

REQUEST FOR EXPRESSIONS OF INTEREST

**Landfill Gas Beneficial Use Evaluation for the
Buncombe County Landfill**

Alexander, North Carolina



Date of Issue: Tuesday, May 9, 2023
Proposal Due Date: Thursday, June 29, 2023, 3:00 PM ET

Issued for:
Buncombe County Solid Waste Department
81 Panther Branch Road
Alexander, North Carolina 28701
(828) 250-5460

Issued by:
Buncombe County Procurement Office
200 College Street, Suite 420
Asheville, North Carolina 28801
(828) 250-4154



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Buncombe County Solid Waste Department

Landfill Gas Beneficial Use Evaluation for the Buncombe County Landfill Alexander, North Carolina

Issue Date: Tuesday, May 9, 2023

Title: Landfill Gas Beneficial Use Evaluation for the Buncombe County Landfill

Issuing Agency & Address: Buncombe County Procurement Office
200 College Street, Suite 420
Asheville, North Carolina 28801
(828) 250-4154

Location of Work: Buncombe County Solid Waste Management Facility
85 Panther Branch Road, Alexander, North Carolina 28701

Proposed Term of Contract: To be determined

Contact Person: Ron Venturella, Procurement Manager
email: ron.venturella@buncombecounty.org

Submittal packages must be labeled: EOI for Landfill Gas Beneficial Use Evaluation for the Buncombe County Landfill

Pre-submittal Meeting: A mandatory pre-submittal meeting will be conducted on Wednesday, May 24, 2023 from 9:00 to 10:00 AM ET at the Buncombe County Landfill Administration Office Building located at 85 Panther Branch Road, Alexander, North Carolina 28701.

Submittals are due before Thursday, June 29, 2023 at 3:00 PM ET to the Buncombe County Procurement Office. Submittals will be date stamped and recorded as they are received. Submittals received after this date and time will not be considered.

The County requests one (1) electronic copy of the Submittal from each Company via email.



1.0 SECTION 1 – INTRODUCTION

Buncombe County (County) has issued this Request for Expressions of Interest (REOI) to determine the level of interest and feasibility of a landfill gas-to-energy (LFGE) project at the County’s active Subtitle D landfill. The County currently has an electrical generation landfill gas project using a Jenbacher engine and the EOI would present the next generation beneficial end use.

The County is interested in reviewing any and all ideas and concepts from experienced and qualified firms. Once the outside level of interest and options are determined from the REOI process, a Request for Proposals (RFP) may be developed and issued.

1.1 BACKGROUND

The Buncombe County Solid Waste Management Facility is located on NC 251 in Alexander, North Carolina approximately 9 miles northwest of Asheville, North Carolina (see **Figure 1**). The French Broad River borders the site to the south and west. This site covers approximately 654 acres, west of US Highway 25/70.

The facility serves only the residents of Buncombe County. The 2021 population of Buncombe County was estimated to be 271,534. Buncombe County, approximately 659 square miles in area, includes the incorporated municipalities of Asheville, Biltmore Forest, Black Mountain, Montreat, Weaverville, and Woodfin.

The facility has been accepting waste for disposal at the Subtitle D landfill since 1997. Information regarding the amount of waste in place, waste projections, expansion plans, and landfill gas composition and generation rates are included in Section 2.

1.2 OVERVIEW OF PROCUREMENT AND IMPLEMENTATION PROCESS

The initial steps that the County plans to follow in procuring and developing a LFGE project are outlined below. At the culmination of the REOI process, the County will determine the feasibility of initiating a project during 2024 and whether to proceed with an RFP. If an LFGE project is pursued, the RFP will specify a schedule that will allow for installation and/or improvement of a system.

1.	Issue Request for Expressions of Interest (REOI)	May 9, 2023
2.	Pre-submittal Mandatory Meeting	Wednesday, May 24, 2023, 9:00am
3.	Receive REOI Submittals	Thursday, June 29, 2023, 3:00pm

1.3 EXPRESSION OF INTEREST (EOI) SUBMISSION

EOIs will be accepted until Thursday, June 29, 2023 at 3:00 PM ET. One (1) electronic copy of the EOI should be submitted via email to: Ron.Venturella@buncombecounty.org

The EOIs should be marked “Expression of Interest - Landfill Gas Beneficial Use Evaluation for the Buncombe County Landfill”

The requirements for EOI submittals are set forth in Section 3 of this REOI. Any addenda to this REOI, should they be necessary, will be issued to all REOI holders of record. No facsimile submissions will be accepted.



1.4 RIGHTS OF THE COUNTY

All responses, inquiries, or correspondence relating to this REOI will become the property of Buncombe County when received and will become subject to all appropriate public disclosure laws of the State of North Carolina. The County reserves the right to accept or reject any and/or all EOIs, to waive irregularities and technicalities, and to request resubmission.

To the extent permitted by applicable statutes and rules, the County will maintain as confidential trade secrets in its proposal that a respondent does not wish disclosed. As a condition to confidential treatment, each page containing trade secret information shall be identified in boldface at the top and bottom as "CONFIDENTIAL" by the respondent, with specific trade secret information enclosed in boxes, marked in a distinctive color or by similar indication. Cost information shall not be deemed confidential under any circumstances. Regardless of what a respondent may label as a trade secret, the determination whether it is or is not entitled to protection will be determined in accordance with G.S. 132-1.2. Any material labeled as confidential constitutes a representation by the respondent that it has made a reasonable effort in good faith to determine that such material is, in fact, a trade secret under G.S. 132-1.2. respondents are urged and cautioned to limit the marking of information as a trade secret or as confidential so far as is possible. If a legal action is brought to require the disclosure of any material so marked as confidential, the County will notify respondent of such action and allow respondent to defend the confidential status of its information

1.5 COST INCURRED BY RESPONDENTS

Any cost incurred by respondents in preparing or submitting an EOI in response to this request shall be the respondent's sole responsibility.



2.0 SECTION 2 – FACILITY INFORMATION

2.1 FACILITY DESCRIPTION

The Buncombe County Solid Waste Management Facility is located on a 654-acre site and includes:

- 95-acre Subtitle D landfill
- Construction and demolition debris (C&D) waste landfill
- Landfill gas collection and control system
- LFGTE facility with flare and electrical generator
- Onsite electric vehicle charging station and electric vehicle
- Wood waste mulching area
- Convenience center for residential waste disposal, household hazardous waste and recycling
- Drop-off area for white goods and tires

The layout of the facility is shown in **Figure 2**. Seven of the planned ten Subtitle D landfill cells are constructed and Cells 1 through 6 have received waste. Cell 7 construction was completed in early 2023 and disposal operations have commenced.

The landfill gas (LFG) collection and control system (GCCS) serves to collect the LFG generated by waste degradation in the Landfill, and it was installed on a non-regulatory basis (not currently subject to federal landfill air regulation). The system (see **Figure 3**) consists of:

- Twenty-three (23) vertical LFG extraction wells constructed in 2010
- Two (2) LFG migration collectors at the landfill base of the north slope (near the flare)
- One (1) leachate sump slope riser collector in Cell 5
- One (1) protective cover horizontal collectors in Cell 6

The landfill is also an US EPA bioreactor landfill and is allowed to recirculate leachate. Recirculation infrastructure is noted as HITs or horizontal injection trenches on Figure 3. The leachate recirculation system covers Cells 1 through 6 and ceased recirculating in Fall 2017 due to landfill operations. The County intends to re-initiate the recirculation program in Spring 2023 with the yearly potential of 400,000 gallons.

The LFGTE facility and flare consists of a 500-standard cubic feet per minute (scfm) blower, a 3,000 scfm open flare, a 1.4-megawatt Jenbacher Model JGS420 LFG-fired engine preceded by a treatment system including dewatering, filtering, and compression.

2.2 WASTE STREAM

The annual quantity of solid waste received at the facility from Fiscal Years 1997-98 through December 2022 are shown in **Table 1**. The amount of waste in place is approximately 3,329,964 tons. It is estimated that approximately 90 percent of the waste disposed in the Subtitle D landfill is municipal solid waste (MSW) and the remainder consisting of C&D waste. The County anticipates an annual tonnage increase of 3 percent based on expected growth in the County. The landfill has a design capacity of approximately 9,700,000 tons.



Table 1. Tons of Waste Received

Fiscal Year	Tonnage	Cumulative Tonnage	Active Disposal Area
1997-98	86,622	86,622	Cells 1-3
1998-99	109,734	196,356	Cells 1-3
1999-00	120,143	316,499	Cells 1-3
2000-01	122,333	438,832	Cells 1-3
2001-02	146,690	585,522	Cells 4-5
2002-03	160,863	746,385	Cells 4-5
2003-04	170,170	916,555	Cells 4-5
2004-05	173,774	1,090,329	Cells 4-5
2005-06	122,034	1,212,363	Cells 4-5
2006-07	117,215	1,329,578	Cells 4-5
2008-09	143,994	1,473,572	Cell 6
2009-10	129,551	1,603,123	Cell 6
2010-11	113,497	1,716,620	Cell 6
2011-12	116,876	1,833,496	Cell 6
2012-13	109,317	1,942,813	Cell 6
2013-14	107,469	2,050,282	Cell 6
2014-15	113,026	2,163,308	Cell 6
2015-16	108,388	2,271,696	Cell 6
2016-17	112,883	2,384,579	Cell 6
2017-18	107,523	2,492,102	Cell 6
2018-19	115,068	2,607,170	Over Cells 1-6
2019-20	154,454	2,761,624	Over Cells 1-6
2020-21	184,320	2,945,944	Over Cells 1-6
2021-22	184,977	3,130,921	Over Cells 1-6
2022-23	135,665	3,266,586	Over Cells 1-6
07/01/22-12/31/22	63,378	3,329,964	Over Cells 1-6

2.3 LANDFILL GAS

LFG composition was measured in April 2020 and August 2021. A summary of analytical results are presented in **Table 2** and provided as **Attachment A**.



Table 2. Landfill Gas Composition

Sample ID	NMOC as Hexane (ppmv)	Oxygen (%)	Nitrogen (%)	Methane (%)	Carbon Dioxide (%)	Siloxane (ppmv)
April 2020						
BC-PRE	560	1.2	7.2	53.6	36.9	0.28
BC-POST	724	1.2	7.2	53.4	36.7	0.38
August 2021						
BUC - 1	674	2.5	14.5	48.4	34.4	--
BUC - 2	773	2.2	14.1	48.6	34.9	--
BUC - 3	791	2.1	14.2	48.6	34.9	--

During 2022, LFG flow rates averaged 350 scfm. The GCCS is a voluntary system, however, the County does have a Title V operating permit. SCS Engineers completed an LFG generation estimate in 2021 using a proprietary model. **Table 3** presents the modeled theoretical maximum potential and the actual flow rates.

Table 3. Modeled Compared to Actual Flow Rates

Year	Gas Flow Rates (scfm)	
	Modeled	Average Monthly Actual
2020	421	327
2021	391	394
2022	424	351

Based on the model flow rates compared to the actual flow rates, an average of a 13% decrease was realized more than likely based on the aging GCCS. This percent decrease was assessed to the modeled LFG flow rate estimates. It is assumed a GCCS improvement project is complete in 2023 and expansions in 2027 and 2031.

Table 4. Estimated Flow Rates

Year	Gas Flow Rates (scfm)
2022	351
2023	658
2024	591
2025	544
2026	485
2027	844
2028	765



2029	692
2030	615
2031	951
2032	856
2033	765
2034	684



3.0 SECTION 3 – EXPRESSIONS OF INTEREST

3.1 ORGANIZATION OF EXPRESSIONS OF INTEREST

The EOI shall conform to the format set forth in **Table 5** below. Succinct submittals are encouraged. The County requests that submittals be limited to 20 pages or less.

Table 5. EOI Organization

Section Title
Letter of Transmittal
Table of Contents
Section 1 – Respondent Contact Person and Company/Team Information
Section 2 – Relevant Experience and Qualifications
Section 3 – Description of Proposed LFGE Options
Section 4 – Implementation Approach and Schedule
Appendix A – Other Documents (if needed)

3.1.1 Letter of Transmittal

The Letter of Transmittal shall be prepared on the letterhead of the firm that would execute the agreement with the County. The Letter of Transmittal is intended to introduce the respondent and it should contain at least the following information:

- a) A summary of the firm’s interest and commitment to implementing a LFGE project at the Buncombe County Subtitle D landfill; and
- b) A statement that the respondent is prepared to meet the County’s procurement implementation schedule provided in Section 1 of this REOI.

3.1.2 Section 1 - Respondent Contact Person and Company/Team Information

This section shall designate the contact person (supplying name, address, telephone number, fax number and e-mail address) to which the County and consultant will send and receive all communication. This section shall also include at least the following:

- a) A short business history of the respondent; and
- b) Detailed information on the respondent, including organization, parent companies, affiliates and subsidiaries which would assist in performing the scopes of services.



3.1.3 Section 2 – Relevant Experience and Qualifications

This section shall include a list of all LFG utilization projects for which the respondent has been the principal firm (U.S.A. projects only). A short description of at least three (3) of the most relevant projects should be provided and include:

- Project name and location;
- Landfill owner and operator name(s), point(s) of contact, and contact information;
- Type of LFG utilization project and equipment used;
- Type of contractual relationship/agreement between the firm and the owner (i.e. turnkey provider, gas user only, equity partner, etc.); and
- Financing used to implement and operate the LFG utilization project.

3.1.4 Section 3 – Description of Proposed LFGE Options

This section should include a description of the LFGE project option(s) proposed by the respondent. The County is interested in entertaining any and all ideas from experienced and qualified firms regarding beneficial use of LFG. At a minimum, the respondent must include a discussion of the following as part of this section:

- A description of the proposed energy project and available options;
- The scope of services that is being offered (e.g., developer, owner, operator);
- Pricing and escalation (e.g., royalties/payments to landfill owner, electricity price, energy prices) including buyout price and terms;
- Plan for obtaining energy revenues;
- Technology description and performance data;
- Gas collection system construction responsibility;
- Well field operations responsibility; and
- Environmental compliance and permitting responsibility.

3.1.5 Section 4 – Implementation Approach and Schedule

This section should describe a proposed approach and schedule for planning, permitting, constructing, and beginning operation of a LFGE project. The discussion of approach should list only the major milestones and dates.



4.0 SECTION 4 – EVALUATION CRITERIA

The County will review each EOI with regard to the respondents' qualifications, experience, project approach, and project schedule. A pre-submittal meeting will be held for project discussions. Following receipt and preliminary review of the EOIs, the County may request interviews. These interviews will more than likely be virtual non-Powerpoint discussions. At the culmination of this process, the County will determine whether to proceed with an RFP.