Voluntary Carbon Standard Version 2007

Validation Report Template

19 November 2007

Validation Report: BRAZIL-VAL/05286/2010 – VERSION 02

Name of Validation company:	Date of the issue:
BUREAU VERITAS CERTIFICATION HOLDING - SAS	23/06/2010
Report Title:	Approved by:
Validation Report for “Salto Pilão” Hydropower Plant Project Activity	Antonio Daraya – Internal Technical Reviewer
Client:	Project Title:
Consórcio Empresarial Salto Pilão	“Salto Pilão” Hydropower Plant Project Activity
Summary:	

BUREAU VERITAS Certification has made the validation of the “Salto Pilão” Hydropower Plant Project Activity, which is is located between the cities of Lontras, Ibirama and Apiúna, state of Santa Catarina, Southern region of Brazil.

A brief description of the validation project consists of the construction of a hydropower plant with a reservoir of 0.15 km^2 and an installed capacity of 182.3 MW.

The validation scope is defined as an independent and objective review of the project design document, the project’s baseline study, monitoring plan and other relevant documents, and consisted of the following three phases: i) desk review of the project design and the baseline and monitoring plan (December, 2009); ii) follow-up interviews and on site visit (December, 2009)); iii) resolution of outstanding issues and the issuance of the final validation report and opinion (June, 2010).

The overall validation, from Contract Review to Validation Report & Opinion, was conducted using BUREAU VERITAS Certification internal procedures. The first output of the validation process is a list of Clarification and Corrective Actions Requests (CL and CAR) and Forward Action Requests (FAR) if applicable, presented in the Validation Report, version 01. Taking into account this output, the project proponent revised its project design document, originating the PD version 06 (latest edition of the PD), of 22/06/2010. In summary, it is BUREAU VERITAS Certification’s opinion that the project correctly applies the baseline and monitoring methodology ACM0002 – “Consolidated baseline methodology for grid-connected electricity generation from renewable sources” (version 11) and meets the relevant VCS requirements, and local legislation.

Work carried out by:	Number of pages:
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1 INTRODUCTION

This report summarizes the findings of the validation of the project, performed on the basis of VCS criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

1.1. OBJECTIVE

The validation serves as project design verification and is a requirement of all projects. The validation is an independent third party assessment of the project design. In particular, the project's baseline, the monitoring plan (MP), and the project's compliance with relevant VCS criteria which 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 a requirement for all VCS projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of Voluntary Carbon Units (VCUs).

1.2. SCOPE AND CRITERIA

The validation 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 Kyoto Protocol requirements, VCS rules and associated interpretations. 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.

1.3. VCS PROJECT DESCRIPTION

The process undertaken to validate the accuracy and completeness of the project description is the "Salto Pilão" Hydropower Plant Project Activity.

Salto Pilão project activity consists of the construction of a hydropower plant with a reservoir of 0.15 km^2 and an installed capacity of 182.3 MW. The plant is located between the cities of Lontras, Ibirama and Apiúna, state of Santa Catarina, Southern region of Brazil. Salto Pilão hydropower plant (*from Portuguese Usina Hidrelétrica Salto Pilão - UHESP*) is owned by an association of several companies called *Consórcio Empresarial Salto Pilão*. The current consortium structure is as follows:

- Companhia Brasileira de Alumínio (CBA): 60%;
- Camargo Côrrea Geração de Energia S/A (CCGE): 20%; and
- DME Energética Ltda. (DMEE): 20%.

The primary objective of the UHESP is to help meet Brazil's rising demand for energy due to economic growth and to improve the supply of electricity, while contributing to the environmental (run-of-river power plant), social (job creation about 1000 workers in the

construction phase, and infra-structure enhancements in surrounded municipalities), and economic sustainability by increasing the share of renewable energy in total electricity consumption for Brazil (and for the region of Latin America).

Although Salto Pilão hydropower plant does not have alone a major relevant impact in the Host Country given its electric system size, it is undoubtedly part of a greater idea. The project activity contributes to sustainable development since it meets the needs of the present without compromising the ability of future generations to meet their own needs, as defined by the Brundtland Commission (1987). In other words, the implementation of hydroelectric power plants ensures renewable energy generation, reduces the national electric system demand, avoids negative social and environmental impact caused by the construction of large hydropower plants with large reservoirs and fossil fuel thermo power plants, and drives the regional economy, increasing quality of life in local communities.

Therefore, it is indisputable that the project has reduced negative environmental impacts and has developed the regional economy, resulting, consequently, in better quality of life. In other words, environmental sustainability associated to social and economic justice, definitely contributes for the host country's sustainable development.

The DOE hereby confirms that the project description in PD (version 05) is accurate and complete in all respects.

1.4. LEVEL OF ASSURANCE

With basis in the assessment of this project, a validation statement expressing a reasonable level of assurance is expressed as follows:

is materially correct and is a fair representation of the GHG data and,

was prepared in accordance with the related International Standard on GHG quantification, monitoring and reporting, and to relevant national standards.

The validation report is based on VCS PD and documents provided by the project proponent, as well as information obtained from the on-site visit. The validation opinion is assured by the credibility of all the statements above.

2 METHODOLOGY

The validation of the project was carried out from December 2009 to June 2010.

Preparations: 15/12/2009 to 30/12/2009

On-site visit: 16/12/2009 to 17/12/2009

Draft Reporting: 16/06/2010

Validation Reporting: 23/06/2010

The validation consists of the following three phases:

- A desk review of the project design and the baseline and monitoring methodology;
- Follow-up interviews;
- The resolution of outstanding issues and the issuance of the final validation report and opinion.

According to the VCS 2007 policy validations shall be completed within two years of the project start date, or within 1 year of 19 November 2008, whichever is later. The Policy announcement from the VCS Association (10 September 2008) extends this validation deadline. The start date of "Salto Pilão" Hydropower Plant Project Activity is December 11th, 2009, them it is in accordance with the first issue

2.1. REVIEW OF DOCUMENTS

VCS PD and proof of title submitted by Ecopart Assessoria em Negócios Empresariais Ltda., as well as the supporting documents were reviewed.

The draft VCS PD submitted by Ecopart Assessoria em Negócios Empresariais Ltda. and background documents related to the project design and baseline were reviewed.

Furthermore, the validation team used additional documentation by third parties like host party legislation, and technical data based on the project design provided by the company.

Afterwards, this report show the documents considered during the validation process and listed as follows:

- Voluntary Carbon Standard 2007.1, November 18th 2008;

- Voluntary Carbon Standard Program Guidelines, November 18th 2008;

- ISO 14064-2, June 2006;

- VCS - Project Description Template, November 19th 2007;

- GHG Project Protocol;

- Clean Development Mechanism – Validation and Verification Manual, EB 51, Annex 03;

- ACM002 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" – version 11;

- Tool to calculate the emission factor for an electricity system (version 2);

- Tool for the demonstration and assessment of additionality (version 5.2);
- Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion (version 2);
- Combined tool to identify the baseline scenario and demonstrate additionality (version 2.2)[i]

The background documents are provided by the project participants, and the complete list of them is available in Section 5. References Validation Report.

2.2. FOLLOW-UP INTERVIEWS

On December 16th to 17th, 2009, Bureau Veritas Certification performed interviews with persons of Consórcio Empresarial Salto Pilão – CESAP (Project Proponent) and Ecopart Assessoria em Negócios Empresariais Ltda. (Project Participant), related to project specific questions and emission factor.

Interviewed persons were:

Consórcio Empresarial Salto Pilão – CESAP: Paulo H. Müller

From Ecopart Assessoria em Negócios Empresariais Ltda.: Karen M. Nagai.

Interviewed persons and interview topics:

Consórcio Empresarial Salto Pilão – CESAP owners and Ecopart Assessoria em Negócios Empresariais Ltda consultant were interviewed as reported above. The main topics of the interviews are summarized below.

- Desk review findings
- General aspects of the project
- Project design, Commissioning and implementation
- Technical equipment and operation of the project
- Performance of the project
- Involved personnel and responsibilities
- Training and practice of the operational personnel
- Implementation of the monitoring plan
- Monitoring and measurement equipment
- QA/QC Testing and calibration procedures
- Monitored data management

- Data quality, archiving and reporting procedures
- Data uncertainty and residual risks
- GHG calculation
- Procedural aspects of the validation

2.3. RESOLUTION OF ANY MATERIAL DISCREPANCY

The report includes Corrective action and Clarification Requests (CAR and CR) identified in the course of this validation.

A Corrective Action Request is established if:

Mistakes have been made in assumptions or the project documentation which directly will influence the project results,

The requirements deemed relevant for validation of the project with certain characteristics have not been met or

There is a risk that the project would not be registered by the UNFCCC or that emission reductions cannot be verified and certified.

A Clarification Request is issued where information is insufficient, unclear or not transparent enough to establish whether a requirement is met.

After resolution of these CARs and CLs by the project proponent the validator will issue the (final) validation report and opinion.

All CARs and CLs are informed at the end of item 07, with their reasons for closure.

3 VALIDATION FINDINGS

3.1 PROJECT DESIGN

Technology used:

(i) UHESP is a run-of-river hydropower plant

Run-of-river projects do not include significant water storage, and must therefore make complete use of the water flow. A typical run-of-river scheme involves a low-level diversion dam and is usually located on swift flowing streams (**Erro! Fonte de referência não encontrada.**Figure 1).

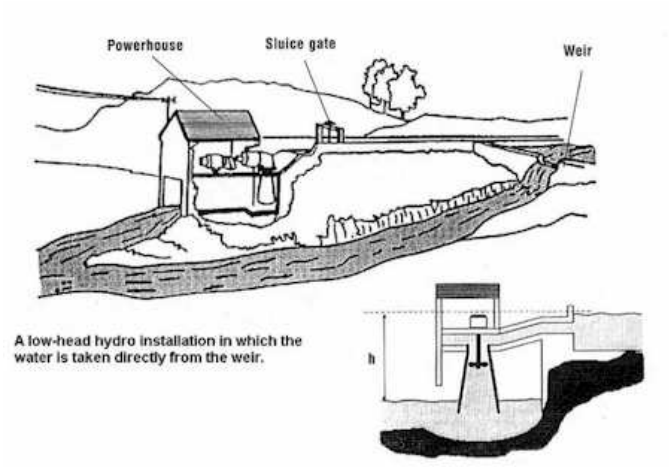

Figure 1 - Schematic view of run-of-river power plant

According to the World Commission of Dams, run-of-river projects are defined as:

> "*Dams that create a hydraulic head in the river to divert some portion of the river flows to a canal or power station… Often (they) have no storage reservoir or limited daily pondage. Within these general classifications there is considerable diversity in scale, design, operation and potential for adverse impacts".*

In the case of UHESP:

- Maximum volume of the reservoir: 1,582,827 m^3;
- Average volume of the reservoir: 21,520 m^3;
- Days of pondage at maximum volume of the reservoir (residence time): 0.16 day;
- Days of pondage at average volume of the reservoir (residence time): 0.002 day.

Considering data above, water in UHESP's reservoir has limited daily pondage; it remains in the reservoir less than 1 day. Therefore, the project can be considered a run-of-river power plant according to the presented criteria

In addition, the Operation License of the project nr. 202/2009 issued on July 13th, 2009 by the Environmental Agency of Santa Catarina State (Fundação do Meio Ambiente – FATMA) states that since the project dam has 206 meters and the reservoir has no purpose of water storage for the water flow regularization, the project is classified as a run-of-river project.

(ii) Turbine Technology

The technology employed at UHESP project is established in the industry. The Francis turbine is the most widely used among water turbines. This turbine is a type of hydraulic reactor turbine in which the flow exits the turbine blades in the radial direction. Francis turbines are common in power generation and are used in applications where high flow rates are available at medium hydraulic head. Water enters the turbine through the penstock and is

directed onto the blades by wicket gates. The low momentum water then exits the turbine through a draft tube. In the model, water flow is supplied by a variable speed centrifugal pump. A load is applied to the turbine by means of a magnetic brake, and torque is measured by observing the deflection of calibrated springs. The performance is calculated by comparing the output energy to the energy supplied.

The technology and equipment used in the project were developed and manufactured locally and has been successfully applied to similar projects in Brazil and around the world. Specifications and equipments that will be used in UHESP are presented in **Erro! Fonte de referência não encontrada.** below.

Table 1 - Specifications of the equipment used at UHESP

Turbines	
Type	Francis
Quantity	2
Power (MW)	93 (each)
Nominal flow (m^3/s)	52.90
Water head (meters)	194.9
Generators	
Type	Vertical-shaft
Quantity	2
Nominal Power (MVA)	101.3 (91.17 MW)
Tension (kV)	13.8
Frequency (Hz)	60

UHESP reservoir's size is 0.15 km^2 and gross power density of 1,215.3 W/m^2. As a matter of comparison, the average power density of the Brazilian hydropower plants, totalizing 74,442 MW of installed capacity, is 2.03 W/m^2.

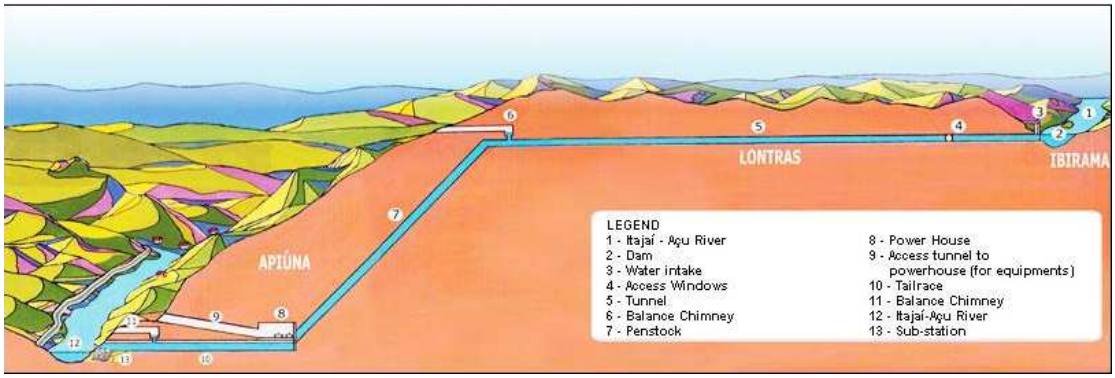

Figure 2 – Simplified Diagram of the UHESP

This project is eligible under the VCS methodology, so it fulfils all applicability criteria of the methodology used. The project consists of the construction of a hydropower plant with a reservoir of 0.15 km^2 and an installed capacity of 182.3 MW. The primary objective of the UHESP is to help meet Brazil's rising demand for energy due to economic growth and to improve the supply of electricity, while contributing to the environmental (run-of-river power plant), social (job creation about 1000 workers in the construction phase, and infra-structure enhancements in surrounded municipalities), and economic sustainability by increasing the share of renewable energy in total electricity consumption for Brazil.

Project duration, crediting time and project start date:

According to the Policy Announcement from the VCS Association in 10 September 2008, the VCS definition for project start date is the date the project activity began reducing or removing GHG emissions. "Salto Pilão" Hydropower Plant Project Activity had its start date confirmed with the evidences of the first generating unit started operation.

Project start date: Date on which the project began reducing or removing

GHG emissions, i.e. when the first generating unit started operation: December 11th, 2009;

Crediting period start date: January 19th, 2010;

·VCS project crediting period: 10 years renewable.

Proof of title:

The concession contract and its following Additional Terms, signed between Ecopart Assessoria em Negócios Empresariais Ltda. and Consórcio Empresarial Salto Pilão –

CESAP, constitute the proof of title, demonstrating the rights to the GHG emissions reductions and the ownership of the project. This proof of title was checked by DOE and is in power of the Consórcio Empresarial Salto Pilão – CESAP.

Double counting and whether the project participated in another emission trading programme:

The DOE evaluation do this project is not creating any other form of environmental credit under any specific programme.

Project applicability to the VCS for projects rejected under other GHG programme:

The project being submitted has not been rejected under other GHG Programme.

Whether the project is eligible under the VCS:

"Salto Pilão" Hydropower Plant Project Activity will be registered as a Voluntary Carbon Standard (VCS) project and facilitate the project implementation with carbon revenue coming from the carbon credits sale. Due to its significant contribution in diminishing carbon emissions and protecting the climate, this project is anticipated to fulfill VCS and qualify for carbon finance.

Any relevant findings relating to the project should be summarized in this section:

The DOE evaluation to this project confirms that the project is eligible according to:

· Legislative: the project attends all legal requirements;

· Technical: the construction of the hydropower plant is technically feasible;

· Economic: carbon credits will compensate the high investments that were necessary to this project activity;

· Sectoral: incentive of good practices to the sector;

· Social: the implementation of hydroelectric power plants ensures renewable energy generation, reduces the national electric system demand, avoids negative social and environmental impact caused by the construction of large hydropower plants with large reservoirs and fossil fuel thermo power plants, and drives the regional economy, increasing quality of life in local communities;

· Environmental: the project attends all legal requirements and no environmental impacts are predicted;

· Geographic /site specific: the plant can be uniquely geographically identified with no barriers regarding logistic;

· Temporal information: the project will not double count the GHG emissions during the ten years renewable of the crediting period.

Any conclusions concerning the project are summarized in this section.

3.2 BASELINE

According to ACM0002 methodology, if the project activity is the installation of a new grid-connected renewable power plant/unit, the baseline scenario is the following:

“Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the “Tool to calculate the emission factor for an electricity system”.

In the absence of the project activity, electricity delivered to the grid by the project would have otherwise been supplied from other plants of the grid-connected emitting larger quantities of carbon dioxide (CO_2). Therefore, the baseline scenario is identified as the continuation of the current (previous) situation of electricity supplied by large hydro with large reservoirs and thermal power stations operated by fossil fuel.

The baseline emission factor is defined as EF_y and is calculated as a combined margin (CM), consisting of the combination of operating margin (OM) and build margin (BM) factors, following the “Tool to calculate the emission factor for an electricity system”. Following this tool, UHESP Project utilizes the “delineation of the project electricity system and connected electricity systems” published by the Brazilian DNA in its Resolution nr. 8, which defines a single system for the Brazilian Interconnected Grid, covering all the five geographical regions of the country (North, Northeast, South, Southeast and Midwest).

The DOE assessed the project activity, through desk review of the PD, a site visit and analysis of the applicable methodology and related documents.

Due this, the DOE can conclude that:

- The baseline methodology is approved,

- The selected baseline methodology is correct applied,

- The appropriate settings of baseline scenario where adopted,

Assessment and demonstration of additionality

Investment Analysis

The project proponent decided to use the “Tool for the demonstration and assessment of additionality”, which refers to the “Guidelines on the assessment of investment analysis” and, therefore, these guidelines were used in the following analysis.

Sub-step 2a – Determine appropriate analysis method

As the project generates financial and economical benefits, other than CDM related income, it will be used the benchmark analysis as the analysis method.

Sub-step 2b – Option III. Apply benchmark analysis

The option of the project proponent (PP) was to use the project internal rate of return (IRR) as the project financial indicator, because it is the most commonly and appropriate indicator used for infrastructure project investment analysis. The project cash flow and the IRR were analyzed by the DOE and it was considered correct.

As the benchmark, it will be used the Weighted Average Capital Cost (WACC) of the project.

The WACC was utilized as the Project Benchmark because:

- It was based on internationally recommended financial models, normally utilized by pension funds, private equity funds and investment banks.

- All the assumptions used on its calculation were cross-checked and were based on public available sources that could be clearly validated by the DOE. The spreadsheet provided by the PP has all the necessary links to access the data sources.

- The WACC assumptions are in conformance with the best market practices for this investment.

Bureau Veritas Certification was able to confirm the investment analysis and particularly the benchmark analysis presented by the PP to assess the financial attractiveness of the project activity to demonstrate additionality.

The total capital obtained for the project includes two components: loan and equity. The project IRR is based on the total investment (including the debt and the equity portions). In order to evaluate the financial viability of the project, the project developer is required to assess the expected minimum returns on all components of the investment made. Therefore, the benchmark selected needs to be such that, the expected minimum return takes into consideration the risks associated with each of the components of the total investment. Thus, from an investor's perspective, the WACC is one of the most appropriate benchmarks for comparing with the project IRR, since it is the weighted average of the total cost of the different components of the investment.

The Project's Weighted Average Capital Cost (WACC) was calculated according the equation below:

$$WACC= E/V*Re + D/V*Rd*(1-Tc)$$

Where:

E/V = Percentage of Equity in Company's Capital Structure;

Re = Cost of Equity;

D/V = Percentage of Debt in Company's Capital Structure;

Rd = Cost of Debt

Tc = Income Tax in Brazil

To calculate the cost of equity it was used the CAPM Model (Capital Assets Price Model), using the following equation:

Re = Rf + βi (ERP)

Where:

Re = Cost of Equity;

Rf = Rate of Return of a Risk Free Asset;

βi = Beta Coefficient;

ERP = Equity Risk Premium;

Sub-step 2c. Calculation and comparison of financial indicators

The project internal rate of return resulting from the cash flow, calculated according to input values is 7.25%.

Project IRR = 7.25%

The parameters and assumptions used to determinate the projects IRR were checked and the DOE determined the accuracy and suitability of them considering the date of the investment decision in July 2008 which can be evidenced through the Minutes of Meeting held by the project sponsor's Board.

Installed Capacity: The installed capacity of 182,3 MW was cross-checked [1]with the website of ANEEL - Brazilian Electricity Regulatory Agency . The Brazilian Electricity Regulatory Agency (in Portuguese, Agência Nacional de Energia Elétrica, ANEEL) is an autarchy of the government of Brazil linked to the Ministry of Mines and Energy. It's stated goal is to "provide favorable conditions for the electricity market to develop in a balanced environment amongst agents, for the benefit of society." The Ministry of Energy and Mines (MME) has the overall responsibility for policy setting in the electricity sector while ANEEL, which is linked to the Ministry of Mines and Energy, is the Brazilian Electricity Regulatory Agency created in 1996 by Law 9427. ANEEL's function is to regulate and control the generation, transmission and distribution of power in compliance with the existing legislation and with the directives and policies dictated by the Central Government.

Plant Load Factor (PLF): The PLF of 106.7 MW was cross-checked at the website[2] of ANEEL - national agency for electrical energy. This input value was accepted, because it was valid and applicable at the time of decision making.

Total investment: The project's total investment of R$ 460 millions was determinate by the company's specialists based on their previous experience and it was cross-checked with a document submitted and approved by BNDES which described all the components of the total investment. BNDES is the Brazilian Development Bank (Portuguese: Banco Nacional de

[1] http://www.mme.gov.br/mme/galerias/arquivos/noticias/2009/01_janeiro/Analise_SocioAmbiental.pdf

[2] http://www.mme.gov.br/mme/galerias/arquivos/legislacao/portaria/Portaria_no_408-2005.pdf

Desenvolvimento Econômico e Social, abbreviated: BNDES) is a federal public company associated with the Ministry of Development, Industry and Foreign Trade. Its goal is to provide long-term financing for endeavors that contribute to the country's development. BNDES is the second largest development bank in the world. This document is valid as evidence because it describes all the values of the project activity total investment.

Energy price: The energy price of R$ 115.00 was cross-checked at the website of CCEE - Power Commercialization Chamber. The Power Commercialization Chamber (CCEE) is the operator of the commercial market. The initial role of the operator was to create a single, integrated commercial electricity market, to be regulated under published rules. This role has become more active since now CCEE is in charge of the auction system. The rules and commercialization procedures that regulate CCEE's activities are approved by ANEEL. One of the main duties of CCEE is to promote auctions to sale electric power, as delegated by ANEEL. The DOE understood that this value was conservative, because the average selling price of electricity energy from hydropower's was R$ 115.00[3].

O&M: The DOE accepted the assumption for the O&M cost of R$12.12/MW with a statement of Maurício Tolmasquim which declares that the O&M costs should vary between R$ 10.00/MW and R$ 30.00/MW. Mauricio Tolmasquim Tiomno is the current chairman of the Power Research Company, an entity affiliated with the Ministry of Mines and Energy. The Power Research Company (EPE) was created in 2004 with the specific mission of developing an integrated long-term planning for the power sector in Brazil. Its mission is to carry out studies and research services in the planning of the energy sector in areas such as power, oil and natural gas and its derivates, coal, renewable energy resources and energy efficiency, among others. Its work serves as input for the planning and implementation of actions by the Ministry of Energy and Mines in the formulation of the national energy policy.

Benchmark: To calculate the benchmark (weighted average capital cost), the following assumptions were used:

The DOE validated that the WACC calculation is based on parameters that are standard in the market, considers the specific characteristics of the project type, and is not linked to the subjective profitability expectation or risk profile of this particular project developer. The WACC as of the project's financial analysis decision date was of 9.36%. For the WACC calculation, the following equation was used:

WACC = Wd x Kd + We x Ke, where:

We and **Wd** are, respectively, the weights of equity and debt typically observed at the sector. **We** is of 35%, and **Wd** of 65%. These numbers derive from the typical leverage of similar projects in the sector in Brazil, based on the rules[4] for available long term loans from Brazilian Development Bank (from the Portuguese *Banco Nacional de Desenvolvimento Econômico e Social - BNDES*).

[3] http://www.ccee.org.br/StaticFile/Arquivo/biblioteca_virtual/Leiloes/Resultados/1_Nova_Resumo_Leil%C3%A3o_por_Vendedorv2.pdf

[4] http://inter.bndes.gov.br/english/RelAnualEnglish/ra2006/Rel-Anual2006.pdf

Kd is the cost of debt, which is observed in the market related to the project activity, and which already accounts for the tax benefits of contracting debts. **Kd** is of 5.02%, and also derives from long term loans applied to the sector in Brazil, and therefore is based on BNDES financing[5] endeavour credit line's interest rates.

Ke is the cost of equity, estimated through the Capital Asset Pricing Model (CAPM). **Ke** is of 17.43%. **Ke** derives from a risk free rate plus the market risk premium adjusted to the sector through Beta. The risk-free rate, the market risk premium, and the Beta have been calculated based on publicly available data and the DOE validated all the input values for the CAPM calculation.

Plugging these numbers into WACC formulae:

WACC = 65% X 5.02% + 35% X 17.43% = 9.36%

As Project IRR = 7.25% < WACC = 9.36%

CDM Project Activity cannot be considered as financially attractive.

Sub-step 2d. Sensitivity analysis

The four variables that might affect the project's finance are (i) the electricity price, (ii) the total amount of investment, (iii) the O&M Cost and (iv) plant load factor increase. The sensitivity analysis considers just the scenarios which contribute to increase the project's financial and economical attractiveness with the objective to confirm how solid the sub-step 2b and 2c's analysis is. Table 2 of the PD presents the results for the main parameters variation which can affect project's cash flow, as showed below:

Table 2 – Results of the sensitivity analysis.

Salto Pilão	**IRR (%)**	**WACC (%)**
Original IRR	7.25	9.36
Tariff increase	8.94	
Plant load factor increase	8.14	
Cost reduction	8.08	
Investment reduction	8.24	

It can be seen that the tariff increase is the main item which can affect project's cash flow, but considering the +10% variation the project's IRR remains below the WACC.

[5] http://inter.bndes.gov.br/english/tjlp.asp

The sensitivity analysis demonstrates that the project activity is not financially attractive once the entrepreneurship's internal rate of return is lower than the reference indicators in all scenarios analyzed.

The tool for demonstration an assessment of additionality says that:

"If after the sensitivity analysis is concluded that the proposed CDM project activity is unlike to be the most financially attractive, or is unlikely to be financially attractive, then proceed to Step 4 (Common practice analysis)."

Therefore, as the sensitivity analysis has shown that the proposed activity is not attractive in the financial point of view, and step 3, Barrier analysis was not considered in the project, we should proceed to the fourth step, common practice analysis.

CAR BQA 01 through 05 and CL BQA 01 through 05, were issued with respect to Investment Analysis. They have been satisfactorily resolved and were closed.

The DOE, based on the assessment result by the financial expert engaged, hereby confirms that the underlying assumptions are appropriate and the financial calculations are correct.

3.3 MONITORING PLAN

The proposed project used CDM Approved consolidated baseline and monitoring methodology ACM0002 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" – Version 11. The project satisfies all criteria for the applied methodology. The application of monitoring methodology was assessed as correct.

The monitoring plan provides detailed information related to the collection, archiving and monitoring of all relevant data needed to:

- Estimate or measure emissions occurring from GHG sources, sinks and reservoirs
- Determine the baseline emissions
- Estimate changes in emissions from the site

The DOE hereby confirms that the monitoring plan complies with the requirements of the methodology.

The steps taken to assess whether the monitoring arrangements described in the monitoring plan are feasible within the project design are described below.

The purpose of the project monitoring is to ensure transparency, validity and reliability of the emission reductions generated by UHESP. All information related to the project monitoring will be available at the time of the project verification and will be archived at least for 2 years after the end of the last crediting period with the project sponsor.

Salto Pilão project will proceed with the necessary requirements according to the ACM0002 – "Consolidated baseline methodology for grid-connected electricity generation from renewable sources". According to this methodology, the following parameters will be monitored:

(i) Quantity of net electricity generation supplied by the project plant/unit to the grid (**$EG_{facility,y}$**);

(ii) Installed capacity of the hydro power plant after the implementation of the project activity (**CAP_{PJ}**);

(iii) Area of the reservoir measured in the surface of the water, after the implementation of the project activity, when the reservoir is full (**A_{PJ}**);

(iv) All parameters to calculate the combined margin CO_2 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" (**$EF_{grid.CM.y}$**).

Procedures for the monitoring of parameters mentioned above are described as follows.

(i) Quantity of net electricity generation supplied by the project plant/unit to the grid in year y (***$EG_{facility,y}$***)

Project sponsor will proceed with the necessary measures for the power control and monitoring. Together with the information produced by both project sponsor and the power utility/Electric Energy Commercialization Chamber (CCEE), it will be possible to monitor the power generation of the project (in MWh/year). CCEE makes feasible and regulates the electricity energy commercialization in Brazil.

There are six energy meters (principal and backup) specified by CCEE: 2 installed at the power plants (which measure the gross energy) and 4 installed at the local substation (which measure the net energy). CCEE has on-line access to the energy readings from meters located at the substation.

Energy data is measured by the meters in real time. Monthly, consolidations are made for payment purposes. Cross check is made between reports from CCEE/power utility and power plant. However, energy data from meters located at the power plant is higher than data from meters at the substation, considering transmission losses from the power plant to the substation.

According to ONS procedures, these meters have to be calibrated every two years after operation starts. All meters calibration will be made following the necessary requirements.

Electricity from CCEE/power utility reports will be considered for emission reduction purposes. Therefore, these monthly reports will be available during the project verification (estimated to happen yearly) as well as the calibration certificates from meters involved in the project activity.

(ii) Installed capacity of the hydro power plant after the implementation of the project activity (***CAP_{PJ}***)

The installed capacity of the power plant (W) will be checked by DOE through an on-site visit during verification (estimated to be yearly). And can be cross-checked with official documents, *e.g.* environmental license, ANEEL Resolutions, and others.

(iii) Area of the reservoir measured in the surface of the water, after the implementation of the project activity, when the reservoir is full (***A_{PJ}***)

Although the project reservoir is very small (150,000 m²) and results in a power density of 1,215.3 W/m^2, project sponsors will monitor the reservoir area (in m^2) of the project through topographical data made once at the time of the project design conception (before the project construction) and monitoring of the water levels in the reservoir. This monitoring of water levels will be made by project sponsor and will be available during the project verification (estimated to happen yearly).

(iv) All parameters to calculate the combined margin CO_2 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" (***$EF_{grid.CM.y}$***).

As mentioned in item 4.1 in the PD "Explanation of methodological choice", the Brazilian DNA will made available the operating margin and build margin emission factors (tCO_2/MWh) yearly. Thus, Project Participants will use data from the Brazilian DNA at the time of the project verification.

Salto Pilão Consortium will be responsible for the maintenance of the equipments monitoring, for dealing with possible monitoring data adjustments and uncertainties, for review of reported results/data, for internal audits of GHG project compliance with operational requirements and for corrective actions. Salto Pilão Consortium is also responsible for the project management, as well as for organizing and training of the staff in the appropriate monitoring, measurement and reporting techniques.

In addition, the Brazilian Power Regulatory Agency (ANEEL) can visit the plant to inspect the operation and maintenance of the facility assuring that project sponsors are carrying out the necessary procedures for the project operation.

Salto Pilão Consortium has hired expert companies to execute their environmental programs. After the beginning of the commercial operations, renovation of degraded areas and of permanent preservation areas will be done according to the regulations of the environmental agencies, through a team of environment experts, who will also monitor the compliance with the environmental agencies' regulations. Studies done during the design phase of the project

activities have shown the environmental impacts and the interference on the social development in the region of the plant, indicating the mitigation measures to be adopted during the construction phase. These measures are being taken seriously. Data about environmental impact are being archived by the hydropower plant and the environmental agency.

Following the ACM0002 methodology, the following parameters will be monitored:

Data / Parameter:	**$EG_{facility,y}$**
Data unit:	MWh/year
Description:	Quantity of net electricity generation supplied by the project plant/unit to the grid in year *y.*
Source of data to be used:	Project sponsor and the power utility/CCEE.
Value of data applied for the purpose of calculating expected emission reductions	934,692 The estimated net electricity dispatched to the grid was calculated through the energy assured of the project 106.7 MW-ave (as established in the 2nd addendum of the Concession Contract signed on August 20th, 2007) and 8,760 hours of operation in a year (106.7MW-ave x 8,760 hours).
Description of measurement methods and procedures to be applied:	Electricity supplied by the project activity to the grid. Double checked by Project Sponsors internal control and sales receipt or documents from the power utility/CCEE. CCEE is a Brazilian government entity which monitors the electricity on the national interconnected grid. Hourly measurement and monthly recording.
QA/QC procedures to be applied:	The equipments used have by legal requirements extremely low level of uncertainty).
Any comment:	-

Data / Parameter:	**Cap_{PJ}**
Data unit:	W
Description:	Installed capacity of the hydro power plant after the implementation of the project activity.
Source of data to be used:	Project site and official data source.
Value of data applied for the purpose of calculating expected emission reductions	182,300,000
Description of measurement methods	Installed capacity determined by official entities

and procedures to be applied:	and can be confirmed during on-site visit verifications.
QA/QC procedures to be applied:	Determined based on recognized standards with no possibility of uncertainty.
Any comment:	-

Data / Parameter:	**A_{PJ}**
Data unit:	m^2
Description:	Area of the reservoir measured in the surface of the water, after the implementation of the project activity, when the reservoir is full.
Source of data to be used:	Project site and official data source.
Value of data applied for the purpose of calculating expected emission reductions	150,000 The reservoir area of the project is based on the Operation License nr. 202/2009, issued on July 13th, 2009 by the Environmental Agency of Santa Catarina State (FATMA).
Description of measurement methods and procedures to be applied:	Measured from topographical surveys, maps, satellite pictures, etc. (once at the time of the project conception) and water levels (during the project crediting period). Monthly measurement and recording.
QA/QC procedures to be applied:	Determined based on recognized standards with extremely low level of uncertainty.
Any comment:	-

Data / Parameter:	**$EF_{grid.CM.y}$**
Data unit:	tCO_2/MWh
Description:	Combined margin CO_2 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*".
Source of data to be used:	Brazilian DNA (Comissão Interministerial de Mudança Global do Clima – CIMGC)
Value of data applied for the purpose of calculating expected emission reductions	0.3112 Calculated based on an average of the operating and build margin emission factors for the year of 2008 published by the Brazilian DNA: <http://www.mct.gov.br/index.php/content/view/4016.html>.

Description of measurement methods and procedures to be applied:	Since option C) for the calculation of the operating margin was chosen, this value will be up-dated annually according to data from the Brazilian DNA and following the prescription of the emission factor tool.
QA/QC procedures to be applied:	Official source of data.
Any comment:	-

Data / Parameter:	$EF_{grid.OM.y}$
Data unit:	tCO_2/MWh
Description:	Operating Margin CO_2 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*".
Source of data to be used:	Brazilian DNA (Comissão Interministerial de Mudança Global do Clima – CIMGC)
Value of data applied for the purpose of calculating expected emission reductions	0.4766 Calculated based on an average of the operating margin emission factor for the year of 2008 published by the Brazilian DNA: <http://www.mct.gov.br/index.php/content/view/4016.html>.
Description of measurement methods and procedures to be applied:	Option C) was chosen to calculate the operating margin. This option does not permit the *ex-ante* vintage for the calculation of the emission factor. Therefore, the emission factor will be calculated ***ex-post*** applying the numbers provided by the Brazilian DNA.
QA/QC procedures to be applied:	Official source of data.
Any comment:	-

Data / Parameter:	$EF_{grid.BM.y}$
Data unit:	tCO_2/MWh
Description:	Build margin CO_2 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".
Source of data to be used:	Brazilian DNA (Comissão Interministerial de Mudança Global do Clima – CIMGC)
Value of data applied for the purpose of calculating expected emission	0.1458 Calculated based on an average of the build

reductions	margin emission factor for the year of 2008 published by the Brazilian DNA: <http://www.mct.gov.br/index.php/content/view/4016.html>.
Description of measurement methods and procedures to be applied:	Option 2 was chosen to calculate the build margin. Therefore, the emission factor will be calculated ***ex-post*** applying the numbers provided by the Brazilian DNA. Numbers provided by the Brazilian DNA will be applied during the project verification.
QA/QC procedures to be applied:	Official source of data.
Any comment:	-

The DOE hereby confirms that the project participants are able to implement the monitoring plan.

3.4 CALCULATION OF GHG EMISSIONS

Emission reductions (ER_y)

According to the selected approved methodology ACM0002, emission reductions are calculated as follows:

$$ER_y = BE_y - PE_y \qquad \text{Equation 1}$$

Where:

ER_y = Emission reductions in year y (tCO_2e/yr);

BE_y = Baseline emissions in year y (tCO_2e/yr);

PE_y = Project emissions in year y (tCO_2e/yr).

Baseline emissions (BE_y)

Baseline emissions are calculated using the annual electricity dispatched to the grid (EG_y) times the CO_2 baseline emission factor (EF_y), as follows:

$$BE_y = EG_{PJ,y} \cdot EF_{grid,CM,y} \qquad \text{Equation 2}$$

Where:

BE_y = Baseline emissions in year *y* (tCO_2/yr);

$EG_{PJ,y}$ = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year *y* (MWh/yr);

$EF_{grid,CM,y}$ = Combined margin CO_2 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*" (tCO_2/MWh).

For Greenfield projects installed at a site where no electricity generation occurred previously, as it is the case of the proposed project activity, the calculation of $EG_{PJ,y}$ is as follows:

$$EG_{\mathrm{PJ,\,y}} = EG_{facility,y} \qquad \textbf{Equation 3}$$

Where:

$EG_{PJ,y}$ = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year *y* (MWh/yr);

$EG_{facility,y}$ = Quantity of net electricity generation supplied by the project plant/unit to the grid in year *y* (MWh/yr).

Baseline emission factor ($EF_{grid,CM,y}$)

According to the selected approved methodology ACM0002, the baseline emission factor (EF_y) is calculated using the methodological tool "*Tool to calculate the emission factor for an electricity system*". According to this tool Project Participants shall apply the following six steps to the baseline calculation:

STEP 1 - Identify the relevant electricity systems.

STEP 2 - Choose whether to include off-grid power plants in the project electricity system (optional).

STEP 3 - Select a method to determine the operating margin (OM).

STEP 4 - Calculate the operating margin emission factor according to the selected method.

STEP 5 - Identify the group of power units to be included in the build margin (BM).

STEP 6 - Calculate the build margin emission factor.

STEP 7 - Calculate the combined margin (CM) emissions factor.

- **STEP 1** – Identify the relevant electricity systems

According to the tool, "*If the DNA of the host country has published a delineation of the project electricity system and connected electricity systems, these delineations should be used. If this information is not available, project participants should define the project electricity system and any connected electricity system and justify and document their assumptions in the CDM-PDD*".

Brazilian DNA has published the Resolution # 8 issued on May 26th, 2008, which defines the Brazilian Interconnected Grid as a single system that covers all the five macro-geographical regions of the country (North, Northeast, South, Southeast and Midwest). Hence, this figure will be used to calculate the baseline emission factor of the grid.

- **STEP 2** – Choose whether to include off-grid power plants in the project electricity system (optional)

Project participants may choose between the following two options to calculate the operating margin and build margin emission factor:

Option (i): only grid power plants are included in the calculation;

Option (ii): both grid power plants and off-grid power plants are included in the calculation.

The Brazilian DNA made available the emission factor calculation based on information

of the grid power plants only – option (i) – following the "*Tool to calculate the emission factor for an electricity system*". More information of the methods applied can be obtained in the DNA's website (http://www.mct.gov.br/index.php/content/view/4016.html).

- **STEP 3** – Select a method to determine the operating margin (OM)

The calculation of the operating margin emission factor ($EF_{grid,OM,y}$) is based on one of the following methods:

(a) Simple OM, or

(b) Simple adjusted OM, or

(c) Dispatch data analysis OM, or

(d) Average OM.

The Brazilian DNA made available the operating margin emission factor calculated using option c – Dispatch data analysis OM. Accordingly to the "*Tool to calculate the emission factor for an electricity system*", when this is the chosen option to calculate the operating margin the emission factor has to be up-dated annually. Hence, and the *ex-post* vintage will be used in the project activity.

- **STEP 4** – Calculate the operating margin emission factor according to the selected method

The dispatch data analysis OM emission factor ($EF_{grid,OM-DD,y}$) is determined based on the power units that are actually dispatched at the margin during each hour *h* where the project is displacing electricity. This approach is not applicable to historical data and, thus, requires annual monitoring of $EF_{grid,OM-DD,y}$.

It will be calculated using the below formulae:

$$EF_{grid,OM-DD,y} = \frac{\sum_h EG_{PJ,h} \cdot EF_{EL,DD,h}}{EG_{PJ,y}}$$ **Equation 4**

Where:

$EF_{grid,OM-DD,y}$= Dispatch data analysis operating margin CO_2 emission factor in year *y* (tCO_2/MWh);

$EG_{PJ,y}$ $EG_{PJ,h}$ = Electricity displaced by the project activity in hour *h* of the year *y* (MWh);

$EF_{EL,DD,h}$ $EF_{EL,DD,h}$ = CO_2 emission factor for power units in the top of the dispatch order in hour *h* in year *y* (tCO_2/MWh);

$EG_{PJ,y}$ = Total electricity displaced by the project activity in year *y* (MWh);

h = Hours in year *y* in which the project activity is displacing grid electricity;

y = Year in which the project activity is displacing grid electricity.

As mentioned above, the host country's DNA will provide $EF_{EL,DD,h}$ in order for Project Participants to calculate the operating margin emission factor. Hence, this data will be updated annually applying the number published by the Brazilian DNA. For estimation purposes, the data of the most recent year available in the DNA website will be used.

- **STEP 5** – Identify the group of power units to be included in the build margin (BM)

The sample group of power units m used to calculate the build margin consists of

either:

(a) The set of five power units that have been built most recently, or

(b) The set of power capacity additions in the electricity system that comprise 20% of the system generation (in MWh) and that have been built most recently.

The build margin will also be calculated by the DNA. The number is published on the website and for estimation purposes the data for the most recent year will be used.

- **STEP 6** – Calculate the build margin mission factor ($EF_{BM,y}$)

The build margin emissions factor is the generation-weighted average emission factor (tCO_2/MWh) of all power units m during the most recent year y for which power generation data is available, calculated as follows:

$$EF_{grid,BM,y} = \frac{\sum_m EG_{m,y} \times EF_{EL,m,y}}{\sum_m EG_{m,y}} \qquad \text{Equation 5}$$

Where:

$EF_{grid,BM,y}$ = Build margin CO_2 emission factor in year *y* (tCO_2/MWh);

$EG_{m,y}$ = Net quantity of electricity generated and delivered to the grid by power unit m in year *y* (MWh);

$EF_{EL,m,y}$ = CO_2 emission factor of power unit m in year *y* (tCO_2/MWh);

m = Power units included in the build margin;

y = Most recent historical year for which power generation data is available.

The Brazilian DNA made available the build margin emission factor calculated following the "Tool to calculate the emission factor for an electricity system", approved by the CDM Executive Board. This parameter will be annually up-dated applying the numbers provided by the Brazilian DNA. The number is published on the website and for estimation purposes the data for the most recent year will be used.

- **STEP 7** – Calculate the combined margin (CM) emissions factor $EF_{y.}$

The combined margin is calculated as follows:

$$EF_y = w_{OM} \cdot EF_{OM,y} + w_{BM} \cdot EF_{BM,y} \qquad \text{Equation 6}$$

Where:

w_{OM} = weighting of operating margin emissions factor (%);

$EF_{OM\,y}$ = Operating margin CO_2 emission factor in year y (tCO_2/MWh);

w_{BM} = weighting of build margin emissions factor (%);

$EF_{BM,\,y}$ = Build margin CO_2 emission factor in year y (tCO_2/MWh).

According to the emission factor tool, wind and solar power generation project activities shall use the default values of w_{OM} = 0.75 and w_{BM} = 0.25 for the first crediting period and for subsequent crediting periods. All other projects shall use the default values of w_{OM} = 0.5 and w_{BM} = 0.5 for the first crediting period, and w_{OM} = 0.25 and w_{BM} = 0.75 for the second and third crediting period, unless otherwise specified in the approved methodology which refers to this

tool.

Quantity of net electricity generation supplied by the project plant/unit to the grid ($EG_{facility,y}$)

Estimated quantity of net electricity generation supplied by the project plant/unit to the grid is presented in section 4.2 in the PD version 03..

Project emissions (PE_y)

The proposed project activity may involve project emissions that can be significant. In this sense, according to the selected CDM methodology, these emissions shall be accounted for as project emissions by using the following equation:

$$PE_y = PE_{FF,y} + PE_{GP,y} + PE_{HP,y} \qquad \textbf{Equation 7}$$

Where:

PE_y = Project emissions in year *y* (tCO2e/yr);

$PE_{FF,y}$ = Project emissions from fossil fuel consumption in year *y* (tCO2/yr);

$PE_{GP,y}$ = Project emissions from the operation of geothermal power plants due to the release of non-condensable gases in year *y* (tCO2e/yr);

$PE_{HP,y}$ = Project emissions from water reservoirs of hydro power plants in year *y* (tCO2e/yr).

Emissions from fossil fuel combustion ($PE_{FF,y}$)

Considering that there is no fossil fuel combustion in the proposed project activity, $PE_{FF,y}$ = 0 tCO_2/year.

Emissions from the operation of geothermal power plants due to the release of non-condensable gases ($PE_{GP,y}$)

Considering that the proposed project activity consists on the construction of a small hydropower plant, there are no emissions of non-condensable gases from the operation of geothermal power plants. Therefore, $PE_{GP,y}$ = 0 tCO_2/year.

Emissions from water reservoirs of hydro power plants ($PE_{HP,y}$)

New hydro electric power projects resulting in new reservoirs, shall account for CH_4 and CO_2 emissions from reservoirs, estimated as follows:

a) if the power density (*PD*) of power plant is greater than 4 W/m^2 and less than or equal to 10 W/m^2:

$$PE_y = \frac{EF_{Res} \times TEG_y}{1000} \qquad \textbf{Equation 8}$$

Where:

PEy = Emission from reservoir expressed as tCO_2e/year;

EF_{Res} = is the default emission factor for emissions from reservoirs, and the default value as per EB23 is 90 Kg CO_2e/MWh;

TEG_y = 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).

b) If power density (*PD*) of the project is greater than 10W/m^2, PE_y = 0.

The power density of the project activity is calculated as follows:

$$PD = \frac{Cap_{PJ} - Cap_{BL}}{A_{PJ} - A_{BL}} \qquad \text{Equation 9}$$

Where:

PD = Power density of the project activity, in W/m^2.

Cap_{PJ} = Installed capacity of the hydro power plant after the implementation of the project activity (W).

Cap_{BL} = Installed capacity of the hydro power plant before the implementation of the project activity (W). For new hydro power plants, this value is zero.

A_{PJ} = Area of the reservoir measured in the surface of the water, after the implementation of the project activity, when the reservoir is full (m^2).

A_{BL} = Area of the reservoir measured in the surface of the water, before the implementation of the project activity, when the reservoir is full (m^2). For new reservoirs, this value is zero.

Leakage emissions (LE_y)

According to the methodology, "*no leakage emissions are considered. The main emissions potentially giving rise to leakage in the context of electric sector projects are emissions arising due to activities such as power plant construction and upstream emissions from fossil fuel use (e.g. extraction, processing, and transport). These emissions sources are neglected".* Therefore, leakage of Salto Pilão is 0 tCO_2/year.

Baseline emission factor ($EF_{grid,CM,y}$)

For estimation purposes, the most recent available data (2008) from the hourly emission factor provided by the Brazilian DNA was applied. When applying the estimate figures in the formula presented in item 4.1, the $EF_{grid,OM\text{-}DD,y}$ obtained was:

$$EF_{grid,OM\text{-}DD,\ 2008} = 0.4766\ tCO_2e/MWh.$$

The average building margin for the considered years is:

$$EF_{BM,\ 2008} = 0.1458\ tCO_2e/MWh.$$

With these numbers, applying in the formula presented in step 6 of section B.6.1., we have:

$$EF_{2008} = 0.5 \times 0.4766 + 0.5 \times 0.1458$$

$$EF_{2008} = 0.3112\ tCO_2e/MWh$$

Quantity of net electricity generation supplied by the project plant/unit to the grid ($EG_{facility,y}$)

Estimated electricity exported to the grid by the project is estimated based on the energy assured as established by the 2nd Addendum of the Concession Contract, August 20th, 2007. Considering an energy assured of 106.7 MW-average and 8,760 hour of operation in a year, Salto Pilão is expected to export 934,692 MWh/year.

Considering Equation 2 and the expected annual electricity delivery to the grid by the project, baseline emissions are as follows:

Table 3 – Baseline emissions of Salto Pilão project during the first crediting period

Years	Net energy generation (MWh)	Days of operation	Baseline emissions (tCO2e)	Nr. years
2010	888,598	347	276,532	1st
2011	934,692	365	290,876	2nd
2012	934,692	365	290,876	3rd
2013	934,692	365	290,876	4th
2014	934,692	365	290,876	5th
2015	934,692	365	290,876	6th
2016	934,692	365	290,876	7th
2017	934,692	365	290,876	8th
2018	934,692	365	290,876	9th
2019	934,692	365	290,876	10th
2020	46,094	18	14,345	11th
TOTAL	**9,346,920**	**3,650**	**2,908,762**	**11**

The DOE concludes that the formulas and factors used are correct and transparent and the assumptions made for estimating GHG emission reductions are correct.

3.5 ENVIRONMENTAL IMPACT

The growing global concern on sustainable use of resources is driving a requirement for more sensitive environmental management practices. Increasingly this is being reflected in countries' policies and legislation. In Brazil the situation is not different. Environmental rules and licensing policies are very demanding in line with the best international practices.

In Brazil, the sponsor of any project that involves construction, installation, expansion or operation of any polluting or potentially polluting activity or any other capable to cause environmental degradation is obliged to secure a series of permits from the relevant environmental agency (federal and/or local, depending on the project).

Project sponsors have to obtain all licenses required by the Brazilian environmental regulation (National Environmental Council Resolution "Conselho Nacional do Meio Ambiente - CONAMA" nr. 6/87):

- *The preliminary license (*Licença Prévia *or LP),*
- *The construction license (*Licença de Instalação *or LI); and*
- *The operating license (*Licenca de Operação *or LO).*

Accordingly to article 3 of this Resolution and Complementary Law nr. 38 dated November 21st, 1995, in order to issue licenses, the Environmental Impact Study (from the Portuguese *Estudo de Impacto Ambiental – EIA*) and the Environmental Impact Report (from the Portuguese *Relatório de Impacto Ambiental – RIMA*) are required for hydropower projects with installed capacity greater than 10 MW. Since UHESP has installed capacity of 182.3 MW, the Environmental Impact Study and Report were required.

The Project Environmental Impact Study was prepared by Ambiental Consultoria e Planejamento Ltda. in September 1997 and is composed by three volumes:

I) Methodological aspects and information related to the project;

   a) General description of the project (identification, objectives, preferential area of installation and justifications for the project implementation);

   b) Technical description of the project (project alternative locations studies: introduction, basic types of hydro projects, inventory, preliminary feasibility study, feasibility study, UHESP general description, datasheet, costs and schedule);

   c) Environmental legislation (introduction, environmental licensing and environment impact study, issues related to environmental juridical aspects of the electrical sector);

d) Methodology (methodological references, study limits, research techniques and source of information).

II) Diagnosis of the current situation;

a) Occupation history;

b) Recent trends and current situation of the physical and biotic medium (hydro resources, soil, flora and vegetation, geology, geomorphology and landscape, terrestrial fauna, ictus fauna);

c) Recent trends and current situation of the socio-economic-cultural environment (area of influence and directly affected area).

III) Impact analysis and mitigation measures proposals, as well as programs and plans;

a) Qualification of the main Works and Actions of the project;

b) Interactions matrix between the project actions and associated impacts;

c) Interaction network of the associated impacts of the main project actions;

d) Impacts characterization (physical, biotic and socio-economic);

e) Classification of the associated impacts of the works and actions related to the project.

The main concerns of the community and technicians were presented in the environmental study and were related to the possibility of flooding in the municipalities of Lontras and Rio do Sul, possibility of drying the river between the dam and the power house, the quality of the water (for bathing and fishing), blockade of the fishes immigration, deforestation, fauna impact, resettlement, consequences in the activities of ecotourism in Ilha das Cotias, impacts on Archeological sites and cultural heritages, job creation and financial compensation.

The following plans are been implemented in order to reduce the impacts of the project construction, raised in the environmental study analysis:

I) Environmental control. It involves 17 (seventeen) programs, which includes: climates conditioning observations, water quality monitoring, monitoring and conservation of local fauna, reservoir cleaning, geological impacts monitoring, environmental control of the engineering works, degraded areas recuperation, ecological station implementation, terrestrial fauna monitoring and conservation, population resettlement, social communication, infrastructure improvement, workers training, public health control, support of the municipalities, landscape memory conservation, archeological rescue.

II) Expropriation. The expropriation plan was chosen to ensure a fair compensatory condition for the local community and a fair value to the areas involved in the project boundaries.

III) Multiple use of the reservoir. This plan involves the conservation and protection of the reservoir and other areas direct and indirect affected. The plan is divided in 2 (two) main programs: a) utilization program and; b) multiple use of the reservoir.

Besides of the above mentioned plans, there are several actions that are been implemented, which includes river flow maintenance, complementary environmental studies for the project monitoring, maintenance and monitoring of Ilha das Cotias (with hunters surveillance), treatment of the residues generated by the project construction, and others. All information related to the environmental programs and plans is presented in the project PBA (as mentioned below) and conditioning licenses. All information related to the licensing process is available with the project sponsors and the environmental agency of Santa Catarina State.

Environmental Impact Study and report were made publicly available to local stakeholders and public entities. Furthermore, according to the CONAMA Resolution nr. 1 dated January 23rd, 1986, the environmental agency – State or National – is responsible to issue licenses and decide the necessity in making public consultations and forums for the project implementation. When public consultation is required, it usually happens in parallel with the Preliminary License issuance. In the case of UHESP, the stakeholder forum was held on September 25th, 2002 together with the environmental agency of Santa Catarina. Considering the positive contribution of UHESP for the region, the public forum resulted in the Preliminary License issuance on July 24th, 2003.

After the Preliminary License issuance, the environmental agency requires a report containing environmental and social programs to be implemented aiming the mitigation of impacts caused by the project construction (from the Portuguese "*Projeto Básico Ambiental – PBA"*), which shall contain:

- Archeological rescue program;
- Reservoir cleaning and conservation program;
- Fauna rescue, conservation and monitoring;
- Water quality monitoring;
- Degraded area recuperation program;
- Erosion control program.

The PBA of UHESP was prepared by ECSA Engenharia Sócio-Ambiental S/C Ltda. in November 2003, which presented 24 programs. The UHESP PBA was approved by the environmental agency and, therefore the Construction License was issued on December 11th, 2003.

In parallel with the power plant construction, programs described in the PBA are implemented and, when the power plant construction finishes, the Operating License is issued.

In order to keep the Operating License valid, many social and environmental requirements have to be quarterly assessed, thus this license is constantly revalidated during the project's

lifetime. This ensures that the project continuously meets its environmental obligations and the goals that are established in the project PBA.

Table 4 – History of UHESP licenses issued by FATMA

Type	Number	Date of issuance
Preliminary License	228/03	24/07/2003
Construction License	076/03	11/12/2003
	076/05	30/11/2005
	063/GELAO/07	31/07/2007
	085/07	22/10/2007
Operation License	202/09	13/07/2009

The necessary documents and requirements for the licensing process are presented in the CONAMA Resolution nr. 6. All licenses and environmental studies are available with the project sponsor and the environmental agency of Santa Catarina State (FATMA).

3.6 COMMENTS BY STAKEHOLDERS

The steps taken to assess the adequacy of the local stakeholder consultation are described below.

As mentioned in item 3.5, in order to issue licenses, the Environmental Impact Study (from the Portuguese *Estudo de Impacto Ambiental – EIA*) and the Environmental Impact Report (from the Portuguese *Relatório de Impacto Ambiental – RIMA*) are required for hydropower projects with installed capacity greater than 10 MW.

Both studies shall be made publicly available to local stakeholders and public entities. Furthermore, according to the CONAMA Resolution nr. 1 dated January 23rd, 1986, the environmental agency – State or National – is responsible to issue licenses and decide the

necessity in making public consultations and forums for the project implementation. When public consultation is required, it usually happens in parallel with the Preliminary License issuance.

In the case of Salto Pilão project, the public forum was held by the environmental agency of Santa Catarina State (FATMA) on September 25th, 2002. Considering the positive contribution of Salto Pilão implementation, no concerns were raised in this meeting and the Preliminary License was issued on July 24th, 2003.

The DOE hereby confirms that the process of local stakeholder consultation is observed to be adequate.

The management and operational system can be checked by validation team as following:

> The management and operational system of the project is suitable. In accordance with methodologies and procedures indicated.
>
> An operational structure was established with responsibilities identified. The documents referenced as in the site visit, we confirm the applicability of the structure indicated in the VCS PD.
>
> Staff training plan was clear; training records were available.
>
> The quality management were clearly defined in the VCS PD.

4 VALIDATION CONCLUSION

Bureau Veritas Certification has performed a validation of the “Salto Pilão” Hydropower Plant Project Activity in Brazil. The validation was performed on the basis of VCS criteria and host country criteria and also on the criteria given to provide for consistent project operations, monitoring and reporting.

The validation consisted of the following three phases:

i) A desk review of the project design and the baseline and monitoring plan;

ii) Follow-up interviews with project stakeholders;

iii) The resolution of outstanding issues and the issuance of the final validation report and opinion.

Project participants used the latest tool for demonstration of the additionality. In line with this tool, the PD provides analysis of investment to determine that the project activity itself is not the baseline scenario.

By the construction of a hydropower plant with a reservoir of 0.15 km^2 and an installed capacity of 182.3 MW, the project is likely to result in reductions of GHG emissions partially. An analysis of the investment barrier demonstrates that the proposed project activity 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. Given that the project is implemented and maintained as designed, the project is likely to achieve the estimated amount of emission reductions.

The review of the project design documentation (version 01 dated November 12th, 2009) and the subsequent follow-up interviews have provided Bureau Veritas Certification with sufficient evidence to determine the fulfillment of stated criteria. The Validation Report was based on the version 06, dated June 22nd, 2010 from the PD. In our opinion, the project correctly applies and meets the relevant criteria requirements for the VCS and the relevant host country criteria.

The validation is based on the information made available to us and the engagement conditions detailed in this report.

Campinas, June 23st 2010

Marco Prauchner	Antonio Daraya
Validation Team Leader	Internal Technical Reviewer

5 REFERENCES

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

i. PD “Salto Pilão” Hydropower Plant Project Activity, version 01, of November 12th , 2009;

ii. PD “Salto Pilão” Hydropower Plant Project Activity, version 02, of March 5th , 2010;

iii. PD “Salto Pilão” Hydropower Plant Project Activity, version 03, of April 26th , 2010;

iv. PD “Salto Pilão” Hydropower Plant Project Activity, version 04, of May 21st , 2010;

v. PD “Salto Pilão” Hydropower Plant Project Activity, version 05, of June 11st , 2010;

vi. PD “Salto Pilão” Hydropower Plant Project Activity, version 06, of June 22nd , 2010;

vii. Calculation Excel Spreadsheets;

viii. Operation License (LO) nº 202/2009, valid until on: Jully 16th , 2012;

ix. Financial Demonstrations and Calculations.

6 VERIFIERS' CV'S

Bureau Veritas Certification Leader GHG Verifier and 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 9001:2008 and ISO 14001:2004 Lead Auditor and has also experience in the implementation of Environmental Management Systems. Marco is qualified as Lead Verifier and Internal technical reviewer to the GHG – Green House Gases.

Rubens da Silva Ferreira – Is graduated in Chemical Engineering with experience in Quality and Environmental management in glass industries. He is ISO 9001:2008, ISO 14001:2004 and OHSAS 18001:2007 Lead Auditor and has also experience in the implementation of Environmental Management Systems. Rubens is qualified as Lead Verifier GHG – Green House Gases.

Bureau Veritas Certification, Finance Specialist

Bernardo Aleksandravicius - 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, Observer

Ricardo Fontenele – Is graduated in Mechanical engineer with in Quality, Environmental and Health and Safety management in mechanical, plastic and chemical industries. 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. Ricardo act in this project as an observer working together with the team.

Bureau Veritas Certification, Internal Technical Reviewer

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 GHG Verifier.

7 VCS VALIDATION PROTOCOL

Table 1 Validation requirements based on the Voluntary Carbon Standard 2007.1

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
1. VCS Program specific issues					
a. Have the project(s) created another form of environmental credit (for example renewable energy certificates)?	VCS	3.1	The Project Participants confirm that UHESP project will not create another form of environmental credit, in accordance with item 1.13 - VCS PD "Salto Pilão" Hydropower Plant Project Activity version 01.	OK	Ok
b. If yes, have the project participants provided a letter from the program operator that the credit has not been used and has been cancelled from the relevant programthe?	VCS	3.1	NA	OK	OK
c. Are he VCS PD, monitoring reports, and other documents required under the VCS Program in English?	VCS	3.2	Yes, all the documents are in English.	OK	OK
2. Project level requirements					
a. General requirements					
a. Have the project proponent applied an approved VCS Program methodology or a methodology from an approved GHG Program based on the list of current VCS Program approved GHG Programs and methodologies as set out on www.v-c-s.org?	VCS	5.2	Yes, the project uses the CDM methodology: ACM002 – "Consolidate baseline methodology for grid-connected electricity generation from renewable sources" – version 10.		
b. Is the Project Start Date before 1 January 2002? (If yes, a CAR shall be raised as the Project Start Date for non-AFOLU projects for the VCS 2007.1	VCS	5.2.1	No, the Project start Date is on December 23rd	CAR01	OK

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
shall not be before 1 January 2002)			2009. **CL01 -** Clarify the event that defined the start date (to the Project Start Date for non-AFOLU projects for the VCS 2007.1 shall not be before 1 January 2002). **CL02 -** Please clarify the date on which the project will be fully operational. **CAR 01** – In accordance with the VCS PD Template, from 19 November 2007, specify the Crediting period start date, in the item 1.6 from the VCS PD.	CL01 CL02	OK OK
c. Will this validation be completed within two years of the Project Start Date? If not, was this validation contracted before 19 November 2008? (If yes validation shall be completed by 19 November 2009 and proof of contracting prior to 19 November 2008 shall be provided)	VCS	5.2.1	Yes.	OK	OK
d. Is the earliest Project Crediting Period Start Date under the VCS 2007.1 28 March 2006 for non-AFOLU projects and 1 January 2002 for AFOLU projects ?	VCS	5.2.1	Yes.	OK	OK

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
e. Does the project reduce GHG emissions from activities that are included in an emissions trading program; or take place in a jurisdiction or sector in which binding limits are established on GHG emissions?	VCS	5.2.1	No.	OK	OK
f. If yes, have the project proponents provided evidence that the reductions or removals generated by the project have or will not be used in the emissions trading program or for the purpose of demonstrating compliance with the binding limits that are in place in that jurisdiction or sector? [Such evidence could include: a letter from the program operator or designated national authority that emissions allowances (or other GHG credits used in the program) equivalent to the reductions or removals generated by the project have been cancelled from the program; or national cap as applicable or; purchase and cancellation of GHG allowances equivalent to the GHG emissions reductions or removals generated by the project related to the program or national cap]	VCS	5.2.1	NA.	OK	OK
g. Have project proponents claimed GHG credits from one project under more than one GHG Program? (If yes, a CAR shall be raised, as Project proponents shall not claim GHG credits from one project under more than one GHG Program)	VCS	5.2.1	No.	OK	OK
h. Was this project rejected by other GHG Programs?	VCS	5.2.2	No. Informed that the project was not rejected by other GHG program. The VCS Program is the only	OK	OK

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
			GHG program that the project participates. It is cross-checked the UNFCCC website, list of rejected project activities available on December 21st 2009.		

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
i. If yes, have project proponents:	VCS	5.2.2			
i. clearly stated in its VCS PD all GHG Programs for which the project has applied for credits and why the project was rejected? (Such information shall not be deemed commercially sensitive information	VCS	5.2.2	NA	OK	OK
ii. provided the VCS Program validator and verifier, VCS Program project database and VCS Program Registry with the actual rejection document(s) including any additional explanations?	VCS	5.2.2	NA	OK	OK
j. Is this a renewal of the Project Crediting Period?	VCS	5.2.3	No	OK	OK
k. If yes have a VCS Program approved validator determined that the original project baseline scenario(s) and additionality is still valid or has been updated taking account of new data and changed VCS Program requirements where applicable?	VCS	5.2.3	NA	OK	OK
b. Standards and factors					
d. Do standards and factors used to derive GHG emission data as well as any supporting data for additionality and baseline scenario(s) meet the following requirements:	VCS	5.5			
i. be publicly available from a reputable and recognised source (e.g. IPCC, publishedGovernment data etc)?	VCS	5.5	Yes.	OK	OK

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
ii. be reviewed as part of its publication by a recognised competent organization?			Yes.	OK	OK
c. Project grouping					
a. Is this a grouped project?	VCS	5.6	No.	OK	OK
b. If yes , was this grouped project described in one VCS PD?	VCS	5.6	NA	OK	OK
c. Does this PD include a description of the central GHG information system and controls associated with the project and its monitoring?	VCS	5.6	NA	OK	OK
d. What is the sampling carried out by the VCS verifier?	VCS	5.6	NA	OK	OK
e. Have the sampling of a grouped project taken account of any sub groups and associated activities within each sub group?	VCS	5.6	NA	OK	OK
f. Do this project, which intends to apply for the VCS Program VCUs as part of a grouped project also comply with the VCS Program requirements for grouped projects, detailed in the most recent version of the Program Guidelines 2007.1 on www.v-c-s.org?	VCS	5.6	NA	OK	OK
d. Content of the VCS PD					
a. Is the PDD used as a basis for validation prepared in accordance with the latest template and guidance from the VCS?	VCS	5.7	Yes, Voluntary Carbon Standard - Project Description Template based on template from November 19th 2007.	OK	OK

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
b. Is there a project title?	PD temp	1.1.	Yes, The title is “Salto Pilão” Hydropower Plant Project Activity.	OK	OK
c. Type/Category of the project	PD temp	1.2	The project falls in the energy industries category (renewable sources).	OK	OK
i. Is it defined wether the project category is part of a GHG program that has been approved by the VCS Board?	PD temp	1.2	Yes.	OK	OK
ii. Is it specified if the project is a Grouped project?	PD temp	1.2	This project is not a grouped project.	OK	OK
d. Is the amount of emission reductions over the crediting period estimated, including project size? (Micro project: Less than 5,000 tonnes CO2 equivalent emissions reductions per year; Mega Project: More than 1,000,000 tonnes CO2 equivalent emissions reductions per year)	PD temp	1.3	Yes. The project is expected to reduce 211,974 tCO_2/year and, therefore, is not considered as a micro or mega project.	OK	OK
e. Is a brief description of the project provided?	PD temp	1.4	Yes. Salto Pilão project activity consists of the construction of a hydropower plant with a reservoir of 0.15 km^2 and an installed capacity of 182.3 MW. The plant is located between the cities of Lontras, Ibirama and Apiúna, state of Santa Catarina, Southern region of Brazil. Salto Pilão hydropower plant (*from Portuguese Usina Hidrelétrica Salto Pilão - UHESP*) is owned by an association of	CL03	OK

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
			several companies called *Consórcio Empresarial Salto Pilão*. The current consortium structure is as follows: ▪ Companhia Brasileira de Alumínio (CBA): 60%; ▪ Camargo Côrrea Geração de Energia S/A (CCGE): 20%; and ▪ DME Energética Ltda. (DMEE): 20%. The project activity reduces greenhouse gases (GHG) emissions that would have occurred in the absence of the project by avoiding electricity generation from fossil fuel sources in the operating margin and build margin of the national interconnected grid. It is important to highlight that UHESP is a run-of-river power plant, with a small reservoir, which results in a minimum environmental impact. The primary objective of the UHESP is to help meet Brazil's rising demand for energy due to economic growth and to improve the supply of electricity, while contributing to the environmental (run-of-river power plant), social (job creation about 1000 workers in the construction phase, and infra-structure enhancements in surrounded municipalities), and economic sustainability by increasing the share of renewable energy in total		

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
			electricity consumption for Brazil (and for the region of Latin America and the Caribbean). **CL03** – Please clarify the phrase: "…by increasing the share of renewable energy in total electricity consumption for Brazil (and for the region of Latin America and the Caribbean)."		

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
f. Is the project location, including geographic and physical information allowing the unique identification and delineation of the specific extent of the project, and including GPS project boundaries, provided?	PD temp	1.5	The project is located in Itajaí-açú river, between the cities of Lontras, Ibirama and Apiúna, santa Catarina State, southern region of Brazil. The geographic coordinates of the project activity are: Powerhouse: 27°5'55"S and 49º28'8"W Dam: 27°8'8"S and 49°31'4"W	OK	OK
g. Duration of the project activity/crediting period	PD temp	1.6			
i. Is the project start date, i.e., the date on which the project begun reducing or removing GHG emissions, provided?	PD temp	1.6	In accordance with the VCS PD, version 01, the UHESP start date is on December 23rd, 2009, when the project is expected to start full operations. **CAR 02** - According to the VCS 2007.1, the project start date is the "*date on which the project began reducing or removing GHG emissions*", but, when the site visit was realized, on December 16th 2009, the UHESP were working, then the information on the VCS PD is not correct..	CAR02	OK

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
ii. Is the crediting period start date, i.e., the date the first monitoring period commenced, provided? (VCS project crediting period: A maximum of ten years which may be renewed at most two times)	PD temp	1.6	Refer to **CAR01**.	CAR01	OK
h. Are the conditions prior to project initiation provided?	PD temp	1.7	Yes. Prior to the project activity implementation, there was no hydropower plant or other project activity been implemented in the location of the UHESP project.	OK	OK
i. Is a description of how the project will achieve GHG emission reductions and/or removal enhancements provided?	PD temp	1.8	Yes. The UHESP project will achieve GHG emission reductions through the renewable energy generation to the grid, which would be generated through the operation of hydropower plants with large reservoirs and with thermal power stations operated with fossil fuel.	OK	OK
j. Are project technologies, products, services and the expected level of activity described?	PD temp	1.9	Yes. UHESP is a run-of-river hydropower plant. Run-of-river projects do not include significant water storage, and must therefore make complete use of the water flow. A typical run-of-river scheme involves a low-level diversion dam and is usually located on swift flowing streams. According to the World Commission of Dams	CAR03 CAR04 CL04 CL05 CL06	OK OK OK OK OK

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
			(WCD, 2000), run-of-river projects are defined as: "*Dams that create a hydraulic head in the river to divert some portion of the river flows. They have no storage reservoir or limited daily pondage. Within these general classifications there is considerable diversity in scale, design, operation and potential for adverse impacts".* In the case of UHESP: -Maximum volume of the dam: 1,582,827 m^3; -Average volume of the dam: 21,520 m^3; -Nominal flow of the turbines: 26.15m3/s; -Days of pondage at maximum volume of the dam: 0.70 day; -Days of pondage at average volume of the dam: 0.01 day. According to the turbine's manufacturer the minimum flow rate required for each turbine in UHESP is 21.7 m^3/s and the nominal value is 52.3 m^3/s. As the power plant can be operated with a single turbine, the minimum required flow is the same value. To determine the river's dry season flow rate, data provided by Salto Pilão Consortium study indicating monthly average river flow at the project activity location for the period from 1931 to 2001 was used.	CL07 CL08	OK OK

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
			It is possible to observe that autumn (21 March to 20 June) is a dry season in the region. For the purposes to demonstrate the run-of-river status of UHESP, the lowest monthly values (April to June) for the last 70 years will be used. In this terms, the average dry season flow rate is 84.97 m^3/s, which is even higher than the minimum flow required for the operation of both turbines (2 × 21.7 m^3/s = 43.4 m^3/s). Then, to the understanding of the project participants, Salto Pilão Project can be considered a run-of-river power plant according to all the presented criteria. Turbine Technology The technology employed at UHESP project is established in the industry. The Francis turbine is the most widely used among water turbines. This turbine is a type of hydraulic reactor turbine in which the flow exits the turbine blades in the radial direction. Francis turbines are common in power generation and are used in applications where high flow rates are available at medium hydraulic head. Water enters the turbine through the penstock and is directed onto the blades by wicket gates. The low momentum water then exits the turbine through a draft tube. In the model, water flow is supplied by a		

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
			variable speed centrifugal pump. A load is applied to the turbine by means of a magnetic brake, and torque is measured by observing the deflection of calibrated springs. The performance is calculated by comparing the output energy to the energy supplied. **CAR 03** - The source http://www.dams.org//docs/report/wcdintro.pdf was not available to the cross-check on January 4, 2010. **CAR 04** – The source "project design consolidation" dated May 2008 (chapter 7), was not available to the cross-check on January 4, 2010. **CL 04** – Please clarify where in the source: http://www.eletrobras.com/elb/data/Pages/LUMISF99678B3PTBRIE.htm the following information can be confirmed: "Another way to characterize run-of-river power plants comes from the Eletrobrás 2000) definition: run-of-river projects are defined as "*the projects where the river's dry season flow rate is the same or higher than the minimum required for*		

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
			the turbines"…" **CL 05** – Please clarify the source to the following information: "According to the turbine's manufacturer the minimum flow rate required for each turbine in UHESP is 21.7 m^3/s and the nominal value is 52.3 m^3/s". **CL 06** – Please clarify the source relative to the information "data provided by Salto Pilão Consortium study indicating monthly average river flow at the project activity location for the period from 1931 to 2001 was used." **CL 07** - Please clarify the source relative to the information: "UHESP reservoir's size is 0.15 km^2 and gross power density of 1,215 W/m^2". **CL 08** – All the sources must be available to the DOE. Please clarify the source relative to the information:" As a matter of comparison, the average power density of the Brazilian hydropower		

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
			plants, totalizing 74,442 MW of installed capacity, is 2.03 W/m^2”.		

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
k. Does the VCS PD include identification of relevant local laws and regulations related to the project and demonstration of compliance with them?	PD temp	1.10	**CAR 05** – According to the VCS PD Template "*The VCS PD shall include identification of relevant local laws and regulations related to the project and demonstration of compliance with them.*" On the VCS PD version 01, item 1.10, there's no identification of relevant local laws and regulations related to the project and demonstration of compliance with them.	CAR05	OK
l. Are risks that may substantially affect the project's GHG emission reductions or removal enhancements idendified?	PD temp	1.11	The GHG emission reductions from Salto Pilão project is related to the quantity of energy exported to the grid. Since the project will follow all the necessary requirements for the project operation in accordance with local, regional and national regulations of the entities mentioned in the section above, there will be low risks and levels of uncertainty involved in the proposed project activity.	OK	OK
m. Is confirmation that the project was not implemented to create GHG emissions primarily for the purpose of its subsequent removal or destruction demonstred?	PD temp	1.12	Before the installation of the UHESP project no electricity was generated in the project activity site. Hence, no GHG emission reductions occurred primarily to the project activity.	OK	OK

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
n. Has the project created another form of environmental credit (for example renewable energy certificates)?	PD temp	1.13	The Project Participants confirm that UHESP project will not create another form of environmental credit, in accordance with item 1.13 - VCS PD "Salto Pilão" Hydropower Plant Project Activit version 01.	OK	OK
o. If yes, has the proponent provided a letter from the program operator that the credit has not been used and has been cancelled from the relevant program?	PD temp	1.13	NA	OK	OK
p. Was the project rejected under other GHG programs (if applicable)	PD temp	1.14	No. Informed that the project was not rejected by other GHG program. The VCS Program is the only GHG program that the project participates. It is cross-checked the UNFCCC website, list of rejected project activities available on December 21st 2009.	OK	OK
q. If yes, does the project:	PD temp	1.14			
i. clearly state in its VCS PD all GHG programs for which the project has applied for credits and why the project was rejected? (Such information shall not be deemed commercially sensitive information)	PD temp	1.14	NA	OK	OK
ii. provide the VCS verifier and Registry with the actual rejection document(s) including	PD	1.14	NA	OK	OK

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
explanation?	temp				
r. Are project proponents roles and responsibilities, including contact information of the project proponent, other project participants provided?	PD temp	1.15	**CAR 06** – The roles and responsibilities are not specified in the VCS PD version 01, item 1.15.	CAR06	OK
s. Is any information relevant for the eligibility of the project and quantification of emission reductions or removal enhancements, including legislative, technical, economic, sectoral, social, environmental, geographic, site-specific and temporal information provided?	PD temp	1.16	**CAR 07** – The information requested in the PDD must be submitted in their respective fields.	CAR07	OK
t. Is there any commercially sensitive infromation that has been excluded from the public version of the VCS PD that will be displayed on the VCS Project Database?	PD temp	1.17	NA	OK	OK
u. If yes, was it listed?	PD temp	1.17	NA	OK	OK
v. Are title and reference of the VCS methodology applied to the project activity and explanation of methodology choices provided?	PD temp	2.1	Yes, the methodologies used were: ACM0002 – "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" (version 10).	OK	OK
w. Does the project use one of the VCS program approved project methodologies and provide information relevant to methodology deviations or methodology revisions?	PD temp	2.1	Yes, refer item v).	OK	OK

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
x. Are the choice of the methodology and its applicability to the project activity justified?	PD temp	2.2	Yes. ACM0002 methodology is applicable to grid-connected renewable power generation project activities that (a) install a new power plant at a site where no renewable power plant was operated prior to the implementation of the project activity (greenfield plant); (b) involve a capacity addition; (c) involve a retrofit of (an) existing plant(s); or (d) involve a replacement of (an) existing plant(s). In the case of hydropower plants: The project activity is implemented in an existing reservoir, with no change in the volume of reservoir; or The project activity is implemented in an existing reservoir, where the volume of reservoir is increased and the power density of the project activity, as per definitions given in the Project Emissions section, is greater than 4 W/m^2; or The project activity results in new reservoirs and the power density of the power plant, as per definitions given in the Project Emissions section, is greater than 4 W/m^2. Considering the applicability conditions, UHESP can use ACM0002 methodology as it is a new hydro power plant with a power density greater than 4 W/m^2.	OK	OK

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
y. Are GHG sources, sinks and reservoirs identified for the baseline scenario and for the project?	PD temp	2.3	Yes. According to ACM0002 (version 10, EB 47), baseline determination shall only account CO_2 emissions from electricity generation in fossil fuel fired power that is displaced due to the project activity. Table 4 shows the gases included in the project boundary and brief explanation. **CL 09** - Clarify why the emission of CH_4 in the project activity was excluded for "No significant emission from reservoir is identified in the project activity, according to the power density calculation."	CL09	OK
z. Is it described how the baseline scenario is identified and the identified baseline scenario?	PD temp	2.4	Yes. According to ACM002 methodology, if the project activity is the installation of a new grid-connected renewable power plant/unit, the baseline scenario is the following: "Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the "Tool to calculate the emission factor for an electricity system".	CAR08 CL10	OK OK

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
			In the absence of the project activity, electricity delivered to the grid by the project would have otherwise been supplied from other plants of the grid-connected emitting larger quantities of carbon dioxide (CO_2). Therefore, the baseline scenario is identified as the continuation of the current (previous) situation of electricity supplied by large hydro with large reservoirs and thermal power stations – or by Diesel oil, in the case of isolated systems. More information about the baseline scenario is presented in the common practice analysis of the section below. The baseline emission factor is defined as EF_y and is calculated as a combined margin (*CM*), consisting of the combination of operating margin (OM) and build margin (BM) factors, following the "Tool to calculate the emission factor for an electricity system" (version 1.1). Following this tool, UHESP Project utilizes the "*delineation of the project electricity system and connected electricity systems*" published by the Brazilian DNA in its Resolution nr. 8, which defines a single system for the Brazilian Interconnected Grid, covering all the five geographical regions of the country (North, Northeast, South, Southeast and Midwest).		

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
			CL 10 – Clarify the source to the following information: "Therefore, the baseline scenario is identified as the continuation of the current (previous) situation of electricity supplied by large hydro with large reservoirs and thermal power stations – or by Diesel oil, in the case of isolated systems." **CAR 08 -** The "Tool to calculate the emission factor for an electricity system" is actually in his version 02 (since 16 October 2009), and not version 1.1.		

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
aa. Has the project proponent selected the most reasonable baseline scenario for the project?	PD temp	2.4	Yes, refer item z)	OK	OK
bb. Does it reflect what most likely would have occurred in the absence of the project?	PD temp	2.4	Refer to CL 10.	CL10	OK
cc. Is it described how the emissions of GHG by source in baseline scenario are reduced below those that would have occurred in the absence of the project activity (assessment and demonstration of additionality)?	PD temp	2.5	Yes. The description of how the emissions of GHG by source in baseline scenario are reduced below those that would have occurred in the absence of the project activity is demonstrated through the "Tool for the demonstration and assessment of additionality", as referred in ACM0002 used in this project, (Test 1 – project test).	OK	OK
dd. Has the project proponent demonstated, in the VCS PD, in addition to describing how the project meets the VCS methodology, that the project is additional based on one of the tests, the project test, the performance test, and technology test?	PD temp	2.5	Yes. Based on Test 1 – The project test	OK	OK
ee. Are title and reference of the VCS methodology (which includes the monitoring requirements) applied to the project activity and explanation of methodology choices provided?	PD temp	3.1	Yes. Methodology ACM0002 – "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" **CAR 09**: The correct name to the Methodology ACM002 is: "Consolidated baseline methodology for grid-connected electricity generation from renewable	CAR09	OK

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
			sources". In the VCS PD version 01, item 3.1, and 3.2 the name of the methodology appears as ""Consolidated monitoring methodology for zero-emissions grid-connected electricity generation from renewable sources"		

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
ff. Is monitoring, including estimation, modelling, measurement or calculation approaches desbride including:	PD temp	3.2			
i. Purpose of monitoring?	PD temp	3.2	**CAR 10**: The purpose of monitoring (refer to VCS PD Template) was not described on the PDD version 01.	CAR10	OK
ii. Types of data and information to be reported, including units of measurement?	PD temp	3.2	Yes. the following parameters will be monitored: Quantity of net electricity generation supplied by the project plant/unit to the grid in year y (**$EG_{facility,y}$**); Installed capacity of the hydro power plant after the implementation of the project activity (**CAP_{PJ}**); Area of the reservoir measured in the surface of the water, after the implementation of the project activity, when the reservoir is full (**A_{PJ}**); **CAR 11** The units of measurement aren't those established by the methodology ACM002.	CAR11	OK
iii. Origin of the data?	PD temp	3.2	**CAR 12** – The site visit by the DOE can't be considered as an origin to the data of **CAP_{PJ}.**	CAR12	OK

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
iv. Monitoring, including estimation, modelling, measurement or calculation approaches?	PD temp	3.2	Yes.	OK	OK
v. Monitoring times and periods, considering the needs of intended users?	PD temp	3.2	No. **CAR 13** - Monitoring times and periods, considering the needs of intended users are not included in the VCS PD version 01.	CAR13	OK
vi. Monitoring roles and responsibilities ?	PD temp	3.2	Yes. Salto Pilão Consortium will be responsible for the maintenance of the equipments' monitoring, for dealing with possible monitoring data adjustments and uncertainties, for review of reported results/data, for internal audits of GHG project compliance with operational requirements and for corrective actions.	OK	OK
vii. Managing data quality?	PD temp	3.2	Yes.	OK	OK
gg. Are data and parameters monitored/selecting relevant GHG sources, sinks and reservoirs for monitoring or estimating GHG emissions and removals described in the tabular form including:	PD temp	3.3	**CL 11** – Clarify why the parameters listed on section 3.2 from the VCS PD version 01 are not the same that appears on section 3.3.	CL11	OK

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
i. Data unit?	PD temp	3.3	**CAR 14** – The unit to the parameter **Cap_{PJ}** is W in accordance with ACM002 version 10, and not MW. **CAR 15** – The unit to the parameter **A_{PJ}** is m^2 in accordance with ACM002 version 10, and not km^2.	CAR14 CAR15	OK OK
ii. Description?	PD temp	3.3	Yes.	OK	OK
iii. Source of data to be used?	PD temp	3.3	Yes.	OK	OK
iv. Value of data applied for the purpose of calculating expected emissions reductions?	PD temp	3.3	**CL 12** – Please clarify the origin of the datas applied to: $EG_{facility,y}$; TEG_y; Cap_{PJ}; A_{PJ}.	CL12	OK
v. Description of measurement methods and procedures to be applied?	PD temp	3.3	Yes.	OK	OK
vi. QA/QC procedures to be applied?	PD temp	3.3	Yes.	OK	OK
vii. Any comment?	PD temp	3.3	Yes.	OK	OK

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
hh. Is the monitoring plan described?	PD temp	3.4	No. **CAR 16** – The section 3.4 from the VCS PD version 01 was left blank.	CAR16	OK
ii. Are methodological choices explained?	PD temp	4.1	Yes. **CL 13** – Clarify the phrase:" Estimated quantity of net electricity generation supplied by the project plant/unit to the grid is presented in section B.6.3 below." What is the section B.6.3. (page 25 from the VCS PD version 01)	CL13	OK
jj. Are GHG emissions and/or removals for the baseline scenario quantified?	PD temp	4.2	**CL 14** – Clarify the phrase:"… When applying the estimate figures in the formula presented in step 3 of section B.6.1….". What is the section B.6.1 (page 27 from the VCS PD version 01). **CAR 17** - The source "2nd Addendum of the Concession Contract, August 20th, 2007" was not available to cross-check.	CAR17 CL14 CL15	OK OK OK

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
			CL 15 – Clarify the origin to the value of 2,5 % to transmission losses.		

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
kk. Are GHG emissions and/or removals for the project quantified?	PD temp	4.3	Yes.	OK	OK
ll. Are GHG emission reductions and removal enhancements for the GHG project quantified?	PD temp	4.4	Refer to **CAR 17** and **CL 15**	CAR17 CL15	OK OK
mm. Was a summary of environmental impact assessment, when such an assessment is required by applicable legislation or regulation, provided? ISO14064-2, 5.2.k	ISO 14064-2	5.2.k	**CAR 18** – The summary of environmental impact assessment was not included in the VCS PD version 01.	CAR18	OK
nn. Were relevant outcomes from stakeholder consultations and mechanisms for on-going communication provided?	PD temp	6	No.	OK	OK
oo. Waere chronological plan for the date of initiating project activities, date of terminating the project, frequency of monitoring and reporting and the project period, including relevant project activities in each step of the GHG project cycle provided?	PD temp	7	Yes.	OK	OK
pp. Was evidence of proof of title provided through one of the following:	PD temp	8.1			
i. a legislative right?	PD temp	8.1	N.A.	OK	OK

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
ii. a right under local common law?	PD temp	8.1	N.A.	OK	OK
iii. ownership of the plant, equipment and/or process generating the reductions/removals?	PD temp	8.1	Yes.	OK	OK
iv. a contractual arrangement with the owner of the plant, equipment or process that grants all reductions/removals to the proponent?	PD temp	8.1	N.A.	OK	OK
qq. Does the project reduce GHG emissions from activities that participate in an emissions trading program, or take place in a jurisdiction or sector in which binding limits are established on GHG emissions?	PD temp	8.2	N.A.	OK	OK
rr. If yes, have project proponents provided evidence that the reductions or removals generated by the project have or will not be used in the Program or jurisdiction for the purpose of demonstrating compliance, such as:	PD temp	8.2	N.A.	OK	OK
i. a letter from the Program operator or designated national authority that emissions allowances (or other GHG credits used in the Program) equivalent to the reductions/removals generated by the project have been cancelled from the Program; or national cap as applicable?	PD temp	8.2	N.A.	OK	OK
ii. purchase and cancellation of GHG allowances equivalent to the reductions/removals generated by the	PD	8.2	N.A.	OK	OK

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
project related to the Program or national cap?	temp				
e. Additionality					
a. Has the project proponent demonstrated that the project is additional using one of the following tests: Test 1 - The project test; Test 2 – Performance test; Test 3 – Technology test?	VCS	5.8	The project proponent used test 1.	OK	OK
b. If the project proponent used Test 1:	VCS	5.8			
i. Step 1 – Regulatory Surplus - Is the project be mandated by any enforced law, statute or other regulatory framework? (If yes a CAR shall be issued and the project shall be deemed non additional).	VCS	5.8	No.	OK	OK
ii. Step 2 – Implementation Barriers – Does the project face one (or more) distinct barrier(s) compared with barriers faced by alternative projects?	VCS	5.8			
i. Investment Barrier – Does the project face capital or investment return constraints that can be overcome by the additional revenues associated with the generation of VCUs?	VCS	5.8	Yes, the project faces an investment barrier because the project IRR is not high enough to justified the required investment. The project IRR is 7.25% which is below the benchmark of 9.58%. CL BQA 1 - Clarify with evidences the moment of investment decision, in order to guarantee that the input values are the correct ones at this moment in	CL BQA 1, CL BQA 2, CL BQA 3, CL BQA 4 and CL BQA 5	OK OK OK OK OK

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
			the project chronology. CL BQA 2 – Are there any similiars projects developed by the same project proponent that can be assessed and compared with the proposed project? CL BQA 3 – Are there any third-party or publicly available sources, such as invoices or price indices that can be used to cross-check the assumptions (plant investment, energy price, O&M costs, plant load factor and installed capacity? CL BQA 4 – Are there any feasibility reports, public announcements and annual financial reports related to the proposed CDM project activity and the project participants? CL BQA 5 – Explain the assumptions used to find the power output used in the investment analysis. See document "Cópia de Cash Flow_Salto Pilão.xls" worksheet "KEY" cell C5.		

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
ii. Technological Barriers – Does the project face technology-related barriers to its implementation?	VCS	5.8	N.A.	OK	OK
iii. Institutional barriers – Does the project face financial, organizational, cultural or social barriers that the VCU revenue stream can help overcome?	VCS	5.8	N.A.	OK	OK
iii. Step 3 – Common Practice	VCS	5.8			
i. Is project type common practice in sector/region, compared with projects that have received no carbon finance?	VCS	5.8	No.	OK	OK
ii. if it is common practice, have the project proponents identified barriers faced compared with existing projects?	VCS	5.8	N.A.	OK	OK
iii. Is the demonstration that the project is not common practice based on guidance in the GHG Protocol for Project Accounting, Chapter 7?	VCS	5.8	Yes.	OK	OK
1. Was data on all baseline candidates within the geographic area collected?	GHG PROTOCOL	7.4.2 AND 7.6	Yes.	OK	OK

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
2. Was a relative percentage for each different technology or practice calculated? (Common practice refers to the predominant technologies or practices in a given market, as determined by the degree to which those technologies or practices have penetrated the market (defined by a specified geographic area). This percentage could be based on the number of plantsor sites using each technology or practice, or could be weighted by the proportion of the total output for the market that is attributed to each technology or practice.)	GHG PROTOCOL	7.4.2 AND 7.6	Yes.	OK	OK
c. If the project proponent used Test 2:	VCS	5.8			
i. Step 1 – Regulatory Surplus - Is the project be mandated by any enforced law, statute or other regulatory framework? (If yes a CAR shall be issued and the project shall be deemed non additional).	VCS	5.8	N.A.	OK	OK
ii. Step 2: Performance Standard	VCS	5.8			

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
i. Are the emissions generated per unit output by the project below the level that has been approved by the VCS Program for the product, service, sector or industry, as the level defined to ensure that the project is not business-as-usual?	VCS	5.8	N.A.	OK	OK
ii. Are performance standard based additionality tests approved through the double approval process and by the VCS Board? (The list of approved performance standards is on www.v-c-s.org)	VCS	5.8	N.A.	OK	OK
d. If the project proponent used Test 3:	VCS	5.8			
i. Step 1: Regulatory Surplus - Is the project be mandated by any enforced law, statute or other regulatory framework? (If yes a CAR shall be issued and the project shall be deemed non additional).	VCS	5.8	N.A.	OK	OK
ii. Step 2: Technology Additionality – Are the project and its location contained in the list of project types and applicable areas approved as being additional by the VCS Program? (The approved list is available on www.v-c-s.org)	VCS	5.8	N.A.	OK	OK
f. Identifying GHG sources, sinks and reservoirs relevant to the project					

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
a. Refer to Clause 6, under Methodologies.	VCS	5.9	Refer to Clause 6, under Methodologies.	-	-
g. Determining the baseline scenario					
a. Has the project proponent selected the most conservative baseline scenario for the project, based on the requirements in the applicable VCS methodology?	VCS	5.10	Yes. *According to ACM002 methodology, if the project activity is the installation of a new grid-connected renewable power plant/unit, the baseline scenario is the following:* "Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the "Tool to calculate the emission factor for an electricity system".	OK	OK
b. Does the baseline scenario set out the geographic scope as applicable to the project?	VCS	5.10	Yes.	OK	OK
c. Has the project proponent selected or established criteria and procedures for identifying and assessing potential baseline scenarios considering the following:	ISO 14064-2	5.4			
i. The project description, including identified GHG sources, sinks and reservoirs;	ISO 1406	5.4	N.A.	OK	OK

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
	4.2				

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
ii. Existing and alternative project types, activities and technologies providing equivalent type and level ofactivity of products or services to the project;	ISO 14064-2	5.4	N.A.	OK	OK
iii. Data availability, reliability and limitations;	ISO 14064-2	5.4	N.A.	OK	OK
iv. Other relevant information concerning present or future conditions, such as legislative, technical, economic,sociocultural, environmental, geographic, site-specific and temporal assumptions or projections.	ISO 14064-2	5.4	N.A.	OK	OK
d. Has the project proponent demonstrated equivalence in type and level of activity of products or services provided between the project and the baseline scenario and has explained, as appropriate, any significant differences between the project and the baseline scenario ?	ISO 14064.2	5.4	N.A.	OK	OK
e. Has the project proponent selected or established, explained and applied criteria and procedures for identifying and justifying the baseline scenario?	ISO 14064.2	5.4	N.A.	OK	OK
f. In developing the baseline scenario, has the project proponent selected the assumptions, values and procedures that help ensure that	ISO	5.4	N.A.	OK	OK

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
GHG emissions reductions or removal enhancements are not over-estimated?	1406 4.2				
g. Has the project proponent selected or established, justified and applied criteria and procedures for demonstrating that the project results in GHG emissions reductions or removal enhancements that are additional to what wouldo ccur in the baseline scenario?	ISO 1406 4.2	5.4	N.A.	OK	OK
h. Has the project participant demonstrated that the project has met all relevant regulations, legislation and project approvals (e.g. environmental permits)?	VCS	5.10	Refer to **CAR 05**.	CAR05	OK
h. Monitoring the GHG project					
a. Has the project proponent shall established and maintained criteria and procedures for obtaining, recording, compiling and analysing data and information important for quantifying and reporting GHG emissions and/or removals relevant for the project and baseline scenario (i.e. GHG information system)?	VCS	5.11	Refer to **CAR 16**.	CAR16	OK
b. Do the monitoring procedures include?	VCS	5.11			
i. purpose of monitoring?	VCS	5.11	Refer to **CAR 10**.	CAR10	OK
ii. types of data and information to be reported, including units of measurement?	VCS	5.11	Refer to **CAR 11**, **14** and **15**.	CAR11 CAR14	OK OK

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
				CAR15	OK

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
iii. origin of the data?	VCS	5.11	Refer to **CL 12**.	CL12	OK
iv. monitoring methodologies, including estimation, modelling, measurement or calculation approaches?	VCS	5.11	Yes.	OK	OK
v. monitoring times and periods, considering the needs of intended users?	VCS	5.11	Refer to **CAR 13**.	CAR13	OK
vi. monitoring roles and responsibilities?	VCS	5.11	Yes.	OK	OK
vii. GHG information management systems, including the location and retention of stored data?	VCS	5.11	**CL 16** - Please clarify how was established the control of documents and datas.	CL16	
c. Where measurement and monitoring equipment is used, does the project proponent ensure the equipment is calibrated according to current good practice?	VCS	5.11	Yes. There will be energy meters (principal and backup) specified by ONS that will be installed at the power plants and at the local substation. Before the operations start, ONS demands that these meters are calibrated by an entity with Rede Brasileira de Calibração (RBC) credential. According to ONS, these meters have to be calibrated every two years after operation starts. All meters calibration will be made following the necessary requirements.	OK	OK

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
d. Does the project proponent apply GHG monitoring criteria and procedures on a regular basis during project implementation?	VCS	5.11	N.A.	OK	OK
i. Monitoring reports for the GHG project					
a. Do monitoring reports include all the monitoring data, calculations, estimations, conversion factors and others standard factors as defined in the monitoring clause of the applied VCS Program methodology and set out in the VCS PD? (A list of VCS approved methodologies is available on www.v-c-s.org)	VCS	5.12	N.A.	OK	OK
j. Records relating to the project					
a. Has the project proponent kept all documents and records in a secure and retrievable manner for at least two years after the end of the project crediting period.?	VCS	5.13	Refer to **CL 16.**	CL16	OK
k. Information to validator and verifier					
a. Has the project proponent made available to the validator the VCS PD, proof of title and any requested supporting information and data needed to evidence statements and data in the VCS PD and proof of title?	VCS	5.14	Refer to CAR 03, 04, 17 and CL 04, 05, 07, 08, 10.	CAR03 CAR04 CAR18 CL04 CL05 CL07	OK OK OK OK OK OK

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
				CL08 CL10	OK OK
b. Has the project proponent made the VCS PD and validation report available to the verifiers as well as a monitoring report applicable to the period of monitoring and any requested supporting information and data needed to evidence statements and data in the monitoring report?	VCS	5.14	N.A.	OK	OK

Table 2 – Approved Consolidated Baseline and Monitoring Methodologies ACM0002

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
1.Source, Definitions and Applicability					
1.1. Applicability					
Does the project activity comprise a grid-connected renewable power generation?	-	DR	Yes.	OK	OK

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
Is the project activity the installation, capacity addition, retrofit or replacement of a power plant/unit of one of the following types: hydro power plant/unit (either with a run-of-river reservoir or an accumulation reservoir), wind power plant/unit, geothermal power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit?	-	DR	Yes. UHESP is a run-of-river hydropower plant	OK	OK
Is the hydro power plant a project activity that results in a new reservoir and the power density of the power plant, as per definition given in the Project Emissions section, greater than 4 W/m²?	-	DR	Yes. UHESP can use ACM0002 methodology as it is a new hydro power plant with a power density greater than 4 W/m^2.	OK	OK
2.Baseline Methodology procedure					
2.1 . Identification of the baseline scenario					
Is the baseline the following: Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the “Tool to calculate the emission factor for an electricity system”?	-	DR	Yes.	OK	OK
2.2. Additionality					

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
The additionality of the project activity was demonstrated and assessed using the latest version of the "Tool for the demonstration and assessment of additionatily" agreed by the CDM Executive Board, which is available on the UNFCCC CDM website?	-	DR	Yes.	OK	OK
2.3. Project boundary					
Did the project participants include the physical site of the plant as well as the reservoir area?	-	DR	Yes	OK	OK
Does the spatial extent of the project boundary include the project power plant and all power plants connected physically to the electricity system that the CDM project power plant is connected to?	-	DR	Yes.	OK	OK
2.4. Emissions reductions					
Are the emission reductions determined according to the following formula: ERy = BEy – PEy ?	-	DR	Yes. This formula is defined in section 4.1 of VCS PD version 01..	OK	OK
Are all values chosen in a conservative manner and is the choice justified?	-	DR	Yes.	OK	OK

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
2.5. Project emissions					
Do the project emissions include emissions from the reservoir?	-	DR	No. As described in section B.6.1 of the VCS PD version 01, the power density of UHESP is greater than 10 W/m2. Therefore, PEy = 0.	OK	OK
2.6. Leakage					
Were the leakage effects addressed?	-	DR	According to the ACM0002 methodology, project participants do not need to consider leakage effects.	OK	OK
3. Monitoring Methodology					
Will the electricity generation from the proposed project activity be monitored?	-	DR	Yes. The Electricity supplied to the grid by the project will be monitored	OK	OK
Will the data needed to recalculate the operating margin emission factor, if needed, based on the choice of the method to determine the operating margin (OM), consistent with "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" (ACM0002) be monitored?	-	DR	Yes.	OK	OK

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
Will the data need to recalculate the build margin emission factor, if needed, consistent with "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" (ACM0002) be monitored?	-	DR	Yes	OK	OK
Will the surface area of reservoir at the full reservoir level be monitored?	-	DR	Yes. This is a new hydro electric power project.	OK	OK

Table 3 Resolution of Corrective Action and Clarification Requests

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1 and 2	Summary of project owner response	Validation team conclusion

CAR BQA 1 – According with the Tool for the demonstration and assessment of the additionality: “Internal company benchmarks/expected returns (including those used as the expected return on equity in the calculation of a weighted average cost of capital - WACC), should only be applied in cases where there is only one possible project developer and should be demonstrated to have been used for similar projects with similar risks, developed by the same company or, if the company is brand new, would have been used for similar projects in the same sector in the country/region. This shall require as a minimum clear evidence of the resolution by the company’s Board and/or shareholders and will require the validating DOE to undertake a thorough assessment of the financial statements of the project developer - including the proposed WACC - to assess the past financial behavior of the entity during at least the last 3 years in relation to similar projects.“ Provide evidences to justify the benchmark.	VCS 5.8	PPs response on 26/04/2010: In fact, the Additionality Tool states that the company internal benchmark is applicable only in the particular case that the project activity can be implemented by the project activity and demonstration that this benchmark was used in the past shall be presented. However, the benchmark used in UHESP project is not the company internal benchmark as can be seen in the PD (version 2). The Weighted Average Cost of Capital (WACC) of the electric sector was used to be compared to the project Internal Rate of Return (IRR). WACC was calculated based on parameters that are standard in the market as required by the Additionality Tool. All source of information used to calculate the benchmark is publicly available (since is based on historical data of parameters well known in the in the market) and is referred in the WACC calculation spreadsheet. Considering explanations above, the use of the benchmark is justified and demonstration that it was applied for similar projects of the same project developer is not need.	The evidences presented by the PP didn’t demonstrated that the considered benchmark was the weighted average cost of capital of the electric sector. CAR BQA 1 was not closed. Answer 2 The wacc calculated by ANEEL referred in the answer was not the benchmark for the electricity sector but the benchmark for the electricity distribution sector. The DOE coudn’t validated the EMBI+Brazil and the typical leverage of Electric Generators in Brazil. In the DOE’s opinion this benchmark is not an approved benchmark for the electricity sector as stated in the PD and some inputs couldn’t be validated by the DOE in the referred websites. CAR BQA 1 was not closed.

		PPs response on 11/05/2010: Please refer to the PPs response in the first round of this finding. The benchmark used to be compared with the project IRR is not the company internal benchmark, but the Weighted Average Cost of Capital (WACC) calculated based on parameters that are standard in the market – option (a) of the "Tool for the demonstration and assessment of additionality". According to the option (a) of the Additionality Tool, *discount rates and benchmarks shall be derived from government bond rates* (risk free rate - 30-year US Treasury Yield - and the country risk premium - EMBI+Brazil), *increased by a suitable risk premium* (equity risk premium - S&P500 vs T.Bond Yield) *to reflect private investment and/or the project type* (Adjusted Industry Beta), *as substantiated by an independent (financial) expert or documented by official publicly available financial data* (WACC was calculated based on historical data publicly available. All source of information is available in the WACC calculation spreadsheet). Just for reference, the WACC calculated by ANEEL for the electricity sector in 2006 (the same year of UHESP investment decision) is 9.98% - closest to the ones calculated by PP (9.58%).	Answer 3 Provide evidences to justify the assumptions. - In case of typical leverage provide an evidence which states that the typical leverage of the electricity sector is the relation referred in the WACC calculation. - The DOE couldn't validated the assumption used for the EMBI+Brazil, because this assumption was not publicly available. - Provide an evidence to justify the appropriateness use of the electricity distribution sector benchmark as a comparable benchmark to the electricity generation sector in Brazil. - In the DOE's opinion the WACC cannot be classified as a bechmark derived from an government bond rate, increased by a suitable risk premium to reflect private investment and/or the project type. CAR BQA 1 was not closed.

		Therefore, this document clearly demonstrates that the benchmark considered for Salto Pilão project was calculated based on parameters that are standard in the market. The WACC calculated by ANEEL is publicly available at: <http://www.aneel.gov.br/aplicacoes/audiencia/arquivo/2006/008/resultado/nota_tecnica_nº_302_2006_wacc.pdf> and it is attached to this response. In addition, although the Annex 8 from the 43rd CDM Meth Panel is a draft tool (Draft tool to determine the weighted average cost of capital – WACC), it can be used to solve DOE concerns. According to the Step 1 of this tool, the following options shall be chosen: *(i) The project activity can only be implemented by the project participants and not by an entity other than project participant; or* (ii) *The project activity could also be implemented by entities other than the project participants.* As explained by PP, option (ii) is applicable for Salto Pilão project. Therefore, in case of option (ii) "*the financial discount rate of financial benchmark shall be determined based on parameters that are standard in the market, considering the specific characteristics of the project type, but not linked to the subjective profitability expectation or risk profile of a particular project developer*".	Answer 4 (26/05/2010) - The Annual report from BNDES was not available to the PP in the moment of the investment decision. - The DOE couldn't validated the assumption of EMBI+Brazil. It is not available in the websites quoted in the PP's answer. (Bradesco: http://www.economiaemdia.com.br/br/home.aspx) and some newspapers (http://www1.folha.uol.com.br/folha/dinheiro/ult91u738817.shtml). CAR BQA 1 was not closed. Answer 5 (13/06/2010) The answer was accepted because the PP provided the evidences to justify the assumptions. CAR BQA 1 was closed.

		Considering explanations above, the WACC of the sector is applicable to be compared to the IRR of Salto Pilão project and justification that there is only one possible developer is not needed, as well as the demonstration that this benchmark has been used for similar project of the same company. PPs response on 21/05/2010: The benchmark calculated by ANEEL is not the benchmark used to compare the IRR of UHESP project. This benchmark was used only as reference to support the WACC calculated by the PPs. Since the WACC provided by ANEEL and the ones calculated by the PPs (for the same time/period) are similar, it is demonstrated that data used by PP is based in parameters standard well known and used in the electricity sector. Therefore, the option used by PPs is (a) of item 6 (sub-step 2b) of the Additionality Tool, which states: *"a) Government bond rates, increased by a suitable risk premium to reflect private investment and/or the project type, as substantiated by an independent (financial) expert or documented by official publicly available financial data".* Regarding the references for the parameters mentioned by DOE, PPs clarify that: ▪ Estimated Country Risk Premium (EMBI+Brazil):	

		Information is available at the website mentioned in the WACC spreadsheet. In this website “EMBI+Brazil spread” shall be chosen for the same period presented in the WACC calculation. In fact, historical data will not be presented in a table since only subscribers have access to this information. However, it can be noted that the graphic presented at the website is similar to the one presented in the WACC calculation spreadsheet. ▪ Typical Leverage of Electric Generators in Brazil: BNDES Information is available at the BNDES’s website as presented in the WACC calculation spreadsheet: <http://inter.bndes.gov.br/english/conditions.asp>. As can be seen in the link above, the maximum share available for the BNDES financing line is 80%. However, this 80% corresponds only to the financeable items. Non-eligible items are presented in the following link: <http://inter.bndes.gov.br/english/items_support.asp>, which includes land and terrain regularization, imported equipment and others. Considering the other costs of the project, in general, financing share corresponds to approximately 65%. Therefore, this value was used for the WACC calculation. Considering explanations above, all parameters used in the WACC calculation are publicly available and can be checked by DOE.	

		PPs response on 25/05/2010: Considering DOE comments, PPs clarify that: - BNDES Annual Report (2006) presents BRL 582 millions of financing destined to hydropower plants from the total investment of BRL 876 millions (page 18 of the report). These values demonstrate that the average share of financing is 66%, *i.e.* similar to the ones considered for the benchmark calculation (65%). In addition, some examples of BNDES financing share from the total investment can be mentioned (page 19 of the report): ▪ UHE São Salvador: 67% (BRL570/ BRL848 millions); ▪ UHE Corumbá: 40% (BRL272/ BRL680 millions); ▪ UHE Capim Branco I: 22% (BRL102/ BRL464 millions). Considering information above, the share of 65% is a reasonable assumption for the benchmark calculation. BNDES 2006 Report is attached to this response. - The Emerging Market Bond Index (EMBI) is a well known parameter in the market and is calculated by JP Morgan for Brazil, Argentina, Bulgaria, Russia, South Africa and other emerging economies. BACEN report related to the EMBI information is attached to this response.	

		Historical data is available at the JP Morgan's website (as well as Reuters and Bloomberg) and daily data is presented by other institutions as banks (Bradesco: http://www.economiaemdia.com.br/br/home.aspx) and some newspapers (http://www1.folha.uol.com.br/folha/dinheiro/ult91u738817.shtml). Other sources can be considered by DOE. - There is no benchmark for electricity generation calculated by ANEEL. As mentioned in the previous PPs response, although the benchmark calculated by ANEEL was destined to electricity distribution companies, parameters used represents the parameters of the electricity sector as explained in the ANEEL methodological choices for WACC calculation (presented in the ANEEL technical note sent to DOE on May 11th, 2010). Note that WACC calculated by ANEEL is used just for reference to support the benchmark used to compare the IRR of UHESP project. Considering explanations above, the benchmark used for UHESP project is suitable to be compared with the UHESP project IRR and follows the additionality tool. PPs response on 11/06/2010: Considering issues raised by the DOE in the 4th round of findings, PPs clarify the following:	

		- The 2006 BNDES Report represents the market environment at the time of the investment decision of UHESP project. Therefore, to the understanding of the PPs, it is reasonable to consider this report as a documented evidence of the typical leverage of electric generators in Brazil for the benchmark calculation in the context of the investment decision of UHESP project. - PPs found another source of reference for the EMBI+Brazil parameter: <http://www.ambito.com/economia/mercados/riesgo-historico.asp?idpais=3>. The values used for the benchmark calculation is according to this source of information. However, PPs considering the latest 5 years of the investment decision for the EMBI+Brazil parameter. Therefore, benchmark calculation was reviewed. PD and benchmark calculation spreadsheet is attached to this response. As can be seen, the project IRR remains lower than the benchmark. In the PPs response dated 21/05/2010 of this finding, PPs explained that option (a) presented in the §6 of the Additionality Tool (see PPs response on 21/05/2010 of this finding) was chosen as the most appropriated option for the benchmark calculation. However, PPs realized that in reality option (e) is more appropriated, since WACC is not classified in the other alternative options presented in the Additionality Tool. Therefore, PD was reviewed to correct the option chosen for the benchmark calculation. Please refer to the fifth version of the document.	

CAR BQA 2 – The project proponent used a real cash flow and a nominal benchmark. For more information about this error see the document "96 common errors in company valuation"[6] page 14 item 4.A.2.	VCS 5.8	PPs response on 26/04/2010: The financial analysis was conducted considering the real cash flow and the real WACC. Please refer to the PD (version 2) and the financial spreadsheets. PPs response on 11/05/2010: Please see PPs response on April 26th, 2010 and financial spreadsheets (WACC and IRR calculation) attached to this response.	The evidences presented by the PP didn't demonstrate that the considered benchmark was calculated in real terms. The CAR BQA 2 was not closed. Answer 2 (26/05/2010) The PP provided a spreadsheet which describes all the benchmark calculation. CAR BQA 2 was closed.

[6] Available in http://papers.ssrn.com/sol3/papers.cfm?abstract_id=895151.

CAR BQA 3 – The PP didn't provided all the pages from the documents "Páginas fin.BNDES VM.pdf", "Páginas fin.BNDES VC.pdf" and "Páginas fin.BNDES VC.pdf".	VCS 5.8	PPs response on 26/04/2010: The financing contract is used as an evidence for the project timeline, thus, only the first and last pages of the contract were presented. Project Participants clarify that the investment decision happened in July 2006 and financing contract was signed only in April 2007. The financial analysis of the project is based on data and parameters available at the time of the project investment decision. PPs response on 11/05/2010: Financing contracts are attached to this response.	The DOE requests again that the project participants provides all the pages from the documents "Páginas fin.BNDES VM.pdf", "Páginas fin.BNDES VC.pdf" and "Páginas fin.BNDES VC.pdf". CAR BQA 3 was not closed. Answer 2 The documents were provided. CAR BQA 3 was closed.

CAR BQA 4 – Provide evidences to justify that the benchmak used in the investment analysis is an approved benchmark for the electricity sector (specify the source of this affirmation).	VCS 5.8	PPs response on 21/05/2010: Data used for the benchmark calculation is based on publicly available official data. Please refer to the PPs response in CAR BQA 1. PPs response on 25/05/2010: Please refer to the PPs response in CAR BQA 1. PPs response on 11/06/2010: Considering DOE comments, PPs reviewed the PD. In fact, the benchmark used for UHESP project is not the approved benchmark of the electricity sector, but the benchmark calculated with parameters that are standard in the market and well known in the electricity sector. Please refer to the fifth version of the document.	There were some assumptions used in the benchmark calculation which were not based on publicly available official data. Refer to answer 3 of the CAR BQA 1. Provided evidences to justify that the used benchmark was considered an official benchmark by an official agency or remove this affirmation from the PD. CAR BQA 4 was not closed. Answer 2 (26/05/2010) The PP didn't provided any evidences to support that the benchmak used in the investment analysis is an approved benchmark for the electricity sector. CAR BQA 4 was not closed. Answer 3 (13/06/2010) Considering the PD's changes CAR BQA 4 was closed.

CAR BQA 5 – Definy and explain in the PD if the benchmark was derived from: (a) Government bond rates, increased by a suitable risk premium to reflect private investment and/or the project type, as substantiated by an independent (financial) expert or documented by official publicly available financial data; (b) Estimates of the cost of financing and required return on capital (e.g. commercial lending rates and guarantees required for the country and the type of project activity concerned), based on bankers views and private equity investors/funds' required return on comparable projects; (c) A company internal benchmark (weighted average capital cost of the company), only in the particular case referred to above in paragraph 5. The project developers shall demonstrate that this benchmark has been consistently used in the past, i.e. that project activities under similar conditions developed by the same company used the same benchmark; (d) Government/official approved benchmark where such benchmarks are used for investment decisions; (e) Any other indicators, if the project participants can demonstrate that the above Options are not applicable and their indicator is appropriately justified.	VCS 5.8	PPs response on 21/05/2010: As mentioned in the PPs response of CAR BQA 1, the benchmark used in UHESP project is derived from "*government bond rates, increased by a suitable risk premium to reflect private investment and/or the project type, as substantiated by an independent (financial) expert or documented by official publicly available financial data*" (option a). This information was included in the PD (version 4). PPs response on 25/05/2010: Considering PPs explanations in CAR BQA 1, the benchmark used for UHESP project is suitable to be compared with the UHESP project IRR and follows the additionality tool. Please refer to the PPs response in CAR BQA 1. PPs response on 11/06/2010: Considering DOE comments, PPs reviewed the PD, changing the option chosen for the benchmark calculation. See PPs response in CAR BQA 1. Please refer to the fifth version of the PD.	Answer 1 In the DOE's opinion the WACC cannot be classified as a bechmark derived from an government bond rate, increased by a suitable risk premium to reflect private investment and/or the project type. CAR BQA 5 was not closed. Answer 2 (26/05/2010) The wacc cannot be considered a government bond rate increased by a suitable risk premium. CAR BQA 5 was not closed. Answer 3 (13/06/2010) Considering the PD's changes CAR BQA 5 was closed.

CAR 01 – In accordance with the VCS PD Template, from 19 November 2007, specify the Crediting period start date, in the item 1.6 from the VCS PD.	VCS 5.2.1	PPs response on 05/03/2010: According to the Voluntary Carbon Standard 2007.1 (18 November 2008), the crediting period start date is "*the date on which the project began reducing or removing GHG emissions*". Therefore, the project start is December 11th, 2009, the date in which the first generating unit started operation (ANEEL Ordinance nr. 4,597 dated December 10th, 2009). However, according to the VCS project description template, the project start date is "*the date on which a financial commitment was made to the project and the project reached financial closure*". Considering this definition as the project start date, Salto Pilão start date is April 12th, 2007 (financing contract). In both cases, there is documented evidence that carbon credits revenues were considered for Salto Pilão project. This information was included in the new version of the PD (version 2). ANEEL Resolutions and financing contract are attached to this response. Considering the alteration in the operation start of the project, PD was reviewed (version 2). In addition, PPs updated the version of the ACM0002 methodology in the PD considering the most recent version (11). PPs response on 26/04/2010: According to the VCS 2007.1, the starting date of the crediting period is considered as the date on which the first monitoring period commence. In the case of UHESP project, the crediting period start date is considered as the date on which both generating units of UHESP started operations, *i.e.* January 19th, 2010. This information was included in the new version of the PD (version 3). Considering explanations above, PPs reviewed the VCUs calculation spreadsheet and PD (version 3). In addition, PPs reviewed the CO_2 emission factor of the grid according to DOE comments in CAR 20.	The CAR 01 is about the Crediting period start date, and not about the start date. In accordance witht the the Voluntary Carbon Standard 2007.1, the project crediting period start date is "The date on which the first monitoring period commences." The PP response is not in line with the proposed CAR. The answer is not accepted. The CAR 01 is still open. Answer 2 The answer is in accordance with the demand established on CAR 01 and with the VCS 2007.1. The answer is accepted. The CAR 01 was closed.

CAR 02 - According to the VCS 2007.1, the project start date is the "*date on which the project began reducing or removing GHG emissions*", but, when the site visit was realized, on December 16th 2009, the UHESP were working, then the information on the VCS PD is not correct..	PD temp 1.6	PPs response on 05/03/2010: See Project Participants response in CAR 01. PD was reviewed based on ANEEL authorizations. Please refer to the second version of the document. PPs response on 26/04/2010: The UHESP starting date is December 11th, 2009, when the first generating unit started operation following the definition presented in the VCS 2007.1. Please refer to the third version of the PD.	The PP shall define a project start date according to the VCS 2007.1. A single date shall be presented. The answer is not accepted. The CAR 02 is still open. Answer 2 The answer is in accordance with the demand established on CAR 02 and with the VCS 2007.1. The answer is accepted. The CAR 02 was closed.
CAR 03 - The source http://www.dams.org//docs/report/wcdintro.pdf was not available to the cross-check on January 4, 2010.	PD temp 1.9	PPs response on 05/03/2010: The WCD Report link was corrected in the new version of the PD. In addition, Project Participants change the view of references in the PD to facilitate the analysis by DOE. Therefore item 9 of the PD (version 1) was withdrawal. Please refer to the second version of the document.	The source < http://www.unep.org/dams/WCD/report.asp> was cross-checked on 13 April, 2010. The answer is accepted. The CAR 03 was closed.

CAR 04 – The source "project design consolidation" dated May 2008 (chapter 7), was not available to the cross-check on January 4, 2010.	PD temp 1.9	PPs response on 05/03/2010: The document "Projeto Básico Consolidado" dated May 2008 is attached to this response to cross-check information presented in section 1.9 of the VCS PD. PPs response on 26/04/2010: Considering DOE comments, PPs mentioned in the PD (version 3) the spreadsheet with the residence time calculation. Please refer to the third version of the document.	The source "Projeto Básico Consolidado" was cross-checked on 13 April, 2010, but the information about Days of pondage at maximum volume of the reservoir (residence time) in section 1.9 was not available. The answer is not accepted. The CAR 04 is still open. Answer 2 The change was done in the PD version 3. The answer is accepted. The CAR 04 was closed.

CAR 05 – According to the VCS PD Template "*The VCS PD shall include identification of relevant local laws and regulations related to the project and demonstration of compliance with them.*" On the VCS PD version 01, item 1.10, there's no identification of relevant local laws and regulations related to the project and demonstration of compliance with them.	PD temp 1.10	PPs response on 05/03/2010: Salto Pilão project follows all local laws and regulations related to the electricity sector (generation and commercialization), environment licensing (water protection, environmental plans and programs, compensations), labour, and others. Since there are many laws, decrees, dispatches, ordinances, Project Participants believe that there is no necessity to mention these regulations in the PD. This information is publicly available information and can be obtained in the website of the entities mentioned in the PD (version 1) for example. PPs response on 26/04/2010: Although PPs believe that information related to local law and regulations cannot be superficially mentioned in the PD and assessment shall be made by DOE, PPs included relevant regulations applicable to UHESP project in the PD (version 3).	The PP response does not addresses the question in CAR 05. The answer is not accepted. The CAR 05 is still open. Answer 2 The change was done in the PD version 3. The answer is accepted. The CAR 05 was closed.

CAR 06 – The roles and responsibilities are not specified in the VCS PD version 01, item 1.15.	PD temp 1.15	PPs response on 05/03/2010: Roles and responsibilities were included in item 1.15. In addition, Project Participants corrected the name of the PP Ecopart. Please refer to the second version of the document.	The correction was done. The answer was accepted. The CAR 06 was closed.
CAR 07 – The information requested in the PDD must be submitted in their respective fields.	PD temp 1.16	PPs response on 26/04/2010: Please refer to section 1.16 of the new version of the PD (version 3).	The correction was done. The answer was accepted. The CAR 07 was closed.
CAR 08 - The "Tool to calculate the emission factor for an electricity system" is actually in his version 02 (since 16 October 2009), and not version 1.1.	PD temp 2.3	PPs response on 05/03/2010: Project Participants updated the versions of the emission factor tool and ACM0002 methodology in the new version of the PD. In addition, the project category mentioned in item 1.2 was reviewed in the new version of the PD according to the category/scope presented at the UNFCCC's website. Please refer to the second version of the document.	The corrections were done. The answer was accepted. The CAR 08 was closed.
CAR 09: The correct name to the Methodology ACM002 is: "Consolidated baseline methodology for grid-connected electricity generation from renewable sources". In the VCS PD version 01, item 3.1, and 3.2 the name of the methodology appears as ""Consolidated monitoring methodology for zero-emissions grid-connected electricity generation from renewable sources"	PD temp 3.1	PPs response on 05/03/2010: The name of the methodology was corrected in the new version of the PD (version 2).	The corrections were done. The answer was accepted. The CAR 09 was closed.

CAR 10: The purpose of monitoring (refer to VCS PD Template) was not described on the PDD version 01.	PD temp 3.2	PPs response on 05/03/2010: The purpose of monitoring was included in the new version of the PD (version 2).	The correction was done. The answer was accepted. The CAR 10 was closed.
CAR 11 The units of measurement aren't those established by the methodology ACM002.	PD temp 3.2	PPs response on 05/03/2010: The units of measurement presented in the PD (version 1) were corrected according to ACM0002 methodology (version 11). Please refer to the second version of the PD.	The units were corrected. The answer was accepted. The CAR 11 was closed.
CAR 12 – The site visit by the DOE can't be considered as an origin to the data of **CAP_{PJ}.**	PD temp 3.2	PPs response on 05/03/2010: The installed capacity of the hydropower plant after the implementation of the project activity (Cap_{PJ}) can be confirmed through the 2nd addendum of the project concession contract dated August 20th, 2007, the project license (nr. 202/2009, issued on July 13th, 2009) and ANEEL authorization (ANEEL Ordinance nr. 395, issued on March 30th, 2005).	All the sources presented in the PP response were cros-checked on 13 April, 2010, and the value of CAP_{PJ} was correctly addressed in the PDD version 2. The answer was accepted. The CAR 12 was closed.
CAR 13 - Monitoring times and periods, considering the needs of intended users are not included in the VCS PD version 01.	PD temp 3.2	PPs response on 05/03/2010: Monitoring times and periods were included in the new version of the PD (version 2).	The corrections were done. The answer was accepted. The CAR 13 was closed.
CAR 14 – The unit to the parameter **Cap_{PJ}** is W in accordance with ACM002 version 10, and not MW	PD temp 3.3	PPs response on 05/03/2010: As mentioned in CAR 11, units of measurement from the parameters to be monitored were corrected in the new version of the PD (version 2).	The units were corrected. The answer was accepted. The CAR 14 was closed.

CAR 15 – The unit to the parameter $\mathbf{A_{PJ}}$ is m^2 in accordance with ACM002 version 10, and not km^2.	PD temp 3.3	PPs response on 05/03/2010: As mentioned in CAR 11 and 14, units of measurement from the parameters to be monitored were corrected in the new version of the PD (version 2).	The units were corrected. The answer was accepted. The CAR 15 was closed.
CAR 16 – The section 3.4 from the VCS PD version 01 was left blank.	PD temp 3.4	PPs response on 05/03/2010: Section 3.4 of the PD was reviewed including the project monitoring plan. In addition, Project Participants included description of the energy meters. Please refer to the second version of the document. PPs response on 26/04/2010: Although information related to the project monitoring is already presented in section 3.2 following the VCS project description template, PPs reviewed the PD including the monitoring plan in section 3.4. Please refer to the third version of the document.	There is no change in the second version of the PDD. The answer was not accepted. The CAR 16 is still open. Answer2 The corrections were done. The answer was accepted. The CAR 16 was closed.
CAR 17 - The source "2nd Addendum of the Concession Contract, August 20th, 2007" was not available to cross-check.	PD temp 4.2	PPs response on 05/03/2010: The 2nd addendum of the concession contract is attached to this response.	The source "2nd Addendum of the Concession Contract, August 20th, 2007" was cross-checked on 13 April, 2010, The CAR 17 was closed.

CAR 18 – The summary of environmental impact assessment was not included in the VCS PD version 01.	ISO 14064-2 5.2k	PPs response on 05/03/2010: The summary of the environmental impact assessment was included in item of the PD. Please refer to the second version of the document. The Environmental Impact Study/Report is attached to this response for cross-check.	The correction was done. The answer was accepted. The CAR 18 was closed.

CL BQA 1 - Clarify with evidences the moment of investment decision, in order to guarantee that the input values are the correct ones at this moment in the project chronology	VCS 5.8	PPs response on 05/03/2010: All documents related to the investment decision as well as the project chronology (item 1.6 of the PD) are attached to this response. Documented evidence of the assumptions considered in the project cash flow is attached to this response. PPs response on 26/04/2010: As presented in the PD (version 2), investment decision happened in April 2006, which can be evidenced through the Minutes of Meeting held by the project sponsor's Board. The project start date is considered as the date on which the first generating unit started operations, *i.e.* December 11th, 2009. Therefore, the investment decision is not dated as the project starting date. Please refer to the new version of the PD (version 3). As mentioned in the PPs response in CAR BQA 3, financial analysis was based on the values available at the time of the investment decision (2006). Documented evidence was presented to the DOE.	The moment of investment decision cannot be the same as the project start date. According with the Tool for the demonstration and assessment of the additionality, page 13 , guidance 6: "Input values used in all investment analysis should be valid and applicable at the time of the investment decision taken by the project participant. The DOE is therefore expected to validate the timing of the investment decision and the consistency and appropriateness of the input values with this timing. The DOE should also validate that the listed input values have been consistently applied in all calculations." CL BQA 1 was not closed. Answer 2 Provided the document to justify this answer. CL BQA 1 was not closed. Answer 3 Provided the document to justify this answer. CL BQA 1 was not closed.

CL BQA 1 - Clarify with evidences the moment of investment decision, in order to guarantee that the input values are the correct ones at this moment in the project chronology. (Cont.)	VCS 5.8	PPs response on 25/05/2010: In fact, PPs response dated April 2006 is incorrect. Where is written April 2006 should be read July 2006. Documented evidence was sent to DOE.	Answer 4 The DOE have a document which is from 06/07/2006 and not from april 2006 as cited in the respective answer. Specify the document which can be used as an evidence to justify the date of investment decision. CL BQA 1 was not closed. Answer 5 (26/05/2010) The DOE accepted the referred document. CL BQA 1 was closed.
CL BQA 2 – Are there any similiars projects developed by the same project proponent that can be assessed and compared with the proposed project?	VCS 5.8	PPs response on 05/03/2010: There are no similar projects developed by the project proponent as can be checked at the ANEEL's website: <http://www.aneel.gov.br/>.	The DOE couldn't find any similar project. OK, the answer to CL BQA 2 was accepted.

CL BQA 3 – Are there any third-party or publicly available sources, such as invoices or price indices that can be used to cross-check the assumptions (plant investment, energy price, O&M costs, plant load factor and installed capacity?	VCS 5.8	PPs response on 05/03/2010: All sources/references of the assumptions used in the project cash flow as well as the benchmark are presented in the spreadsheets attached to this response (cash flow and benchmark). Documented evidence is also attached. PPs response on 26/04/2010: - Benchmark: Please refer to the PPs response in CAR BQA 1 and BQA 2; - O&M: The news presented by DOE is dated September 2008, which cannot be compared to the time of the investment decision of UHESP project (2006). Since there is no documented evidence for the O&M costs available at the time of the project investment decision, PPs considered reasonable to compare actual costs with estimated ones of UHESP (not a general value which does not represent the specificities of the project), demonstrating that the values considered at the time of the project conception are compatible with the actual costs (in reality, actual costs – BRL 57.22/MWh – are higher than the estimated ones – BRL 50/MWh). Project Participants call attention to the fact that the O&M costs around BRL 50/MWh includes the power plant management, connection system (transmission and distribution), taxes for the water resources use - electricity generation - (from the Portuguese *Custo pelo uso do bem público - UBP*), as established in the Concession Contract of the project, and others costs. If we considered only the O&M costs, the actual value is BRL 12.72/MWh and, therefore, between the range of BRL10/MWh to BRL30/MWh as stated by M. Tomasquinn. See the consortium report containing of the monitoring of operational costs of UHESP project. - Ok. - As mentioned in the PD, the investment decision happened in 2006, which can be demonstrated through the Consortium Board's meeting held July 6th, 2006. Therefore, following the "Guidelines on the assessment of investment analysis" referred in the Additionality Tool, UHESP financial analysis is based on the values applicable at the time of investment decision. See PPs response in CAR BQA 3.	- Benchmark: CAR BQA 1 and CAR BQA 2. - O&M: The DOE considered this input value high, because according with Maurício Tomasquinn[7], the O&M costs vary between R$ 10.00 / MWh and R$ 30.00 / MWh. Provide more evidences to justify this input value. - Plant load factor, total amount of energy and the capacity installed were accepted, because the DOE cross-checked these input values with documents from the Ministry of Mines and Energy[8] and EPE[9]. - Others input values: The DOE depends on the date of investment decision definition to validate the others parameters. The CL BQA 3 generated the CAR BQA 1, 2 and 3. CL BQA 3 was not closed. Answer 2 - O&M: The DOE not accepted the assumption for the O&M cost (R$ 46,734,600.00 – which represents more than 10% of the total investment) based on the document "Diretrizes para Estudos e Projetos de Pequenas Centrais Hidrelétricas[1]" from Eletrobrás. It considers reasonable to use 5% of the total investment as an input value for the O&M costs and the assumption used by the PP represents more than 10% of total investment, so the DOE didn't validated this input value. - Benchmark: CAR BQA 1 and CAR BQA 2. - Price of energy: The DOE validated this assumption based on the result of the first auction of energy provided by Aneel.[2] - Total of investment: Provide evidences to justify this assumption. CL BQA 3 was not closed.

[7] http://www.mre.gov.br/portugues/noticiario/nacional/selecao_detalhe3.asp?ID_RESENHA=491419

[8] Plant load factor: http://www.mme.gov.br/mme/galerias/arquivos/legislacao/portaria/Portaria_no_408-2005.pdf

[9] Installed capacity: http://www.mme.gov.br/mme/galerias/arquivos/noticias/2009/01_janeiro/Analise_SocioAmbiental.pdf.

			Answer 3 The total investment, the plant load factor and the installed capacity were cross-checked by the financing contract of the BNDES. Segregate in the investment spreadsheet the O&M costs from the others costs referred in this answer and provide evidences to jusitfy these costs. CL BQA 3 was not closed.
		PPs response on 11/05/2010: - O&M: Please, note that Salto Pilão is not a small hydropower plant and, therefore, the document "Diretrizes para Estudos e Projetos de Pequenas Centrais Hidrelétricas" is not applicable to be used as reference for UHESP project. - Benchmark: Please, refer to the PPs response in CAR BQA 1 and CAR BQA 2. - Total of investment: Please, refer to the Minutes of Meeting held by the project sponsor board attached to this response. PPs response on 25/05/2010: Separated O&M costs are presented in the consortium report containing of the monitoring of operational costs of UHESP project, which was already sent to DOE on April 26th, 2010. However, PPs attached to this response.	Answer 4 Provide the evidences to support the answer related to the O&M costs. The PP didn't provided a spreadsheet containing the other costs separated from the O&M costs as described in the answer. CL BQA 3 was not closed. Answer 5 (26/05/2010) According with the guidelines on the assessment of investment analysis version 3 paragraph 6 the input values have to be based on the relevant information available at the time of the investment decision and not information available at an earlier or later point. CL BQA 3 was not closed. Answer 6 (13/06/2010) The answer to CL BQA 3 was accepted. CL BQA 3 was closed.

CL BQA 4 – Are there any feasibility reports, public announcements and annual financial reports related to the proposed CDM project activity and the project participants?	VCS 5.8	PPs response on 05/03/2010: There is no public evidence that CDM was considered for Salto Pilão project. All evidence related to the carbon credits consideration is attached to this response. PPs response on 26/04/2010: There is no information related to the CDM project and the Project Participants publicly available. All documents related to the carbon credits for UHESP project were presented to DOE.	This question was not related to the CDM consideration, it is about the CDM project and the project participants. CL BQA 4 was not closed. Answer 2 This answer was accepted because the DOE didn't find any other document related to the proposed CDM project. CL BQA 4 was closed.
CL BQA 5 – Explain the assumptions used to find the power output used in the investment analysis. See document "Cópia de Cash Flow_Salto Pilão.xls" worksheet "KEY" cell C5.	VCS 5.8	PPs response on 05/03/2010: As mentioned in the Project Participants response in CL BQA 3, all evidence related to the assumptions used in the project cash flow is presented in the spreadsheet attached. Documented evidence is also attached.	The DOE validated the input values used and the calculation of the electricity output. CL BQA 5 was closed.

CL01 - Clarify the event that defined the start date (to the Project Start Date for non-AFOLU projects for the VCS 2007.1 shall not be before 1 January 2002).	VCS 5.2.1	PPs response on 05/03/2010: As presented in the project timeline in item 1.6, the project activity started after January 1st, 2002. Documented evidence related to the project timeline is attached to this response. PPs response on 26/04/2010: Please refer to PPs response in CAR02.	The answer was not accepted. Refer to CAR 02. Answer 2 The UHESP starting date is December 11th, 2009, when the first generating unit started operation following the definition presented in the VCS 2007.1. The answer was accepted. The CL 01 was closed.

CL02 - Please clarify the date on which the project will be fully operational.	VCS 5.2.1	PPs response on 05/03/2010: The generating units of the project started operation on: 11/12/2009: ANEEL ordinance nr. 4,597, issued on 10/12/2009; 19/01/2010: ANEEL ordinance nr. 102, issued on 20/01/2010. PPs response on 26/04/2010: ANEEL authorizations represent the operation start of the generating units of the project, which in fact happened on these dates. Another document that can be presented as evidence for the operation start of the project is the demonstration of the financial compensation for the use of the water resources. This compensation is calculated based on the electricity generated by UHESP (<http://www.aneel.gov.br/aplicacoes/cmpf/gerencial/>). In the case of UHESP, the amount paid is available at: <http://www.aneel.gov.br/aplicacoes/cmpf/gerencial/>. Since this compensation is paid based on the electricity generation, and UHESP paid the “complete” value in January, the project became fully operational in January 2010.	The two ANEEL ordinaces are releases to operate. The PP shall provide the effective date in which the project will be fully operational. This date shall be verifiable. This CL will influence the CAR 02. The answer was not accepted. Answer 2 The sources: <http://www.aneel.gov.br/aplicacoes/cmpf/gerencial/> and <http://www.aneel.gov.br/aplicacoes/cmpf/gerencial/> were cross-checked on 30/04/2010. The answer was accepted. The CL 02 was closed.

CL03 – Please clarify the phrase: "…by increasing the share of renewable energy in total electricity consumption for Brazil (and for the region of Latin America and the Caribbean)."	PD temp 1.4	PPs response on 05/03/2010: Brazil exports electricity for some countries of the Latin America region. Therefore, the project contributes for the increasing the share of renewable energy consumption in Brazil and, indirectly, for some countries in the Latin America region. This information was included in the new version of the PD (version 2). The Caribbean region was also mentioned since it can be said that Caribbean region is included in the negotiations of the Latin America region. Both regions are committed in achieving a target of 10% renewable energy for the total energy use in the region. Through an initiative from the Ministers of the Environment in 2002[10], a preliminary meeting of the World Summit for Sustainable Development (WSSD) was held in Johannesburg in 2002. In the WSSD final Plan of Implementation no specific targets or timeframes were stated, however, their importance was recognized for achieving sustainability in accordance with the Millennium Development Goals[11]. However, considering that the Caribbean region is not benefited directly by the electricity generation from Brazil, the Caribbean region was withdrawal from the PD (version 2). In addition, Project Participants review item 1.4 of the PD in order to improve the text related to the description of the project activity and explanations of its contribution to the Host Country.	The explanations were accepted. The corrections were done. The answer was accepted. The CL 03 was closed.

[10] UNEP-LAC (2002). Final Report of the 7th Meeting of the Inter-Sessional Committee of the Forum of Ministers of Environment of Latin America and the Caribbean. United Nations Environment Programme, Regional Office for Latin America and the Caribbean. 15 to 17 May, 2002, São Paulo (Brazil).

[11] WSSD Plan of Implementation, Paragraph 19 (e): "*Diversify energy supply by developing advanced, cleaner, more efficient, affordable and cost-effective energy technologies, including fossil fuel technologies and renewable energy technologies, hydro included, and their transfer to developing countries on concessional terms as mutually agreed. With a sense of urgency, substantially increase the global share of renewable energy sources with the objective of increasing its contribution to total energy supply, recognizing the role of national and voluntary regional targets as well as initiatives, where they exist, and ensuring that energy policies are supportive to developing countries' efforts to eradicate poverty, and regularly evaluate available data to review progress to this end.*"

CL 04 – Please clarify where in the source: http://www.eletrobras.com/elb/data/Pages/LUMISF99678B3PTBRIE.htm the following information can be confirmed: "Another way to characterize run-of-river power plants comes from the Eletrobrás 2000) definition: run-of-river projects are defined as "*the projects where the river's dry season flow rate is the same or higher than the minimum required for the turbines*"…"	PD temp 1.9	PPs response on 05/03/2010: Eletrobrás Report "Diretrizes para estudos e projetos de Pequenas Centrais Hidrelétricas" dated January 2000 is attached to this response. However, since the Operation License (nr. 202/2009 issued by FATMA) states that the UHESP is a run-of-river project, Project Participants withdrawal Eletrobrás definition.	The explanations were accepted. The corrections were done. The source Operation License (nr. 202/2009 issued by FATMA) was cross-checked on 13 April, 2010. The answer was accepted. The CL 04 was closed.
CL 05 – Please clarify the source to the following information: "According to the turbine's manufacturer the minimum flow rate required for each turbine in UHESP is 21.7 m^3/s and the nominal value is 52.3 m^3/s".	PD temp 1.9	PPs response on 05/03/2010: This information is presented in the Consolidated Project Design ("Projeto Básico Consolidado) prepared by CNEC Engenharia S/A dated May 2008, chapter 7.9.2, table 7.9.7. However, Project Participants withdrawal this information, since the Operation License of the project demonstrates that UHESP is a run-of-river power plant.	The explanations were accepted. The corrections were done. The source Operation License (nr. 202/2009 issued by FATMA) was cross-checked on 13 April, 2010. The answer was accepted. The CL 05 was closed.
CL 06 – Please clarify the source relative to the information "data provided by Salto Pilão Consortium study indicating monthly average river flow at the project activity location for the period from 1931 to 2001 was used."	PD temp 1.9	PPs response on 05/03/2010: This information was withdrawal from the VCS PD. Please, refer to the Project Participants response in CL04 and CL05.	The explanations were accepted. The corrections were done. The source Operation License (nr. 202/2009 issued by FATMA) was cross-checked on 13 April, 2010. The answer was accepted. The CL 06 was closed.

CL 07 - Please clarify the source relative to the information: "UHESP reservoir's size is 0.15 km² and gross power density of 1,215 W/m^2".	PD temp 1.9	PPs response on 05/03/2010: The reservoir area of 0.15 km^2 presented in the VC DP (version 1) is according to the Operation License nr. 202/2009 issued on July 13th, 2009 by FATMA. However, the reservoir area mentioned in the Consolidated Project Design ("Projeto Básico Consolidado") prepared by CNEC Engenharia S/A in May 2008 mentions 0.34 km^2, in the quote of 319 meters. This value is established through the quote x area x volume curve of the reservoir (see chapter 7.2 of the consolidated project design). Considering this difference of information, Project Participants clarify that 0.15 km^2 is the area increased by the implementation of UHESP project. The area of 0.34 km^2 considers the river channel and the area increased by the project implementation. Although 0.15 km^2 should be considered in the PD as part of the impact of UHESP project, Project Participants reviewed the PD considering the 0.34 km^2 for conservativeness reasons. Therefore, the power density calculation was also reviewed. Please refer to the second version of the document. Operation License nr. 202/2009 and Consolidated Project Design dated May 2008 is attached to this response. PPs response on 26/04/2010: Considering DOE comments, PPs reviewed the PD (version 3) considering the reservoir area presented in the Operation License. The VCUs spreadsheet was also reviewed.	The DOE understand that the value in the OperationLicense is the more actual and the more appropriate to the reservoir area. The use of the area increased by the implementation of the UHESP is in line with the AM_CLA_0049. Please review the PD. The answer was not accepted. Answer 2 The correction was done. The answer was accepted. The CL 07 was closed.

CL 08 – All the sources must be available to the DOE. Please clarify the source relative to the information:" As a matter of comparison, the average power density of the Brazilian hydropower plants, totalizing 74,442 MW of installed capacity, is 2.03 W/m^2".	PD temp 1.9	PPs response on 05/03/2010: Source/reference for this information is mentioned in PD (version 1). *Plano Decenal de Expansão de Energia Elétrica: 2008-2017* is a publicly available information. See: <http://www.epe.gov.br/PDEE/Forms/EPEEstudo.aspx>. As mentioned in the Project Participants response in CAR 3, Project Participants change the view of references in the PD to facilitate the analysis by DOE. Please refer to the second version of the document. PPs response on 26/04/2010: In fact, the power density of 2.03 W/m^2 is not directly presented in the document. It shall be calculated based on the information presented in page 360 of "Plano Decenal de Expansão de Energia 2008-2017", volume I (authorized power of hydropower plants in operation and reservoir area).	The source <http://www.epe.gov.br/PDEE/Forms/EPEEstudo.aspx> was cross-checked on 13 April, 2010. The value to the average power density of the Brazilian hydropower plants, 2.03 W/m^2 was not identified in this source. The answer was not accepted. Answer 2 The source "Plano Decenal de Expansão de Energia 2008-2017 was cross-checked on 30/04/2010. The answer was accepted. The CL 08 was closed.

CL 09 - Clarify why the emission of CH_4 in the project activity was excluded for "No significant emission from reservoir is identified in the project activity, according to the power density calculation."	PD temp 2.3	PPs response on 05/03/2010: According to ACM0002 (version 11), GHG emissions from hydropower plants reservoirs are considered only in cases in which the power density is greater than $4W/m^2$ and less or equal to $10W/m^2$. Since Salto Pilão hydropower plant has a power density of 536.2 W/m^2, there is no emission from reservoir to be considered in the project activity. PPs response on 26/04/2010: The reservoir area of the project was changed in the new version of the PD (version 3) based on the Operation License. Please refer to the PPs response in CL 07.	The answer was not accepted. Refer to CL 07. Answer 2 The correction was done. The answer was accepted. The CL 09 was closed.

CL 10 – Clarify the source to the following information: "Therefore, the baseline scenario is identified as the continuation of the current (previous) situation of electricity supplied by large hydro with large reservoirs and thermal power stations – or by Diesel oil, in the case of isolated systems."	PD temp 2.4	PPs response on 05/03/2010: Source/reference of this information was included in the new version of the PD (version 2). PPs response on 26/04/2010: Considering DOE comments, PPs reviewed the PD (version 3).	The source <http://www.aneel.gov.br/aplicacoes/capacidadebrasil/capacidadebrasil.asp> was cross-checked on 13 April, 2010. Thermal power stations can operate with mineral coal, oil, natural gas or biomass, then explain the phrase: "…or by Diesel oil, in the case of isolated systems". The answer was not accepted. Answer 2 The change was done. The answer was accepted. The CL 10 was closed.
CL 11 – Clarify why the parameters listed on section 3.2 from the VCS PD version 01 are not the same that appears on section 3.3.	PD temp 3.3	PPs response on 05/03/2010: Parameters presented in section 3.2 are correct. The parameter "total electricity produced by the project activity" (TEG_y) mentioned in item 3.3 is only applicable for hydropower plants with power densities greater than 4 W/m^2 and less than or equal to 10 W/m^2. Therefore, item 3.3 of the PD was reviewed. Please refer to the second version of the document.	The explanations were accepted. The corrections were done. The answer was accepted. The CL 11 was closed.

CL 12 – Please clarify the origin of the datas applied to: $EG_{facility,y}$; TEG_y; Cap_{PJ}; A_{PJ}.	PD temp 3.3	PPs response on 05/03/2010: Information was included in the new version of the PD (version 2). PPs response on 26/04/2010: Please refer to the PPs response in CL07.	The answer was not accepted. Refer to CL 07. Answer 2 The correction was done. The datas are in accordance with the value of the reservoir area presented in the Operation License. The answer was accepted. The CL12 was closed.
CL 13 – Clarify the phrase:" Estimated quantity of net electricity generation supplied by the project plant/unit to the grid is presented in section B.6.3 below." What is the section B.6.3. (page 25 from the VCS PD version 01)	PD temp 4.1	PPs response on 05/03/2010: Where is written "section B.6.3" should be read "section 4.2". This information was corrected in the new version of the PD (version 2).	The corrections were done. The answer was accepted. The CL 13 was closed.
CL 14 – Clarify the phrase:"… When applying the estimate figures in the formula presented in step 3 of section B.6.1….". What is the section B.6.1 (page 27 from the VCS PD version 01).	PD temp 4.2	PPs response on 05/03/2010: Where is written "section B.6.1" should be read "section 4.1". This information was corrected in the new version of the PD (version 2).	The corrections were done. The answer was accepted. The CL 14 was closed.

CL 15 – Clarify the origin to the value of 2,5 % to transmission losses.	PD temp 4.2	PPs response on 05/03/2010: The value of 2.5% of transmission losses was estimated by the Project Participants. However, according to the ONS glossary of terms (Submódulo 20.1, revision 1), the energy assured of a power plant is the fraction of energy produced by a power plant with a fixed guaranteed level, which it is calculated based on ANEEL criteria. The ONS glossary of terms is available at: <http://www.ons.org.br/>. Therefore, the energy assured corresponds to the energy which will in fact be delivered to the grid. Since estimated energy generation, and VCUs, was calculated based on the energy assured of Salto Pilão project, there is no need to discount transmission losses (if the transmission losses were considered, a double discount would be made in the energy generation).	The explanations were accepted. The corrections were done. The answer was accepted. The CL 15 was closed.
CL 16 - Please clarify how was established the control of documents and datas.	VCS 5.11	PPs response on 26/04/2010: Information was included in the new version of the PD (version 3).	The corrections were done. The answer was accepted. The CL 16 was closed.
CAR 19 - In the PD version 02 the notation in figures and tables appears in a incorrectly manner (non-sequentially). Review all the document.	PD temp 1.9	PPs response on 26/04/2010: Considering DOE comments, PPs reviewed the PD. Please refer to the third version of the document.	The corrections were done. The answer was accepted. The CAR 19 was closed.

CAR 20 - The value of data and the calculations to the parameters: $EF_{grid.CM.y}$ and $EF_{grid.OM.y}$ presented in the section 3.3 , 4.1 and 4.2 in the PD version 02 are not in accordance with the **"**Tool to calculate the emission factor for an electricity system" version 02.	PD temp 3.3	PPs response on 26/04/2010: Project Participants clarify that the CO_2 emission factor of the grid was calculated according to the **"**Tool to calculate the emission factor for an electricity system" and based on Brazilian DNA publicly available data. However, since 2008 data presents an emission factor of 0.3112 tCO_2/MWh (a significantly higher value when compared to those for 2006 and 2007), PPs used the average for the last three years available (2006, 2007 and 2008) in order to be conservative, which resulted in an emission factor of 0.2326 tCO_2/MWh. Since the option used for the OM calculation is the dispatch data analysis, the EF would be updated at the time of the project verification. Although PPs believe that the above mentioned approach is the most appropriate one, the CO_2 emission factor used for UHESP project was reviewed based on the last available emission factor (2008 year), which resulted in 0.3112 tCO_2/MWh. Please refer to the new version of the PD (version 3) and VCUs spreadsheet.	The explanations were accepted. The changes were done. The answer was accepted. The CAR 20 was closed.