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Pan Pac Forest Products Limited Submission on:

**Climate Change (Stationary Energy and Industrial Processes) Regulations 2009
(Draft for consultation), and**

**Climate Change (Unique Emissions Factors) Regulations 2009 (Draft for
consultation)**

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1: Summary of submission

1.1 This submission from Pan Pac Forest Products Limited is limited to comments on the draft regulations with regards to combustion of waste, in particular wood waste, for the purpose of generating electricity or industrial heat.

1.2 Pan Pac considers a threshold for mandatory participation in the NZ ETS must be established for each individual fuel source.

1.3 Methane and Nitrous Oxide emissions from the combustion of wood waste are minor, difficult to quantify, and should be excluded as a requirement for mandatory participation in the NZ ETS.

1.4 An appropriate default threshold for participation would be 5000t CO₂-e, consistent with other activities.

1.5 We believe an alternative to basing emissions on the mass and calorific value of the fuel used could be the energy output of the combustion process, and suggest this is more appropriate in certain situations.

1.6 Procedures for establishing the mass and calorific value of fuels such as wood waste are deficient. Data must be standardised to a specified moisture content, and “non fuel” components such as ash content should be discounted.

1.7 The default emissions factor for combustion of wood waste is far too imprecise, it would be preferable to have a number of default emissions factors for the different classes of combustion process and equipment.

1.8 Pan Pac considers the option for establishing an Unique Emissions Factor based on the energy output of the combustion process rather than based on fuel input should be available.

1.9 The Threshold Emissions Factor is seen as not having value, particularly in the case of combustion of wood waste, and should be removed from the regulations.

1.10 An alternative procedure to continuous monitoring of output gases should be established, based on a programme of periodic testing.

2: Pan Pac’s Interest in the Regulations

2.1 Pan Pac Forest Products Limited is an integrated Forestry and Forest Products manufacturer based near Napier.

2.2 Pan Pac’s operations at the Whirinaki site are energy intensive. Operations include:

- Thermomechanical pulping of wood, with consequential high usage of electrical energy.
- Kiln drying of sawn lumber, with consequential use of heat energy.
- Flash Drying of Thermomechanical wood pulp, with consequential use of heat energy.

2.3 Pan Pac manages much of the site’s energy requirements through combustion of waste from the sawmilling and pulping operations, in particular combustion of wood waste (Bark and sawdust). This provides most of Pan Pac’s process heat requirements, and is also utilised to supplement the site’s electricity requirements.

2.4 Provisions in Schedule 3 of the Climate Change Response Act 2002 as amended by the Climate Change Response (Emissions Trading) Amendment Act 2008 define Activities with respect to which persons must be participants in the Emissions Trading Scheme. Specifically Schedule 3, Part 3 requires persons combusting used oil, waste oil, used tyres, or **waste** for the purpose of generating electricity or industrial heat to participate. Pan Pac’s activities, specifically the combustion of wood waste to generate heat energy and electricity, meet the criteria in this clause.

2.5 Pan Pac has previously submitted on an earlier draft of the Stationary Energy and Industrial Processes Regulations 2008 – Draft for consultation (Ref 1)

2.6 Any expertise Pan Pac has with regards to the current draft regulations is in the field of combustion of waste for the purpose of generating electricity or industrial heat. Accordingly we will limit our comments to this topic.

3: Draft Regulations – Stationary Energy and Industrial Processes.

3.1 Pan Pac acknowledges amendments made to the Draft Regulations based on submissions to the 2008 Draft Regulations.

3.2 Thresholds for Participation

3.2.1 We note the Act does not specify a threshold for mandatory participation in the NZ ETS with regards to combustion of waste for the purpose of generating electricity or industrial heat. We believe this is an oversight in the Act, and are pleased to note it is proposed to develop thresholds under section 60 of the Act (Ref 2).

3.2.2 Pan Pac acknowledges that setting thresholds for participation will be a balance between ensuring significant emission sources are captured by the provisions, while ensuring there is no impediment or disincentive to the efficient use of waste as an alternative to fossil fuels.

3.2.3 We consider each individual fuel source should have its own individual threshold. As an example, Pan Pac combusts mainly wood waste. However a small amount of waste oil from site operations is at times absorbed onto the fuel. The amount of oil is almost impossible to measure, being heavily contaminated with wood fibre, dirt, and water – contaminating material generally exceeds the amount of waste oil. In these circumstances we believe accounting for the small amount of emissions from this source would be onerous, and would not significantly contribute to the emissions inventory. Our resource consent permits us to combust up to 500 litres of this material per month, which is equivalent to less than 20t CO₂-e per year. We would not expect to have to account for emissions from this source.

3.2.4 Setting a threshold for participation from the combustion of woodwaste is problematical. Carbon Dioxide is not counted as an emission under the Emissions Trading Scheme provisions, so emissions are only from other gases, Methane and Nitrous Oxide. Both are minor emissions from the combustion of woodwaste, and the amount is largely dependent on the combustion equipment used rather than due to properties of the fuel. The Duffill Watts

report (Ref 3) notes: “Non-CO2 emissions (CH4 and N2O) from combustion are typically vanishingly small compared to CO2 but are subject to much greater uncertainty and variability”.

3.2.5 From information received at the Workshop on reporting requirements under the NZ ETS: Combustion of waste, 24/6/09, 2007 total energy sector emissions were 32,743 kt CO2-e, of which emissions from the combustion of biomass contributed only 111kt CO2-e, that is around 0.3%.

3.2.6 With the uncertainties in measuring and monitoring Methane and Nitrous Oxide from combustion of wood waste, coupled with the small total amount of these emissions, we contend it would be preferable to remove combustion of wood waste as an activity for mandatory participation in the NZ ETS. The combustion of wood waste to replace fossil fuels should be encouraged, and removal of the requirement for mandatory participation in the NZ ETS would assist.

3.2.7 Failing removal of these provisions from the ETS, an appropriate threshold value must be set. We note The draft Climate Change (Other removals Activities) regulations 2009 prescribe a threshold of 5000tCO2-e for eligibility to register as a participant, and that this threshold is consistent with that set in the Act for mandatory registration as a participant for mining coal. A similar threshold may be appropriate for mandatory participation for combustion of waste.

3.3 Emissions calculation methodology

3.3.1 The base methodology for calculation of emissions from the combustion of waste for electricity or industrial heat involves:

- Monitoring and recording the volume of waste used. If waste is from more than one category, each stream must be monitored individually.
- Establishing the calorific value of each waste stream.
- Applying an emissions factor to convert fuel usage to emissions.

3.3.2 We believe the procedure as it stands is not precise enough to determine emissions from combustion of wood waste with sufficient accuracy. We are concerned that determining emissions based on the inputs to a boiler may not be the best method of calculating emissions. A preferable alternative to consider is to base emissions calculations on the energy output of the combustion unit rather than fuel input. As far as we are aware energy output is already measured routinely by most affected operations, while assessing the usage of input fuels is often only done on a mass balance basis, and subject to large errors.

3.4 Measurement of Fuel input mass and fuel calorific value

3.4.1 Our understanding is that both Methane and Nitrous Oxide emissions are more a factor of the combustion equipment used than the fuel type. The Duffill Watts review (Ref 3) of default emissions factors notes: “Emissions of CH₄ and N₂O are particularly sensitive to factors that influence combustion efficiency”. Accordingly using fuel input to define emissions is not appropriate.

3.4.2 It is difficult to accurately measure the volume or mass of input fuels, particularly where the input is a mixture of different fuel types, each of which must be considered separately under the current procedures.

3.4.3 The current methodology does not make an allowance for “non fuel” components of the input fuel. Pan Pac believes that, if the use of input fuel data is to be persevered with, the fuel mass and calorific value must be standardised to a specified moisture content, preferably on an oven dry basis.

3.4.4 In addition “non fuel” components such as ash content should be discounted from the mass of fuel used and calorific values only based on the combustible organic component.

3.5 Default Emissions Factor

3.5.1 Given that emissions of Methane and Nitrous Oxide are mainly a factor of the combustion equipment and process rather than the fuel used, the use of a default Emissions Factor is unlikely to provide an accurate or realistic estimate of emissions.

3.5.2 We suspect that the default emissions factor for combustion of wood waste is an average of results from a number of different processes and also different types of wood waste. The individual data used has a wide spread of results, as evidenced by the default emissions factor of 1.87 tCO₂-e/TJ compared to the unique emissions factor threshold for combustion of wood waste, 0.83 tCO₂-e/TJ. Emissions Trading bulletin 10 (Ref 2) notes “For the waste combustion sector, UEF thresholds have been set on the basis of confidence intervals associated with DEFs”. This provides clear evidence of an excessive spread of results used to determine the default emissions factor.

3.5.3 It may be that using a number of default emissions factors related to different combustion processes and equipment will provide a more appropriate measure of emissions.

3.5.4 At present Pan Pac has no confidence that the default emissions factor bears relevance to emissions from high efficiency combustion of wood waste in a modern high temperature boiler. Under the regulations as they currently stand, there is no alternative but to explore the use of an Unique Emissions Factor specific to our operations.

4 Draft Regulations: Unique emissions Factors.

4.1 Given the short-comings of the default emissions factor for combustion of wood waste, it is necessary that an alternative exists whereby a unique emissions factor can be established for an operation. Some improvements can easily be made to the existing regulations to make them more appropriate for combustion of wood waste.

4.2 Pan Pac supports the use of an unique emissions factor defined by the energy output of the combustion unit rather than the mass and calorific value of the fuel used, as outlined in paragraph 2.3.2 above.

4.3 Threshold emissions factor

4.3.1 The regulations only permit the use of an unique emissions factor when the factor is lower than the threshold emissions factor. In the case of combustion of wood waste, there is a very large gap between the default emissions factor and the threshold emissions factor. The Threshold factor has been determined on the basis of confidence intervals associated with the default emissions factor. When those confidence intervals are large, the gap between the default emissions factor and the threshold emissions factor becomes excessive.

4.3.2 In the case of combustion of wood waste, the default emissions factor is 1.87 tCO₂-e/TJ. The threshold emissions factor is 0.83 tCO₂-e/TJ, less than half of the default emissions factor.

4.3.3 Pan Pac suggests there is no requirement for a threshold emissions factor, and this is removed from the regulations.

4.4 Measurement of Fuel input mass and fuel calorific value

4.4.1 Comments made in Section 2.4 of this submission are equally valid with regards to establishing an unique emissions factor.

- Given that Methane and nitrous Oxide emissions from wood waste are more a function of the combustion equipment and process than the fuel, it is not appropriate to calculate emissions based on fuel properties.
- It is difficult to accurately measure the mass or volume of fuels.
- If the use of input fuel data is to be persevered with, the fuel mass and calorific value must be standardised to a specified moisture content, preferably on an oven dry basis.
- Procedures need to exclude “non fuel” components such as ash content.

4.5 Continuous Equipment Monitoring of combustion gas stream

4.5.1 The requirement to continuously monitor the output gases of the combustion unit provides a level of accuracy and precision of the output in excess of what is practicable in many cases. Pan Pac suggests an alternative procedure based on periodic spot testing of the output would be sufficient.

4.5.2 As far as we can ascertain, none of the test procedures in the draft regulations provide for analysis of Nitrous Oxide. An alternative or additional test procedure is therefore necessary.

References

- 1: Pan Pac Forest Products Limited Submission on Climate Change (Stationery Energy and Industrial Processes) Regulations 2008 (Draft for consultation) December 2008.
- 2: Emissions trading bulletin no.10: Draft climate change regulations for stationery energy, industrial processes and liquid fossil fuels, Ministry for the Environment, June 2009.
- 3: Review of Default Emissions Factors in Draft Stationary Energy and Industrial Processes Regulations: Waste Combustion for the Purpose of Generating Electricity or Industrial Heat. Report to the Ministry for the environment, May 2009, Duffill Watts.