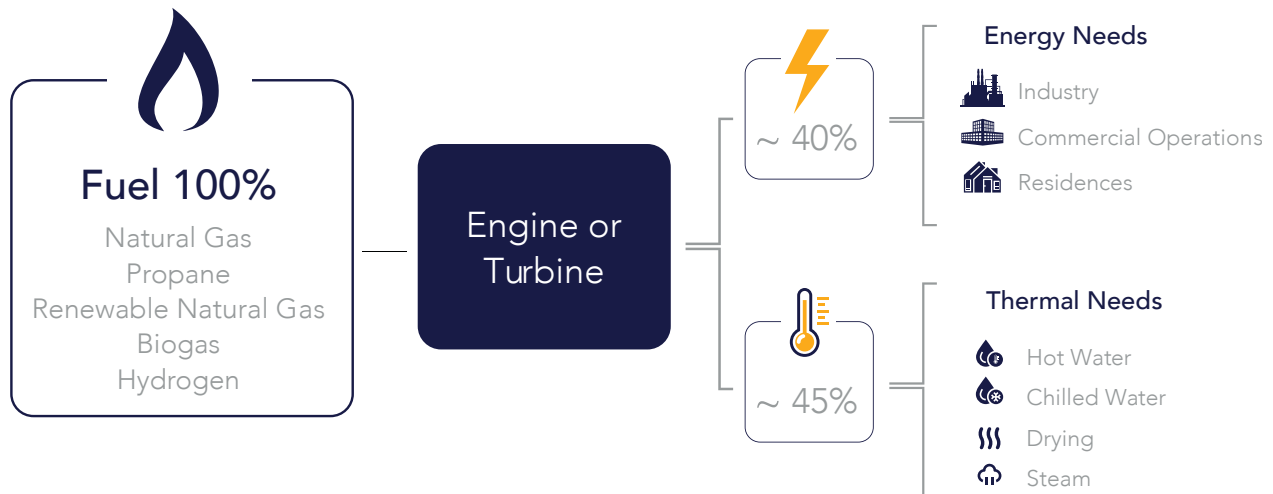




Cogeneration as a Business Tool

Puerto Rico - 2022

Cogeneration, or Combined Heat and Power (CHP), is the simultaneous generation of electricity and thermal power (e.g. steam, hot water, chilled water). By capturing otherwise wasted displaced heat, CHP plants can produce hot water, steam, chilled water, and many other thermal products. A well-designed CHP system will result in lower energy costs, higher power reliability and lower emissions when compared to the separate procurement of electricity from the utility and production of thermal power from on-site boilers or mechanical chillers.



Onsite cogeneration is already supporting industrial and commercial operations in Puerto Rico in three core areas: Energy Savings, Reliability, and Emissions Reductions.

Lower Energy Costs

CHP recovers heat from the on-site electricity generation process to make thermal products needed in most commercial and industrial operations. Displaced heat can be used to make steam, hot water, and chilled water available free of additional fuel consumption, which offsets fuel costs for boilers and electricity costs for traditional chillers. By producing multiple products, CHP can achieve fuel efficiency between 85%-90%, compared with around 30%-40% for a standard power generation. Additionally, cogeneration at the point of consumption avoids utility Transmission and Distribution losses, making the overall output more efficient and cost effective.

These thermal products are used in everything from air conditioning to sterilization, so CHP is relevant to operations as diverse as office buildings, hospitals, and industrial manufacturing. See the case studies at the end of this document for a sample of how different companies use CHP.

Higher Reliability

On-site CHP relies on established generator technologies that can operate continuously and, if needed, disconnect from the utility and continue to supply power during a utility disruption. Such island-capable systems can be complemented with renewable technologies and batteries to form on-site microgrids.

Emissions Reductions

Fueled by readily-available, low emission natural gas, propane, renewable natural gas (RNG), biogas or hydrogen, electricity generated through CHP has a lower carbon footprint than power supplied by the utility in Puerto Rico. This is reinforced by offsetting electrical needs for the thermal side of operations, ie electricity needed to boil or chill water. Because of its impact on emissions, CHP can be a valuable tool for companies to fulfill their ESG or carbon emission goals.

Tools to Help You Set Up

Puerto Rico is ready to support CHP projects through established providers with successful on-Island track records. Operational projects in Puerto Rico have traditionally included:

- Puerto Rican Engineering & Design companies that are familiar with local technical and permitting requirements. These companies perform feasibility studies to customize the project to a specific operation.
- Puerto Rican General Contractors or EPC Contractors that are familiar with local requirements and have on-island, readily-available personnel and equipment.
- Foreign Equipment & Technology Providers with established on-island operations and decades of experience in the design of CHP systems. These providers have proven track records of successful installations in Puerto Rico and abroad.
- Service providers that perform Operations and Maintenance (O&M) work to let businesses focus on their core activities.
- Puerto Rican fuel suppliers with established on-island operations. There are terminals along the North and South of Puerto Rico that import and store propane and natural gas to provide redundancy and resiliency in the face of a potential natural disaster or supply disruption. There is also an emerging biogas, RNG, and hydrogen industries that will create a local supply of fuel.

Financing and Incentives

Puerto Rico is ready to support CHP projects through established providers with successful on-Island track records. Operational projects in Puerto Rico have traditionally included:

- Projects in Puerto Rico benefit from local and foreign CHP-specialized financiers that can provide on- or 3rd party financing. Options for financing include Operational Leases and Power Purchasing and Operation Agreements (PPOAs).
- There are also available incentives for cogeneration projects. Within Act 60, Puerto Rico's Comprehensive Incentives Code, the following incentives apply to high-efficiency CHP projects:
 - » Act 60 Benefits from DDEC
- There is also an opportunity to take advantage of the 10% federal Investment Tax Credit (ITC) for cogeneration projects.

Case Studies

GFR Media, Guaynabo



GFR Media, the parent company of the largest media outlets in Puerto Rico, chose cogeneration in 2020 as a solution for their electrical and thermal needs. They installed a 1.4 MW engine fueled by natural gas to supply power, cooling, and heating for their offices and printing operations in Guaynabo, Puerto Rico. This installation protects GFR Media from any interruptions to the power supply, while also providing a cost and emission reduction. In the first few months of operations, they were save around 20% of their electricity costs.

To learn more about their project, contact Project Engineer Mariette Sánchez at MDM Consulting Group.

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Hospital de la Concepción, San Germán



In 2017, Hospital de la Concepción invested in their resilience and self-sufficiency by installing a 2.8 MW CHP system adjacent to their San Germán facilities. This CHP operation enables the hospital to operate entirely independent of the grid, which was critical during and after Hurricanes Irma and María hit Puerto Rico later in 2017. The Hospital was not only able to keep their lights in the face of the disaster, but they provided their own cooling and refrigeration needs as byproducts to their power generation. The 167-bed hospital has seen significant cost savings, while serving as a model for other critical facilities to achieve similar independence and resiliency.

To learn more about their project, contact Project Engineer Roberto Acosta, Accurate Solutions.

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Pfizer, Vega Baja



As a manufacturer of life-critical products, Pfizer recognized the need to have reliable and redundant on-site generation. To that effect, they contracted 5MW of propane-fueled cogeneration. Through four engines, they produce the power that they need to operate their 24/7 manufacturing facility as well as provide the steam, hot water, and chilled water that they need to operate. In doing so, they were able to offset the high-energy needs of their water chillers and boilers, which helped reduce costs and emissions. This cogeneration facility operates as 85% efficiency as a result of capturing and converting waste heat into usable products.

To learn more about their project, contact Project Engineer Eduardo Avilés, Viatris.

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This document was created in coordination with partners in Invest Puerto Rico's Energy Advisory Committee. For more information contact,

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