



August 29, 2016

Economic Development Proposal

To: "Congressional Task Force on Economic Growth on Puerto Rico"

Mail: prtaskforce@mail.house.gov

Law: "Puerto Rico Oversight Management and Economic Stability Act" (PROMESA)
Section 409 of Public Law 114-187

The Company: Waste Reduction Technologies, LLC is a company organized under the laws of the Commonwealth of Puerto Rico and formed by local investors, with extensive technical expertise in engineering design, construction, operation and management of industrial and commercial facilities.

In pursuing this project we have as part of our team various consultants and equipment manufacturers that bring broad experience in the technology we are proposing. Our proposal is based on proven technology.

Concept: The sustainable processing of municipal solid waste (MSW) to sort the waste stream, recover the recyclables, and generate synthesis gas for energy generation.

Economic basics: Integrate the **Circular Economy** concept to the MSW treatment and processing, to reuse and transform the discarded materials into new product and/or energy.

Municipal Solid Waste

Our proposal is concerned mainly with the MSW's generated in our island, of which we have thoroughly researched and studied its composition and the different processing methods.

During the months of March and April, 2016, WRT conducted a waste stream characterization of the MSW generated in the Municipality of Bayamon, (the previous characterization was done in 2003, it included the whole island), the new findings were significant and it showed a change in consumer habits and the result of the different regulations implemented by the municipalities.

Technical Business Model

- 1) Vehicles under contract with the municipality will deliver the MSW to the WRT processing plant. All receiving and processing will be in an enclosed facility, under strict environmental controls.
- 2) The single stream (waste separated at the source) will be sorted, baled and shipped.
- 3) Commingled waste (not separated at the source) will be mechanically sorted into its different components.



- 4) All recovered material with market value will be baled and shipped.
- 5) The non recoverable plastic and cellulose fraction will be shredded and dried.
- 6) The organic fraction will be shredded and dried.
- 7) At various points in the process metals will be extracted from the stream.
- 8) These last two fractions which have a high calorific content, called RDF (Refuse Derived Fuel) will be the feedstock for the gasifiers.
- 9) The gasifiers will transform the RDF into synthesis gas or syngas.
- 10) The syngas will fuel a combination of gas engines and generators to generate electricity.

Economic Business Model

Plant revenues:

Revenues	Payment By	Percentage
Gate fees at plant	Municipal government (1)	23%
Recyclables sales	Local or foreign markets (2)	19%
Energy Sales	PREPA or private network (3)	56%
Carbon Credits sale	Commodities market	2%
Total		100%

Notes:

1. Municipalities are the owner of the waste collected and is required by law to safely dispose it.
2. Markets have been operating for years.
3. Law requires PREPA net metering and interconnections for sales to private networks (2016 Puerto Rico Law: "Ley de Política Pública de Diversificación Energética por Medio de Energía Renovable").

The revenue generated will provide for:

- Operation and maintenance expenses
- Insurance
- Repayment of loans
- Benefits to shareholders and other investors

Financial Resources

- Private investors
- Commonwealth of Puerto Rico industrial incentives
- Long term financing by USDA/RURAL
- Federal Tax Credits



Comparison of Sustainable Projects

➤ **Solar Farms:**

A 10 megawatts solar farm requires an investment of \$46,000,000 on approximately 10 acres of flat land properly oriented to the sun, for six hours daily production, 70% of the time, or 42 megawatts/hour per day.

- Cost per MWH installed \$4,600,000
- Production per day 42 MWH

➤ **Incineration**

An 80 megawatts plant requires an investment of \$700,000,000 on approximately 25 acres of flat land with close water resources for its steam generation and cooling systems will produce at 80% of the time for 24 hours or 1536 MWH per day.

- Cost of MW installed \$10,000,000
- Production per day 1536 MWH

➤ **Gasification proposal by WRT**

A 10 megawatts plant requires an investment of \$50,000,000 on approximately 8 acres of flat land, cooling is not required, will produce at 80% of the time for 24 hours 154 MWH per day.

- Cost of MW installed \$6,250,000
- Production per day 154 MWH

➤ **Investment cost per megawatt hour produced per day**

- Solar farm \$ 1,095,238
- Incinerator \$ 455,730
- Gasification \$ 324,675

Ten (10) waste processing and gasification plants as proposed by WRT in Puerto Rico will generate the same amount of energy as the large incinerator at 72% of the cost. Also it will, reduce transportation cost and create economic activity at the different locations.



Areas to be impacted

- The first plant will be installed at the Municipality of Bayamón to serve the city of Bayamon and nearby towns; negotiations are in progress with the municipal administration.
- Studies are been made in the Isabela/Aguadilla and the Arroyo/Guayama areas.
- In WRT's strategic planning a total of eight to nine regional plants are contemplated, moving closer to the source the processing of MSW's. We could handle and process about 50% of the daily waste stream generated. This thinking is in accordance with the regionalization initiative for economic development plan of Puerto Rico

Economic Development Benefits to Puerto Rico

The implementation of a WRT municipal solid waste processing plant will:

- Create much needed jobs, approximately 63 well paying new jobs per plant.
- Provide a \$50,000,000 investment in the Municipality of Bayamón first and then in other regions throughout Puerto Rico.
- Increase the life of existing landfills by 500%.
- Solve the problem caused by organic matter (food waste) in landfills and in the environment.
- Rescue valuable materials from the waste stream.
- Through the recovery of recyclable materials, create the opportunity for the establishment of new enterprises in Puerto Rico.
- Through the gasification process generate a clean gas to be used to generate electricity at a competitive price.
- In essence, use a renewable source to create jobs, new industrial opportunities and generate electricity.

Conclusion

This initiative by local entrepreneurs will impact in a significant way and will benefit the environmental, health and economic development of Puerto Rico. WRT through its waste processing plants offers a fast opportunity to help create wealth in the island, by providing needed jobs, and investment in the local economy.

The aid provided by the USA Government through its Agencies will directly benefit the economic development of Puerto Rico

Contact Person:

Luis M. Gárate