

PROJECT NOTICE: COGENERATION PLANT LUJÁN DE CUYO

**PROJECT NOTICE: COGENERATION PLANT
LUJÁN DE CUYO – MENDOZA**



ENERGIA & AMBIENTE S.A
Cutral Có 7617 – B° SUPE - Carrodilla – Lujan de Cuyo - Mendoza

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1. Bidder's information:

Central Puerto S.A.

Taxpayer Identification Number (CUIT) 33-65030549-9

Domicile: Ruta 84 s/n. Luján de Cuyo (5507). Mendoza

2. Name of the individual and legal entity

Agent:

Engineer Pamela A. Ulloa Henríquez

National Identity Number (DNI): 18799794

Legal domicile. Telephones:

Av. Tomás A. Edison 2701 – (c1104BAB) – City of Buenos Aires – (011) 43175000

Domicile. Telephones:

Ruta 84 s/n- (5507) Luján de Cuyo – Mendoza – (0261) 5216200

3. Legal domicile, domicile and information of the responsible professional:

Corporate name: Energy & Environment S.A.

CUIT: 30-71221235-3

Domicile: Cutral Có No. 7617 –B° SUPE, Carrodilla – Luján de Cuyo, Mendoza

Email: energiyambiente2016@gmail.com

4. Authors who participated

Name/Occupation	Role within the study	Signature
Adriana M. Lorenzo Degree in Biology with an Ecology orientation	Report edition	
	Field research Preparation of the Project notice, Environmental Impact Assessment, Mitigation Measures and Environmental Control	
José A. Rojas - Technician	Data processing and digital Cartography	

5. General Description of the Project and denomination:

This study consists on the assessment of the environmental feasibility for the construction of a Cogeneration Plant to provide electrical and steam energy in Central Puerto SA (CPSA) - Mendoza Plant.

General objective

- To assess the environmental feasibility for the construction of a Cogeneration Plant to provide electrical and steam energy in Central Puerto SA (CPSA) - Mendoza Plant.

Specific aims

- To identify and quantify the interactions between the cogeneration plant project and its surroundings.
- To suggest measures to mitigate, control and monitor the potential negative impacts detected and to suggest measures that tend to boost the positive environmental impacts.

5.1 General description of the project

The project includes the development of engineering, design, construction and assembly of a Cogeneration Plant, including the installation of the main and auxiliary equipment which will guarantee the optimal functioning of the Plant in Central Puerto S.A. industrial premises, located in the Provincial Industrial Park (PIP) in Luján de Cuyo department.

The installation to be built will consist of two state-of-the art SIEMENS gas turbines (GT), SGT5-800-54 model, with their corresponding Heat Recovery Steam Generators (HRSG) of vertical flow.

Central Puerto S.A. Mendoza Plant (CPSA – MZA.) will be responsible for the operation and maintenance of the Cogeneration Plant to provide electrical and steam energy.

Equipment to be installed

- **Gas turbine**

Two SIEMENS Gas Turbines, SGT5-800-54, will be installed with their corresponding SGEN5 generators, as shown in Images 1 and 3. The characteristics of the gas turbines are mentioned in the following table.

FUTURE EQUIPMENT	BRAND	NOMINAL POWER	FUEL
Sgt5-800-54	Siemens	*54 MW	Natural gas

* ISO conditions (room temperature 15°C, relative humidity 60% and atmospheric pressure 1013 mbar).

Table 1: Equipment characteristics

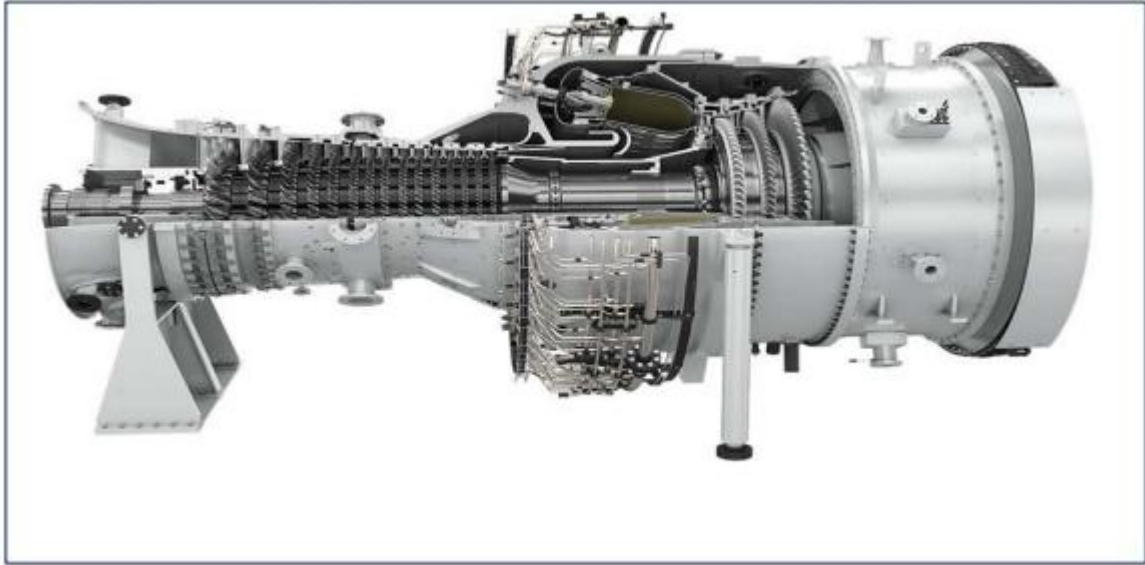


Image 1: Gas turbine 800

This machine combines a simple and robust design with great reliability and easy maintenance, and shows high efficiency and low emission indexes.

It offers great flexibility regarding the use of fuels. They are fit to operate with natural gas and diesel oil (distillate #2), while keeping its operational conditions and maintenance diagrams.

It provides great efficiency and capacity to elevate steam, all of which make it an exceptional machine for cogeneration installations.

It includes a Diverter Damper (gas by-pass) to the HSRG (heat recovery), which allows to operate the GT on an open cycle when facing a failure of the HRSR, enabling the GT to operate and deliver energy.

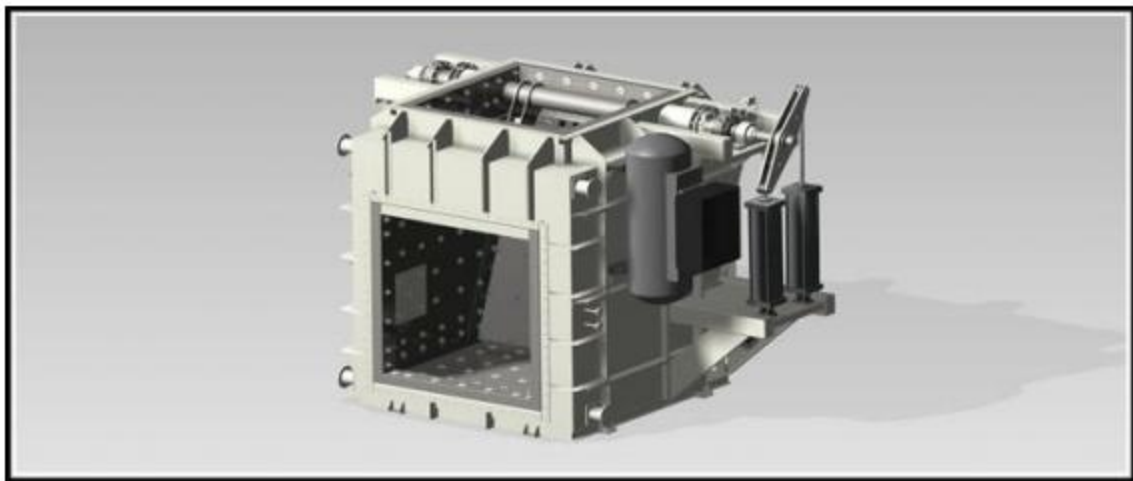


Image 2: Diverter Damper (gas by-pass)

At the time of choosing the turbine, the following conditions were considered:

- Room temperature: between 7 °C and 8 °C.
 - Environmental relative humidity: between 30% and 99%.
- **Heat recovery (HRSG)**

The selected equipment is a HRSG, designed for the informed location conditions and the requirements of the conditions of steam, with vertical flow, and additional fire, with no intermediate reheat. Its state-of-the-art design is completely modular and prefabricated, which allows a much quicker assembly (Image 3).



Image 3: Heat recovery (HRSG)

The equipment includes:

- Economizer section;
 - Evaporator section with its corresponding dome;
 - Superheat unit;
 - Spray system to control steam's temperature;
 - Tubes system from the GT and the main gas outlet chimney;
 - Purge system to control the quality of the water and the steam;
 - Silencers;
 - Instrumentation.
- **Cooling system**

A Fin Fan Coolers system is planned to cool the lubrication oil of the GT (graph 1).

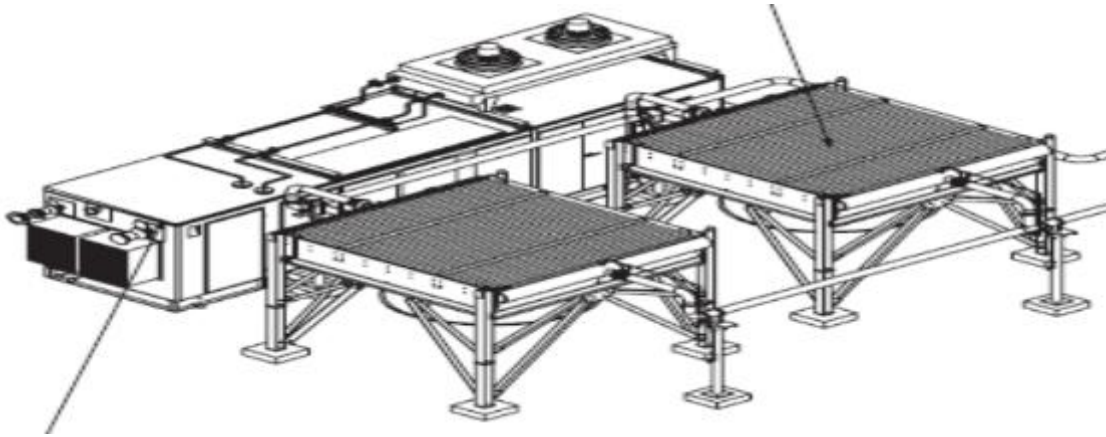


Image 4: auxiliary systems – Fin Fan Coolers system

– **Plant's Auxiliary Systems**

The Plant is designed to burn Natural Gas and Liquid Diesel Oil Fuel (Distilled #2). The design includes the following supplementary systems:

- Electrical and TG control modules;
- Feed water tower and pumps;
- Air cooled lube oil coolers;
- Gas receiving unit, gas compressor;
- Electrical and control module BOP;
- Set up trafo;
- Air compressor;
- Liquid fuel handling;
- Water treatment building.

The layout 2D is attached to the Exhibit section, and it includes the different auxiliary equipment.

– **Electrical grid**

Electrical connection and transmission

The energy produced by both cogeneration units (approximately 46 MW each) will be derived to the 132 Kv Transformer Station Luján de Cuyo.

The connection includes the three-phase transformer to level up the voltage of generation to the SADI (Argentine Interconnection System) connection voltage in 132 Kv (GSU- Generator Step-up Transformers).

Supply characteristics – steam delivery range and electrical energy associated

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- a) Delivered steam: 125-130 T/h in an ideal production range, with a steam delivery capacity between 100 and 130 T/h, with a possible steam production of up to 200 T/h with additional fire in the HRSG.

During maintenance or failure of any of the 2 GT(s), it is possible to reach steam production of 90 T/h

- b) Electrical energy production: Electrical power 92 MW (gross).
c) The Cogeneration Plant will have the capacity to meet actual and future demand of the Refinery upon a blackout of the interconnected electrical system.

6. Socioeconomic aims and benefits

The aim of the construction, assembly and startup of the Cogeneration Plant is to reach a high level of efficiency when producing both heat and electricity (image 5), and to obtain a reduction of the emission of greenhouse gases due to the fact that the combustion of natural gas releases less carbon monoxide (CO₂) and nitrogen oxide (NO_x) than liquid fuels or coal.

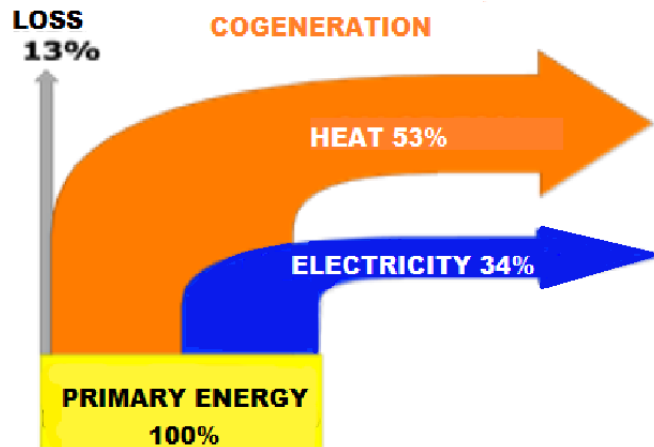


Image 5. Benefits of Cogeneration

In addition, this proposal will help to increase the availability of electrical energy in the area it is located as well as the increase of energetic independence of the users of the energy it generates.

On the other hand, energy generation through cogeneration produces a reduction in greenhouse gases emission, contributing this way to the improvement of the quality of the local, provincial and national energetical matrix within the context of the efforts that must be made towards mitigating global warming of the atmosphere and its effects.

7. Localization with indication of the municipal jurisdiction(s) involved

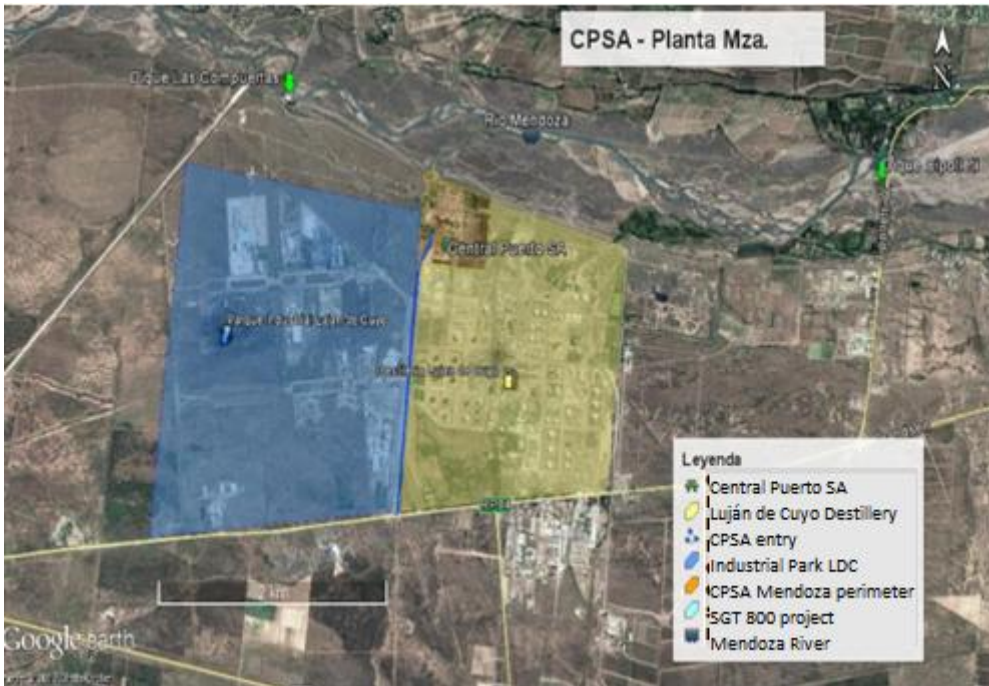
The Electrical Energy Generation Plant, CPSA Mendoza Plant, is located in a completely-industrial area, and adjoins the PIP (Provincial Industrial Park) and YPF S.A Luján de Cuyo Industrial Complex,

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Mendoza Province, approximately 32 km away from Mendoza City, at a height of 1073 mts above sea level (Table 2, satellite image 1,2,3; and graph 1).

LOCATION OF THE PLANT	
Type of coordinates: geographic	
33° 03' 21.23" S	68° 58' 48.51" W

Table 2. Study Plant's location



Satellite image 1: General Location of Central Puerto SA Mendoza Plant

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Satellite image 2: Specific location of CPSA Mendoza Plant



Satellite image 3: Study Area

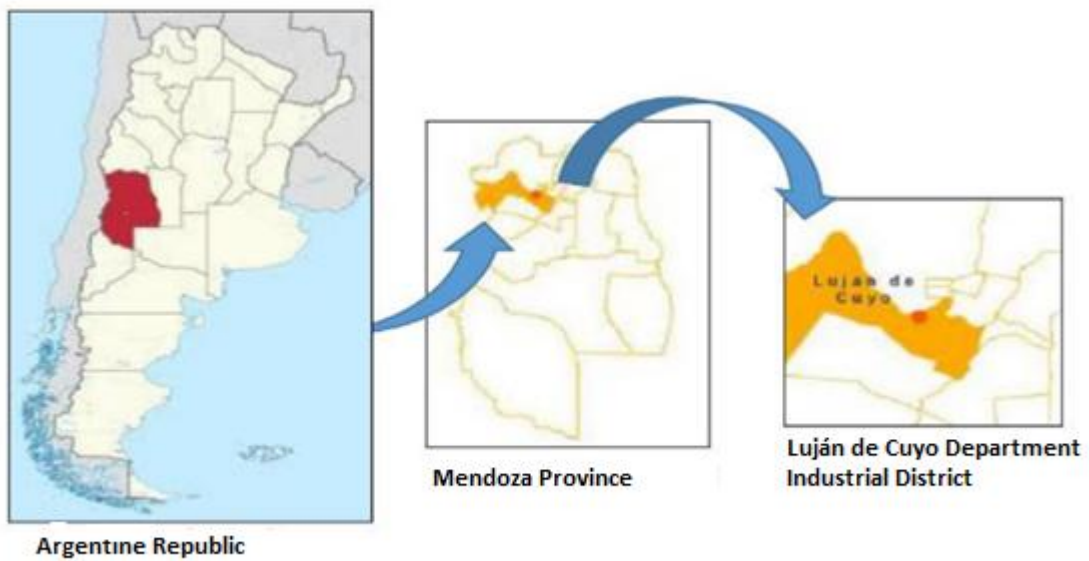
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Pictures 1 and 2: Plant and offices entry



Pictures 3 and 4: Plant's entry from provincial route no. 84



Graph 1: Relative location of CPSA Mendoza Plant

8. Affected population

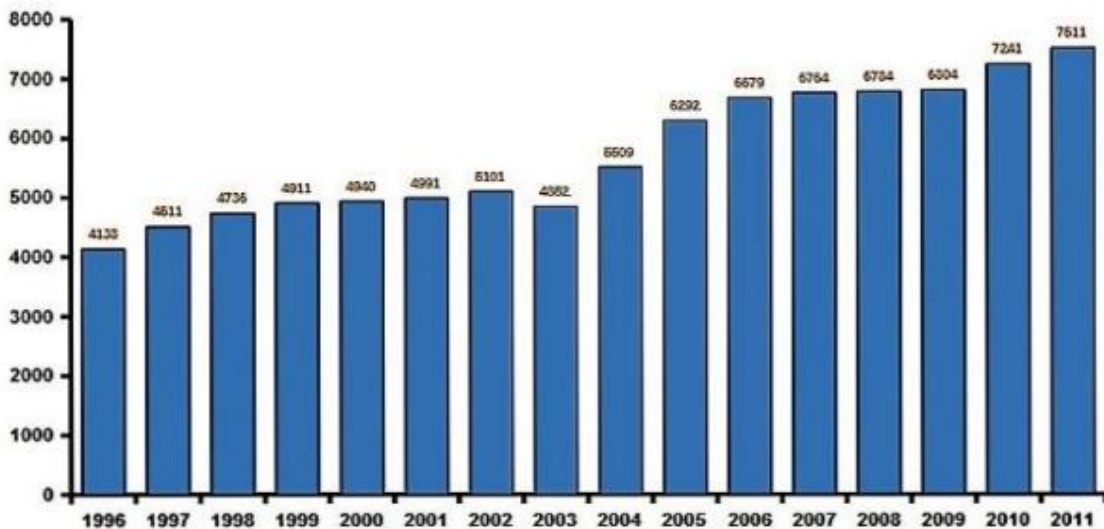
The possible effect on the population is analyzed in a differentiated way for the construction stage and the operation stage. In addition, difference can be made between the population within the local area of the project and Mendoza population in general, as analyzed in the Exhibits on the corresponding Environmental Impact Assessment Study.

During the construction stage, at a local level, positive impacts are expected due to the need for local labor force. In addition, local goods and services providers (shops, meals delivery, transport services, etc.) will experience growth in their activities due to the increase in the demand for such goods and services because of the development of the proposed project.

Other small, temporary impacts are expected, usually related to civil work activities, such as sound emissions and an increase in vehicular traffic.

During the operation stage, local benefits are expected to be identical to the ones described for the construction stage, with the exception that there will be fewer people working in the area.

At a provincial level, according to the data published by the Undersecretariat of Energy and Mining of the Government of Mendoza, the tendency of the evolution of the demand of electrical energy of the province is clearly increasing (Graph 2), which shows a 4.5% annual increase.



Graph 2. Forecast of the demand in Mendoza

Source: Energy Report First Half 2014 – Undersecretariat of Energy and Mining – Mendoza Government

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Therefore, the project under study will increase the annual energy generation, due to the installation of the equipment proposed, by approximately 450000 KWh/year, with a **19%** reduction of the greenhouse gases emission per unit of power generated.

9. Area surface

The surface of the area selected for the project under study will be of 54m x 74m.

(Image 6. Specific location of the project under study).

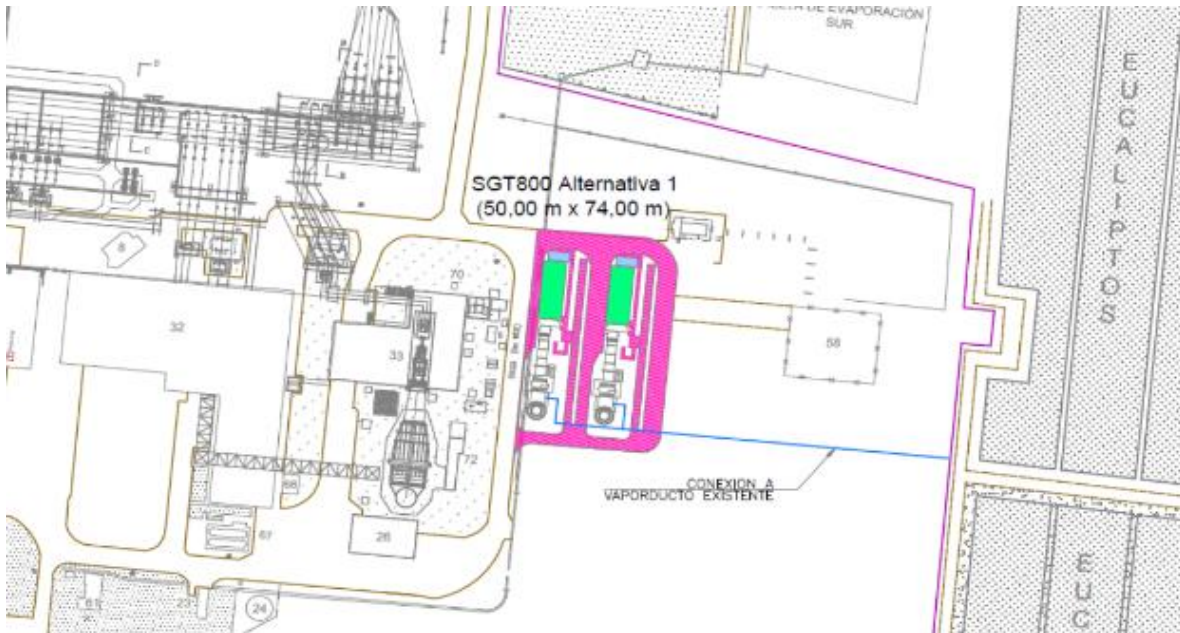


Image 6. Specific location of the project under study

10. Covered existing and projected surface

10.1 Parcel's data (legal, physical and economic data)

- Legal Data

The area where the plant is located belongs to Centrales Térmica Mendoza Sociedad Anónima, registered in the Property Registry under Property Identification Number 103910/6, Entry A-1 Luján de Cuyo, dated 11-23-1995, and approved by Cadastre Provincial Direction, under no. 16887, Luján de Cuyo.

- Physical data (cadastre)

The cadastral information of the plant is mentioned in the following table.

CADASTRAL DATA	
Surface as per ownership instrument	3436,61 m ²
Measurement	49 ha
Cadastral nomenclature	04-04-88-2300-315185-0006
Rent list number	06/37397/1
Municipal list number	35957

Table 3. Cadastral data

- Institutional data

The industrial building started operations in 1971 and worked under the governmental domain of Agua y Energía Eléctrica (AyE) [Water and Electrical Energy]. On November 1st, 1994 it was purchased by CMS Energy, and changed its name to Centrales Térmicas Mendoza S.A. and, as from 2007, it became part of SADESA group. In 2014, after a take-over merger, it became CPSA.

- Economic data

According to the ownership title in the Cadastre Directorate of Mendoza, the total surface of the area of the project is 69 Ha or 8,542.80 m², building fraction with larger surface. The Cadastral Nomenclature is 06-99-00-1300-554656-0000-1.

11. Total investment to be made

The expected investment is of USD \$125,000,000 (one hundred, twenty-five thousand million American dollars).

12. Project stages and schedules

12.1 Works schedule

The details of the works to be made were already explained in section 5. The construction stage will have a duration of 1 year and 9 months, as indicated in the following table.

Work schedule		Duration (year/month)	
I	Construction	General	1 year
		Installation	2 months
		Commissioning	9 months
II	Operation and maintenance		Life cycle of the plant
III	Dismantling and closing		

Table 4. Project stages

The Cogeneration Luján de Cuyo Project Schedule is attached to the Exhibits.

12.2. Project stages

Proyecto SGT-800 will be carried out in the following stages:

12.2.1. Construction stage

Conditioning of the platform where the new machine will be located:

- Establish entry accesses and workplace sector

Transport and assembly of equipment:

- Assembly of structures and industrial equipment (turbines, boilers and pipes, etc.).

Movement of people and materials:

- Affected equipment: crane, light and heavy vehicles
- Entry and exit of machine, vehicles and people into and out of the Plant
- Tests and commissioning activities and reception in the Plant

Waste generation:

- Solid waste (wood, waste metals, packaging materials, isolating materials, plastics, etc).

Termination and cleaning of the area:

- Removal of temporary installations, final inspection, and cleaning of the area.

12.2.2 Operation and maintenance stage

Functioning of the plant:

- Operation of the turbomachine (energy generation)
- Resources and service demand
- Noise and vibrations generation
- Gas emission and liquid effluents generation

12.2.3 Dismantling and closing stage

- Drafting of the Environmental Assessment Study for the closing of the project
- Communication to the authorities and disconnection
- Dismantling and demolition
- Dismantling of the elements that form the project
- Disassembly, transport, and storage of the equipment and structures owned by the Power Station
- Demolition of the foundations and buildings
- Buildings preservation (alternative to the previous item)

13. Energy consumption per time unit in the different stages

The energy to be consumed is presented in the following table:

STAGE	CONSUMPTION	UNIT
Construction	*Assembly	10
	Commissioning	500

*For the project, the use of three auxiliary boards for each of the different stages of the assembly is considered.

Table 5: Energy consumption in each stage

14. Fuel consumption per type, time unit and stage

In the project, it is expected that the installation of liquid fuel will remain as it is nowadays, with supply coming from YPF Refinery.

For SGT 800, according to the information supplied by the manufacturer, fuel consumption will be:

TYPE OF OIL	CONSUMPTION [Kcal/KWh]
Natural Gas (NG)	(without additional fire): 2226 Kcal/Kwh
	(with additional fire): 2525 Kcal/Kwh
Diesel Oil#2 (D#2) (without additional fire):	2341 Kcal/Kwh

Table 6. Fuel consumption

15. Water, consumption and other frequent uses, source, quantity and quality

15.1 Construction stage

The water to be used will be from the river (through a fire network):

- Civil work and cleaning activities
- Estimated consumption: 4000 m³

15.2 Operation stage

Cooling water.

For the Gas Turbines, cooling water is required for the lube oil and for the generator, where:

- The cooling load of the generator is approximately 700 kW, and
- The cooling load for the lube oil is 1,150 kW.

The amount of cooling water will depend on inlet and outlet temperatures.

Both the generator and the lube oil are cooled by air, i.e., no cooling water is required.

The unit with DLE (Dry Low Emission) technology does not require water injection to control NO_x.

15.3 Drinking water demand

Drinking water for the staff, both for the construction and operation stage, will be provided as bottled water purchased locally.

16. Comprehensive detail of other supplies

In addition, grease, lubricant oils and fuels (natural gas and diesel oil) will be used during the startup, constructions and operation stages.

17. Technology to be used

The technology to be used was described in Section 5.

18. Infrastructure and equipment needs directly and indirectly created by the project

The infrastructure and equipment needed for the development of the project was described in Section 5. The machines needed in each stage are mentioned below:

STAGE	EQUIPMENT AND MACHINERY
General civil work	Crane, light and heavy vehicles, turbomachines, etc.
Electrical work	Generator sets

Table 7. Equipment and machinery to be used during the project

19. Tests, determinations, field and/or laboratory studies carried out

Soil and topography studies will be carried out.

20. Waste and pollutants. Types and volumes per time unit

Central Puerto S.A. (CPSA) management has established the implementation of an Integrated Management System (SIG) for its Electrical Energy Generation Plants, especially Mendoza Plant (MZA). This system meets the needs and the requirements of their own policies, objectives, their clients', the regulations in force and the ISO (International Organization for Standardization): 9001/2008 quality, and ISO 14001/2004 environment.

In Section 1.1.4 "Common Actions, Construction, Operation and Maintenance Stage" of the "Environmental Impact Assessment Study of Luján de Cuyo Cogeneration Plant Project" attached in the Exhibit section, where the expected generation of discharges and liquid effluents (sewage and industrial), and solids similar to urban and industrial waste and hazardous and non-hazardous waste is explained in detail.

The expected generation of waste are described below in accordance to the stages of the project and time units.

TYPE OF WASTE	STAGE	GENERATION RATE
Industrial waste	Construction	200 l/day
Solid waste	Construction	200 Kg/day
Gas emissions generation	Operation and maintenance	0.29 Kg CO ₂ /kWh
Liquid effluents	Operation and maintenance	1000 l/hour
*Hazardous waste (oil waste)	Construction and operation	Small amounts of Y48 (Y8-Y9)

and hydrocarbon, or solid waste polluted with them)		
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Table 8. Types of waste in accordance with the stages and time units

* Mendoza Plant is registered as a hazardous waste producer at the Environmental Protection Direction of the province of Mendoza.

20.1 Emissions and noises (Sound Pressure)

In order to protect the resources, CPSA plant in MZA performs constant monitoring as a fundamental part of the environmental planning.

- Gas emissions

CPSA MZA Plant monitors the gas emissions generated. In each report, the monitoring equipment, data acquisition and recording systems are described. In addition, it includes the reference methodology for sample taking and processing, as well as, the year of the commissioning of the analyzed equipment. All of this, in accordance with Resolution ASPA 01/2010, in compliance with the format and the content of the submission of the Environmental Planning for the semester.

Attached there is the management report of the gas emissions for the first half of 2017. Such report is submitted semesterly before the National Energy Regulation Office (ENRE for its acronym in Spanish).

- Emissions-Specific Monitoring Equipment (ESME)

ESME are used in Cogeneration (CG) units. This equipment measures gas and the Total Particulate Matter (TPM).

Equipment used:

- TESTO 350: portable combustion gas analyzer
- Zambelli 600 plus: isokinetic sampling system

Gas specific measurements are made once a month in all corresponding units, plus the TPM measurements when a unit uses liquid fuel. The following table contains the parameters measured according to the type of fuel:

EQUIPMENT	TYPE OF FUEL	PARAMETERS
Gas Turbine (GT)	Natural gas	O ₂
		NO _x
	Liquid fuel	O ₂
		NO _x
		SO ₂
	TPM	

Table 9. Types of fuel and parameters measured

- Greenhouse gases emissions

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Along with everything described and analyzed above, the Company has also calculated the Greenhouse Gases emissions, such as *carbon dioxide equivalent CO_{2eq}*.

The caloric energy of the fuels informed by CAMESA were used for the calculation:

- Natural Gas (GN) 8400 kcal/m³
- Diesel Oil (GO) 8580 kcal/l

In the following table, there appears the comparison of the current emission generation versus the generation that will take place with the new installation in order to check the decrease in the emissions.

Unit	Power [MW]	Specific consumption [kcal/kWh]			Emission factor of CO ₂			Affectionation per % of dispatch with each fuel 2015			CO ₂ emission [kg CO ₂ /kWh]			CO ₂ emission (t/year)		
		GN	GO	FO	GN [t/dam3]	GO [t/m3]	FO [t/t]	GN [%]	GO [%]	FO [%]	GN	GO	FO	GN	GO	FO
LDCUTG23	23	3804	4522	---	1,951	2,65	---	100%	0%	---	0,88	0,00	---	178.029	0	---
LDCUTG24	23	3804	4522	---	1,951	2,65	---	100%	0%	---	0,88	0,00	---	178.029	0	---
														356.058		
Annual Gen 402.960														0,88		
2xSGT-800 (GN)	99,942	2205	---	---	1,951	---	---	64%	---	---	0,33	---	---	285.127	---	---
2xSGT-800 (GO)	94,408	---	2232	---	---	2,65	---	---	36%	---	---	0,25	---	---	207.494	---
														492.620		
Annual Gen 857.845														0,57		
														-19%		

Table 10. CO₂ equivalent emissions of the project

Greenhouse gases emission per energy generated will be reduced by **19%** with the installation of the proposed equipment. The Emissions Management Report 2017-2018 – Mendoza Plant, 1st half 2017, can be found in the Exhibit section.

- Noise: Sound Pressure Monitoring

It is important to take into consideration that the Plant is in an area whose soil is mainly industrially used.

In order to comply with the regulations in force, even quality regulations, the Company has incorporated noise measure instruments inside the parcel in order to monitor this variable with the functioning of the Power Station.

The environmental situation of the measurements of the environmental parameters are made in accordance with Resolution ENRE 555/01 Environmental Management of the Agents of the MEM

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(Ministry of Energy and Mining), IRAM Regulation 4061 and 4062, Disturbing Noises for the Neighborhood.



Satellite image 4. Noise measurement locations

Selected locations for the measurement were: Points 01, 18, 20 and 21, as seen in the previous satellite image. In addition, the time of the measurement and the meteorological data of the place were taken into consideration.

The audible noise measurement instruments were:

BRAND	MODEL	SERIES
CENTER	320	11062512
Extech	SL355	130210277

Table 11. Measurement instruments

Pursuant to the attached report in Exhibit 10, for each reference times (morning-rest and night), measurements show values according to the noise classification (L_f (or L_C) < 8 dBA) considered as non-disturbing noise. Therefore, decibels of the pre-existing activities do not exceed the standards for the industrial area established in IRAM Regulations 4061 and 4062.

Attached to the Exhibit section there is the report of the Environmental Parameters Measurement – Resolution ENRE no. 5 55/01, form G.

As a conclusion on the Resources Monitoring Management, we can say that CPSA MZA Plant complies with the applicable regulations in force.

21. Main organisms, entities or companies involved

- Environmental and Territorial Planning Secretariat – Environmental Assessment Unit – Government of Mendoza.
- Municipality of Luján de Cuyo.
- Provincial Electrical Energy Regulation Office (EPRE for its acronym in Spanish).
- Distrocuyo S.A.
- Ministry of Economy, Ministry of Infrastructure and Ministry of Energy– Government of Mendoza.
- Undersecretariat of Energy and Mining - Government of Mendoza.
- Ministry of Energy and Mining (MinEm – for its acronym in Spanish) – Electrical Energy Secretariat – Undersecretariat of Renewable Energies. Argentine Government.
- National Energy Regulation Office (ENRE for its acronym in Spanish).

22. Consulted national and international regulations/criteria

22.1 National Environmental Regulations

Sections/laws/decrees	Description
Section 41 (Argentine Constitution)	It recognizes the right to a healthy, balanced environment, fit for human development. It establishes that the productive activities must meet the current needs without jeopardizing future generations and that the environmental damage creates the obligation of repairing it.
Section 43 (Argentine Constitution)	Any person may file a fast and unobstructed writ for protection (Amparo), should there not be any other appropriate judicial means, against any act or omission from public authorities or any person, which damages, restricts, alters or threatens, currently or imminently, in a clearly random or illegal way, rights and safeguards recognized by this Constitution, a treaty or law. The judge will have the power to deem unconstitutional the regulation on which such act or omission is grounded. This action may be filed against any form of discrimination and regarding the rights which protect the environment, competition, users and consumers, as well as the rights that protect the people in general, the affected, the Ombudsman, and the associations which promote these interests, registered in accordance to the law, which will determine the requirements and manner of the organization.
Law no. 25675 Framework law Environment Management and Quality Minimum Requirements	It establishes the objectives, principles and instruments of the National Environmental Policy. It establishes the Environmental Impact Assessment as a policy and as an environment management instrument.
Law no. 24051 Hazardous waste: generation, manipulation, transport and	It establishes the criteria to define the hazardousness of the waste and it regulates the generation, manipulation, transport, treatment and final disposition procedures of hazardous waste when in national territory or where there is interprovincial transit. It defines

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treatment.	the requirements for the registration in the National Records of Generators, Carriers and Operators of Hazardous Waste.
Law no. 26331 Native Forests Environmental Protection Minimum Requirements	It establishes that every province must perform through a “participating process” the Territorial Planning of Native Forests in accordance with the criteria of sustainability that it sets forth, with a sustainable management of the forest and the soil.
Law no. 22351 Protected Natural Areas	The areas of the territory of the Argentine Republic which, due to their extraordinary beauty or rich autochthonous wildlife, or due to some scientific interest, must be protected and preserved for scientific investigations, education and enjoyment of the current and future generations, in accordance with the requirements set forth by National Security, may be declared as National Parks, Natural Monument or National Reserve.
Law no. 23302 Indigenous policy and support for Native Communities. Indigenous Affairs Statute Coordination Council.	It is hereby declared that the attention and support towards existing aborigine people and indigenous communities in the country are of national interest, as well as their defense and development for their complete participation in the socioeconomic and cultural process of the Nation, always respecting their own values and modalities. To that end, plans will be implemented to allow their access to land property and the promotion of their farming, forestall, mining, industrial or craft activities, in any of their specialization, the preservation of their cultural standards in the educational plans and the protection of their health.
Law no. 25743 Protection of the archeological and paleontological patrimony	Its object is the preservation, protection and safeguard of the Archeological and Paleontological Patrimony as a component of the National Cultural Patrimony, as well as the scientific and cultural use of it.
Law no. 22421 Wildlife protection and preservation.	It is hereby declared that the wildlife which inhabits temporary on permanently the Argentine territory is of public interest, as well as its protection, preservation, propagation, repopulation and rational exploitation.

22.2 Provincial Environmental Rules

Law/Decree	Description
Law no. 5961 Environmental General Law	Its aim is to preserve the environment in all the territory of Mendoza, in order to safeguard the ecological balance and the sustainable development, and its regulations are part of public order laws. It sets the Principles of the Environmental Policies and Planning of the province. Title V establishes that it is mandatory to obtain the Environmental Impact Declaration (DIA for its acronym in Spanish) for all those work projects or activities which may modify, directly or indirectly, the environment. Exhibit 1 settles the province and municipality competences regarding the projects submitted to the Environmental Impact Evaluation Procedure.
Law no. 8051 Territorial Planning	It establishes the territorial planning as a political-administrative procedure of the State. It incorporates the planning as a basic

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	<p>instrument to reconcile the economic, social and environmental development process with balanced and efficient ways to occupy the territory.</p> <p>It sets the principles and aims of the Territorial Planning in order to promote the equitable and sustainable territorial development of the province.</p>
<p>Law no. 8195 Native Forests Environmental Protection Law</p>	<p>It regulates the minimum requirements established by Law no. 26331. The regulation sets forth the different instruments of management and planning in order to implement the plans of territorial planning of the forest in the province and their sustainable management.</p>
<p>Law no. 6045 Protected Natural Areas</p>	<p>Its aim is to establish the regulations that will govern the natural areas of the province and their wild environment.</p>
<p>Law no. 5754 Indigenous policy – native community. Indigenous Affairs Statute Coordination Council.</p>	<p>It is hereby declared that the Province of Mendoza adheres to Law no. 23302 “Indigenous Policy and Support for the Native Communities” passed by Argentine Congress.</p> <p>In addition, law no. 6920/01 recognizes the ethnic and cultural preexistence of the Huarpe Milcallac people in the province of Mendoza.</p>
<p>Law no. 5917 Hazardous waste: Generation, Manipulation, Transport and Treatment</p>	<p>Agrees with National Law 24051.</p>
<p>Decree no. 2109/94: Regulation of the Procedure of Environmental Impact Assessment. Title V, law no. 5961.</p>	<p>It regulates the Procedure of the Environmental Impact Assessment established in Title V of Law no. 5961. In its sections 9, 10 and 11, it sets forth the requirements and minimum contents for the presentation of Project Notices.</p>
<p>Decree no. 2625/99 Regulation of Law no. 5917. Hazardous waste.</p>	<p>It regulates Law no. 5917. It sets forth the procedures for the management of hazardous waste in the province of Mendoza. It creates the Province Records of Generators, Carriers and Operators of Hazardous Waste.</p>

22.3. National and Province Regulations of Electrical Energy

Laws/Decrees/Resolutions	Description
<p>Law no. 24065 Regulatory frame of Electrical Energy</p>	<p>It modifies the previous law. It regulates the activities of the generation, transport and distribution of electrical energy. It declares electrical energy transport as a public service. It grants PEN the power to provide licenses and to exercise the regulatory power of the State. It creates the ENRE to exercise these functions. It sets forth the obligation of having a Convenience and Public Necessity Certificate for the construction and/or operation of important installations. It determines the functions of the ENRE: to safeguard the protection of the property, the environment and public safety in the construction and operation of the transport systems and the distribution of electricity.</p>
<p>Law no. 27191</p>	<p>It amends Law no. 26190, regarding the National Promotion</p>

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Electrical Energy	Regimen for the use of Renewable Energy Sources for the Production of Electrical Energy. Amendment.
Law no. 25019 Solar and Wind Energy National Regimen	Solar and Eolic Energy National Regimen. The generation of electrical energy from wind and solar energy in the whole national territory is hereby declared of national interest.
*Resolution S.E. 182/95	It establishes the limits of gas emissions that must be complied with by the thermal generators by conventional means, and the analysis of the environmental impact that the gas emissions produced by the plants is part of the Environmental Diagnosis or Environmental Assessments that the companies in the thermal generation by traditional means industry must prepare during the different stages of the project of a new plant or the expansion of it.
Resolution S.E. no 785/05 National Program of Loss Control of Aboveground Reservoir	Considering: That the activity generated by the manipulation of hydrocarbon and its derivatives is a source of risks, with a high level of possibility of situations that may produce environmental damage, generate health risks and affect the quality of life of the population. That in that sense, the Argentine Government has established through Law no. 16660 "Installations for the Production of Fuels and the Generation of Electrical Energy", that any installation for the production, transformation and storage of solid, mineral, liquid or gas fuel must comply with the rules and regulations, in the whole Argentine territory, established by the Executive Branch to comply with the safety and health standards of the population. In addition, Decree no. 10877/60 establishes that it is competence of the Energy Secretariat to ensure the compliance with the aforementioned regulation in the whole Argentinian territory.
Resolution ENRE no. 546/99	It sets forth the Environmental Procedures for the Construction of Installations of Electrical Energy Transport which use voltage of 132Kv or higher.
Resolution ENRE no. 555/01	It establishes that it is mandatory to implement Environmental Management Systems in each of the MEM agents within the ENRE environmental jurisdiction.
Decree PEN no. 531/2016	Regimen of National Promotion for the Use of Renewable Energy Sources for the Production of Electrical Energy. Regulation.
Law no. 6491	It sets forth the regulations that govern the generation, transport and distribution of electrical energy in the territory of the province.
Electricity Regulatory Framework of the Province of Mendoza	It creates the EPRE. Its functions include: to safeguard the protection of the environment in the construction and operation of the generation, transport and distribution systems of electrical energy.
Resolution EPRE 87/99	Environmental Procedures for the Construction of Installations of the Transport System and/or Distribution of Electrical Energy which use voltage of 33kv or higher.
Resolution MEyM no. 136/2016 Ministry	Electrical Energy supply from renewable means through CAMESA in representation of the distributing agents and major users in the wholesale electric market (MEM for its acronym in Spanish). RenovAr program, Round 1, BIDDING TERMS AND CONDITIONS.

MEyM: Ministry of Energy and Mining

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S.E.: Energy Secretariat

Resolution ENRE: Resolution of the Energy Regulator Office

Resolution EPRE: Resolution of the Provincial Energy Regulator Office

International regulation	Description
World Bank Environmental and Social Sustainability Performance Standards in the private sector	PS 1: Assessment and Management of Environmental and Social Risks and Impacts PS 2: Labor and working conditions PS 3: Resource efficiency and Pollution Prevention PS 4: Community Health, Safety and Security PS 5: Land Acquisition and Involuntary Resettlement PS 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources PS 7: Indigenous Peoples PS 8: Cultural Heritage

IEC: International Electrotechnical Commission

23. Reasons which justify the exemption of declaration, according to the bidder.

As stated in the conclusions of the Environmental Impact Study section, all expected negative impacts are low or moderate and can be completely mitigated. Moreover, it is a project aimed at the generation of energy without affecting hydrologic resources. This represents a double benefit in increasing by 450,000 KWh/year the electrical energy supplied to a system with unsatisfied demand and by decreasing greenhouse gas emissions rate per unit of power generated by a 19% with respect to current operation.

24. Exhibits

Documents "Layout2xSGT800" and Layout 2D

Cogeneration Project Schedule

Report: Environmental Parameters Measurement - G Form

Report: Emissions Management - 2017-2018 year - Mendoza Plant 1st half 2017.

Chapter: Natural and Socioeconomic Means Description

Chapter: Environmental Impact Assessment Study of the Cogeneration Project Luján de Cuyo CPSA - Planta MZA.

25. Bibliography

Adaptación a las consecuencias del Cambio Climático en el Sistema Hidrológico de Cuyo. Informe de Salvaguardas Ambientales. Programa BID AR-G1003- Banco Interamericano de Desarrollo. 2015. (Adaptation to the consequences of Climate Change in the Hydrological System in Cuyo. Environmental Safeguards. BID AR-G1003 Program- Interamerican Development Bank. 2015)

PROJECT NOTICE: COGENERATION PLANT LUJÁN DE CUYO

Análisis y Gestión de los Riesgos Naturales, Ambientales y Antrópicos. Arce, F.; Guerra García, M. Belén; y Tapiz, Y. *Carrera Geógrafo Profesional Facultad de Filosofía y Letras - Universidad Nacional de Cuyo.* 2013. (Analysis and Management of Natural, Environmental and Anthropic Risks. Arce, F.; Guerra García, M. Belén; y Tapiz, Y.)

Cogeneración Industrial. Taller Tecnológico De Eficiencia Energética. Comisión Nacional para el Uso Eficiente de la Energía. Siemens. 2015. (Industrial Cogeneration. Energy Efficiency Technological Workshop)

CRICyT. 2009. *Geomorfología.* María Elena Abraham.

Guías Sobre Medio Ambiente, Salud y Seguridad. Corporación Financiera Internacional - Grupo del Banco Mundial. 2007. (Guidelines on Environment, Health and Safety. International Financial Corporation - World Bank Group. 2007)

Informe de Inspección. Resolución 785/2005 SE (TAAH) - Investigación Exploratoria - Fases IA y IB. Universidad Nacional de Tres de Febrero. Ambiental CTM SA – Planta Luján de Cuyo. 2015. (Inspection Report. Resolution 785/2005 SE (TAAH)-Exploratory investigation - Phases IA and IB)

Morábito, J.; Salatino S.; Medina R.; Zimmermann M.; Filippini, M.; Bermejillo, A.; Nacif, N.; Campos, S.; Dediol, C.; Genovese, D.; Pizzuolo, P y Mastrantonio, L. (2005) *Calidad del agua en el área regadía del río Mendoza, Argentina. Revista de la Facultad de Ciencias Agrarias. UNCUYO.* Vol. 37, no. 1, p. 1-23. (Quality of water in the irrigation are of the Mendoza River, Argentina).

Parque Industriales Públicos. IDITS. Agencia de Promoción de Inversiones – Mendoza Invest. - Provincia de Mendoza. 2014 (Public Industrial Park. IDITIS. Investment Promotion Agency)

Resolución ENRE N° 13/2012. Procedimientos para la medición y registro de emisiones a la atmósfera. Anexo Ente Nacional Regulador de la Electricidad. (ENRE Resolution no. 13/2012. Procedures for the measurement and record of emissions to the atmosphere.)

Sistemas Integrados de Gestión Medio Ambiente, Calidad, Seguridad. MP-D-001 Manual Particular del SIG - Mendoza Plant - Central Puerto. 2016. *Sistemas Integrados de Gestión Medio Ambiente, Calidad, Seguridad. Instalaciones, Procesos productivos y Residuos-Efluentes característicos Mendoza Plant. Central Puerto.* 2015. (Integrated systems of Environment Management, Quality and Safety)

Websites:

<http://ww.cricyt.edu.ar/ladyot/catalogo/cdandes/cap04.htm>

http://www.who.int/water_sanitation_health/dwq/gdwq3rev/es/

http://www.ub.edu.ar/revistas_digitales/Ciencias/Vol6Numero4/articulos.htm

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http://www.idits.org.ar/Nuevo/Notas/N_1105_PoloTICPostActo.html

<http://www.lujandecuyo.gob.ar>

EXHIBITS

- Documents "Layout2xSGT800" and Layout 2
- Cogeneration Project Schedule
- Report: Environmental Parameters Measurement - G Form
- Report: Emissions Management - 2017-2018 year - Mendoza Plant 1st half 2017.
- Natural and Socioeconomic Means Description
- Environmental Impact Assessment Study of Cogeneration Project Luján de Cuyo CPSA – MZA Plant.