

Gaston County Landfill Gas to Energy Project

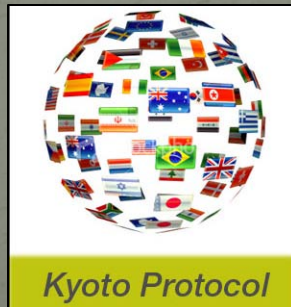
A Self-Developed Approach






Background:

- Kyoto Protocol
- New Administration
- RGGI
- CCX
- Alt Fuels
 - Carbon management



Own and Operate?

- Permitting
- Licensing
- Facility design
 - First building designed and constructed under County's new UDO
- Start up and certification
- Negotiation of PPA
- Carbon monetization


North Carolina Department of Environment and Natural Resources
Division of Air Quality

Beverly Eaves Perdue
Governor

B. Keith Overcash, P.E.
Director

Dee Freeman
Secretary

February 19, 2010

Mr. Ray Maxwell, P.E.
Public Works Director
Gaston County Green Energy Park
PO Box 1578
Gastonia, NC 28503

Subject: Air Permit No. 10047R00
Gaston County Green Energy Park
Dallas, Gaston County, North Carolina
Permit Class: Small
Facility ID# 3600343

Dear Mr. Maxwell, P.E.:

In accordance with your completed application received February 8, 2010, we are forwarding herewith Permit No. 10047R00 to Gaston County Green Energy Park, Dallas, Gaston County, North Carolina for the construction and operation of air emissions sources or air cleaning devices and appurtenances. Please note the records retention requirements are contained in General Condition 2 of the General Conditions and Limitations.

If any parts, requirements, or limitations contained in this permit are unacceptable to you, you have the right to request a formal adjudicatory hearing within 30 days following receipt of this permit, identifying the specific issues to be contested. Such a request will stay the effectiveness of the entire permit. This hearing request must be in the form of a written petition, conforming to G.S. 150B-23 of the North Carolina General Statutes, and filed with the Office of Administrative Hearings, 6714 Mail Service Center, Raleigh, NC 27699-6714. The form for requesting a formal adjudicatory hearing may be obtained upon request from the Office of Administrative Hearings. Unless a request for a hearing is made pursuant to G.S. 150B-23, this air permit shall be final and binding.

You may request modification of your air permit through informal means pursuant to G.S. 150B-22. This request must be submitted in writing to the Director and must identify the specific provisions or issues for which the modification is sought. Please note that the permit will become final and binding regardless of a request for informal modification unless a request for a hearing is also made under G.S. 150B-23.

Mooreville Regional Office - Division of Air Quality
610 East Center Avenue, Suite 301, Mooreville, North Carolina 28115
Phone: (704) 663-1686 | FAX: (704) 663-7579 | Internet: www.ncair.org/

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Where to go from here:

- Self - develop
- Clear Solid Waste Goals
 - 1) to reduce greenhouse gas emissions from the decomposition of waste occurring in the landfill
 - (2) to produce renewable energy from the capture of biogas
 - (3) to provide the infrastructure for development of a green Eco-Industrial Park

Major Program Development Elements

- FERC Licensing
- Utility Commission Approval/Certificate of Public Convenience
- Renewable Energy Credit Certification
- Solid Waste Permit
- Air Permits (Flare and Generators)
- Verified Emissions Reduction Purchase Agreement (VERPA)
- Purchase Power Agreement (PPA)
- Utility Interconnect Agreement
- Financing
- Design and Bidding
- Construction
- Marketing of Carbon Credits
- Climate Action Reserve (CAR) Registration

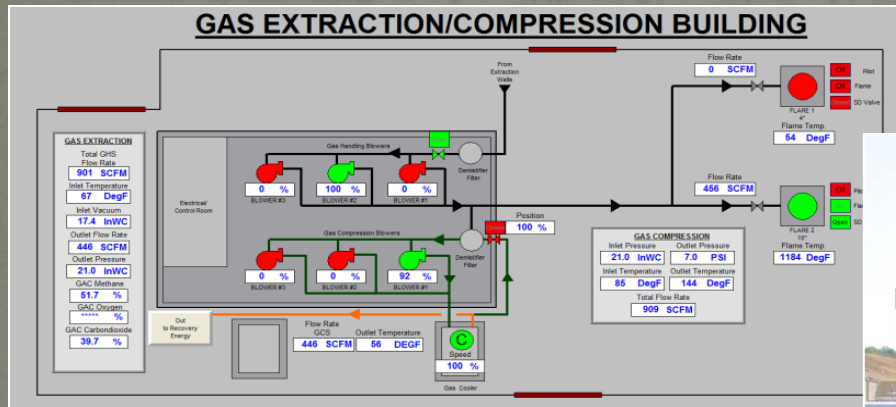
Renewable Energy Center

- Online in the fall of 2011
- Initially included
 - gas clean-up and compression equipment
 - gas transmission line
 - three internal combustion engine-generator sets
- Designed to accommodate fourth generator expansion
- Future development as landfill expands

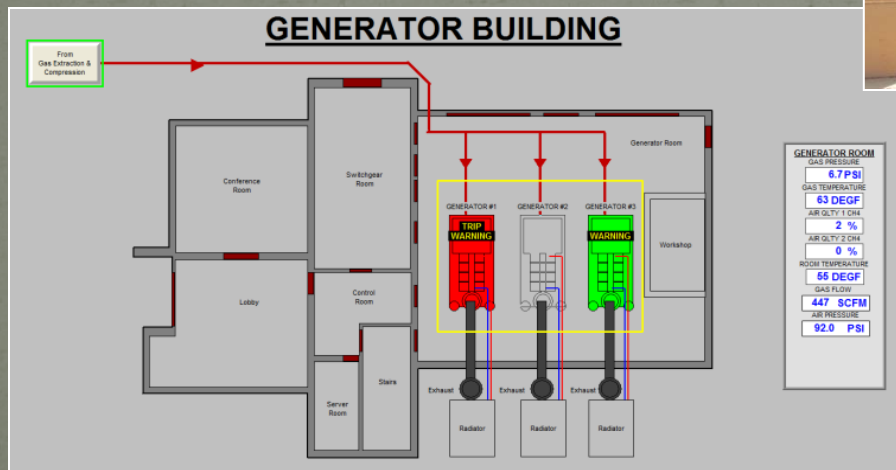


The Gaston County Renewable Energy Center also includes a roof-type solar panel array that has the potential to produce 28.5 kW.

Renewable Energy Center



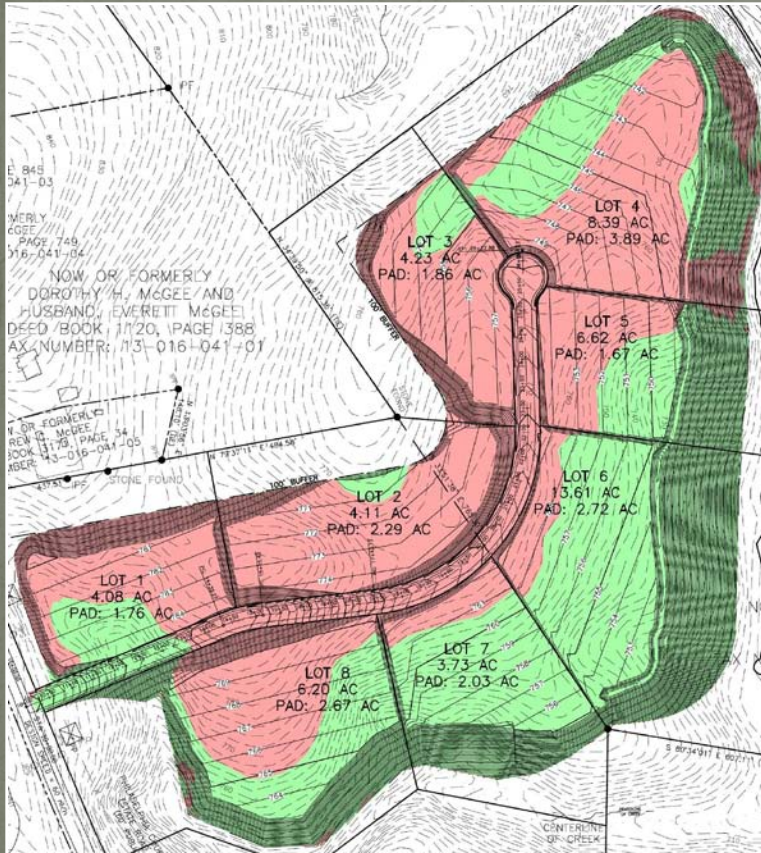
Overview of LFG extraction and compression system



Overview of Generator system

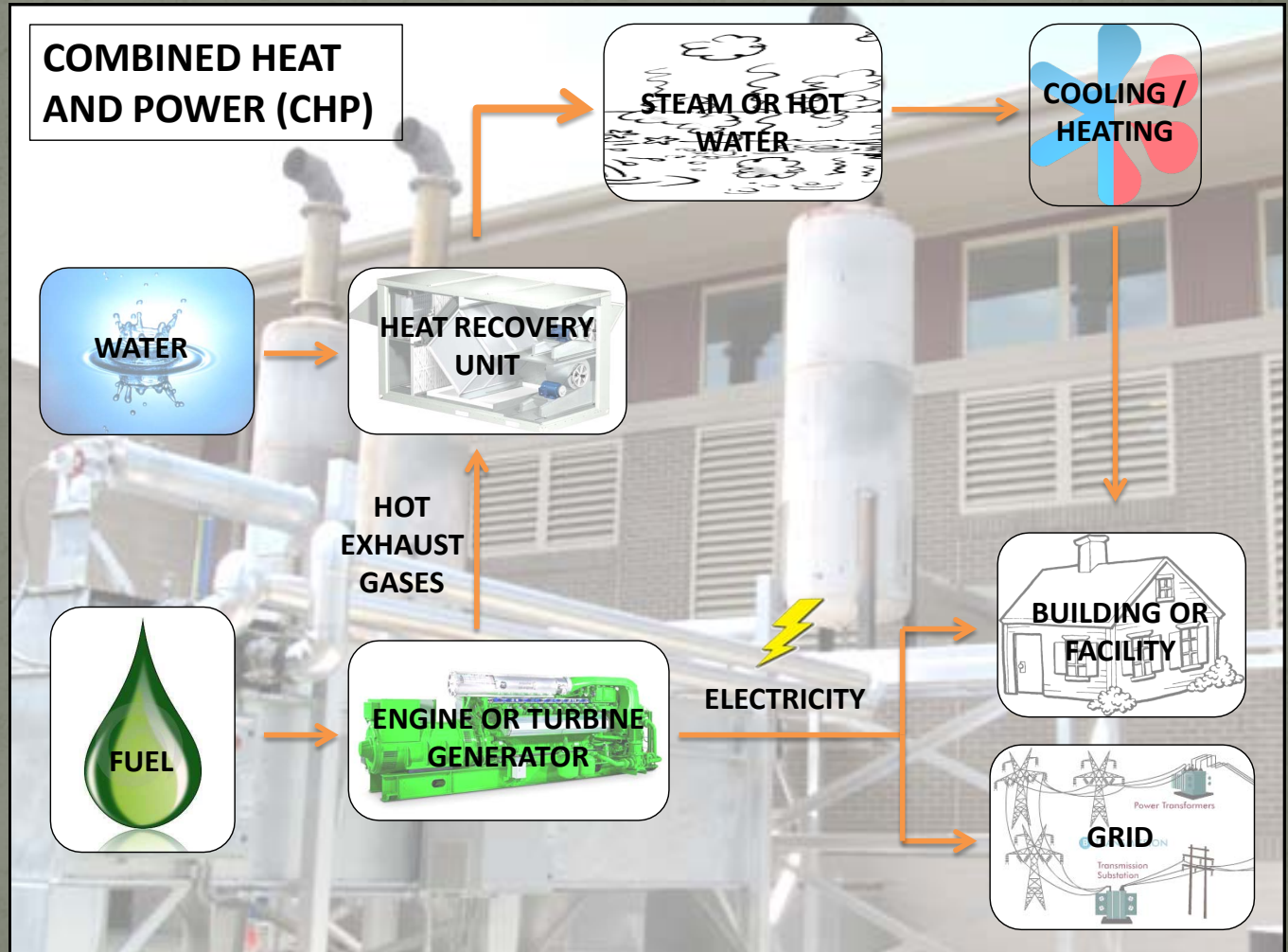


Eco-Industrial Park



Eco-Industrial Park

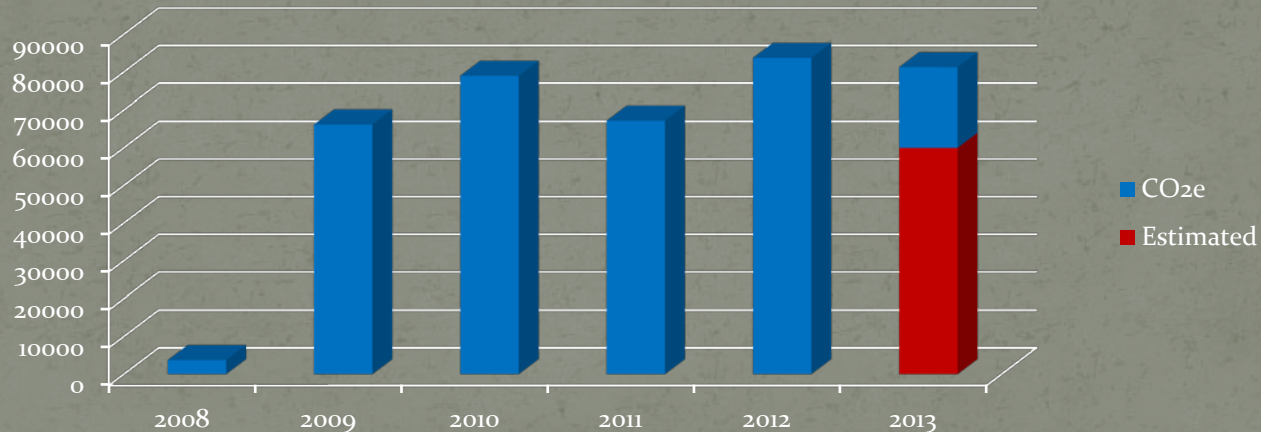
The County has identified a partial list of businesses it wishes to attract to the Park through reduced-cost heat and excess landfill gas from the Renewable Energy Center and adjacent landfill, access to recyclable materials collected at the landfill, and traditional economic development incentives.



Carbon Market

The County became a project developer on the Climate Action Reserve and took full responsibility for registering and verifying their credits on April 9th, 2013. This includes all data collection and analysis, uploading of all data and information to CAR's website, verifications, and financial responsibility. The County is also self-marketing the credits and recently sold all available while choosing from multiple offers for vintage 2012 and 2013 credits.

VERs

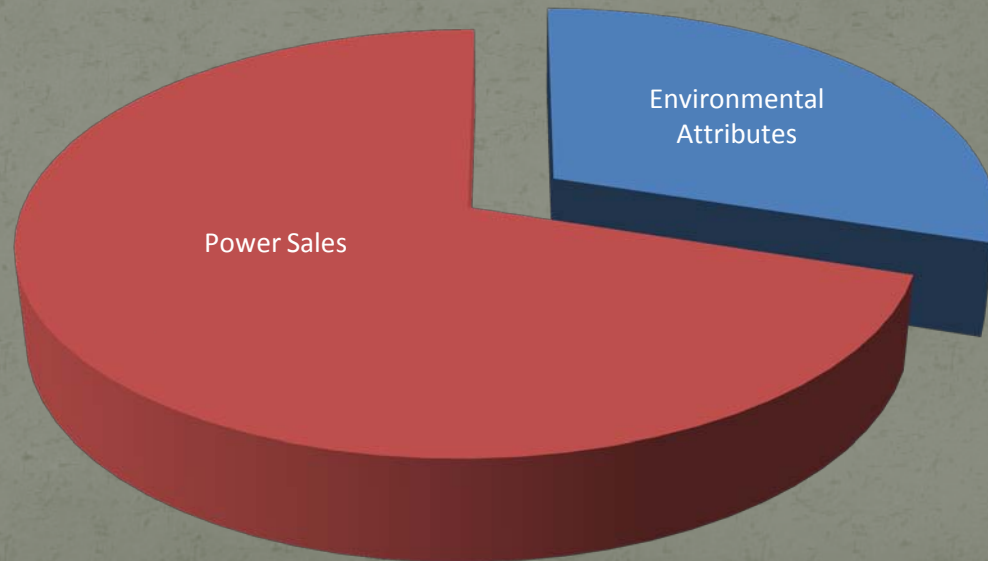


6 year VER totals through March of 2013 that have been verified and registered through the Climate Action Reserve (estimated VERs are based on continuous data and are expected to be verified by CAR)

Sustainability and Economic Benefits

The economic vitality of any landfill gas-to-energy project is based on its ability to generate a revenue stream that offsets capital, operation and maintenance costs. Project implementation was formulated around the theory of aggregating revenue streams from the monetization of environmental attributes (carbon offsets and renewable energy credits) and energy generation potential resulting from the capture and collection of landfill gas from the facility's active and closed MSW landfill units.

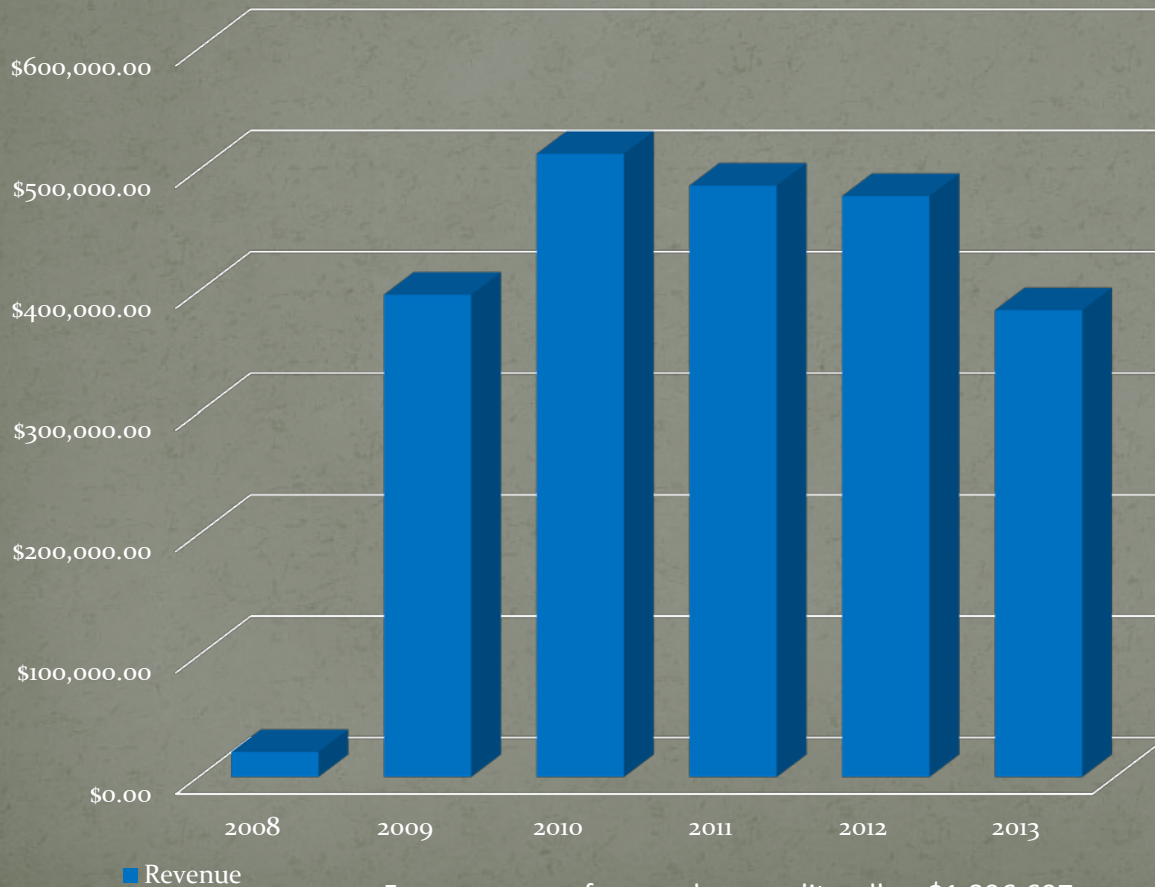
Based upon a 20-year economic pro forma, revenue from environmental attributes constitutes approximately 30 percent of the total revenue from the project, while the production of electricity makes up the remaining 70 percent.



Breakdown of projected revenue streams

Sustainability and Economic Benefits

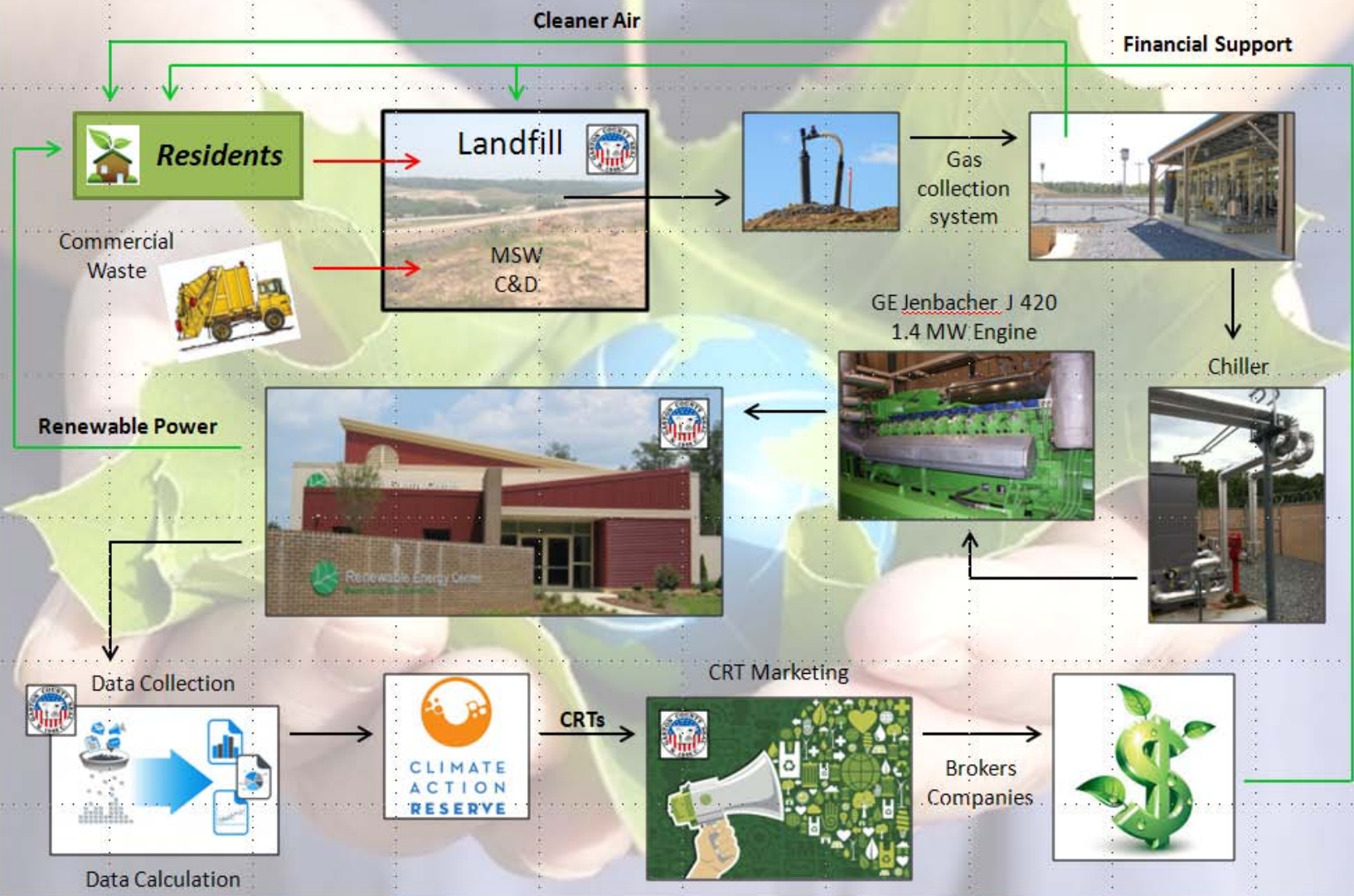
Carbon Offset Revenue



5 year revenue from carbon credit sells = \$1,896,697

- Funding for Renewable Energy Center
- Project financing
- VER proposals
- PPA
- Sale of RECs
- Future development

GASTON COUNTY SOLID WASTE AND RECYCLING GAS COLLECTION/POWER PRODUCTION & CARBON CREDIT MARKETING SYSTEMS



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A Self-Developed Approach

