Office of the Minister for Climate Change Issues

Chair

Cabinet Economic Growth and Infrastructure Committee

Emissions Trading Scheme: Regulations for Solid Waste Disposal Facilities

Proposal

1. I propose that the Committee

    a. Agree to the recommended methodologies for solid waste disposal facility reporting under the New Zealand Emissions Trading Scheme; and

    b. Invite the Minister for Climate Change Issues to issue drafting instructions to the Parliamentary Counsel Office for technical amendments to the exposure draft regulations on the basis of these decisions; and

    c. Invite the Minister for Climate Change Issues to submit a paper on regulations for the disposal facility sector to Cabinet Legislative Committee in order to promulgate these regulations by 1 October 2010.

Executive summary

2. Disposal facilities create methane emissions through the biodegradation of organic waste in oxygen-less environments. Carbon dioxide emissions are also created, but these are either already accounted for in the NZ ETS in the case of wood, or not included in the national greenhouse gas inventory as they are assumed immediately reabsorbed by growing organic matter.

3. Methane emissions from landfills have declined around 30% since 1990 despite increasing population, economic growth and solid waste volumes. The main reason for reduced emissions is the rapid uptake of landfill gas collection and destruction systems in our largest landfills.

4. Under the Climate Change Response Act 2002 (the Act), the solid waste disposal facility sector enters the New Zealand Emissions Trading Scheme (NZ ETS) from 1 January 2013. Regulations are required under the Act to prescribe methodologies for participants to calculate their emissions and the removals from selected activities.

5. Under section 166(3) of the Act, it is necessary for these regulations to be Gazetted no later than 1 October 2010 to come into force on 1 January 2011.

6. There is a difference between the recommended methodology and that used in the New Zealand's Greenhouse Gas Inventory (Inventory) that will create fiscal implications of $8m per annum benefit to the Crown on average over 2013 to 2020. It is expected that in medium term (between ten and twenty years), there will be approximate fiscal neutrality (i.e. participants will be required to surrender a similar number of emission units for an activity to the number the Crown is required to surrender).

7. A series of consultation activities on exposure draft disposal facility regulations have taken place. This consultation has informed the final package of regulations for which I now seek approval.

8. Aligning data collection and emissions calculation methodologies with existing business systems where possible allows participants to calculate their emissions with administrative costs minimised.

9. I recommend that the Committee confirms previous in-principle decisions and agrees changes to policy to clarify participant obligations. If approval is granted, drafting instructions will be issued to the Parliamentary Counsel Office (PCO). The policy changes include:

    a. a technical change to the default emissions factor

    b. a methodological change to how landfill gas destroyed is accounted for

    c. allowing participants to define waste classes for the development of unique emissions factors

    d. defining the maximum landfill gas collection efficiency estimate is 90%

Background

10. Disposal facilities create methane emissions through the biodegradation of organic waste in oxygen-less environments. Carbon dioxide emissions are also created, but these are either already accounted for in the NZ ETS in the case of wood, or not included in the national greenhouse gas inventory as they are assumed immediately reabsorbed by growing organic matter.

11. Methane emissions from landfills have declined around 30% since 1990 despite increasing population, economic growth and solid waste volumes. The main reason for reduced emissions is the rapid uptake of landfill gas collection and destruction systems in our largest landfills. Other reasons include the trend towards larger, modern regionalised waste management systems, and changes to the amount of organic matter in disposed waste.

12. The Act requires participants in the solid waste disposal facility sector of the NZ ETS to enter the scheme from 1 January 2013. Voluntary reporting of activity starts 1 January 2011 and mandatory reporting on 1 January 2012.

13. Under section 166(3) of the Act, it is necessary for these regulations to be Gazetted no later than 1 October 2010 to come into force on 1 January 2011. New Climate Change (Disposal Facility) regulations and amendments to the Unique Emissions Factors (UEF) regulations form an overall package of amendment regulations applying to waste disposal facilities.

14. Section 62 of the Act requires participants to collect data and calculate emissions and removals in accordance with methodologies prescribed in regulations made under section 163 of the Act.

15. Participants will face NZ ETS costs as well as costs from the waste levy under the Waste Minimisation Act 2008. The levy is currently set at $10 per tonne of waste and revenue is used to support the Waste Minimisation Fund. The

proposed default emissions factor, by contrast, will result in a NZ ETS cost of $55 per tonne of waste (assuming a $50 price per emission unit from 2013)[1].

16. On 26 May 2010, Cabinet Economic Growth and Infrastructure Committee agreed in-principle (EGI Min (10) 11/3) to recommended methodologies for this package of regulations. The Committee also approved the release of the draft regulations for consultation and invited the Minister for Climate Change Issues to report back to the Cabinet Economic Growth and Infrastructure Committee seeking confirmation of previous in-principle decisions and approval for any policy amendments to the final regulations. This paper actions this.

17. Consideration of submissions received during formal consultation and information from discussions between officials and stakeholders have informed the recommended methodologies.

Comment

18. There are three methods that could be provided in regulations to require landfill participants to calculate their emissions and thereby mitigate the fiscal risk from an absence of required methods. The two methods not preferred are:

    a. Direct measurement. This method would directly measure and record surface emissions. While this may lead to the most accurate result, there is no generally internationally accepted method of performing the measurement. Additionally, reporting using this method would create significant ongoing compliance costs for participants.

    b. First order decay method (Inventory method): This method would estimate and record actual emissions, but based on the amount and composition of waste in situ and applying assumptions regarding decay rates. Participants would then use a model to estimate their emissions. This method will result in the same policy problems as above.

19. Those methods give rise to the following policy problems:

    a. Counting emissions from waste already disposed, when the participants cannot recover those emissions costs from the person responsible for disposing the waste.

    b. The emissions arising after landfill closure would become the responsibility of the Crown instead of the landfill operator, as the NZETS only applies to open landfills

20. The recommended method is mass balance. This method would estimate potential, rather than actual, emissions based on a standard emissions factor and the waste disposed in the period. This method has significantly less compliance costs than the other two methods and would avoid the policy problems identified. This is the method preferred by an independent expert stakeholder group that was created to advise officials on methods and emissions factors.

21. Consultation on method choice revealed some support for direct measurement. However, this method does not resolve either policy problem.

[1] $50 per emission unit is used consistently through this paper, as this is the standard price for all analysis of post 2013 NZ ETS sectors

22. Mass balance is not the method used by the Inventory because it does not estimate actual emissions. It thereby creates some short term fiscal implications. The difference arises from the drawn-out period of time that it takes waste to biodegrade and release all its potential emissions. Over the long term, the Inventory method and the mass balance approach will calculate in the same number of emissions in total, so there are no long term fiscal implications. In the short term, it is likely that the mass balance will result in more emissions units being surrendered than emissions are reported in the Inventory. This difference reduces if waste quantities are similar year on year. The long term frame for equivalence between methods is expected to be less than 20 years assuming static waste quantities.

23. There is no change to the in-principle policy decisions already made on this matter.

Calculation of emissions

24. The process for determining the emissions of a landfill reflects the following basic formula: a unit of activity multiplied by a default emission factor for that activity or unique emission factor if the participant has been granted one.

25. The recommended methodology will, by default, assume that the participant disposes waste of average composition and does not have a landfill gas collection and destruction system ("LFG system"). If a participant wishes to have the emissions benefits of waste diversion or operating a LFG system recognised, then the participant will need to apply for a Unique Emissions Factor (UEF) through the Climate Change (Unique Emissions Factors) regulations (the UEF regulations).

26. The point of measurement of activity will be identical to that prescribed in the Waste Minimisation Act 2008. Additionally, the method for calculating the activity will replicate reporting methods already implemented in regulations under the Waste Minimisation Act 2008, so that participants will estimate the quantity of waste disposed in a period in the same way between the two Acts.

27. There is one clarification to the in-principle policy decisions already made in this area. The earlier in-principle policy decision stated that the landfill gas efficiency estimate was separate to the UEF calculation. This is recommended to be changed so that the efficiency estimate is included within the UEF calculation.

Disposal facility emissions factor

28. The DEF for waste is recommended to be set according to the best quality data available that is consistent with the approach taken in the Inventory. It is envisaged that the Inventory will be able to utilise revised DEFs in the landfills regulations or any UEFs for which approval has been granted.

29. The proposed default emissions factor and its workings are attached as Appendix 1. This figure has changed slightly since in-principle policy decisions were made. New data, obtained through consultation, has resulted in the inclusion of sewage sludge as an organic waste component as well as better alignment of other components with the categories used in determining a unique emissions factor (below). The overall effect is an increase in the default emissions factor from 1.072 to 1.10 tonnes of carbon dioxide equivalent per tonne of waste.

30. This results in the following cost to a landfill operator from 2013: Assuming $50 per emissions unit and the use of the default emissions factor with no landfill gas system efficiency estimate, each tone of waste disposed in the facility will 'cost' the operator $55. That cost is expected to be passed on through increased gate fees.

Amendments to UEF regulations

31. Amendments are proposed to the UEF regulations to allow participants to apply for two site-specific factors. The UEF regulations currently provide for UEFs for certain activities undertaken by the coal, geothermal and waste combustion sectors and for all liquid fossil fuel sector activities.

32. The first amendment would permit participants to seek a UEF based on a site level analysis of waste composition. The expected costs of compositional analysis are in the order of $100,000 per site. This means participants are only likely to pursue a UEF if they are already certain of significant compositional differences from the average.

33. A participant is unlikely to apply for a UEF if it knows their waste has a higher proportion of organic material in it than is assumed in the default emissions factor. Such a participant would be advantaged by using the DEF, as it would underestimate emissions. This would create a fiscal cost to the Crown. However, officials consider such a situation has low probability because the DEF is based on historical waste compositional analysis and results from such analyses show continued reduction in the organic proportion of waste. By 2013, it very likely that the DEF will be relatively conservative and marginally overestimate emissions. A landfill will need to have a very high proportion of wood and paper in their waste stream to have an emissions factor higher than the DEF, which is unlikely given continued interest in resource efficiency initiatives like recycling.

34. Significant feedback on the waste composition UEF amendment was provided by submitters. Many submitters had concerns at the workability of compositional analysis. Others requested the use of the results of previous analysis. Analysis of those submissions and further discussion with a technical expert has lead to a change in the application of a UEF based on waste composition.

35. Participants who wish to obtain a UEF on the basis of waste composition must analyse all waste received over a set period. Participants will be able to define waste streams (such as 'waste from transfer stations') and develop individual UEFs specifically for those streams. Consequently, a participant may have a single UEF to cover all waste received, or a number of different UEFs depending on the number of waste streams they wish to identify.

36. These changes will provide flexibility for participants and bring the methods in the UEF regulations into alignment with typical disposal facility operations.

37. The second amendment to the UEF regulations would allow participants to obtain a unique LFG collection efficiency estimate to reflect their operation of a LFG system. The methodology to be followed would require both metered and gas composition information along with estimates of the landfill gas generation of the waste in situ. Such a method is commonly performed by those NZ landfills that have LFG systems. There will be some costs for those who do not have meters installed or perform calculations of gross methane generation; however

these costs are expected to be far outweighed by the reduction in reported emissions and therefore NZ ETS costs.

38. There is one policy change recommended to this area from the previous in-principle decisions. This is to cap the amount of gas capture that may be claimed at 90%[2]. Because the available method for estimating the capture efficiency has significant uncertainties, this change is required to ensure that spurious results are not used.

39. Applications for either of the site specific factors will be required to be supported by verification statements. The process for obtaining this verification, including criteria for qualifying as a verifier, is already set out in the UEF regulations. Independent verification will provide quality control enabling UEF applications to be made without fees.

Exemptions and thresholds

40. In some cases, it may not be practically or politically possible to pass the costs of the NZ ETS onto the person that brings the waste to the facility. In such situations, the costs would then need to be absorbed by the landfill operator who will almost always be a local council. Such situations include those of small, isolated communities such as Great Barrier Island, South Westland, Ahipara, and Wairoa. In these areas, there is risk of illegal waste disposal through consumer price sensitivity, as well as cost impediments to installing landfill gas collection systems or transporting waste to modern landfills with such systems.

41. Although the exposure draft regulations did not propose exemptions or a threshold, many submitters considered that attention to these issues was necessary.

42. It is not crucial that these regulations contain exemptions or a threshold. Disposal facility operators will not be exposure to NZ ETS costs from the coverage of waste sector emissions until 2013. This provides sufficient time to consider the cost, benefits and any perverse outcomes from the use of a threshold or exemptions in this sector.

Consultation

43. This paper was prepared by the Ministry for the Environment with input from the Ministry for Economic Development and the Ministry of Transport. The Ministry of Agriculture and Forestry, Treasury, Ministry of Foreign Affairs and Trade, and Te Puni Kōkiri were consulted on this paper and concur with its recommendations.

44. The Department of Prime Minister and Cabinet was informed.

45. In accordance with section 166 of the Act, consultation with stakeholders has included an opportunity for formal written submissions on exposure draft disposal facility regulations and UEF amendment regulations. Consultation has also included a series of sector specific workshops for participants.

[2] This maximum estimate is based on the analysis in the 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Volume 5: Waste, Chapter 3, page 3.19. That analysis states that such high efficiencies have been measured but are typically associated with closed landfills with specifically designed covers and gas recovery systems.

46. In accordance with section 3(g) of the Act (Treaty of Waitangi clause), consultation with Māori has included notification of the consultation on draft regulations and explanation of the purpose of the consultation.

47. In accordance with section 173 of the Act, material incorporated by reference in the draft disposal facility and UEF amendment regulations was made available for inspection during working hours, free of charge, at the office of the Ministry for the Environment in Wellington from 21 June to 23 July 2010.

Financial implications

48. The proposals in this paper will have fiscal impacts from 2013, when NZ ETS liabilities commence for the waste sector. These impacts are relative to net revenue and expenses of the NZ ETS that have already been agreed through previous policy decisions.

49. The proposals in this paper have fiscal impacts in the form of costs and savings relative to the status quo. As discussed earlier, the methodologies proposed for the NZ ETS are necessarily different from the Inventory methodology. This means that in any year, the Inventory may determine the disposal facility sector's total emissions to be slightly higher, or slightly lower than charged under the NZ ETS. It is not possible to quantify the exact magnitude of any fiscal costs as a result of this misalignment but it is possible to estimate the likely magnitude of the risk.

50. Officials have compared the Inventory total for the nine years from 2000 through to 2008 against the total emissions that would have been charged under the NZ ETS using the proposed methodology. Because waste quantities were increasing for the fifty years previous as well as within the period, the mass balance approach estimates potential emissions substantially greater than the actual emissions reported in the Inventory. The average overstatement is 54% for the period.

51. Officials have compared the projected inventory total for 2013 to 2020 against the total expected emissions charged under the NZ ETS using the proposed methodology. An assumption has been made of a constant amount of waste disposed annually, which is justified on the evidence of waste quantities disposed over the last ten years and the objectives of the Waste Minimisation Act 2008. In this scenario, the average over-surrender of emission units is valued at less than $8m and declines through the period, assuming an emissions unit price of $50.

52. The costs of the NZ ETS post-2012 are currently accounted for in Crown accounts. When international obligations are agreed for the period post-2012, these costs will be considered alongside NZ ETS net revenues and expenses.

Human rights

53. There are no inconsistencies between the proposal and the New Zealand Bill of Rights Act 1990 or the Human Rights Act 1993.

Legislative implications

54. Secondary legislation is required to implement the NZ ETS. Drafting instructions for disposal facility regulations and amendments to the UEF regulations providing for participants in the solid waste disposal facility sector to monitor and report on emissions as well as exemptions will be issued to the Parliamentary Counsel Office if the recommendations in this paper are approved.

55. Approval for submission of the final regulations to the Executive Council will be sought from the Cabinet Legislative Committee when the regulations have been drafted.

Regulatory impact analysis

Regulatory Impact Analysis requirements

56. The RIA requirements apply to this proposal and a Regulatory Impact Statement (RIS) has been prepared and is attached to this paper.

Quality of the Impact Analysis

57. The Ministry for the Environment's independent RIA Panel has reviewed the RIS prepared by the Ministry for the Environment and associated supporting material. The Panel considers that the information and analysis summarised in the RIS meets the quality assurance criteria

Consistency with Government Statement on Regulation

58. I have considered the analysis and advice of my officials, as summarised in the attached RIS and I am satisfied that, aside from the risks, uncertainties and caveats already noted in this Cabinet paper, the regulatory proposals recommended in this paper:

    - are required in the public interest
    - will deliver the highest net benefits of the practical options available, and
    - are consistent with our commitments in the Government statement "Better Regulation, Less Regulation

Publicity

59. A public statement accompanying the Gazetting of regulations is envisaged to advise participants in the solid waste disposal facility sector of the detail of their responsibilities under the Act to report on emissions. Detailed explanatory information and guidance materials to support these regulations will be disseminated to provide greater clarity for participants on the nature of their obligations. Workshops and individual case management will be undertaken to assist compliance.

60. I intend proactively releasing this paper on the Ministry for the Environment website. The issues it discusses will be of interest to NZ ETS participants and it is likely requests will be made under the Official Information Act 1982. Appropriate withholdings will be made before the release.

Recommendations

61. The Minister for Climate Change Issues recommends that the Committee:

1. note that the Climate Change Response Act 2002 (the Act) requires participants in the solid waste disposal facility sector of the New Zealand Emissions Trading Scheme (NZ ETS) to enter the NZ ETS on 1 January 2013

2. note that is necessary to have regulations to support the entry of this sector into the NZ ETS gazetted by 1 October 2011

3. confirm the following in-principle decisions for the recommended methodologies for disposal facility regulations and amendments to the unique emissions factors regulations made on 26 May 2010 by Cabinet Economic Growth and Infrastructure Committee (EGI Min (10) 11/3):

   3.1. the default emissions factor will be that used in the national greenhouse gas inventory

   3.2. those who are required to calculate emissions in accordance with the disposal facility regulations will be able to apply for approval by the Chief Executive of a unique emissions factor (UEF) to recognise different waste composition from the national average

4. approve the following policy changes for the disposal facility regulations

   4.1. the basic method for reporting emissions from a disposal facility will be amount of waste disposed in a year multiplied by a default emissions factor which assumes zero landfill gas collection

   4.2. The default emissions factor will be 1.10 tonnes of carbon dioxide equivalent per tonne of waste

5. approve the following policy additions for the amendments to the unique emissions factors regulations:

   5.1. those who are required to calculate emissions in accordance with the disposal facility regulations will be able to apply for approval by the Chief Executive of a unique emissions factor to recognise either, or both, of

      5.1.1. different waste composition from the national average

      5.1.2. landfill gas collection efficiency

   5.2. those who wish to calculate a UEF based on waste composition are allowed to apply for a single UEF to represent all waste, or multiple UEFs according to their own defined classes of waste

   5.3. those who wish to calculate a UEF based on landfill gas collection may not report a landfill gas collection efficiency estimate greater than 90%.

6. note that as the proposed methodology differs from the approach used to calculate New Zealand's obligations, the Crown is exposed to price uncertainty with potential fiscal costs or savings, because its costs are not known until emissions are reported in the Inventory

7. note that due to the differing methodologies there will be fiscal implications that are highly uncertain, but are likely to benefit NZ ETS revenues until 2020

8. agree to incur estimated fiscal revenues of $8m per year from 2013 as a result of the methodology proposed in 4.1 above

9. note that because the costs of the NZ ETS post-2012 have yet to be budgeted for these fiscal costs do not count against the budget allowance, although when these costs are fully accounted for in Crown accounts, the net fiscal impact of the NZ ETS will have an impact on the operating balance.

10. notes that consultation on draft regulations and amendments to regulations was undertaken and submissions have informed these policy recommendations

Next steps

11. invite the Minister for Climate Change Issues to issue drafting instructions to the Parliamentary Counsel Office to give effect to these recommendations

12. invite the Minister for Climate Change Issues to submit a paper on disposal facility regulations and amendments to the unique emissions factor regulations to Cabinet Legislative Committee in order to promulgate these regulations by 1 October 2010

13. note the Minister for the Environment intends proactively releasing this Cabinet paper on the Ministry for the Environment website with appropriate withholdings as if the paper had been requested under the Official Information Act 1982

_____

Hon Dr Nick Smith
Minister for Climate Change Issues

_____ /_____ /_____

Appendix 1: Recommended default emissions factor (DEF)

The DEF is constructed using the most recent national reported statistics on solid waste composition, along with a methodology from the Intergovernmental Panel on Climate Change 2006 Guidance.

The calculations performed to determine this figure were based on

- Waste composition (from MFE NZ, SWAP Baseline Results, 2004)
- Methane correction factor for aerobic decomposition in year of deposition (MCF) (from MfE (April 2010), New Zealand Greenhouse Gas Inventory 1990 - 2008)
- Degradable organic content (DOC) (from IPCC, 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Volume 5, Chapter 3: Solid Waste Disposal, 2006)
- Fraction of DOC that decomposes (DOCf) (IPCC (2006))
- Fraction of landfill gas that is methane (FCH4) (IPCC (2006))
- Molecular weight ratio CH_4/C (IPCC (2006))
- Global warming potential of CH_4 (IPCC (2006))
- Consultation on exposure draft regulations

The resulting factor is then adjusted for the oxidation of methane as it passes through a landfill cover. This adjustment removes a calculation step for participants

The formula used to develop the DEF was:

$$\mathbf{DEF = MCF \times DOC \times DOCf \times FCH_4 \times 16/12 \times GWPCH_4 \times (1 - OX)}$$

The DEF is recommended to be 1.10 tonnes of carbon dioxide equivalent per tonnes of solid waste.

$$\mathbf{DEF = 1.10\ t\ CO_2e\ /\ t\ waste}$$

The recommended default emissions factor will be identical to that used in the Inventory and therefore will not create any fiscal benefits or costs.