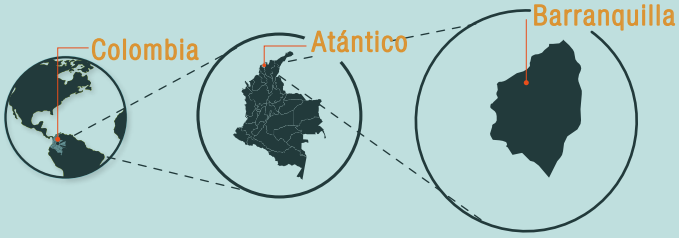
TECHNICAL AND FINANCIAL FEASIBILITY ANALYSIS OF AN ENERGY DISTRICT PROJECT

PROJECT AT CLÍNICA GENERAL DEL NORTE (CGdN) IN BARRANQUILLA, COLOMBIA

DISTRITOS TÉRMICOS
COLOMBIA



BASELINE SCENARIO/GENERAL DESCRIPTION

CGdN's David Herrera Tower (DH Tower) has an average cooling demand of 200TR, for which it operates two chillers with a combined capacity of 140TR and efficiencies of 1.33 kW/TR and 1.5 kW/TR respectively, which is not sufficient to provide the comfort needs inside the "DH Tower".

The recent implementation of energy efficiency measures has allowed reducing the consumption of the Tower to 1.27 kW/TR.

Emissions generated by the cooling plant of the DH Tower are 216 TonCO2eq/year.

COOLING AS A SERVICE (CAAS) SOLUTION FOR AIR CONDITIONING

Energy District developer and operator: E2 Energía Eficiente.

Energy District service end-users: Clínica General del Norte (CGdN).

Energy District Application: Outsourcing of chilled water supply services for air conditioning under the ESCO/CaaS (Cooling as a Service) scheme.

Renewable Energy: None.

Type of Energy District project: Cooling as a Service solution in existing buildings (brown-field).

Energy District Status: "DH Tower" cooling plant already built and in operation under CaaS service.

Proposed Energy District scenario: The CaaS proposal for the "DH Tower" involves replacing the two old chillers with a new plant offering an efficiency of 0.7 kW/TR, and sized to supply the 200TR demand.

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PROJECT BENEFITS

Energy Benefits: 45% reduction in electricity consumption for cooling production, equivalent to COP $540 million / year (USD $135,000/year).

Environmental Benefits: The total reduction of GHG emissions could be 37 tonCO2eq/year (considering emissions from energy consumption and emissions from refrigerant leaks).

ECONOMIC INDICATORS:

CAPEX for the developer:

- The investment to achieve the change of equipment in the "DH Tower" is USD $355,000 (COP $1,222 Million) including equipment, mechanical and electrical works.
- The IRR of the project is 20% with a NPV of USD $85,720 and a simple payback period of 3.5 years.

*COP: Colombian Pesos

PROJECT SWOT ANALYSIS

Strengths: The project took advantage of the existing equipment obsolescence, high electricity prices and CGdN's expansion plans to offer a win-win solution for all parties involved.

Opportunities: The replacement of the "DH Tower" cooling plant will be the first phase of a plan to expand the CaaS service to the other two CGdN towers: "Calle 70 Tower" and "External Consultation Tower".

Weaknesses: The project is highly sensitive to the USD/COP exchange rate and interest rate index.

Threats/Challenges: The implementation of the project should be carried out with the least disruption to the clinic's daily activities.

NORMATIVE FRAMEWORK

The project is eligible to qualify for tax benefits for energy efficiency projects.

NEXT STEPS

The characterization of the "External Consultation Tower" and "Calle 70 Tower" is necessary to move towards the integration of the three towers extramural chilled water distribution network.

CONTACT INFORMATION

UNIDO Energy Districts Project in Colombia
Mrs. Cristina Mariaca M.Sc | h.mariacaorozco@unido.org
Mr. Ricardo Baquero M.Sc | r.baquero@unido.org

Mr. Alexi Sierra – Engineering and projects director
e2asierra@e2energiaeficiente.com
E2 - Energía Eficiente S.A. E.S.P