2014 SWANA EXCELLENCE AWARD NOMINATION
LANDFILL GAS UTILIZATION

GASTON COUNTY, NORTH CAROLINA
Solid Waste and Recycling Division
3155 Philadelphia Church Road
Dallas, NC 28034

704-922-0267
marcie.smith@gastongov.com
emily.melton@gastongov.com
# Table of Contents

## Executive Summary

## 1. Site Design & Construction
- Self-development
- Development Elements
- Eco-Industrial Park

## 2. Environmental Controls
- Monitoring and Methods
- Long Term Sustainability
- Environmental Benefits

## 3. Regulatory Compliance
- Sustainability Goals
- Compliance Standards
- Awards & Inspections

- Operational Design
- Economic Benefits and Cost Effectiveness
- System Upgrades

## 5. Utilization of Equipment/Systems and Technologies
- Renewable Energy Center
- SCADA System and Technology
- Maintenance and Training

## 6. Public Acceptance, Appearance and Aesthetics
- Community Relations
- Public Education
- Site Appearance Maintenance

## 7. Innovation and Creativity
- Self – development
- Carbon Market
- Awards and Recognitions
Executive Summary

Like many county and municipal governments, Gaston County North Carolina owns and operates a municipal solid waste landfill that is producing methane gas emissions. As a greenhouse gas, methane has been documented to be 21 times more potent than carbon dioxide when released into the atmosphere. As such, Gaston County chose to voluntarily reduce its greenhouse gas emissions through the destruction of the methane and conversion of landfill gas to energy. However, through a careful and deliberate evaluation process, unique to many county and municipal governments, the County chose to own and operate the landfill gas to energy facility, with project development including all permitting, licensing, carbon monetization and negotiation of the power purchase and renewable energy credit agreements; and facility design, construction, start-up, and certification. In this process, the County also provided the infrastructure for development of a green Eco-Industrial Park. The County’s ownership of this process also extends to include full in house registering and verification of carbon credits through the Climate Action Reserve (CAR,) as well as self-marketing of these credits, making Gaston County the first municipal government to completely own and operate this type of system completely ground up.

Overview of Gaston County ‘s Landfill Gas to Energy Project
Site Design & Construction

Self-Development

In 2008, Gaston County began to explore sustainability practices that could be implemented in conjunction with its existing solid waste management and landfill operations. The major challenge of the County’s sustainability initiative was to provide what is best for the citizens of Gaston County and the environment both now and in the indefinite future. Given recent concerns regarding global warming, the County also wanted to insure that appropriate stewardship practices were in place or being developed for their existing landfill operation to reduce greenhouse gas emissions. The County established three primary sustainability objectives: (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; and (3) to provide the infrastructure for development of a green Eco-Industrial Park.

Although Gaston County was not required by regulation to collect and control the gases released from its landfill site, the county installed a passive venting system that was comprised of 9 wells and a cut-off trench in 1995. After a landfill gas feasibility study, the passive system was converted to an active system with a blower and candle stick flare. Additional wells were installed in 2008 along with a new blower/flare system and continuous monitoring equipment.

Currently, approximately 1,000 standard cubic feet per minute (SCFM) of landfill gas is being collected by 72 wells, and is either destroyed through a flaring system or sent to the Renewable Energy Center where 2 GE Jenbacher J 420 engines are running full time, producing power.
Along with its landfill gas to energy facility and selling credits on the carbon market, Gaston County seeks to join the Green Economy and reduce alarming environmental trends through promotion of industry in the newly developed eco-industrial park located at the Gaston County Solid Waste Landfill. The Eco-industrial Park includes a (potential) biodiesel production facility as well as other environmentally sensitive operations, with the cornerstone being the Renewable Energy Center. Businesses located at the Eco-industrial Park could benefit from repurposed waste heat piped from the Renewable Energy Center or waste feedstock from other operations including the Gaston County solid waste stream. The eco-industrial park will create jobs, reduce greenhouse gas emissions, improve our region’s air quality and provide building sites for Eco-industrial tenants. It will also establish Gaston County as a suitable location for green businesses looking to build or expand.

### Site Design & Construction

**Development Elements**

Since Gaston County made the decision to build, own, and operate a LFGTE facility and Eco-Industrial Park, the program development approach was structured around that scenario. The major elements that had to be addressed during implementation of the program are summarized in the following table.

#### 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

---

**Eco-Industrial Park**

Along with its landfill gas to energy facility and selling credits on the carbon market, Gaston County seeks to join the Green Economy and reduce alarming environmental trends through and promotion of industry in the newly developed eco-industrial park located at the Gaston County Solid Waste Landfill. The Eco-Industrial Park includes a (potential) biodiesel production facility as well as other environmentally sensitive operations, with the cornerstone being the Renewable Energy Center. Businesses located at the Eco-Industrial Park could benefit from repurposed waste heat piped from the Renewable Energy Center or waste feedstock from other operations including the Gaston County solid waste stream. The eco-industrial park will create jobs, reduce greenhouse gas emissions, improve our region’s air quality and provide building sites for Eco-Industrial tenants. It will also establish Gaston County as a suitable location for green businesses looking to build or expand.
The Gaston County Eco-Industrial Park is designed to leverage the County’s substantial landfill gas and recyclable material reserves as inputs for a web of businesses creating value-added products. The concept includes use of waste from one facility as an input to another—giving all businesses located in the park a competitive advantage. The Park is designed to interconnect with the existing Renewable Energy Center. Excess heat from the electricity generation process and excess landfill gas will be captured for use in facilities located in the Industrial Park. Gaston County plans to utilize Combined Heat and Power technology from their Renewable Energy Center for their Green Energy Eco-Industrial Park.
Environmental Controls

**Monitoring and Methods**

As part of landfill management practices, groundwater and gas monitoring wells are monitored quarterly by a third party consultant. 27 groundwater wells and 10 gas monitoring wells located on site at locations dependent on site geology, depth to groundwater, surface water features, on-site and off-site structures and sensitive receptors to minimize the risk of groundwater pollution and gas migration.

Leachate management is also an important practice at Gaston County Landfill, as leachate is monitored, collected, and re-circulated back into the landfill. Leachate recirculation is used to enhance the rate and extent of decomposition in the landfill, thus increasing the rate of gas production. Recirculation has played a large part in the viability of the landfill’s gas to energy project, and careful monitoring of leachate produced and re-circulated is vital for optimal performance of the LFGTE system. Both leachate produced and leachate re-circulated are monitored and recorded on a daily basis and aggregated monthly in conjunction with methane flow and concentration to view both long and short term trends.

![Groundwater monitoring well](image)

![Site layout for groundwater and methane monitoring wells](image)

![2013 Leachate Collection and Recirculation Graph](image)
Environmental Benefits

Gaston County recognized that its existing solid waste management practices had the potential to be turned into a renewable energy resource rather than contributing to the area’s growing air quality problem through the emission of GHGs from the landfill. Thus the development of a power generation facility using landfill gas as its fuel source has the potential to reduce GHG emissions and to produce green, renewable energy in the form of electricity and heat.

Long Term Sustainability

After considering available options the County elected to build, own and operate the proposed landfill gas to energy facility in order to maximize its long-term environmental and economic benefits. In addition to development of the landfill gas-to-energy facility the County also chose to monetize carbon offsets from methane destruction and to develop and Eco-Industrial Park for private sector green business ventures.

In sponsoring this green partnership it is the County’s goal to create a business environment with a sustainability focus that is compatible with existing solid waste management operations. This is expected to potentially reduce the quantity of materials disposed through additional waste material reuse and recycling, and to catalyze the production of other forms of renewable resources: biodiesel fuel, biogas, liquid propane, heat recovery, recycled construction and demolition materials, etc. The Eco-Industrial Park will also be a venue for education outreach and sustainability research.
Regulatory Compliance

**Sustainability Goals**

The LFGTE project produces clean renewable energy and reduces GHG emissions, while the eco-Industrial Park will benefit the citizens of Gaston County on multiple levels: one, it will reduce the volume of waste entering the landfill thus delaying costly expansions and extending the landfill’s useful life; second, it will bring new manufacturing jobs to Gaston County and help combat a spiraling unemployment rate; third, it will grow the County’s Green Economy and enhance its reputation as a supportive environment.

It is the mission of the Renewable Energy Center to further integrate solid waste management in Gaston County by harvesting the immense energy potential of the landfill. By taking a phased development approach, Gaston County Renewable Energy Center will produce a sustainable and renewable energy source in the most cost-effective manner possible.

The Renewable Energy Center produces power places electricity on the grid from recovered landfill gas. Staff operates and maintains all equipment included in the process of extraction/compression and production. Within the last year, the collection/extraction system produced over 75,000 CO2e tones and the Renewable Energy Center surpassed the calendar year production goal of 20,000 MWH produced.

Our goals are

- To improve air quality by reducing greenhouse gas emissions.
- To generate a stable revenue stream from the production of renewable energy and associated environmental attributes.

**Renewable Energy Center**

It is the mission of the Renewable Energy Center to further integrate solid waste management in Gaston County by harvesting the immense energy potential of the landfill. By taking a phased development approach, Gaston County Renewable Energy Center will produce a sustainable and renewable energy source in the most cost-effective manner possible.

The Renewable Energy Center produces power places electricity on the grid from recovered landfill gas. Staff operates and maintains all equipment included in the process of extraction/compression and production. This division also maintains all generators that are in operation at various County facilities.
2014 Excellence Award Entry, Landfill Gas Utilization, 
Gaston County Solid Waste and Recycling

Regulatory Compliance

Within the last year, the Renewable Energy Center surpassed the calendar year production goal of 20,000 MWH produced.

This division has also sought out expertise in the area of gas clean-up technologies to reduced maintenance costs. A chiller system to provide basic clean-up of the landfill gas will be installed and operational by the end of FY 13.

Our goals are to:

- To improve air quality by reducing greenhouse gas emissions.
- To generate a stable revenue stream from the production of renewable energy and associated environmental attributes.

The performance measures we utilize to gauge the success of the Renewable Energy Center are:

- To reduce emissions generated county-wide – to be measured and submitted in annual greenhouse gas emission survey submitted to NC DENR.
- To maintain at least 97% up-time on the generator operations, and measure through kwh produced and delivered to electrical grid.

Compliance Standards

Gaston County Landfill maintains environmental compliance as documented by Solid Waste, Air Quality, Water Quality, and Land Quality inspections from NCDENR. Gaston County’s LFGTE project is also listed and producing credits on the Climate Action Reserve, which holds strict environmental compliance standards. In order for the county to have their carbon credits accepted and listed on the Reserve, the landfill must provide annual proof of environmental compliance.
Awards and Inspections

The following is a page from Gaston County Landfill's latest verification statement in which the third party verifiers concluded that Gaston County was in compliance with all environmental laws and regulations.

is following their Monitoring Manual procedures to assure they pass the Legal Requirement Test and the Project is in compliance with all Federal, State and Local regulations.

Eligibility 4: Regulatory Compliance
RCE reviewed the procedures described in the Gaston County Monitoring Manual to ensure that the Project remains in compliance with all applicable local, state, and Federal requirements. RCE reviewed environmental and operating permits including the North Carolina Department of Environment and Natural Resources (NCDENR) Division of Air Quality air permit and the NCDENR Municipal Solid Waste Landfill Facility permit to operate. During RCE's review there was no evidence of non-compliance found, and the procedures for ensuring regulatory compliance in the Monitoring Manual were being properly followed. Finally, RCE confirmed signature of the Attestation of Regulatory Compliance, after the end of the reporting period, which was uploaded to the Reserve.

3.4 Ownership of GHG Reductions
RCE reviewed evidence that Gaston County has ownership of the GHG emission reductions. Ownership documentation reviewed includes permits, and the contract agreement between Gaston County and Duke Carolinas—the buyer of the electricity generated by the Project—which states that Gaston County retains all emission reduction credits. Finally, RCE reviewed the completed Attestation of Title which was uploaded to the Reserve website following the end of the reporting period.

3.5 GHG Monitoring and Management Systems
RCE reviewed the data management systems during the site visit and desktop review. RCE completed the majority of the GHG management systems review during the site visit by observing the onsite procedures and interviewing the landfill and Gaston County personnel. The onsite review included an assessment of the Project data collection, processing and handling procedures, recordkeeping and data storage, quality control and assurance procedures, record retention systems, and a field tour of the Project equipment. The desktop review included a detailed review of the Project monitoring plan and its conformance to Protocol requirements. RCE also confirmed that the Project was implemented according to the monitoring plan.

The primary data gathered for the Project during this reporting period includes LFG flow to the 4-inch flare, the 10-inch flare, and the engines; methane content of the LFG; the flare temperatures; and the operation of the engines. Three Veris Verabar V100 differential pressure flow meters in conjunction with Rosemount differential pressure transmitters were used to record flow to the two flares and engines at a standard temperature and pressure of 60°F and 1 atm. RCE confirmed that the position of the flow meters are adequate to ensure laminar flow. A continuous methane analyzer—a Siemens Ultramat 23 gas analyzer is used to measure methane content on a continuous basis.

The operation and temperature of the flares are continuously monitored by thermocouples. Operation of the engines is monitored through the power plant’s SCADA system which records electricity production data for each engine on a 15-minute basis. The LFG flow, concentration, and temperature data is recorded continuously via a PLC system which sends data to an electronic chart recorder. The data is exported in 10-minute intervals on a weekly basis. The Environmental Analyst at the landfill also records manual measurements in a Project Logbook on a daily basis.

During the site visit RCE reviewed the data storage and retention policies of the Gaston County Landfill and verified they were in conformance with the Protocol requirements and followed the Monitoring Manual.
Planning, Operations & Financial Management

It was determined that program implementation could best be accomplished through a phased construction approach to take advantage of the opportunity to generate a revenue stream from the destruction of methane (carbon offsets) while the power generation and Eco-Industrial Park components were being implemented. In addition to realizing an early verified emission reduction (VER) revenue stream, this phased construction approach allowed confirmation of landfill gas quality and quantity characterizations for power generation design and also facilitated required permitting, licensing, and financing activities.

**Economic Benefits and Cost Effectiveness**

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.
Planning, Operations & Financial Management

Funding for the landfill gas-to-energy project was structured based upon an enterprise concept where project revenues offset debt retirement and facility operations and maintenance expenditures. Project financing was secured through the private placement of a recovery zone facility bond with Bank of America Public Capital Corp. The County received a number of proposals from the carbon-offset companies to monetize VERs resulting from the destruction of landfill methane and entered into a multi-year Verified Emissions Reduction Purchase Agreement. The County was able to secure enough revenue from the VERs before the carbon market fell to secure funding for the Renewable Energy Center.

A multi-year purchase power agreement was negotiated with Duke Energy of the Carolinas. Renewable Energy Credit sales were bundled in the agreement with Duke Energy. The grid-interconnect is with the Rutherford Electric Membership Corporation of North Carolina system. The revenue from the power purchase agreement aided in the financial backing for the gas clean-up technology and the initial grading and prepping of the eco-industrial park.

System Upgrades

The engines in the Renewable Energy Center had several maintenance issues during the first year of operation. Staff members were changing oil every 750 hours of engine operation due to elevated levels of silicone. Typically these engines should get close to 2,000 hours of oil life before a change would be indicated. Exhaust valves were also experiencing excessive wear and are our greatest operating expense at this time. Typically, these have a service life of 20,000 hours, while our valves have an average service life of about 4,000 hours. Due to the increased maintenance costs, the County sought out expertise in the area of gas clean-up technologies to reduce these costs.

A dual core heat exchanger and chiller system was installed to provide basic clean-up of the landfill gas. Through this system, the exchanger passes the chilled outgoing gas along the hot incoming gas (but does not mix them); this cools the incoming gas and reheats the outgoing gas. This lowers the RH (Relative Humidity) of the gas leaving the exchanger and greatly improves the efficiency of the chiller by reducing the heat load on it.

The intent is to flash cool the hot gas coming off of the compressors to remove as much of the water as possible. Gas being extracted from the landfill is close to 100% RH. The water contained in the extracted gas stream carries a significant amount of siloxane compounds which dramatically increase wear in the engines, causes a buildup of siloxanes on internal engine parts requiring increased maintenance to remove and significantly decreases engine oil life. Early calculations show that we are removing close to 300 gallons of water from out gas stream daily, while the most recent gas analysis indicates that we are removing about 20% of the siloxane load in the gas stream.
Utilization of Equipment/Systems Technology

Renewable Energy Center

The power generation facility, which went online in the fall of 2011, initially included installation of gas clean-up and compression equipment, construction of a gas transmission line from the landfill to the generator site, and installation of three internal combustion engine-generator sets designed to burn low BTU landfill gas. The generation facility is designed to accommodate expansion through the addition of a fourth generator. The landfill gas collection system will be expanded as future MSW landfill cells are developed and more gas becomes available.

The Gaston County Renewable Energy Center also includes a roof-type solar panel array that has the potential to produce 28.5 kW. The addition of the solar panel array helps off-set the parasitic load of the building and was a unique feature that was attractive to Duke Power when setting up the Power Purchase Agreement.
Utilization of Equipment/Systems Technology

**SCADA System and Technology**

Initially, the gas extraction and compression systems were each fitted with two 60 Hz Gardner Denver centrifugal blowers. The power generation facility includes three GE Jenbacher J 420 engines generators at 1.4 megawatts (MW) each. However, the system, building, and the grid interconnect is designed to accommodate approximately 6 megawatts as more gas becomes available. The infrastructure design includes up-fits of two additional blowers and an additional generator. The Renewable Energy Center initially produces enough power for 1,900 homes and will eventually expand to serve as many as 3,800 homes by 2021.

The entire gas collection and extraction system, including all blowers, flares, generators, and associated mechanical and monitoring equipment are tied into a SCADA system that allows operators to view, analyze, and control the system via computers located in the generator building and the scale house. The SCADA system is also equipped to phone generator operators should there be any alarms or system failures/shutdowns.
Utilization of Equipment/Systems Technology

Maintenance and Training

Generator operators and county personnel perform all of the maintenance to the equipment except for calibrations. The county hires a third party to inspect, clean, and calibrate all components of the landfill gas system on a quarterly basis. This includes everything from calibrating flow meters and analyzers to loop checking the SCADA system to cleaning and blowing out lines going to monitoring equipment. Calibration and maintenance records are archived and kept on site for reference.

Two generator operators, a wellfield operator, and several landfill supervisors are all trained and assist with general and preventative maintenance of the landfill gas collection and extraction components. The wellfield operator has a daily checklist and visually inspects components at the extraction site every morning. The generator operators provide generator maintenance that ranges from sparkplug changes and valve adjustments at 1,000 hours to major overhauls at 20,000 hours.

All responsible personnel were trained by Perennial Energy, the installation company, after construction of the new system was complete and before it was commissioned. Several employees have successfully completed SWANA’s LFG Systems and Operation and Maintenance Course, while other employees have been factory trained on GE Engines in Austria.

Personnel have all been trained on not only the generators but also the support equipment of pumps, drives, controls, and breakers and continue training on safety and new technologies pertaining to this industry as they develop.
Public Acceptance, Appearance and Aesthetics

Community Relations

Gaston County Solid Waste’s LFGTE project and eco-industrial park have garnered local and state-wide attention due to its innovative self-development and its state of the art facilities. The groundbreaking ceremony at the Renewable Energy Center in October 2011 opened to the public, and had a large turnout from members of the community. Since then, there have been many municipal and Government agencies to come tour the entire LFGTE project.

Government officials of surrounding counties (Mecklenburg, Lincoln, Rutherford and Cleveland), Centrolina Council of Government, NCDENR officials, members of the NC Sustainable Energy Association, and officials from the Department of Energy are among the people to tour the facilities.

Public Education

Educational programs are provided by staff members in school settings ranging from litter programs, compost programs, recycling and sustainability programs, and landfill programs. The County also provides classroom training with a working landfill model. This fully functional model allows students to see how a landfill is built with clay, liner, cover dirt, and recirculation pipes while allowing students to place actual classroom trash into the model. The model also includes the LFGTE component with wells, a flare, and a candle to represent the renewable electricity generated by the trash. Students are educated on the importance of sustainable energy as well as the specifics of the County’s facility (i.e. how much trash the landfill takes in, how many homes the Renewable Energy Center powers, etc...). There are additional educational opportunities available on site as well as through the classroom setting. On site landfill (including the LFGTE facilities) tours are also made available upon request, serving pre-school through community college students. There is also an opportunity for both paid and unpaid internships depending on availability. Internships range from high school credit opportunities to paid college students with Environmental Science backgrounds.
Gaston County Solid Waste’s Renewable Energy Center is a state-of-the-art facility and the County takes pride in keeping both the landfill and the Renewable Energy Center looking its best. The entrance of the energy park has a bed of native hollies and shrubs and red maples line the driveway to the facility. The landscape surrounding the Renewable Energy Center is comprised of various perennials, such as lilies to give the facility color throughout the seasons. The facility, which includes an atrium, conference room, bathrooms, an office, and control room to go along with the generator room is cleaned daily, and even the generator room is clean and in top shape. The extraction site, located at the back side of the landfill is also clean and well maintained. A fenced in gravel lot keeps both unwanted visitors and animals out of the equipment, while minimizing the mud around the area. All equipment (other than the flares) is covered under a shed or in an enclosed control room. Continual maintenance, such as cutting grass, weeding, shoveling gravel, and spreading mulch is done by county employees.
Innovation and Creativity

**Self-Development**

Like many county and municipal governments, Gaston County North Carolina owns and operates a municipal solid waste landfill that is producing methane gas emissions. As a greenhouse gas, methane has been documented to be 21 times more potent than carbon dioxide when released into the atmosphere. As such, Gaston County chose to voluntarily reduce its greenhouse gas emissions through the destruction of the methane and conversion of landfill gas to energy. However, through a careful and deliberate evaluation process, unique to many county and municipal governments, the County chose to own and operate the landfill gas to energy facility, with project development including all permitting, licensing, carbon monetization and negotiation of the power purchase and renewable energy credit agreements; and facility design, construction, start-up, and certification. In this process, the County also provided the infrastructure for development of a green Eco-Industrial Park. The County’s ownership of this process also extends to include full in house registering and verification of carbon credits through the Climate Action Reserve (CAR,) as well as self-marketing of these credits, making Gaston County the first municipal government to completely own and operate this type of system completely ground up.

**Carbon Market**

Within the past year, the US Carbon Market has seen a huge downturn in prices for landfill gas carbon credits. The County’s Verified Emissions Reduction Purchase Agreement (VERPA) was bought out in April, 2013 as a result of the poor climate of the carbon market. Once the VERPA was bought the County took complete control of all gas rights and environmental attributes.

As VER sales were a large revenue stream for the County, staff began looking at cost-analysis for required calibrations, data management and analysis, verifications, CAR maintenance fees, and landfill credit prices. After careful analysis, the County found it fiscally appropriate to keep the project listed on CAR and continue to verify and register their credits.

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 currently has three offers for vintage 2012 and 2013 credits.
The Gaston County Solid Waste and Recycling Division, located in Dallas, NC was recently awarded the Environmental Protection Agency’s Landfill Methane Outreach Program (LMOP) 2013 Community Partner of the Year Award.

The EPA’s LMOP recognizes the best in the landfill gas industry and awarded Gaston County Solid Waste and Recycling Division for its superior innovation, realization of environmental and economic benefits, and achievement in advancing landfill gas energy projects. Gaston County staff were presented the award during the Partner and Project of the Year Awards Ceremony at the 17th Annual LMOP Conference on Jan. 22, 2014, in Baltimore, Maryland. Accepting the award for Gaston County were Mrs. Marcie Smith, Solid Waste and Recycling Administrator, and Mrs. Emily Melton, Environmental Analyst, who had given a presentation highlighting the major project elements and processes during the first day of the conference.

Gaston County Solid Waste and Recycling has set sustainability goals including reducing landfill emissions, producing renewable energy, and providing infrastructure for a new Eco-Industrial Park. The county owns and operates a municipal solid waste landfill that is producing methane gas emissions. As a greenhouse gas, methane has been documented to be 21 times more potent than carbon dioxide when released into the atmosphere. As such, Gaston County chose to voluntarily reduce its greenhouse gas emissions through the destruction of the methane and conversion of landfill gas into energy. However, through a careful and deliberate evaluation process, unique to many county and municipal governments, the county chose to own and operate the landfill gas energy facility, with project development including all permitting, licensing, carbon monetization and negotiation of the power purchase and renewable energy credit agreements; and facility design, construction, start-up, and certification. In this process, the county also provided the infrastructure for development of a green Eco-Industrial Park. The county’s ownership of this process also extends to include full in-house registering and verification of carbon credits through the Climate Action Reserve (CAR), as well as self-marketing of these credits.

With a voluntary gas collection system installed, a self-developed LFG electricity project (2.8 megawatts) in operation, and grading and utility hook-ups in place at the Park, the county is well on its way to realizing all of its main objectives. The power production portion of this project would not have been possible without the extensive help of Rutherford Electric Membership Corporation and Duke Energy. The county plans to make excess LFG as well as waste heat from the LFG electricity project available to future tenants of the Park, intended to help “green” businesses thrive.

Gaston County Solid Waste and Recycling is excited to be honored by the EPA for its innovative landfill gas energy accomplishments, as there have been only 100 recipients nationally since the program began in 1994.