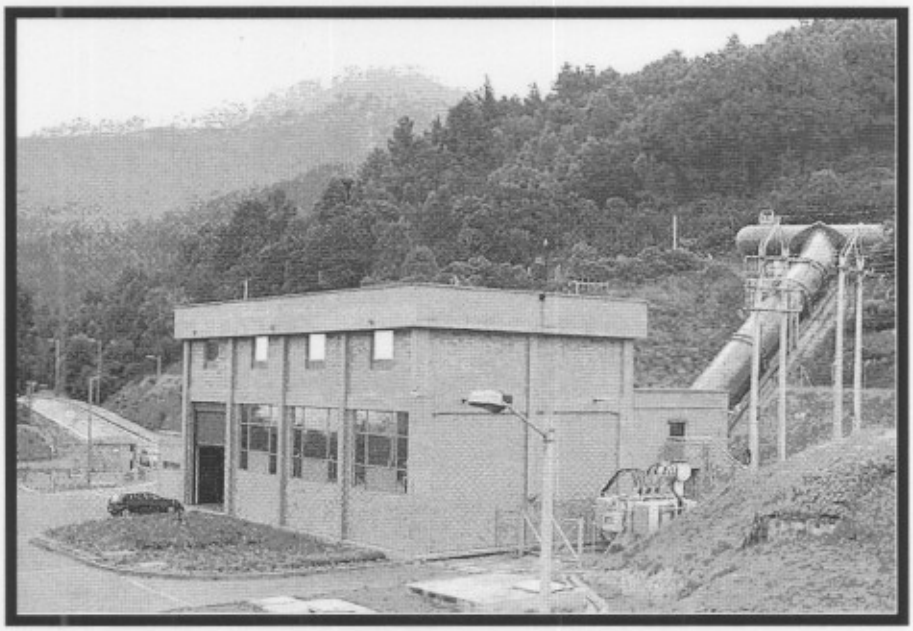
acueducto
AGUA Y ALCANTARILLADO DE **BOGOTÁ**

SANTA ANA HYDROELECTRIC PLANT
A SMALL-SCALE CDM PROJECT



MONITORING REPORT OF CO_2 EMISSIONS REDUCTIONS ACHIEVED DURING THE SECOND ACCREDITATION PERIOD, August 1, 2006 – July 31, 2007

September 26, 2008

Version: 3

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1. Objectives of this Monitoring Report

The regulatory framework of the UNFCCC requires that the emissions reductions from duly registered CDM projects be reviewed and verified by a Designated Operational Entity (DOE), in order for UNFCCC to Certify the CO_{2e} emissions reductions. The Monitoring Report, Verification and Certification are required to enable the UNFCCC to emit with precision the number of Certificates of Emission Reduction due to the CDM project. This Monitoring Report was prepared in the most precise and conservative manner possible, in order to document the amount of CO_{2e} displaced from the national interconnected grid by the Santa Ana Hydroelectric Plant during its second accreditation period, from August 1, 2006 – July 31, 2007.

The PDD of the Santa Ana Hydroelectric Plant was duly validated by the DOE *TUV Industrie Service GMBH SUD Group*, and was officially registered as a Small Scale CDM project by the CDM Executive Board.

The Colombian Institute for Technical Standards and Certification - ICONTEC, as Designated Operational Entity for Verification and Certification Energy Industries (renewable / non-renewable sources), was retained by the *Empresa de Acueducto y Alcantarillado de Bogotá (EAAB)* for the official Verification and Certification of the CO_{2e} emissions reduced by Santa Ana Hydroelectric Plant, CDM project 0275, during by its second accreditation period.

2. Description of the Project

2.1 Localization

The EAAB - ESP provides drinking water to the city of Bogota and 10 neighbors municipalities. The demand for drinking water (14.5 m^3/s) is attended through three important supply systems:

1. Chingaza System – Wiesner Plant (10.6 m^3/s).
2. Bogota River System – Tibitoc Plant (3.5 m^3/s).
3. Tunjuelo System – Dorado Plant (0.4 m^3/s).

The Chingaza System – Wiesner Plant is the system of supply of drinking water most important city: produces approximately 70% of the drinking water consumed by Bogotá.

As part of the Vulnerability Mitigation Program of the Water Supply Systems, which is running the EAAB - ESP since the late nineties, the company built at the beginning of this decade Usaquén Alternate Tunnel, a tunnel covered in conventional concrete, with 2.5 km in length, which leads the treated flow from the Wiesner Plant, in La Calera, to the tanks Santa Ana and Suba, in Bogota.

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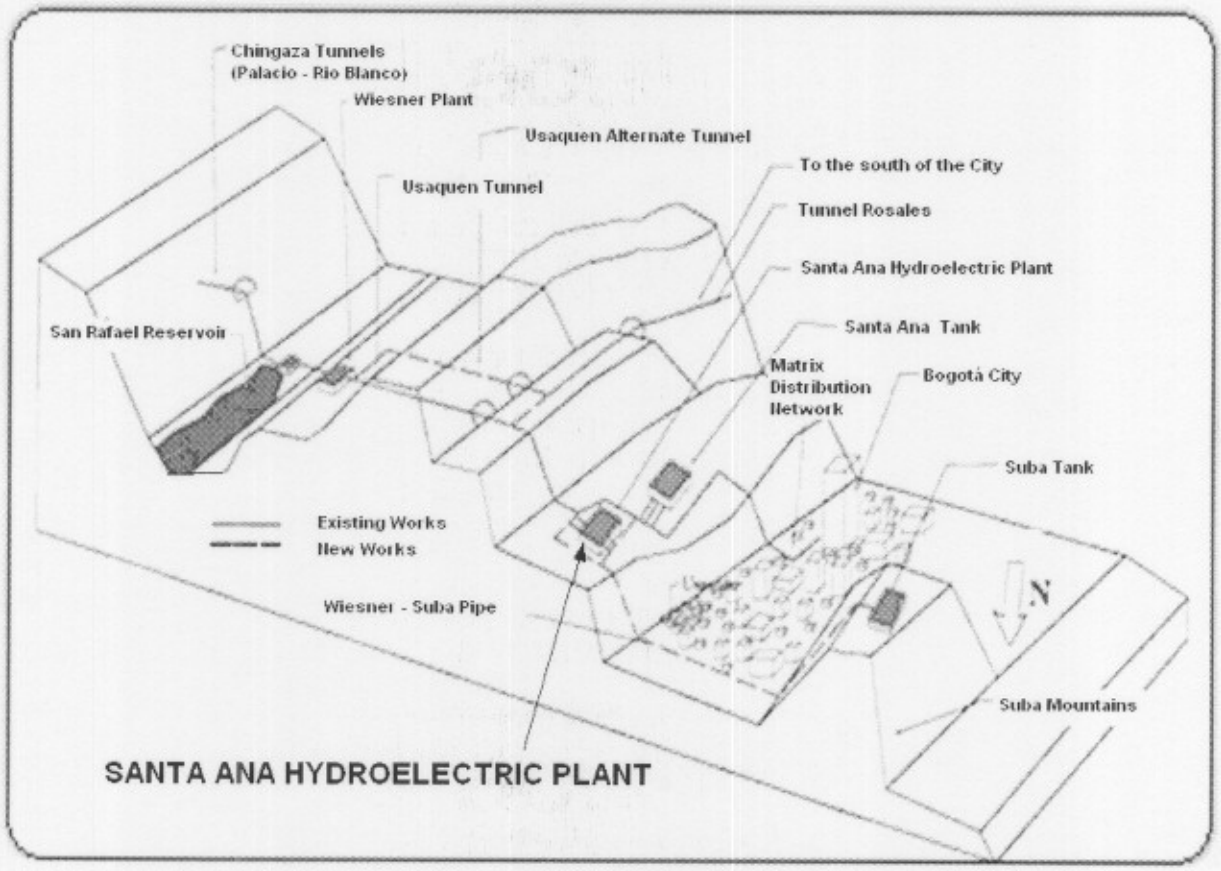
The tanks Santa Ana and Suba[1], located at 2,709 and 2,640 meters above see level respectively, reaching approximately 70% of the flow treated (7.3 m^3/s) and the Rosales Tunnel diverted the remaining 30% (3.3 m^3/s) to other storage tanks located south of the city.

In order to take advantage of the difference in available height between the Wiesner Plant – located at 2,825 meters above see level - and Santa Ana Tank, as well as the flow of water delivered to the city through Chingaza System, was built between the years 2001 and 2003 the Santa Ana Hydroelectric Plant[2]. Its exact location corresponds to the coordinates 110324.65 North and 105849.56, at north of Bogotá.

FIGURE 1

LOCATION OF THE PROJECT IN THE BOGOTA DRINKING WATER DISTRIBUTION SYSTEM



[1] The storage capacity of Santa Ana Tank is 30,000 m^3 and Suba Tank is 90,000 m^3.
[2] The turbine is located at 2,704 meters above sea level. That implies that exploits a gross height of approximately 120 meters between the Wiesner Plant and the turbine.

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2.2 Technical Characteristics

The main technical characteristics of the Santa Ana Hydroelectric Plant are: Francis turbine horizontal axis; net design head 105.9 metros[3]; design flow 13.5 m^3/s[4]; installed capacity 13.43MW; nominal capacity 12 MW; rotation speed 600 rpm; synchronous generator; transformer power 15 MW.

The flow of treated water normally turbine is used by the plant for the production of electrical energy that is delivered into the national interconnected grid through local distribution system[5].

2.3 Annual Generation Expected

The Santa Ana Hydroelectric Plant was designed to generate around 90 GWh/year considering a reliable flow of water around 13.5 m^3/s, due to the expansion of the Wiesner Plant to treat a flow of approximately 21 m^3/s[6].

However, the reliable flow generation was reduced significantly compared to the flow of the technical characteristics of design of the plant, due mainly to the reduction in the trend of water consumption in the city since the late 90's, which move from 17.6 m^3/s in 1996 to 14.5 m^3/s in 2001, a value from that year has been maintained an average over the last 5 years[7]. The reduction in the demand for water in the city, result of the implementation of various measures by the EAAB - ESP to increase efficiency in its use, reduced expectations of generating the Santa Ana Hydroelectric Plant to 47 GW/year approximately.

One of the most important measures taken by the EAAB to ensure reliably supply of water required to meet the demand of the city, a goal that overlaps with any other objective, was the implementation of the Vulnerability Mitigation Program of the Water Supply Systems. This program was designed to identify any potential risks that could affect the drinking water supply to the city. As a part of it, the Chingaza Tunnels Maintenance and Coating Program, which began in 2003, seeks to mitigate as much as possible the risk of detachment from them, coating the tunnels in conventional concrete[8]. This program includes an annual maintenance period of 3

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[3] The net design head 105.9 m is the average operation of the turbine. The maximum net design head is 109.5 m and the nominal net design head is 100 m. The net head is function of flow due to the loss of the hydraulic structure dependent flow led from the Wiesner Plant to Santa Ana Hydroelectric Plant. Additionally, also depends on the pressure downstream turbine imposed by the hydraulic network of the city.

[4] The efficient operation flows are between 5.2 m^3/s and 13.5 m^3/s.

[5] The flow required by Santa Ana and Suba tanks is normally used by the Santa Ana Hydroelectric Plant for the production of electricity. However when the turbo group is unavailable (in the event of failure, low flow or maintenance), the flow will be conducted automatically by a multijet valve installed in a parallel pipe. In the event that the turbo group and multijet valve are unavailable, the flow may be conducted through a derivation of high pressure.

[6] EAAB: **Designs for Construction of the Usaquén Alternate Tunnel and Santa Ana Hydroelectric Plant**. Report No. 5. Optimization of the Central. Contract: SF-1-02-4000-0122-96. Contractor: INGETEC S.A.

[7] EAAB: Water Supply Department: **Expansion Plan of Water Supply System of the Bogota city and its Neighbors Municipalities**. Report. No. 4. Adjustment Optimal Dispatch of the Plants. Contract No. 2-02-4500-305-2001 and No. 2-02-25300-332-2004. Contractor: INGETEC S.A

[8] Ibid. Report No. 3. Rehabilitation Program, Vulnerability Supply System and Service Life of Asset.

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months of tunnels that supply water of the Chingaza System to the Santa Ana Hydroelectric Plant and to the city (see Figure 2).

The annual tunnels maintenance program consists of two interdependent steps:

- *First*, alternatively shutting down each of the Chingaza tunnels for complete inspection and maintenance during a three month period per year. This operation reduces the total flow of drinking water from Chingaza System – Wiesner Plant by approximately 3.6 m^3/s, from 10.6 m^3/s to 7.0 m^3/s.

- *Second*, increase the supply of drinking water from the Bogotá River System – Tibitoc Plant by approximately 3.6 m^3/s to compensate the loss of supply from Chingaza System – Wiesner Plant. The annual tunnels maintenance program relies upon an increase in the supply from the Bogotá River System – Tibitoc Plant System from 3.5 m^3/s to 7.1 m^3/s.

During the annual 3 months Chingaza tunnels maintenance, the optimal operation of the aqueduct system of the city requires the maximum output of the Tibitoc Plant and the minimum production of the Wiesner Plant to protect the San Rafael water reservoir. Under this operation scheme, the water flow of 7 m^3/s from the Chingaza System – Wiesner Plant is normally distributed as follows: 3.3 m^3/s to downtown and south Bogotá and only 3.7 m^3/s to the north of the city through the Santa Ana Hydroelectric Plant. With this flow the Santa Ana Hydroelectric Plant is not programmed to operate during the annual period of tunnels maintenance (see Figure 3).

As a result of this scheme of operation, it is estimated that over the 10 year term of the Chingaza Tunnels Maintenance and Coating Program, generating annual probably mean of the Santa Ana Hydroelectric Plant is around the 47 GWh/year[9] and the probably mean flow for generation during the annual maintenance period is placed below 3.7 m^3/s. This flow does not allow efficient operation of the plant which is it expected to remain quit functioning 3 months each year during the 10 years of implementation of the program[10].

[9] Ibid. Report No. 4. Study of Optimal Dispatch Aqueduct System.
[10] The Santa Ana Hydroelectric Plant could generate using flows > 3.7 m^3/s and < 5.2 m^3/s but is a special operation in which it is required to control vibrations in the turbo group to approach the cavitation region.

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FIGURE 2

CONDITIONS NORMAL OPERATION WATER SUPPLY SYSTEMS

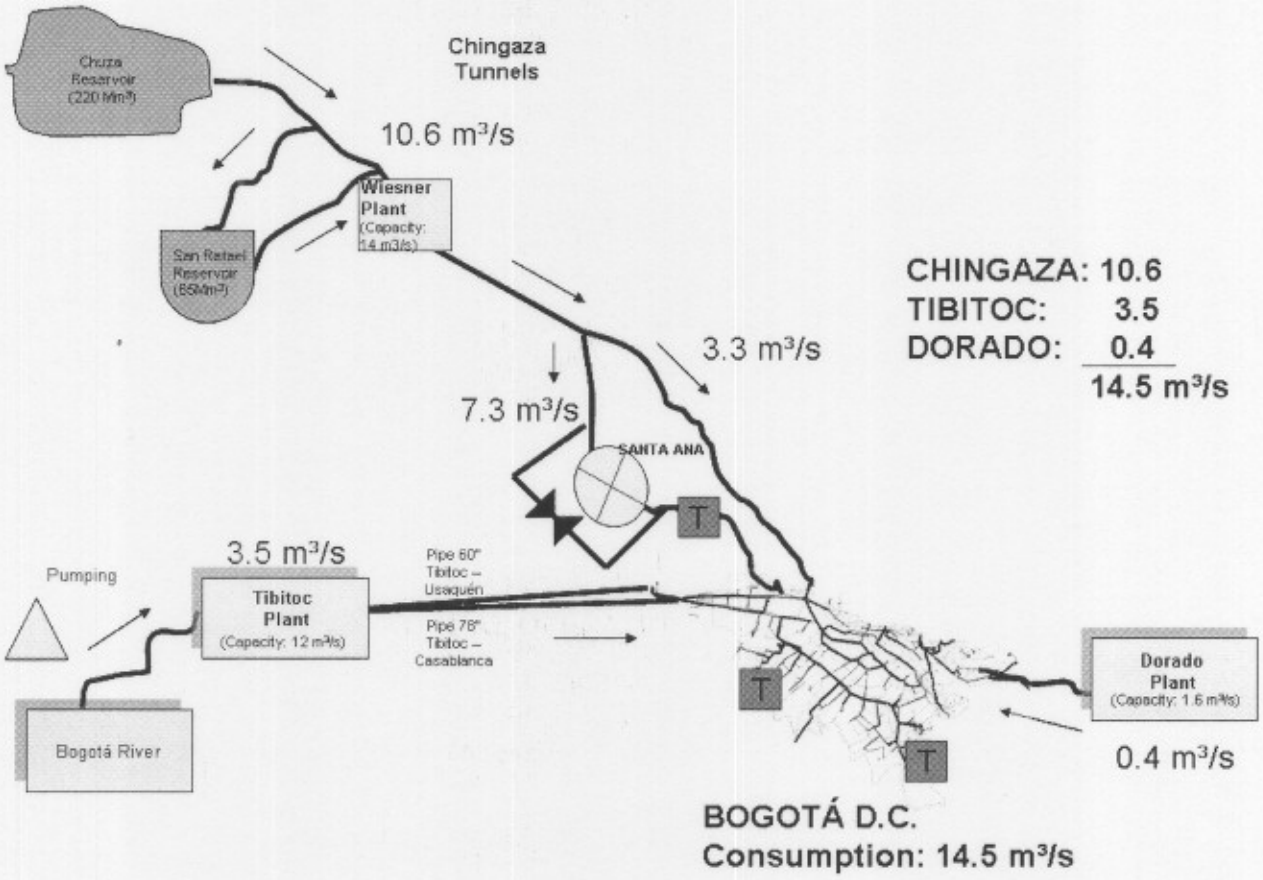

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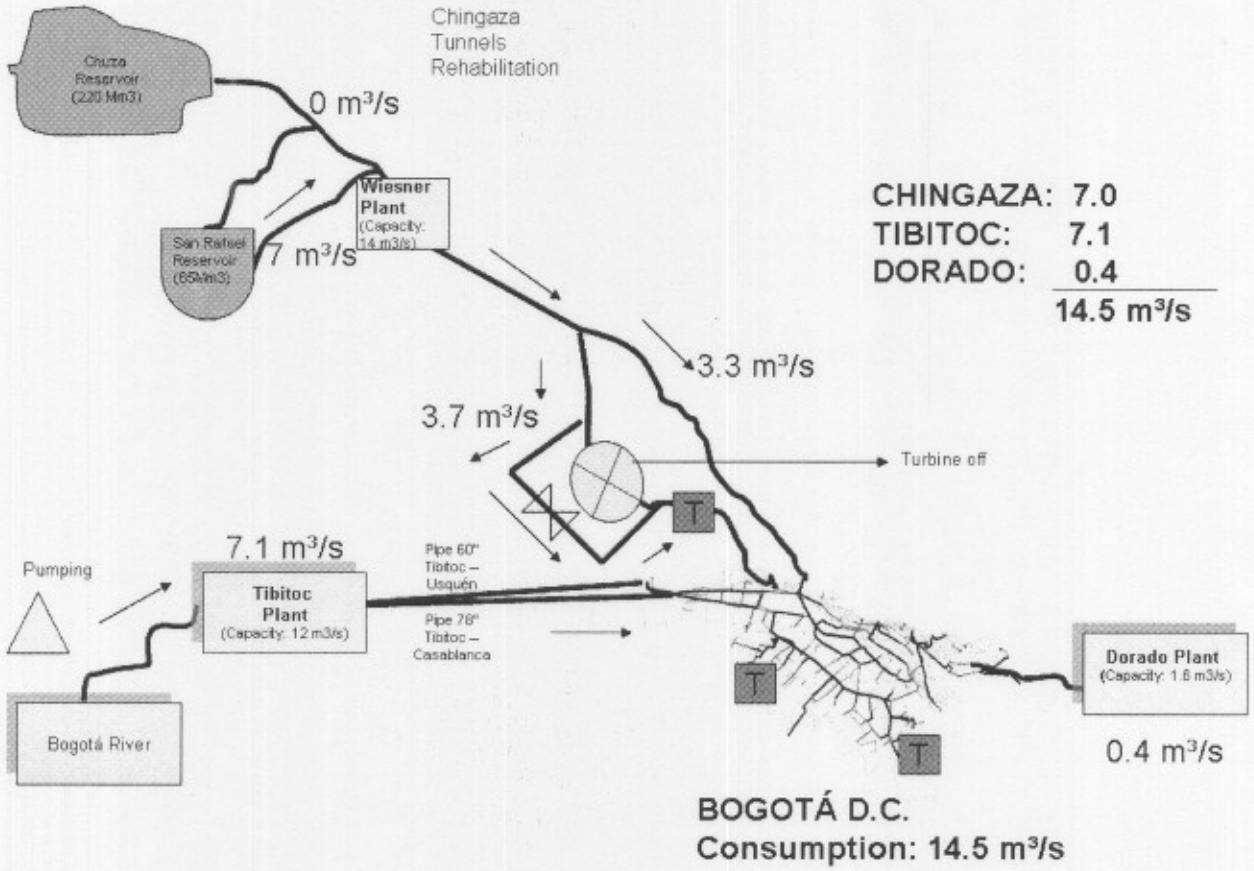
FIGURE 3

**CONDITIONS OPERATION WATER SUPPLY SYSTEMS
MAINTENANCE AND COATING CHINGAZA TUNNELS (TIME: 3 MONTHS)**



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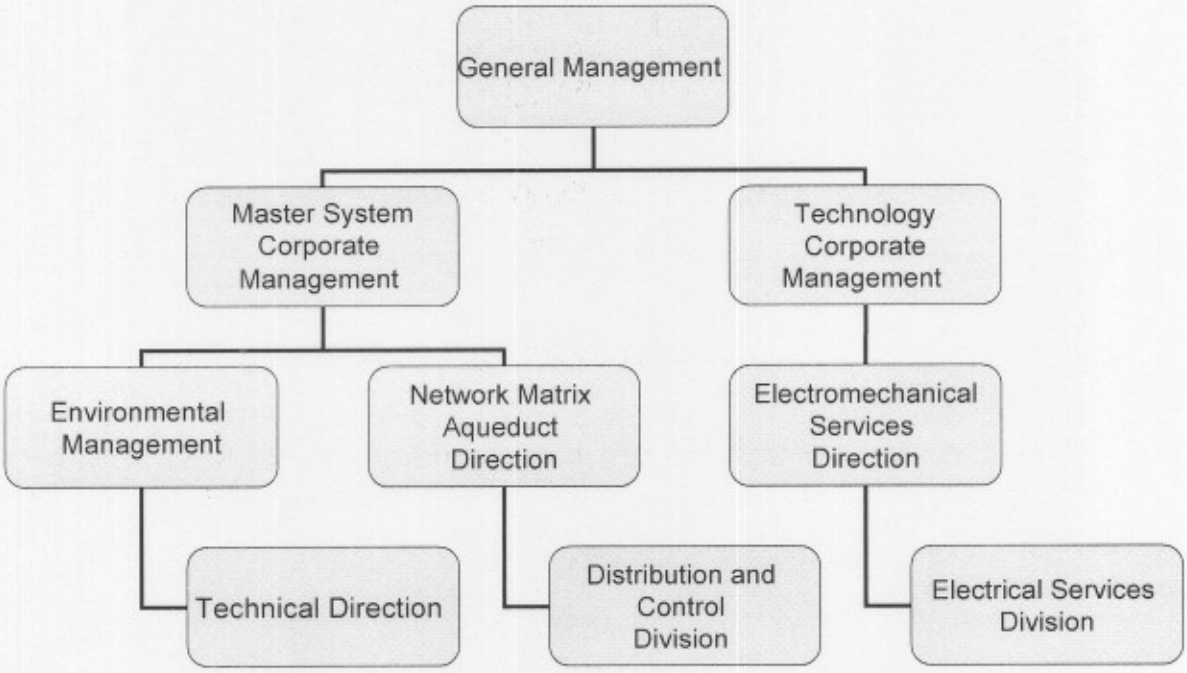
3. Operation of the Project during the Second Period Accreditation

3.1 Operational and Administrative Structure

Figure 4 shows the part of the organizational structure of the EAAB - ESP[11] who was responsible for the administration, operation and maintenance of the Santa Ana Hydroelectric Plant, during the second period of accreditation.

FIGURE 4

OPERATIONAL AND ADMINISTRATIVE STRUCTURE
SANTA ANA HYDROELECTRIC PLANT



Because is a point of operation of the distribution system of drinking water in the city, the administration of the plant and its general operation were in charge of the Master System Corporate Management, through the Network Matrix Aqueduct Direction by Distribution and Control Division.

[11] EAAB - ESP: Resolutions 931 and 932, 2002. These resolutions were overturned by the Agreement 11 of the Board of Directors of the EAAB - ESP, June 25, 2007. The period of adjustment to the EAAB - ESP to the new organizational structure was implemented during the month of July 2007.

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The technical and commercial operations related to the process of generating and selling electricity, were in charge of the Corporate Management of Technology, through the Electromechanical Services Direction by the Electrical Services Division.

The Scheduled Maintenance of electrical, electronic and mechanical components equipment of the plant was carried out by the Electromechanical Services Direction. This maintenance is part of a Service Agreement signed between the Network Matrix Aqueduct Direction and the Electromechanical Services Direction.

The monitoring of the CDM component project was conducted by the Environmental Management, through the Technical Direction by the CDM Team Leader, which is responsible for preparing the report monitoring supported by the Services Electromechanical Direction and Network Matrix Aqueduct Direction.

3.2 General Operation

Table 1 shows the average flow available by month for generation during the second period of accreditation, according to information reported by the Network Matrix Aqueduct Direction.

TABLE 1

FLOW AVAILABLE BY MONTH FOR GENERATION

PERIOD	AVERAGE FLOW (m^3/s)
Aug-06	7.22
Sep-06	7.32
Oct-06	7.34
Nov-06	7.26
Dec-06	7.22
Jan-07	7.37
Feb-07	7.73
Mar-07	7.37
Apr-07	7.23
May-07	7.14
Jun-07	7.16
Jul-07	7.09

Source: Network Matrix Aqueduct Direction

The availability of flow for generation in the Santa Ana Hydroelectric Plant is maintained through the year, due to an inability to carry out the annual coating and maintenance of the Chingaza tunnels between August 2006 and July 2007.

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The fact that prevented carry out the annual coating and maintenance of the tunnels was the rehabilitation of the pipe 60 Bogotá River System - Tibitoc plant, which began in May 2006 and ended in September 2007[12].

As explained in item 2 of this report, to ensure the flow of potable water demand that the city during the implementation of activities coating and maintenance of the tunnels, it is necessary to adjust the operation of the aqueduct system making the reduction in the production of drinking water Chingaza System offset by the increase in the production of the Bogotá River System. To ensure that this operation is optimal requires the pipes of 60 "and 78" System Rio Bogota – Tibitoc Plant are in perfect condition.

Therefore, the difficulty in adjusting the operation of the pipeline system during the second period of accreditation which allowed the Santa Ana Hydroelectric Plant operate the twelve months of the year and generate a 15.68% more electricity compared to the estimated annual generation.

3.3 Technical Operation

The electricity generated by the Santa Ana Hydroelectric Plant is put into the national interconnected grid through the local distribution system, according to the contract signed between the EAAB and the operator of the local grid, CODENSA (*Comercializador y Distribuidor de Energía S.A)*[13], in compliance with the provisions by resolutions 025 of 1995 and 070 of 1998 of the *Comisión de Regulación de Energía y Gas* – CREG[14].

The administration, operation and maintenance of network assets, according to the contract signed between the EAAB and CODENSA[15], is complying with the resolutions CREG 003 of 1994, 082 of 2002 and 070 of 1998.

The daily measurement of the electricity generated is carried out in the Usaquén Electrical Substation, owned by CODENSA, through the commercial frontier power meter, SIEMENS No. 30031, complying with all the technical requirements in the CREG resolutions 025 of 1995 and 006 of 2003 and the provisions of the *Administrador de Intercambios Comerciales* - ASIC[16].

The power meter calibration SIEMENS No. 30031 complies with all the provisions in the CREG resolutions 070 of 1998 and 006 of 2003 and the Technical Colombian Standard NTC - ISO / IEC 17025.

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[12] EAAB – ESP. Network Matrix Aqueduct Department: Construction of the rehabilitation works, geotechnical stabilization and repair of specific problems of the matrix aqueduct pipe 60" Tibitoc - Usaquén. Contract No. 1-01-25400-796-2005. Contractor: Consorcio Tibitoc SBCC 2005.

[13] Contract No. 9-09-25400-566-2004. Duration: 25 years.

[14] The Energy and Gas Regulatory Commission – CREG – is the Colombian authority that regulates the sector of Energy and Gas.

[15] Contract No. 9-99-25400-568-2004. Duration: 2 years. Contract No. 1-99-26300-742-2006. Duration: 1 year.

[16] The Exchange Trading System Administrator– *ASIC* – and the National Dispacth Center – NDC – are handled by the state enterprise *Interconección Electrica* S.A. – ISA.

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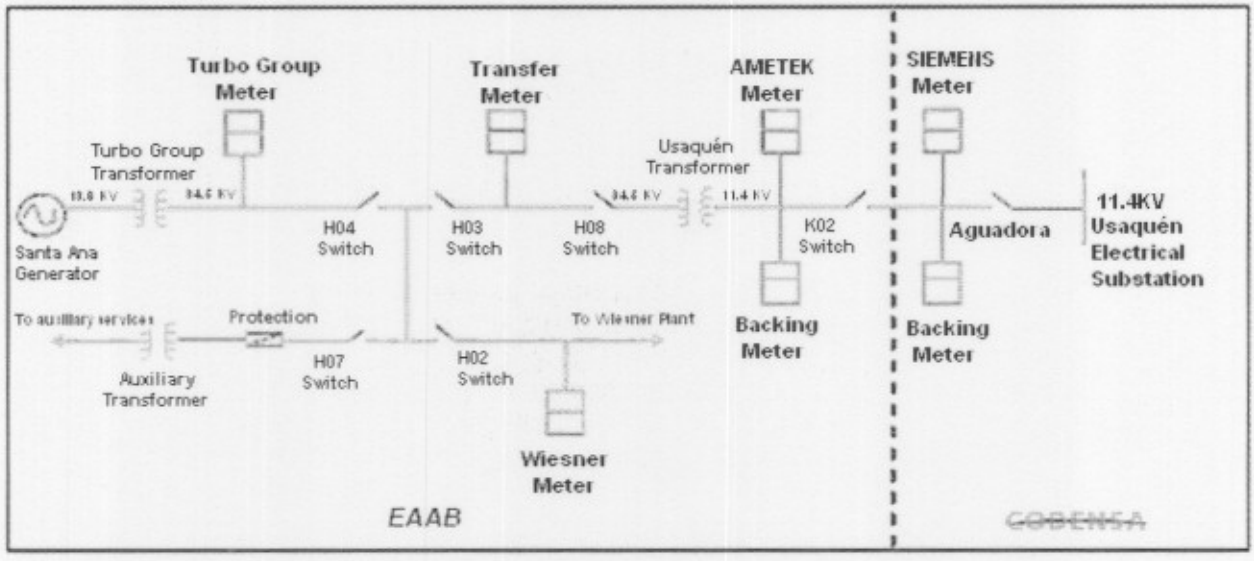
The verification and validation of the daily measurement that makes the power meter SIEMENS 30031 is done by the EAAB through interrogation, automatic and electronic, of the power meter AMETEK, Model JemSTAR, which is in the Usaquén Electrical Substation, owned by the EAAB - ESP. This meter has protocols testing and calibration certificates issued by the manufacturer. It does not have the formality of registration with the ASIC and therefore is under full responsibility of the EAAB.

The Single Line Diagram of Santa Ana Hydroelectric Plant (see Figure 5) shows the main line driving the power generated from the plant to the commercial frontier power meter, which is delivered to the interconnected national grid. The two additional lines showed are output energy lines: one to provide energy to the auxiliary services of the Hydroelectric Plant and the other one as an emergency line to supply energy to the Wiesner Plant[17]. In none of the cases, the control system allows importation of energy from another grid that could be counted as energy generated by the Santa Ana Hydroelectric Plant.

FIGURE 5

SINGLE LINE DIAGRAM SANTA ANA HYDROELECTRIC PLANT



[17] The Clause 12 of the connecting contract for operation of the Santa Ana Hydroelectric Plant No. 9-99-25400-566-2004 signed on December 23, 2004 between the EAAB and the grid operator, CODENSA, expressed regarding new connections that "The EAAB-ESP cannot connect in parallel to the assets of connection object this contract, the grid that goes to the Wiesner Plant, unless the Wiesner Plant is disconnected from the La Calera Electrical Substation. It is also considered an emergency condition that must be informed to the Local Dispatch Center (LDC) of CODENSA S.A. E.S.P. and coordinated by the latter, following the rules of operation to assure the disconnection power from La Calera Electrical Substation. No other grid can be connected to the assets to this contract. If the EAAB – ESP fail to fulfill this part of the contract, CODENSA, assumes that the EAAB-ESP terminates the contract and will proceed to disconnect the connection point previously assigned".

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3.4 Commercial Operation

The electricity generated by the Santa Ana Hydroelectric Plant is marketed by EMGESA[18] *(Empresa Generadora de Energía Eléctrica S.A.)*, acting as a representative of the plant in the Wholesale Power Market of Colombia, as part of the marketing contract signed with the EAAB[19].

As smaller plant began commercial operations on June 10, 2005,[20] after the official registration of the commercial frontier in the ASIC, with an effective capacity of 8 MW under the following characteristics[21]:

SIV CODE	METER SERIAL NUMBER	EXPORTER	IMPORTER	VOLTAGE LEVEL (kV)	METER CLASS	CR	START
ESNT 1001	30031	EMGESA	CODENSA	11.4	0.2	CR21	2005-06-09

CR: Collection Center (where the meter data are reported)

The registration of the electricity generation makes daily EMGESA, trough CAM[22] (*Compañía Americana de Multiservicios*), with information obtained through the interrogation, automatic and electronic, of the commercial frontier meter[23].

The data is recorded by CAM in the ASIC (Experts Market - XM) [24] and communicates to both EAAB as CODENSA. This information is analyzed independently by EMGESA, CODENSA and EAAB in accordance with the procedures of verification and validation defined by each entity and by Resolution CREG 006 of 2003. The data that is registered in the ASIC is officially published on the website of XM and corresponds to the electricity measure and delivered to the interconnected national grid through the local distribution system.

Additionally, the ASIC and other market agents checked once this information is available for consultation in the database NEON, administered by XM.

[18] Electricity Generating Company.
[19] Contract No. 1-99-26300-671-2005. Duration: 3 years.
[20] The period from June 10 up to July 31, 2005, corresponds to the period of testing and adjustments.
[21] Communication No. 01916-1 from ISA to EMGESA, dated June 9, 2005.
[22] Multi Services American Company.
[23] CAM is a company that provides services to EMGESA for interrogation and recording commercial frontier power meters. Additionally CAM has accredited laboratory in Colombia for the revision of power meters.
[24] XM is a company of ISA that is created in 2005, responsible for managing the ASIC and the NDC. Provides services of operation, administration and development of the Wholesale Energy Market of Colombia.

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4. Monitoring of Emissions Reduction of CO2e during the Second Period Accreditation.

4.1 Data Monitored

The data monitored during the second period of accreditation correspond to the actual electricity generated and delivered daily by the Santa Ana Hydroelectric Plant to the national interconnected grid, which are officially registered and available for consultation on the website of XM (see Annex 1).

The roles of authority and responsibility that were identified for different aspects associated with the monitoring of these data, between August 1, 2006 and July 31, 2007, are presented in Table. 2.

TABLE 2

ROLES OF AUTHORITY AND RESPONSIBILITY OF MONITORING PLAN

	Measurement		Registration		Verification		Report		Calibration and Maintenance Equipment	
	Internal	External	Internal	External	Internal	External	Internal	External	Internal	External
Authority	Director of Network Matrix Aqueduct Office/ Director of Electromechanical Services Office	EMGESA	Director of Network Matrix Aqueduct Office/ Director of Electromechanical Services Office	EMGESA	Director of Network Matrix Aqueduct Office/ Director of Electromechanical Services Office	XM EMGESA CODENSA	Director of Network Matrix Aqueduct Office/ Director of Electromechanical Services Office	EMGESA	Director of Network Matrix Aqueduct Office/ Director of Electromechanical Services Office	EMGESA CODENSA
Responsibility	Thecnical Operator of the plant / Chief of Electrical Services División	CAM	Thecnical Operator of the plant / Chief of Electrical Services División	CAM	Chief of Distribution and Control Division / Chief of Electrical Services División	CAM CODENSA EMGESA	Chief of Distribution and Control Division / Chief of Electrical Services División	CAM	Chief of Distribution and Control Division / Chief of Electrical Services División	CAM

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Based on the data monitored and application of the emission factor of the national interconnected grid, 0.4392 kg CO_2e per KWh[25], Table 3 presents the monitoring report of CO_2e emissions reduced monthly during the second period of accreditation of the project. The daily monitoring report is on file ***Emissions Reduction of CO2e - Santa Ana (1-08-06 to 31-07-07). xls***.

TABLE 3

ELECTRICITY DELIVERED TO THE NATIONAL INTERCONNECTED GRID AND ESTIMATION OF CO_2e EMISSIONS REDUCED AUGUST 1, 2006 – JULY 31, 2007

PERIOD	ELECTRICITY (MW/h)	EMISIONS REDUCED (Ton CO_2e)
Agu-06	4,633	2,035
Sep-06	4,546	1,996
Oct-06	4,662	2,048
Nov-06	4,422	1,942
Dec-2006	4,628	2,033
Jan-2007	4,681	2,056
Feb-07	4,369	1,919
Mar-07	4,801	2,050
Apr-2007	4,261	1,930
May-07	4,479	1,967
Jun-07	4,389	1,928
Jul-07	4,504	1,978
Total	54,374	23,881

[25] Ministry of Mines and Energy. *Unit of Planning Miner and Power* : **Simplify Methodology for the Calculation of Base Lines for Small Scale CDM Projects for Generation of Electrical Energy with Renewable Sources Interconnect to the Grid for year 2004**. October, 2005

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4.2 Procedure for Quality Assurance

Different aspects associated with the monitoring carried out by the EAAB - ESP of electricity actually generated and delivered by the Santa Ana Hydroelectric Plant to the interconnected national grid, are being framed in the Quality Management System Process Energy Generation, on which there was significant progress towards implementing the aspects and requirements of the Standard ISO 9001:2000, during the second period of accreditation of the project:

- **Documentary Aspects**:

The Quality Plan for the Process Power Generation and three detailed procedures were documented and approved:

Code	Procedures
1NM101010	Start and Operation of the Santa Ana Hydroelectric Plant
1NM101505	Measurement and Data Analysis
1NM101510	Conciliation of Results

Subsequently have been implementing provisions in corporate processes which in turn responded to the requirements of a Quality Management System based on Standard ISO 9001:2000, such as:

Code	Procedures
0PG05	Strategic Planning
0PG10	Preparation of Plans
0MC05	Planning Management Systems
0SA200510	Planning Operation and Maintenance
0SA201505	Operation System
0SA202005	Administrative and Financial Management
0FA101005	Preventive Maintenance Tanks, Pumping Stations and Control Structures
0FA101010	Corrective Maintenance
0AS05	Management Agreements Shared Services
0TH50	Training
0GD10	Document Management
0GD05	Information Management
0MC15	Opportunities of Improvement
0MC20	Internal Audits

- **Opportunities of Improvement**:

As opportunity of improvement was detected the need to obtain the data generating plant interrogating, automatically and electronically, the power meter AMETEK which is in the Usaquén Electrical Substation, owned by the EAAB. This improvement allowed the Electrical Services Division conduct the verification and validation of daily data generation reported by EMGESA almost immediately to send the information by that entity. To make this cross-

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checking, was developed and implemented an application in Excel that allows the EAAB compare daily data generation EMGESA registered with the daily data reporting the power meter itself. The information recorded by EMGESA is valid as long as the difference between the data is less than 5%.

- **Internal Audits:**

Within the EAAB Audits Program was included an Internal Audit Process Power Generation, which was conducted in July 2007 by the Quality and Process Direction of the Planning and Control Corporate Management. The implementation of improvements compared to the comments raised in the audit will be highlight in the Verification of the third accreditation period CDM project.

5. Environmental and Social Aspects

The Santa Ana Hydroelectric Plant was built in compliance with all environmental permits required by the national and regional environmental regulations, as stipulated in the Environmental Management Plan approved by Resolution 1913 of 2000 by the Environmental Authority responsible, the Autonomous Regional Corporation Cundinamarca - CAR.

It was duly consulted with the concerned parties and neighboring communities, following compliance with the environmental and sectorial laws and regulations.

The operation plant does not generate any negative social or environmental impact. Rather, it comes generate environmental benefits associated with a small-scale renewable energy project: in addition to reducing greenhouse gases in the national interconnected grid, reduces local emissions of particulate thick and thin, SO2, SOx, NOx and heavy metals when fuel shifted of the grid for fossil power generation is coal.

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Información generada por Neón entre 01/08/2006 y 31/07/2007 [DD/MM/YYYY]

	GENERACION DE MENORES (kWh) MENOR SANTA ANA Central
01/08/2006	118,412.00
02/08/2006	116,520.00
03/08/2006	151,400.00
04/08/2006	155,890.00
05/08/2006	159,198.00
06/08/2006	142,272.00
07/08/2006	144,986.00
08/08/2006	154,076.00
09/08/2006	152,840.00
10/08/2006	159,774.00
11/08/2006	153,134.00
12/08/2006	160,660.00
13/08/2006	146,272.00
14/08/2006	152,756.00
15/08/2006	153,716.00
16/08/2006	154,118.00
17/08/2006	155,324.00
18/08/2006	153,054.00
19/08/2006	155,594.00
20/08/2006	132,830.00
21/08/2006	131,746.00
22/08/2006	150,370.00
23/08/2006	167,764.00
24/08/2006	162,102.00
25/08/2006	155,374.00
26/08/2006	155,148.00
27/08/2006	135,664.00
28/08/2006	150,932.00
29/08/2006	149,170.00
30/08/2006	151,188.00
31/08/2006	150,312.00

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Información generada por Neón entre 01/08/2006 y 31/07/2007 [DD/MM/YYYY]

	GENERACION DE MENORES (kWh) MENOR SANTA ANA Central
01/09/2006	141,888.00
02/09/2006	158,524.00
03/09/2006	146,020.00
04/09/2006	152,676.00
05/09/2006	154,308.00
06/09/2006	154,396.00
07/09/2006	153,770.00
08/09/2006	155,158.00
09/09/2006	162,242.00
10/09/2006	145,412.00
11/09/2006	153,270.00
12/09/2006	153,022.00
13/09/2006	148,468.00
14/09/2006	151,880.00
15/09/2006	154,980.00
16/09/2006	153,200.00
17/09/2006	142,064.00
18/09/2006	144,024.00
19/09/2006	149,724.00
20/09/2006	147,990.00
21/09/2006	149,036.00
22/09/2006	155,426.00
23/09/2006	151,744.00
24/09/2006	141,676.00
25/09/2006	156,380.00
26/09/2006	157,852.00
27/09/2006	159,788.00
28/09/2006	149,528.00
29/09/2006	146,848.00
30/09/2006	154,228.00

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Información generada por Neón entre 01/08/2006 y 31/07/2007 [DD/MM/YYYY]

	GENERACION DE MENORES (kWh) MENOR SANTA ANA Central
01/10/2006	143,150.00
02/10/2006	155,086.00
03/10/2006	157,710.00
04/10/2006	154,750.00
05/10/2006	159,102.00
06/10/2006	155,670.00
07/10/2006	161,446.00
08/10/2006	150,904.00
09/10/2006	149,454.00
10/10/2006	153,122.00
11/10/2006	156,546.00
12/10/2006	154,610.00
13/10/2006	157,010.00
14/10/2006	179,674.00
15/10/2006	70,872.00
16/10/2006	140,134.00
17/10/2006	148,612.00
18/10/2006	155,972.00
19/10/2006	154,270.00
20/10/2006	150,834.00
21/10/2006	155,510.00
22/10/2006	135,984.00
23/10/2006	148,398.00
24/10/2006	145,310.00
25/10/2006	149,272.00
26/10/2006	152,790.00
27/10/2006	157,848.00
28/10/2006	156,384.00
29/10/2006	147,040.00
30/10/2006	151,742.00
31/10/2006	152,898.00

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Información generada por Neón entre 01/08/2006 y 31/07/2007 [DD/MM/YYYY]

	GENERACION DE MENORES (kWh) MENOR SANTA ANA Central
01/11/2006	152,318.00
02/11/2006	142,326.00
03/11/2006	114,708.00
04/11/2006	161,152.00
05/11/2006	132,286.00
06/11/2006	146,380.00
07/11/2006	150,222.00
08/11/2006	153,380.00
09/11/2006	151,524.00
10/11/2006	151,592.00
11/11/2006	125,930.00
12/11/2006	131,472.00
13/11/2006	140,748.00
14/11/2006	148,742.00
15/11/2006	133,500.00
16/11/2006	147,722.00
17/11/2006	138,780.00
18/11/2006	155,936.00
19/11/2006	148,116.00
20/11/2006	153,418.00
21/11/2006	151,294.00
22/11/2006	156,504.00
23/11/2006	154,682.00
24/11/2006	158,082.00
25/11/2006	156,480.00
26/11/2006	147,562.00
27/11/2006	152,414.00
28/11/2006	155,078.00
29/11/2006	155,112.00
30/11/2006	154,326.00

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Información generada por Neón entre 01/08/2006 y 31/07/2007 [DD/MM/YYYY]

	GENERACION DE MENORES (kWh) MENOR SANTA ANA Central
01/12/2006	155,752.00
02/12/2006	156,144.00
03/12/2006	147,358.00
04/12/2006	139,304.00
05/12/2006	158,566.00
06/12/2006	156,956.00
07/12/2006	137,448.00
08/12/2006	152,054.00
09/12/2006	148,738.00
10/12/2006	144,276.00
11/12/2006	150,350.00
12/12/2006	157,274.00
13/12/2006	154,178.00
14/12/2006	154,072.00
15/12/2006	155,542.00
16/12/2006	153,954.00
17/12/2006	146,924.00
18/12/2006	152,232.00
19/12/2006	154,224.00
20/12/2006	157,298.00
21/12/2006	157,622.00
22/12/2006	158,120.00
23/12/2006	153,154.00
24/12/2006	136,732.00
25/12/2006	120,298.00
26/12/2006	147,344.00
27/12/2006	149,418.00
28/12/2006	148,448.00
29/12/2006	150,096.00
30/12/2006	144,200.00
31/12/2006	132,068.00

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Paginas de consulta: 1 2 3 4 **5**6 7 8 9 10 11 12

Información generada por Neón entre 01/08/2006 y 31/07/2007 [DD/MM/YYYY]

	GENERACION DE MENORES (kWh) MENOR SANTA ANA Central
01/01/2007	119,896.00
02/01/2007	121,100.00
03/01/2007	144,132.00
04/01/2007	142,866.00
05/01/2007	140,630.00
06/01/2007	123,702.00
07/01/2007	113,096.00
08/01/2007	119,138.00
09/01/2007	140,462.00
10/01/2007	154,464.00
11/01/2007	149,232.00
12/01/2007	153,834.00
13/01/2007	153,070.00
14/01/2007	139,406.00
15/01/2007	152,432.00
16/01/2007	157,004.00
17/01/2007	158,752.00
18/01/2007	157,670.00
19/01/2007	157,254.00
20/01/2007	158,014.00
21/01/2007	143,068.00
22/01/2007	154,102.00
23/01/2007	156,784.00
24/01/2007	158,198.00
25/01/2007	157,220.00
26/01/2007	154,932.00
27/01/2007	159,146.00
28/01/2007	150,170.00
29/01/2007	168,598.00
30/01/2007	194,996.00
31/01/2007	227,642.00

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Paginas de consulta: 1 2 3 4 5 **6**7 8 9 10 11 12

Información generada por Neón entre 01/08/2006 y 31/07/2007 [DD/MM/YYYY]

	GENERACION DE MENORES (kWh) MENOR SANTA ANA Central
01/02/2007	179,088.00
02/02/2007	162,286.00
03/02/2007	165,206.00
04/02/2007	153,040.00
05/02/2007	159,140.00
06/02/2007	162,926.00
07/02/2007	163,094.00
08/02/2007	157,144.00
09/02/2007	166,168.00
10/02/2007	165,342.00
11/02/2007	153,654.00
12/02/2007	163,506.00
13/02/2007	162,894.00
14/02/2007	159,390.00
15/02/2007	64,762.00
16/02/2007	95,610.00
17/02/2007	161,942.00
18/02/2007	153,638.00
19/02/2007	162,436.00
20/02/2007	163,060.00
21/02/2007	164,554.00
22/02/2007	161,026.00
23/02/2007	165,196.00
24/02/2007	165,536.00
25/02/2007	155,740.00
26/02/2007	159,804.00
27/02/2007	158,312.00
28/02/2007	164,656.00

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Paginas de consulta: 1 2 3 4 5 6 **7**8 9 10 11 12

Información generada por Neón entre 01/08/2006 y 31/07/2007 [DD/MM/YYYY]

	GENERACION DE MENORES
	(kWh)
	MENOR SANTA ANA
	Central
01/03/2007	161,686.00
02/03/2007	163,354.00
03/03/2007	165,456.00
04/03/2007	153,610.00
05/03/2007	160,738.00
06/03/2007	158,404.00
07/03/2007	158,014.00
08/03/2007	148,536.00
09/03/2007	161,836.00
10/03/2007	161,092.00
11/03/2007	152,798.00
12/03/2007	160,136.00
13/03/2007	161,524.00
14/03/2007	161,486.00
15/03/2007	161,210.00
16/03/2007	160,248.00
17/03/2007	166,362.00
18/03/2007	145,788.00
19/03/2007	141,682.00
20/03/2007	162,866.00
21/03/2007	159,060.00
22/03/2007	157,060.00
23/03/2007	137,288.00
24/03/2007	159,892.00
25/03/2007	147,196.00
26/03/2007	133,578.00
27/03/2007	98,190.00
28/03/2007	142,028.00
29/03/2007	62,056.00
30/03/2007	142,676.00
31/03/2007	160,712.00

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Información generada por Neón entre 01/08/2006 y 31/07/2007 [DD/MM/YYYY]

	GENERACION DE MENORES (kWh) MENOR SANTA ANA Central
01/04/2007	134,642.00
02/04/2007	145,258.00
03/04/2007	153,444.00
04/04/2007	149,844.00
05/04/2007	113,854.00
06/04/2007	106,670.00
07/04/2007	130,446.00
08/04/2007	123,070.00
09/04/2007	157,142.00
10/04/2007	157,254.00
11/04/2007	156,912.00
12/04/2007	155,542.00
13/04/2007	154,824.00
14/04/2007	147,868.00
15/04/2007	148,914.00
16/04/2007	154,684.00
17/04/2007	155,870.00
18/04/2007	155,890.00
19/04/2007	150,540.00
20/04/2007	155,592.00
21/04/2007	157,768.00
22/04/2007	128,936.00
23/04/2007	153,374.00
24/04/2007	154,014.00
25/04/2007	155,830.00
26/04/2007	111,686.00
27/04/2007	172,740.00
28/04/2007	157,906.00
29/04/2007	145,366.00
30/04/2007	149,332.00

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Paginas de consulta: 1 2 3 4 5 6 7 8 **9** 10 11 12

Información generada por Neón entre 01/08/2006 y 31/07/2007 [DD/MM/YYYY]

	GENERACION DE MENORES (kWh) MENOR SANTA ANA Central
01/05/2007	141,718.00
02/05/2007	149,980.00
03/05/2007	141,734.00
04/05/2007	144,156.00
05/05/2007	151,408.00
06/05/2007	142,158.00
07/05/2007	144,368.00
08/05/2007	147,128.00
09/05/2007	151,672.00
10/05/2007	156,620.00
11/05/2007	152,312.00
12/05/2007	156,668.00
13/05/2007	136,704.00
14/05/2007	132,578.00
15/05/2007	124,866.00
16/05/2007	109,634.00
17/05/2007	150,476.00
18/05/2007	150,872.00
19/05/2007	147,612.00
20/05/2007	126,322.00
21/05/2007	123,468.00
22/05/2007	150,116.00
23/05/2007	153,144.00
24/05/2007	153,478.00
25/05/2007	155,630.00
26/05/2007	156,194.00
27/05/2007	137,322.00
28/05/2007	150,362.00
29/05/2007	154,738.00
30/05/2007	140,038.00
31/05/2007	145,328.00

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Paginas de consulta: 1 2 3 4 5 6 7 8 9 **10** 11 12

Información generada por Neón entre 01/08/2006 y 31/07/2007 [DD/MM/YYYY]

	GENERACION DE MENORES
	(kWh)
	MENOR SANTA ANA
	Central
01/06/2007	152,974.00
02/06/2007	154,340.00
03/06/2007	141,524.00
04/06/2007	150,442.00
05/06/2007	146,956.00
06/06/2007	149,648.00
07/06/2007	156,504.00
08/06/2007	156,980.00
09/06/2007	158,414.00
10/06/2007	129,896.00
11/06/2007	133,482.00
12/06/2007	159,874.00
13/06/2007	145,672.00
14/06/2007	155,334.00
15/06/2007	153,578.00
16/06/2007	136,238.00
17/06/2007	124,056.00
18/06/2007	122,624.00
19/06/2007	153,652.00
20/06/2007	158,548.00
21/06/2007	141,706.00
22/06/2007	154,514.00
23/06/2007	149,034.00
24/06/2007	132,414.00
25/06/2007	154,126.00
26/06/2007	153,608.00
27/06/2007	150,148.00
28/06/2007	154,576.00
29/06/2007	147,926.00
30/06/2007	110,166.00

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Paginas de consulta: 1 2 3 4 5 6 7 8 9 10 **11**12

Información generada por Neón entre 01/08/2006 y 31/07/2007 [DD/MM/YYYY]

	GENERACION DE MENORES (kWh) MENOR SANTA ANA Central
01/07/2007	115,148.00
02/07/2007	120,060.00
03/07/2007	152,306.00
04/07/2007	148,856.00
05/07/2007	153,198.00
06/07/2007	151,418.00
07/07/2007	150,964.00
08/07/2007	131,380.00
09/07/2007	148,514.00
10/07/2007	149,108.00
11/07/2007	150,182.00
12/07/2007	151,666.00
13/07/2007	153,406.00
14/07/2007	155,698.00
15/07/2007	134,690.00
16/07/2007	147,712.00
17/07/2007	150,788.00
18/07/2007	120,524.00
19/07/2007	149,310.00
20/07/2007	138,748.00
21/07/2007	144,540.00
22/07/2007	128,042.00
23/07/2007	143,180.00
24/07/2007	149,990.00
25/07/2007	153,254.00
26/07/2007	151,294.00
27/07/2007	151,322.00
28/07/2007	157,614.00
29/07/2007	139,082.00
30/07/2007	151,074.00
31/07/2007	161,366.00

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Paginas de consulta: 1 2 3 4 5 6 7 8 9 10 11 **12**