

Climate Change Unit
EPA regional Inspectorate
McCumiskey House
Richview
Clonskeagh Road
Dublin 14

Objection to New Entrant Verification Report ref NE2-001-R2

Dear Sirs

Your letter and enclosure (New Entrant Verification Report NE2-001-R2) dated 26th May 2009 re the above and Aghada CCGT refers.

In this response we seek to address areas of confusion that have arisen around the gas supply agreements and the basis for calculating projected emissions. Due to an erroneous interpretation of the complex gas Connection Agreement, which is only a part of a suite of gas agreements between ESB & BGE, the approach to calculation of the projected CO₂ emissions as outlined in the New Entrant Verification Report NE2-001-R1 is incorrect. ESB has the facility to instantaneously book up to the Maximum Hourly Quantity (MHQ) on line. This equates to 20,392,800 kWh daily. This is fundamental as the actual daily gas consumption of the plant must exceed 19,000,000kWh or else plant output will be limited. The daily gas quantity of 19,000,000kWh for the Aghada CCGT plant specified ("committed capacity") in the gas Connection Agreement is not relevant to the actual fuel demand of the plant and hence its projected emissions. The gas supply arrangements for this plant are outlined in further detail in the attached Appendix.

Clause (k), Appendix 3 of the NAP clearly states that "allocations will be based on **agreed** projected emissions". It further stipulates that " For New Entrants in Powergen....., allocation will be based on a CCGT power plant and where appropriate, subject to the provisions of Best New Entrant or other guidelines as specified by the CER". The EPA Guidance for assessors on the Validation of Projections sets down the parameters determined by the CER for New Entrants. ESB contends that this approach should be applied in determining the projected emissions thereby remedying the miscalculation. If not remedied this would lead to a shortfall in ESB's CO₂ allocation and a significant financial loss.

ESB proposes that the methodology contained in the NAP and the EPA Guidance for assessors on the Validation of Projections is the correct methodology to use. The calculation of the RE for 2009 and 2010-2012 based on the NAP approach are included in the attachments. Also included is a calculation based on site specific parameters – note that the energy input is less than the MHQ (this alternative calculation is also acceptable to ESB).

If, however, the Agency wishes to propose an alternative methodology based on site specific gas capacity considerations this would require further communication and discussion as there are three relevant and variable site specific parameters i.e. load factor, efficiency and power output and these factors cannot be considered in isolation. We re-iterate that the gas connection is not a limiting factor on the CCGT electrical output (gas consumption at maximum load is less than the MHQ).

We calculate that the projected CO2 emission using the NAP Methodology is 1,264,461 tonnes (as detailed in the Appendix attached).

In addition we contend that ESB's NESA allocation priority should not be changed. We reserve our rights and remedies in this regard and reiterate our position in relation to priority as we had detailed in our letter to the Agency of 14th January 2009.

Summary:

The RE contained in the "New Entrant Verification Report NE2-001-R2" is calculated on an incorrect basis. The use of the "Committed Capacity" figure of 19,000,000 kWh is not valid. A Revised RE figure of 1,264,461 tonnes is proposed by ESB (and pro rata for the leap year 2012) based on the NAP Methodology. ESB therefore requests that EPA revise its "New Entrant Verification Report NE2-001-R2".

ESB appreciates that the matters addressed herein, in particular relating to gas capacity are complex and we would welcome an opportunity to clarify any issues at a meeting with the Agency.

Yours Sincerely

Gerry Lawlor
Manager Environmental Services
ESB Power Generation
9/06/2009

Appendix:

- (i) Gas contract issues
- (ii) RE calculations
- (iii) RE Spreadsheet for 2009.

Appendix

(i) Gas contract issues

There have been significant changes in regulations of gas capacity markets since 2007. A shipper is no longer obliged to book annual capacity for a peak day operation. It is now possible to profile one's capacity requirements by contracting for a variety of gas capacity products available in the Irish gas market from a multi-annual product down to within day firm gas capacity product. Booking of capacity is now carried out on line and is instantaneous.

Accordingly the concept of annual committed capacity no longer represents an annual limit on gas supply. This is fundamental to understanding the implications of the provisions in the suite of gas capacity agreements entered into by ESB with BGE.

The EPA has attached large significance to the figure for "Committed Capacity" of 19,000,000 kWh/day referred to in the gas Connection Agreement. However the entirety of the Agreements must be considered.

Attention is drawn to Section 2.2.2 of the BGE connection agreement already submitted to the Agency. This clause cites the Enhanced Pressure Services (EPS) Agreement as a fundamental condition of the agreement. The EPS includes details of the Maximum Hourly Quantity (MHQ) of gas to be transported (Equivalent to 20,392,800 kWh daily).

The "Committed Capacity" is only the **minimum** capacity that ESB is committed to pay BGE for (regardless of how much gas it actually books). The "Committed Capacity" was purely a commercial agreement between ESB and BGE and was developed as a funding mechanism to enable BGE (as owner of the infrastructure) to secure the finances to construct the gas pipe. It is a payment mechanism to fund the infrastructure development costs and has nothing to do with the actual or projected gas usage at the Aghada CCGT plant or indeed the maximum usage quantity or capacity.

Accordingly the statement in the Agency's verification report that "the gas supplier is under no commitment to supply over and above 19,000,000 kWh in any given day" is not correct – BGE is contractually obliged, as part of the Connection Agreement to deliver up to the full MHQ of 849.7 MWh (Equivalent to 20,392,800 kWh daily) of the EPS Agreement to ESB under commercial contracts with any other third party.

As a clarification ESB is the gas supplier and purchases the gas in the UK and ships it over to its stations for its own use. BGE Networks can only restrict our nomination and thereby our allocation at the exit point to the agreed MHQ (849.7 MWh).

Appendix (ii) RE Emission Calculation Spreadsheet

Using NAP Approach to Estimate Emissions				
Net Electrical Output	431.6	MWe	Over lifetime of plant - As cited by Agency	
BNE Efficiency	54.70%	NCV basis		
Thermal Input	789.031	MWth NCV		
CER Capacity Utilisation Factor	90.87%		As cited by Agency	
Hrs per year	8760			
Emission factor for N Gas	201.3199	kg CO2 per MWh		
Annual CO2 Emissions	1,264,461 1,267,925	tons CO2 per annum leap year		
Using ESB own data to Estimate Emissions				
Net Electrical Output	431.6	MWe	Conservative estimate of efficiency in commercial operation over initial years	
ESB Efficiency	57.00%	NCV basis		
Thermal Input	757.193	MWth NCV	Thermal input here is less than MHQ¹	
ESB Capacity Utilisation Factor	92.37%		Historic availability of PBEG CCGT 2001-2005	
Hrs per year	8760			
Emission factor for N Gas	201.3199	kg CO2 per MWh		
Annual CO2 Emissions	1,233,469 1,236,849	tons CO2 per annum leap year		
¹ As the ESB thermal input is less than the MHQ there is no capacity limitation on full load operation for this unit.				
MHQ	849.7	MWth GCV basis	20,392,800	KWh Daily
	767.10916	MWth NCV basis		

(ii) RE Spreadsheet for 2009

CCGT Aghada Commissioning Schedule and Gas Consumption

Based on Schedule 9/2/09 delayed by 6 weeks

Daily Quantity

20,975.6 MWs

Load	Gas Consumption	Daily Quantity MWth	24 hour Gas Consumption MWth	18 hour Gas Consumption MWth	18 hour Equivalent GO	24 hour Equivalent GO
FSNL	25%	20,975.6	5,244	3,933	5,231	6,974
10%	28%	20,975.6	5,873	4,405	5,858	7,811
15%	32%	20,975.6	6,712	5,034	6,695	8,927
20%	36%	20,975.6	7,551	5,663	7,532	10,043
25%	40%	20,975.6	8,390	6,293	8,369	11,159
40%	53%	20,975.6	11,117	8,338	11,089	14,786
50%	60%	20,975.6	12,585	9,439	12,554	16,739
75%	80%	20,975.6	16,780	12,585	16,739	22,318
80%	83%	20,975.6	17,410	13,057	17,366	23,155
100%	100%	20,975.6	20,976	15,732	20,923	27,898

August Commissioning Activities	Dates	Duration (Days)	Gas Consumption %	Daily Hours of Operation	Daily Gas Consumption MWth	Total Gas Consumption MWth	CO2 emissions Tonnes
1st fire and synchronising	31st July - 7th August	8	25	18	3,933	31,463	5,719
Steam blow	14th August - 23rd	10	28	18	4,405	44,049	8,006

September Commissioning Activities		Duration (Days)	Gas Consumption %	Daily Hours of Operation	Daily Gas Consumption MWth	Total Gas Consumption MWth	CO2 emissions Tonnes
Bypass operation		4th - 12th	36	18	5,663	50,971	9,264
Initial combined cycle operation		13th - 23rd	53	24	11,117	122,288	22,226
Gas Oil commissioning		26th - 28th	28	18	5,858	17,575	3,194
Gas Oil Operation		29th - 30th	60	18	12,554	25,108	4,563

(ii) RE Spreadsheet for 2009

October Commissioning Activities			Duration (Days)	Gas Consumption %	Daily Hours of Operation	Daily Gas Consumption MWth	Total Gas Consumption MWth	CO2 emissions Tonnes
Gas Oil Operation		1st - 8th	8	60	18	12,554	100431.1728	18,254
CC testing		9th - 16th	8	80	18	12,585	100,683	18,299
Operational testing		17th - 30th	14	53	18	8,338	116,729	21,216

November Commissioning Activities		Duration (Days)	Gas Consumption %	Daily Hours of Operation	Daily Gas Consumption MWth	Total Gas Consumption MWth	CO2 emissions Tonnes
Further testing	1st - 2nd	2	100	24	20,976	41,951	7,625
Reliability run	3rd - 12th	10	60	24	12,585	125,854	22,874
Reliability run Gas	13th - 22nd	10	80	24	16,780	167,805	30,499
Reliability run GO	23nd - 30th	8	60	24	16,739	133,908	24,338

December Commissioning Activities			Duration (Days)	Gas Consumption %	Daily Hours of Operation	Daily Gas Consumption MWth	Total Gas Consumption MWth	CO2 emissions Tonnes
Performance test		2nd - 9th	8	80	24	16,780	134,244	24,399
Final Plant Checks/ Handover		10th	1	100	24	20,976	20,976	3,812
Commercial Running		11th - 31st	21	100	24	20,976	440,488	80,059

Equivalent gas consumption

Totals		1,674,522	304,347
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Total CO2 for 2009	304,347
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(ii) RE Spreadsheet for 2009

Historical					
2007	kWhrs (thermal)		MWhrs (thermal)	CO2	CO2/MW hr thermal
January	276,315,539		276,316	49,412	0.178825465
February	333,481,497		333,481	59,926	0.179697346
March	296,384,066		296,384	53,058	0.179019003
April	455,604,304		455,604	81,959	0.179889659
May	404,773,055		404,773	74,361	0.183710432
June	218,253,431		218,253	39,880	0.182723075
July	332,392,294		332,392	60,492	0.18198876
August	372,860,925		372,861	68,695	0.184238246
September	345,396,106		345,396	63,614	0.184177608
October	342,478,814		342,479	61,795	0.18043396
November	360,308,227		360,308	64,483	0.178967509
December	259,063,897		259,064	45,802	0.1767983
Total	3,997,312,154		3,997,312	723,477	0.180990947

Weighted average CO2/Mw hr thermal	0.180990947
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Oxidation factor removed	0.181900449
Adjustment from 3.667 to 3.664	0.181751635