CLEAN DEVELOPMENT MECHANISM
SIMPLIFIED PROJECT DESIGN DOCUMENT
FOR SMALL-SCALE PROJECT ACTIVITIES (SSC-CDM-PDD)
Version 02

CONTENTS

SECTION A. General description of the small-scale project activity

A.1. Title of the small-scale project activity:

"Pão de Açúcar – Demand side electricity management – PDD 7"

Document version: 7

Document date: 16 March 2007

A.2. Description of the small-scale project activity:

The purpose of the project activity is to reduce electricity consumption at the stores of Companhia Brasileira de Distribuição (CBD) resulting in greenhouse gases emissions reductions. The reduction in electricity consumption has been achieved through the implementation of different independent electricity efficiency measures at the stores of CBD, starting in the year 2001.

The CDM-SSC-PDD comprises measures and programs to increase energy efficiency in the use of electricity in thirteen stores.

CBD is the largest food retailer in Brazil, stating in 2004 R$ 15.3 billion in gross revenues and around 15% market share. In December 2004, CBD had 551 stores, distributed into 12 states, totaling sales area of 1,144,749 square meters and 63.4 thousand employees. CBD actuates in the market with 5 brands: Pão de Açúcar (PA), Extra (EXTRA), ExtraEletro (ELETRO), CompreBem Barateiro (CPRBEM) and Sendas-Sé (SENDAS). Stores are concentrated mainly in the state of São Paulo, in the Southeast region of the country.

CBD believes that the improvement of electricity efficiency is the surest and most direct way of increasing the sustainability of the energy system. Energy efficiency accentuates the positive attributes of energy (the services it provides) and diminishes the negative aspects (the pollution and financial costs) associated with producing and delivering energy.

Additionally, improving energy efficiency offers a powerful tool for achieving sustainable development by reducing the need for investment in new infrastructure, by cutting fuel costs, and by increasing competitiveness for businesses and welfare for consumers. It creates environmental benefits through reduced emissions of greenhouse gases and local air pollutants. It can offer social benefits in the form of increased energy security (through reduced reliance on fossil fuels, particularly when imported) and better energy services.

A.3. Project participants:

Name of Party involved (*) ((host) indicates host Party)	Private and/or public entity(ies) project participants (*) (as applicable)	Kindly indicate if the Party involved wishes to be considered as project participant (Yes/No)
Brazil (host)	Companhia Brasileira de Distribuição – Grupo Pão de Açúcar (private entity)	NO

	Ecoinvest Carbon Brasil. (private entity)	
(*) In accordance with the CDM modalities and procedures, at the time of making the CDM-PDD public at the stage of validation, a Party involved may or may not have provided its approval. At the time of requesting registration, the approval by the Party(ies) involved is required.		
Note: When the PDD is filled in support of a proposed new methodology (forms CDM-NBM and CDM-NMM), at least the host Party(ies) and any known project participant (e.g. those proposing a new methodology) shall be identified.		

A.4. Technical description of the small-scale project activity:

A.4.1. Location of the small-scale project activity:

A.4.1.1. Host Party(ies):

Brazil

A.4.1.2. Region/State/Province etc.:

CBD Headquarter is located at:

Street: Av. Brigadeiro Luís Antônio, 3172.
Postal code: 01402-901
City: São Paulo
State: SP
Country: Brazil

This SSC-CDM-PDD comprises the following stores:

Store Name		Location
PA-REG	1241	Rua São Luiz Gonzaga, 170 - Rio de Janeiro - RJ
EXTRA	1310	Av. Guido Caloi, 25 - São Paulo - SP
EXTRA	0606	Av. Antônio Carlos de Magalhães, s/nº - Salvador - BA
EXTRA	1336	Rua Desidério de Oliveira, s/nº - Niterói - RJ
COMPREBEM	2445	Av. Barão de Mauá, 2005 - Mauá - SP
PA-SP	2436	Rua Coelho Lisboa, 651 - São Paulo - SP
COMPREBEM	2442	Rua Prof. Valério Giuli, 12 - São Paulo - SP
SENDAS	1826	Estrada União e Indústria, 11711 - Petrópolis - RJ
PA-REG	0256	Rua 24 de Maio, 411 - Fortaleza - CE
COMPREBEM	1734	Rua João Domingues de Oliveira, 194 - Ribeirão Pires - SP
COMPREBEM	0007	Av. Gen. Olímpio da Silveira, 414 - São Paulo - SP
SENDAS	1637	Rua Benjamin Constant, 263 - Ponto Cem Reis - Niterói - RJ

A.4.1.3. City/Town/Community etc:

Please, refer to table in Section A.4.1.2.

A.4.1.4. Detail of physical location, including information allowing the unique identification of this small-scale project activity(ies):

Please, refer to table in Section A.4.1.2.

A.4.2. Type and category(ies) and technology of the small-scale project activity:

Each component project activity is a “Type II – Energy efficiency improvement project” and “Category II.E – Energy efficiency and fuel switching measures for buildings”. The methodology used is AMS-II.E.

A group of different environmentally safe and sound actions and technologies has been employed in each store, including:

- Identification of the main opportunities for electricity consumption reduction.

- Contracting specialized services to develop management system in order to monitor and control electricity consumption.

- Revision of operational procedures aiming at creating a more efficient standard of operation of the stores with the establishment of daily electricity consumption targets focusing specially the peak hour demands.

- Identification of energy demands benchmarks from the comparison of several stores of the group, taking into consideration the specificities of each one of the brands that have different consumption patterns.

- Best practices in the operation and maintenance of air conditioning and refrigerating systems. This type of load represents the major consumption element within stores electricity consumption patterns. Therefore, very stringent operational and maintenance procedures and investments to improve installations performance were implemented in order to reduce electricity demand.

- Substitution of light bulbs for more efficient devices and changes in the operational procedures, operating at more suitable and efficient illumination levels according to each area.

For further information please refer to Section B.2.

A.4.3. Brief explanation of how the anthropogenic emissions of anthropogenic greenhouse gas (GHGs) by sources are to be reduced by the proposed small-scale project activity, including why the emission reductions would not occur in the absence of the proposed small-scale project activity, taking into account national and/or sectoral policies and circumstances:

In each component project activity greenhouse gases emissions reductions are achieved by reducing the consumption of grid electricity, when compared to the baseline scenario. Electricity generation is renowned as an important greenhouse gas emissions source. In Brazil, despite the large participation of hydro based electricity generation, considered zero-emission source, fossil generation represents a significant portion of the generation, especially in the margin of the system.

For each component project activity, the electricity baseline consists in the electricity consumption of the store before the implementation of the project activity. In the case of a new facility, the baseline consists in the benchmark electricity consumption of the facility that would otherwise be built.

Electricity is multiplied by an emission coefficient, which is calculated in accordance with provisions of paragraph 7 for category I.D projects. The basis for calculating grid electricity emission coefficient is the concept of "approximate operating margin" and "build margin". The emissions from grid electricity are calculated considering two effects, the influence of the project activity in the operation of existing power plants (Operating Margin) and in the construction of new power plants (Build Margin). The weighted average of operating and build margin generates the combined margin that characterizes grid emissions. Since the influence of fossil based thermo power plants is higher in the margin of the system, then emissions tend to be greater than the average emissions for the grid, considering all the generation.

Possible emissions derived from the use of fossil fuels due to the project activity (after 1/1/2001), for instance because of the substitution of electric ovens by gas ovens or because of the use of diesel generators during the peak hours, will be accounted in project emissions.

In the absence of the project activity, emissions would be greater than that of the project scenario, because the electricity consumption trend would be kept flat during the crediting period. The additionality assessment conducted in Section B.3 states with further details the additionality of the project.

The most important and comprehensive program developed with regard to electricity efficiency in Brazil is the PROCEL – National Program for Electrical Energy Conservation. PROCEL was launched in 1985 by the Ministry of Mines and Energy and aims at promoting the conservation and efficiency in electricity production and consumption. It encompasses several actions involving different sectors of the country. The program does not impose any obligation on electricity consumption nor tax or financial incentives for electricity efficiency. There is no other legislation that imposes restrictions in electricity consumption.

A.4.3.1 Estimated amount of emission reductions over the chosen crediting period:

Table below accounts for the estimated amount of emissions reduction for the fixed crediting period of 10 years, starting in 2001.

Years	Annual estimation of emission reductions (tonnes of CO_2eq)
2001	1,101
2002	919
2003	1,485
2004	2,421
2005	2,658
2006	2,658
2007	2,658
2008	2,658
2009	2,658
2010	2,658
Total estimated reductions	21,877

(tonnes of CO_2e)	
Total number of crediting years	10
Annual average over the crediting period of estimated reductions (tonnes of CO_2e)	2,188

A.4.4. Public funding of the small-scale project activity:

The project is being developed on equity basis. CBD has implemented the project without any public funding or other source of debt.

A.4.5. Confirmation that the small-scale project activity is not a debundled component of a larger project activity:

A proposed small-scale project activity shall be deemed to be a debundled component of a large project activity if there is a registered small-scale CDM project activity or an application to register another small-scale CDM project activity:

(1) With the same project participants;

(2) In the same project category and technology/measure;

(3) Registered within the previous 2 years; and

(4) Whose project boundary is within 1 km of the project boundary of the proposed small-scale activity at the closest point.

The group of stores in the present project activity cannot be deemed to be a debundled component of a large project activity because the boundaries of each component of the present project activity, i.e., the physical boundary of each store (see physical location of each store in item A.4.1.2), is not within 1 km of the project boundary of any store included the other 7 CBD CDM project activities developed concomitantly. If there are stores whose boundaries are closer than 1 km at the closest point, they will be considered as one project activity.

Therefore, the present small-scale project activity is not a debundled component of a larger project activity.

SECTION B. Application of a baseline methodology:

B.1. Title and reference of the approved baseline methodology applied to the small-scale project activity:

"AMS-II.E – Energy efficiency and fuel switching measures for buildings" (version 8).

For the calculation of the baseline emission coefficient of the electricity displaced "AMS-II.E" remits to "AMS-I.D – Grid connected renewable electricity generation" (version 10), which ultimately remits to "ACM0002 – Consolidated baseline methodology for grid connected electricity generation from renewable sources" (version 6).

B.2 Project category applicable to the small-scale project activity:

Each component project activity is "Type II – Energy efficiency improvement projects" and "Category II.E – Energy efficiency and fuel switching measures for buildings". The methodology used is AMS-II.E – Version 8.

<u>Justification of how the proposed project activity conforms with the project type and category selected</u>

Methodology AMS-II.E applies to:

> "…any energy efficiency and fuel switching measure implemented at a single building, such as a commercial, institutional or residential building, or group of similar buildings, such as a school, district or university. This category covers project activities aimed primarily at energy efficiency; a project activity that involves primarily fuel switching falls into category III.B. Examples include technical energy efficiency measures (such as efficient appliances, better insulation and optimal arrangement of equipment) and fuel switching measures (such as switching from oil to gas). The technologies may replace existing equipment or be installed in new facilities. The aggregate energy savings of a single project may not exceed the equivalent of 60 GWh per year."

Each component project activity is the implementation of different independent electricity efficiency measures in the stores of CBD (similar commercial buildings) with the objective of reducing the consumption of electricity. The primary aim of the project activity is energy efficiency and not fuel switching. A group of different environmentally safe and sound actions and technologies has been employed in each store, including:

- Identification of the main opportunities for electricity consumption reduction.

- Contracting specialized services to develop management system in order to monitor and control electricity consumption.

- Revision of operational procedures aiming at creating a more efficient standard of operation of the stores with the establishment of daily electricity consumption targets focusing specially the peak hour demands.

- Identification of energy demands benchmarks from the comparison of several stores of the group, taking into consideration the specificities of each one of the brands that have different consumption patterns.

- Best practices in the operation and maintenance of air conditioning and refrigerating systems. This type of load represents the major consumption element within stores electricity consumption patterns. Therefore, very stringent operational and maintenance procedures and investments to improve installations performance were implemented in order to reduce electricity demand.

- Substitution of light bulbs for more efficient devices and changes in the operational procedures, operating at more suitable and efficient illumination levels according to each area.

As one can see, part of the actions can be generally classified as management change, involving changes in operational and maintenance procedures and the implementation of energy management system. Other part involved capital investments and increase in maintenance costs such as substitution of light bulbs, retrofitting of air conditioning, retrofitting of refrigerators and chillers, substitution of freezers and improvement of cold ambient insulation.

Demonstration that the project is eligible as small-scale and that it will remain under the SSC limits

It is provided below the efficiency improvements in each component project activity.

Store		**Monitored/estimated reduction in electricity consumption [MWh]**									
		2001	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
PA-REG	1241	391	254	322	637	658	658	658	658	658	658
EXTRA	1310	931	1,139	1,575	2,697	3,782	3,782	3,782	3,782	3,782	3,782
EXTRA	0606	1,267	1,229	1,420	1,732	2,159	2,159	2,159	2,159	2,159	2,159
EXTRA	1336	696	77	805	1,145	1,136	1,136	1,136	1,136	1,136	1,136
COMPREBEM	2445	290	511	485	829	881	881	881	881	881	881
PA-SP	2436	270	281	361	534	559	559	559	559	559	559
COMPREBEM	2442	193	278	228	506	528	528	528	528	528	528
SENDAS	1826	325	78	166	346	403	403	403	403	403	403
PA-REG	0256	174	121	151	261	257	257	257	257	257	257
COMPREBEM	1734	178	20	109	129	193	193	193	193	193	193
COMPREBEM	0007	49	85	131	179	127	127	127	127	127	127
SENDAS	1637	583	400	1,043	1,686	1,205	1,205	1,205	1,205	1,205	1,205
TOTAL		**5,347**	**4,473**	**6,796**	**10,681**	**11,888**	**11,888**	**11,888**	**11,888**	**11,888**	**11,888**

As demonstrated above, the efficiency improvements in each store and the total efficiency improvements in all stores remain below 60 GWh/year, every year throughout the crediting period.

B.3. Description of how the anthropogenic emissions of GHG by sources are reduced below those that would have occurred in the absence of the registered small-scale CDM project activity:

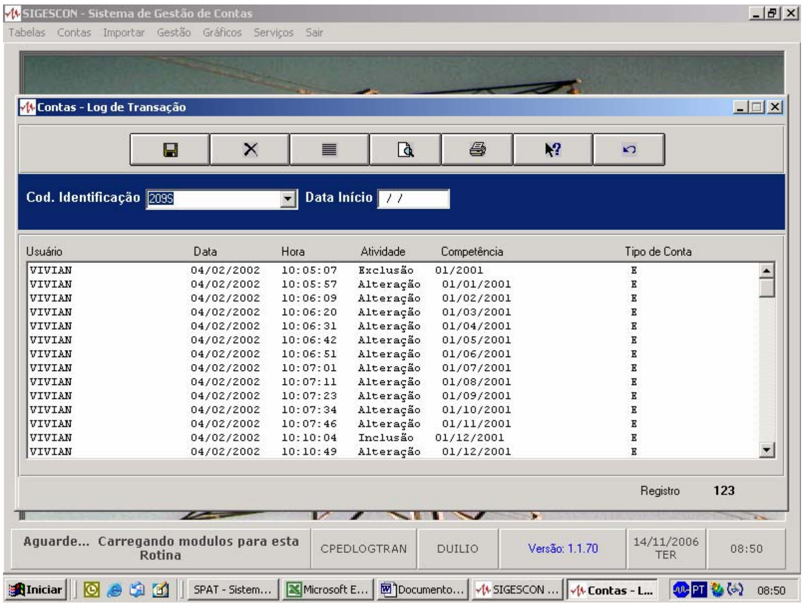
The additionality of each component project activity is demonstrated together, as they are similar project activities and face similar barriers to happen, through "Attachment A to Appendix B of the Simplified Modalities and Procedures for small-scale CDM project activities".

In the absence of the project activity, the most likely scenario would be the continuation of the same levels of electricity consumption existing before the implementation of the project activity in the equipment and facilities of each component of the project activity. Despite the barriers associated with the project, CBD decided to implement it. The fact that the project may benefit from carbon credits has been important in the decision process.

<u>Prompt-start projects conditions</u>

Project participants wish to have the crediting period starting prior to the registration of the project activity. Therefore, in accordance with the "Tool for the demonstration and assessment of additionality" and the "Decision -/CMP.1 - Further guidance relating to the clean development mechanism" it is provided below:

(1) Evidence that the project activity started in the period between 1 January 2000 and 18 November 2004: the implementation of the project activity started in January year 2001 (a contract signed with a third company, Eletropaulo Metropolitana – Eletricidade de São Paulo S. A., to use an specific store as a pilot to the energy efficiency program at CBD is supplied as evidence) and continued in the following years, thus, after January 1st 2000, and before November 18th 2004. Evidence is available with project proponents at the project site. Another evidence is the operation start of the monitoring tool Sigescon, a software implemented to monitor and manage the implementation of the project activity. Printscreen of the software with one of the entries inserted in January 1st 2001 and an entry example can be seen in Figure 1.



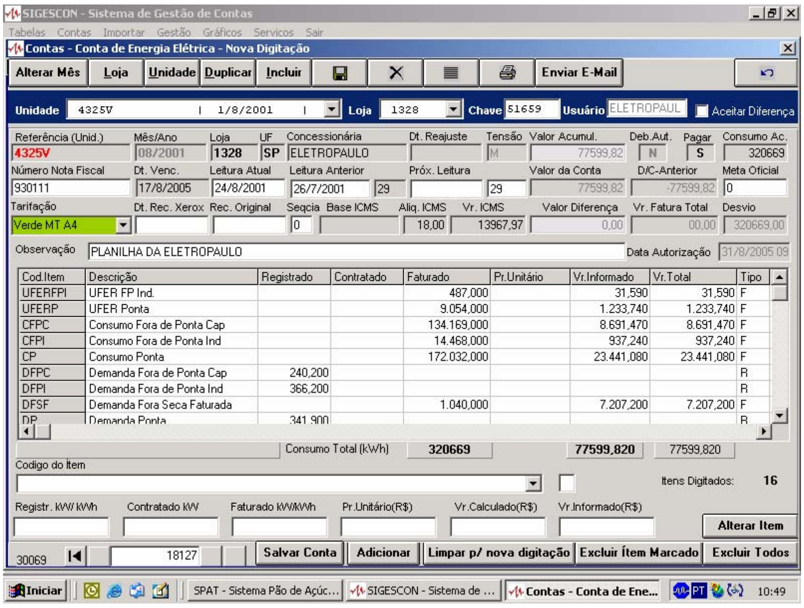


Figure 1 – Printscreen of the Sigescon software tool

(2) Evidence that the project activity has either submitted a new methodology or have requested validation by a designated operational entity by 31 December 2005: project activity has submitted a new methodology proposal in Round 11 (June 2005) under number NM0120. The proposal was graded C in the CDM-EB 21st meeting (September 2005).

(3) Evidence that the incentive from the CDM was seriously considered in the decision to proceed with the project activity: project proponent has seriously considered the incentives of the CDM as it can be demonstrated by the contract signed between CBD and Sinerconsult, which was the company that implemented the electricity efficiency program. Evidence is available with project proponents at the project site.

<u>Barriers analysis</u>

While energy efficiency is widely viewed as an important element of energy and environmental policy, there is still much to develop in energy efficiency in Brazil. One problem for this development on a public policy level is that it is often difficult to estimate the real impacts of energy efficiency improvements in the economy because the assumptions about technical factors, equipment costs, expected rates of market penetration, consumer behavior and policy measures can be difficult to determine.

On a private level, frequently, investment decisions are not taken exclusively with direct reference to discount rates and discounted cash flows. Decision makers consistently purchase products that are less economical and less efficient (compared with others on the market) than is in their financial best interest. Cost-effectiveness and economic potential are concepts that are usually based on an ideal world where decision makers act in an economically rational way and adopt energy-efficient technology as soon as it becomes “cost-effective” and this is not often true.

It is likely that decision makers undervalue energy efficiency when compared with other investments, with energy savings balanced against higher purchase costs, if energy efficiency is viewed as an investment. Sometimes, even when investment decisions are more likely to be evaluated in terms of economic rationale, like in business or industry, decision makers may apply less stringent investment criteria to productive investments and those that increase market share than to energy efficiency investments. Consequently, equipment and appliance manufacturers tend to produce less-efficient products.

Investments in energy efficiency are often more difficult to finance even when the apparent costs of energy efficiency are much less than those of new energy supply. This is because suppliers and users of energy are two different groups with vastly different investment priorities and access to capital. As energy efficiency is often a minor consideration in the choice of equipment, its costs have to be paid back at a rapid rate. Product characteristics other than energy efficiency are usually more important for individual consumers. In addition, the value of investments in energy efficiency is subject to fluctuations of energy prices. Information on the performance of energy efficiency investments is often difficult to acquire.

Market forces tend to improve energy efficiency, but usually at a slow rate. There are numerous market failures and barriers that explain why energy-efficient technologies, which appear cost-effective, are not chosen. Barriers can occur all along the product manufacture, distribution and purchase stream, but most attention is directed towards consumers and their purchase decisions. Among the most important barriers are the following:

(1) Investment barrier

One of the main barriers to the establishment of energy efficiency programs is the difficulty to obtain funding to the projects. Due to lack of understanding of this market and the contracting characteristics the financial agents consider it a risky business. Also, these same agents have a high opportunity cost associated with other well-known products, such as revolving credits and consumer financing. Therefore, the risk perception involved in the development of the efficiency program and installation of equipment was high, incurring in very unfavorable interest rates and funding conditions for the project activity. In other words, if the company can choose between various investment options, frequently due to limited managerial and absorption capacity not all alternatives are realized, even if all are profitable. The companies select the most rewarding ones combined with low risk measures. Energy efficiency measures are sometimes considered as risky as they involve change of behaviour and attitudes (e.g. maintenance practices) and their potential benefits are thus perceived as unsure. On the other hand other investments are perhaps even more profitable or absorb management less. When comparing different investment possibilities it is very likely that a company will prefer to invest mainly in their core business and not e.g. in improved energy efficiency. The project involved a significant investment into a business not related to the core business of CBD, around R$11 millions, and it was developed on equity basis, without any public or private funding.

Additionally, capital markets are very attractive in Brazil, especially considering the high interest rates in the country, what makes the investment in the capital markets much more attractive than funding efficiency programs, especially considering the risks in the return of an efficiency program. Real interest rates have been extraordinarily high since the Real plan stabilized inflation in 1994. As a consequence of the long period of inflation, the Brazilian currency experienced a strong devaluation, effectively precluding commercial banks from providing any long-term debt financing. The lack of a long-term debt market has had a severely negative direct impact on the financing of projects in Brazil.

The transaction costs involved in investing in the project were substantial and, even though they may not be explicitly calculated, CBD decision makers had a sense of their magnitude and they represented an important barrier to investment. Transaction costs are the administrative costs of making and implementing a purchase decision.

(2) Technological barrier

The maintenance of the situation existing previously to project implementation represented a less technologically advanced alternative which involved lower risks due to the performance uncertainty and so it would have led to higher emissions.

The risk involved in the implementation of the project activity and the lack of CBD confidence in the results of the project represented barriers to its implementation. CBD was affected by the risks (actual and perceived) of using a new or unfamiliar technology. At the earliest stage of a project development, it is not yet proven and the costs and benefits of using it are not well known. It may not work as expected, it may break down, operating and maintenance costs may be higher than promised, or it may be made obsolete by some newer technology. There can also be a certain distrust of new technologies, because of a bad reputation from unsubstantiated claims of early product introductions.

(3) Barrier due to prevailing practice

Prevailing practice, existing regulatory requirements and existing policies would not push the implementation of the project activity to the point of its implementation. Uncertain economic scenario, little economic incentive for energy efficiency programs and capital restrictions appears as important barriers to investment in energy efficiency, so that efficiency programs are not a common practice in the sector and rely on self promoted initiatives. Here the problem is the related lack of awareness regarding their energy losses and what can be done, as well as the limitations of in-house capacity.

(4) Other barriers

Limited information is also a barrier to project implementation. Energy-use is a “secondary” and “invisible” characteristic of CBD activities, and so supplementary information is needed to bring it to the attention of the company’s decision makers. Energy is a small part of the cost of doing business and often treated as a fixed cost. Markets fail to disseminate information about products’ energy characteristics to the extent that is economically efficient. There are two aspects of this under-supply of information. First, information dissemination is in part a “public good”, meaning that providers cannot collect a price from all who use it. Second, there must be enough easily-obtainable information disseminated to surmount the “threshold” required to start consumers’ information gathering efforts.

Also, as electricity is not a major cost in CBD operations, there used to be limited awareness and interest in energy costs and reducing energy expense. Energy is also a “delayed” attribute. A product’s energy costs, to the extent they can be distinguished in an overall bill, are only perceived some weeks or months after the purchase and are not an immediate concern at the time of purchase. Thus consumers often ignore them in the face of more pressing concerns about products’ performance, features and sales price.

As showed above, the project activity faced several barriers to happen, while the alternative to the project activity was not prevented by them. Since the beginning of the project implementation, CDM incentives have been considered because they will alleviate the identified barriers, in the following manner:

- The certification of the anthropogenic greenhouse gas emission reductions will add value to corporate image, resulting in intangible benefits in favor of project activity.
- The financial benefit of the revenue obtained with the CERs will alleviate the total costs of project activity.

Therefore, the project activity is additional and the baseline scenario is the continuation of the situation previous to the project activity, with electricity consumption levels remaining the same as that existing before the project implementation.

National policies and circumstances

The most important and comprehensive program developed with regard to energy efficiency in Brazil is the PROCEL – National Program for Electrical Energy Conservation. PROCEL was launched in 1985 by the Ministry of Mines and Energy and aims at promoting the conservation and efficiency in electricity production and consumption. It encompasses several actions involving different sectors of the country. The program does not consider any obligation on electricity consumption nor tax or financial incentives for electricity efficiency. There is no other legislation that imposes restrictions in electricity consumption.

In the years 2001 and 2002, Brazil faced a severe crisis in the electricity sector. Electricity supply and demand had a serious unbalance and the Federal Government had to launch an emergency plan to deal with electricity shortage. Among other measures, a compulsory consumption reduction of 20% in relation to the average electricity consumption in the period of May to July 2000 was imposed to consumers from June 1, 2001 to February 28, 2002. The electricity consumption in the country is showed in Figure 2. The rationing plan lasted for ten months and caused a GDP growth reduction of 1.0 to 1.5% (Pinto Júnior, 2003)[1].

Three major factors contributed to the electricity rationing:

- Absence of investments in electricity generation capacity in the years previous to 2001.
- Unexpected electricity demand increase, due to economic growth.
- Severe dry season, with reservoirs of hydro power plants falling down under historical levels.

In spite of the rationing being a severe negative event that impacted the country economy, it showed everyone that there are very good opportunities to implement efficiency programs all over the economic activities. After the rationing period the consumption restrictions were eliminated and electricity supply moved quickly to the situation of surplus supply. Electricity prices fell down in consequence of high availability caused by reduction of consumption, situation that remains until today.

[1] **Pinto Júnior, H. (2003)**. *Les problèmes des réformes structurelles et institutionnelles inachevées: le cas de l'industrie éléctrique au Brésil.* Révue de l'Energie **544**, 103-111.

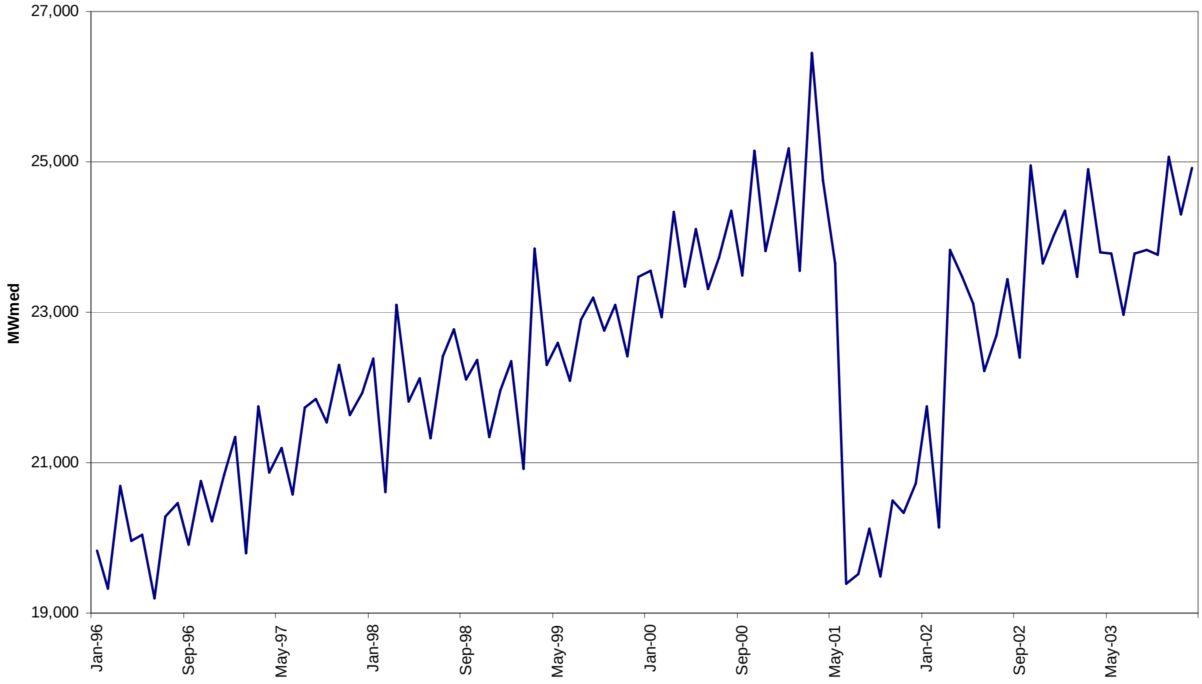


Figure 2 - Monthly load average in the Brazilian S-SE-CO interconnected electricity system from 1996 to 2003 (ONS, 2004)

CBD not only anticipated[2] but also learned from this fact and, even after the rationing, it strengthened the efforts towards electricity demand consumption reduction. With this project activity CBD has been able to maintain and strengthen the electricity efficiency program that started during the rationing.

B.4. Description of how the definition of the project boundary related to the baseline methodology selected is applied to the small-scale project activity:

The project boundary is the physical, geographical site of each store.

The only gas included in the emissions calculations is CO_2 because this is the main emissions source. Other greenhouse gases are excluded for simplification.

Emission sources included are: emissions due to fossil fuel consumption for the generation of electricity in the grid power plants.

B.5. Details of the baseline and its development:

As defined in AMS-II.E, the energy baseline consists of the energy use of the existing equipment that is replaced in the case of retrofit measures and of the facility that would otherwise be built in the case of a new facility. This project activity consists of retrofit measures and management improvement such as efficient appliances, better insulation, optimal arrangement of equipment and operational changes.

[2] The CBD program was elaborated in the second semester of 2000 and initiated officially in January 1, 2001. In April 2001 the Brazilian energy authorities decided that a rationing would be necessary. The decision concerning the rationing program and its rules was released in May 2001.

Therefore, the baseline is chosen as the energy use of the existing equipment that is replaced. As demonstrated in the additionality section, the baseline scenario is the continuation of the situation existing previously to project implementation. The baseline is defined independently for each component project activity (each store) as the electricity consumption in the year previous to project implementation.

Store 1241 (MWh)			
PA-REG: Rua São Luiz Gonzaga, 170 - Rio de Janeiro - RJ			
	1999	**2000**	**2001**
Estimated from the balance sheet	1,083.59	2,279.44	2,014.56
Monitored		1,998.00	1,607.00

Store 0256 (MWh)			
PA-REG: Rua 24 de Maio, nº 411 - Fortaleza - CE			
	1999	**2000**	**2001**
Estimated from the balance sheet	1,013.87	1,069.67	1,028.56

Store 1734 (MWh)			
CPRBEM: Rua João Domingues de Oliveira, 194 - Ribeirão Pires - SP			
	1999	**2000**	**2001**
Estimated from the balance sheet	1,070.27	1,995.34	1,353.49

Store 0007 (MWh)			
CPRBEM: Av. Gen. Olímpio da Silveira, 414 - São Paulo - SP			
	1999	**2000**	**2001**
Estimated from the balance sheet	460.64	680.84	547.31

Table 1 – Electricity consumption trend at individual CBD stores

Possible emissions derived from the use of fossil fuels due to the project activity (after 1/1/2001), for instance because of the substitution of electric ovens by gas ovens or because of the use of diesel generators during the peak hours, will be accounted in project emissions.

Electricity is multiplied by an emission coefficient calculated in accordance with provisions of methodology "AMS-I.D – Version 10":

> "9. For all other systems, the baseline is the kWh produced by the renewable generating unit multiplied by an emission coefficient (measured in $kgCO_{2eq}/kWh$) calculated in a transparent and conservative manner as:
>
> (a) A combined margin (CM), consisting of the combination of operating margin (OM) and build margin (BM) according to the procedures prescribed in the approved methodology ACM0002. Any of the four procedures to calculate the operating margin can be chosen, but the restrictions to use the Simple OM and the Average OM calculations must be considered …"

Date of baseline completion: 13/02/2007.

SECTION C. Duration of the project activity / Crediting period:

C.1. Duration of the small-scale project activity:

C.1.1. Starting date of the small-scale project activity:

01/01/2001

C.1.2. Expected operational lifetime of the small-scale project activity:

30 years, 0 months.

C.2. Choice of crediting period and related information:

C.2.1. Renewable crediting period:

C.2.1.1. Starting date of the first crediting period:

Not applicable.

C.2.1.2. Length of the first crediting period:

Not applicable.

C.2.2. Fixed crediting period:

C.2.2.1. Starting date:

01/01/2001

C.2.2.2. Length:

10 years, 0 months.

SECTION D. Application of a monitoring methodology and plan:

D.1. Name and reference of approved monitoring methodology applied to the small-scale project activity:

The monitoring methodology used is "AMS II.E– Energy efficiency and fuel switching measures for buildings" – Version 8.

D.2. Justification of the choice of the methodology and why it is applicable to the small-scale project activity:

Justification on the choice of the methodology is presented in Section B.2.

D.3 Data to be monitored:

Monitoring consists of:

(a) Documenting the measures, programs and specification of equipments replaced;

(b) Monitoring the electricity consumption with the centralized management tool Sigescon (electricity invoices from each individual store can be used to cross-check the information);

(c) Monitoring of additional fossil fuel consumption due to the project activity;

(d) Calculating the energy savings due to the measures implemented (by using the consumption of the year immediately before the implementation of the project as baseline).

D.4. Qualitative explanation of how quality control (QC) and quality assurance (QA) procedures are undertaken:

1. The electricity consumption of each store is measured each month by the electricity company. The measurement is based on calibrated meters installed in each one of the stores. The measure is informed to the project through the electricity bill that needs to be paid monthly.

2. The electrical efficiency program includes different actions in each one of the stores. When the action is the installation of new equipment (such as light bulbs, freezers, chillers, better insulation, etc.), the monitoring can be performed verifying the purchase receipts of the equipment. When the actions include operational and behavioral changes, they can be monitored through meeting minutes, folders, interviews with employees, etc.

3. The consumption of fossil fuels is monitored through fossil fuels purchase invoices.

D.5. Please describe briefly the operational and management structure that the project participant(s) will implement in order to monitor emission reductions and any leakage effects generated by the project activity:

Project operator and manager is Companhia Brasileira de Distribuição – Grupo Pão-de-Açúcar. The company has maintenance and operations procedures, which include the monitoring of electricity consumption. Part of the project activity was the implementation of an electricity management program and software to control the results of the electricity efficiency program. The electricity consumption in each store is controlled and monitored from the company headquarters with the software SIGESCON, where all the information is available electronically and with historic back up. Data is obtained from local monitoring in each store and consolidated electronically in SIGESCON. Data is kept electronically in the system, with back-up available. Monthly reports are produced from these data.

The calculation of emissions reductions is made through a Microsoft Excel spreadsheet, which contains formulae in accordance with the methodology. The data obtained from the consolidated reports shall be introduced in the spreadsheet and emissions reductions will be calculated automatically.

All monitored data related with the project activity will be stored until two years after the end of the crediting period.

D.6. Name of person/entity determining the monitoring methodology:

Name: A. R. J. Esparta
Company: Ecoinvest Carbon Brasil
Street: Rua Padre João Manoel, 222
City: São Paulo
State: SP
Postal code: 01411-000
Country: Brazil

SECTION E.: Estimation of GHG emissions by sources:

E.1. Formulae used:

E.1.1 Selected formulae as provided in appendix B:

Not applicable.

E.1.2 Description of formulae when not provided in appendix B:

E.1.2.1 Describe the formulae used to estimate anthropogenic emissions by sources of GHGs due to the project activity within the project boundary:

Project activity emissions are calculated as the electricity consumption of each component project activity (EC_{proj}) multiplied by the grid electricity emission factor (EF_{grid}):

$$PE = EC_{proj} \cdot EF_{grid} + FF_{proj} \cdot EF_{fossil}$$

Where,

- EF_{grid} is the grid electricity emission factor, in tCO_2/MWh.
- EC_{proj} is the monitored electricity consumption of the project activity, in MWh.
- FF_{proj} is the consumption of fossil fuels in the project activity, if any, in TJ.
- EF_{fossil} is the emission factor of the fossil fuel used, if any, in tCO_2/TJ.

The electricity emissions factor is calculated as per methodology "AMS-I.D-Version 10, Paragraph 9, Option (a)":

Emission Factor for the Brazilian North-Northeast Interconnected grid

Baseline (including imports)	EF_{OM} [tCO2/MWh]	Load [MWh]	LCMR [MWh]	Imports [MWh]
2003	0.1264	76,935,819	75,994,843	7,632,626
2004	0.3289	81,199,780	78,248,786	3,826,422
2005	0.2702	85,818,478	83,269,838	4,790,635
	Total (2003-2005) =	243,954,076	237,513,467	16,249,684
	$EF_{OM, simple-adjusted}$ [tCO2/MWh]	$EF_{BM,2005}$	Lambda	
	0.1044	0.0491	λ_{2003}	
	Alternative weights	Default weights	0.7192	
	w_{OM} = 0.75	w_{OM} = 0.5	λ_{2004}	
	w_{BM} = 0.25	w_{BM} = 0.5	0.5330	
	Alternative EF_{CM} [tCO2/MWh]	Default EF_{CM} [tCO2/MWh]	λ_{2005}	
	0.0906	**0.0767**	0.5572	

EF_{grid} = 0.0767 tCO_2/MWh for the Brazilian North-Northeast interconnected grid

Emission factors for the Brazilian South-Southeast-Midwest interconnected grid				
Baseline (including imports)	EF_{OM} [tCO2/MWh]	Load [MWh]	LCMR [MWh]	Imports [MWh]
2003	0.9823	288,933,290	274,670,644	459,586
2004	0.9163	302,906,198	284,748,295	1,468,275
2005	0.8086	314,533,592	296,690,687	3,535,252
	Total (2003-2005) =	906,373,081	856,109,626	5,463,113
	$EF_{OM, simple-adjusted}$ [tCO2/MWh]	$EF_{BM,2005}$	Lambda	
	0.4349	0.0872	λ_{2003}	
	Alternative weights	Default weights	0.5312	
	w_{OM} = 0.75	w_{OM} = 0.5	λ_{2004}	
	w_{BM} = 0.25	w_{BM} = 0.5	0.5055	
	Alternative EF_y [tCO2/MWh]	Default EF_y [tCO2/MWh]	λ_{2005}	
	0.3480	**0.2611**	0.5130	

$$EF_{grid} = 0.2611\ tCO_2/MWh \text{ for the Brazilian South-Southeast-Midwest interconnected grid}$$

In one store (2445) backup/peak-hour diesel generators were used for 3 months in 2001. The diesel consumptions was monitored (an average of roughly 3,580 liters per month) and the appropriate project emissions is included in the calculation:

$$FF_{proj\ (2001)} = 29.3\ tCO_2$$

Monitored/estimated electricity consumption from 2001 until 2010 are presented below for each small-scale component project activity:

Store		EC_{proj} [MWh]									
		2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
PA-REG	1241	1,607	1,744	1,676	1,361	1,340	1,340	1,340	1,340	1,340	1,340
EXTRA	1310	9,560	9,352	8,916	7,794	6,709	6,709	6,709	6,709	6,709	6,709
EXTRA	0606	6,456	6,494	6,303	5,991	5,564	5,564	5,564	5,564	5,564	5,564
EXTRA	1336	4,515	5,134	4,406	4,066	4,075	4,075	4,075	4,075	4,075	4,075
COMPREBEM	2445	1,567	1,346	1,372	1,028	976	976	976	976	976	976
PA-SP	2436	1,395	1,384	1,304	1,131	1,106	1,106	1,106	1,106	1,106	1,106
COMPREBEM	2442	1,682	1,597	1,647	1,369	1,347	1,347	1,347	1,347	1,347	1,347
SENDAS	1826	2,043	2,290	2,202	2,022	1,965	1,965	1,965	1,965	1,965	1,965
PA-REG	0256	827	880	850	740	744	744	744	744	744	744
COMPREBEM	1734	1,042	1,200	1,111	1,091	1,027	1,027	1,027	1,027	1,027	1,027
COMPREBEM	0007	544	508	462	414	466	466	466	466	466	466
SENDAS	1637	2,882	3,065	2,422	1,779	2,260	2,260	2,260	2,260	2,260	2,260
TOTAL		**34,120**	**34,994**	**32,671**	**28,786**	**27,579**	**27,579**	**27,579**	**27,579**	**27,579**	**27,579**

Monitored/estimated project emissions from 2001 until 2010 are presented below for each small-scale component project activity:

Store		PE [tCO_2]									
		2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
PA-REG	1241	420	455	438	355	350	350	350	350	350	350

EXTRA	1310	2,496	2,442	2,328	2,035	1,752	1,752	1,752	1,752	1,752	1,752
EXTRA	0606	495	498	483	460	427	427	427	427	427	427
EXTRA	1336	1,179	1,340	1,150	1,062	1,064	1,064	1,064	1,064	1,064	1,064
COMPREBEM	2445	438	351	358	268	255	255	255	255	255	255
PA-SP	2436	364	361	340	295	289	289	289	289	289	289
COMPREBEM	2442	439	417	430	357	352	352	352	352	352	352
SENDAS	1826	533	598	575	528	513	513	513	513	513	513
PA-REG	0256	63	67	65	57	57	57	57	57	57	57
COMPREBEM	1734	272	313	290	285	268	268	268	268	268	268
COMPREBEM	0007	142	133	121	108	122	122	122	122	122	122
SENDAS	1637	752	800	632	464	590	590	590	590	590	590
TOTAL		**7,595**	**7,777**	**7,211**	**6,275**	**6,038**	**6,038**	**6,038**	**6,038**	**6,038**	**6,038**

E.1.2.2 Describe the formulae used to estimate leakage due to the project activity, where required, for the applicable project category in appendix B of the simplified modalities and procedures for small-scale CDM project activities

There is no leakage to be considered. Hence,

$$LE = 0$$

E.1.2.3 The sum of E.1.2.1 and E.1.2.2 represents the small-scale project activity emissions:

The small-scale project activity emissions are defined in E.1.2.1.

E.1.2.4 Describe the formulae used to estimate the anthropogenic emissions by sources of GHGs in the baseline using the baseline methodology for the applicable project category in appendix B of the simplified modalities and procedures for small-scale CDM project activities:

Baseline emissions are calculated as the electricity consumption of each component project activity in the year before project implementation, i.e. in the year 2000, (EC_{base}) multiplied by the electricity emission factor (EF_{grid}) plus the electricity:

$$BE = EC_{base} \cdot EF_{grid}$$

Where,

- EF_{grid} is the grid electricity emission factor, in tCO_2/MWh.
- EC_{base} is the monitored electricity consumption of the baseline, in MWh.

The baseline is defined as the year before project implementation, therefore year 2000. The electricity consumption in the year 2000 is presented below, for each small-scale component project activity:

Store	EC_{base}, in [MWh]	BE, in [tCO_2]

		2000	
PA-REG	1241	1,998	522
EXTRA	1310	10,491	2,739
EXTRA	0606	7,723	592
EXTRA	1336	5,211	1,361
COMPREBEM	2445	1,857	485
PA-SP	2436	1,665	435
COMPREBEM	2442	1,875	490
SENDAS	1826	2,368	618
PA-REG	0256	1,001	77
COMPREBEM	1734	1,220	319
COMPREBEM	0007	593	155
SENDAS	1637	3,465	905
TOTAL		**39,467**	**8,696**

E.1.2.5 Difference between E.1.2.4 and E.1.2.3 represents the emission reductions due to the project activity during a given period:

$$ER = BE - PE - LE$$

Store		***ER* [tCO_2]**									
		2001	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
PA-REG	1241	102	66	84	166	172	172	172	172	172	172
EXTRA	1310	243	297	411	704	987	987	987	987	987	987
EXTRA	0606	97	94	109	133	166	166	166	166	166	166
EXTRA	1336	182	20	210	299	297	297	297	297	297	297
COMPREBEM	2445	46	133	127	216	230	230	230	230	230	230
PA-SP	2436	70	73	94	139	146	146	146	146	146	146
COMPREBEM	2442	50	73	60	132	138	138	138	138	138	138
SENDAS	1826	85	20	43	90	105	105	105	105	105	105
PA-REG	0256	13	9	12	20	20	20	20	20	20	20
COMPREBEM	1734	46	5	28	34	50	50	50	50	50	50
COMPREBEM	0007	13	22	34	47	33	33	33	33	33	33
SENDAS	1637	152	104	272	440	315	315	315	315	315	315
TOTAL		**1,101**	**919**	**1,485**	**2,421**	**2,658**	**2,658**	**2,658**	**2,658**	**2,658**	**2,658**

E.2 Table providing values obtained when applying formulae above:

Table below provides total values when applying formulae above to the project activity:

Year	Estimation of project activity emissions [tCO_2]	Estimation of baseline emissions [tCO_2]	Estimation of leakage emissions [tCO_2]	Estimation of emissions reductions [tCO_2]
2001	7,595	8,696	0	1,101
2002	7,777	8,696	0	919
2003	7,211	8,696	0	1,485
2004	6,275	8,696	0	2,421
2005	6,038	8,696	0	2,658
2006	6,038	8,696	0	2,658
2007	6,038	8,696	0	2,658
2008	6,038	8,696	0	2,658
2009	6,038	8,696	0	2,658
2010	6,038	8,696	0	2,658
Total	**65,085**	**86,961**	**0**	**21,877**

SECTION F.: Environmental impacts:

F.1. If required by the host Party, documentation on the analysis of the environmental impacts of the project activity:

The project activity has been implemented in accordance with all the applicable environmental legislation in the Municipal, State and Federal levels. No significant environmental impacts are due to the project activity.

SECTION G. Stakeholders' comments:

G.1. Brief description of how comments by local stakeholders have been invited and compiled:

The Brazilian Designated National Authority for the CDM requires the compulsory invitation of selected stakeholders to comment the PDD sent to validation in order to provide the letter of approval. CBD and Ecoinvest invited comments from local stakeholders when validation starts. The local stakeholders invited are listed below:

- City Hall
- City Council
- State Environmental Agency
- Local Environmental Agency
- Local NGO
- State Public Attorney
- FBOMS (Representative of Brazilian Environmental ONGs)

Copies of the invitation letters and receipts (AR – *Avisos de Recebimento*) will be available with project proponents.

G.2. Summary of the comments received:

So far, no comments have been received from local stakeholders.

G.3. Report on how due account was taken of any comments received:

So far, no comments have been received from local stakeholders.

Annex 1

CONTACT INFORMATION ON PARTICIPANTS IN THE PROJECT ACTIVITY

Organization:	Companhia Brasileira de Distribuição – Grupo Pão de Açúcar
Street/P.O.Box:	Av. Brigadeiro Luís Antonio, 3172
City:	São Paulo
State/Region:	SP
Postfix/ZIP:	01402-901
Country:	Brazil
Telephone:	+55 11 3886-0421
FAX:	+55 11 3884 2677
URL:	www.paodeacucar.com.br
Represented by:	
Salutation:	Mr.
Last Name:	Furlan
Middle Name:	
First Name:	Sidney
Personal E-Mail:	sidney.furlan@paodeacucar.com.br

Organization:	Ecoinvest Carbon Brasil Ltda.
Street/P.O.Box:	Rua Padre João Manoel, 222
City:	São Paulo
State/Region:	SP
Postfix/ZIP:	01411-000
Country:	Brazil
Telephone:	+55 11 3063-9068
FAX:	+55 11 3063-9069
URL:	www.ecoinvestcarbon.com
Represented by:	
Salutation:	Mr.
Last Name:	Martins Jr
Middle Name:	de Mathias
First Name:	Carlos
Personal E-Mail:	cmm@ecoinvestcarbon.com

Annex 2

INFORMATION REGARDING PUBLIC FUNDING

The project is being developed on equity basis. CBD has implemented the project without public funding or other source of debt.

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