New Zealand Government

The New Zealand Emissions Trading Scheme

An Electricity Allocation Factor for 2013 and beyond

What's happening?

The Government is consulting on whether to revise the Electricity Allocation Factor (EAF) to apply from 2013 onwards. In 2010, the EAF was initially set at a level of 0.52 tCO_2e/MWh. At that time the Government acknowledged the EAF would need to be reviewed before the end of 2012.

Two of the EAF options being consulted on originate from a contact group which was established by the Ministry for the Environment to review the EAF, along with the status quo. These options are:

a) leave the EAF at 0.52 tCO_2e/MWh or

b) increase the EAF to 0.537 tCO_2e/MWh or

c) increase the EAF to 0.606 tCO_2e/MWh.

We are also seeking feedback on the durability of the EAF and circumstances which might trigger future reviews. This will allow affected parties to have their views considered before the Minister decides on an appropriate setting for the EAF.

What is the EAF?

The EAF is an important element of the allocation of emission units (NZUs) to those undertaking eligible emission-intensive and trade-exposed activities. It is given effect in regulation 6(a) of the Climate Change (Eligible Industrial Activities) Regulations 2010. It is required for estimating baselines for activities and reflects the indirect NZ ETS costs incurred via the electricity market and is expressed as tCO_2e/MWh of electricity used.

Who may be affected?

The EAF is relevant to the allocative baseline for any eligible industrial activity that receives an allocation of units. The degree to which a change in EAF affects each activity depends upon the electricity intensity of that activity. If the EAF is increased then allocative baselines will correspondingly increase and the converse should the EAF decrease.

On average, about 32 per cent of the units allocated to eligible activities are attributable to electricity use. However, it does vary across activities, for example:

- producing carbon steel from cold ferrous feed has 71 per cent of the baseline originating from electricity use
- various timber processing activities have an average electricity use which contributes 60 per cent of the baseline
- horticulture-related activities have a less electricity-intensive allocative baseline at 6 per cent on average.

How will your allocative baseline be affected by a new EAF?

The allocative baselines for eligible industrial activities are listed in the Schedule to the Climate Change (Eligible Industrial Activities) Regulations 2010. The allocative baselines for each activity were estimated based on information supplied by businesses on the use of eligible inputs such as coal, gas and electricity.

Should the EAF be changed, then the allocative baselines in the schedule will be changed accordingly. The existing allocative baselines from the schedule, based upon an EAF of 0.52 tCO_2/MWh, are listed in a table at the end of this factsheet. The table also shows what the baselines would be if the EAF increases to 0.537 tCO_2/MWh or 0.606 tCO_2/MWh.

In total, under present ETS rules, increasing the EAF to 0.537 would increase the total annual industrial allocation by just under 20,000 units. Increasing the EAF to 0.606 increases the total allocation by just under 100,000 units.

Background to the existing EAF

At the end of 2008, a sub-group of the Stationary Energy and Industrial Processes Technical Advisory Group (SEIP TAG) produced a recommendation for an EAF for the period to the end of 2012. This was included in consultation material released in December 2009 and, following consideration of submissions, included in regulations during 2010.

The EAF was initially set at 0.52 tCO_2e/MWh. In the summary of submissions document for the industrial allocation regulations development, it was indicated that: "*The Government recognises that the EAF will need to be reviewed before the end of 2012, to ascertain its appropriateness beyond 2013.*"

Developing an EAF for 2013 and beyond

In 2011, the Ministry for the Environment assembled a contact group made up of industry representatives and others with energy sector and technical expertise. The work of this contact group is described in its terms of reference and included the following elements:

- advising on a scoping analysis
- considering key assumptions
- scoping a modelling exercise
- selecting a modelling supplier
- considering modelling results
- developing a recommendation to the Ministry.

Modelling considered by the contact group

The contact group considered two sets of modelling results. Analysis by Energy Modeling Consultants (EMC) Ltd (Dr Tom Halliburton and Dr Jonathan Lermit) covered the main short-run, marginal cost analysis and some imperfect competition analysis using a (Cournot) market simulation approach.

The Ministry of Economic Development (MED) provided build schedules required as an input for the EMC analysis using the Generation Expansion Model (GEM), a model regularly used in the electricity sector. MED also used this model to provide long-run, marginal cost based results for the contact group's consideration.

The contact group's recommendations form the basis for the EAF options outlined in this factsheet and are outlined in more detail in a later section.

EAF options for consultation

The Minister for Climate Change Issues is consulting on the following options for an EAF for 2013 and beyond:

a) the status quo EAF of 0.52 tCO_2/MWh)

b) the most broadly supported contact group EAF recommendation of 0.537 tCO_2/MWh)

c) the higher EAF recommendation, that was supported by some contact group members, of 0.606 tCO_2/MWh).

Note that the status quo is included as a comparison with the contact group recommendations and because it is close to option (b).

Option (b), an increase in the EAF to 0.537 tCO_2/MWh, is considered technically credible and broadly supported by the model results. It is based on a set of scenarios representing observed trends in the electricity sector, lends some weight to issues identified as potentially increasing the EAF by the contact group, and is broadly consistent with some of the other evidence (LRMC and Cournot modelling) considered by the contact group but not used directly in calculating the EAF.

Option (c), the higher recommendation favoured by some contact group members, is for an increase in the EAF to 0.606 tCO_2/MWh. The rationale behind this option is to give greater weight to issues identified by the contact group as potentially increasing the EAF. In particular, the likelihood of the NZ ETS driving decisions around the future role of Huntly power station, a low coal price future, and social cost arguments.

For more detail on the arguments behind the contact group recommendations see its report .

Allocative baseline consequences of the options

The individual allocative baseline consequences of the three EAFs being consulted on are provided in a table at the end of this factsheet.

The total allocation of units to industrial firms is approximately 3.5 million units per annum. At $10.41 per unit, this equates to approximately $36.4m per annum, about a third of which is attributable to electricity use.

Options (b) and (c) cost the Crown (and therefore benefit businesses) approximately 20,000 units and 100,000 units per annum respectively, relative to option (a).

Consultation questions – EAF level

1. Do you support EAF option (a) or (b) or (c)?
2. What are the reasons for your preference?
3. Should the EAF be set at some other level?
4. If so, what level and why?

The duration of an EAF recommendation

When modelling the future, the situation may evolve differently to what was assumed at the time. This creates uncertainty about how long an EAF should apply before it is reviewed. The contact group recommended the EAF is enduring, until events warrant a review.

It is proposed that the EAF for 2013 and beyond does not have an explicit time for review set. Rather it is proposed that key variables are regularly monitored and compared with what was assumed when the modelling was undertaken. If the situation changes sufficiently to warrant a reassessment, then a process of EAF review similar to that outlined in the contact group recommendation can occur. Suggestions from the contact group report for key variables included: emissions price, thermal fuel prices, major plant changes in generation and market structure changes.

Consultation questions – EAF duration and process

5. Should the EAF be durable until significant events occur warranting a reassessment?
6. What variables do you consider key to the durability of an EAF?
7. Do you have any comments on the contact group advice, as outlined in part 2 of its recommendation, on how future EAF revisions are undertaken?

Tell us what you think

We welcome submissions from all interested parties.

Please email your submission with the subject line ‘EAF submission’ to:
etsconsultation@climatechange.govt.nz

or mail it to:
Ministry for the Environment
PO Box 10362
Wellington 6143.

The deadline for submissions is
5pm on 20 July 2012.

The contact group advice

The contact group recommendations to the Ministry for the Environment were finalised late in 2011 and include two main elements. The first concerns the magnitude of the EAF recommended for application from 2013 and beyond. The second concerns the duration of the EAF and guidance on the process around its estimation.

During its assessment, the contact group considered the wide range of modelled results, the apparent effect of assumptions concerning the future role of Huntly power station's coal units and the choice of counterfactual scenarios.

The contact group recommendation for an EAF for 2013 and beyond

The contact group, having considered the modelling results and insights, recommended that "*the EAF should be 0.537 tCO_2/MWh or higher with those who considered it higher considering that the EAF should be 0.606 tCO_2/MWh*."

Factors cited in support of a small change in the EAF were:

- uncertainty whether an NZ ETS emission price would result in a shift of Huntly power station coal units to dry-year reserve status
- a view that expected increases in coal prices meant the central counterfactual scenario was more likely than an alternative scenario and represented the best estimate given current market knowledge. There was also concern that giving one alternative scenario explicit weight introduced bias
- a view that the social costs of an EAF which is either too high or too low are both inefficient and undesirable.

Factors cited in support of a larger increase in the EAF were:

- a greater likelihood attributed to the NZ ETS emission price affecting when the Huntly power station coal units shift to dry-year reserve status
- a view that coal prices would not necessarily rise and the (coal-based) alternative counterfactual scenario warranted explicit weighting in estimating the EAF, and in the absence of the NZ ETS additional coal-fired generation capacity would have been constructed
- a view that greater emphasis is applied to asymmetric social cost arguments that there are higher costs in an EAF which is too low relative to an EAF which is too high.

The contact group recommendation regarding the EAF duration and process

The contact group recommended that "*an EAF recommendation should be enduring until significant events occur warranting a re-assessment*."

Business members of the group indicated such an approach would help lower the investment risk profile for businesses for which the EAF is relevant.

Part 2 of the contact group's report includes guidance for the Ministry on future EAF revisions. The recommended approach included the following elements:

- an initial review of key assumptions, modelling techniques and any direct evidence that has emerged
- a recommendation to use the core methodology from 2008 and 2011 as the basis for analysis, unless the review suggests an alternative approach is justified, in which case both should be used side by side. As well as the core methodology, consideration should be given to complementary analyses that add confidence to an EAF recommendation
- guidance around key assumptions and the choice of counterfactual and other scenarios
- the electricity sector modelling should be written up so the key audiences (a task group of affected and interested parties) can understand and comment on the analysis
- any future reviews and recommendations should also consider whether any additions or refinements to methodology or process are justified
- guidance on future engagement with interested and affected parties was also provided, supporting a more transparent approach to selection of advisory groups
- to have a durable EAF a process of monitoring key variables will also be required.

Table of allocative baselines

An allocative baseline is a key factor that influences how many emission units are allocated to those undertaking eligible activities per tonne of output, eg, producing a tonne of burnt lime under the status quo produces an allocative baseline of 1.428 tCO_2e. The other components that influence the actual number of units received are the level of assistance (0.6 or 0.9) and any adjustment required to reflect the transitional surrender obligation (presently set at 'one for two' until the end of 2012).

Activity	Product	Option A (EAF = 0.520)	Option B EAF = 0.537	Option C EAF = 0.606
Manufacture of carbon steel from cold ferrous feed	A	0.3896	0.3994	0.4391
	B	0.1438	0.1463	0.1565
Manufacture of iron and steel from iron sand	A	3.0705	3.0893	3.1654
	B	0.1170	0.1190	0.1270
	C	0.2712	0.2800	0.3159
	D	0.1608	0.1630	0.1718
Production of burnt lime		1.4280	1.4288	1.4321
Production of carbamide (urea)		1.6210	1.6245	1.6389
Production of cartonboard	A	1.1170	1.1283	1.1742
	B	0.4633	0.4784	0.5399
	C	0.3183	0.3210	0.3317
Production of caustic soda		1.6060	1.6585	1.8715
Production of cementitious products	A	0.9392	0.9403	0.9449
	B	0.0227	0.0234	0.0264
Production of clay bricks and field tiles	A	0.2249	0.2264	0.2325
	B	0.8784	0.8813	0.8932
	C	0.2209	0.2227	0.2302
Production of cut roses		0.0009	0.0009	0.0009
Production of ethanol		1.4650	1.5076	1.6807
Production of fresh capsicums		3.5240	3.5305	3.5570
Production of fresh cucumbers		3.2880	3.2926	3.3113
Production of fresh tomatoes		2.4260	2.4304	2.4481
Production of gelatine		6.4130	6.4607	6.6545
Production of glass containers		0.5884	0.5946	0.6199
Production of hydrogen peroxide		1.3810	1.3950	1.4517
Production of lactose		1.4210	1.4323	1.4779
Production of market pulp	A	0.5853	0.5983	0.6508
	B	1.3380	1.3812	1.5566
	C	1.0140	1.0463	1.1774
Production of methanol		0.7847	0.7854	0.7884
Production of newsprint	A	0.4911	0.5035	0.5540
	B	1.3230	1.3662	1.5417
Production of packaging and industrial paper	A	0.4558	0.4655	0.5051
	B	0.5100	0.5171	0.5461
	C	0.0934	0.0961	0.1071
Production of protein meal		0.9183	0.9240	0.9470
Production of reconstituted wood panels		0.2066	0.2131	0.2393
Production of tissue paper	A	1.1970	1.2176	1.3013
	B	0.7646	0.7896	0.8911
Production of whey powder		0.8427	0.8526	0.8927

New Zealand Aluminium Smelters (NZAS) has a unique allocative baseline for aluminium smelting. Its baseline takes into account the nature of its specific electricity contracts. The EAF is still part of the calculation. The allocative baseline for aluminium produced by NZAS is published in Climate Change (Eligible Industrial Activities) Regulation 7(4) and presently set at 3.318 for 2012.

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