



**CASE STUDY
CS ENERGY LTD –
GENERATION
ACCREDITATION**

**Case Study – Accreditation of a combined
cycle gas turbine generation system**

Name of Rule:	Greenhouse Gas Benchmark Rule (Generation) No.2 of 2003
Name of Applicant:	CS Energy Ltd
Name of Generating System:	Swanbank E
Name of Project:	Combined Cycle Gas Turbine Generating System

Part One - Introduction

This case study outlines the process used to assess CS Energy's application for accreditation as a provider of abatement certificates under the NSW Greenhouse Gas Abatement Scheme.

CS Energy's application was made in respect of its Swanbank E generating system, which is connected to the Queensland transmission network. This system started commercial operation in November 2002, and has a nameplate rating of 385MW. It uses a combined cycle gas turbine fuelled by natural gas and coal bed methane.



Part Two – Assessing the Application

2.1 Does the application meet all relevant eligibility criteria?

The first issue the Scheme Administrator considered was whether the applicant meets all the relevant eligibility criteria for accreditation as a provider of NSW Greenhouse Abatement Certificates (NGACs). These criteria are specified in the *Greenhouse Gas Benchmark Rule (Generation) No. 2 of 2003* (the Rule) and the *Electricity Supply (General) Regulation 2001* (the Regulation).

2.1.1 Is the applicant eligible to be an Accredited Abatement Certificate Provider?

Under Clause 5 of the Rule, the Scheme Administrator may accredit:

- (a) *Generators;*
- (b) *Deemed retailers; and/or*
- (c) *Any person entitled to create NGACS under this Rule.*

Clause 6.2 of the Rule defines a Generator as (among other things):

The person who is registered with NEMMCO as the Generator as defined under the National Electricity Code with respect to a Generating System.

CS Energy stated that it is registered with NEMMCO (the National Electricity Market Management Company) as the generator with respect to the Swanbank E generating system. The Scheme Administrator checked the NEMMCO website and confirmed that CS Energy is listed as the registered generator. It was therefore satisfied that CS Energy meets this eligibility requirement.

2.1.2 Does the project meet the connectivity requirements?

Under Clause 5 of the Rule, the Scheme Administrator may accredit a person with respect to a generating system that:

supplies any electricity at a Connection Point connected to the NSW Electricity Network or a transmission or distribution network interconnected with the NSW Electricity Network.

In effect, this means eligible generators are those connected to the main transmission networks of the National Electricity Market (NEM), or to distribution systems currently connected to those networks in NSW, the Australian Capital Territory, Queensland, Victoria and South Australia.

CS Energy stated that the Swanbank E generating system is connected to the NEM's transmission network via a Transmission Node Identifier. It also provided the identifier number and NEMMCO documentation to support this statement.

Based on this information, and the fact that CS Energy is listed as the registered generator on the NEMMCO website, the Scheme Administrator was satisfied that CS Energy meets the connectivity requirements.

2.1.3 Does the project have appropriate metering equipment?

Clause 73G(1)(b) of the Regulation states that the Scheme Administrator may accredit a person with respect to an activity if:

the generating system is equipped with metering equipment approved by the Scheme Administrator.

The Scheme Administrator has indicated that it will determine the appropriateness of metering equipment on a case by case basis but, in doing so, will be guided by the requirements of Chapter 7 of the National Electricity Code.

CS Energy provided a single line diagram of the revenue metering system which stated the accuracy classes of the:

- current transformer;
- voltage transformer; and
- tariff meters.

These accuracy classes meet the requirements set out in Schedule 7.2 of the National Electricity Code.

To be registered with NEMMCO, a generator must meet the metering equipment requirements set out in Schedule 7.2 of the National Electricity Code. As CS Energy is a NEMMCO registered generator, the Scheme Administrator was satisfied that the generating systems has adequate metering equipment.

2.1.4 Are appropriate record keeping arrangements in place?

Clause 73G(1)(c) of the Regulation states that the Scheme Administrator may accredit a person if they have appropriate record keeping arrangements.

To be appropriate, the Scheme Administrator believes these arrangements need to:

- be consistent with its Guide to Record Keeping for Abatement Certificate Providers;
- meet the requirements set out in 73IF of the Regulation; and
- provide sufficient data to support the applicant's proposed approach for calculating the number of NGACs it can create (as outlined in its application form).

CS Energy identified two records that it will use for calculating the number of NGACs it can create:

- NEMMCO Generation meter data; and
- Gas meter data.

The Scheme Administrator was satisfied that CS Energy's record keeping arrangements are capturing the data it needs to calculate the number of NGACs (based on the applicant's calculations for estimating this number provided in another part of its application). However, it considered that CS Energy's description of the processes and controls surrounding these arrangements did not provide it with enough confidence to assess the overall appropriateness of these arrangements. Given that the project is likely to create a sizable number of NGACs per year, it required an audit of CS Energy's record keep systems before making its final assessment. This audit is discussed in Part 3.

2.2 Has the applicant correctly identified the project's generation category and NSW Production Baseline?

The second issue the Scheme Administrator considered is whether the applicant has correctly identified the project's generation category, and therefore its NSW Production Baseline. These factors influence what method the applicant should use to calculate the number of NGACs it can create, and determine what proportion of its electricity production is eligible for creating NGACs.

2.2.1 In which generation category does the project belong?

CS Energy stated that Swanbank E was a Category D Generating System. Clause 7.4 of the Rule defines Category D Generating Systems as:

Those Generating Systems that are not classified as Category A, B or C

The Scheme Administrator was satisfied that Swanbank E cannot be classified as any other category under the Rule because it:

- does not satisfy the definition of Category A Generating Systems under the Emissions Workbook and is not listed in Schedule C of the Rule;
- is not listed in Schedule B, which nominates the Category B Generating Systems; and
- uses fossil fuel, has a nameplate rating of more than 30MW and commenced commercial operation after 1 January 2002 and therefore cannot be classified as Category C.

The Scheme Administrator therefore accepts that Swanbank E is a Category D Generating System.

2.2.2 What is the project's NSW Production Baseline?

Under Clause 8.4, all Category D Generating Systems have a NSW Production Baseline of zero. This means that all Swanbank E's electricity production is eligible for the creation of NGACs.

2.3 Is the applicant's proposed method for calculating NGACs appropriate?

The final issue the Scheme Administrator considered was whether the applicant proposes to use the correct method to calculate the number of NGACs it is eligible to create, and has used this method correctly to estimate this number.

Clause 9.4.1 of the Rule sets out a range of methods that Category D generators can use to calculate the number of NGACs they can create. CS Energy proposed to use the NSW Production Baseline Method, specified under Clause 9.4.1 (a). This method uses Equation 1:

$$\text{Number of NGACs} = \text{Eligible Generation} * (\text{NSW Pool Co-efficient} * \text{Emission Intensity} \\ \text{Adjustment Factor} - \text{Emissions Intensity})$$

As part of this approach, Eligible Generation is calculated using Equation 2. *Emission Intensity* is calculated using Equation 4 ($\text{Emissions Intensity} = \text{Total Greenhouse Gas Emissions} / \text{Net Electricity Generated}$), where Total Greenhouse Gas Emissions is calculated using the equations set out in Clause 10 of the Rule.

The Scheme Administrator reviewed the proposed calculation methodology and was satisfied that Equation 1 is the appropriate method, because CS Energy does not meet the specified conditions for using the other methods set out in Clause 9.4. However, it identified several issues with CS Energy's application of this approach in estimating the number of NGACs it can create.

The most significant issue related to CS Energy's calculation of the project's Total Greenhouse Gas Emissions. Under Clause 10 of the Rule, the value for these emissions depends on the energy content of the fuel that the project uses. In its submission, CS Energy did not provide an explanation or evidence to support its calculation of this energy content.

Because the Total Greenhouse Gas Emissions value has a significant impact on the number of NGACs that can be created, the Scheme Administrator required an audit to assure it that the actual energy content values CS Energy used to determine this value are fair and reasonable. This audit is discussed in Part 3.

Part Three – Obtaining Audit Assurance

3.1 What scope of audit is required prior to approval?

Based on its initial assessment of CS Energy's application, the Scheme Administrator commissioned an audit with the following scope:

The Scheme Administrator requires the auditor to conduct sufficient procedures to enable the auditor to express an opinion on the following matters, that in all material respects:

- *the applicant's record keeping arrangements are considered adequate to:*
 - *meet the requirements of 73IF of the Electricity Supply (General) Regulation 2001;*
 - *be consistent with Guide to Record Keeping for Abatement Certificate Providers; and*
 - *support the creation of NGACs using the approach outlined by the applicant in the application form.*
- *the applicant's calculation of the energy content of the fuel used by the generating system:*
 - *conforms with standard industry practice; and*
 - *is supported by sufficient and appropriate evidence*

If relevant, the Scheme Administrator requires the auditor to recommend to it any conditions of accreditation to which, in the auditor's opinion, the applicant should be subject.

The Scheme Administrator requested that three members of the Audit and Technical Services Panel provide a quote to perform this audit, including a detailed draft of the scope of work involved. Based on these quotes, it selected an auditor and gained CS Energy approval.

CS Energy was required to meet the cost of this audit, which was around \$9,000.

3.2 What were the results of this audit?

The auditor conducted a series of desktop and on-site tasks. Its findings were as follows:

1. *Record keeping arrangements are considered adequate to:*
 - *meet the requirements of 73IF of the Electricity Supply (General) Regulation 2001;*
 - *be consistent with the Guide to Record Keeping for Abatement Certificate Providers; and*
 - *support the creation of NGACs using the approach outlined by the applicant in the application form and demonstrates the ability to achieve on-going compliance with the Rule for the purpose of certificate creation.*

2. *Calculation of the energy content of the fuel used by the generating system:*
 - *conforms with standard industry practice, and*
 - *is supported by sufficient and appropriate evidence.*

3. *There are no conditions of accreditation that are relevant for CS Energy with respect to Swanbank E Generating System.*

Part Four – Making a Final Decision

4.1 Did the audit provide the necessary assurance?

The auditor's findings assured the Scheme Administrator that:

- the applicant had sufficient record keeping arrangements to support the creation of NGACs and to be consistent with the Guide to Record Keeping; and
- the energy content values used in the applicant's proposed calculation methodology were fair and reasonable.

The Scheme Administrator therefore decided to accredit CS Energy as a provider of NGACs in respect of the Swanbank E generating system.

4.2 What special conditions and on-going audit and reporting conditions should accreditation be subject to?

In addition to the standard accreditation conditions applying to generators, the Scheme Administrator imposed two special accreditation conditions. These conditions require CS Energy to:

- undertake a pre-registration audit to the Scheme Administrator's satisfaction; and
- provide assurance that it is not participating the Queensland 13% Gas Scheme.

Before CS Energy can register its first NGACs in relation to Swanbank E, it must commission an audit to assure the Scheme Administrator that the data and methodology it will use to create NGACs are correctly applied, and to confirm how many NGACs it will create. The Scheme Administrator believes this audit is necessary to manage the risks posed to the Scheme by the large number of NGACs CS Energy expects to create. If the pre-registration audit is successful, it will consider allowing CS Energy to undergo spot audits only and rely on CS Energy reporting annually on its compliance.

After 1 January 2005, CS Energy may be eligible to create Gas Electricity Certificates (GECs) under the Queensland 13% Gas Scheme as well as NGACs under the NSW Scheme. The NSW Scheme does not permit NGACs to be created where a benefit has been obtained under another mandatory greenhouse gas scheme. Therefore, if CS Energy wishes to register NGACs in relation to abatement occurring on or after 1 January 2005, the Scheme Administrator requires it to provide a statutory declaration stating that it is not creating GECs under the Queensland 13% Gas Scheme in respect of that abatement.

Part Five - Summary

Assessment of Application		Accreditation audit scope and findings	Accreditation conditions
Project Description	<ul style="list-style-type: none"> ■ Combined cycle gas turbine using coal bed methane and natural gas. ■ Nameplate rating 385 MW. ■ Commenced commercial operation November 2002. 	<ul style="list-style-type: none"> ■ Audit assurance sought over <ul style="list-style-type: none"> - record keeping arrangements; and - energy content of the fuel used by the generating system. ■ Audit results satisfactory 	<ul style="list-style-type: none"> ■ General conditions of accreditation for Generators ■ Audit report required prior to registration of certificates ■ Statutory declaration required prior to registration of certificates from 2005
Eligibility as the Generator	<ul style="list-style-type: none"> ■ Eligible as the Generator, as CS Energy is registered with NEMMCO as the generator. 		
Connectivity and supply of electricity	<ul style="list-style-type: none"> ■ Connected to the NEM via transmission node. 		
Category of Generating System	<ul style="list-style-type: none"> ■ Category D. 		
NSW Production Baseline	<ul style="list-style-type: none"> ■ All Category D Generating Systems have a NSW Production Baseline of zero. 		
NGAC calculation methodology	<p>NSW Production Baseline Method, ie:</p> <ul style="list-style-type: none"> ▪ Equation 1 used to calculate number of NGACS; ▪ Equation 2 used to calculate eligible generation; ▪ Equation 4 used to calculate emissions intensity; and ▪ Equations 7, 8, 9, 10 and 11 used to calculate total greenhouse gas emissions. 		

Assessment of Application	Accreditation audit scope and findings	Accreditation conditions
Metering	<ul style="list-style-type: none"> ■ Current transformer, voltage transformer and tariff meters have accuracy classes consistent with Schedule 7.2 of the National Electricity Code. ■ As CS Energy is a NEMMCO registered generator, the metering arrangements of the generating system are accepted as adequate. 	
Record Keeping Arrangements	<p>CS Energy identified two records relevant in calculating the number of NGACS created:</p> <ul style="list-style-type: none"> - Meter data for NEMMCO generation; and - Gas meter data. <p>Established by audit that record keeping arrangements are adequate.</p>	

Part Six – Terms and Definitions

Term	Definition
Abatement Certificate	A certificate represents one tonne of carbon dioxide equivalent of greenhouse gas emissions, the release of which into the atmosphere was avoided, or which was removed from the atmosphere by the activity in respect of which it was created
Abator	The person contractually liable for the energy consumed in the installation or site that is the subject of a greenhouse abatement activity, or the person nominated to be the abator in respect of greenhouse abatement activity by written agreement. This particularly applies for demand side abatement activities
Accreditation	Authorisation given by the Scheme Administrator to an abatement certificate provider to create abatement certificates in respect of a specified activity, once eligibility against the Greenhouse Gas Benchmark Rules is satisfied
NSW Pool Coefficient	The average emissions per unit of electricity delivered at transmission nodes for all generating systems supplying the notional NSW pool, as determined in accordance with the Compliance Rule; this factor is announced by the Tribunal by 30 November each year.
Demand side abatement	Activities that reduce emissions by reducing electricity consumption through increased efficiency of electricity consumption, eligible on-site electricity generation, and substitution of sources of energy for electricity or substitution of electricity for other sources of energy
Financial Assurance	This may be required by the Scheme Administrator to secure or guarantee an abatement certificate provider's compliance with the surrender of any certificates against any breach of accreditation conditions or the improper creation of certificates
Greenhouse gas	A generic term for gases such as carbon dioxide, methane, nitrous oxide, perfluorocarbon or sulphur hexafluoride, as defined in the Act and the Regulation
Greenhouse Gas Abatement Program (GGAP)	An environmental initiative administered by the Commonwealth Government's Australian Greenhouse Office to reduce Australia's net greenhouse gas emissions by supporting activities that are likely to result in substantial emission reductions or substantial sink enhancement
NGAC	A NSW Greenhouse Abatement Certificate; a transferable certificate in the scheme
Office of the Renewable Energy Regulator (ORER)	The Commonwealth Regulator of the Mandatory Renewable Energy Target Scheme
Scheme administrator	The body administering functions such as accrediting abatement certificate providers, verifying abatement activity and maintaining a registry of certificates; this is IPART, in the first instance

For a complete list of terms refer to the Glossary of terms on the Scheme website.