



**Secondary Fuel Cost Recovery Mechanisms for Licensed
Generation Capacity in the Republic of Ireland**

Consultation Paper

7 August 2009

SECONDARY FUEL CONSULTATION

TABLE OF CONTENTS

1. SUMMARY.....	3
2. INTRODUCTION	3
2.1. THIS DOCUMENT	3
2.2. BACKGROUND.....	4
3. TESTING AND MONITORING.....	6
3.1. INTRODUCTION	6
3.2. FUEL STOCK MONITORING	6
3.3. FUEL STOCK INSPECTIONS	6
3.4. SECONDARY FUEL TEST.....	9
4. COMPENSATION ARRANGEMENTS.....	12
4.1. ASSUMPTIONS.....	12
4.2. PROPOSED ALLOWABLE COSTS.....	13
4.3. PROPOSED CALCULATION METHOD - COMPENSATION PAYMENT	14
4.4. FUEL COST CALCULATION	14
4.5. MAINTENANCE COST CALCULATION	16
4.6. SEMO ARRANGEMENTS.....	17
4.7. WORKED EXAMPLE	17
5. CHARGING FOR NON-COMPLIANCE OF GENERATORS.....	18
5.1. BASIS FOR CHARGING	18
5.2. SECONDARY FUEL CHARGE	18
5.3. PROPOSED CHARGE FOR FAILED SECONDARY FUEL TEST	19
5.4. PROPOSED CHARGE FOR SECONDARY FUEL STOCK LEVEL FAILURE	20
5.5. SETTLEMENT & PAYMENT	22
6. INSTRUCTIONS FOR RESPONSES.....	22
7. NEXT STEPS.....	22
APPENDIX A: GRID CODE MODIFICATIONS.....	23
APPENDIX B: SECONDARY FUEL TEST: CHARGING/COMPENSATION.....	30

1. SUMMARY

On 12 January 2009, the Commission for Energy Regulation published a Decision 09/001 “Secondary Fuel Obligations on Licensed Generation in the Republic of Ireland” (CER09/001)¹. The purpose of this Decision 09/001 was to strengthen the obligations on generators with respect to their role in relation to security of electricity supply and to introduce a remuneration mechanism for meeting specific obligations. Following the publication of this Decision 09/001, EirGrid is now in the process of developing the necessary arrangements for testing and remunerating generators for secondary fuel testing. In this paper EirGrid will consult on the proposed arrangements for compensating generators for secondary fuel testing and for charging generators for non compliance with the secondary fuel obligations per the Decision 09/001.

Details of how to respond to this consultation are included in Section 6 of this paper. Responses to this paper are due on **4 September 2009**.

2. INTRODUCTION

2.1. THIS DOCUMENT

The purpose of this document is to propose a range of options for the compensation of generators for secondary fuel testing and for charging of generators for secondary fuel non compliance. The paper seeks the views of the public and interested parties on the options proposed. The proposed arrangements cover the Republic of Ireland only and have thus been prepared by the Transmission System Operator (TSO) in the Republic of Ireland, EirGrid. In addition this paper provides information on the planned monitoring and inspection of secondary fuel stock levels and the testing regime for secondary fuelling.

This document follows on from several consultation and decision papers on secondary fuel obligations published by the CER over the last two years.

This paper is divided into the following key sections:

- Section three of this paper provides information on the arrangements for monitoring and inspecting fuel stock levels and for secondary fuel testing. The proposed arrangements

¹ <http://www.cer.ie/en/electricity-security-of-supply-current-consultations.aspx?article=7d14283f-b667-4cdc-996b-61f6e56fd94e>

SECONDARY FUEL CONSULTATION

for fuel stock level monitoring and secondary fuel testing are being progressed through the Grid Code Review Panel.

- Section four outlines the proposed compensation arrangements for secondary fuel testing. It also outlines the proposed allowable costs. Participants are invited to provide comments on this section of the paper.
- Section five sets out the proposed charging mechanism for generators who are not compliant with the secondary fuel obligations. Participants are invited to provide comments on this section of the paper.
- Sections six and seven of this document provide information on the submission of responses and the next steps for finalising the proposed secondary fuel arrangements.

Appendix A contains those Grid Code modifications proposed in relation to testing, monitoring and inspection required to fulfill the secondary fuel obligations outlined in the Decision 09/001. These are included for information purposes.

Appendix B provides details of the calculation methodology for the compensation payment.

2.2. BACKGROUND

There is a significant and increasing reliance on natural gas as a generation fuel. A significant percentage of electricity generation in Ireland is produced using natural gas. Furthermore, as indigenous gas supplies have depleted over the years more gas is now imported from Great Britain via two sub-sea interconnectors. This reliance on natural gas for electricity generation has considerable implications for the electricity system in Ireland in the event of a natural gas supply shortage or physical interruption. Therefore, natural gas emergencies are of particular concern when endeavouring to ensure the secure supply of electricity. The identification of specific secondary fuel requirements determined in Decision 09/001 and the provision for EirGrid to test and monitor secondary fuel capability are seen as measures to address this risk. Thus it is recognised that periodic secondary fuel testing and monitoring is required to assess generator performance and guarantee capability.

The CER Decision 09/001 stated that EirGrid should administer the arrangements for secondary fuel testing and associated generator cost recovery. The following key decisions are the focus of this consultation paper.

SECONDARY FUEL CONSULTATION

Decision B: Minimum Output Capacity when running on a Secondary Fuel

Generating units required to run on a secondary fuel must be capable of generating on its secondary fuel at no less than 90% of the unit's capacity on its primary fuel. For example, a 100MW unit must have an output of at least 90MW on its secondary fuel.

Decision C: Quantity of Fuel Stocks to be stored and Arrangements for Fuel Stocks

- 1. Stocks stored will be examined by EirGrid. EirGrid may wish to install a signal from the generator's tanks so that the level of secondary fuel stocks can be monitored by EirGrid. At EirGrid's request, generators are required to declare the amount of usable fuel.*
- 2. Arrangements for replenishment of secondary and primary fuel stocks and demineralised water, if applicable, to be advised to the Commission on an annual basis. If the fuel is used, then the generator should make arrangements immediately to replenish the stock. Throughout the winter period, generators are asked to be particularly prudent with their fuel stocks and at all times, the fuel stocks should meet the minimum requirement set out in this paper.*
- 3. Fuel stocks should be stored in a usable form.*

Decision D: Testing Obligations

EirGrid can perform up to two successful tests per year on each generating unit. EirGrid will develop the necessary arrangements and procedures to be followed for the tests.

Changes will be made to the Grid Code to provide for this testing regime.

Decision E: Cost Recovery

For tests carried out under decision D, the variable costs for testing the unit on its secondary fuel will be remunerated through the Ancillary Services Mechanism. The testing regime will begin once the testing procedures have been developed by EirGrid and once the harmonized ancillary services arrangements go-live, which is expected in October 2009.

The Decision 09/001 highlighted that there are costs incurred by generators when running on secondary fuel. This paper sets out the proposed arrangements for compensating generators for the costs incurred while testing on secondary fuel.

The planned arrangements for secondary fuel monitoring, inspection and testing are currently being progressed through the Grid Code Review Panel.

3. TESTING AND MONITORING

3.1. INTRODUCTION

Decision 09/001 identifies certain generation units which are required to hold stocks of secondary fuel. This section, for information, briefly discusses the monitoring and testing arrangements proposed by EirGrid and progressed via the Grid Code.

3.2. FUEL STOCK MONITORING

EirGrid will monitor the real-time secondary fuel stock levels received from the generators using SCADA communications signals. This will require the installation of real time signalling systems in the secondary fuel tanks of generation units. It should be noted that real time secondary fuel stock level indication will need to be commissioned for both the onsite and off site secondary fuel storage locations.

3.2.1. Requirements

- 1) Generators are obliged to provide monthly reports to EirGrid on their secondary fuel stock levels (MWh). The report must show the available amount of fuel (MWh) of the unit running continuously at rated capacity on its primary fuel.
- 2) When a generator has real time secondary fuel level indication commissioned, the unit will be required to provide this real time secondary fuel level indication to the NCC via this signal. The real time fuel level indication must show the available amount of fuel (MWh) of the unit running continuously at rated capacity on its primary fuel.

At present, real time signalling systems have yet to be installed for many of the generators. In the interim, EirGrid has commenced its monitoring duties and has received information from generators on their secondary fuel stock levels. EirGrid is currently monitoring the secondary fuel stock level compliance of generators in accordance with the deadline of 30th June 2009 as set out in Decision 09/001.

3.3. FUEL STOCK INSPECTIONS

EirGrid will carry out physical inspections of the secondary fuel stocks held in secondary fuel tanks. It should be noted that inspections will be carried out on all secondary fuel storage locations including offsite third party locations.

SECONDARY FUEL CONSULTATION

3.3.1. Requirements

- 1) EirGrid will carry out up to two physical inspections of secondary fuel stock levels per year. The inspections will be carried out during business hours on business days.
- 2) Notice will be issued by EirGrid to the appropriate nominated contact point for the generator. Notice of one business day will be given to the generation unit prior to the inspection. The generator will be required to facilitate EirGrid or their representative's access to their fuel stores and any reasonable request in the examination.
- 3) Where a generator's fuel stock is held off-site on their behalf by another party, the generator must arrange with the holder of the fuel to facilitate an inspection by EirGrid with one business day's notice as outlined above. A dedicated supply line (pipeline) with a dedicated pump must be in place between the off-site fuel storage and the generating station.

EirGrid may carry out random secondary fuel stock level checks as it deems appropriate. EirGrid will monitor and inspect the secondary fuel stock levels held by generators in accordance with the fuel stock quantities required under the Decision 09/001. There are certain specific criteria that will govern whether a unit is in accordance with the secondary fuel stock level obligations. These criteria are outlined in sections 3.3.2.

3.3.2. Criteria – Passed Fuel Stock Test

A passed fuel stock test is one where the real time fuel stock levels are in accordance with the physical fuel stock inspection and where the readings confirm that there is sufficient fuel to meet the running requirements for the unit as defined by the Decision 09/001.

i.e. a passed fuel stock test is based on the generator meeting all of the following criteria:

- 1) That the required² levels of secondary fuel stock communicated via real-time fuel level indication to the NCC or through the monthly reports are present in the tanks;
- 2) That the required levels of secondary fuel stocks following physical inspection are present in the tanks;
- 3) That tanks are replenished immediately following any secondary fuel usage by generator (without instruction from EirGrid)

² required meaning the specified number of days of secondary fuel stock required to be held by a generator as per the Decision 09/001. This can range from one to five days depending on the type of plant and the estimated run hours of the plant per annum. These requirements will be subject to derogation/exemption as determined by the Commission.

SECONDARY FUEL CONSULTATION

- 4) That tanks are replenished in a prompt manner following a secondary fuel test (on instruction from EirGrid) within the specified window for replenishment (2 calendar months); and
- 5) The stored secondary fuel must be in usable form.

** required meaning the specified number of days of secondary fuel stock required to be held by a generator as per the Decision 09/001. This can range from one to five days depending on the type of plant and the estimated run hours of the plant per annum. These requirements will be subject to derogation/exemption as determined by the Commission.

In all other cases, where the unit does not meet the criteria set out in section 3.3.2., the secondary fuel stock test will be deemed a failure.

When an inspection takes place it will make reasonable allowance for any fuel used in recent secondary fuel tests (carried out on instruction from EirGrid) which is in the process of being re-stocked assuming evidence is provided to this effect. Any secondary fuel testing (or use of secondary fuel) which is carried out by the generator without instruction from EirGrid should not impact on the generator's required secondary fuel stock levels.

Generators are obliged at all times to make EirGrid aware of any material changes to the stock level of secondary fuel, its usability or the ability of the unit to operate on that fuel. For the avoidance of doubt, three hours (of running at rated capacity on primary fuel) will be deemed a material difference in fuel stock levels (margin of error). Generators will be required to increase their stock to the required levels within two calendar months following the failed stock level test.

Following a secondary fuel test which is carried out on instruction from EirGrid there will be a reasonable period of time (two calendar months) allowed to the generation unit to replenish secondary fuel stock levels. During this time the unit will not be deemed to have failed the fuel stock level test provided the amount of fuel stored in the tanks is equivalent to the required stock level less the amount of fuel consumed during the secondary fuel test plus the allowed margin of error.

SECONDARY FUEL CONSULTATION

3.3.3. Communication of Fuel Inspection Result

Following a failed secondary fuel stock level inspection (as per criteria in section 3.3.3), EirGrid will issue a non-compliance notice to the generator and CER within 10 business days.

3.4. SECONDARY FUEL TEST

3.4.1. Background

EirGrid can instruct a generation unit to perform up to two successful secondary fuel tests per year. This section defines the arrangements for testing the capability of a generation unit to change-over from primary to secondary fuel and back to primary fuel on instruction from EirGrid.

Definitions

Fuel Switch Over Output is the MW output not lower than minimum load, at which a generation unit can achieve a switch over from primary fuel to secondary fuel or vice versa. This definition formed part of the proposed modifications to the Grid Code for secondary fuel.

Secondary Fuel Test

On instruction from the NCC a generation unit must complete a change-over from primary fuel to secondary fuel while holding electrical output at or above the **Fuel Switch Over Output**. The unit will then be required to run on secondary fuel for a period of time before being instructed to change back to primary fuel. The unit when on the secondary fuel will be instructed to a MW value of no less than 90% of registered capacity on the primary fuel or such other level as system conditions allow. Following a period of running on secondary fuel, the unit will be instructed by NCC to change back to the primary fuel, again while holding electrical output at or above Fuel Switch Over Output.

3.4.2. Requirements - Secondary Fuel Test

For the first test following the implementation of the approved testing arrangements, EirGrid will give prior notice of not less than 48 business hours to the generator's nominated contact point.

SECONDARY FUEL CONSULTATION

For all subsequent tests, EirGrid will issue an instruction from the National Control Centre (NCC) to switch fuel. EirGrid will endeavour to schedule the test at such time as to minimise the possibility of the generator undergoing sustained running on its secondary fuel.

- 1) On instruction from EirGrid's NCC a generation unit must switch from the primary to secondary fuel in five hours or less. It should achieve this while holding electrical output at or above the **Fuel Switch Over Output**. This parameter is provided by the nominated contact point to the TSO and is considered part of the generation data requirements in the Grid Code. The generation unit must operate continuously while switching from its primary to its secondary fuel on instruction from EirGrid.
- 2) The unit when on the secondary fuel will be instructed to generate at a MW value of no less than 90%³ of their registered capacity on primary fuel or such other level as system conditions allow. The unit will need to maintain operation on the secondary fuel for a minimum of one hour after a successful fuel switchover.
- 3) Following a period of running on the secondary fuel, the NCC will instruct the unit to switch back to the primary fuel. The unit should achieve this while maintaining the electrical output at all times above the **Fuel Switch Over Output**. During the test, the generation unit should respond to the instructions issued by NCC at all times.

It is anticipated that under normal circumstances the secondary fuel test should be completed within a few hours. However, under exceptional circumstances, the unit may be required to operate on secondary fuel for a longer period of time if there are concerns for system security. EirGrid will consider the system conditions at all times when scheduling secondary fuel tests.

3.4.3. Criteria – A Successful Secondary Fuel Test

A test is deemed successful if the unit materially complies with all instructions from the NCC including electronic dispatch instructions, operates continuously at or above **Fuel Switch**

³ *Per the Decision 09/001, Generating units required to run on a secondary fuel must be capable of generating on its secondary fuel at no less than 90% of the unit's capacity on its primary fuel.*

SECONDARY FUEL CONSULTATION

Over Output at all times during the test and operates on secondary fuel with a performance that is equivalent to that on the primary fuel source.

i.e. a successful secondary fuel test is based on a generator meeting all of the following criteria:

- 1) Compliance with the instructions issued by NCC;
- 2) Carry out a successful change-over from primary to secondary fuel at or above **Fuel Switch Over Output** while operating continuously (i.e. without tripping);
- 3) Continuous operation on secondary fuel for a specified period at an output instructed by NCC;
- 4) Successful change-over to primary fuel at or above the **Fuel Switch Over Output** while operating continuously (i.e. without tripping); and
- 5) Generator's performance is in line with the Grid Code requirements.

For the avoidance of doubt the performance of the unit on the secondary fuel cannot be limited by any EPA or other license requirements. In addition, if the unit while on secondary fuel is instructed for system conditions to maintain an output less than 90% of registered capacity on primary fuel but completes the rest of the test successfully, the test will be deemed a success.

In all other cases, where the unit does not meet the criteria set out in section 3.4.3, the secondary fuel test will be deemed a failure.

3.4.4. Communication of Test Result

Following a Secondary Fuel Test (per criteria in section 3.4.3), EirGrid will issue a report to the generator. In cases of non-compliance, a notice will be issued to the generator and CER within 10 business days.

3.4.5. Fuel Stock Replenishment Following a Secondary Fuel Test

Following a secondary fuel test, the generator is expected to make the necessary arrangements with their suppliers to replenish secondary fuel stock levels. As specified above, generators have two calendar months from the date of the secondary fuel test to replenish stocks to the required level and with fuel of a usable grade. A detailed assessment of the secondary fuel capability of a generator may be required if there are multiple secondary fuel test fails. In the case of a failed secondary fuel test, generators must replenish the stocks expended in both the original and repeat tests within two calendar months, from the date of the original test.

3.4.6. Re-Test following a failed secondary fuel test

Following a failed secondary fuel test, the generator will be obliged to communicate with EirGrid on the reasons for failure of the unit in the secondary fuel test. Generators will be required to carry out a secondary fuel re-test promptly. If there is repeated failure of the unit to successfully complete a secondary fuel test, then that unit will be in breach of the Decision 09/001 and the matter will be referred to CER.

4. COMPENSATION ARRANGEMENTS

During a secondary fuel test, the generation unit will be required to use a less economic fuel than it would otherwise choose. This imposes a cost on the generation unit that would not be recovered under the current Single Electricity Market arrangements. As per Decision 09/001, the generator will be remunerated for the variable costs of testing on secondary fuel.⁴

Compensation payments for secondary fuel testing will be paid out of the Ancillary Services pot, but any payments associated with secondary fuel testing will be ring-fenced from all other payments of the AS pot. This is because compensation and testing on secondary fuel only applies to the Republic of Ireland. Any monies received by EirGrid through charging for secondary fuel non compliance will reduce the revenue requirement for secondary fuelling (from customers).

This section lists the proposed allowable costs and the calculation options for compensating generators for the costs associated with carrying out a secondary fuel test.

4.1. ASSUMPTIONS

EirGrid proposes the following principles with regard to compensation payments for generators testing on secondary fuel.

1. Payment for a test will only be made where the test of the use of secondary fuel is executed on instruction from the TSO.
2. Payment will be made to the generator for allowable costs only. The allowable costs are described in section 4.2.
3. The compensation payment to generators for secondary fuel testing will be based on the allowable secondary fuel costs less the avoided cost of running on the primary fuel.

⁴ Section 6 of Decision 09/001 stated the following:

“For tests carried out under decision D, the variable costs for testing the unit on its secondary fuel will be remunerated through the Ancillary Services Mechanism.”

SECONDARY FUEL CONSULTATION

4. The payment period is defined by the instructions issued by the NCC to the generation unit to switch to secondary fuel. Payment will be made to the unit for switching to its secondary fuel, running on secondary fuel for the instructed period and switching back to the primary fuel at fuel switchover output.
5. Where a secondary fuel re-test of a generation unit is required, the unit will be compensated for its allowable costs provided the secondary fuel re-test is successful. This will occur only in instances where the re-testing of the unit has been agreed with EirGrid. This is illustrated in Appendix B.
6. Costs must be necessarily and properly incurred.
7. A failure to comply with the secondary fuel obligations will result in a secondary fuel charge. This is detailed in section 5.

4.2. PROPOSED ALLOWABLE COSTS

This section lists the proposed allowable costs for secondary fuel testing. In deriving these costs, EirGrid has received submissions from a number of generators on their estimated costs for secondary fuel testing. In conjunction with CER, EirGrid has considered these submissions and the following allowable costs are proposed on that basis.

Allowable costs can be broken down into two main categories of expenditure; fuel costs and maintenance costs. The allowable maintenance costs are only those incremental maintenance costs associated with secondary fuel testing. The proposed allowable components of the maintenance costs are as follows:

1. EOH (Equivalent Operating Hours): additional cost incurred for secondary fuel operation
2. De-mineralised water: larger quantities of water are required for secondary fuel operation,

Table 1 lists the proposed allowable costs for secondary fuel testing.

Table 1: Allowable Costs

Index	Cost	Cost Details
1	Fuel Costs	Costs of stocks of fuel consumed during the testing period (€/MWh)
2	Maintenance Costs	Equivalent Operating hours (EOH) De-mineralised water

SECONDARY FUEL CONSULTATION

The nominal estimated figure for maintenance has been calculated to take broad account of the incremental maintenance costs associated with running on secondary fuel as instructed by EirGrid.

An additional cost concern raised in the Decision 09/001 has been the penalties incurred under IPPC licences for running on secondary fuel for any period of time. The EPA has clarified that bi-annual secondary fuel testing should not have any significant compliance implications for licensees. Licensees must inform their individual enforcement inspectors of their completion of a secondary fuel test in compliance with the new Grid Code obligations for secondary fuel tests.

4.3. PROPOSED CALCULATION METHOD - COMPENSATION PAYMENT

The compensation payment for secondary fuel testing will be based on the allowable costs listed in section 4.2. This section proposes several methods of calculation of both the fuel and maintenance costs associated with testing on secondary fuel.

$$\text{Compensation Payment} = \text{Fuel Costs} + \text{Maintenance Costs}$$

4.4. FUEL COST CALCULATION

The fuel cost calculation will be based on the formula below:

In each Trading period:

*Fuel Costs = [Benchmark Energy * Currency Exchange Rate * 1/ Net Calorific Value * Heat Rate]*

$$\text{Fuel Costs } (\text{€ / MWh}) = \frac{\text{\$}}{\text{tonne}} * \frac{\text{€}}{\text{\$}} * \frac{\text{tonne}}{\text{GJoule}} * \frac{\text{GJoule}}{\text{MWh}}$$

Where:

Benchmark Energy = the Platts quoted price (in US dollars per metric tonne) of secondary fuel.

Currency Exchange Rate = the Euro/USD foreign exchange reference rates quoted on the European Central Bank website.

SECONDARY FUEL CONSULTATION

Net Calorific Value = the Value quoted (in metric tonnes per Giga Joule) for distillate in the Energy Statistics Manual which has been prepared by the IEA in co-operation with the Statistical Office of the European Communities (Eurostat)

Heat Rate = the publicly available data that was used for directed contracts modelling. This data was validated by KEMA in 2007 and NERA in 2008.

There are four variations to this option; these are described in Options 1, 2, 3 and 4.

4.4.1. Option 1

The compensation payment will be calculated by EirGrid.

- EirGrid will define an **average** benchmark energy rate **for the year ahead** using Platts *Forward Oil Curve*. This average benchmark energy rate will then be used to calculate the fuel cost (€/MWh).
- For the months January to December in any given calendar year, a weighted average fuel cost will be calculated and converted to Euro.
- The average year ahead fuel cost will be used to set the annual compensation pot.
- On the day of a generator's Secondary Fuel Test, the generator will be compensated for the hours of running at the average year ahead fuel cost.

4.4.2. Option 2

The compensation payment will be calculated by EirGrid.

- EirGrid will define an **average** benchmark energy rate **for the year ahead** using Platts *Forward Oil Curve*. This average benchmark energy rate will then be used to calculate the fuel cost (€/MWh).
- For the months January to December in any given calendar year, a weighted average fuel cost will be calculated and converted to Euro.
- The average year ahead fuel cost will be used to set the annual compensation pot.
- On the day of a generator's Secondary Fuel Test, EirGrid will set a **spot benchmark energy rate** using Platts *Oil Spot Price*. This spot benchmark energy rate will then be used to calculate the fuel cost (€/MWh).
- A generator will be compensated for the hours of running on secondary fuel at the spot benchmark energy rate.

4.4.3. Option 3

The benchmark energy rate will be submitted by the generator. This rate should be based on an internationally recognised oil benchmark index. The generator will then calculate the

SECONDARY FUEL CONSULTATION

equivalent fuel cost for the unit (€/MWh) for the day of the secondary fuel test and submit to EirGrid.

4.4.4. Option 4

- The generator will submit the MW hours of secondary fuel that were used during the secondary fuel test that require replenishment.
- The generator will be compensated for the marginal replacement cost of the fuel in this case.
- EirGrid will compensate for the secondary fuel used during the secondary fuel test based on the forward benchmark energy rate for the month ahead. The Platts Forward Oil Curve will be used. This benchmark energy rate will then be used to calculate the fuel cost (€/MWh).

4.5. MAINTENANCE COST CALCULATION

A nominal amount will be paid to the generator for incremental maintenance costs incurred during secondary fuel testing. There are two options for calculation of the maintenance costs.

4.5.1. Option 1

The incremental maintenance costs will be calculated by EirGrid. These values will be defined annually. This will give rise to a nominal fixed maintenance payment for those costs associated with bi-annual secondary fuel tests. This fixed amount will be used when setting the annual compensation pot.

4.5.2. Option 2

Each generator will submit their calculations of their incremental maintenance costs associated with secondary fuel testing. These costs will have to be accompanied with an auditor's statement and director's sign off confirming the verity of the costs. The allowable costs submitted by generators, should be based on the allowable costs outlined in section 4.2.

SECONDARY FUEL CONSULTATION

4.6. SEMO ARRANGEMENTS

During a secondary fuel test, generators will be compensated for their primary fuel costs through SEM and for their incremental secondary fuel costs through the compensation arrangements outlined in section 4.3.

Compensation Payment

In each trading period, the total compensation payment to generators for carrying out a secondary fuel test will be as follows:

When Dispatch Quantity = Metered Quantity (in SEMO)

$$\text{Compensation Payment} = \left[[\text{Metered Quantity} * \text{Fuel Costs}] - [\text{Dispatch Quantity} * \text{Bid Price}] \right] + [\text{Maintenance Cost}]$$

4.7. WORKED EXAMPLE

1) Sample Benchmark Energy	\$636/tonne (June 2009)
ECB Conversion Rate	1 € = \$ 0.7077
Net Calorific Value (Gasoil)	43.38 GJ/tonne
Sample Heat Rate	9 GJ/MWh
Equivalent Operating hours (EOH)	€290/hr
De-mineralised water	€500/hr
Sample Bid Price (SEM)	€30/MWh

$$\text{Fuel Costs (€/MWh)} = 636 * 0.7077 * 1/43.38 * 9 = \text{€}93.40/\text{MWh}$$

$$\text{Maintenance Costs} = 290 + 500 = \text{€}790/\text{hr}$$

In a trading period:

For a unit with an average output of 400 MW in a half hour trading period

$$\text{Compensation Payment} = \left[[400 * 93.40] - [400 * 30] + [790] \right] / 2 = \text{€}13,075$$

Note: the EOH cost and the demineralised water cost are estimated based on recommendations from expert technical advice on the calculation of allowable maintenance costs for secondary fuel testing. The estimated maintenance costs are based on those costs incurred by a 400 MW unit for secondary fuel testing. The figures were calculated taking into

SECONDARY FUEL CONSULTATION

account industry knowledge and analysis of comparable units in Ireland and the UK. These maintenance costs may change from year to year.

5. CHARGING FOR NON-COMPLIANCE OF GENERATORS

To provide appropriate incentives, it is considered appropriate to propose the introduction of charges for those secondary fuel tests that are unsuccessful and for any failed fuel stock level monitoring and site inspections carried out by EirGrid.

It should be noted that this charging for secondary fuel non-compliance will be calculated completely separately from SEMO and is unrelated to any market payments. SEMO have been consulted on this matter.

5.1. BASIS FOR CHARGING

For secondary fuel stock levels, the charging will be based on the criteria outlined in section 3.3.2.

For secondary fuel testing, the charging will be based on the criteria outlined in section 3.4.3.

5.2. SECONDARY FUEL CHARGE

The secondary fuel charge will be calculated referencing the estimated average capacity payment received by a generator per MW per hour. The secondary fuel charge (SFC) will be stated in the Annual Statement of Payments & Charges.

$$\text{SecondaryFuelCharge}(SFC) = \frac{\text{AnnualCPMPot}}{[\text{TotalPlantAvailability} * \text{No.ofHours}(pa)]}$$

Example: 2009 SFC

$$SFC = \frac{€650,000,000}{[8500MW * 8760]} \approx €8.50 / MWhr$$

This SFC will be referenced throughout the charging section of this paper. It is proposed that for the first year of the new regime, no secondary fuel charge will be imposed (i.e. SFC = 0). This non charging period is intended to provide an opportunity to generators to become

SECONDARY FUEL CONSULTATION

familiar with the testing regime. Following this initial one year period, EirGrid will introduce the proposed charging mechanisms as set out in this paper.

5.3. PROPOSED CHARGE FOR FAILED SECONDARY FUEL TEST

If a generation unit fails a secondary fuel test, a charge will be levied on the unit. This charge will be based on the secondary fuel charge. Following a failed secondary fuel test, the generation unit will be liable for a secondary fuel test fail charge for a twenty four hour period.

$$\text{SecondaryFuelTestFailCharge} = [\text{SFC} * \text{RC} * 24\text{Hours}]$$

Where:

SFC = the secondary fuel charge

RC = the Registered capacity of the generator

Note: this charge will not apply to any re-testing of a generation unit required within a six month period following a failed secondary fuel test. Any non compliance by generators with the secondary fuel obligations will be reported and published each year.

Please note that during a secondary fuel test generators will be liable for charges as per the Trading and Settlement Code ⁵and the relevant rules will apply.

Worked Examples

1) For a 100 MW unit

RC = 100 MW

SFC = €8.50

Secondary Fuel Test Fail Charge = €8.50 * 24 * 100 = €20,400

2) For a 400 MW unit

RC = 400 MW

SFC = €8.50

Secondary Fuel Test Fail Charge = €8.50 * 24 * 400 = €81,600

⁵<http://allislandmarket.com/assets/?id=5c2ff7a9-d643-4f1f-8088-1e69eb180c7b>

SECONDARY FUEL CONSULTATION

For any subsequent failed secondary fuel test within a six month period no allowable costs will be recoverable by the generation unit.

5.4. PROPOSED CHARGE FOR SECONDARY FUEL STOCK LEVEL FAILURE

If a unit has non-compliant secondary fuel stock levels then a charge will be levied on the generator weekly.⁶ The amount of this charge will be dependent on the volume of stock below required stock levels and the length of time that the fuel stock levels are non-compliant. This charge will be levied weekly on the unit (and will take into account the allowed 2 month replenishment window following a secondary fuel test).

Note: This charge will increase to a maximum after a six month period and following continued non-compliance the generator will be referred to the CER. CER will be kept updated on the success/failure of stock level tests on a six monthly basis. Repeated non-compliance by generators with the secondary fuel stock level obligations will be published annually.

$$FuelStockFailCharge = SFC * RC * \frac{(Y - X)}{Y}$$

Where:

Y is the fuel stock level requirement per Decision 09/001 (hours)

X is the amount of fuel stocks currently held (hours)

SFC = the secondary fuel charge

RC = the Registered capacity of the generator

Note: the charge for a unit will be dependent on the amount of fuel stocks held and will be reduced proportionately according to the amount of hours of stock held by the unit relative to the fuel stock requirements.

Worked Examples:

- 1) For a 100 MW unit with a 72 hour fuel stock level requirement
This unit currently has fuel stock levels equating to 48 hours.

⁶ This charge will be levied on Monday of every week, if a generator has non compliant stock levels as of Monday the charge will be levied for the full week.

SECONDARY FUEL CONSULTATION

RC = 100 MW, SFC = €8.50

X = 48 hours, Y = 72 hours

Weekly Charge = €8.50 * 100 * (72 – 48)/72 = €283

2) For a 400 MW unit with a 120 hour fuel stock level requirement

This unit currently has fuel stock levels equating to 96 hours.

SFRC = 400 MW, SFC = €8.50

X = 96 hours, Y = 120 hours

Weekly Charge = €8.50 * 400 * (120 – 96)/120 = €680

3) For a 400 MW unit with a 120 hour fuel stock level requirement

This unit currently has fuel stock levels equating to 0 hours.

SFRC = 400 MW, SFC = €8.50

X = 0 hours, Y = 120 hours

Weekly Charge = €8.50 * 400 * (120 – 0) /120 = €3400

Over a 6 month period, this unit could incur a charge of approx. €88,400.

If EirGrid is unable to access the fuel tanks on the day scheduled for a fuel stock level inspection, generators will be charged the hours lost by EirGrid staff in visiting the site and being unable to gain access. A warning will be sent to the generator in this case.

If on a second visit, EirGrid could again not gain access to the tanks this will be deemed a failed stock level test and generators will incur a failed stock level charge.

If on repeated occasions EirGrid is unable to access the fuel tanks to carry out a fuel stock level inspection, then the matter will be referred to CER.

The fuel stock fail charge will be levied until such time as a purchase order for delivery has been submitted which indicates the date of delivery and that sufficient fuel has been ordered to meet the required fuel stock levels. EirGrid may investigate the stock levels at this time to ensure that the stock levels are at the required level.

5.5. SETTLEMENT & PAYMENT

Any charging imposed on generators will be offset against any compensation payments accrued to generators in lieu of costs incurred.

Post testing in each six month period, the generation unit and EirGrid will agree on the net compensation payment and/or charge in advance of billing. Payments for secondary fuelling will be included as part of the Ancillary Service Billing mechanism. Settlement will be made on a six monthly basis and payments/charges for Secondary Fuel Tests will be invoiced and made in euro.

6. INSTRUCTIONS FOR RESPONSES

Views and comments are invited regarding all aspects of this document.

Responses should be sent to

Yvonne.Coughlan@eirgrid.com by **4 September 2009**.

EirGrid is primarily seeking comments on the proposed compensation and charging arrangements which are outlined in section four and five of this paper.

It would be appreciated if comments are clearly aligned with the sections and sub sections of this consultation paper to which they relate. Please note that if confidentiality is required, this should be made clear in the response. In any event, it is intended that all responses will be shared with CER.

7. NEXT STEPS

Generators should meet the obligations set out in the CER Decision 09/001 (CER 09/001) by 30 June 2009.

Following consultation on this paper, EirGrid and CER will review all comments and feedback with the aim of publishing the final Decision paper in September/October 2009.

APPENDIX A: GRID CODE MODIFICATIONS

This Appendix contains the Grid Code modifications to facilitate secondary fuel tests and fuel stock checks. This section is included for information purposes only.

General overview of changes

The issues addressed in this proposal include data collection, connection conditions relating to capabilities of generators on secondary fuel, if applicable, and provision of signals, definitions and testing.

Section by Section Review

Planning Code

Information that must be supplied in the planning time frame by the Generator is contained in PC.A4. Changes are necessary here for a generator unit to supply information for both primary fuel and secondary fuel and the number of available running hours at registered capacity from on-site fuel storage stocked to its full capacity.

Connection Conditions

Changes are required in this section so that generators comply with the connection conditions for both primary and secondary fuel.

Operational Conditions

EirGrid has been directed by the CER to test generators periodically on secondary fuels and the associated capability on-line fuel changeover. The proposed clauses give EirGrid the right to carry out the necessary tests and monitoring.

Glossary

Two new definitions are required in the glossary table of the Grid Code, namely Fuel Switch Over Output and Secondary Fuel.

Proposed Grid Code Modifications

SECONDARY FUEL CONSULTATION

It is proposed to amend the Grid Code by adding in the text in red and by deleting the text in blue strikethrough:

Planning Conditions

PC.A4.3 Generator Operating Characteristics And Registered Data

Minimum requirements for generator operating conditions are specified in the **Connection Conditions**.

- * For thermal plant, provide a functional block diagram of the main plant components, showing boilers, alternators, any heat or steam supplies to other processes etc. indicate whether single shaft or separate shaft.

For each individual unit, on **Primary Fuel** and on **Secondary Fuel**, fill in the following:

- Unit Number:
- **Registered Capacity** (MW):
- **Fuel:**

	Symbol	Units
* Normal Maximum Continuous Generation Capacity:		MW
* Normal Maximum Continuous Export Capacity		MW
* Power Station auxiliary load		MW
§ Power Station auxiliary load		Mvar
* Maximum (Peaking) Generating Capacity		MW
* Maximum (Peaking) Export Capacity		MW
* Normal Minimum Continuous Generating Capacity		MW
* Normal Minimum Continuous Export Capacity		MW
* Generator Rating:	Mbase	MVA
* Normal Maximum Lagging Power Factor		Mvar
* Normal Maximum Leading Power Factor		Mvar

SECONDARY FUEL CONSULTATION

§ Governor Droop	R	
§ Forbidden zones		MW
§ Terminal Voltage adjustment range		kV
§ Short Circuit Ratio		
§ Rated Stator Current		Amps

* Number of available hours of running at **Registered Capacity** from on-site fuel storage stocked to its full capacity

Connection Conditions

CC.12.2 Signals and indications required to be provided by **Users** will include but shall not be limited to the following:

- (a) **LV** switchgear positions pertinent to the status of each **Grid Connected Transformer** through a set of two potential free auxiliary contacts (one contact normally open and one contact normally closed when circuit breaker is open) for each circuit breaker;
- (b) kV at transformer low **Voltage** terminals; and
- (c) a minimum of four sets of normally open potential free auxiliary contacts in each transformer LV bay for fault indication.

*(d), (e), (f), (g) and (h) are applicable to **Generators** only*

- (d) MW and +/-Mvar at alternator terminals of each **Generation Unit**;
- (e) kV at **Generator Transformer LV** terminals;
- (f) **Generator Transformer** tap position;
- (g) Measured or derived MW output on each fuel, from **Generation Units** that can continuously fire on more than one fuel simultaneously;
- (h) Where it is agreed between the **TSO** and the **Generator** that signals are not available on the **HV** terminals, +/- **MW** and +/- **Mvar** shall be provided at the **Grid Connected Transformer** low **Voltage** terminals; and

SECONDARY FUEL CONSULTATION

- (i) Remaining **Secondary Fuel** capability (where applicable) in MWh equivalent when running at **Registered Capacity**.

(j) and (k) are applicable to **Demand Customers** only,

- (j) **MW** and +/- **Mvar** at the **HV** terminals of the **Grid Connected Transformer**; and
- (k) **Grid Connected Transformer** tap position.

(l), (m) and (n) are applicable to **Dispatchable Demand Customers** who represent a **Demand Side Unit** which consists on an **Individual Demand Site**:

- (l) **MW** and **Mvar +/-** at alternator terminals of each **Generator** where applicable;
- (m) Measured or derived **MW Output** for each **Generator** at the **HV** terminals of the **Grid Connected Transformer**; and
- (n) **Demand Reduction** aggregated at the **HV** terminals of the **Grid Connected Transformer**.

(o), (p) (q) and (r) are applicable to **Dispatchable Demand Customers** who represent a **Demand Side Unit** which consists on an **Aggregated Demand Site**:

- (o) The aggregated **MW** and +/- **Mvar** aggregated at alternator terminals of each **Generator** where applicable;
- (p) Where requested by the **TSO**, the **MW** and **Mvar** of each **Individual Demand Site** at the alternator terminals of each **Generator** where applicable;
- (q) The aggregated, measured or derived **MW** output for each **Generator**, aggregated at the **HV** terminals of the **Grid Connected Transformer** where applicable: and
- (r) The aggregated **Demand Reduction** aggregated at the **HV** terminals of the **Grid Connected Transformer**.

Operating Conditions

OC10.2.2 In order to achieve the primary objective set out in OC10.2.1, OC10 establishes

SECONDARY FUEL CONSULTATION

procedures for **Monitoring, Testing and Investigation**. In particular, this facilitates adequate assessment of each of the following:

- (a) whether **Centrally Dispatched Generation Units (CDGU) and Demand Side Units** comply with **Dispatch Instructions**;
- (b) whether **Generators, Dispatchable Demand Customers and Generator Aggregators** are in compliance with **Declarations of Availability, Ancillary Services capabilities, Operating Characteristics** and any other data required to be registered by those **Generators, Dispatchable Demand Customers and Demand Side Unit Aggregators** under the **Grid Code**;
- (c) whether **Power Quality of Users** conforms with International Electro technical Commission Standards: 'Electromagnetic Compatibility-Limits-Limitation of emission of harmonic currents for equipment connected to medium and high voltage power supply systems [IEC/TR3 61000-3-6] and 'Electromagnetic Compatibility-Limits-Limitation of voltage fluctuation and flicker for equipment connected to medium and high voltage power supply systems ' [IEC/TR3 61000-3-7]; **and**
- (d) whether **Users** are in compliance with protection requirements and protection settings under the **Grid Code, Users' Connection Agreements, Ancillary Service Agreements and System Support Agreements** between **Users** and the **TSO**; **and**
- (e) **whether Generators have the ability to generate on Secondary Fuel (where applicable) and have the ability to carry out on on-line fuel changeover at Fuel Switch Over Output.**

OC10.4.4 Performance parameters that the **TSO** shall **Monitor** may include, but are not limited to, the following:

OC10.4.4.1 compliance with **Dispatch Instructions**;

OC10.4.4.2 compliance with **Declarations** including, without limitation, in respect of:

SECONDARY FUEL CONSULTATION

- (a) **Primary, Secondary and Tertiary Operating Reserve** provided by each of a **Generator's Generation Units**, following a low **Frequency Event** on the **Transmission System**;
- (b) **Frequency Regulation** provided by each **Generation Unit** (to confirm that it is consistent with the **Declared Governor Droop**); and
- (c) Tertiary Operating Reserve 2 and Replacement Reserve provided by each of a Generator's Generation Units.

OC10.4.4.3 Compliance with **IEC Power Quality** standards; and

OC10.4.4.4 Provision of static and dynamic **Reactive Power**; and

OC10.4.4.5 Monitoring of **Primary Fuel and Secondary Fuel** capability, on-line changeover capability and fuel storage levels.

OC10.5.5 The **TSO** may, from time to time, carry out **Tests** in order to determine that a **User** is complying with its **Connection Conditions, Registered Operating Characteristics and Declarations**. The **TSO** may:

- (a) from time to time and for the purposes of **Testing**, issue a **Dispatch Instruction**;
- (b) induce controlled **Power System Frequency** or **Voltage** conditions or variations for the purpose of determining that the **Generation Unit's** response is in accordance with its **Declared Availability, Ancillary Service** capabilities and **Operating Characteristics**; and
- (c) having given three **Business Days** notice, or less where agreed, (identifying the **Ancillary Service** and/or **Operating Characteristic** to be tested), send a representative to the **Generator's Site** to verify by **Testing** in accordance with the **Test** procedures specified in OC10.5.8, that the **Generator** is in compliance with its **Declared** values; and
- (d) request **Start-Up on Secondary Fuel**, or on-line changeover at **Fuel Switch Over Output** from **Primary Fuel to Secondary Fuel** or from **Secondary Fuel to Primary Fuel**, where applicable.

SECONDARY FUEL CONSULTATION

Glossary

Two new definitions are required in the glossary table of the Grid Code.

Fuel Switch Over Output **The MW output, not lower than Minimum Load at which a Generation Unit can achieve a switch over from Primary Fuel to Secondary Fuel or from Secondary Fuel to Primary Fuel.**

Secondary Fuel **The fuel or fuels registered in accordance with the Grid Code as the secondary or back-up fuel(s) authorised for Energy production by the Generation Unit.**

SECONDARY FUEL CONSULTATION

APPENDIX B: SECONDARY FUEL TEST: CHARGING/COMPENSATION

Table 2 illustrates the proposed charging and compensation for secondary fuel testing and re-testing. It shows the allowable costs for both a secondary fuel test and any re-tests. For example, following a secondary fuel re-test; if the generator is successful, the generator will be compensated for their fuel costs and incremental maintenance costs.

Table 2: Allowable costs and charges for Secondary Fuel Testing

Scenario		Fuel Costs	Incremental Maintenance Costs	Secondary Fuel Test Fail Charge
First Secondary Fuel Test	Pass	√	√	×
	Fail	√	√	√
Re-test	Pass	√	√	×
	Fail	×	×	×