



Ministry for the  
**Environment**  
Manatū Mō Te Taiao



# Guide to Reporting for *Coal Activities* under the New Zealand Emissions Trading Scheme

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# 1 Overview

As part of the New Zealand Emissions Trading Scheme (NZ ETS), stationary energy participants are required to collect data to report on the greenhouse gas emissions associated with certain activities from 1 January 2010. The details of these reporting obligations are set out in the Climate Change (Stationary Energy and Industrial Processes) Regulations 2009.

Persons who import or mine more than 2000 tonnes of coal in a year are required to participate in the NZ ETS. Persons who purchase more than 250,000 tonnes of coal from coal mining participants in a year can choose to participate in the NZ ETS.

There are options for coal sector participants to apply for approval to use a unique emissions factor (UEF) in certain situations. Requirements are set out in the Climate Change (Unique Emissions Factors) Regulations 2009.

## 2 Registering as a participant

The Climate Change Response Act 2002 (the Act)<sup>1</sup> requires persons carrying out the coal-related activities listed above to register as a participant in the NZ ETS within 20 working days of carrying out the particular ETS activity. For persons already carrying out these activities, this means you need to register by 1 February 2010 which is 20 working days after reporting obligations begin on 1 January 2010. Surrender obligations begin on 1 July 2010.

To register as a participant you must:

- first, apply to open a holding account which will ultimately be used for surrendering and receiving New Zealand Units (NZUs) when the surrender obligations for the particular sector begin. A participant who will be involved in more than one activity can use a single holding account for all of them.

To open a holding account, register as a user on the New Zealand Emission Unit Register (NZEUR) website at <http://www.eur.govt.nz> and, once the user registration is approved, use the online application form to open an account

- second, register as a participant by completing an online participant notification form at [www.eur.govt.nz](http://www.eur.govt.nz).

The participant is the person who undertakes the activity of importing, mining or purchasing coal. In the case of mining, the permit holder is to be treated as the participant under the NZ ETS. If no permit is required, the owner of the mine is legally responsible under the NZ ETS.

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<sup>1</sup> The Climate Change Response Act 2002 and related regulations are all available at [www.legislation.govt.nz](http://www.legislation.govt.nz). Weblinks and additional guidance: [www.climatechange.govt.nz/emissions-trading-scheme/regulations](http://www.climatechange.govt.nz/emissions-trading-scheme/regulations). An independent report from CRL Energy provides further technical background: [www.climatechange.govt.nz/consultation/draft-regulations-seip/review-default-emissions-factors.pdf](http://www.climatechange.govt.nz/consultation/draft-regulations-seip/review-default-emissions-factors.pdf)

# 3 Importing coal

*Climate Change (Stationary Energy and Industrial Processes) Regulations 2009: 6–8*

## 3.1 Overview

The formula for calculating emissions associated with importing coal accounts for greenhouse gas emissions that will occur as a result of the coal being combusted. Any coal which is re-exported is explicitly deducted. Information must be recorded for each class of coal: lignite, sub-bituminous and bituminous. Because the emissions factor is expressed in energy terms, both tonnes of coal and gross calorific value are required.

An optional stockpile adjustment is provided to enable coal importers to carry over liability for coal that might be imported in one year but used in another.

## 3.2 Information you are required to collect

The following information must be collected for each class of coal imported:

Information to collect	How to collect
<ul style="list-style-type: none"> <li>tonnes of coal imported</li> </ul>	<ul style="list-style-type: none"> <li>total of each class imported in the year</li> <li>as recorded at the customs point</li> <li>may be obtained from shipping documentation</li> </ul>
<ul style="list-style-type: none"> <li>calorific value of coal imported</li> </ul>	<ul style="list-style-type: none"> <li>can be measured or obtained from the supplier</li> <li>expressed as terajoules/tonne (TJ/t)</li> <li>as a gross or higher heating value</li> </ul>
<ul style="list-style-type: none"> <li>tonnes of coal re-exported</li> </ul>	<ul style="list-style-type: none"> <li>total of each re-exported in the year</li> <li>as recorded at the customs point</li> </ul>
<ul style="list-style-type: none"> <li>calorific value of coal re-exported</li> </ul>	<ul style="list-style-type: none"> <li>can be measured or obtained from the supplier</li> <li>expressed as terajoules/tonne</li> <li>as a gross or higher heating value</li> </ul>
If you wish to make a stockpile adjustment* the following information must also be collected:	
<ul style="list-style-type: none"> <li>tonnes of coal added to the stockpile</li> <li>calorific value of coal added</li> </ul>	<ul style="list-style-type: none"> <li>record during the year for a typical stockpile</li> <li>if adding to an amalgamated stockpile record total tonnes of the base stockpile</li> <li>can be measured or obtained from the supplier</li> <li>expressed as terajoules/tonne</li> <li>as a gross or higher heating value</li> </ul>
<ul style="list-style-type: none"> <li>tonnes of coal removed</li> </ul>	<ul style="list-style-type: none"> <li>record during the year for a typical stockpile</li> <li>measure in aggregate if removed from an amalgamated stockpile</li> </ul>

\* Further information on stockpile adjustments can be found in Schedule 1 of the SEIP Regulations

### 3.3 Example calculation

Crayburn Coal Distributers Ltd undertakes coal importation and distribution activities. During the year, the company imported 20,000 tonnes of bituminous coal and another 100,000 tonnes of lignite, and used 5000 tonnes of bituminous coal from its stockpile.

Based on measurements of the imported lignite, Crayburn applied for, and received, approval to use a UEF of 91.00 tCO<sub>2</sub>-e/TJ. The calorific value of the coal stockpile was estimated to be 0.0230 TJ/t. None of the imported coal was re-exported.

Class	Quantity imported (t)	Gross calorific value (TJ/t)	Stockpile adjustment (t)	Gross calorific value (TJ/t)	Quantity exported (t)	Emission factor (tCO <sub>2</sub> -e/TJ)	Emissions (tCO <sub>2</sub> -e)
Bituminous	20,000	0.0236	-5,000	0.0230	0	88.15	51,744
Lignite	100,000	0.0174	0	0	0	91.00	158,340
<b>Total</b>							<b>210,084</b>

Emissions for each class of imported coal are calculated as imports minus exports adjusted for any coal added to or removed from a stockpile.

$$E = [(A \times CV_1) - (S \times CV_2) - (C \times CV_1)] \times EF$$

Emissions from importing bituminous coal

$$= [(20,000 \times 0.0236) - (0 \times 0) - (-5,000 \times 0.0230)] \times 88.15$$

$$= 51,744 \text{ tonnes CO}_2\text{-e}$$

Emissions from importing lignite

$$= [(100,000 \times 0.0174) - (0 \times 0) - (0 \times 0)] \times 91.00$$

$$= 158,340 \text{ tonnes CO}_2\text{-e}$$

**Total emissions** = the sum of emissions for each class of coal

$$= 210,084 \text{ tonnes CO}_2\text{-e}$$

## 4 Mining coal

*Climate Change (Stationary Energy and Industrial Processes) Regulations 2009: 9–11*

### 4.1 Overview

The formula for calculating emissions associated with mining coal accounts for greenhouse gas emissions that will occur as a result of the coal being combusted and for fugitive coal seam methane (FCSM) which is released to atmosphere during mining activities.

Recording the volume of mined coal at the point of sale means no stockpile adjustment is needed. All mined coal sold, gifted or used by the participant must be included. Coal which is exported by the miner or sold to an opt-in participant is then explicitly deducted. A deduction is allowed for FCSM which is flared or oxidised.

Information must be recorded for each class of mined coal: lignite, sub-bituminous and bituminous. Because the emissions factor is expressed in energy terms, both tonnes of coal and gross calorific value are required.

### 4.2 Information you are required to collect

The following information must be collected for each class of coal mined in the year:

Information to collect	How to collect
<ul style="list-style-type: none"><li>tonnes of mined coal sold</li></ul>	<ul style="list-style-type: none"><li>recorded at the point of sale</li><li>include coal exported or sold to opt-in participants</li></ul>
<ul style="list-style-type: none"><li>tonnes exported</li></ul>	<ul style="list-style-type: none"><li>recorded at the customs point</li></ul>
<ul style="list-style-type: none"><li>tonnes sold to opt-in participants</li></ul>	<ul style="list-style-type: none"><li>recorded at the point of sale</li></ul>
<ul style="list-style-type: none"><li>tonnes combusted by the person for own use</li></ul>	<ul style="list-style-type: none"><li>recorded at the mine or combustion site</li></ul>
<ul style="list-style-type: none"><li>tonnes gifted</li></ul>	<ul style="list-style-type: none"><li>recorded at the mine</li><li>includes coal provided gratuitously to any person or entity, including an employee</li></ul>
<ul style="list-style-type: none"><li>calorific value</li></ul>	<ul style="list-style-type: none"><li>measured on a consistent basis</li><li>unit of measurement is TJ/t</li><li>as a gross or higher heating value</li></ul>
<ul style="list-style-type: none"><li>total tonnes of coal mined in the year</li></ul>	<ul style="list-style-type: none"><li>by category (surface, underground bituminous coal, or underground mined sub-bituminous)</li><li>include all saleable coal removed from the mine</li><li>exclude any overburden or unsaleable coal</li><li>measured at the mine</li></ul>
<ul style="list-style-type: none"><li>tonnes of methane flared, combusted or otherwise oxidised</li></ul>	<ul style="list-style-type: none"><li>measured at the mine</li></ul>

## 4.3 Example calculation

Valletta Miners Pty Ltd is involved in coal-mining activities in New Zealand. In the year, the company mined 98,786 tonnes of lignite from an open cast mine, 57,897 tonnes of sub-bituminous coal from an underground mine and 69,568 tonnes of bituminous coal from an underground mine.

Ninety per cent of the mined bituminous coal was exported. Twelve thousand tonnes of sub-bituminous coal was sold to opt-in NZ ETS participants, with the bulk of the remaining quantity of coal (bituminous, sub-bituminous and lignite) sold domestically via direct contracts and wholesalers. All mine staff have an annual allowance of coal as part of their employment contracts and this accounted for 210 tonnes of sub-bituminous coal. A further 410 tonnes of sub-bituminous coal is used in an on-site boiler. A total of 750 tonnes of fugitive coal seam methane (FCSM) was captured and flared during the year.

Valletta Miners Pty Ltd has decided not to pursue UEFs for their coal mining activities for any of the three coal classes.

### Step one: Record tonnes and calorific value for classes of mined coal sold, used, exported or gifted

Class of coal	Sold (t)	Calorific value (TJ/t)	Own use (t)	Gifted (t)	Exported (t)	Opt-in (t)	EF (tCO <sub>2</sub> -e/TJ)	Emissions (tCO <sub>2</sub> -e)
Mine 1: Lignite	98,786	0.0153	0	0	0	0	94.79	143,268
Mine 2: Sub-bituminous	57,277	0.0213	410	210	0	12,000	90.64	88,610
Mine 3: Bituminous	69,568	0.0289	0	0	62,611	0	88.15	17,723

### Step two: Record quantities of total coal mined

Category of coal	Quantity (tonnes)	Emission factor (tCO <sub>2</sub> e/tonne)	Emissions (tCO <sub>2</sub> -e)
Surface (lignite)	98,786	0.018	1778
Underground: Sub-bituminous	57,897	0.288	16,674
Underground: Bituminous	69,568	0.385	26,784
Methane flared or oxidised	750	17.89	13,417

### Step three: Calculate emissions

Emissions for each class of mined coal are calculated as total mined coal sold + coal gifted or used less any exports or coal sold to an opt-in participant.

Data must be entered separately for each component of the equation:

$$E = [(A \times CV) + (C \times CV) + (D \times CV) - (B \times CV) - (BA \times CV)] \times EF_1$$

Emissions from lignite:

$$\begin{aligned} &= [(98,786 \times 0.0153) + (0) + (0) - (0) - (0)] \times 94.79 \\ &= 143,268 \text{ tonnes CO}_2\text{-e} \end{aligned}$$

Emissions from sub-bituminous coal:

$$\begin{aligned} &= [(57,277 \times 0.0213) + (410 \times 0.0213) + (210 \times 0.0213) \\ &\quad - (0) - (12,000 \times 0.0213)] \times 90.64 \\ &= 88,610 \text{ tonnes CO}_2\text{-e} \end{aligned}$$

Emissions from bituminous coal:

$$\begin{aligned} &= [(69,568 \times 0.0289) + (0) + (0) - (62,611 \times 0.0289) - (0)] \times 88.15 \\ &= 17,723 \text{ tonnes CO}_2\text{-e} \end{aligned}$$

### **Total emissions from the activity of mining coal for the year**

An emissions return must record the total emissions from the activity of purchasing coal per annum, calculated by adding together the emissions for each class of mined coal sold, with the sum of FCSM from each category of mined coal, less any methane flared or otherwise oxidised.

$$\begin{aligned} &= \Sigma(E) + \Sigma(E_{CSG}) - (G \times EF_{FLA}) \\ &= (143,268 + 88,610 + 17,723) + (1778 + 16,674 + 26,784) - (750 \times 17.89) \\ &= 281,420 \text{ tonnes CO}_2\text{-e} \end{aligned}$$

# 5 Purchasing coal by opt-in participants

*Climate Change (Stationary Energy and Industrial Processes) Regulations 2009: 45–47*

## 5.1 Overview

Coal purchasers who buy more than 250,000 tonnes of coal per annum from one or more domestic miners can choose to opt-in to the NZ ETS as a coal purchasing participant.

The formula for calculating emissions associated with purchasing coal accounts for greenhouse gas emissions will occur as a result of the coal being combusted. Any purchased coal which is then exported is explicitly deducted from the equation.

Information must be recorded for each class of coal: lignite, sub-bituminous and bituminous. Because the emissions factor is expressed in energy terms, both tonnes of coal and gross calorific value for each class of coal are required.

An optional stockpile adjustment allows for the liability to be carried over for coal that is purchased in one year but used in another.

## 5.2 Information you are required to collect

The following information must be collected for each class of coal purchased:

Information to collect	How to collect
<ul style="list-style-type: none"><li>tonnes purchased</li></ul>	<ul style="list-style-type: none"><li>as recorded at the point of sale</li></ul>
<ul style="list-style-type: none"><li>tonnes exported</li></ul>	<ul style="list-style-type: none"><li>as recorded at the customs point</li></ul>
<ul style="list-style-type: none"><li>calorific value</li></ul>	<ul style="list-style-type: none"><li>measured on a consistent basis</li><li>unit of measurement expressed as TJ/t</li><li>as a gross or higher heating value</li></ul>
If you wish to make a stockpile adjustment* the following information must also be collected:	
<ul style="list-style-type: none"><li>tonnes of coal added to the stockpile</li></ul>	<ul style="list-style-type: none"><li>record during the year for a typical stockpile</li><li>if adding to an amalgamated stockpile, record total tonnes of the base stockpile</li></ul>
<ul style="list-style-type: none"><li>calorific value of coal added</li></ul>	<ul style="list-style-type: none"><li>can be measured or obtained from the supplier</li><li>expressed as TJ/t</li><li>as a gross or higher heating value</li></ul>
<ul style="list-style-type: none"><li>tonnes of coal removed</li></ul>	<ul style="list-style-type: none"><li>record during the year for a typical stockpile</li><li>measure in aggregate if removed from an amalgamated stockpile</li></ul>

\* Further information on stockpile adjustments can be found in Schedule 1 of the SEIP Regulations

## 5.3 Example calculation

Southland Generation Ltd (SGL) purchased 270,000 tonnes of lignite in the year from a NZ ETS coal-mining participant at Roxburgh. The class of coal purchased has a gross calorific value of 0.01676 TJ/t. The company has not applied for a UEF. Southland Generation Ltd added 20,000 tonnes to the coal stockpile. The stockpile calorific value was estimated at 0.01698 TJ/t using the methodology outlined in Schedule 1, section 7.

Class of coal	Quantity purchased (t)	Gross calorific value (TJ/t)	Stockpile adjustment		Quantity exported (t)		Emission factor (tCO <sub>2</sub> -e/TJ)	Emissions (tCO <sub>2</sub> -e)
Lignite (Roxburgh)	270,000	0.01676	20,000	0.01698	0	n/a	91.95	384,866

Emissions associated with purchased coal are calculated as purchases less any stockpile adjustment minus exports:

$$E = [(A \times CV_1) - (S \times CV_2) - (C \times CV_1)] \times EF$$

Emissions from lignite purchased

$$\begin{aligned}
 &= [(270,000 \times 0.01676) - (20,000 \times 0.01698) - (0)] \times 91.95 \\
 &= 384,866 \text{ tonnes CO}_2\text{-e}
 \end{aligned}$$

# 6 Unique emissions factors (UEF)

*Climate Change (Unique Emissions Factors) Regulations 2009*

## 6.1 Overview

In certain situations, the default emissions factors may over-estimate the emissions associated with a particular class or category of coal. The Unique Emissions Factors (UEF) Regulations set out methods for participants to calculate a UEF for certain activities, and a process for applying and getting approval to use the UEF.

- All participants may apply for approval to use a unique emissions factor (UEF) for the carbon content of coal imported, mined or purchased. The UEF must also be lower than a specified threshold.
- A coal importer or opt-in participant who uses coal themselves may also apply for a UEF for the CH<sub>4</sub> and N<sub>2</sub>O emissions from their actual combustion of coal in particular equipment. This will require measurement of various physical properties along with concentrations of the gases in the exhaust stacks. Samples must be taken at a sufficient frequency and duration to ensure that extrapolations provide representative estimates of emissions across the full range of operating conditions.
- A coal-mining participant may apply for approval to use a UEF for FCSM emissions associated with a category of underground mined coal. This will require measurement of various physical properties along with CH<sub>4</sub> concentrations in representative samples of mine ventilation exhaust air.

## 6.2 Applications

The UEF must be based on the sampling, testing and calculation methods set out in the UEF regulations, the results of which must be independently verified.

An application for approval of a UEF must:

- describe the class or category of coal covered by the UEF, with well-defined parameters so the class or category of coal to which it applies may be easily identified and accounted for separately from coal that is not within the class or category
- be accompanied by a verifier's statement and a plan for ongoing testing.

If a UEF is to be applied for emissions in a particular year, the application must be submitted to the Chief Executive of the Ministry of Economic Development by 31 January of the following year.

## 6.3 Eligibility

The following eligibility criteria for coal participants must be met:

- the class of coal for which a UEF is being sought must not be larger than coal from the designated mine
- the class of coal for which a UEF is being sought must have well-defined parameters so coal within this class is easily identified and accounted for separately from other classes of coal
- the participant's UEF will only be approved if it is lower than the specified threshold emission factor.

## 6.4 Verification

The sampling, testing and calculations undertaken to develop a UEF must be independently verified. A recognised verifier must review the records provided by the applicant and assess these against the process outlined in the regulations to establish and calculate the UEF. A list of recognised verifiers will be posted at [www.eur.govt.nz](http://www.eur.govt.nz).

## 6.5 Use of a unique emissions factor

Details of approved unique emissions factors, including the name of the participant and any conditions of approval, will be published in the *New Zealand Gazette*.

If approved by the Chief Executive of the Ministry for Economic Development, a UEF may be used until:

- there is a material change in any of the information or factors on which the Chief Executive's approval was based, or the relevant legislation, or
- any conditions to which the approval is subject cease to be met.

To help determine when a material change might occur, participants are required to submit a plan for ongoing sampling and testing with their application. The Chief Executive may also grant approval subject to any conditions considered appropriate. This could, for example, include a requirement to submit the results of ongoing testing at a later date.

# 7 Stockpile adjustment

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

The NZ ETS enables coal importers and opt-in participants to use a stockpile adjustment to better align their emission liabilities to their use of coal, rather than incurring those liabilities in the year of import or purchase.

If more coal is added to a stockpile than removed in one year, the emissions liability for coal imported or purchased in that year would be decreased by the size of the adjustment. If more coal is removed from a stockpile than added in one year, then the emissions liability for coal imported or purchased would increase by the size of the stockpile adjustment.

The rules and methodologies for using a stockpile adjustment, including example calculations, are outlined in Schedule 1 of the SEIP Regulations. Rules also specify how calorific value is to be determined for coal stockpiles.

These cover situations where:

- the stockpile comprises a single class of coal
- the stockpile includes a mix of classes of coal, which may include non-obligation coal
- the stockpile adjustment is not included in the year, but has been used previously.

Participants who choose to include a stockpile adjustment will need to ensure they choose the correct stockpile adjustment formula, specific to their circumstances.

## 8 Record keeping

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 a unique emissions factor.

## 9 References

The Climate Change Response Act 2002 and related regulations are all available at [www.legislation.govt.nz](http://www.legislation.govt.nz)

Weblinks and additional guidance: [www.climatechange.govt.nz/emissions-trading-scheme/regulations](http://www.climatechange.govt.nz/emissions-trading-scheme/regulations)

An independent report from CRL Energy provides further technical background:

[www.climatechange.govt.nz/consultation/draft-regulations-seip/review-default-emissions-factors.pdf](http://www.climatechange.govt.nz/consultation/draft-regulations-seip/review-default-emissions-factors.pdf)