



Voluntary Carbon Standard Version 2007 Verification Report Template

19 November 2007

Verification Report: N°BRAZIL-VER/03616/2008 - Version 03

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Verification Report for BAESA Project	Antonio Daraya – Lead GHG Verifier Ashok Mammen – Internal Technical Reviewer
Client:	Project Title:
ENERGÉTICA BARRA GRANDE S.A – BAESA	BAESA Project, BRAZIL
Summary:	
Bureau Veritas Certification has made the verification of the 708 MW BAESA project Hydro Power Plant (HPP), located in the Southern Region of Brazil, between the cities of Anita Garibaldi, State of Santa Catarina and Pinhal da Serra, State of Rio Grande do Sul, Brazil. The verification scope is defined as a periodic independent and objective review and an ex-post determination of the monitored reductions in GHG emissions during defined verification period and consisted of the following three phases: i) desk review of the project design, baseline and monitoring plan; ii) follow-up interviews with project stakeholders; iii) resolution of outstanding issues and the issuance of the final verification report and opinion. The overall verification, from Contract Review to verification Report & Opinion, was conducted using Bureau Veritas Certification internal procedures. The first output of the verification process is a list of Clarification and Corrective Actions Requests (CL and CAR), presented in the Verification Report. Taking into account this output, the project proponent revised its Monitoring Report Document. In summary, it is Bureau Veritas Certification's opinion that the project correctly applies the baseline and monitoring methodology ACM 0002, version 07 and meets the relevant VCS requirements, and local legislation. Based on the information we have seen and evaluated, we confirm the following statement: Reporting period: 01/01/2006 to 31/12/2008 Baseline emissions: 1,751,434 tCO₂e Project emissions: 723,096 tCO₂e Emission reductions: 1,028,338 tCO₂e Vintage 2006: 153,460 tCO₂e Vintage 2007: 368,968 tCO₂e Vintage 2008: 505,908 tCO₂e	
Work carried out by:	Number of pages:
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1. Introduction

Energética Barra Grande S/A BAESA has commissioned Bureau Veritas Certification to verify the emission reductions of its VCS “BAESA Project”.

This report summarizes the findings of the first periodic verification of the project, performed on the basis of VCS – Voluntary Carbon Standard version 2007.1 criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

1.1 Objective

Verification is the periodic independent review and ex post determination of the monitored reductions in GHG emissions during defined verification period.

The objective of the periodic verification is to verify that actual monitoring systems and procedures are in compliance with the monitoring systems and procedures described in the monitoring plan; further more, the periodic verification evaluates the GHG emission reductions data and express a conclusion with a high, but not absolute, level of assurance about whether the reported GHG emission data is free of material misstatements; and verifies that the reported GHG emission reductions data is sufficiently supported by evidence, i.e. monitoring records.

The verification shall consider both quantitative and qualitative information on emission reductions.

Quantitative data comprises the monitoring reports submitted to the verifier by the project entity.

Qualitative data comprises information on internal management controls, calculation procedures and procedures for transfer, frequency of emissions reports, review and internal audit of calculations/data transfers.

The verification is based on criteria set by VCS – Voluntary Carbon Standard version 2007.1.

1.2 Scope and Criteria

The verification scope 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 VCS – Voluntary Carbon Standard version 2007.1.

The verification is not meant to provide any consulting towards the Client. However, stated requests for forward actions and/or corrective actions may provide input for improvement of the project monitoring towards reductions in the GHG emissions.

1.3 VCS project Description

The project activity consists on the supply of clean hydroelectric energy to the Brazilian National Interconnected System (SIN) through the implantation and operation of Hydro Power Plant (HPP) Barra Grande, located in the Southern Region of Brazil, between the cities of Anita Garibaldi, state of Santa Catarina and Pinhal da Serra, state of Rio Grande do Sul, with an installed capacity of 708 MW, using a small reservoir, with low environmental impact related to its installed capacity.

Barra Grande Hydro Power Plant generates electricity through clean and renewable source and it contributes to attend the growing demand for electricity in Brazil, due to the country’s economical and population growth, contributing, thus, to the environmental, social and economical sustainability, by increasing the participation of clean and renewable energy in relation to the country’s total consumption of electricity. The installation of HPP Barra Grande provides the

generation of enough electricity to the supply of 30% of the energetic demand of the state of Santa Catarina or 20% of the total energy consumed in the state of Rio Grande do Sul.

The scenario prior to the implantation of the project points to an important presence of thermoelectric power plants in the national energetic matrix (second greatest source of energy in the country), with total concentration of coal thermoelectric power plants (greatest contributors for the emission of CO₂ in the national energetic matrix) being in the Southern Region of the country, where BAESA Project is located. Moreover, the projection of the Ministry of Mines and Energy (MME) points to a total growth in the offer of thermoelectric energy in the country of 10,486 MW in the period of 2006-2015, based mainly on natural gas, oil and mineral coal, sources with more potential to contribute to global warming than the generation provided by the technology implanted by BAESA Project. It is important to highlight that all coal thermoelectric power plants projected by MME to start their operation in the period of 2006-2015 are located in the Southern region of the country, where BAESA Project is located.

Baseline scenario establishes that electricity delivered to the grid by the project activity would have been generated otherwise by the operation of a grid-connected power plant and by the addition of new generating sources, as reflected in the combined margin (CM) calculations described in the "Tool to calculate the emission factor for an electricity system".

The alternative scenarios to the project activity are two situations which reflects the calculation of the combined margin of baseline scenario: (i) the continuity of the present scenario, with electricity generation happening according to the current generation composition of the National Interconnected System, more specifically of the South Subsystem and (ii) the construction of a new mineral coal thermoelectric power plant.

BAESA Project makes use of three generator units with three specific meters (for each unit), destined to measure the Project's generation of energy. The project activity reduces the emission of greenhouse gases (GHGs) through the use of renewable sources of energy and making use of clean technology, avoiding the generation of electricity via sources of fossils fuels with consequent emissions of CO₂, that would be generated if the project did not exist. The reservoir of HPP Barra Grande is responsible for emissions of CH₄ which will be accounted for and reduced from the total project emission reduction.

Through actions that exceed the simple compliance of compensatory measures determined by the authorities involved in the entrepreneurship implementation, the construction of BAESA project proved that it is possible unite social and economic development with environment preservation, social responsibility and historical and cultural heritage recuperation.

Therefore, BAESA Project contributes to the sustainable development of the cities involved and of the country once contributing to the economic growth without compromising the future generations, respecting the concept of Sustainable Development, established by Brundtland Report, elaborated by the World Commission on Environment and Development, which defines the term "sustainable development" as "the development that satisfies the present necessities, without compromising the capacity of future generations of supplying their own necessities".

There are some environmental and social requirements that are condition for the maintenance and renewal of the License necessary for the project operation. BAESA Project has its Operation License emitted by IBAMA (environmental agency responsible for that) which is an evidence that all actions required are being implemented.

On 15th January 2009, BAESA sent through the letter “BAESA – 022/2009” all reports and documents related to the actions necessary to renew the Operation License. There is a table in this letter that presents a synthesis of the follow-up of the actions from July to December 2008.

Project Participants describe below some actions developed by BAESA in this period and its references in the letter “BAESA – 022/2009”.

- Keep the Programs of Technical and Social Assistance and present annual reports on the activities, including a system to attend economic-financial issues of the properties;

The Project of Technical and Social Assistance was presented to IBAMA in August 2005. This project is under execution for a period of 42 months. The implementation of this project is happening in an integrated way with the actions of the projects of environmental education and conservation of water and soil. For these projects, BAESA hired three institutions UNOESC, EMATER/RS and EPAGRI/SC, that will work together to give the necessary support to the re-insertion and the social and economic re-organization of the families. All reports related to this program presented to IBAMA are described in the item 2.4 of the letter “BAESA – 022/2009”.

- Present, in the Monitoring Reports, evaluation with the checking of indicators of economical and social insertion of the families served by the Program of Technical and Social Assistance;

The Project of Technical and Social Assistance provide the definition of indicators to monitor and evaluate the social and economic insertion of the families. The evaluation with the checking of indicators of economical and social insertion of the families related to the information of 2007 was sent to IBAMA in July/2008 through the letter BAESA 375/2008. This information can be seen in the item 2.5 of the letter “BAESA – 022/2009”.

- Present annual monitoring reports of the impact on the vitality of the surrounding communities, according to programs indicators and others that may infer the revitalization of these communities;

BAESA sent to IBAMA through the letter “BAESA 022/2009” the report named “Evaluation and Monitoring of Surrounding Communities of Barra Grande Dam – General Report of November 2008” complying with the requirement 2.6 of the Renovation of Operation License 447/2005. This information can be seen in the item 2.6 of the letter “BAESA – 022/2009”.

- Continue with actions developed to prevent endemic diseases in the reservoir’s area of influence, according to the local and regional health organs;

These actions are part of the Program of Technical and Social Assistance and Environmental Education. The principal methodological tool is the education of the surrounding population about basic knowledge which provides the construction of knowledge for best life quality of the families in harmony with the environment. BAESA develops actions through partnership with official entities of the state of Rio Grande do Sul and Santa Catarina. BAESA participated in the vaccination campaign aiming at to finish with infantile paralysis and “rubeola” in the cities covered by the HPP Barra Grande. Information that

shows that a report about these actions was provided to IBAMA can be found in the item 2.9 of letter “BAESA – 022/2009”.

- Keep the Unity of Service to the Population Affected by the implantation of the entrepreneurship, in an easily accessible place, throughout the period of concession of the Plant, which should be amply divulged to the interested parties;

The attendance of the population is done in the Permanent Centre of Attendance of BAESA, located in Anita Garibaldi. 140 attendances were done in the period from July to December 2008. This information can be seen in the item 2.10 of the letter “BAESA – 022/2009”.

- Present a report on the programs of local development promotion aimed at the third sector in the municipalities of Anita Garibaldi/SC, Pinhal da Serra/RS and Esmeralda/RS, in which it can be inferred the effective participation of the entrepreneur and effective partnership along with public institutions and non-governmental organizations;

The support to the local development has been implemented through the strengthening of the technical and social assistance actions, accelerating the introduction of new productive alternatives in the region of HPP Barra Grande. To contribute in a systemic way for the region development, BAESA made a partnership with SEBRAE/SC to contribute for the technical-economic viability of entrepreneurship and production units, through the boosting of productive capacity and organization of the social capital involved. Information that shows that a report about these actions was provided to IBAMA can be found in the item 2.8 of the letter “BAESA – 022/2009”.

- Conclude, according to the physic-financial timetable and Commitment Terms with the beneficiaries, the construction for collective rural resettlement;

The item 2.3 of the letter “BAESA – 022/2009” shows that BAESA sent to IBAMA a report through the letter 0375/2008 of 8th July 2008, describing the attendance of the requirements.

- Continue with the Monitoring of slopes surrounding the reservoir;

The project keeps its activities according the schedule established. The item 2.12 of the letter “BAESA – 022/2009” shows the reports delivered to IBAMA to prove the continuity of the Program.

- Continue with the Program for Recuperation of Degraded Areas according to the guidelines obtained in the seminar of December 06, 2007 and IBAMA's recommendations;

BAESA continues developing action in the Program for Recuperation of Degraded Areas according to the guidelines of IBAMA. Proof of that can be found in all reports delivered to IBAMA that are presented in the items 2.14 and 2.15 of the letter “BAESA – 022/2009”.

- Continue the monitoring of *Dyckia distachya* and other relocated rheophytes; work along with research institutions for the development of

projects of genetic census of the relocated species, aiming at assessing the genetic variability of *Dyckia distachya* population; and present reports referring to *Dyckia distachya* and to the diagnosis and inventory of species of rheophytes;

BAESA continues developing actions to monitor *Dyckia distachya* and other relocated rheophytes. All activities were described in several reports about this subject which were delivered to IBAMA in January 2008 through the letter "BAESA – 022/2009". This information can be found in the item 2.16 of the letter "BAESA – 022/2009".

- Continue with the Program of Forest Reposition according to the guidelines obtained in the seminar of December 06, 2007 and IBAMA's recommendations; and present reports every semester containing the methodology employed in each area, the seedlings quantitative, the species used, the quantitative of areas recuperated, and aims for the following months;

BAESA continues developing actions in the Program of Forest Reposition according to the guidelines of IBAMA. Proof of that can be found in all reports delivered to IBAMA that are presented in the items 2.14 and 2.15 of the letter "BAESA – 022/2009".

- Guarantee the monitoring of the Ichthiofauna;

BAESA executes the monitoring and management of Ichthiofauna since 2002. Currently, BAESA develops the Ichthiofauna Plan through a contract established with the institution FAPEU-LAPAD-UFSC. Reports that describe this monitoring were delivered to IBAMA in January 2009 through the letter "BAESA – 022/2009". This information can be seen in the item 2.17 of the letter "BAESA – 022/2009".

- Continue the Fauna Monitoring using the same methodologies and areas employed in the periods before and during the fillings of the reservoir in order to compare the results obtained;

BAESA keeps executing the Fauna Monitoring as required by IBAMA. BAESA presented several reports to IBAMA to show that this monitoring has been executed. Proof of that can be seen in the item 2.18 of the letter "BAESA – 022/2009".

- Present annual reports on the monitoring of the quality of water.

BAESA presented to IBAMA in January 2009 the annual report of monitoring of the quality of water as can be seen in the item 2.11 of the letter "BAESA – 022/2009".

1.4 Level of assurance

Emission reductions are directly connected to the hydraulic generation of energy, which depends significantly on the volume of water in the basin of the rivers in which it is located. Scarce rains, floods, or any other natural factor may cause an impact on the generation capacity of the project and, consequently, may affect the emission reductions provided by it.

The control of reservoirs' level realized by ONS – Operador Nacional do Sistema (National System Operator) seeks to optimize the level of water available for the generation of hydroelectric energy in each of the power plants associated to the respective reservoirs, besides keeping a certain amount of water reserved for situations of emergency. In this context, the ONS may, for example, prevent a power plant located at the beginning of a river's course to increase its rate of flow, in case it negatively affects the other power plants along the course of the same river. Thus, this control on reservoirs can also affect the emission reductions of greenhouse gases provided by the project.

Another risk that project participants considered to be low, but that must be mentioned is the fortuitous loss of concession to exploit the hydraulic energy located in Pelotas River. The right to exploit this hydraulic potential was acquired by the entrepreneurs through a Contract of Concession and its modifications.

There are hypotheses that may provide the extinction of the concession of the project's owners before the Final Term of Concession, such as (i) expropriation of the concession by the conceding power and (ii) decreeing of caducity of the concession by the conceding power. The occurrence of these hypotheses, although remote, may happen and may also prevent that emission reductions are reached by the project.

2. Methodology

The overall verification, from Contract Review to Verification Report & Opinion, was conducted using Bureau Veritas Certification internal procedures.

The Verification Report shows, in a transparent manner, criteria (requirements), means of verification and the results from validating the identified criteria.

The Project Description Template of the BAESA project was reviewed and compared with the Project Description Template, of 19 November 2007.

The methodologies used are:

- Approved consolidated baseline and monitoring methodology ACM0002, "Consolidated baseline methodology for grid-connected electricity generation from renewable sources", version 7,
- "Tool for the demonstration and assessment of additionality", version 05.2,
- "Tool to calculate the emission factor for an electricity system", version 01.1.

ACM0002 consolidated baseline methodology is applicable to grid-connected renewable power generation that involves electricity capacity additions.

The ACM0002 methodology can be applicable to BAESA Project due to the following aspects:

- HPP Barra Grande is an installation of a new hydro power plant/unit;
- The geographic and system boundaries for the relevant electricity grid can be clearly identified and information on characteristics of the grid is available due to the geographic data and the relevant electricity grid system limits are easily identified, as well as all information about the grid is available in ONS, Operador Nacional do Sistema (National System Operator), (www.ons.org.br), and in ANEEL, Agência Nacional de Energia Elétrica (National Agency of Electric Energy), (www.aneel.gov.br).
- HPP Barra Grande is a project activity which results in new reservoirs and the power density of the power plant is greater than 4 W/m².

The power density of the project activity, according to ACM0002 methodology, is calculated as demonstrated below:

PD = Power Density of the project activity, in W/m²

- Installed capacity of the hydro power plant after the implementation of the project activity (W) = 708,000,000 W
- Area of the reservoir measured in the surface of the water, after the implementation of the project activity, when the reservoir is full = 94,000,000 m²

$$PD = \frac{708,000,000 \text{ W}}{94,000,000 \text{ m}^2} = 7.3 \text{ W/m}^2$$

Then, PD is greater than 4 W/m²

On October 16, 2008, Bureau Veritas Certification performed interviews with persons of Energética Barra Grande S/A – BAESA and Enerbio Consultoria Ltda, related to project specific questions and emission factor.

Persons interviewed were:

From Baesa: Ana Cristina Karl, Hamilton Garboggini and João Rezeck Junior.

From Enerbio: Eduardo Baltar.

The site visit included a review of the project documentation, review of performance records, interviews with project participants and local stakeholders, collection of measurements, observation of established practices, checking the accuracy of monitoring equipment, review of monitoring results, verification of the correct application of monitoring methodologies, determination of the reductions in GHG emissions, and review of additional data.

3. Verification Findings

3.1 Remaining issues, including any material discrepancy from previous validation, CARs and CRs

This is the Initial and First Periodic Verification of the project.

- Initial and First Periodic Verification Report – version 01.

The following CARs and CRs were open by the Verification Team and answered by the Project Proponents. The answers were accepted by the Verification Team, and the CARs and CRs were closed.

CAR 01 – The Monitoring Report does not have the version and issuing date.

Answer: It was included the version and issuing date in the Monitoring Report Version 02.

CAR 02 - As the Validation Process is being initiated in October 2008, the crediting period start date, September 01, 2006, stated in the Monitoring Report, is not in compliance with the Policy Announcement from the VCS Association of 19 March 2008, “The VCUs can be registered back to the project start date provisions in VCS 2007 Clause 5.2.1. This is, 28 March 2006 or two years prior to the completion of the project validation whatever is later.

Answer: The crediting period starting date was changed to follow the Policy Announcement from the VCS Association of 19 March.

CAR 03 – Monitoring Report stated the electrical energy unit in MW and not MWh as it should be done.

Answer: Monitoring Report was corrected and electrical energy was stated in MWh.

CR 01 – As mentioned in the Monitoring Report, each energy generation unit has one meter located in the Powerhouse, which is responsible for registering the “Gross Electricity, or Total Electricity Generated”, by each unit. Spreadsheets obtained directly from the meters are used to monitor this parameter. Please, provide evidences of this information for the period involved in the calculations of Project Emissions in the Monitoring Report.

Answer: Spreadsheets are attached to these answers.

CR 02 – Please, send a copy of the calibration certificates of all the electricity measurement equipment involved in the measurement of the “Gross Electricity Generation”, “Net Electricity Generation supplied to the Grid” and “Power plant’s internal consumption”.

Answer: Calibration certificates for all measurements equipment involved are attached to these answers.

- First Periodic Verification Report – version 02.

Considering the new provisions of VCS 2007.1, defining that the crediting period start date is the date in which the first monitoring period commenced, the VCS PD has been revised to version 04, changing the project start date to November 01, 2005, corresponding to the operation starting date of the first turbine, and defining as the crediting period start date January 01, 2006.

Due to the change made in the crediting period start date in VCS PD Version 04, it was necessary to change the expected emission reductions of the project, and new spreadsheets and evidences were received by the DOE. It was also necessary to update the Schedule of the Project.

On February 11, 2009, a version 04 of the monitoring report was issued, based on PD version 04 and all the updating of the emission reduction calculations.

This version 02 of the Verification Report is considering all the changes made in the VCS PD version 04 and in version 04 of the monitoring report.

3.2 Project Implementation

The project activity has been implemented according to the Project Design Document, presently being validated to be registered.

3.3 Completeness of Monitoring

The First Periodic Verification covered the period of January 01, 2006 to December 31, 2008.

GHG emission reductions during this period were achieved through the dispatched electricity generated by HPP Barra Grande that, in the absence of the project, would have been generated through non-renewable sources from Power Plants connected to the Brazilian Interconnected System, fostering the emission of greater quantities of green house gases.

Baseline scenario is that electricity delivered to the grid by the project would have otherwise been generated by the operation of a grid-connected power plant and by the addition of new generating sources, as reflected in the combined margin calculations.

Monitoring has the objective of measuring the emission reductions achieved by the project. The monitoring plan has followed the Monitoring Methodology of the consolidated baseline methodology for grid-connected electricity generation from renewable sources ACM0002, version 07.

The main parameters controlled were:

- Gross Electricity Generation (MWh);
- Plant Internal Consumption (MWh);
- Net Electricity Supplied to the Grid (MWh);
- Emission Factor for Electricity Generation Connected to the Brazilian Interconnected Grid (tCO₂e/MWh);
- Project Emissions (tCO₂e);
- Project Emission Reductions (tCO₂e);

HPP Barra Grande’s Operation and Maintenance Manager is responsible for the operation and maintenance activities of the plant and for the activities of

consolidation and analysis of gross and net electricity. Each generator unit has three measurement instruments. One of them is located in the Powerhouse and it measures the gross electricity generated by the unit and two of them, called "Principal" and "Retaguarda" (Rear), are located in the substation with the objective of measuring net electricity.

Data of Net Electricity supplied to the Grid was checked with the information available in the website of the CCEE (CCEE - Entity responsible for measurements, accounting and settlement on Brazilian electric energy market).

The emission factor for power generation connected to Brazilian National Interconnected System was made available by the Ministry of Science and Technology (MCT) with data of National System Operator, ONS. The variables EFgrid,OM,y and EFgrid,BM,y were calculated and monitored by Enerbio Consultoria through the dispatch data of National Interconnected System.

Emissions and emission reductions achieved by the project activity were monitored by the project participants, as described in the Monitoring Plan of the VCS PD, using the equation indicated by methodology ACM0002, version 07 for emission reductions calculation.

Period of Monitoring Report: 01 January 2006 to 31 December 2008.

- Amount of Monitored Emission Reductions: 1,028,338 tCO₂e

- Total Crediting Period of the VCS Project: 01 January 2006 to 31 December 2015.

The CO₂ emission factors of build margin and operating margin is calculated ex-post. CO₂ emission factors from electricity generation verified on Brazilian Interconnected System (SIN) are calculated based on the generation record of plants centrally dispatched by the National Operator of the System (From the Portuguese Operador Nacional do Sistema - ONS).

Combined Margin CO₂ Emission Factor was calculated based on data supplied by Ministry of the Science and Technology (MCT) (www.mct.gov.br), institution which chairs the Brazilian DNA of CDM. Operating Margin Emission Factor and Build Margin Emission factor, necessary data to calculate the Combined Margin Emission Factor were calculated by ONS (National System Operator) and made available by MCT.

The Build Margin CO₂ Emission Factor for the year of 2008 was not available at the moment of the Monitoring Report elaboration. Therefore, it was used the Build Margin Emission Factor of the year of 2007 to calculate the Combined Margin Emission Factor of 2008. Build Emission Factor of 2007 is lower than Build Emission Factor of 2006, therefore the calculation is more conservative.

The tool to calculate the emission factor for an electricity system recommends that the following default values should be used for WOM and WBM: WOM = 0.5 and WBM = 0.5 for the first crediting period, and WOM = 0.25 and WBM = 0.75 for the second and third crediting period, unless otherwise specified in the approved methodology which refers to this tool.

For the First Crediting Period of BAESA Project, it was adopted the following weights: WOM = 0.50 and WBM = 0.50.

There is no Leakage for the project activity; however, the Power Density of Barra Grande Power Plant is 7.3 W/ m². Therefore, emissions from its reservoir must be considered. To calculate project emissions, it was used the equation below:

$$PE_y = \frac{EF_{Res} \cdot TEG_y}{1000}$$

Where:

PE_y = Emission from reservoir expressed as tCO₂e/year;

EFRes = is the default emission factor for emissions from reservoirs, and the default value, as per EB23, is 90 Kg CO₂e/MWh;

TEGy = Total electricity produced by the project activity, including the electricity supplied to the grid and the electricity supplied to internal loads, in year y (MWh).

Project emission reductions are calculated according to version 07 of ACM0002 methodology. LEy is zero. Therefore, emission reduction is calculated as described below:

$$ERy = BEy - PEy$$

Where:

ERy = Emission Reduction in year y (t CO₂e/yr)

BEy = Baseline emissions in year y (t CO₂e/yr)

PEy = Project emissions in year y (t CO₂e/yr)

Baseline emissions are calculated as indicated by the baseline methodology ACM0002, that establishes that baseline emissions include only CO₂ emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity. The baseline emission is calculated as follows:

$$BEy = (EGy - EG_{baseline}) * EF_{grid,CM,y}$$

Where:

BEy = Baseline Emission in year y (t CO₂e/year)

EGy = Electricity supplied by the project activity to the grid (MWh)

EG_{baseline} = Baseline electricity supplied to the grid in case of modified or retrofit facilities (MWh). For new power plants this value is taken as zero.

EF_{grid,CM,y} = Combined margin CO₂ emission factor for grid connected power generation in year y calculated using the latest version of the "Tool to calculate the emission factor for an electricity system"

EGy and EF_{grid,CM,y} are monitored, and EG_{baseline} is 0 (zero), because HPP Barra Grande is a new power plant to be connected to the interconnected grid.

The verification team had access and checked the Excel files with all the information and calculations related to the monitored variables.

Baseline Emissions = 1,751,434 tCO₂e

Project Emissions = 723,096 tCO₂e

Emission Reductions = 1,028,338 tCO₂e

3.4 Accuracy of Emission Reduction Calculations

According to the technical specifications defined by ONS Grid Procedures, in HPP Barra Grande there is a SMF - Measurement Billing System. The communication of this SMF with CCEE occurs directly through a VPN (Virtual Private Network) and, consequently, SCDE - Electric Power Data Collection System for billing, has direct access to the mass memory of the electricity meters. In the first week of each month, HPP Barra Grande operators collect, in the electricity meters mass memory, gross and net hourly generation data of the generation units referring to the previous month. This data are compiled in a unique spreadsheet which is the HPP's internal control generation spreadsheet for the referred month under analysis.

Information of the internal control generation spreadsheet is checked with SCDE spreadsheets. However, for emission reductions calculation, it will be used the electricity generation data of CCEE General Measurement Report, available in the CCEE website. This data consist of the net electricity generation minus the

losses of National Interconnected System (approximately 2.5%), setting, therefore, a more conservative value.

Both generation information, internally generated and through CCEE website, are electronically stored by the Operation and Maintenance Manager.

Periodically, the Information Technology Area makes a backup for all plant data through backup tapes.

All data collected as part of the monitoring will be archived and be kept for at least 2 years after the end of the last crediting period.

All the information related to the total electricity produced by the project activity, including the electricity supplied to the grid and the electricity supplied to internal loads, in year y (MWh), the net energy supplied to the grid and the calculation of the emission factors were checked by the validation team, according to the monitoring plan.

The verification team had access and verified the Calibration Certificates of all the energy measurement equipments.

3.5 Quality of Evidence to Determine Emission Reductions

All the information made available by the project participants to the verification team, including the reliability of the evidence and the source and nature of the evidences (external, internal, oral and documented) were considered sufficient in quantity and appropriate in quality.

The Voluntary Carbon Standard Monitoring Report, version 04, issued on February 11, 2009, was the base utilized for this Verification Report.

3.6 Management and Operational System

The HPP Barra Grande Operation and Maintenance Manager is responsible for the operation and maintenance activities of the plant and for the activities of consolidation and analysis of gross and net electricity.

Measurement activities are carried out by the operators of the operation team. HPP Barra Grande follows the ONS Grid Procedures to make the calibration of its electricity meters.

All HPP Barra Grande operators are certified according to technical procedures required by ONS, aiming at ensuring quality, security and reliability in the SIN operation. (SIN = Sistema Interligado Nacional = National Interconnected System). This certification occurs every 3 years.

Furthermore, members of operation team participate in specific training for their functions and in training programs for specific projects of the company as, for example, for the implementation of ISO 14001.

For all the data and parameters monitored are defined the data unit, its description, the source of the data to be used, the description of measurement methods, the procedures to be applied and QA/QC procedures.

4. Verification conclusion

Bureau Veritas Certification has made the first periodic verification of the VCS BAESA Project, of Energética Barra Grande S/A, located in the Southern Region of Brazil, between the cities of Anita Garibaldi, state of Santa Catarina and Pinhal da Serra, state of Rio Grande do Sul, with an installed capacity of 708 MW, using a small reservoir, with low environmental impact related to its installed capacity.

The verification was performed on the basis of VCS 2007.1 criteria, Monitoring Methodology ACM0002, version 7, host country criteria and also on the criteria given to provide for consistent project operations, monitoring and reporting.

The management of Energética Barra Grande S/A is responsible for the preparation of the GHG emission reductions data and the reported GHG emission reductions of the project, on the basis set out within the project

VCS 2007 Verification Report Template

Monitoring and Verification Plan, indicated in the final VCS PD version 4, of February 03, 2009. The development and maintenance of records and reporting procedures in accordance with that plan, including the calculation and determination of GHG emission reductions from the project is the responsibility of the management of the project.

Bureau Veritas Certification confirms that the project is implemented as planned and described in the Project Design Document. Installed equipment being essential for generating emission reductions runs reliably and is calibrated appropriately. The monitoring system is in place and the project is generating GHG emission reductions.

Bureau Veritas Certification can confirm that the GHG emission reductions are calculated without material misstatements. Our opinion relates to the project's GHG emissions and resulting GHG emission reductions, reported and related to the valid and registered project baseline and monitoring and its associated documents.

Based on the information we have seen and evaluated, we confirm the following statement:

Reporting period: From 01/01/2006 to 31/12/2008.

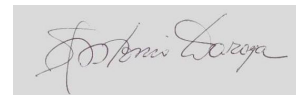
Baseline Emissions:	1,751,434 tCO ₂ e
Project Emissions:	723,096 tCO ₂ e
Leakage:	0 tCO ₂ e
Emission Reductions:	1,028,338 tCO ₂ e
Vintage 2006:	153,460 tCO ₂ e
Vintage 2007:	368,968 tCO ₂ e
Vintage 2008:	505,908 tCO ₂ e

20 March, 2008



Ashok Mammen
Internal Technical Reviewer

20 March 2009



Antonio Daraya
Lead GHG Verifier

5. References

Documents provided by the company that relate directly to the GHG components of the project.

1. PD BAESA project, version 03, of November 20, 2008.
2. PD BAESA project, version 04, of February 03, 2009.
3. Voluntary Carbon Standard Validation Report, version 02, of December 09, 2008.
4. Voluntary Carbon Standard Validation Report, version 03, of February 09, 2009.
5. Voluntary Carbon Standard Monitoring Report, version 02, of December 08, 2008.
6. Voluntary Carbon Standard Monitoring Report, version 03, of February 06, 2009.
7. Voluntary Carbon Standard Monitoring Report, version 04, of February 11, 2009.
8. Voluntary Carbon Standard Monitoring Report, version 05, of March 18, 2009.
9. Approved consolidated baseline and monitoring methodology ACM 0002, version 7.
10. Methodological Tool "Tool for the demonstration and assessment of additionality", version 05.2.
11. Annex 12, EB 35 Report - Methodological Tool "Tool to calculate the emission factor for an electricity system, version 01.1.
12. VCS Verification Report Template – 19 November 2007.
13. Voluntary Carbon Standard 2007.1.
14. Calculation Excel Spreadsheets.

6. Verifiers' CV's

Bureau Veritas Certification Lead GHG Verifier

Antonio Daraya – is graduated in Chemical Engineering with a very large experience in Industrial and Environmental management in several industrial fields. He is ISO 9001:2000, ISO 14001:2004 and OHSAS 18001 Lead Auditor and has also experience in the implementation of Quality and Environmental Management Systems. Antonio is qualified as Lead Verifier GHG – Green House Gases.

Bureau Veritas Certification Team Member, GHG Verifier

Marco F. Prauchner – is graduated in Mechanical Engineering with experience in Quality and Environmental management in mechanical, plastic and chemical industries. He is ISO 9001:2000 and ISO 14001:2004 Lead Auditor and has also experience in the implementation of Environmental Management Systems. Marco is qualified as Lead Verifier GHG – Green House Gases.

Bureau Veritas Certification – Financial Specialist

Bernardo Aleksandravicius is graduated in Business Administration with a very expressive experience in valuation of new projects in the electrical and technology sectors; Equity analyst with focus on the consumer staples, consumer discretionary, technology and telecommunications sectors for many companies in Brazil.

Bureau Veritas Certification, Internal Technical Reviewer

Ashok Mammen - PhD (Oils & Lubricants), MsC (Analytical chemistry). Over 20 years of experience in petrochemical sector. He has been involved in the validation and verification processes of more than 50 CDM projects.