment variable. The estimated coefficient for the treatment variable, β_E, is the impact of the treatment on mean daily emissions at a site, holding all other variables constant. β_E is an estimate of the average daily change in site emissions across treatment group sites arising from the treatment.

4. Perform a t-test to establish the statistical significance of β_E.
5. If β_E is found to be statistically significant, multiply $-\beta_E$ by the total number of days covered by treatment group energy consumption data in the measurement period to estimate total abatement arising from the treatment in the measurement period.

Subdivision B Calculating abatement for a population

56 Statistical significance of treatment effect

Section 56 describes a hypothesis test on the treatment effect estimated in the regression analysis (**hypothesis test 3**).

The null hypothesis is that being included in the treatment group has no effect on mean daily emissions at a site. If the estimated treatment effect (estimated using regression equation 1) is found to be in the lower 5th percentile of a t-distribution based on the standard error of the estimated treatment effect and an assumed mean of zero, the null hypothesis is rejected. If this is the case, it can reasonably be concluded that the impact of targeting treatment to a site is a reduction in emissions at that site.

57 Abatement for a population in a measurement period

The abatement for a population in the measurement period is calculated using **equation 14,** by multiplying the negative of the estimated treatment effect (estimated using regression equation 1) by the total number of days for which there is measured energy consumption at sites in the treatment group.

The estimated treatment effect is the amount by which emissions at a site would be expected to change as a result of receiving the treatment, based on regression analysis on all the sites in the control and treatment groups. This value will be negative if the null hypothesis can be rejected (that is, the estimated impact of the treatment will be a decrease in mean daily emissions), so it is multiplied by negative one when calculating abatement.

Subdivision C Estimating the effect of treatment

58 Regression analysis

Linear regression is applied to a dataset containing data for all sites in the control and treatment groups against a dependent variable – mean daily site emissions in the measurement period – and a number of independent variables. The regression is weighted by the number of days for which measured energy consumption data is being used for the site in the measurement period. This means that sites for which there is data for the whole measurement period have a greater impact on the estimated values of coefficients in the regression equation (**regression equation 1**) than sites affected by attrition during the measurement period.

One independent variable, T_s, captures whether the site is in the treatment group. It takes the value of 1 if the site is in the treatment group and the value of 0 if the site is in the control group. The estimated coefficient for the treatment variable, β_E, thus captures the effect of the treatment on mean daily emissions at a site.

Another independent variable included in the regression analysis is average daily emissions for each site for the pre-treatment period. If relevant, a variable to capture the effects of attrition may also be included; this controls for the possibility that sites with energy use data

covering only part of the measurement period might have different average daily emissions compared to sites with data for the whole period due, for example, to seasonal effects.

Finally, this sub-method allows for variables chosen by the proponent. If other explanatory variables are being included in the regression analysis, these must be chosen before the initial selection, meet the definition of ***explanatory variable*** given in section 5 and be monitored according to the relevant monitoring requirements.

Subdivision D Calculating mean daily site emissions

59 Mean daily site emissions in a measurement period

Mean daily emissions for a site in the measurement period are worked out using **equation 15**. Emissions at the site in the measurement period are divided by the number of days for which measured energy consumption data is being used for the site during the measurement period.

60 Mean daily site emissions in a pre-treatment period

Mean daily emissions for a site in the pre-treatment period are worked out using **equation 16**. Emissions at the site in the pre-treatment period are divided by the number of days in the pre-treatment period.

Subdivision E Calculating site emissions

61 Site emissions in a measurement period

Emissions at a site in the measurement period are calculated using **equation 17**. Energy consumption for the site, determined in accordance with the monitoring requirements, is multiplied by the relevant emissions factors, and emissions from natural gas and electricity are then added together.

62 Site emissions in a pre-treatment period

Emissions at a site in the pre-treatment period are calculated using **equation 18.** Energy consumption for the site is multiplied by the relevant emissions factors, and emissions from natural gas and electricity are then added together.

Part 5 Reporting, record-keeping and monitoring requirements

Subsection 106(3) of the Act provides that a methodology determination may subject the project proponent of an eligible offsets project to specified reporting, record-keeping and monitoring requirements.

Under Parts 17 and 21 of the Act, a failure to comply with these requirements may constitute a breach of a civil penalty provision, and a financial penalty may be payable.

The reporting, record-keeping and monitoring requirements specified in Part 5 of the Determination are in addition to any requirements specified in the Act, regulations and legislative rules.

Reporting periods

The Act and subordinate legislation provide for flexible reporting periods between six months and two years in duration. As described in Part 1 of this Explanatory Statement, measurement periods must run for one year, with the exception of the final measurement period in the crediting period, which must run for at least one year and up to two years. This means that a reporting period may consist of a single measurement period or two one-year measurement periods.

Proponents should be aware that the Act and subordinate legislation may also specify other reporting and notification requirements affecting the Determination.

Audit requirements

The Act provides for a risk-based approach to auditing emissions reductions. Subsections 13(1) and 76(4) of the Act provide for legislative rules to be made by the Minister, specifying the level of assurance, frequency and scope of the audit report that must be provided with project reports for different types of projects.

Division 1 Offsets report requirements

63 Operation of this Part

The effect of paragraph 106(3)(a) of the Act is that a methodology determination may set out requirements to be included in each offsets report.

64 Offsets report requirements

Further to requirements under the Act or subordinate legislation, section 64 sets out specific additional information that must be included in each offsets report for an aggregated small energy users project.

The reporting requirements make use of the concept of a ***relevant population***, which is defined in relation to a reporting period as a population which is included in the calculation of the net abatement amount for the reporting period.

In the first reporting period, the offsets report for an aggregated small energy users project must include:

- the number of relevant populations in the project;

- a description of those populations;
- for each site in each control or treatment group in the population:
    - an address;
    - the population it belongs to; and
    - whether it has been selected for the control or treatment group; and
- a description of the goods or services included in the treatment for each relevant population.

Addresses will assist the Regulator to establish whether the project is funded under another government programme, in line with the additionality requirements in subsection 27(4A) of the Act.

In the second or subsequent reporting periods, the offsets report must provide details of all new sites entering a control or treatment group in a relevant population in the project and describe any goods and services included in treatments under the project that are different from those described in previous offsets reports.

If a site in a control or treatment group in a relevant population is affected by attrition during the reporting period, the offsets report must include the address of the site and whether the site was selected for the control or treatment group in the population.

If the proponent is using sub-method 3, has elected to include other variables and fails to monitor an explanatory variable in accordance with the monitoring requirements at some time during the reporting period, the offsets report must describe the period over which the variable was not monitored, the reason it was not monitored, the value of the variable used in the calculations and how that value was determined.

These offsets report requirements are in addition to the general offsets report requirements specified in the Regulations and legislative rules.

Division 2 Notification requirements

65 Operation of this Part

The effect of paragraph 106(3)(b) of the Act is that a methodology determination may set out requirements to notify one or more matters relating to the project to the Regulator.

66 Notification requirements

Section 66 requires proponents to notify the Regulator of a decision to change the activities undertaken as part of a treatment for a population in the project, where the new activities are not covered by the description of the treatment included in the application for declaration or a previous notification. For example, if the project application described the treatment to be offered as information relating to opportunities to reduce energy consumption and the proponent later decided also to install new lighting at sites in the treatment group, the proponent would be required under this section to notify the Regulator of this change.

The Regulator must be notified at least 30 days before the new treatment activities commence. Under section 80 of the Act, the requirement to comply with a notification requirement is a civil penalty provision, and financial penalties may apply if the proponent

does not provide notification to the Regulator as required by this section of the Determination.

Division 3 Record-keeping requirements

67 Operation of this Division

The effect of paragraph 106(3)(c) of the Act is that a methodology determination may set out record-keeping requirements for an eligible offsets project.

68 Record keeping requirements

Section 68 lists the records that must be kept for an aggregated small energy users project, in addition to record-keeping requirements that will apply to all projects as specified in the Act and legislative rules.

Choices and certification
Part 3 of the Determination specifies a range of choices that proponents must make at particular stages of the project and certifications that must be given by an accredited statistician. These decisions and certifications must be recorded and the record retained, including evidence of when the decisions and certifications were made.

Information about sites
The project proponent must also keep records of the address for each site in each population and, for sites joining the population during the measurement period, the circumstances in which that occurred (a site may join the population when it starts to meet the definition of the population chosen by the proponent under section 14).

For a site that is affected by attrition during the project, records must be kept for the day the site was affected by attrition and the circumstances in which the attrition occurred. For example, if a metered gas or grid electricity account is terminated at a site, records must be kept of which metered amount was terminated and the day on which it was terminated.

Disposal of equipment and building components
If energy-consuming equipment is removed or replaced as part of treatment under the project under the circumstances described in section 30 of the Determination, evidence of the disposal of the equipment in accordance with the relevant Commonwealth, state or territory legislative requirements must be kept.

The same requirement applies to building components and other non-energy-consuming equipment that are removed from a building and disposed of, if the removal is performed by the project proponent, the project proponent's agent, or a person contracted by the project proponent.

Division 4 Monitoring requirements

Subdivision A Preliminary

69 Operation of this Part

Division 4 describes the parameters that require monitoring, including specifications for the manner and frequency of monitoring. Sections 70 to 74 specify requirements to monitor an

aggregated small energy users project that is an eligible offsets project under paragraph 106(3)(d) of the Act.

Subdivision B Monitoring requirements

70 Monitoring energy consumption

The energy sources chosen under section 20 to be measured at a site must be monitored at that site for all time periods in the crediting period for which the site is part of the control or treatment group in the population. This requirement ceases to apply if the site is no longer a member of the control or treatment group because it is affected by attrition. Also, if a population will not be included in the calculation of the net abatement amount in a measurement period, energy consumption need not be monitored during that measurement period.

71 Monitoring energy consumption using billing data

If the project involves monitoring energy consumption at a site using billing data, then that data must have been collected in accordance with the laws regulating the supply of the energy (electricity or natural gas) in that jurisdiction, for example the National Energy Retail Rules[2] in jurisdictions where they apply.

Legislation governing the measurement of energy consumption for billing purposes includes numerous provisions to ensure that the measurements, as far as practicable, are an accurate reflection of energy consumed at the site over the relevant period. These provisions are relied upon under the Determination rather than requiring proponents to use a separate measurement process, unless they choose to take meter readings specifically for the project.

72 Monitoring energy consumption other than using billing data

If the project does not involve monitoring a site's energy consumption using billing data, then energy consumption must be measured in accordance with section 72.

Energy consumption must either be:

- measured or estimated in accordance with the laws regulating the supply of the energy (electricity or natural gas) in that jurisdiction, including the National Energy Retail Rules in jurisdictions where they apply; or
- metered in accordance with the relevant requirements of the National Measurement Institute (see *NMI M 6 Electricity Meters* and *NMI R 137 Gas Meters*) without bias by a person who had no knowledge of whether the site is in a treatment or control group.

The project proponent does not need to measure the energy consumption directly; rather the project proponent may access data from another party, such as a metering company.

[2] *National Energy Retail Law (South Australia) Act 2011*, accessible in 2015 at http://www.legislation.sa.gov.au/LZ/C/A/NATIONAL%20ENERGY%20RETAIL%20LAW%20(SOUTH%20AUSTRALIA)%20ACT%202011/CURRENT/2011.6.UN.PDF.

73 Monitoring explanatory variables for sub-method 3

If the project uses sub-method 3, then the project proponent must monitor the explanatory variables that the project proponent has chosen for the regression analysis.

The proponent may monitor the variable themselves, or using data collected by a third party. The variable must be, or have been, monitored accurately, in accordance with any relevant industry practice and at each site for all time periods for which the site is part of a control or treatment group. If the monitoring is done at a location other than the site (for example, if temperature or rainfall data from a weather station is used), the location at which the measurement is taken should be chosen so that the measurement would be expected to be reflective of a measurement taken at the site itself.

The section 73 monitoring requirements do not apply in measurement periods for which the population will not be included in the calculation of the net abatement amount.

Subdivision C Consequences of failing to monitor the project as required

74 Consequences of not monitoring explanatory variable as required

Section 74 sets out requirements for determining the value of an explanatory variable used in sub-method 3 if the proponent fails to monitor the variable in accordance with section 73 at a site for a period of time in a reporting period (the ***non-monitored period***). The value of the variable for the site during the non-monitored period must be determined according to:

- any relevant industry practice;
- any relevant historical values for that variable for the site;
- any other data that relates to the explanatory variable; and
- any other matter the project proponent considers relevant.

This section does not prevent the Regulator from taking action under the Act or subordinate legislation in response to the proponent's failure to monitor the variable in accordance with the monitoring requirements.

Part 6 Dividing an aggregated small energy users project

75 Operation of this Part

Part 6 sets out requirements for dividing an aggregated small energy users project that is an eligible offsets project.

76 Requirements for division of project

Where there is more than one population in the project, under section 77A of the Act the proponent may choose to split a project into separate populations to report and apply for emissions reductions separately. If a proponent uses section 77A of the Act to divide a project into parts, the overall project can be divided into distinct populations, but no further. For example, a project could not be divided into two parts if one part was a population and the other part was a selection of sites from within a population. If the project is divided into parts, each part must consist of one or more whole populations.

Statement of Compatibility with Human Rights

Prepared in accordance with Part 3 of the Human Rights (Parliamentary Scrutiny) Act 2011

Carbon Credits (Carbon Farming Initiative—Aggregated Small Energy Users) Methodology Determination 2015

This Legislative Instrument is compatible with the human rights and freedoms recognised or declared in the international instruments listed in section 3 of the *Human Rights (Parliamentary Scrutiny) Act 2011*.

Overview of the Legislative Instrument

The *Carbon Credits (Carbon Farming Initiative—Aggregated Small Energy Users) Methodology Determination 2015* (the Determination) sets out the detailed rules for implementing and monitoring offsets projects that avoid greenhouse gas emissions by reducing emissions from energy consumption among a select group of small energy users in a designated population. The Determination applies to projects that involve comparing emissions between a treatment group and a control group in a designated population and measuring the consumption of electricity or natural gas (or both) by both groups.

Project proponents wishing to implement the Determination must make an application to the Clean Energy Regulator (the Regulator) and meet the eligibility requirements set out under the Determination. Offsets projects that are approved by the Regulator can generate Australian Carbon Credit Units, representing emissions reductions from the project.

Project proponents can receive funding from the Emissions Reduction Fund by submitting their projects into a competitive reverse auction run by the Regulator. The Government will enter into contracts with successful proponents, which will guarantee the price and payment for the future delivery of emissions reductions.

Human rights implications

The Determination engages Article 17(1) of the International Covenant on Civil and Political Rights (ICCPR). Article 17(1) of the ICCPR provides for the right of every individual to be protected against arbitrary or unlawful interference with the individual's privacy. The term 'privacy' has not been defined by international human rights law but it is generally accepted that it encompasses 'information privacy'—the right to privacy of information about a particular individual.

An interference with an individual's privacy will not be considered 'unlawful' if it is authorised by a law that complies with the provisions, aims and objective of the ICCPR and specifies in detail the precise circumstances in which such interferences may be permitted. An interference with an individual's privacy will not be considered 'arbitrary' if it is reasonable in the particular circumstances and the law is in accordance with the provisions, aims and objectives of the ICCPR.

The Determination engages the right to privacy because it requires the proponent to monitor and report on energy consumption at sites in the project, such as households and small businesses, and report the addresses of those sites to the Regulator. Energy consumption data is used to calculate the emissions reductions from sites in the project, and addresses are required to be reported to establish whether the project is funded under another government programme, in line with the additionality requirements in subsection 27(4A) of the *Carbon Credits (Carbon Farming Initiative) Act 2011.*

These requirements are reasonable and the Rules are therefore not 'arbitrary' within the meaning of Article 17(1) of the ICCPR.

Furthermore, the Determination does not authorise an unlawful interference with an individual's privacy because the Determination adequately specifies the circumstances in which information may be collected and used, operating within the existing protections on privacy set out in Australian law. Part 3 of the Determination requires that the proponent must have a legal right to access data about measured energy consumption for each site, and to use that data in the manner described in the Determination. Laws that may affect whether the proponent has a legal right to access and use customer data include the *Privacy Act 1988* and laws governing the retail supply of electricity and natural gas in each jurisdiction, such as the *National Energy Retail Law (South Australia) Act 2011*. These laws contain privacy protections and make provision for the disclosure of personal information between energy retailers, distributors, regulators and market operators. The *Privacy Act 1988* provides for the protection of personal information and sets out National Privacy Principles, which outline standards for the collection, storage, security, use, disclosure and quality of personal information.

The Regulator is required to handle all personal information in accordance with the *Privacy Act 1988* and is bound by the secrecy provisions in the *Clean Energy Regulator Act 2011*. In particular, Part 3 of the *Clean Energy Regulator Act 2011* includes a number of significant restrictions on the use or disclosure of information collected by the Regulator.

The Determination is therefore compatible with Article 17(1) of the ICCPR because it does not unlawfully or arbitrarily interfere with an individual's privacy.

Conclusion

The Determination is compatible with human rights because it does not limit any human rights and freedoms recognised or declared in the international instruments listed in section 3 of the *Human Rights (Parliamentary Scrutiny) Act 2011*.

The Hon Greg Hunt MP, Minister for the Environment