

New Zealand Government



The New Zealand Emissions Trading Scheme

- ❖ **A guide to synthetic greenhouse gas activities in the New Zealand Emissions Trading Scheme**

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1 Overview

Regulations for reporting synthetic greenhouse gas (SGG) emissions under the New Zealand Emissions Trading Scheme (NZ ETS) came into force from 1 January 2011. Voluntary reporting also started from that date.

SGGs include sulphur hexafluoride (SF₆), perfluorocarbons (PFCs) and hydrofluorocarbons (HFCs).

Persons who manufacture or import SGGs, either in bulk or in goods, and who are not exempt are required to participate in the NZ ETS. SGG participants are required to collect certain data to calculate and report on the greenhouse gas emissions associated with certain activities from 1 January 2012. The details of these calculation methods are set out in the Climate Change (Stationary Energy and Industrial Processes) Regulations 2009.

People who destroy or export SGGs, either in bulk or in equipment, and who meet the eligibility criteria can choose to participate in the NZ ETS. The calculation of emissions 'removed' from those activities must be carried out in accordance with the Climate Change (Other Removal Activities) Regulations 2009.

Exemptions from mandatory participation in the NZ ETS are provided for in the Climate Change (General Exemptions) Order 2009. These exemptions are in addition to those exemptions listed in Part 4 subpart 2 of Schedule 3 of the Climate Change Response Act 2002 (the Act).

This guide is intended to help people who import, manufacture, export, or destroy SGGs in the tasks of:

- registering as participants
- making use of the available lead time, and the option of voluntary reporting, to develop systems and to minimise future NZ ETS costs by improving the accuracy of emissions reporting
- meeting the mandatory reporting and surrender obligations that these regulations will eventually place on SGG importers and manufacturers.

This guide is intended as general guidance only and is not legal advice. For more detailed information you should read the Act and the regulations referred to in this guide. For information about your specific legal obligations, please consult your legal advisors.

An emission unit will be required to be surrendered (or awarded for removal activities) for each whole tonne of emissions¹, meaning that rounding of part tonnes of total annual emissions is always downwards.

The participant is the person carrying out the activity of importing SGGs. For SGGs contained in imported vehicles or equipment, this will be the person who makes the decision to import. In cases where there are two or more parties involved in the decision, it will be the responsibility

¹ Section 63(1) of the Act.

of the parties involved to determine who the importer is for the purposes of the CCRA or whether to register as a joint participant.

2. Registering as a participant

All NZ ETS reporting is done through the New Zealand Emission Unit Register operated by the Environmental Protection Authority (EPA).

Reporting templates for SGG participants are available on the NZEUR website for voluntary reporting purposes. SGG importers and manufacturers operating at 1 January 2012 are mandatory participants and need to register as participants in the ETS by 31 January 2012. SGG exporters and destroyers are voluntary participants and, if intending or considering voluntary reporting for the 2011 calendar year, should also register as participants.

To register as a participant you must gain access to the system by registering as a user and opening an account. Your account will be used for surrendering and receiving NZUs. Once you have done this you can register as a participant. If you will be involved in more than one activity you can use a single holding account for all mandatory activities.

1. Register as a User

To register as a user – go to the New Zealand Emission Unit Register (NZEUR) website at www.eur.govt.nz and follow the steps under 'Join now'. You will need a username and a password.

2. Open an account

Once the user registration is approved, log on using the username and password and use the online application form to open an account. Once you have entered the required details, you will be emailed an account holder declaration form which needs to be signed and returned to EPA. Your account will not be opened until EPA has received this form.

3. Register as a participant

After opening an account, register as a participant by completing an online participant notification form at www.eur.govt.nz. It is a good idea to fill in the account holder declaration form and the participant notification at the same time as the required signatures may be the same.

Registering is a simple process. Registering early does not create any extra obligations for you and will ensure that NZEUR staff are aware of you and may be able to involve you in the development and testing of the online reporting tools required for the SGG sectors.

3 About the regulations

Regulations affecting SGG participants are in three parts:

1. *Climate Change (Stationary Energy and Industrial Processes) Regulations 2009*

These regulations set out the methods and other requirements for determining emissions from importing or manufacturing SGG, including in bulk and in goods such as motor vehicles.

2. *Climate Change (Other Removals) Regulations 2009*

These regulations provide for the determination of emissions removed from New Zealand through exporting or destroying SGG. The regulations also identify the eligibility criteria for the emissions to be counted as removed.

3. *Climate Change (General Exemptions) Order 2009*

These regulations list the situations where a person is exempt from obligations under the NZ ETS in respect of SGG imported, including when it is contained in particular goods. The regulations also provide for a threshold of SGG imported that is contained in motor vehicles, ships and planes.

These regulations can be found at www.legislation.govt.nz and through the direct links provided in the reference section.

4 Exemptions

Climate Change (Other Removal Activities) Regulations 2009: 9 to 16

Climate Change (General Exemptions) Order 2009: 14 and 15

Clauses 14 and 15 of the *Climate Change (General Exemptions) Order 2009* identify a series of goods and situations where a person is exempt in respect of importing SGG. If exempt, the person is not a mandatory participant and does not need to carry out any of the obligations of the Act, including registering as a participant, emissions reporting or surrendering units.

The exemptions include:

- SGG contained in the air-conditioning or refrigeration systems of an aircraft or ship, where that aircraft or ship is passing through New Zealand, in New Zealand for the purpose of repair, part of the armed forces of another State, registered in New Zealand,² or owned by a New Zealand person³
- SGG contained in aircraft, ships or motor vehicles if the total SGG imported in the year does not exceed 100 tonnes of emissions
- SGG contained in any other goods if the goods (including SF₆ or other SGGs in bulk):
 - are in New Zealand temporarily, or
 - are not off-loaded in New Zealand but destined for a port outside New Zealand, or
 - are for the individual's personal, domestic or household use or consumption, or
 - contain SGG solely because the SGG was used to manufacture the goods (such as insulation foam).

Persons are also exempted from obligations in respect of importing the SGG mixture HFC-245fa/365mfc, including in goods.

The exemptions listed above are mirrored in the *Climate Change (Other Removals) Regulations 2009*. Consequently, emission units can only be claimed for removals of SGG other than those contained in excluded goods.

The Act also provides that the activity of importing SGG does not include importing SGG in goods that are necessary for human health, including metered dose inhalers.

There is an additional constraint regarding SF₆ exported or destroyed. To be eligible to receive units for exporting or destroying SF₆, a person needs information that the SF₆ being exported or destroyed had entered New Zealand on or after 1 January 2013.

² Except for when the aircraft or ships enters New Zealand for the first time.

³ Except for when the aircraft or ships enters New Zealand for the first time.

5 Importing or exporting bulk gas

Climate Change (Stationary Energy and Industrial Processes) Regulations 2009: 44A to 44R
Climate Change (General Exemptions) Order 2009: 14 and 15

All calculations of emissions from importing, manufacturing exporting or destroying SGG assume that the emissions occur in the year that the activity occurs. Therefore, calculation methods estimate *potential* emissions rather than *actual* emissions.

Emissions for any bulk gas import or export activity are calculated as:

$$E = A \times \text{GWP}/1000$$

Where

- ‘E’ is emissions of each class of gas. If there are imports or exports of more than one class the calculation may need to be repeated several times
- ‘A’ is the mass of a class of synthetic greenhouse gas imported in bulk in the year, in kilograms
- ‘GWP’ is the global warming potential of the class of gas, as defined in table 2 of schedule 2A of the *Climate Change (Stationary Energy and Industrial Processes) Regulations 2009*, or by application of regulation 44R, or if the class is a single SGG, the GWP listed in table 1 of schedule 2A.

Table 2 of schedule 2A of the regulations list classes by the ASHRAE 34-2007 Standard and provide GWP figures for commonly imported and exported mixes of SGG.

Where a mix of SGG imported or exported is not listed in table 2 of schedule 2A, regulation 44R requires a person to use the following formula to determine the GWP of the class of gas:

$$\text{GWP} = \sum (A \times B)$$

This means the overall GWP for the class is a function of the percentage of each SGG in the mass of the mix (‘A’) multiplied by its GWP (‘B’).

Information required to be collected in order to carry out the calculations is:

Gas	Information to be collected	Possible sources
SF ₆	The total mass imported or exported in the year (or other period for exports), as recorded at the customs point, in kilograms.	Sales and purchase documentation Customs documentation Measurements by supplier, purchaser or customer
HFCs and PFCs	The constituents and the total kilograms of each class of HFC or PFC imported or exported by the person in the year (or other period for exports), as recorded at the customs point.	Sales and purchase documentation Customs documentation Measurements by supplier, purchaser or customer

Examples:

1) Person AB imported 35kg of SF₆ in the year:

$$E = A \times \text{GWP}/1000$$

$$\text{So } E = 35 \times 23900/1000 = 836$$

2) Person CD exported 2000kg of R134a in the year:

$$E = 2000 \times 1300/1000 = 2600$$

6 Importing or exporting gas in equipment

Climate Change (Stationary Energy and Industrial Processes) Regulations 2009: 44A to 44R

Climate Change (Other Removal Activities) Regulations 2009: 9 to 16

Climate Change (General Exemptions) Order 2009: 14 and 15

This chapter explains the methodology for calculating emissions from importing or exporting goods containing SGG which are not motor vehicles. The methodological options for motor vehicle importers and exporters are detailed in chapter 7.

Emissions from importing SGG contained in goods, or removals from exporting SGG contained in goods, are calculated using the following equation:

$$E = \sum (A \times B \times GWP / 1,000,000)$$

Where

- 'E' is emissions of each class of gas. If there are imports or exports of more than one class the calculation may need to be repeated several times
- 'A' is the total number of units of each type of pre-charged equipment that were not excluded goods, containing SGG imported or exported in the year by the person
- 'B' is the mass of a class of SGG imported or exported in the type of pre-charge equipment in the year, in kilograms
- 'GWP' is the global warming potential of the class of gas, as defined
 - if importing, in table 2 of schedule 2A of the *Climate Change (Stationary Energy and Industrial Processes) Regulations 2009*, or by application of regulation 44R, or if the class is a single SGG, the GWP listed in table 1 of schedule 2A⁴
 - if exporting, in table 2 of the schedule of the *Climate Change (Other Removal Activities) Regulations 2009*, or by application of regulation 21, or if the class is a single SGG, the GWP listed in table 1 of the schedule.

Further detail on the application of regulation 44R and the schedules can be found in chapter 5.

Information that is required to be collected

Gas	Information to be collected	Possible sources
SF ₆	For each type of pre-charged equipment imported or exported, the SF ₆ charge in grams in that type of equipment.	Sales and purchase documentation Customs documentation Measurements by supplier, purchaser or customer Nameplate information Manufacturer information

⁴ See the information in chapter 5 for further explanation.

	The total number of units of each type of pre-charged equipment imported or exported by the person in the year (or other period for exports), as recorded at the customs point.	Sales and purchase documentation Customs documentation
HFCs and PFCs	The total number of units of each type of pre-charged equipment imported or exported by the person in the year (or other period for exports), that are not excluded goods, as recorded at the customs point.	Sales documentation Customs documentation
	The HFC or PFC charge in grams in each type of pre-charged equipment imported or exported by the person in the year (or other period for exports).	Sales and purchase documentation Customs documentation Measurements by supplier, purchaser or customer Nameplate information Manufacturer information
	The constituents of the class of HFCs or PFCs in each type of pre-charged equipment imported or exported by the person in the year (or other period for exports).	Sales and purchase documentation Customs documentation Measurements by supplier, purchaser or customer Nameplate information Manufacturer information

Example:

Person EF imported 2000 small appliances of type G, and 200 larger appliances of type H.

$$E = \sum (A \times B \times GWP/1,000,000)$$

Type	Number of units (A)	Gas charge (B)	Class	GWP	Emissions
Type G	2000	80 grams	R404a	3260	521
Type H	200	1200 grams	R134a	1300	312
Total					833

7 Importing or exporting gas in motor vehicles

Climate Change (Stationary Energy and Industrial Processes) Regulations 2009: 44A to 44R

Climate Change (Other Removal Activities) Regulations 2009: 9 to 16

Climate Change (General Exemptions) Order 2009: 14 and 15

Importing and exporting SGG contained in motor vehicles is a special case of the activity of importing or exporting SGG contained in pre-charged equipment. Consequently, this guide provides extra information for persons in this group.

Default SGG charge sizes for cars, vans, utes, trucks, buses and off-engine refrigerated trucks and trailers are provided in table 3 of Schedule 2A of the *Climate Change (Stationary Energy and Industrial Processes) Regulations 2009*. Other vehicle types (such as tractors) cannot use those default values and the person carrying out the activity will need to determine the actual charge size.

Motor vehicle importers and exporters can use the following methods:

1. the default charge method, or
2. the actual charge method, or
3. a combination of the two.

The default charge method allows a person to use default values for the mass of the SGG charge. The actual charge method is the same as the method explained in chapter 6 and requires measuring and recording the mass of the SGG charge in the category of motor vehicle. The equation is therefore:

$$E = \sum (A \times B \times \text{GWP} / 1,000,000)$$

Where

- 'E' is emissions of each class of gas. If there are imports or exports of more than one class the calculation may need to be repeated several times
- 'A' is the total number of units of each type of motor vehicle containing SGG imported or exported in the year by the person
- 'B' is the mass of the class of SGG imported in the type of motor vehicle in the year, or the default charge for the category of motor vehicle, in kilograms
- 'GWP' is the global warming potential of the class of gas, as defined in table 2 of schedule 2A of the *Climate Change (Stationary Energy and Industrial Processes) Regulations 2009*, or by application of regulation 44R, or if the class is a single SGG, the GWP listed in table 1 of schedule 2A⁵.

Further detail on the application of regulation 44R and the schedules can be found in chapter 5.

⁵ See the information in chapter 5 for further explanation.

Information that is required to be collected is:

The total number of units of each type of motor vehicle imported or exported by the person in the year (or other period for exports), as recorded at the customs point.	Sales and purchase documentation Customs documentation
The HFC or PFC charge in grams in each type of motor vehicle imported or exported by the person in the year (or other period for exports), if the actual charge method is being used for this type of motor vehicle.	Sales and purchase documentation Customs documentation Measurements by supplier, purchaser or customer Nameplate information Manufacturer information
The constituents of the class of HFCs or PFCs in each type of motor vehicle imported or exported by the person in the year (or other period for exports).	Sales and purchase documentation Customs documentation Measurements by supplier, purchaser or customer Nameplate information Manufacturer information

There is a threshold of 100 tonnes of emissions. If a person calculates their emissions over the year to be below this amount, then no NZ ETS obligations will apply. Similarly, if a person determines their removals are below this threshold, then they are not eligible.

Reported total emissions and removals are the greater of emissions or removals less 100, or zero. That is, all persons who import or export SGG contained in motor vehicles are required to deduct the first 100 tonnes of emissions from their calculations.

Examples:

- 1) Person AB imported 1500 cars and uses the default method

$$E = \sum(A \times B \times GWP/1,000,000)$$

$$\Rightarrow E = 1500 \times 700 \times 1300/1,000,000 = 1365$$
 So total E = 1365 – 100 = 1265.
- 2) Person CD imported 62 cars and uses the default method

$$E = 62 \times 700 \times 1300/1,000,000 = 56$$
 So is exempt.
- 3) Person EF imported 1500 cars and 300 trucks and uses both default and actual methods.

	Number	Charge	Emissions
Cars – type 1	380	345g (actual)	170
Cars – rest	1120	700g (default)	1019
Trucks – type 1	280	990g (actual)	360
Trucks – rest	20	1200g (default)	31
			1580
Less 100			(100)
Total emissions			1480

8 Manufacturing gas in New Zealand

The regulations provide methods to determine emissions and removals from manufacturing synthetic greenhouse gases in New Zealand if this activity occurs in the future. The equation for determining the emissions from manufacturing SGG is:

$$E = (A + B + C) \times \text{GWP}/1000$$

Where

- E is emissions for the particular class of SGG. If there is more than one class of SGG manufactured then the calculation will need to be repeated and total emissions calculated by summing the results
- A is the mass of the class of gas manufactured at the facility in the year, in kilograms
- B is the mass of the class of gas emitted during manufacturing at the facility in the year, in kilograms
- C is the mass of the class of gas emitted during handling at the facility in the year, in kilograms
- 'GWP' is the global warming potential of the class of gas, as defined in table 2 of schedule 2A of the *Climate Change (Stationary Energy and Industrial Processes) Regulations 2009*, or by application of regulation 44R, or if the class is a single SGG, the GWP listed in table 1 of schedule 2A⁶.

Further detail on the application of regulation 44R and the schedules can be found in chapter 5.

Information that is required to be collected is:

Information to be collected	Possible sources
Mass of each class of SGG manufactured by the facility in the year, in kilograms.	Sales documentation Manufacturing information
Mass of each class of SGG emitted during manufacture by the facility in the year, in kilograms.	Manufacturing and other systems monitoring
Mass of each class of SGG emitted during handling by the facility in the year, in kilograms.	Manufacturing and other systems monitoring
The constituents of each class of SGG manufactured or emitted during the year, if the class is not a single gas or it is not listed in table 2 of schedule 2A of the <i>Climate Change (Stationary Energy and Industrial Processes) Regulations 2009</i> .	Chemical analysis Manufacturing information

⁶ See the information in chapter 5 for further explanation.

Example:

Person GH manufactured 11,250 kg of HFC134a in New Zealand in the year. In that process, there were 0.2kg of HFC134a emissions from manufacture, and 0.05kg of HFC134a emissions from handling.

$$E = (A + B + C) \times \text{GWP}/1000$$
$$\Rightarrow E = (11250 + 0.2 + 0.05) \times 1300/1000 = 14625$$

9 Destroying gas in New Zealand

The equation for determining emissions removed through the destruction of synthetic greenhouse gases is:

$$R = ((\sum (A \times B)) \times C - D) \times GWP/1000$$

Where

- R is the removals for the class of SGG destroyed. If there is more than one class of SGG destroyed, then the calculation will need to be repeated and total removals calculated by summing the results
- A is the mass of the batch of chemicals containing the SGG submitted to the destruction facility, in kilograms
- B is the percentage by mass of the class of SGG in the relevant batch of chemicals
- C is the destruction efficiency factor for the class of SGG at the destruction facility
- D is the estimate of handling losses of the class of SGG in the batch of chemicals, in kilograms
- GWP is the global warming potential of the class of gas, as defined in table 2 of the schedule of the *Climate Change (Other Removal Activities) Regulations 2009*, or by application of regulation 21, or if the class is a single SGG, the GWP listed in table 1 of the schedule.

Information that is required to be collected is:

Information to be collected	Possible sources
Mass of chemicals in each batch of chemicals containing the class of SGG submitted by the person to the destruction facility in the year, in kilograms.	Sales and purchase documentation Systems monitoring information
The percentage by mass of the class of SGG in each batch of chemicals.	Chemical analysis
The constituents of each class of SGG destroyed at the facility during the year, if the class is not a single gas or it is not listed in table 2 of schedule 2A of the <i>Climate Change (Stationary Energy and Industrial Processes) Regulations 2009</i> .	Chemical analysis
The destruction efficiency factor for the class of SGG at the destruction facility.	Chemical analysis Equipment manufacturer information
Mass of each class of SGG emitted during handling by the facility in the year, in kilograms.	Systems monitoring information

Example:

Person IJK destroys synthetic greenhouse gases. In the year, it was recorded that four batches of chemicals were destroyed with varying chemical compositions:

	Class of SGG	Batch	Mass of batch kg	Mass of class in batch by %	Destruction efficiency	Losses of class kg	GWP of class	Total for class
	R134a	1	15000	11%	99%	2	1300	
	R134a	2	15000	5%	99%	1	1300	
	R134a	3	15000	21%	99%	1	1300	
	R134a	4	15000	9%	99%	2	1300	8873
	R152A	1	15000	4%	95%	0	140	
	R152A	4	15000	4%	95%	0	140	160
	R125	1	15000	2%	99%	0	2800	
	R125	3	15000	5%	99%	0	2800	
	R125	4	15000	9%	99%	1	2800	6650
R143A	R143A	2	15000	1%	98%	0	3800	558.6
Total								16241

10 Record keeping and references

Participants must retain sufficient records to enable the chief executive of the Ministry of Economic Development to verify the emissions a participant reports in their emissions return. Records must be retained for a period of at least seven years after the end of the year to which they relate. This includes any records relating to removal activities.

References

The Climate Change Response Act 2002 and related regulations are all available at www.legislation.govt.nz

Weblinks and additional guidance: www.climatechange.govt.nz/emissions-trading-scheme/regulations

An independent report from CRL Energy provides further technical background: <http://www.climatechange.govt.nz/consultation/synthetic-gases/methods-for-synthetic-gas-regulations/>