VALIDATION REPORT

EcoSecurities Group PLC

Combined Cycle at Loma de la Lata Thermo Unit Project

SGS Climate Change Programme
SGS United Kingdom Ltd
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Date of Issue:	**Project Number:**
06-07-2010	CDM.VAL1005 BR10
Project Title:	
Combined Cycle at Loma de la Lata Thermo Unit Project	
Organisation:	**Client:**
SGS United Kingdom Limited	EcoSecurities Group PLC
Publication of PDD for Stakeholders Consultation	
Commenting Period:	06/11/2008 – 05/12/2008
First PDD Version and Date:	Version 1, 24/10/2008
Final PDD Version and Date:	Version 2.1, 01/06/2010

Summary:

EcoSecurities Group PLC has commissioned SGS to perform the validation of the project: Combined Cycle at Loma de la Lata Thermo Unit Project.

Methodology Used: ACM0007 Baseline methodology for conversion from single cycle to combined cycle power generation.

Version and Date: version 3 approved in EB35.

The scope of the validation is defined as an independent and objective review of the project design document, the project's baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against Kyoto Protocol requirements, UNFCCC rules and applicable CDM requirements.

The report is based on the assessment of the project design document undertaken through stakeholder consultations, application of standard auditing techniques including but not limited to document reviews, follow up actions (e.g. site visit, telephone or e-mail interviews) and also the review of the applicable approved methodology and underlying formulae and calculations.

The report and the annexed validation describes a total of 9 findings which include:

- 3 Corrective Action Requests (CARs);
- 4 Clarification Requests (CLs);
- 2 Forward Action Requests (FARs); and

All findings have been closed satisfactorily and the project will be recommended to the CDM Executive Board with a request for registration

A new version 2.1 of the PDD dated 01/06/2010 was issued to address the comments raised during the incompleteness check.

Subject:			**Document Distribution**
CDM Validation			
Validation Team:			
Fabian Gonçalves – Lead Assessor Jose Abella – Local Assessor Sandeep Kurmi – Sectoral Expert (1)			☒ No Distribution (without permission from the Client or responsible organisational unit)
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Authorised Signatory:			
Name: Siddharth Yadav Date: 23rd August 2010			☐ Unrestricted Distribution
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Abbreviations

CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CL	Clarification Request
COP/MOP	Conference of Parties / Meeting of Parties
DOE	Designated Operational Entity
DNA	Designated National Authority
EB	CDM Executive Board
FAR	Forward Action Request
GHG	Greenhouse Gas(es)
IPCC	Intergovernmental Panel on Climate Change
KP	Kyoto Protocol
PDD	Project Design Document
SGS	SGS United Kingdom Limited
UNFCCC	United Nations Framework Convention on Climate Change

Table of Content

Annexes:

1. Validation Opinion

SGS United Kingdom Ltd has been contracted by EcoSecurities Group PLC to perform a validation of the project: "Combined Cycle at Loma de la Lata Thermo Unit Project" in Argentina.

The validation was performed in accordance with the UNFCCC criteria for the Clean Development Mechanism (CDM), Validation and Verification Manual (VVM) version 1 and host country criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

By the conversion of the existing plant into a combined cycle generation plant by adding three Heat Recovery Steam Generators that will capture the heat from the exhaust gases currently released to the atmosphere by the three gas turbines and use it to produce steam the project activity will result in reductions of greenhouse gas (GHG) emissions that are real, measurable and give long-term benefits to the mitigation of climate change.

In our opinion, the project meets all relevant UNFCCC, CDM criteria and all relevant host country criteria. The project correctly applies methodology ACM0007 version 3. It is demonstrated that the project is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity.

The total emission reductions from the project are estimated to be 5, 728,900 tCO2e over a 10 years crediting period during 01/07/2010 to 30/06/2020, averaging 572,890t of CO2e annually. The emission reduction forecast has been checked and it is deemed likely that the stated amount is achieved given the underlying assumptions do not change.

The project will hence be recommended by SGS for registration with the UNFCCC.

Signed on Behalf of the Validation Body by Authorized Signatory

Signature: 

Name: Siddharth Yadav

Date: 23rd August 2010

2. Introduction

2.1 Objective

EcoSecurities Group PLC has commissioned SGS to perform the validation of the project: Combined Cycle at Loma de la Lata Thermo Unit Project in Argentina with regard to the relevant requirements for Clean Development Mechanism (CDM) project activities. The purpose of a validation is to have an independent third party assess the project design. In particular, the project's baseline, the monitoring plan (MP) and the project's compliance with relevant UNFCCC and host country criteria are validated in order to confirm that the project design as documented is sound and reasonable and meets the stated requirements and identified criteria. Validation is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of certified emission reduction (CER). UNFCCC criteria refer to the Kyoto Protocol (KP) criteria and the CDM rules and modalities and related decisions by the COP/MOP and the CDM Executive Board (EB).

2.2 Scope

The scope of the validation is defined as an independent and objective review of the project design document, the project's baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against Kyoto Protocol requirements, UNFCCC rules and associated interpretations. SGS has employed a risk-based approach in the validation, focusing on the identification of significant risks for project implementation and the generation of CERs.

The validation is not meant to provide any consulting towards the Client. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the project design.

2.3 GHG Project Description

Central Térmica Loma de la Lata is an open cycle thermal plant consisting of three natural gas turbines. The gross installed capacity is 369.93 MW (Ref. 19).

The proposed project consists in the conversion of the existing plant into a combined cycle generation plant adding three Heat Recovery Steam Generators (HRSG) that will capture the heat from the exhaust gases released to the atmosphere. The steam produced on the HRSGs will be used to drive a 175.73 MW gross capacity steam turbine (Ref. 15).

2.4 The Names and Roles of the Validation Team Members

Name	Role
Fabian Gonçalves	Lead Assessor
José Abella	Local Assessor

Sandeep Kurmi – Sectoral Expert for Scope 1

Aurea Nardelli – Technical Reviewer

3. Methodology

3.1 Review of CDM-PDD and Additional Documentation

The validation is performed primarily as a document review of the publicly available project design document version 1 dated 24/10/2008 and the subsequent versions 1.1, dated 16/01/2009, version 2 dated 24/07/2009 and version 2.1 dated 01/06/2010 (final version). The assessment is performed by trained assessors using a validation protocol (Annex A.2, Table 2).

The site visit was performed on 24/11/2008 – 25/11/2008. The results are summarized in a separate checklist as annex 1of this report.

Lead and local staff was also involved to confirm other statements in the PDD through review of documents direct contacts with key stakeholders (including the project developers and Government and NGO representatives in the host country).

3.2 Use of the Validation Protocol

The validation protocol used for the assessment is designed in accordance with the Validation and Verification Manual, version 1, dated 28th November 2008. **The VVM version 1.2 came into force after EB55 and the Validation Report was checked against the new requirements.**

It serves the following purposes:

- it organises, details and clarifies the requirements the project is expected to meet; and
- it documents both how a particular requirement has been validated and the result of the validation (reporting).

The validation protocol consists of several tables. The different columns in these tables are described below.

Checklist Question	Ref ID	Means of Verification (MoV)	Comment	Draft and/or Final Conclusion
The various requirements are linked to checklist questions the project should meet.	Lists any references and sources used in the validation process. Full details are provided in the table at the bottom of the checklist.	Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.	The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.	This is either acceptable based on evidence provided (Y), or a Corrective Action Request (CAR) due to non-compliance with the checklist question (See below). Clarification Request (CL) is used when the validation team has identified a need for further clarification.

The completed validation protocol for this project is attached as Annex A.1 to this report

3.3 Findings

As an outcome of the validation process, the team can raise different types of findings

A Clarification Request (CL) is raised if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met

Where a non-conformance arises the Assessor shall raise a **Corrective Action Request (CAR).** A CAR

is issued, where:

I. The project participants have made mistakes that will influence the ability of the project activity to achieve real, measurable additional emission reductions;

II. The CDM requirements have not been met;
III. There is a risk that emission reductions cannot be monitored or calculated.

The validation process may be halted until this information has been made available to the assessors' satisfaction. Failure to address a CL may result in a CAR. Information or clarifications provided as a result of a CL may also lead to a CAR.

A Forward Action Request (FAR) is raised during validation to highlight issues related to project implementation that require review during the first verification of the project activity. FARs shall not relate to the CDM requirements for registration.

Corrective Action Requests and Clarification Requests are raised in the draft validation protocol and detailed in a separate form (Annex A.3). In this form, the Project Developer is given the opportunity to "close" outstanding CARs and respond to CLs and FARs.

3.4 Internal Quality Control

Following the completion of the assessment process and a recommendation by the Assessment team, all documentation will be forwarded to a Technical Reviewer. The task of the Technical Reviewer is to check that all procedures have been followed and all conclusions are justified. The Technical Reviewer will either accept or reject the recommendation made by the assessment team. Findings can be raised at this stage and client must address them within agreed timeline.

4. Validation Findings

4.1 Approval

The letter of approval from Argentina was issued on 19/03/2009 for the "Combined Cycle at Loma de la Lata Thermo Unit Project" and a new letter of approval was issued on 21/05/2010 authorizing Central Térmica Loma de la Lata S.A. as the project participant in Argentina (Ref. 7b).

The letter of approval from United Kingdom of Great Britain and Northern Ireland was issued on 29/05/2009 (Ref. 7a).

The letters were received from the PP directly and was confirmed from the list of projects that have been granted. The UK and Argentina LoA is available at the following websites:

UK:
http://www.decc.gov.uk/assets/decc/what%20we%20do/global%20climate%20change%20and%20energy/tackling%20climate%20change/intl_strategy/mechanisms/clean_dev/1_20100527094605_e_@@_cdmukapprovedprojects.pdf

Argentina:

http://www.ambiente.gob.ar/?idarticulo=6304

Argentina and United Kingdom of Great Britain and Northern Ireland are Party of the Kyoto Protocol.

The letter from both Parties refer to the CDM project activity that will be submitted for registration. The authenticity of the LoA is considered as genuine, as all information is consistent with that presented in the PDD (Ref. 1) and UNFCCC website.

4.2 Participation Requirements

Argentina is listed as the non-Annex-I Party, has ratified the protocol on 28th September 2001 and is allowed to participate (http://maindb.unfccc.int/public/country.pl?country=AR).
United Kingdom of Great Britain and Northern Ireland is listed as Annex I Party, has ratified the protocol on 31st May 2002 and is allowed to participate (http://maindb.unfccc.int/public/country.pl?country=GB).

The name of the project participants between the GSC PDD and the PDD submitted for registration is different. In the GSC PDD version 1 the project participants are:

- Pampa Energía S.A.

- EcoSecurities Group PLC.

The project participants in the PDD version 2.1 submitted for registration are:

- Central Térmica Loma de la Lata S.A.

- EcoSecurities Group PLC

The information supplied in the PDD section A.3. is consistent with further chapters of the PDD (ref. 1). The PP (Central Térmica Loma de la Lata S.A) identified in version 2.1 of the PDD was the same PP that was identified in version 1 of the PDD (Pampa Energía S.A), and the only difference related to the company's change of name (ref. 31).The document ref. 31 is the board meeting dated 11/02/2008, inspected and registered on 06/08/2008 by the Ministry of Justice in Argentina which explain the change of name from Pampa Energía S.A. to Central Térmica Loma de la Lata S.A.

4.3 Project Design Document including Project Description

The title "Combined Cycle at Loma de la Lata Thermo Unit Project" identifies the unique CDM project activity.

The description of the project is correct and transparent. The information is available on the purpose of the project activity, type of technology used and the contribution of the project to sustainable development.

The technology of this combined cycle plant will result in a significantly better performance. The most important parts of the technology come mainly from developed countries, representing a technology transfer process and its consolidation in the host country. The proposed project consists in the conversion of the existing plant into a combined cycle generation plant adding three Heat Recovery Steam Generators that will capture the heat from the exhaust gases released to the atmosphere.

The project is located in Neuquén Province, Department of Confluencia, Provincial Road 51, km 85, Portezuelo Grande, Argentina.

Latitude: S 38º 30'46.47"

Longitude: W 68º 36'19.81"

The category of the proposed project activity is correctly identified:
Sectoral Category 1 - Energy Industries

During the site visit, it was observed that the civil works were ongoing: preparation for the installation of the new Steam Generator. It was also verified in the chronogram that the forecast was to start the installation in September 2009.

The project description in the PDD (ref. 1) was checked during the on site assessment conducted from 24/11/2008 to 25/11/2008 with the following measures:

1) Project site observation;
2) Interviews with the project participant and local stakeholders as shown in section 6 (list of persons interviewed).

As the result of the above steps, the DOE acknowledges that project description in the PDD (ref. 1) is complete and accurately defines the nature and technical aspects of the project activity.

No public funding is being used for the project activity.

From the information provided by the Client in the PDD version 2.1 the start date of the project activity stated is 06/09/2007. This is the date of the contract between Pampa Energia S.A. and Isolux - Corsán for the design, engineering, equipments provision, installation, civil works and tests required for the conversion of Loma de la Lata to Combined Cycle (Ref. 15).

The operational lifetime of the project is stated as 17 years.

As described above, the DOE confirms that the PDD (ref.1) complies with use of the appropriate format (CDM PDD version 3) and is described based on appropriate tools, guidelines, manual and guidance which are specified and requested by the CDM procedures.

4.4 Applicability of selected methodology to the project activity

The project uses approved methodology: ACM0007 – Consolidated methodology for conversion from single cycle power generation, version 03.

Methodologies and tools versions are still valid and applicable to the project activity:

ACM0007 version 3;

Tool to calculate the emission factor for an electricity system, Version 02;

Combined tool to identify the baseline scenario and demonstrate additionality, Version 02.2.

The project meets the following applicability conditions of ACM0007 version 3:

- The plant is operational since 1994 and consists of three General Electric natural gas turbines operating in an open cycle, with an installed capacity of 123.31 MW each.
- There was no previous use for the waste heat generated onsite and the same was not utilizable for any other purpose which is verified by visual inspection during site visit and checking equipments specification. As observed during site visit no equipment for heat recovery had been installed.
- The average lifetime of the gas turbine is more than 25 years, according to the manufacturer.

- The proposed project will utilize the exhaust heat of the existing gas turbines but will not involve any upgrade or modification of the gas turbines.
- To calculate the emission factor the actual generation and fuel consumption data necessary for the calculation was obtained from the Wholesale Electricity Market Operator (CAMMESA) website and presented in the ex-ante grid emission factor 2006-2008 spreadsheet (Ref. 16).

The methodology ACM0007 version 3 is applicable where the project activity does not increase the lifetime of the existing gas turbine or engine during the crediting period. CAR#3 was raised to provide documented evidence of the lifetime of the equipments.

The open cycle plant is operational since 1994, with three General Electric natural gas turbines operating with a thermal efficiency of 34% (calculated using data from 2003-2008). The proposed project will not upgrade or modify the existing gas turbines that would impact in the operational lifetime. The lifetime of the combined cycle is greater than the 10 year crediting period. SGS verified that the lifetime of the gas turbines is 17 years since the project operation start date. CAR# 3 was closed out.

As described in the CAR #3 above and verified during the validation assessment, the proposed project will not involve any upgrade or modification to the existing gas turbines that would impact in their technical operational lifetime. The open cycle plant is in operation since 1994 and until 2008 (PDD preparation and site visit) the gas turbine # 3 is the one that has operated more time (64,339 h). According to the manufacturer (ref. 14), the inspection of all rotor components is required when the accumulated rotor starts or operation hours reach the inspection limit. When no recommendations have been made, rotor inspection should be performed at 5,000 factored starts or 200,000 factored hours. This interval indicates the work life of the rotor. For the open cycle plant Loma de la Lata the historical operation and the expected operation in combined cycle, the limited factor for the rotor inspection is 200,000 h (ref. 14). According with the data above, the remaining lifetime of the gas turbines rotors is at least 131,000 h (17 years) based on the ref. 14 which presents the current operation hour of the equipments. The lifetime of the combined cycle is greater than the 10 year crediting period and are found in accordance with EB50 Annex 15 where the remaining lifetime was determined according to the manufacturer information (ref. 14). The equipments lifetime is also in accordance with the default values provided in the EB50 Annex 15 where the lifetime of gas turbines above 50MW capacity is 200,000 h.

The DOE also confirms that there are no sources of emissions involve in the project activity that contribute to more than 1% of the total annual emission reductions by the project activity and are not being addressed by the methodology applied (ref. 2).

4.5 Project Boundary

The project boundary is the spatial extent of the project boundary and encompasses the power plant at the project site and all power plants connected physically to the electricity system that the CDM project power plant is connected to.

The gases included in the baseline scenario and project scenario are according to the ACM0007 version 3 (ref. 2). The CO2 emissions from the on-site fuel consumption of fossil fuels for operation of the gas turbine or engine were included.

The CO2 emissions from fossil fuel fired power plants connected to the electricity system in the operating and build margin; and the CO2 emissions from operation of Project power plant in open cycle mode were included.

The spatial extent of the Project electricity system, as defined in the “Tool to calculate the emission factor for an electricity system”, Version 02 comprehends the project plant and other plants connected to the Argentinean grid.

4.6 Baseline Selection and Additionality

All plausible alternative options to the project activity were identified and a detailed analysis was performed on each option according to the steps highlighted in the “Combined Tool to identify the baseline scenario and demonstrate additionality”, version 02.2. The determination of the chosen baseline is transparent.

To select the baseline scenario the project applied the "Combined Tool". The following alternative scenarios were discussed:

- Scenario 1 - Continuation of current practice: this scenario is not prevented by any barrier because the current practice does not require investments, new equipments or development of a new technology; SGS verified that 11% of the Argentinean grid is generated through thermal open cycle plants (ref. 10.4).

- Scenario 2 - Investment in a new fossil fuel plant of annual output equivalent to the proposed project: this scenario faces investment barriers because of the current economical condition in Argentina. The fact that raising capital for new fossil fuel plants in Argentina has became a difficult task for private investors. Identified reasons for this problem are the adoption of adverse tariff restrictions that have impaired the results of Power Companies in the country and reduced the ability to finance their working capital; the significant fluctuations in the Argentine Peso against the U.S. dollar; and the limited access to international credit markets to finance the operation and growth strategies in Argentina, as the restructuring, in 2005, of part of the Argentinean debt that had been in default since 2001. Related to the technological barrier there are uncertainties in the gas market in Argentina that impact the development of new gas thermal plants. The problems are the need to import higher gas volumes at a price higher than the local supply; the redirecting of gas to attend specific demands; and the shortage of gas transportation capacity to carry contracted gas supply from the basins to the plant's site (ref. 32).

- Scenario 3 - Commercial renewable power plant of equivalent capacity to the proposed Project not undertaken as a CDM activity: this scenario faces investment and technological barrier. The construction of a hydropower plant with the same capacity requires significantly higher investment costs relative to the Project activity. According to FRACCHIA (2007), the installation cost of 1 MW is at least two times higher for the case of hydro plants in Argentina (FRACCHIA, L.E. "Energía 2007". IAE. Universidad Austral, July, 2007, Ref. 22). The current regulatory and economical conditions of the energy sector in Argentina are the main reason for investors' lack of interest in hydro Projects in Argentina (ref. 22). The region where the project is located has a potential for hydro plants (ref. 27) but were never implemented. Also the project owner does not have the capacity to construct and develop hydro plants (ref. 35).

- Scenario 4 - Project activity implemented as a non-CDM Project: this scenario faces investment and technological barrier. The energy sector in Argentina faces difficulties to attract investments to invest in new plants or in the upgrading of existing plants. No relevant capacity additions have been made in Argentina since 2002 (ref. 10.4). Regarding technological barrier, it is related to equipments. The required equipments for the installation of the combined cycle system have to be imported from foreign companies (Siemens, VOGT, Bachman and Foster). The proposed project activity is the first combined-cycle operated by the project owner (ref. 35). Combined cycle plants are designed to operate at base load with scarce capability of adjusting power and the operational turndown can trigger the production of heat because the temperatures reduces rapidly compromising the combustion and efficiency (ref. 1). The project aims to sell the additional generated energy through the framework of the Energía Plus program (Ref.12). Besides the program provide a safer environment for energy trading the uncertainties related to the natural gas supply and the amount of electricity to be delivered to the grid persist (Ref.12).

According to the barrier analysis presented in the PDD the alternative scenario 1 (Continuation of current practices) is the only one scenario not prevented by any barrier. In the case that the alternative not prevented by any barrier is not the proposed project activity undertaken without being registered as a CDM project activity, then this alternative scenario was identified as the baseline scenario. This is in accordance with Combined Tool.

The investment in a new fossil fuel plant (scenario 2), or the construction of a hydropower plant (scenario 3) or the project activity implemented as a non-CDM Project (scenario 4) faced some barriers (investment, technological and common practice) due to the conditions of the energy sector in Argentina and the characteristics of the PP.

The selection of the baseline from the possible scenarios is consistent with available data. All key assumptions are explained and information sources are clearly referenced. Sources were checked to ensure information contained in the PDD is correct. Information was cross checked by confirming the assumptions from other sources (Secretariat of Energy, Legal Framework: http://energia3.mecon.gov.ar/contenidos/verpagina.php?idpagina=882 (which are the normative for the studies and management to enhance the environmental control in the sector, consulted on 08/09/2008 and Secretariat of Energy, Resolution S.E. 182/95:

http://energia3.mecon.gov.ar/contenidos/verpagina.php?idpagina=889 (which are the conditions and requirements for the emissions resulted from the thermal power plants, consulted on 08/09/2008).

In the absence of the proposed project activity the electricity to meet the demand in the grid will be generated by the operation of the existing power plant in open cycle mode, the operation of existing plants connected to the grid and the addition of new generation sources to the grid (Ref.10.4). The installed capacity in Argentina in the past 5 years were analysed (Ref. 10.4, http://energia3.mecon.gov.ar/contenidos/archivos/Reorganizacion/informacion_del_mercado/publicaciones/mercado_electrico/PYE.xls), and considered in the barrier analysis. The load factor calculated for the proposed project activity was defined based on the third party company "Mercados Energéticos Consultores" contracted by the PP to evaluate the future evolution of the electricity market and determine the economic electricity generation of the project activity. The study dated on May 2007 (report MH 1005 - PH 230-06, ref. 27) was based on the same dispatch models utilized by CAMMESA. In Argentina CAMMESA (Wholesale Electric Market Administration Company) coordinates the power plants dispatch (merit order dispatch), the plants with the lowest price to supply power or higher efficiency for the same type of fuel are dispatched first. According with the merit order criteria of CAMMESA, the proposed project activity will have a better ranked dispatch than the baseline (open cycle).
The conclusion was that the project activity will operate at full dispatch if there is natural gas available. The estimated load factor for the combined cycle is 89.9% (ref. 27). Based on this report and applying a security margin, the project developer considered a load factor of 86%. Due to the project activity there is an increase of the natural gas consumed to operate the gas turbines. No supplementary natural gas is consumed by the Heat Recovery Steam Generator to operate the steam turbine.
Additionally it is important to mention that the average load factor of the open cycle considering the five years previous to start of the project was 51% (increased from 24% in 2003 up to 68% in 2008) as result of previous years of country economic crisis. The average of the last five years was utilized to conservatively estimate the baseline emission of the project.

The additionality discussion is based on barrier analysis. The PDD version 1 presents some information about investment analysis. In the case of using investment analysis the information should be presented according to the "Tool" (Combined tool to identify the baseline scenario and demonstrate additionality, version 2.2). CAR#1 was raised.

The revised PDD version 2 follows correctly the Combined Tool. The barrier analysis was discussed showing that the baseline scenario is the continuation of the current practice. Section B.5 presents the additional explanation about how the registration of the CDM project will alleviate the barrier that prevents the project activity. Data not related to the additionality discussion was excluded from the PDD. CAR#1 was closed out.

4.6.1 Additionality

The project uses the latest version of the "Combined tool to identify the baseline scenario and demonstrate additionality" (Version 2.2).

The EB50 Annex 13 was used by the DOE when assessing the barrier analysis presented in the PDD.

The project, being implemented without CDM, faces investment and technological barriers.

According to the VVM para 114, issues that have a direct impact on the financial returns of the project activity cannot be considered barrier and shall be assessed by investment analysis and this does not refer to risk related barrier or barriers related to the unavailability of sources of finance for the project activity. The barrier analysis presented in the PDD demonstrate that the baseline scenario is the continuation of the current practice because is the only scenario not prevented by any barrier. The "investment" barrier mentioned in the discussion above is related to the current economical condition in the country (Argentina) where the energy sector faces difficulties to attract investments in new plants or in the upgrading of existing plants.

Section B.4 of the PDD describes the barriers that prevented the implementation of the project. The general context of the electricity sector in Argentina faced continuous financial and operational difficulties. During 2001 and 2002, Argentina experienced a period of severe political, economical and social crisis. The government issued the Public Emergency law 23.697(ref.32), which implied to:

- Convert electricity, transmission and distribution tariffs from US$ to Argentine Pesos;

- Freeze all regulated transmission and distribution tariffs.

Furthermore, through several resolutions (ref. 10, ref.10.2, ref. 32), the government changed the regulatory framework in which Caps on the energy tariffs and Retention of marginal profits were imposed (ref. 10.2, Resolution 406/2003, dated 08/09/2003). According to Resolution SE 406/03 (ref. 10.2, http://www.enre.gov.ar) the generating companies should be reimbursed first for their variable operational costs and secondly their profit on spot transactions, if CAMMESA has available funds. If not, these profits would be withheld by CAMMESA for future payment. The result of the structural difficulties faced by the electricity sector in Argentina, investments in either conversions or construction has been deterred.

The aforementioned conditions resulted in low energy prices, which together with the political and economic situation in Argentina made the investments by national and international investors a lot riskier. Under these conditions there is no incentive for investment in new energy generation plants in Argentina because low energy tariffs do not allow for profit. Moreover, the marginal costs further disincentive efficiency projects because the price paid to more efficient plants is lower than what is paid to inefficient ones.

Based on the arguments aforementioned, it is clear that since these conditions apply to the entire Argentinean energy sector (based on the resolutions of the sector in Argentina), both scenarios 3 and 4 face a financial barrier.

Furthermore, the construction of a new hydro plant (scenario 3) would require higher investments (ref. 22) than scenario 4 and would not be able to benefit from the special price scheme established in the aim of the Energia Plus Program (ref. 12), as the self-generation by the industrial sector and electricity cogeneration would, thus making this scenario even less likely. The fact that 70% of the provinces energy is being generated by hydro plants, does not change the scenario that the Project Developer faced when the decision to convert the open cycle generation plant to a combined cycle generation plant, since all the hydropower plants commissioned in Neuquén (province where the project is located) and in Argentina were commissioned prior the Argentine economic crisis of 2000-2002 (ref. 22, 33). These hydro plants were built before Argentina entered the economic crisis. This was evidenced by the fact that hydrological energy generation in Argentina related to the total generation declined from 2002 to 2007 by 15% (ref. 34) and additionally no important capacity addition was made in the same period.

The same applies to the 12 combined cycle plants in Argentina (ref. 24, 25). They were all commissioned prior to the regulatory framework modification that the government conducted in 2002 due to the economic crisis (ref. 25). Thus, before these measures, the conversion from open-cycle to combined cycle plants was financially attractive, but afterwards, the situation in Argentina changed, the scenario or conditions that the project developer faced were completely different. Therefore, these 12 CCGT plants are not similar to the proposed project activity and further CCGT projects will only happen if either government's support is given (for example, CT. Belgrano and C.T San Martin were financed by FONINVEMEN) or through CDM benefits.

The conclusion is that the financial barrier prevent scenario 3 and 4 from occurring. The following arguments were also crosschecked to assess the additionality of the project activity.

- The technology used in the proposed project is not domestically available: All equipment required for the installation of the combined cycle system has to be imported from foreign companies (Siemens, VOGT, Bachman and Foster). Furthermore, in spite of the presence of a certain number of CCGT plants in the country, the design engineering expertise needed to set up combined cycle systems still has to be provided by the manufacturing companies (ref. 25). In addition, as this is not only the first combined-cycle Project of Central Térmica Loma de la Lata S.A. but also the first one operated by Pampa, a specific training course will be developed in order to guarantee a high quality operation and maintenance. Pampa Energia has 5 generation plants: 2 hydro plants and 3 thermal open cycle plants. This information was checked during the site visit through interview with project participants and can be confirmed in the website (www.pampaenergia.com.ar).

Gas turbine combined-cycle power plants are usually designed to operate at full capacity all the time. Operation reduction may trigger the production of heat as exhaust temperatures falls off rapidly. The preference to operate at full capacity is because of the high thermal efficiency and low air emissions that the combined-cycle gas turbines have. Under this situation, the thermodynamic quality of the combined-cycle sequential combustion would be compromised. Variation in the gas supply to the turbine decrease the efficiency, also, steam temperature can rapidly fall below the recommended limit for the steam turbine. The reduction of the energy delivered to the grid in the aim of the Energía Plus program compromises the

economic benefits of the project representing a disincentive to energy private investors in Argentina (Ref. 12, www.pampaenergia.com.ar).

- There are tariff restrictions in the host country:

Law 25561, Public Emergency and Reform of the Exchange Regime (Chapter 2, Article 8; January 8, 2002): Conversion of electricity prices and transmission and distribution tariffs from their original USD values to Pesos at a rate of Argentine Pesos 1.00 per U.S. $1.00 (ref. 10). This law had a negative impact in the proposed project and was applicable at the time of decision was taken;

Resolution SE 240/2003, introduction of caps on the spot market price (120 Argentine Pesos / MWh), which did not reflect the marginal cost of generating energy to the system (ref. 10.1). This resolution had a negative impact in the proposed project and was applicable at the time of decision was taken;

Resolution SE 406/2003, introduction of a new payment priority for the liabilities owed by the Administrator Company of the WEM *(Compania Administradora del Marco Mayorista Electrico Sociedad Anonima - CAMMESA)* to the generation agents operating in the WEM given the depletion of the available funds in the Stabilization Fund of the WEM due to the system's operational deficit (ref. 10.2). This resolution had a negative impact in the proposed project and was applicable at the time of decision was taken

- The access to international credit market is limited: Country Risk - Argentina Finance is Not Yet in the World's Good Graces; April 13, 2007 (ref. 10.3).

- The capacity additions made in Argentina since 2002 are not relevant: according with data provided by the Secretariat of Energy the total capacity increase from 2002 until 2006 was only 1% (ref. 10.4).

- Law 23.697, suspension of subsidies due to the financial problems in the country (ref. 32).

As a response to the 2001 economic crisis tariffs were converted to the Argentine peso and frozen in January 2002 through the Public Emergency and Exchange Regime Law. Together with high inflation the devaluation of the peso, many companies in the sector had to deal with high levels of debt in foreign currency under a scenario in which their revenues remained stable while their costs increased. This situation has led to severe underinvestment and unavailability to keep up with an increasing demand, factors that contributed to the 2003-2004 energy crises (ref. 36).
Electricity tariffs in Argentina are well below the Latin American & Caribbean average (LAC). In 2004, the average residential tariff was US$0.0380 per kWh, very similar to the average industrial tariff, which was US$0.0386 per kWh in 2003 (http://info.worldbank.org/etools/lacelectricity/comparecountries.asp?scountries=2,4,5,6,7,18,24,25&indicator=21&iy=y&year=2000&gr1=1&gr5=1&selline=#chart):

Average residential tariff (US$/MWh)					
	2000	2001	2002	2003	2004
Argentina	99.6996	88.40737	30.90505	34.28958	37.97273
Bolivia	63.69416	63.42293	62.18021	63.1461	62.5955
Brazil	88.2239	77.6244	73.86693	84.23152	107.2
Chile	N/A	88.33878	87.0723	90.66691	97.51424
Colombia	58.82964	62.29499	66.9049	61.34908	71.88702
Paraguay	49.14812	56.5285	51.90266	54.1411	58.51943
Uruguay	121.3	111.2	86.1	83.20002	91.69998
Venezuela	N/A	97.06112	61.24304	58.31062	57.43865

average industrial tariff (US$/MWh)					
	2000	2001	2002	2003	2004
Argentina	N/A	116.3	35.88439	38.60129	N/A
Bolivia	61.33174	53.41773	46.85271	46.57072	44.8393
Brazil	51.56153	44.73648	43.19949	49.44069	59.33366

Chile	N/A	61.86354	61.9298	62.80266	66.04748
Colombia	57.98662	64.75851	63.20304	63.28831	80.92757
Paraguay	31.84374	35.583	34.33273	34.18178	35.84677
Uruguay	46.31211	43.20001	33.60018	33.39997	37.60001
Venezuela	N/A	N/A	44.44643	42.14776	40.94426

The spot prices are frozen by the government and the electricity prices in Argentina are low (ref. 10-10.2, 32). This is in accordance with EB50 Annex 13 considering that the evidences provided are strong arguments to support the barrier analysis. The CDM revenue can alleviate the barriers due to the political scenario of the electricity sector in the country.

It is expected that the CDM revenues will help to surpass the investment barrier mentioned in section B.4 of the PDD (low electricity price in Argentinean, the current political scenario and the currency exchange rate risk).

According to the Combined Tool, as the outcome of step 2, if there is only one alternative that is not prevented by any barrier, and if this alternative is not the proposed Project activity undertaken without being registered as a CDM Project activity, then this alternative is identified as the baseline scenario. In addition, still under step 2, if the CDM alleviates the barriers that prevent the implementation of the Project activity, step 4 (common practice analysis) should be conducted.

Step 4 – common practice analysis is correctly applied and proved that the project activity is not a common practice scenario. The common practice analysis was checked through the information provided in the PDD, references and website of the electricity sector in Argentina (Ref. 12, 16, www.portalweb.cammesa.com). Refer to item 4.6.6 for more details.

4.6.2 Prior Consideration of the Clean Development Mechanism

The proposed start date of the project activity according to PDD version 1 is 06/09/2007. The start date is before the start date of the validation process. It is a requirement to have reliable evidence that the CDM was considered prior to the project start date and that continuing and real actions were taken to secure the CDM status for the project activity in parallel with its implementation, following the guidelines from paragraph 5, EB 41, Annex 46. In addition, it is requirement to have a detailed timeline of project implementation. CL#2 was raised.

The start date of the project is 06/09/2007 that represents the signature of the contract between Pampa Energia S.A. and Isolux for the design, engineering, equipments, installation, civil works and tests required for the conversion of Loma de la Lata to Combined Cycle. Section B.5 of the PDD version 2 presents the timeline and reliable evidence that the CDM was considered prior to the project start date and continuing action in parallel with its implementation. It was found in compliance with EB41 annex 46. CL#2 was closed out.

The CDM was considered prior to the project start date (copies of documents attached in Ref.13). The following chronology was confirmed:

- January – April 2006: Pampa acquired 8.66% of the capital stock of Central Puerto S.A., the owner of the Loma de la Lata (ref. 13l);

- 17/05/2006: Pampa started conversations with Econergy Argentina to evaluate the CDM potential of the Project activity (ref.13a) (verified the original email between Pampa Energia and Econergy);

- 13/09/2006: Econergy presented a commercial proposal for the validation of the Project and purchase of its CERs (ref.13b);

- 04/12/2006: Central Puerto S.A. agreed to sell the Central Térmica Loma de la Lata to Pampa (ref.13c);

- 12/03/2007: EcoSecurities presented a proposal for the validation process and to purchase its CERs. (Ecosecurities started conversations with Pampa Energía S.A. before that date, however there are no formal evidences to support that until March 2007) (ref.13d);

- 17/05/2007: Closing of the acquisition of the Central Térmica Loma de la Lata by Project Developer (ref.13e);

- 06/07/2007: A Pampa's Board Meeting took place; in which it was stated that its subsidiary, the Project developer was in advanced negotiations with carbon consulting companies to develop the CDM component, essential source of revenue that would turn the Project economically viable (ref.13f);

- 11/07/2007: EcoSecurities continued negotiating a proposal until November 2007, when the Project developer informed that the proposal had been accepted (ref.13g);

- 06/09/2007: starting date of the Project activity (ref.15);

- 08/09/2007: Local newspaper published an article about the Project activity and its implementation as CDM Project (ref.13h);

- 29/11/2007: EcoSecurities Project Implementation Team performed a site visit to Pampa Energía S.A. (ref. 13i);

- 19/12/2007: EcoSecurities Due Diligence Report (ref. 13j);

- 10/12/2007: ERPA signed between Pampa Energia SA and EcoSecurities Group PLC (ref.13 k).

- January – October 2008: EcoSecurities and the Project Developer worked in the elaboration of the CDM Project Design Document.

- September 2008: start of civil works at project site (verified during site visit in November 2008 that the civil works started recently in September 2008).

- 06/11/2008: PDD published for global stakeholder consultation (start date of validation).

With the information provided can be considered that the CDM was seriously considered before project start date and continuously. The project meets the EB41 Annex 46 and EB49 Annex 22 requirements.

4.6.3 Identification of Alternatives

The alternatives scenarios presented in the PDD are:

- Continuation of current practice, (i.e. continue operating the plant in open cycle mode).

- Investment in a new fossil fuel plant of annual output equivalent to the proposed project.

- Commercial renewable power plant of equivalent capacity to the proposed project not undertaken as a CDM activity.

- Project activity implemented as a non-CDM project.

All alternatives are in compliance with the prevailing laws and regulations. There is no regulation in Argentina to prevent the continuation of current practice and there are no specific laws that require upgrading existing open cycle thermal plants. There is no regulation for the type of fossil fuel to be used.

The selection of the baseline from the possible scenarios is consistent with available data. All key assumptions are explained and information sources are clearly referenced. Sources were checked to ensure information contained in the PDD is correct. Information was cross checked by confirming the assumptions from other sources (Secretariat of Energy, Legal Framework: http://energia3.mecon.gov.ar/contenidos/verpagina.php?idpagina=882 (Consulted on 08/09/2008 and Secretariat of Energy, Resolution S.E. 182/95: http://energia3.mecon.gov.ar/contenidos/verpagina.php?idpagina=889 (Consulted on 08/09/2008). The most plausible baseline scenario is the continuation of the operation of the plant in open cycle mode, this mean the continuation of current practice (refer to section 4.6.1 above for more details).

4.6.4 Investment Analysis

Not applicable.

4.6.5 Barrier Analysis

Section B.4 of the PDD describes the barriers that prevented the implementation of the project. The baseline scenario is the continuation of the operation of the plant in open cycle mode. The project being implemented without CDM faces investment and technological barrier.

Investment barrier: According to Resolution SE 406/2003 (ref. 10.2, http://www.enre.gov.ar) the generating companies should be reimbursed first for their variable operational costs and secondly their profit on spot transactions, if CAMMESA has available funds. If not, these profits would be withheld by CAMMESA for future payment. The result of the structural difficulties faced by the electricity sector in Argentina, investments in either conversions or construction has been deterred. No relevant capacity additions have been made in Argentina from 2002 until 2007. Also the electricity spot price is calculated based on the operational costs of the most inefficient plant connected to the grid. The spot prices have been artificially frozen by the government. With this scenario to invest in a combined cycle thermal plant is not attractive as has no incentive in the country (Ref. 10 -10.2).

Technological barrier: This project is the first combined cycle plant operated by the project owner, resulting in a lack of technical capacity. A specific training course will be developed in order to guarantee a high quality operation and maintenance. Gas turbine combined-cycle power plants are usually designed to operate at full capacity all the time. Operation reduction may trigger the production of heat as exhaust temperatures falls off rapidly. According to ref. 12 I reduction of the energy delivered to the grid in the aim of the Energía Plus program compromises the economic benefits of the Project representing a disincentive to energy private investors in Argentina (Ref.12).

It is expected that the CDM revenues will help to surpass the investment barrier mentioned (low electricity price in Argentina, the current political scenario and the currency exchange rate risk). It is expected that the CDM revenues will mitigate the risk of gas supply because the project does not increase the gas consumption. Finally it is expected that the CDM will alleviate the identified barriers that prevent the proposed Project activity from occurring.

According to the Secretaria de Energia, the energy sector in Argentina faces problems in attracting investments and raising capital to invest in new plants or upgrading existing plants like Loma de la Lata. The low electricity prices and limited profits do not encourage the investment in the energy sector. Also no relevant capacity additions were made in this kind of generation (ref. 10.4, http://energia3.mecon.gov.ar/contenidos/archivos/Reorganizacion/informacion_del_mercado/publicaciones/mercado_electrico/PYE.xls).

The proposed project activity is in accordance with the guidelines for objective demonstration and assessment of barriers (EB50 Annex 13). The investment and technological barriers meet the guidelines requirements. In the case of technological barrier, it is expected that the CDM revenue will alleviate the low electricity price in the country, the current political scenario. For the investment barrier, the limited profits and low prices of the electricity are not encouraging the investments in the energy sector. The energy sector in the country faces problems in attracting investments in new plants or upgrading existing plants like Loma de la Lata. Also no relevant capacity additions were made in this kind of generation.

Please refer to section 4.6.1 for more detail regarding barrier analysis.

4.6.6 Common Practice Analysis

The common practice analysis (step 4 of the Combined tool) was not clearly presented in the PDD to highlight the essential distinctions between project activity and similar projects identified, so CL#6 was raised. The revised PDD version 2 presents more details and a conclusive common practice analysis. The conclusion is that there are no other similar projects compared with proposed project activity. CL#6 was closed out.

According to the VVM para 117 for large scale projects which is the case of Loma de la Lata, common practice analysis shall be carried out as a credibility check of the other evidence used by the PP to demonstrate additionality. The common practice analysis complements the barrier analysis.

According to the VVM para 119 the DOE shall assess whether the geographical scope of the common practice analysis is appropriate for the assessment of common practice. Official sources and local and industry expertise shall be used to determine to what extent similar and operational projects, other than CDM have been undertaken in the defined region. If similar and operational projects, other than CDM, are widely observed in the region, the DOE shall assess whether there are essential distinctions in relation to the proposed project.

In this case similar activities to the proposed CDM project activity are defined as activities that are of similar scale, take place in a comparable environment, inter alia, with respect to the regulatory framework and are undertaken in the relevant geographical area (Ref. 10, 25).

There are 12 combined cycle plants connected to the National Grid in the whole country (Argentina) (Ref. 25).

	Power Plant	Company	Capacity (MW)	Operation start date	Similar?
1	AES-PARANA	C.T. AES PARANA	845	01/01/2001	No
2	AGUA DEL CAJON	C.T. AGUA DEL CAJON	184	01/01/1999	No
3	ALTO VALLE	C.TERMICA ALTO VALLE	80	01/01/2001	No
4	C.COMB.COSTANERA	CENTRAL COSTANEAS SA	529	01/10/1998	No
5	COSTANERA	CENTRAL COSTANEAS SA	322	01/02/1997	No
6	C.COMB.PUERTO	CENTRAL PUERAS SA	798	01/01/1999	No
7	C.T. GENELBA	GENEL–A - PETROBRAS	674	01/01/1997	No
8	CDRO RIVADAVIA	ELECTROPATAGONIA-C.RIV-C.COMB.	63	17/10/2002	No
9	DOCK SUD	CENTRAL DOCK SUD	1595	01/01/1999	No
10	LUJAN DE CUYO	C. TERMICAS MENDOAS SA	290.2	17/10/2002	No
11	MARANZANA	GEN.MEDITERRANEA (EX ENRON)	68	17/10/2002	No
12	S.M. DE TUCUMAN	PLUSPETROL ENERGY SA(TUC Y SM)	382	01/05/2001	No

(ref.25, http://portalweb.cammesa.com/Pages/Publicaciones/Revistas/estacional.aspx, official data from CAMMESA)

All plants were commissioned prior to the regulatory framework modification in 2002 conducted by the government (ref. 25). After this period the investment in the sector restricted the conversion of open-cycle to combined-cycle plants. The new regulatory framework has introduced low electricity tariffs and created barriers to the implementation of the most efficient technology. According to the data available in the CAMMESA website (ref. 25), these 12 plants cannot be considered similar to the proposed project activity due to the different regulatory conditions, these plants started operation before the new regulatory framework. Two combined cycles plants are under construction at this time, but these plants do not consist of closing an open cycle like the proposed project activity (Loma de la Lata). Also these plants are being developed with government support, receiving direct financing of the FONINVEMEM (Ref. 12). Due to the energy supply restriction in Argentina, the Government created the FONINVEMEN fund in order to increase the energy generation by building two 800 MW CCGT plants (C.T Belgrano and C.T San Martin) and furthermore finish the construction of the Nuclear Plant ATUCHA II in 2010. This means that these funds were only available for these state owned companies and not for any company that wanted to increase their energy generation (efficiency increase or power addition) or build a new plant. This is why Loma de la Lata could not benefit from the FONINVEMEN.

The conclusion of the DOE is that there are no similar plants and the proposed project activity is not considered a common practice.

4.7 Application of Baseline Methodology and Calculation of Emission Factors

The project follows the methodology ACM0007, version 3. The baseline is the continuation of the existing process i.e. the continuation of the current practice of generating electricity in open mode cycle with the existing gas turbines and the electricity generated from the waste heat being supplied to the grid. Baseline emission consists in the electricity that would be generated by the operation of the power plant in open cycle mode and by grid-connected power plants. The emissions factor for the open cycle in the baseline is calculated by the historical performance of the plant 5 years data previous to the start of the project (August 2003 – July 2008, Ref. 24).

The following formula according to methodology ACM0007 version 3 was used:

$BE_y = (EF_{OC} * OG_{xy}) + (EF_{grid,y} * (PG_y – OG_{xy}))$

CAR #09 was raised: The PP should transparently report and explain the reason for the changes in the values of baseline assumptions between the GSC PDD and PDD version 2.1.

In response to the CAR #09 raised the PP explained the reasons for the change of the baseline assumptions between the GSC PDD and the PDD version 2.1.

The values of baseline assumptions presented in the GSC PDD version 1 table 13 were not in accordance with the data provided and evidences during validation assessment.

Parameter	Formula (number)	Value		Unit	Comments / Source
		from	to		
PC	-	531	530.63	MW	Capacity of the power plant in combined cycle operation by given as declared net capacity
PG_y	PC*8760 h/yr*LF*(1-RF)	3,851,576	3,877,637	MWh	Calculated
OC	-	363.17	362.90	MW	Net power generation capacity of the open cycle gas turbine or engine. According to the nameplates checked on site
$OG_{P,y}$	OC/PC*PG_y (7)	2,634,719	2,651,935	MWh	Calculated
FC_{HIST}	-	426,640,077	426,923,216	m3	Calculated based on the five years of generation records previous to start of the project
EF_{GRID}	-	0.479	0.538	tCO2/ MWh	Calculated
$BE_{H,y}$	(EF_{OC}*$HG_{OC,y}$)+(EF_{GRID}*(PG_y-$HG_{OC,y}$)) (5)	2,012,321	2,175,640	tCO2/ yr	Calculated
$BE_{P,y}$	(EF_{OC}*$OG_{P,y}$)+(EF_{GRID}*(PG_y-$OG_{P,y}$)) (5)	2,174,590	2,262,672	tCO2/ yr	Calculated
BE_y	MIN ($BE_{,H,y}$, $BE_{P,y}$)	2,012,321	2,175,640	tCO2/	Calculated

				yr	

The PDD was revised and the data presented in table 10 of the PDD version 2.1 was checked and found correct (Ref. 24). CAR #09 was closed out.

The information related to the fixed parameters used to calculate the baseline was presented below.

The Baseline emission factor of the grid was calculated as a combined margin according to the Tool to calculate the emission factor for an electricity system, version 02, EB50. The baseline emission factor is calculated ex-ante. The Simple Operating Marg–n - OM (option a) was calculated applying the *ex-ante* option, using the full generation-weighted average for the most recent 3 years. The build margin (BM) was calculated *ex-ante* based on the most recent information available on plants already built. Source of data to calculate the combined emission factor was confirmed by auditors: CAMMESA (Wholesale Electricity Market Administrator Company) and ENRE (National Entity Regulator of Electricity); Ref. 16, Excel file attached for detailed data. Sources: http://www.cammesa.com/lprogest.nsf/MPROGEST?OpenFrameSet and http://www.enre.gov.ar/web/bibliotd.nsf/5c729b1084c03a8703256f410044adef/33bafafaada850b9032573380044d7c7?OpenDocument.

The following equations and values were applied:

$$EF = w_{OM} \cdot EF_{grid,OM,y} + w_{BM} \cdot EF_{grid,BM,y}$$

$EF_{grid,OM} =$ 0.5210 tCO_2/MWh (2006-2008)

$EF_{grid,BM} =$ 0.5558 tCO_2/MWh

$w_{OM} =$ 0.5

$w_{BM} =$ 0.5

Ex-ante $EF_{grid,CM} =$ 0.538 tCO_2/MWh

Regarding leakage, it is assumed negligible according to ACM0007 version 3. CH4 leakage due to production, transportation and consumption of increased quantity of natural gas consumed by the project activity was calculated by the project and considered negligible (approximately 0.015% of the baseline emissions, Ref. 26). The monitoring methodology does not require to monitor any parameters related to leakage.

Project emissions consider emissions from the use of fossil fuel to operate the gas turbine and supplementary fossil fuel used in order to operate the steam turbine.

The following parameters listed in section B.6.2 of the PDD will remain fixed during the crediting period, were verified and considered correct (CER spreadsheet, Ref. 24):

- Historical net quantity of electricity generated by the Open Cycle operation of the power plant (verified the internal spreadsheet with historical data, Ref.11); the load factor had been 51% on an average of 5 years as verified with the historical data. There is an increase of load factor from 24% to 68% in the past 5 years. The low values of the two first years are mostly the result of previous years of economic crisis in the country. The conversion of the project activity from open to combined cycle represents an increase in efficiency, thus a reduction of its marginal cost. In Argentina CAMMESA (Wholesale Electric Market Administration Company) coordinates the power plants dispatch according to the marginal cost criteria (merit order dispatch). Therefore, the plants with the lowest price to supply power or higher efficiency for the same type of fuel are dispatched first. In conclusion, based on the merit order criteria of CAMMESA, the Project activity will have a better ranked dispatch than the baseline (open cycle) which will result in better load factor for combined cycle during project years. The auxiliary consumption was verified as 7MW (1.9% of gross capacity) based on real measured historical data, Ref.11.

- - Net generation capacity of the Project power plant (confirmed during site visit and Ref. 19);

There will be an increase of natural gas consumption due to the increase of operation of the gas turbines from a load factor of 51% (open cycle) to 86% (combined cycle). To calculate the increase of natural gas consumption due to the gas turbines operation increase from a load factor of 51% (open cycle) to 86% (combined cycle) the following equations were used:

Natural Gas Consumption TOTAL = Electricity generation of the project * Heat Rate Combined Cycle / NCV, natural gas

Heat Rate Combined Cycle = Heat rate Open Cycle * Open Cycle Net Installed Capacity / Combined Cycle Net Installed Capacity

The calculation of the Heat Rate of the Combined Cycle based on the Heat Rate of the Open Cycle and the capacities of the open and combined cycle, demonstrates that there is no supplementary fuel consumption considered to operate the steam turbine.

To avoid confusion and based on ACM007 v03, the calculator was updated to separately present FTGi,y and FSTj,y (please refer to Raw data Cells P11 and P13).

The natural gas consumption of the gas turbines was calculated as follows:

Natural Gas Consumption Gas Turbines = Electricity generation Gas Turbines * Heat Rate Open Cycle / NCV, natural gas

The Heat rate of the combined cycle was calculated based on the net installed capacity of the open cycle (362.9 MW) and the net installed capacity of the combined cycle, as established by the methodology.

The calculation of electricity generation (average project generation) in the project year 365*24 = 8760 operational hours:

Electricity generation project = Combined cycle Net installed capacity*Operational hours/year*Load Factor*(1-Reserve for frequency regulation)

The load factor was defined based on the third party company contracted by the PP to evaluate the future evolution of the electricity market and determine the economic electricity generation of the project activity. The study was base on the same dispatch models utilized by CAMMESA. The conclusion was that the project activity will operate at full dispatch if there is natural gas available. Based on this report (ref. 27) and applying a security margin, the project developer considered a load factor of 86% subject to availability of Natural gas at competitive price (refer to section 4.6 above). The data was verified for net generation with the same report including hours of operation and auxiliary consumption (ref. 28). The 'Reserve for frequency regulation' which is applicable to all projects in Argentina is the value defined by CAMMESA (Wholesale Power Market Operator) to seek a balance between production and demand requirements within the proposed service quality and in normal operating conditions, maintain the frequency within defined limits. To do this, a daily reserve for frequency regulation must assign for maintaining, if any surplus reserves is required, to keep the intended quality (ref.29, 29.1).

- Net power generation capacity of the open cycle gas turbine or engine (confirmed during site visit by equipments inspection and pictures, Ref. 6 and 19);

- Historic fuel consumption of the Project in Open cycle generation (verified the internal spreadsheet with historical data, Ref.11);

- Grid Operating Margin (based on CAMMESA (Wholesale Power Market Operator), (verified the emission factor spreadsheet and CAMMESA website, Ref. 16);

- Grid Build Margin (verified the emission factor spreadsheet and CAMMESA website, Ref. 16);

- Default weighting value for Operating Margin (verified the emission factor spreadsheet and CAMMESA website, Ref. 16);

- Default weighting value for Operating Margin (verified the emission factor spreadsheet and CAMMESA website, Ref. 16);

- Grid emission factor (calculated according to Ref.16, using official data).

Formulas are correctly described in the PDD (Ref. 1) and in the CER spreadsheet (Ref. 24) as required by the methodology and tools.

Baseline emission BEy for year y was calculated according to ACM0007 version 3 (formula 9) and is the lower value between the baseline emissions calculated on the basis of historical power generation, BEH,y, and the baseline emissions calculated based on the load factor of the Project situation.

BE_y= Min between $BE_{H,y}$ and $BE_{P,y}$

$ER_y = BE_y – PE_y – L_y$ (Ref. 24)

4.8 Application of Monitoring Methodology and Monitoring Plan

Data and monitored parameters and parameters available at validation are according to the applied methodology.

The monitoring plan complies with monitoring methodology and the following parameters will be monitored:

- Project electricity generation in year;

- Consumption of fuel I (natural gas) of Project for operating gas turbine during the year;

- Consumption of fuel j of Project during the year y for operating Steam Turbine;

- Net calorific value of the consumed natural gas in the year;

- CO2 emission factor for the fossil fuel used previous to the Project start.

It was verified during the site visit that the consumption of fuel is registered on a daily basis. According to ACM0007 version 3, this parameter should be monitored hourly, so CL#5 was raised. According to the revised PDD version 2, the gas consumption will be measured continuously by the Project for each gas turbine and will be registered hourly. The gas consumption measured by the supplier on a daily basis will be cross-checked every month with Project measurements.. Natural gas consumption will be crosschecked with the fuel purchase receipts where possible. CL#5 was closed out

It was verified during the site visit that the High Heating Value (HHV) is analyzed every 5 minutes using the chromatography. The Net Calorific Value (NCV) is calculated through the internal computer using the HHV. It was requested to the PP to provide the detailed NCV measurement according to ACM0007 version 3. CL#4 was raised. The NCV of the fossil fuel can be measured or calculated according to the methodology. CL#4 was closed out.

Monitoring data will be continuously measured using calibrated meters. At the time of the site visit, the project was not implemented, consequently there was no procedure implemented yet. As stated in the PDD version 2 all data will be monitored electronically and archived (backup). Data shall be kept for the crediting period plus two years after the last issuance of CERs. Monitoring data will be reproducible and comparable with third parties. The electricity meter will be audited by the concessionary company (CAMMESA). Natural gas consumption will be controlled by the project and by the supplier.

According to the PDD version 2, the responsibilities of the personnel regarding data collection, calibration, maintenance, and data recording will be established and documented. The skilled personnel designated for the operation of the plant will receive training for the engineering provider. Additionally they will receive training on CDM monitoring requirements and data recording and reporting to guarantee the awareness and commitment of the personnel to monitor the required data for the entire crediting period. FAR#7 was raised and the procedures related to authority and responsibility should be checked during the first verification audit.

The monitoring plan reflects the current condition of the project and what will be implemented before project operation. To comply with the monitoring requirements the following procedures are expected to be available during verification:
- Information on monitoring equipment and respective positioning in order to safeguard a proper installation;
- Calibration of monitoring equipment;
- Maintenance of monitoring equipment and installations;
- Day-to-day records handling including what records to keep, storage area of records and how to process performance documentation;

- Dealing with possible monitoring data adjustments and missing data allowing redundant reconstruction of data in case of monitoring problems;
- Internal audits of GHG project compliance with operational requirements where applicable;
- Project performance reviews before data is submitted for verification, internally or externally,

FAR#8 was raised to check management procedures implemented during the first verification audit.

The project is not implemented. The monitoring plan presented in the PDD and verified during validation assessment reflects the actual condition of the project and what will be implemented before project operation. The DOE consider that the PP is able to implement the proposed monitoring plan in accordance with the monitoring methodology and PDD.

From the information provided by the Client in the PDD version 2, section B.8 states that the baseline was determined on 12th of September 2008.

4.9 Environmental Impacts

The Environmental Impact Assessment (EIA) of the project activity was already elaborated by the Regional School of Avellaneda of the National Technological University of Argentina. This document was presented to the National Regulator Entity of Electricity (ENRE) that approved the incorporation of the project to the Wholesale Electric Market (MEM) on 22nd May 2008. Locally, the EIA was submitted to the Sub-Secretariat of Environment, of the State Secretariat of Environmental Resources of the Provincial Government of Neuquén (SSMADS). The mentioned authority conceded the Environmental License for the Construction of the Combined-Cycle through the Disposition Nº 387/2008 of 21/07/2008 (Ref. 18).

4.10 Local Stakeholder Comments

The following entities were invited to comment on project on 13/11/2008:

· National and Local Environment Authorities;

· Local and national media;

· Academics;

· Industry association representatives;

· NGOs;

· Local community association(s);

· Local community.

It was verified that letters and e-mails had been sent to the local stakeholders (Ref. 17). It was also verified that newspaper announcements were made, to publish details of the project on its web site and to invite the local stakeholders (Ref. 17). It was noted that the letters were sent in Spanish (local language). From the information provided by the Client in the PDD version 2 section E the undertaken local stakeholder process has been described in a complete and transparent manner. No comments were received from the process.

5. Comments by Parties, Stakeholders and NGOs

In accordance with sub-paragraphs 40 (b) and (c) of the CDM modalities and procedures, the project design document of a proposed CDM project activity shall be made publicly available and the DOE shall invite comments on the validation requirements from Parties, stakeholders and UNFCCC accredited non-governmental organizations and make them publicly available. This chapter describes this process for this project.

5.1 Description of how and when the PDD was made publicly available

The PDD for this project was made available on *http://cdm.unfccc.int/Projects/Validation/DB/Y90E45C6SKNGOJ6RLGBSL7JLM86EOA/view.html* and was open for comments from 06/11/2008 until 05/12/2008. Comments were invited through the UNFCCC CDM homepage.

5.2 Compilation of all comments received

Comment Number	Date Received	Submitter	Comment
0			

5.3 Explanation of how comments have been taken into account

No comments received.

6. List of Persons Interviewed

Date	Name	Position	Short Description of Subject Discussed
24/11/2008 25/11/2008	Anamélia Medeiros Santos	Implementation team/EcoSecurities	PDD development
24/11/2008 25/11/2008	Adriana Torchelo	Project Manager/EcoSecurities	PDD development
24/11/2008 25/11/2008	Sebastian Ofman	Pampa Energia S.A.	Project data, local stakeholder
24/11/2008 25/11/2008	Joaquin Gianantonio	Pampa Energia S.A.	Project data
24/11/2008 25/11/2008	Mario Compani	Environmental Manager/Pampa	Environmental license, EIA
24/11/2008 25/11/2008	Brian Handerson	Director/Pampa	Project data, monitoring
24/11/2008 25/11/2008	Mariano Dagostino	Pampa Energia S.A.	Monitoring
24/11/2008 25/11/2008	Soledad Barbini	Pampa Energia S.A.	Monitoring
24/11/2008 25/11/2008	Jorge Michieleto	Plant Manager/Pampa	Project data, monitoring

7. Document References

Category 1 Documents (documents provided by the Client that relate directly to the GHG components of the project, (i.e. the CDM PDD, confirmation by the host Party on contribution to sustainable development and written approval of voluntary participation from the designated national authority):

/1/ PDD: Combined Cycle at Loma de la Lata Thermo Unit Project. Version 1, 24/10/2008; Version 1.1, 16/01/2009; Version 2, 24/07/2009; Version 2.1, 01/06/2010.

/2/ ACM0007–- Baseline methodology for conversion from single cycle to combined cycle power generation, and monitoring methodology for conversion from single cycle to combined cycle power generation, Version 03, approved in EB35.

/3/ Tool to calculate the emission factor for an electricity system, Version 02, approved in EB50.

/4/ Combined tool to identify the baseline scenario and demonstrate additionality, Version 02.2.

Category 2 Documents (background documents used to check project assumptions and confirm the validity of information given in the Category 1 documents and in validation interviews):

/5/ Evidence Pampa owner of CLLL, Resol SE 0435-2007
/6/ Resol SE 210-1993 CLLL, Capacity
/7a,b/ Letter of Approval from UK and Argentina
/8/ Plants_Fuel_Cons_2008, CAMMESA
/9/ Boilers Performance, HRSG
/10/ Regulatory documents (additionality): Law 25561
Ref.10.1 – Law 240/2003
Ref.10.2 – Resolution 406/2003
Ref.10.3 – Country risk
Ref.10.4 – Capacity additions
/11/ Historical data (electricity, natural gas, operation hour)
/12/ Additionality documents and common practice documents (Energía Plus Resolución 1281/2006); (Foninvemem–- Resolución 406/2003, Resolución 712/2004, Resolución 1427/2004, Resolución 3/2005, Resolución 564/2007)
/13/ CDM Consideration documents:
Ref.13–a - Econergy, start conversations, dated 060517;
Ref.13–b - Econergy, Comercial Proposal, dated 060913;
Ref.13–c - Central Puerto & Pampa Energia, dated 061204;
Ref.13–d - EcoSecurities email Proposal, dated 070312;
Ref.13–e - Pampa acquires LLL, dated 070517;
Ref.13–f - Pampa Board Meeting, dated 070706;
Ref.13–g - EcoSecurities Proposal 2, dated 070711;
Ref.13–h - New about LLL CDM consideration, dated 070908;
Ref.13–i - EcoSecurities mail schedule visit, dated 071129;
Ref.13–j - EcoSecurities Due Diligence Report, dated 071219.
Ref.13k – ERPA dated 10/12/2007
Ref.13–l - Pampa acquired 8.66% of the capital stock of Central Puerto S.A
/14/ EPRI–- Gas Turbine Rotor Life Evaluation; GE Energy–- Heave duty gas turbine; Mail Lifetime Gas turbines, 25 yrs
/15/ Contract Pampa-Isolux, 06/09/2007
/16/ Ex-ante Grid EF spreadsheet (2006-2008)
/17/ Local Stakeholders consultation
/18/ Environmental license, Environmental Impact Assessment
/19/ Actual equipments photos
/20/ Net calorific value (Acta 03-2004 YPF-LLL; PCI y PCS (2007-2008) Natrual gas)
/21/ Training procedure
/22/ Fracchia

/23/ Loma de la Lata monthly report, Natural gas (April 2008)
/24/ Loma de la Lata–- Calculator v2 2009.07.24, Loma - Calculator v2 3 2010 06 01
/25/ List of combined cycle plants in Argentina from CAMMESA (http://portalweb.cammesa.com/Pages/Publicaciones/Revistas/estacional.aspx)
/26/ CH4 leakage calculation
/27/ Energetic study (Proyectos de Ampliación de las C. T. Güemes y C. T. Loma La Lata. Estudio de su operación en el MEM, May, 2007, MH 1005 – PH 230-06)
/28/ Electricity_consumption_Auxiliary_devices
/29/ Reserve for frequency_regulation
/29.1/ CAMMESA procedures (reserve for frequency regulation)
/30/ GE Specifications
/31/ Board meeting dated 11/02/2008 and Company's social denomination change registry in the Ministry of Justice and Human Rights dated 6th August 2008
/32/ Regulatory documents: Law 23697
/33/ List of Hydro plants in Argentina
/34/ Boletin Energético nº21, 2008 (thermal and hydro plants in Argentina)
/35/ Pampa Annual Report 2008
/36/ El Sector Elécrico Argentino Enfrenta un Panorama Incierto

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A.1 Annex 1: Local Assessment

This checklist is designed to provide confirmation of in-country data and information provided in the Project Design Document for Combined Cycle at Loma de la Lata Thermo Unit Project.
It serves as a "**reality check**" on the project that is completed by a local assessor from SGS Argentina.

Issue	**Findings**	**Source/Means of Verification**	**Further Action / Clarification / Information Required?**
Document to confirm project participant owner of Loma de la Lata project	Verified the Resolution SE 0435/2007. This document authorizes Pampa Energia as the owner of Central Térmica Loma de la Lata. The thermal power plant started in 1994 with another company and in 2006-2007 Pampa is the owner.	SV/Ref.5	No
Evidence for the installed capacity of 369.93MW (license, authorization, etc).	Verified the Resolution SE 0210/1993 that defines the actual installed capacity of Central Térmica Loma de la Lata.	SV/Ref.6	No
Check the evidence of the geographical coordinates of the project: Latitude: S 38º 30'46.47" Longitude: W 68º 36'19.81"	Verified the summary of the environmental impact assessment with geographical coordinates.	SV	No
Evidence of the fuel used in the plant (actual fuel). Documented evidence.	Verified the CAMMESA report that mention the power plant, typo of fuel used (natural gas). This information is publicly available (www.cammesa.com).	SV/Ref.8	No
Specification of the heat recovery steam generator (HRSG).	Verified an email and the commercial proposal of the recovery steam generators that will be installed in each boiler. The information was confirmed as presented in the PDD.	SV/Ref.9	No
Document to confirm the additional capacity of 175.73MW (license,	The contract between Pampa and Isolux presents the information about the equipments with the description of the installed capacity. Verified the annex 7.2 of the document	SV/Ref. 15	No

Issue	Findings	Source/Means of Verification	Further Action / Clarification / Information Required?
authorization, etc).	"Modos de Operación Principales" with estimated balance and additional capacity of the thermal power plant of 175.73MW that will be generated using the recovery steam. Before the plant operation, CAMMESA will issue an authorization for the combined cycle.		
Check the capacity of the 3 generators/turbines GE installed (document).	Verified on site the actual installed generators and turbines. Photo was provided.	SV/Ref.15, 19	No
Evidence for the thermal efficiency of 34%.	The thermal efficiency was calculated based on historical data from 2003-2008. Verified that data for the period 2003-2008 were extracted from the complete historical data (available since 1994 to 2008).	SV/Ref.11	No
Check the evidence of serious CDM consideration (documented evidence). Provide the timeline until validation (global stakeholder).	Verified the following evidences: - Pampa purchase Loma: Dec 2006; - Starting of negotiations with carbon consulting companies (MGM International, Ecoenergy and EcoSecurities): 2006; - Board Meeting Act Nº1085, 06/07/2007: negotiations with MGM and Econergy; - Contract Isolux 06/09/2007 (project activity start date); - Contract EcoSecurities: 10/12/2007.	SV/Ref.15	No
Document to evidence the lifetime of the equipments.	Verified the email data 24/08/2008. This email mention the lifetime of 25 years. Also it was verified the manual of the plant for confirmation.	SV/Ref.14	No
Evidence for the efficiency of 49% in the combined cycle and Heat Rate of	Confirmed through document: Siemens, Scope Supply, and Mechanical Equipment. Calculation based on historical data.	SV/Ref.11	No

Issue	Findings	Source/Means of Verification	Further Action / Clarification / Information Required?
7368KJ/MWh.			
Specification of the new steam turbine and generator.	Verified the contract with Isolux that presents the detailed information of the new equipments that will be installed.	SV/Ref.15	No
Confirm that “heat” is not used. Check through site visit, original process diagrams, schemes from the construction of the plant.	Verified during site visit and interviews that heat is not used.	SV	No
Check the contract between Pampa Energia S.A and Isolux to confirm the start date of the project activity.	Verified the contract between Pampa Energia S.A and Isolux to confirm the start date of the project activity. This is the contract for the design, engineering, equipments provision, installation, civil works and tests required for the conversion of Loma de la Lata plant to combined cycle.	SV/Ref.15	No
Check source data used in the baseline (provide copy of this data). Check: electricity generation open cycle, historic electricity generation, natural gas consumption, operation hours, load factor, generation capacity.	Verified the historical data from 2003-2008. Verified the spreadsheets with electricity generation, natural gas consumption, operation hours etc.	SV/Ref.11, 20	No
Evidence of the Argentine grid emission factor calculation. Check: generation per year (2003-2007).	Verified the historical data in the CAMMESA website. There is one meter in the plant that measure the generation and CAMMESA has a communication link to check the data.	SV/Ref.11, 16	No

Issue	Findings	Source/Means of Verification	Further Action / Clarification / Information Required?
Check applicable procedures.	Verified during site visit the ISO9001and 140001 certificates. The plant has operational procedures implemented that will help the project monitoring. Natural gas meter is under responsibility of YPF and the project developer is responsible for the energy meter.	SV/Ref.1	No
Check local stakeholder consultation (copy of documents).	Verified the letters and email sent on 13/11/2008 to local stakeholders. There is no specific requirement in Argentina for the consultation. The PDD was available in the local language in the project developer consultant website.	SV/Ref.17	No
Check parameters available at validation (source data): - historical net quantity of electricity generation (average latest 5 years(; - net power generation capacity of the gas turbine; - net generation capacity of the power plant; - historic fuel consumption of the project; - Emission Factor.	Verified the spreadsheet with historical data for the net quantity of electricity generation, net power generation capacity of the gas turbine, net generation capacity of the power plant, historic fuel consumption of the project and the emission factor.	SV/Ref.11, 24	No

A.2 Annex 2: Validation Checklist

Table 1 Participation Requirements for Clean Development Mechanism (CDM) Project Activities (Ref PDD, Letters of Approval and UNFCCC website)

Requirement	Reference	Comments	Conclusion/CARs/CLs
1. All Parties involved have approved the project activity 1.1. Has the DNA of each Party involved in the proposed CDM project activity in section A.3 of the PDD provided a written letter of approval which confirms 1.1.1. The country is a Party to the Kyoto Protocol 1.1.2. Participation is Voluntary 1.1.3. The Host Party confirming that the proposed CDM project activity contributes to sustainable development of the country Non-Annex 1 Party shall submit a letter of approval 1.1.4. It refers to the precise proposed CDM project activity title in the PDD being submitted for registration	Annex 3, Clean Development Mechanism, Validation and Verification Manual, Version 01 (from this point forwarded referenced as VVM) - 49a-d /54a-b/125 Paragraph 37 CDM Modalities and procedures	Argentina is listed as the non-Annex-I Party, has ratified the protocol on 28th September 2001 and is allowed to participate: http://maindb.unfccc.int/public/country.pl?country=AR United Kingdom of Great Britain and Northern Ireland is listed as Annex I Party, has ratified the protocol on 31st May 2002 and is allowed to participate: http://maindb.unfccc.int/public/country.pl?country=GB The letter of approval from United Kingdom of Great Britain and Northern Ireland was issued on 29/05/2009. The letter of approval from Argentina was issued on 19/03/2009 for the “Combined Cycle at Loma de la Lata Thermo Unit Project” and a new letter of approval was issued on 21/05/2010 authorizing Central Térmica Loma de la Lata S.A. as the project participant in Argentina (Ref. 7b).	Y

Requirement	Reference	Comments	Conclusion/CARs/CLs
1.2. The letter/s of approval are unconditional with respect to 1.1.1 to 1.1.4 above	VVM Para. 49/54	Argentina and United Kingdom of Great Britain and Northern Ireland are Party of the Kyoto Protocol. The letter from both Parties refer to the CDM project activity the will be submitted for registration.	Y
2. The project shall assist non-Annex I Parties in achieving sustainable development and shall have obtained confirmation by the host country thereof, and be entered into voluntarily	VVM Para. 54 Marrakech Accords, CDM Modalities §29 and §30 Kyoto Protocol Art. 12.2, Marrakech Accords, CDM Modalities §40a	The letter of approval from Argentina was issued on 19/03/2009 for the "Combined Cycle at Loma de la Lata Thermo Unit Project" and a new letter of approval was issued on 21/05/2010 authorizing Central Térmica Loma de la Lata S.A. as the project participant in Argentina (Ref. 7b).	Y
3. Parties, stakeholders and UNFCCC accredited NGOs shall have been invited to comment on the validation requirements for a minimum of 30 days, and the project design document and comments have been made publicly available	VVM Para. 128 Marrakech Accords, CDM Modalities, §40	The comments period was over: 06/11/2008 – 05/12/2008. No comments received during stakeholder consultation. http://cdm.unfccc.int/Projects/Validation/DB/Y90E45C6SKNGOJ6RLGBSL7JLM86EOA/view.html	Y
4. The project design document is in accordance with the applicable CDM requirements for completing PDDs.	VVM Para. 57 Marrakech Accords, CDM Modalities, Appendix B, EB Decisions	The recent template version 3 was used and the document has been complete.	Y

Table 2 PDD

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
A. General Description of Project Activity				
A.1. Project Title				
A.1.1. Does the used project title clearly enable the reader to identify the unique CDM activity?	VVM Para.56 Guidelines for completing a CDM-PDD (PDD) section A.1	DR	Yes, the title "Combined Cycle at Loma de la Lata Thermo Unit Project" identifies the unique CDM project activity.	Y
A.1.2. Is there an indication of a revision number and the date of the revision?	VVM Para.56 PDD section A.1	DR	Final PDD version 2.1 dated 01/06/2010.	Y
A.2. Description of the Project Activity				
A.2.1. Does the description of the proposed CDM project activity as contained in the PDD sufficiently cover all relevant elements accurately?	VVM Para.59 PDD section A.2 see also A.4, A.4.3 and B.3	DR SV	The description of the project is correct and transparent. The Information is available on the purpose of the project activity, type of technology used and the contribution of the project to sustainable development. The technology of this combined cycle plant will result a significantly better performance. The most important parts of the technology, comes mainly for developed countries, representing a technology transfer process and its consolidation in the host country. But capturing the waste heat and use it for the steam generator applied by the project activity follows the common technology of its sector.	Y
A.2.2. Does the information provide the reader with a clear understanding of the proposed CDM activity?	VVM Para.60 PDD section A.2 see also A.4, A.4.3 and B.3	DR	The proposed project consists in the conversion of the existing plant into a combined cycle generation plant adding three Heat Recovery Steam Generators that will capture the heat from the exhaust gases released to the atmosphere.	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
A.2.3. Is all information provided consistent and in compliance with the actual situation or planning?	VVM Para.64 PDD section A.2 see also A.4, A.4.3 and B.3	DR SV	The information provided in section A.2 is in compliance with the observed during the site visit. The project is not implemented yet. It is forecast to begin the implementation on July 2010.	Y
A.2.4. Is all information provided consistent with details provided in further chapters of the PDD?	VVM Para.64 PDD section A.2	DR	The information of the Section A.2 of the PDD is consistent with further chapters.	Y
A.3. Project Participants				
A.3.1. Is the table required for the indication of project participants correctly applied?	VVM Para. 51 PDD section A.3	DR	The table is correct and follows the PDD template version 3. Argentina and United Kingdom of Great Britain and Northern Ireland are the Parties involved in the project. The project participants are two entities: • Central Térmica Loma de la Lata S.A. • EcoSecurities Group PLC	Y
A.3.2. Is all information provided in consistency with details provided by further chapters of the PDD (in particular Annex 1)?	VVM Para. 51 PDD section A.3	DR	The description of annex 1 is consistent with the information described in section A.3 of the PDD.	Y
A.4. Technical Description of the Project Activity				
A.4.1. Does the information provided on the location of the project activity allow for a clear identification of	VVM Para.64 PDD section A.4	DR SV	Yes. The project is located in Neuquén Province, Department of Confluencia, Provincial Road 51, Km 85, Portezuelo Grande, Argentina. Latitude: S 38º 30'46.47"	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
the site(s)? Are the latitude and longitude of the site indicated (decimal points)			Longitude: W 68º 36'19.81"	
A.4.2. Does the proposed CDM project activity involve the alteration of existing installations or process?	VVM Para.64 PDD section A.4	DR SV	The project involves the improvement of the actual electricity generation, through the installation of a Steam Turbine Generator to create additional electricity. Upgrading the plant to a combined cycle, what will greatly increase the efficiency from 34% to 49%. (Open Cycle 369.93MW, Combined Cycle 545.66MW)	Y
A.4.3. Do the project participants possess ownership or licenses which will allow the implementation of the project at that site / those sites?	VVM Para.64 PDD section A.4	DR	Yes, Pampa Energía S.A. has the Environmental License for the installation (Disposition Nº 387/2008, Expedient Nº 4805-000401/08) of the project activity.	Y
A.4.4. Is the category(ies) of the project activity correctly identified?	VVM Para.64 PDD section A.4	DR	The category is correctly identified: • Sectoral Category 1 - Energy Industries	Y
A.4.5. Is all information provided in compliance with actual situation or planning as available by the project participants?	VVM Para.64 PDD section A.4	DR	Yes, the works are going on. They are preparing the site for the installation of the new Steam Generator. Verified in the chronogram that it is forecast to start the installation in September 2009.	Y
A.4.6. Is the table required for the indication of projected emission reductions correctly applied?	VVM Para.64 PDD section A.4	DR	Yes, the table follows the CDM-PDD template version 3.	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
A.5. Public Funding				
A.5.1. Does the information on public funding provided conform to the actual situation or planning as presented by the project participants?	PDD section A.4.5	SV	No public funding is being used for the project activity.	Y
A.5.2. Is all information provided consistent with details provided by further chapters of the PDD (in particular annex 2)?	PDD section A.4.5	SV	No public funding is being used for the project activity.	Y
A.5.3. In case of public funding from Annex I Parties is it confirmed that such funding does not result in a diversion of official development assistance	PDD section A.4.5	SV	No public funding is being used for the project activity.	Y
B. Baseline and Monitoring Methodology				
B.1. Choice and Applicability				
B.1.1. Is the baseline methodology previously approved by the CDM Methodology Panel?	VVM Para.68 PDD section B.1	DR	The project uses approved methodology: ACM0007 – Consolidated methodology for conversion from single cycle power generation, version 03.	Y
B.1.2. Has the methodology (incl. the tools) been	VVM Para.69 PDD section B	DR	Methodologies and tools versions are still valid and applicable to the project activity:	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
altered from the original version as referenced in the PDD?	(B.1-B.2)		ACM0007 version 3; Tool to calculate the emission factor for an electricity system, Version 02; Combined tool to identify the baseline scenario and demonstrate additionality, Version 02.2.	
B.1.3. Is the selected approved methodology applicable to the project activity in the PDD?	VVM Para.75/66a/68/73 PDD section B (B.1-B.2)	DR	The project meets the following applicability conditions of ACM0007 version 3: The plant is operational since 1994 and consists of three General Electric natural gas turbines, with an installed capacity of 123.31 MW operating in an open cycle. There was no previous use for the waste heat generated onsite. The average lifetime of the gas turbine is more than 25 years, according with manufacturer. The proposed project will utilize the exhaust heat of the existing gas turbines but will not involve any upgrade or modification of the gas turbines. To calculate the emission factor the actual generation and fuel consumption data necessary for the calculation was obtained from the Wholesale Electricity Market Operator (CAMMESA) website.	Y
B.1.4. Is the discussion in the PDD in conformance with all applicability criteria of the applied methodology?	VVM Para.75/66b/68 PDD section B (B.1-B.2)	DR	The methodology ACM0007 version 3 is applicable where the project activity does not increase the lifetime of the existing gas turbine or engine during the crediting period. CAR 3 was raised to provide documented evidence of the lifetime of the equipments. The open cycle plant is operational since 1994, with three General Electric natural gas turbines operating with a thermal efficiency of about 34%. The proposed project will not upgrade or modify the existing gas turbines that would impact in the operational lifetime. The lifetime of the combined cycle is greater than 10 year crediting period. Verified that the lifetime of the gas turbines is 17 years since the project operation start date. CAR 3 was closed out.	~~CAR 3~~ Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
B.2. Project Boundary				
B.2.1. Are all emission sources and gases related to the baseline scenario, project scenario and leakage clearly identified and described in a complete and transparent manner? Is there information on GHG emissions in proposed CDM project activity boundary as a result of the implementation of the proposed CDM project activity which are expected to contribute more than 1% of the overall expected average annual emissions reductions, which are not addressed by the applied methodology.	VVM Para.79/76 /67a PDD section B.3	DR	Yes, the gases included in the baseline scenario and project scenario is according to the ACM0007. Considered the CO2 emissions from on-site fuel consumption of fossil fuels for operation of the gas turbine or engine.	Y
B.2.2. In case of grid connected electricity projects: Is the relevant grid correctly identified in accordance with the tool to calculate	VVM Para.79 PDD section B.3	DR	It applies the grid defined by the Argentine National Grid System DNA to calculate project emissions. The CO2 emissions from fossil fuel fired power plants connected to the electricity system in the operating and build margin; and the CO2 emissions from operation of Project power plant in open cycle mode were included. The spatial extent of the Project electricity system, as defined in the “Tool to	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
emission factor of electricity system (wherever applicable) and the underlying methodology?			calculate the emission factor for an electricity system", Version 02 comprehends the project plant and other plants connected to the Argentinean grid.	
B.2.3. Does the project boundary include the physical delineation of the proposed CDM project activity?	VVM Para.78/79 PDD section B.3 also see section A.4.3	DR	Section B.3 of the PDD version 2.1 presents the delineation of the proposed project activity.	Y
B.2.4. Are the project's geographical boundaries and the project's system boundaries (components and facilities used to mitigate GHGs) clearly defined?	VVM Para.76/79 PDD section B.3 also see section A.4.3	DR	According to the methodology ACM0007, version 3, The project boundary is the spatial extent of the project boundary encompasses the power plant at the project site and all power plants connected physically to the electricity system that the CDM project power plant is connected to.	Y
B.3. Identification of the Baseline Scenario				
B.3.1. Does the PDD discuss the identification of the most likely baseline scenario? Does the PDD follow the steps to determine the baseline scenario required by the methodology and is the application of the methodology and the discussion and determination of the	VVM Para.67b.80/82/86 PDD Section B.4/B.5	DR	There is a description of the General context of the Electricity Sector in Argentina. All plausible alternative options to the project activity were identified and a detailed analysis was performed on each option according to the steps highlighted in the "Combined Tool to identify the baseline scenario and demonstrate additionality", version 02.2. The determination of the chosen baseline is transparent.	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
chosen baseline transparent?				
B.3.2. Are all tools/procedures in the methodology correctly applied to identify the most reasonable baseline scenario? This includes all potential realistic and credible baseline scenarios in the discussion taking into account relevant national and/or sectoral policies, macro-economic trends and political aspirations?	VVM Para.81/82/86a-d/83/84 PDD Section B.4/B.5	DR	The alternatives scenarios presented are: - Continuation of current practice, (i.e. continue operating the plant in open cycle mode). - Investment in a new fossil fuel plant of annual output equivalent to the proposed project. - Commercial renewable power plant of equivalent capacity to the proposed project not undertaken as a CDM activity. - Project activity implemented as a non-CDM project. All alternatives are in compliance with the prevailing laws and regulations. There is no regulation in Argentina to prevent the continuation of current practice and there are no specific laws that require upgrading existing open cycle thermal plants. There is no regulation for the type of fossil fuel should be used.	Y
B.3.3. Is the choice of the baseline compatible with the available data?	VVM Para.86b-c/95 PDD Section B.4/B.5	DR	The selection of the baseline from the possible scenarios is consistent with available data. All key assumptions are explained and information sources are clearly referenced. Sources were checked to ensure information contained in the PDD is correct. Information was cross checked by confirming the assumptions from other sources (Secretariat of Energy, Legal Framework: http://energia3.mecon.gov.ar/contenidos/verpagina.php?idpagina=882 (Consulted on 08/09/2008 and Secretariat of Energy, Resolution S.E. 182/95: http://energia3.mecon.gov.ar/contenidos/verpagina.php?idpagina=889 (Consulted on 08/09/2008).	Y
B.3.4. Is conservativeness addressed in the way of identifying the baseline?	VVM Para.90 PDD Section B.4/B.5	DR	Yes, the identification of baseline is conservative. The most plausible baseline scenario is the continuation of the operation of the plant in open cycle mode, this mean the continuation of current practice.	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
B.3.5. Does the selected baseline represent the most likely scenario among other possible and/or discussed scenarios?	VVM Para.90/91 PDD Section B.4/B.5	DR	To select the baseline scenario the project applied the barrier analysis as requested in the Combined Tool. The following barriers were considered: Investment barrier, technological barrier, lack of prevailing practice and other barrier. All 4 alternative scenarios were discussed. Scenario 1 - Continuation of current practice: this scenario is not prevent by any barrier because the current practice does not require investments, new equipments or develop a new technology, 11% of the Argentinean grid is generated through thermal open cycle plants (the project is not first of its kind). Scenario 2 - Investment in a new fossil fuel plant: this scenario faces investment barriers because of the current condition in Argentina. The fact that raising capital for new fossil fuel plants in Argentina has became a difficult task for private investors. Identified reasons for this problem are the adoption of adverse tariff restrictions that have impaired the results of Power Companies in the country and reduced the ability to finance their working capital; the significant fluctuations in the Argentine Peso against the U.S. dollar; and the limited access to international credit markets to finance the operation and growth strategies in Argentina, as the restructuring, in 2005, of part of the Argentinean debt that had been in default since 2001. Related to the technological barrier there are uncertainties in the gas market in Argentina that impact the development of new gas thermal plants. The problems are the need to import higher gas volumes at a price higher than the local supply; the redirecting of gas to attend specific demands; and the shortage of gas transportation capacity to carry contracted gas supply from the basins to the plant's site. Scenario 3 - Commercial renewable power plant of equivalent capacity to the proposed Project not undertaken as a CDM activity: this scenario faces investment and technological barrier. The construction of a hydropower plant with the same capacity requires significantly higher investment costs relative to the Project activity15. According to FRACCHIA (2007), the installation cost of 1 MW is at least two times higher for the case of hydro plants in Argentina (FRACCHIA, L.E. "Energía 2007". IAE. Universidad Austral, July, 2007). The current regulatory and economical conditions of	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
			the energy sector in Argentina are the main reason for investors' lack of interest in hydro Projects in Argentina. The region where the project is located has a potential for hydro plants but were never implemented. Also the project owner does not have the capacity to construct and develop hydro plants. Scenario 4 - Project activity implemented as a non-CDM Project: this scenario faces investment and technological barrier. The energy sector in Argentina faces difficulties to attract investments to invest in new plants or in the upgrading of existing plants. No relevant capacity additions have been made in Argentina since 2002. Regarding technological the barrier is related to equipments. The required equipments for the installation of the combined cycle system have to be imported from foreign companies (Siemens, VOGT, Bachman and Foster). The proposed project activity is the first combined-cycle operated by the project owner. According to the barrier analysis presented in the PDD the alternative scenario 1 (Continuation of current practices) is the only one not prevented by any barrier. The alternative not prevented by any barrier is not the proposed project activity undertaken without being registered as a CDM project activity, then this alternative scenario was identified as the baseline scenario. This is in accordance with Combined Tool. In the absence of the proposed project the electricity to meet the demand in the grid will be generated by the operation of the existing power plant in open cycle mode, the operation of existing plants connected to the grid and the addition of new generation sources to the grid.	
B.3.6. Is there a verifiable description of the baseline scenario? Does this include a description of the technology that would be employed and/or the activities that would take place in	VVM Para.86e/85 PDD Section B.4/B.5	DR	The aim of the project is to deliver clean and sustainable generated electricity by the installation of a Steam Generator. The proposed project activities will generate additional electricity without any additional use of fossil fuels and associated CO2 emissions.	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
the absence of the proposed CDM project activity?				
B.4. Additionality				
B.4.1. Does the PDD clearly demonstrate the additionality using the approach as specified in the methodology and by following all the required steps?	VVM Para.67d/95 PDD Section B.1/B.4/B.5	DR	The project applied the Combined Tool, see B.4.2 below. The additionality discussion is based on barrier analysis. The PDD version 1 presents some information about investment analysis. In the case of using investment analysis the information should be presented according to the "Tool" (Combined tool to identify the baseline scenario and demonstrate additionality, version 2.2). CAR#1 was raised. The revised PDD version 2 follows correctly the Combined Tool. The barrier analysis was discussed showing that the baseline scenario is the continuation of the current practice. Section B.5 presents the additional explanation about how the registration of the CDM project will alleviate the barrier that prevents the project activity. Data not related to the additionality discussion was excluded from the PDD. CAR#1 was closed out.	~~CAR 1~~ Y
B.4.2. In case of using the additionality tool: Is the 'Additionality Tool' used in the PDD latest version? If an earlier version has been used, do the changes impact the discussion in the PDD? Are all steps followed in a transparent manner?	PDD Section B.1/B.4/B.5	DR	The project uses the latest version of the "Combined tool to identify the baseline scenario and demonstrate additionality" Version 2.02. Section B.4 of the PDD describes the barriers that prevented the implementation of the project. The baseline scenario is the continuation of the operation of the plant in open cycle mode. According to the Combined Tool, as the outcome of step 2, if there is only one alternative that is not prevented by any barrier, and if this alternative is not the proposed Project activity undertaken without being registered as a CDM Project activity, then this alternative is identified as the baseline scenario. In addition, still under step 2, if the CDM alleviates the barriers that prevent the implementation of the Project activity, step 4 (common practice analysis) should be conducted. The project being implemented without CDM faces investment and technological barrier. According to Resolution SE 406/03 (http://www.enre.gov.ar) the generating	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
			companies should be reimbursed first for their variable operational costs and secondly their profit on spot transactions, if CAMMESA has available funds. If not, these profits would be withheld by CAMMESA for future payment. The result of the structural difficulties faced by the electricity sector in Argentina, investments in either conversions or construction has been deterred. No relevant capacity additions have been made in Argentina from 2002 until 2007. Also the electricity spot price is calculated based on the operational costs of the most inefficient plant connected to the grid. The spot prices have been artificially frozen by the government. With this scenario to invest in a combined cycle thermal plant is not attractive as has no incentive in the country. This project will be the first combined cycle plant operated by the project owner. A specific training course will be developed in order to guarantee a high quality operation and maintenance. Gas turbine combined-cycle power plants are usually designed to operate at full capacity all the time. Operation reduction may trigger the production of heat as exhaust temperatures falls off rapidly. The reduction of the energy delivered to the grid in the aim of the Energía Plus program compromises the economic benefits of the Project representing a disincentive to energy private investors in Argentina. It is expected that the CDM revenues will help to surpass the investment barrier mentioned in section B.4 of the PDD (low electricity price in Argentinean, the current political scenario and the currency exchange rate risk). The CDM revenues will mitigate the risk of gas supply because the project does not increase the gas consumption. Finally it is expected that the CDM will alleviate the identified barriers that prevent the proposed Project activity from occurring. Step 4 – common practice analysis is correctly applied and proved that the project activity is not a common practice scenario. All steps of the Tool were correctly followed.	
B.4.3. Has all information	VVM Para.93/91	DR	All evidence presented is considered credible and reliable. Source data	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
been backed up with references, sources and certification? Is the data presented credible and reliable with complete transparency to all available data and documentation?	PDD Section B		used was provided and is based in official information (public information). Ref.5, 6, 12.	
B.4.4. Is the discussion on additionality and the evidence provided consistent with the starting date of the project? If the project activity start date is prior to the validation is it discussed how the CDM was taken into account in the decision to go ahead with the project activity	VVM Para.102b PDD Section B.5	DR	The proposed start date of the project activity according to PDD version 1 is 06/09/2007. The start date is before validation, reliable evidence that the CDM was considered prior to the project start date and that continuing and real actions were taken to secure the CDM status for the project activity in parallel with its implementation, following the guidelines from paragraph 5, EB 41, Annex 46. The response should provide a detailed timeline of project implementation. CL#2 was raised. The start date of the project is 06/09/2007 that represents the signing of the contract between Pampa Energia S.A. and Isolux for the design, engineering, equipments, installation, civil works and tests required for the conversion of Loma de la Lata to Combined Cycle. Section B.5 of the PDD version 2 presents the timeline and reliable evidence that the CDM was considered prior to the project start date and continuing action in parallel with its implementation. The project follows the EB41 annex 46. CL#2 was closed out. The CDM was considered prior to the project start date (Ref.13): - January - April 2006: Pampa acquired 8.66% of the capital stock of Central Puerto S.A., the owner of the Loma de la Lata; - May 2006: Pampa started conversations with Econergy Argentina to evaluate the CDM potential of the Project activity; - 13/09/2006: Econergy presented a commercial proposal for the validation of the Project and purchase its CERs; - 04/12/2006: Central Puerto S.A. agreed to sell the Central Térmica Loma	~~CL#2~~ Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
			de la Lata to Pampa; - 12/03/2007: EcoSecurities presented a proposal for the validation process and to purchase its CERs. (Ecosecurities started conversations with Pampa Energía S.A. before that date, however there are no formal evidences to sustain that until March); - May 2007: Closing of the acquisition of the Central Térmica Loma de la Lata by Project Developer; - 06/07/2007: A Pampa's Board Meeting took place in which it was stated that its subsidiary, the Project developer was in advanced negotiations with carbon consulting companies (MGM and EcoEnergy) to develop the CDM component, essential source of revenue that would turn the Project economically viable; - 11/07/2007: EcoSecurities continued negotiating a proposal until November 2007, when the Project developer informed that the proposal had been accepted; - 08/09/2007: local newspaper published an article about the Project activity and its implementation as CDM Project; - 06/09/2007: starting date of the Project activity. - 10/12/2007: the Project Developer signed the CDM Emission Reduction Purchase Agreement with EcoSecurities relating to the Combined Cycle at Loma de la Lata Thermo Unit Project. - January - October 2008: EcoSecurities and the Project Developer worked in the elaboration of the CDM Project Design Document. - September 2008: start of civil works at project site. - 06/11/2008: PDD published (validation). With the information provided can be considered that the CDM was seriously considered before project start date and continuously. The project meets the EB41 Annex 46 requirements.	
B.4.5. If an investment	VVM Para.	DR	Not applicable, no investment analysis was used.	Y

Checklist Question		Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
	analysis has been used, has it been shown that the proposed project activity is economically or financially less attractive than at least one other alternative without the revenue from the sale of CERs?	106, 107, 109 112a-c PDD Section B.5			
B.4.6.	If a benchmark is used, is it ensured that it is selected in accordance with the requirements of the tool /methodology and it represents standard returns in the market (not linked to the subjective profitability expectation or risk profile of a particular project developer).	VVM Para. 110 PDD Section B.5	DR	Not applicable, no investment analysis was used.	Y
B.4.7.	If a barrier analysis has been used, has it been shown that the proposed project activity faces barriers that prevent the implementation of this type of proposed project activity but would not have	VVM Para. 114 115a-b/116 PDD Section B.5	DR	See item B.4.2 for detail about barrier analysis. The project applied the Combined Tool and the barriers are discussed in this item. The barriers presented were considered real and applicable to the proposed project. It was demonstrated the barriers prevent the project implementation especially when considering the energy section in Argentina with low tariff, no incentive or programs to develop.	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
prevented the implementation of at least one of the alternatives?				
B.4.8. Is the discussion on additionality consistent with the identification of all plausible and credible baseline scenarios?	VVM Para. 105 PDD Section B.5	DR	The additionality discussion is consistent compared with project scenario and alternative scenarios presented.	Y
B.4.9. Do the identified baseline scenarios include technologies and practices that include outputs or services comparable with the proposed CDM project activity? Do they also abide by the same applicable laws and legislations?	VVM Para. 105 PDD Section A.4.3/B.5	DR	As stated in section B.3 of the checklist the project attend all relevant policies and circumstances. The most plausible baseline scenario is the continuation of the operation of the plant in open cycle mode, this mean the continuation of current practice.	Y
B.4.10. Has it been shown that the project is not common practice?	VVM Para. 119a/b PDD Section B.5	DR	As the CDM will alleviates the barriers that prevent the implementation of the Project activity, step 4 (common practice analysis) should be conducted. The common practice analysis (step 4 of the Combined tool) should be revised to identify clearly the essential distinctions between project activity and similar projects identified. CL 6 was raised. The revised PDD version 2 presents more details and a conclusive common practice analysis. The conclusion is that there are no other similar projects compared with proposed project activity. CL 6 was closed out. The common practice analysis complements the barrier analysis. In this case similar activities to the proposed CDM project activity are defined as activities that are of similar scale, take place in a comparable environment, inter alia, with respect to the regulatory framework and are undertaken in the relevant geographical area.	~~CL 6~~ Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
B.4.11. What are the key distinctions between the project activity and any similar projects that are widely used as common practice?	VVM Para. 118, 119c/d PDD Section B.5	DR	From 1997 to 2000 several natural gas open cycle plants were converted to combined-cycle in Argentina. Currently there are 12 combined cycle thermal plants connected to the grid in Argentina. All the 12 plants were commissioned prior to the regulatory framework modification that the government conducted in 2002 due to the economic crisis that the country. This new regulatory framework has introduced low electricity tariffs and created barriers to the implementation of most efficient technologies (combined cycle thermal plants). Considering this scenario the 12 plants are not considered similar to the proposed project activity. There are other two combined cycle plant in construction but different to the proposed project because these projects do not consist in closing an open cycle. Both plants are being developed with Government support, receiving direct financing of the FONINVEMEM (Ref.12). Distinctions between the project activity and similar projects were demonstrated. The proposed project activity can not be considered common practice.	Y
B.5. Application of the Baseline Methodology				
B.5.1. Has the approved methodology been applied correctly for determining **baseline emissions**?	VVM Para. 91d PDD Section B (B.6.1 -B.71)	DR	The project follows the methodology ACM0007, version 3. Sufficient discussion on the chosen methodology is presented in PDD. The baseline is the continuation of the existing process i.e. the continuation of the current practice of generating electricity in open mode cycle with the existing gas turbines and the electricity generated from the waste heat being supplied to the grid. Baseline emission consists in the electricity that would be generated by the operation of the power plant in open cycle mode and by grid-connected power plants. The emissions factor for the open cycle in the baseline is calculated by the historical performance of the plant 5 years data previous to the start of the project. The Baseline emission factor was calculated as a combined margin according to the Tool to calculate the emission factor for an electricity system, version 2.	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
B.5.2. Has the approved methodology been applied correctly for determining **project emissions**?	VVM Para. 90/91d PDD Section B (B.6.2-B.71)	DR	Consider emissions from the use of fossil fuel to operate the gas turbine and supplementary fossil fuel used in order to operate the steam turbine.	Y
B.5.3. Has the approved methodology been applied correctly for determining **leakage**?	VVM Para. 91d PDD Section B (B.6.2 -B.71)	DR	Leakage is assumed negligible according to ACM0007 version 3.	Y
B.5.4. Where applicable, has the approved methodology been applied correctly for the **direct calculation of emission reductions?**	VVM Para 88/91d PDD Section B (B.6.2 -B.71)	DR	All formulas presented in the PDD follows the required by the methodology. Leakage is not applicable. $ER_y = BE_y - PE_y - L_y$	Y
B.5.5. Where there is an option between different equations or parameters, has the methodological choices for the project been explained, have they been properly justified and are they correct?	VVM Para.89/90/91 PDD Section B (B.6.2 -B.71)	DR	There are no options between different equations. Formulas presented in the methodology ACM0007 version 3 are correctly presented in the PDD version 2.1.	Y
B.5.6. Are uncertainties in the GHG emissions estimates properly addressed in the documentation?	PDD Sections B.5-C	DR	Estimative based on official data and historical data.	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
B.6. Ex-ante Data and Parameters Used				
B.6.1. Are the data provided in compliance with the methodology?	VVM Para. 91/67c PDD Section B.6.3B.6.4	DR	Parameters listed in section B.6.2 of the PDD that will remain fixed during the crediting period were verified and considered correct. The following parameters will remain fixed during crediting period: Historical net quantity of electricity generated by the Open Cycle operation of the power plant; Net power generation capacity of the open cycle gas turbine or engine; Net generation capacity of the Project power plant; Historic fuel consumption of the Project in Open cycle generation; Grid Operating Margin (based on CAMMESA (Wholesale Power Market Operator)); Grid Build Margin; Default weighting value for Operating Margin; Default weighting value for Operating Margin; Grid emission factor. Is the CO2 emissions intensity of the electricity displaced in the grid.	Y
B.6.2. Is all the data derived from official data sources or replicable records and have these been correctly quoted?	VVM Para. 91a/b PDD Section B.6.3/B.6.4	DR	Yes, data provided in section B.6.2 were from official sources. Data from National Secretariat of Energy, CAMMESA; and open cycle thermal power plant historical data based on the latest 5 years.	Y
B.6.3. Is the vintage of the baseline data correct?	PDD Section B.6.3/B.6.4	DR	The most recent 5 years data was used according to the methodology (from 2003 – 2008).	Y
B.6.4. Is all the data appropriate and correctly applied to	VVM Para. 91c	DR	Yes, the data is considered appropriate to the project.	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
the CDM project activity?	PDD Section B.6.3/B.6.4			
B.6.5. Are data and parameters that are not being monitored and remained fixed throughout the crediting period appropriately assessed, correct, and will they result in conservative estimates?	VVM Para. 90 PDD Section B.6.3/B.6.4	DR	The estimated parameters set out in the PDD are considered reasonable resulting in a conservative estimate.	Y
B.7. Calculation of Emissions Reductions				
B.7.1. Has the approved methodology been applied correctly for determining **emission reductions**?	VVM Para. 91d PDD Section A.4.4/B.6	DR	Formulas are correctly described in the PDD according to required by the methodology and tools. Leakage is not applicable. $ER_y = BE_y - PE_y - L_y$	Y
B.7.2. Are the emission reduction calculations documented in a complete and transparent manner?	VVM Para. 91e PDD Section B.6	DR	The equations are presented in the PDD. With the data provided in the PDD it's possible to reproduce the calculation.	Y
B.7.3. Is the projection based on same procedures as used for later monitoring or acceptable alternative models?	PDD Section B.6	DR	The same procedure to calculate the estimate emissions reduction will be used during monitoring period using the real data measured.	Y
B.7.4. Is the calculation of the emission	VVM Para.	DR	Formulas to calculate emissions and emission reductions were checked and were found correct.	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
reduction correct?	91e PDD Section B.6			
B.8. Emission Reductions				
B.8.1. Is the form/table required for the indication of projected emission reductions correctly applied?	PDD Section A.4.4/ Section B.6	DR	Yes, the table follows the correct format.	Y
B.8.2. Is the projection in line with the envisioned time schedule for the project's implementation and the indicated crediting period?	PDD Section A.4.4/ Section B.6	DR	Yes, the projection is in line with project implementation and the indicated in the crediting period.	Y
B.9. Monitoring Methodology				
B.9.1. Does the monitoring methodology provide a consistent approach in the context of all parameters to be monitored and further information provided by the PDD? Are all parameters and data that are available at validation consistent with the approved	VVM Para. 67e PDD Section B.7-B.8 see also Annex 4	DR	Data and monitored parameters and parameters available at validation are according to the required by the methodology.	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
methodology. Has this data been interpreted and applied correctly?				
B.9.2. Does the monitoring methodology apply consistently the choice of the option selected for monitoring both of project and baseline emissions?	PDD Sections B and C	DR	Data and monitored parameters and parameters available at validation are according to the required by the methodology.	Y
B.10. Data and Parameters Monitored				
B.10.1. Does the monitoring plan in the PDD comply with the approved methodology provided for the collection and archiving of all relevant data necessary for estimation or measuring the emission reductions within the project boundary during the crediting period?	VVM Para. 91a/91d/121/79 PDD Section B.7-B.7.2	DR	Verified during site visit that the consumption of fuel is registered in a daily basis. According to ACM0007 version 3 this parameter should be monitored hourly. CL 5 was raised. According to the revised PDD version 2 the gas consumption will be measured continuously by Project for each gas turbine and will be registered hourly. The gas consumption measured by the supplier in a daily basis will be cross-checked every month with Project measurements. CL 5 was closed out. Verified during site visit that the High Heating Value (HHV) is analyzed every 5 minutes using the chromatography. The Net Calorific Value (NCV) is calculated through the internal computer using the HHV. The response should provide the detailed NCV measurement according to ACM0007 version 3. CL 4 was raised. The NCV of the fossil fuel can be measured or calculated according to the methodology. The NCV will be determined by the project developer and monthly report will be available. CL 4 was closed out. The monitoring plan comply with monitoring methodology and the following parameters will be monitored: Net quantity of electricity generated by the project power plant; Consumption of fuel i (natural gas) of Project for operating gas turbine	~~CL 5~~ ~~CL 4~~ Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
			during the year; Consumption of fuel j of Project during the year y for operating Steam Turbine; Net calorific value of the consumed natural gas in the year; CO2 emission factor for the fossil fuel used previous to the Project start.	
B.10.2. Are the choices of project GHG indicators reasonable and in conformance with the requirements set by the approved methodology applied?	PDD Section B.7-B.7.2/B.6.2	DR	The requirements of approved methodology are reflected in the PDD version 2.1.	Y
B.10.3. Will it be possible to determine the specified project GHG indicators?	PDD Section B.6.2-B.8	DR	Data are according to the required by the methodology.	Y
B.10.4. Is the information given for each monitoring variable by the presented table sufficient to ensure the verification of a proper implementation of the monitoring plan?	PDD Section B.6.2-B.7.1	DR	The information provided describes properly the implementation of the monitoring plan.	Y
B.10.5. Is the information given for each monitoring variable by the presented table sufficient to ensure the delivery of high quality data free of potential for biases or	PDD Section B.6.2-B.7.1	DR	The electricity generated will be monitored by the project and it will be checked by the meter readings.	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
intended or unintended changes in data records?				
B.10.6. Is the monitoring approach in line with current good practice, i.e. will it deliver data in a reliable and reasonably acceptable accuracy?	PDD Section B.5-B.7.2	DR	Main data will be collected automatically using calibrated meters.	Y
B.10.7. Are all formulae used to determine project emission clearly indicated and in compliance with the monitoring methodology.	PDD Section B.6.2-B.7.1	DR	Formulas are correctly applied and the CER spreadsheet was provided.	Y
B.11. Quality Control (QC) and Quality Assurance (QA) Procedures				
B.11.1. Is the selection of data undergoing quality control and quality assurance procedures complete?	VVM Para. 121 Refer to all data within the PDD Inc. B.6.2-B.7.1	DR	All monitored parameters in section B.7.1 of the PDD presents the quality control and quality assurance procedure.	Y
B.11.2. Is the belonging determination of uncertainty levels done correctly for each ID in a correct and reliable manner?	Refer to all data within the PDD Inc. B.4/B.7.2/Annex 4	DR	Monitoring data will be continuously measured using calibrated meters.	Y
B.11.3. Are quality control procedures and quality assurance	VVM Para 121	DR	At the time of the site visit the project was not implemented, consequently there is no procedure in place. As stated in the PDD version 2.1 all data will be monitored electronically and archived (backup). Data shall be kept for	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
procedures sufficiently described to ensure the delivery of high quality data?			the crediting period plus two years or the last issuance of CERs.	
B.11.4. Is it ensured that data will be bound to national or internal reference standards?	VVM Para. 86d	DR	Monitoring data will be reproducible and comparable with third parties. The electricity meter will be audited by the concessionary company (CAMMESA). Natural gas consumption is controlled by the project and by the supplier.	Y
B.11.5. Is it ensured that data provisions will be free of potential conflicts of interests resulting in a tendency of overestimating emission reductions?	VVM Para. 19	DR	Monitoring data will be continuously measured using calibrated meters and controlled by the project and third parties.	Y
B.12. Operational and Management Structure				
B.12.1. Is the authority and responsibility of project management clearly described?	PDD Section B.8/Annex 1	DR SV	The project is not implemented yet. Authority and responsibilities of project management will implement before project operation.	Y
B.12.2. Is the authority and responsibility for registration, monitoring, measurement and reporting clearly described?	PDD Section B.8/Annex 1	DR SV	According to the PDD version 2, the responsibilities of the personnel regarding data collection, calibration, maintenance, and record will be established and documented. FAR#7 was raised.	FAR#7
B.12.3. Are procedures identified for training of monitoring personnel?	PDD Section B.8/Annex 1	DR	The skilled personnel designated for the operation of the plant will receive training for the engineering provider. Additionally they will receive training on CDM monitoring requirements and data recording and reporting to guarantee the awareness and commitment of the personnel to monitor the required data for the entire crediting period. FAR#7 was raised.	FAR#7

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
B.13. Monitoring Plan (Annex 4)				
B.13.1. Is the monitoring plan developed in a project specific manner clearly addressing the unique features of the CDM activity?	VVM Para. 122a	DR	The information regarding the monitoring plan is presented in section B.7.2 of the PDD version 2 (Annex 4 of the PDD refers to section B.7.2). The project is not implemented. The monitoring plan reflects the actual condition of the project and what will be implemented before project operation. FAR#8 was raised.	FAR#8 See FAR for more detail
B.13.2. Does the monitoring plan completely describe all measures to be implemented for monitoring all parameter required, including measures to be implemented for ensuring data quality?	VVM Para. 122b	DR	Monitoring data will be continuously measured using calibrated meters.	Y
B.13.3. Does the monitoring plan provide information on monitoring equipment and respective positioning in order to safeguard a proper installation?	VVM Para. 122b	DR	The project is not implemented. The monitoring plan reflects the actual condition of the project and what will be implemented before project operation. FAR#8 was raised.	FAR#8 See FAR for more detail
B.13.4. Are procedures identified for calibration of monitoring equipment?	VVM Para. 122a-c	DR	The PDD version 2 states that meters will be subjected to calibration but as the project is not implemented there is no procedure available. The monitoring plan reflects the actual condition of the project and what will be implemented before project operation. FAR#8 was raised.	FAR#8 See FAR for more detail
B.13.5. Are procedures identified for maintenance of monitoring equipment	VVM Para. 122a-c	DR	The project is not implemented. The monitoring plan reflects the actual condition of the project and what will be implemented before project operation. FAR#8 was raised.	FAR#8 See FAR for more detail

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
and installations?				
B.13.6. Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)	VVM Para. 122a-c	DR	The project is not implemented. The monitoring plan reflects the actual condition of the project and what will be implemented before project operation. FAR#8 was raised.	FAR#8 See FAR for more detail
B.13.7. Are procedures identified for dealing with possible monitoring data adjustments and missing data allowing redundant reconstruction of data in case of monitoring problems?	VVM Para. 122a-c	DR	The project is not implemented. The monitoring plan reflects the actual condition of the project and what will be implemented before project operation. FAR#8 was raised.	FAR#8 See FAR for more detail
B.13.8. Are procedures identified for internal audits of GHG project compliance with operational requirements where applicable?	VVM Para.122a-c	DR	The project is not implemented. The monitoring plan reflects the actual condition of the project and what will be implemented before project operation. FAR#8 was raised.	FAR#8 See FAR for more detail
B.13.9. Are procedures identified for project performance reviews before data is submitted for verification, internally or externally?	VVM Para. 122a-c	DR	The project is not implemented. The monitoring plan reflects the actual condition of the project and what will be implemented before project operation. FAR#8 was raised.	FAR#8 See FAR for more detail

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
B.13.10. Describe the ability of the project participants to implement the monitoring plan.	VVM Para. 122c	DR	The project is not implemented. The monitoring plan reflects the actual condition of the project and what will be implemented before project operation. FAR#8 was raised.	FAR#8 See FAR for more detail
B.14. Baseline Details				
B.14.1. Is there any indication of a date when determining the baseline?	PDD Section B.8/Annex 3	DR	From the information provided by the Client in the PDD version 2 section B.8 states that the baseline was determined on 12th of September 2008.	Y
B.14.2. Is this consistent with the time line of the PDD history?	Also see revision history of the PDD	DR	From the information provided by the Client in the PDD version 2 the determination of baseline is consistent with the PDD history. PDD version 2: 24/07/2009 Baseline: 12/09/2008	Y
B.14.3. Is all data required provided in a complete manner by annex 3 of the PDD?	PDD Annex 3	DR	From the information provided by the Client in the PDD version 2, Annex 3 states the key elements that were used in the estimation of the baseline emission.	Y
C. **Duration of the Project / Crediting Period**				
C.1.1. Are the project's starting date and operational lifetime clearly defined and reasonable?	VVM Para. 102a-c PDD Section C.1.1/C.1.2	DR	From the information provided by the Client in the PDD version 2.1 the start date stated is the 06/09/2007. This is the date of the contract between Pampa Energia S.A. and Isolux - Corsán for the design, engineering, equipments provision, installation, civil works and tests required for the Convertion of Loma de la Lata to Combined Cycle (ref. 15). The operational lifetime of the project is stated as 17 years.	Y
C.1.2. Is the assumed crediting time clearly defined and reasonable (renewable crediting	VVM Para. 102a PDD Section C.2/C.2.1/C.2.2	DR	From the information provided by the Client in the PDD version 2.1 the assumed crediting time is defined as a fixed crediting period of 10 years.	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
period of max 7 years with potential for 2 renewals or fixed crediting period of max. 10 years)?				
C.1.3. Does the project's operational lifetime exceed the crediting period	VVM Para. 102a PDD Section C.1.2/C.2.1.1/C.2.1.2	DR	From the information provided by the Client in the PDD version 2.1 the operational lifetime exceeds the crediting period.	Y
C.1.4. Does the start date indicate whether this is a new project activity or a pre-existing project activity?	VVM Para. 102a/ 98 PDD Section C.1.1/C.2.1.1	DR	From the information provided by the Client in the PDD version 2.1 the project start date is stated as 06/09/2007. This would classify it as a new project. The CDM was considered prior to the project start date (Ref.13).	Y
D. Environmental Impacts				
D.1.1. Does the project comply with environmental legislation in the host country?	VVM Para. 131 PDD section D	DR	The Environmental Impact Assessment (EIA) of the project activity was already elaborated by the Regional School of Avellaneda of the National Technological University of Argentina. This document was presented to the National Regulator Entity of Electricity (ENRE) that approved the incorporation of the project to the Wholesale Electric Market (MEM) on 22nd May 2008. Locally, the EIA was submitted to the Sub-Secretariat of Environment, of the State Secretariat of Environmental Resources of the Provincial Government of Neuquén (SSMADS). The mentioned authority conceded the Environmental License for the Construction of the Combined-Cycle through the Disposition Nº 387/2008 of 21/07/2008.	Y
D.1.2. Has an analysis of the environmental impacts of the project activity been sufficiently	VVM Para. 131 PDD section D	DR	Yes, see D.1.1 above.	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
described?				
D.1.3. Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?	VVM Para. 131 PDD section D	DR	Yes, see D.1.1 above.	Y
D.1.4. Will the project create any adverse environmental effects?	VVM Para. 131 PDD section D	DR	In general, the outcome of the EIA was favourable and the project was not found to have permanent environmental or social negative impacts overall.	Y
D.1.5. Are trans-boundary environmental impacts considered in the analysis?	VVM Para. 131 PDD section D	DR	No trans-boundary environmental impacts are likely to occur due to the project activity.	Y
D.1.6. Have identified environmental impacts been addressed in the project design?	VVM Para. 131 PDD section D	DR	With mitigation controls planned as part of the project design, construction and operation according to the recommendations of the EIA, and the contribution made by the project to sustainable development at local and national scales, the project is expected to have an overall positive impact on the local and global environment. All negative environmental impacts are subject to mitigation.	Y
E. Stakeholder Comments				
E.1.1. Have relevant stakeholders been consulted?	VVM Para. 128a PDD Section E.1	DR	The following entities were invited to comment on project on 13/11/2008 (copy of the letters were provided during validation assessment, Ref. 17): · National and Local Environment Authorities; · Local and national media; · Academics; · Industry association representatives; · NGOs;	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
			· Local community association(s); · Local community.	
E.1.2. Have appropriate media been used to invite comments by local stakeholders?	VVM Para. 128a PDD Section E.1	DR	Yes, verified the letters and e-mails. Also newspaper announcements, to publish details of the project on its web site and to invite the local stakeholders. Letters were sent in Spanish (local language).	Y
E.1.3. Is the undertaken stakeholder process described in a complete and transparent manner?	VVM Para. 128b PDD Section E.1	DR	From the information provided by the Client in the PDD version 2 section E the undertaken local stakeholder process has been described in a complete and transparent manner.	Y
E.1.4. Is a summary of the stakeholder comments received provided?	VVM Para. 128b PDD Section E.2	DR	From the information provided by the Client in the PDD version 2 section E.2 provides a summary of the local stakeholder comments. No comments received from the process.	Y
E.1.5. Has due account been taken of any stakeholder comments received?	VVM Para. 128b PDD Section E.3	DR	No comments received.	Y

A.3 Annex 3: Overview of Findings

Findings Overview

Findings Overview Summary

	CARs	CLs	FARs
Total Number raised	3	4	2

Date:	17/12/2008		Raised by:	Fabian Gonçalves	
Type:	CAR	Number:	01	Reference:	B.4.1

Lead Assessor Comment:

The additionality discussion is based on barrier analysis. The PDD version 1 presents some information about investment analysis. In the case of using investment analysis the information should be presented according to the "Tool" (Combined tool to identify the baseline scenario and demonstrate additionality, version 2.2).

Project Participant Response: **Date:** 16/01/2009

"Baseline methodology for conversion from single cycle to combined cycle power generation", ACM007, version 3, states:
"Project participants shall identify the most plausible baseline scenario and demonstrate additionality using the latest approved version of the "Combined tool to identify the baseline scenario and demonstrate additionality".
"This methodology is only applicable where it can be demonstrated that the baseline scenario is the continuation of the current practice" (page 2).

Furthermore, according with the "Combined tool to identify the baseline scenario and demonstrate additionality", version 2.1:"If there is only one alternative scenario that is not prevented by any barrier, and if this alternative is not the proposed project activity undertaken without being registered as a CDM project activity, then this alternative scenario is identified as the baseline scenario. Explain – using qualitative or quantitative arguments – how the registration of the CDM project activity will alleviate the barriers that prevent the proposed project activity from occurring in the absence of the CDM. If the CDM alleviates the identified barriers that prevent the proposed project activity from occurring, proceed to Step 4, otherwise the project activity is not additional."

Based on the above requirements, PDD section B.4 presented the identification of alternative scenarios to the proposed CDM Project activity ("Tool" Step 1) and the Barrier analysis ("Tool" Step 2). The conclusion of the barrier analysis was that the baseline scenario is the continuation of the current practice (continue operating the plant in open cycle mode).
Thus, section B.5 presented based on qualitative and quantitative arguments how the registration of the CDM project activity will alleviate the barriers that prevent the proposed project activity from occurring in the absence of the CDM. The project cash flow was utilized as a quantitative indicator to demonstrate the impact of the CDM revenues in the project IRR.
Nevertheless, and in order to avoid misunderstanding, the presentation of quantitative information about CDM revenues was modified in PDD Section B.5 and Annex 3. Also the "Financial input table" and "Financial analysis" spreadsheets were removed from the project Calculator. The information presented in PDD Annex 3 can be found in the spreadsheet "Tables for PDD" of the Calculator new version.
Please refer to the attached documents.

Documentation Provided by Project Participant:

- Combined Cycle at Loma de la Lata Thermo Unit Project, PDD Version Number 2, 24/07/2009
- Loma de la Lata – Calculator, version 2, 24/07/2009

Information Verified by Lead Assessor:

Verified the PDD version 2 and spreadsheet with data version 2.

Reasoning for not Acceptance or Acceptance and Close Out:

The revised PDD version 2 follows correctly the Combined Tool. The barrier analysis was discussed showing that the baseline scenario is the continuation of the current practice. Section B.5 presents the additional explanation about how the registration of the CDM project will alleviate the barrier that prevents the project activity. Data not related to the additionality discussion was excluded from the PDD. CAR#1 was closed out.
Acceptance and Close out by Lead Assessor: **Date:** 24/07/2009

Date:	17/12/2008		Raised by:	Fabian Gonçalves	
Type:	CL	Number:	02	Reference:	B.4.4
Lead Assessor Comment:					
The proposed start date of the project activity according to PDD version 1 is 06/09/2007. If the start date is before validation, reliable evidence that the CDM was considered prior to the project start date and that continuing and real actions were taken to secure the CDM status for the project activity in parallel with its implementation, following the guidelines from paragraph 5, EB 41, Annex 46 should be presented. The response should provide a detailed timeline of project implementation.					
Project Participant Response:			**Date:** 16/01/2009		
A detailed timeline describing CDM consideration prior to the project start date and the activities performed in parallel with project implementation to secure CDM status was included in section B.5. Please refer to the updated PDD, version 2.					
Documentation Provided by Project Participant:					
- Combined Cycle at Loma de la Lata Thermo Unit Project, PDD Version Number 1.1, 16/01/2009					
Information Verified by Lead Assessor:					
Verified the PDD version 2.					
Reasoning for not Acceptance or Acceptance and Close Out:					
The start date of the project is 06/09/2007 that represents the signing of the contract between Pampa Energia S.A. and Isolux for the design, engineering, equipments, installation, civil works and tests required for the conversion of Loma de la Lata to Combined Cycle. Section B.5 of the PDD version 1.1 presents the timeline and reliable evidence that the CDM was considered prior to the project start date and continuing action in parallel with its implementation. The project follows the EB41 annex 46. CL#2 was closed out.					
Acceptance and Close out by Lead Assessor:			**Date:** 21/04/2009		

Date:	17/12/2008		Raised by:	Fabian Gonçalves	
Type:	CAR	Number:	03	Reference:	B.1.4
Lead Assessor Comment:					
The methodology ACM0007 version 3 is applicable where the project activity does not increase the lifetime of the existing gas turbine or engine during the crediting period. The response should provide documented evidence of the lifetime of the equipments.					
Project Participant Response:			**Date:** 16/01/2009		
Section A.4.3 of the PDD submitted for validation (Version 1, 24/10/2008) states: "The existing plant, operational since 1994, consists of three General Electric natural gas turbines, Model PG9171E of 123.31 MW each one, operating in open cycle with a thermal efficiency of about 34% (based on the latest five years operational data)." "It is important to mention that, the project will not involve any upgrade or modification to the existing gas turbines that would impact in their technical operational lifetime. The lifetime of all the combined cycle equipments is greater than the 10 year crediting period." The above stated was based on the technology provider (General Electric) paper "Heavy-Duty Gas Turbine Operating and Maintenance Considerations" (attached), which states: "Parts unique to a gas turbine requiring the most careful attention are those associated with the combustion process together with those exposed to high temperatures from the hot gases discharged from the combustion system. An additional area for attention, though a longer-term concern, is the life of the compressor and turbine rotors." (Page 1) "There are many factors that can influence equipment life and these must be understood and accounted for in the owner's maintenance planning. As indicated in *Figure 5*, starting cycle, power setting, fuel and level of steam or water injection are key factors in determining the maintenance interval requirements as these factors directly influence the life of critical gas turbine parts." (Page 4)					

"Thermal mechanical fatigue is the dominant limiter of life for peaking machines, while creep, oxidation, and corrosion are the dominant limiters of life for continuous duty machines. GE bases gas turbine maintenance requirements on independent counts of starts and hours. Whichever criteria limit is first reached determines the maintenance interval". (Page 5)
"Disassembly and inspection of all rotor components is required when the accumulated rotor starts or hours reach the inspection limit"(Page 13)
"Like HGP (Hot Gas Path) components, the unit rotor has a maintenance interval involving removal, disassembly and thorough inspection. This interval indicates the serviceable life of the rotor and is generally considered to be the teardown inspection and repair/replacement interval for the rotor." (Page 33).

According with page 35: "For rotors other than F class, rotor maintenance should be performed at intervals recommended by GE through issued Technical Information Letters (TILs). Where no recommendations have been made, rotor inspection should be performed at 5,000 factored starts or 200,000 factored hours".

Furthermore, according with the Electric Power Research Institute (EPRI), "Gas Turbine Rotor Life Evaluation" paper: "Sections of the rotor may be deemed non-serviceable after 100,000–200,000 hours or between 2500 and 5000 starts… Rotor rebuild/replacement, along with the associated outage, is estimated to exceed $6 million per machine."

Loma de la Lata Open Cycle, operational since 1994, consists of three General Electric natural gas turbines, Model PG9171E, each one with an installed capacity of 123.4 MW.
According with plant historical data the total operative hours of the three turbines since the plant start operation (May 1994) until October 2008 has been: GT1 = 61,260 hrs. GT2 = 63,137 and GT3 = 64,339 hrs. Therefore, the turbine's third rotor is the one with the shorter remaining lifetime.
The turbines are type E, thus the rotor inspection should be performed at 200,000 factored hours.
Therefore, based on the following data: i) The average load factor of the open cycle of the past five years have been 51%; ii) the combined cycle will start to operating around July 2010 and iii) the estimated load factor of the combined cycle is: 86%, the remaining lifetime of the gas turbines rotors is at least 17 years since the project operation start date. (Please refer to the updated Raw data spreadsheet of Loma de la Lata Calculator).

Therefore, during the CDM project crediting period (10 years since July 2010 or the CDM project registration date, whichever is later) it would not be necessary to conduct turbine's rotors inspection, which would involve an upgrade or modification to the existing gas turbines that would impact in their technical operational lifetime.

The information stated above was included at PDD Section A.4.3. Please refer to the updated PDD version 2.

Documentation Provided by Project Participant:

- Combined Cycle at Loma de la Lata Thermo Unit Project, PDD dated 16/01/2009
- Loma de la Lata – Calculator, 2009.01.16
- GE Energy, "Heavy-Duty Gas Turbine Operating and Maintenance Considerations"; 2004.
- EPRI, "Gas Turbine Rotor Life Evaluation", 2008. (Available at: http://my.epri.com)

Information Verified by Lead Assessor:

Verified the PDD version 2, spreadsheet with project data and turbines maintenance manual.

Reasoning for not Acceptance or Acceptance and Close Out:

The open cycle plant is operational since 1994, with three General Electric natural gas turbines operating with a thermal efficiency of about 34%. The proposed project will not upgrade or modify the existing gas turbines that would impact in the operational lifetime. The lifetime of the combined cycle is greater than 10 year crediting period. Verified that the lifetime of the gas turbines is 17 years since the project operation start date. CAR#3 was closed out.

Acceptance and Close out by Lead Assessor:	**Date:** 21/04/2009

Date:	17/12/2008		Raised by:	Fabian Gonçalves	
Type:	CL	Number:	04	Reference:	B.10.1
Lead Assessor Comment:					

Verified during site visit that the High Heating Value (HHV) is analyzed every 5 minutes using the chromatography. The Net Calorific Value (NCV) is calculated through the internal computer using the HHV The response should provide the detailed NCV measurement according to ACM0007 version 3.
Project Participant Response: **Date:** 16/01/2009
According with ACM007 version 3, page 10 (Project emission parameters), the NCV of the fossil fuel can be measured (M) or calculated (C), annually recorded and should be based on measurements or reliable local or national data. *PDD version 1 section B.7.1, stated regarding NCV, that "The NCV is determined by the natural gas supplier with a chromatograph in line. Monthly averages will be available".* *However, at the validation site visit it was determined that the natural gas supplier monthly report to the power plant the daily average HHV instead of the NCV.* *Nevertheless, since the NCV is an essential parameter for the power plant to analyze the efficiency of electricity generation, the power plant has in place an on-line Chromatographer (property of the natural gas supplier) than analyze every 5 minutes the composition of the natural gas. This information is utilized by a flux computer to calculate the NCV of the natural gas according with the Norm GPA-2145/96, which states the standard NCV value of each component.* *The power plant emits a monthly report with essential information about the operation of the plant, included natural gas NCV monthly average.* *Therefore, natural gas NCV value will be available every month.* *The PDD section B.7.7 has been updated to incorporate the procedure to determine the natural gas NCV.*
Documentation Provided by Project Participant: - Combined Cycle at Loma de la Lata Thermo Unit Project, PDD dated 16/01/2009. - Norm GPA-2145/96, NCV of Natural gas components. - Loma de la Lata Monthly Report (Generation, Gas Consumption and Efficiency), April 2008. - Acta N°03/2008 Loma de la Lata – Repsol
Information Verified by Lead Assessor:
Verified the revised PDD version 2, Gas company report, monthly report.
Reasoning for not Acceptance or Acceptance and Close Out:
The NCV of the fossil fuel can be measured or calculated according to the methodology. The NCV will be determined by the gas supplier and monthly report will be available. CL#4 was closed out.
Acceptance and Close out by Lead Assessor: **Date:** 21/04/2009

Date:	17/12/2008		Raised by:	Fabian Gonçalves		
Type:	CL	Number:	05		Reference:	B.10.1
Lead Assessor Comment:						
Verified during site visit that the consumption of fuel is registered in a daily basis. According to ACM0007 version 3 this parameter should be monitored hourly.						
Project Participant Response: **Date:** 16/01/2009						
Since natural gas consumption of each natural gas turbine is essential information for Loma de la Lata power plant to monitor the efficiency of the electricity generation process, the consumption of natural gas is measured continuously at each turbine and registered hourly. (Please refer to attached documentation "Qgas LLL @9300 del día"). Additionally, natural gas supplier informs to the plant the daily consumption of natural gas every month. This information will be utilized to cross-check with the plant information. The information was updated at PDD section B.7.1.						
Documentation Provided by Project Participant:						
- Combined Cycle at Loma de la Lata Thermo Unit Project, PDD dated 16/01/2009 - "Qgas LLL @9300 del día"						
Information Verified by Lead Assessor:						
Verified revised PDD version 2 and daily reports (Qgas LLL @9300 del día).						
Reasoning for not Acceptance or Acceptance and Close Out:						
According to the revised PDD version 1.1 the gas consumption will be measured continuously by Project for each gas turbine and will be registered hourly. The gas consumption measured by the supplier in a daily basis will be cross-checked every month with Project measurements. CL#5 was closed out.						

Acceptance and Close out by Lead Assessor:	**Date:** 21/04/2009

Date:	17/12/2008		Raised by:	Fabian Gonçalves	
Type:	CL	Number:	06	Reference:	B.4.10
Lead Assessor Comment:					
The common practice analysis (step 4 of the Combined tool) should be revised to identify clearly the essential distinctions between project activity and similar projects identified.					
Project Participant Response:			**Date:** 16/01/2009		
The common practice analysis contained in PDD section B.5 was modified in order to clearly identify similar plants with the project activity and discard which are not.					
Documentation Provided by Project Participant:					
- Combined Cycle at Loma de la Lata Thermo Unit Project, PDD dated 16/01/2009					
Information Verified by Lead Assessor:					
Verified revised PDD version 2.					
Reasoning for not Acceptance or Acceptance and Close Out:					
The revised PDD version 1.1 presents more details and a conclusive common practice analysis. The conclusion is that there are no other similar projects compared with proposed project activity. CL#6 was closed out.					
Acceptance and Close out by Lead Assessor:			**Date:** 21/04/2009		

Date:	03/07/2009		Raised by:	Fabian Gonçalves	
Type:	FAR	Number:	07	Reference:	B.12
Lead Assessor Comment:					
The responsibilities of the personnel regarding data collection, calibration, maintenance, and record will be established and documented before verification. The skilled personnel designated for the operation of the plant will receive training for the engineering provider. Additionally they will receive training on CDM monitoring requirements and data recording and reporting to guarantee the awareness and commitment of the personnel to monitor the required data for the entire crediting period.					

Date:	03/07/2009		Raised by:	Fabian Gonçalves	
Type:	FAR	Number:	08	Reference:	B.13
Lead Assessor Comment:					
The project is not implemented. The monitoring plan reflects the actual condition of the project and what will be implemented before project operation. To comply with monitoring requirements the following procedures shall be available during verification: Information on monitoring equipment and respective positioning in order to safeguard a proper installation; Calibration of monitoring equipment; Maintenance of monitoring equipment and installations; Day-to-day records handling including what records to keep, storage area of records and how to process performance documentation; Dealing with possible monitoring data adjustments and missing data allowing redundant reconstruction of data in case of monitoring problems; Internal audits of GHG project compliance with operational requirements where applicable; Project performance reviews before data is submitted for verification, internally or externally;					

Date:	30/04/2010		Raised by:	Fabian Gonçalves	
Type:	CAR	Number:	09	Reference:	Incompleteness
Lead Assessor Comment:					
The PP should transparently report and explain the reason for the changes in the values of baseline assumptions between the GSC PDD and PDD version 2.1.					
Project Participant Response:			**Date:** 25/05/2010		

The reasons for the change of the baseline assumptions between the GSC PDD and the PDD version 2.1 are:

- The gross installed capacity was updated from 370.2 MW to 369.93 MW based on the nameplates checked on site (Actual equipments photos);
- The efficiency of the open cycle was updated from 33% to 34% after checking raw data and calculations of the previous five years; and
- The combined cycle characteristics (PDD Table 2) were updated based on aforementioned changes
- The PDD Table 10 (Summary of Parameters and Values used in the Baseline and Project activity) was updated accordingly to reflect the aforementioned changes.

Documentation Provided by Project Participant:

Revised PDD version 2.1.

Information Verified by Lead Assessor:

PDD version 2.1 and ER spreadsheet version 2.

Reasoning for not Acceptance or Acceptance and Close Out:

The values of baseline assumptions presented in the GSC PDD version 1 table 13 were not in accordance with the data provided and evidences during validation assessment.

Parameter	Formula (number)	Value		Unit	Comments / Source
		from	to		
PC	-	531	530.63	MW	Capacity of the power plant in combined cycle operation by given as declared net capacity
PG_y	PC*8760 h/yr*LF*(1-RF)	3,851,576	3,877,637	MWh	Calculated
OC	-	363.17	362.90	MW	Net power generation capacity of the open cycle gas turbine or engine. According to the nameplates checked on site (ref. 19)
$OG_{P,y}$	OC/PC*PG_y (7)	2,634,719	2,651,935	MWh	Calculated
FC_{HIST}	-	426,640,077	426,923,216	m3	Calculated based on the five years of generation records previous to start of the project
EF_{GRID}	-	0.479	0.538	tCO2/ MWh	Calculated
$BE_{H,y}$	(EF_{OC}*$HG_{OC,y}$)+(EF_{GRID}*(PG_y-$HG_{OC,y}$)) (5)	2,012,321	2,175,640	tCO2/ yr	Calculated
$BE_{P,y}$	(EF_{OC}*$OG_{P,y}$)+(EF_{GRID}*(PG_y-$OG_{P,y}$)) (5)	2,174,590	2,262,672	tCO2/ yr	Calculated
BE_y	MIN ($BE_{,H,y}$, $BE_{P,y}$)	2,012,321	2,175,640	tCO2/ yr	Calculated

The thermal efficiency was calculated based on historical data from 2003-2008. Verified that data for the period 2003-2008 were extracted from the complete historical data (ref. 11).
The PDD was revised and the data presented in table 10 of the PDD version 2.1 was checked and found correct (Ref. 24). CAR #09 was closed out.

Acceptance and Close out by Lead Assessor: | **Date:** 25/05/2010

A.4 Annex 4: Team Members Statements of Competency

Statement of Competence

Name: Goncalves, Fabian.

Status

-	Lead Assessor	x	-	Expert	
-	Assessor	x	-	Financial Expert	
-	Local Assessor	x	-	Technical Reviewer	

Scopes of Expertise

1. Energy Industries (renewable / non-renewable)
Sub scope(s):

2. Energy Distribution
Sub scope(s):

3. Energy Demand
Sub scope(s):

4. Manufacturing
Sub scope(s):

5. Chemical Industry
Sub scope(s):

6. Construction
Sub scope(s):

7. Transport
Sub scope(s):

8. Mining/Mineral Production
Sub scope(s):

9. Metal Production
Sub scope(s):

10. Fugitive Emissions from Fuels (solid, oil and gas)
Sub scope(s):

11. Fugitive Emissions from Production and Consumption of Halocarbons and Sulphur Hexafluoride
Sub scope(s):

12. Solvent Use
Sub scope(s):

13. Waste Handling and Disposal
Sub scope(s):

14. Afforestation and Reforestation
Sub scope(s):

15. Agriculture
Sub scope(s):

Approved Member of Staff by: Siddharth Yadav Date: 25/10/2009

Statement of Competence

Name: Kurmi, Sandeep

Status

-	Lead Assessor		-	Expert	x
-	Assessor	x	-	Financial Expert	
-	Local Assessor	x	-	Technical Reviewer	

Scopes of Expertise

1. Energy Industries (renewable / non-renewable)	**x**
Sub scope(s): Combined heat and Power & Waste Heat and Biomass Electricity Utilization	
2. Energy Distribution	
Sub scope(s):	
3. Energy Demand	
Sub scope(s):	
4. Manufacturing	**x**
Sub scope(s): Lime Production and Use	
5. Chemical Industry	
Sub scope(s):	
6. Construction	
Sub scope(s):	
7. Transport	
Sub scope(s):	
8. Mining/Mineral Production	
Sub scope(s):	
9. Metal Production	
Sub scope(s):	
10. Fugitive Emissions from Fuels (solid, oil and gas)	
Sub scope(s):	
11. Fugitive Emissions from Production and Consumption of Halocarbons and Sulphur Hexafluoride	
Sub scope(s):	
12. Solvent Use	
Sub scope(s):	
13. Waste Handling and Disposal	
Sub scope(s):	
14. Afforestation and Reforestation	
Sub scope(s):	
15. Agriculture	
Sub scope(s):	

Approved Member of Staff by: Siddharth Yadav Date: 27 November 2009

Statement of Competence

Name: Abella, Jose

Status

-	Lead Assessor		-	Expert	
-	Assessor		-	Financial Expert	
-	Local Assessor	Argentina	-	Technical Reviewer	

Scopes of Expertise

1. Energy Industries (renewable / non-renewable)
Sub scope(s):

2. Energy Distribution
Sub scope(s):

3. Energy Demand
Sub scope(s):

4. Manufacturing
Sub scope(s):

5. Chemical Industry
Sub scope(s):

6. Construction
Sub scope(s):

7. Transport
Sub scope(s):

8. Mining/Mineral Production
Sub scope(s):

9. Metal Production
Sub scope(s):

10. Fugitive Emissions from Fuels (solid, oil and gas)
Sub scope(s):

11. Fugitive Emissions from Production and Consumption of Halocarbons and Sulphur Hexafluoride
Sub scope(s):

12. Solvent Use
Sub scope(s):

13. Waste Handling and Disposal
Sub scope(s):

14. Afforestation and Reforestation
Sub scope(s):

15. Agriculture
Sub scope(s):

Approved Member of Staff by: Siddharth Yadav Date: 18/12/2009

Statement of Competence

Name: Nardelli, Aurea

Status

-	Lead Assessor	x	-	Expert	x
-	Assessor	x	-	Financial Expert	
-	Local Assessor	Brazil	-	Technical Reviewer	x

Scopes of Expertise

1. Energy Industries (renewable / non-renewable)
Sub scope(s):

2. Energy Distribution
Sub scope(s):

3. Energy Demand
Sub scope(s):

4. Manufacturing
Sub scope(s):

5. Chemical Industry
Sub scope(s):

6. Construction
Sub scope(s):

7. Transport
Sub scope(s):

8. Mining/Mineral Production
Sub scope(s):

9. Metal Production
Sub scope(s):

10. Fugitive Emissions from Fuels (solid, oil and gas)
Sub scope(s):

11. Fugitive Emissions from Production and Consumption of Halocarbons and Sulphur Hexafluoride
Sub scope(s):

12. Solvent Use
Sub scope(s):

13. Waste Handling and Disposal
Sub scope(s):

14. Afforestation and Reforestation **x**
Sub scope(s): A/R of degraded Land, A/R with agricultural issues, A/R for wood production

15. Agriculture
Sub scope(s):

Approved Member of Staff by: Siddharth Yadav Date: 07/10/2009