



South Carolina State Landfill Gas Primer



**A Primer on Developing
South Carolina's
Landfill Gas-to-Energy
Potential**



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1. The Goals of This Primer

Throughout the country, the number of LFGTE projects is growing. Recovering methane gas at solid waste landfills provides significant environmental and economic benefits by eliminating methane emissions while capturing the emissions' energy value. The methane captured from landfills can be transformed into a cost-effective fuel source for generating electricity and heat, firing boilers, or even powering vehicles.

Permits, incentive programs, and policies for landfill gas-to-energy (LFGTE) project development vary greatly from state to state. To guide LFGTE project developers through the state permitting process and to help them to take advantage of state incentive programs, the U.S. Environmental Protection Agency's (EPA's) Landfill Methane Outreach Program (LMOP) works with state agencies to develop individual primers for states participating in the State Ally Program. By presenting the latest information on federal and state regulations and incentives affecting LFGTE projects in this primer, the LMOP and South Carolina state officials hope to facilitate development of the landfills listed in Table A (p. iii).

To develop this primer, the state of South Carolina identified all the permits and funding programs that could apply to LFGTE projects developed in South Carolina. It should be noted, however, that the regulations, agencies, and policies described are subject to change. Changes are likely to occur whenever a state legislature meets, or when the federal government imposes new directions on state and local governments. LFGTE project developers should verify and continuously monitor the status of laws and rules that might affect their plans or the operations of their projects.

Who Should Read This Primer?

This primer is designed to help realize the potential of landfill gas recovery in the state of South Carolina. It provides information for developers of LFGTE projects, as well as all other participants in such projects:

- Landfill operators
- State regulators
- Utility companies
- Engineers
- Independent power producers
- Equipment vendors
- Utility regulators

What Information Does This Primer Contain?

If you are interested in taking advantage of the economic and environmental opportunities in LFGTE recovery in South Carolina, you will need to know the regulatory requirements that apply. You will also need to know what economic incentives are available to help make these projects more economically viable.

To address these needs, this primer covers the following topics:

- Federal Regulations and Permits. This section provides information on federal regulations that may pertain to LFGTE projects, including solid waste, air quality, and water quality regulations.
- State Regulations and Permits. This section provides information on state permits that apply to landfill gas recovery projects in South Carolina.
- Local Regulations and Permits. Local permit approval will often be needed for LFGTE projects. This section offers a step-by-step process you can follow to secure this approval.

- Federal Incentive Programs. This section presents information on federal incentives that may apply to LFGTE projects.
- State Incentive Programs. This section presents information on the environmental infrastructure financing opportunities that are available in the state of South Carolina.
- Electricity Restructuring. This section discusses how renewable energy provisions in state electricity restructuring regulations might apply to LFGTE projects.

2. LFGTE Projects in South Carolina

Several landfills in South Carolina have already been identified as candidates for LFGTE projects. These landfills are listed in Table A on the next page. For more information about LFGTE Projects in South Carolina, contact the South Carolina LMOP Task Force:

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Table A **Identified Candidate Landfills**

Landfill Name	County	Operational Status
Georgetown County Landfill	Georgetown County	Closed
Horry County Landfill	Horry County	Closed/Open
Hickory Hill Landfill	Jasper County	Open
Palmetto Landfill	Spartanburg County	Open
Screaming Eagle Landfill	Richland County	Open

3. About the Landfill Methane Outreach Program

To promote the use of landfill gas as an energy source, EPA has established the Landfill Methane Outreach Program (LMOP). The goals of LMOP are to reduce methane emissions from landfills by:

- Encouraging environmentally and economically beneficial landfill gas-to-energy project development
- Removing barriers to developing LFGTE projects

To achieve these goals, EPA establishes alliances with four key constituencies:

- State environmental and energy agencies
- Energy users/providers (including investor-owned, municipal and other public power utilities, cooperatives, direct end users, and power marketers)
- Industry (including developers, engineers, and equipment vendors)
- Community partners (municipal and small private landfill owners and operators; cities, counties, and other local governments; and community groups)

EPA establishes these alliances through a Memorandum of Understanding (MOU). By signing the MOU, each ally and partner acknowledges a shared commitment to promoting landfill gas energy recovery at solid waste landfills, recognizes that the widespread use of landfill gas as an energy resource will reduce methane and other air emissions, and commits to certain activities that enhance the development of this resource.

As of September 1999, more than 270 landfill methane recovery projects are operating in the United States. EPA estimates that up to 750 landfills could install economically viable landfill energy projects.

For more information about LMOP, contact:

U.S. Environmental Protection Agency
Landfill Methane Outreach Program (6202J)
401 M Street, SW
Washington, DC 20460
(888) STAR-YES (782-7937)
Fax: (202) 565-2077
<http://www.epa.gov/lmop>

4. Public Information and Education

Public information and education are as important as technical issues in the development of a LFGTE project. The support of neighbors along with the local community is essential to preventing unnecessary delays in the permitting process. Education should occur early and often throughout the project development.

LFGTE projects should be promoted both as a benefit to the environment and the local economy. Information about the project should include the following positive points:

- LFGTE is a form of recycling.
- Project will have a positive effect on air quality; provide comparative examples of improvement effect (i.e., equivalent number of cars removed or trees planted).
- Emphasize innovative nature of the project.
- Supported by EPA; capitalize on their credibility and environmental protection.
- No effort required by or inconvenience to public.

Information should be directed to specific audiences as well as to the general public. Environmentalists, politicians, media, and immediate neighbors should be provided detailed information early and often. This will prevent false assumptions and unnecessary concern. By addressing concerns early in the project development, citizens may become advocates rather than adversaries, and their support can help gain the backing of local politicians who may be asked to provide their approval during the permitting process.

Dissemination of information and educational materials can be accomplished in a variety of ways:

- Community newsletter
- Press releases tied to other positive topics (i.e., improved air quality, new jobs)
- Model/display available for public viewing
- Open house at new facility during construction and at completion
- Presentations at civic meetings, chamber of commerce, and schools
- Inclusion on a local web site

Although these methods of education can be time-consuming, EPA's Landfill Methane Outreach Program has created numerous templates that are available to any entity that becomes a partner in the program. Using LMOP materials eliminates the need for a public relations consultant or time-consuming staff commitments. The materials are professionally prepared and include slides, newsletters, press releases, and videotapes. The use of locally respected technical experts and community leaders as presenters of the information can provide an added benefit in building community confidence.

Part 1: Regulations and Permits

1. Overview Of Federal Regulations And Permits

The following section discusses federal regulations that may pertain to LFGTE projects. LFGTE projects can be subject to solid waste, air quality, and water quality regulations. The federal regulations are presented in general terms, because individual state/local governments generally develop their own regulations for carrying out the federal mandates. Specific requirements may therefore differ among states. Project developers will have to contact relevant federal agencies and, in some cases, state agencies for more detailed information and applications. The discussion of each key federal standard/permit contains three components:

- Importance of the standard/permit to LFGTE project developers
- Applicability to LFGTE projects
- Description of each standard/permit

1.1 Clean Air Act (CAA)

The CAA regulates emissions of pollutants to ensure that air quality meets specified health and welfare standards. The CAA contains two provisions that may affect LFGTE projects: New Source Performance Standards (NSPS) and New Source Review (NSR). Facilities that are planning to construct a new LFGTE system or that plan to modify a landfill operation to incorporate a LFGTE system must obtain an Authority to Construct (ATC) permit from the responsible air regulatory agency if emissions from the project exceed the major facility emission thresholds. The ATC permit specifies the NSPS and NSR requirements that the project must meet. Once construction is complete, the facility must obtain an operating permit that meets the requirements defined in Title V of the 1990 CAA Amendments. The general requirements of NSPS, NSR, and Title V for LFGTE projects are discussed below.

New Source Performance Standards (NSPS) and Emissions Guidelines for MSW Landfills

- Importance:** LFGTE projects can be part of a compliance strategy to meet EPA's new emissions standards for landfill gas.
- Applicability:** Landfills meeting certain design capacity, age, and emissions criteria are required to collect LFG and to either flare it or use it for energy.
- Description:** EPA final regulations under Title I of the CAA Amendments require affected landfills to collect and control LFG. Specifically, the CAA targets reductions in the emissions of non-methane organic compounds (NMOCs) found in LFG, such as benzene, carbon tetrachloride, and chloroform, because they contribute to local smog formation. For landfills that received waste after November 8, 1987 ("existing landfills"), the standards are Emissions Guidelines (EG), and for landfills that commenced construction, reconstruction, modification, or began accepting waste on or after May 30, 1991 ("new landfills"), the standards are New Source Performance Standards (NSPS). The final regulations can be found in the Federal Register, March 12, 1996, Vol. 61, No. 49, pgs. 9907-9944.

The basic requirements are the same for both existing and new landfills. Landfills that meet both of the following criteria must comply with the regulations.

- Capacity – maximum design capacity greater than or equal to 2.5 million Mg (or 2.5 million cubic meters, about 2.75 millions tons)¹
- Emissions – annual NMOC emission rate is greater than 50 Mg (about 55 tons).

Note: As of October 1999, South Carolina was in the process of enacting the State Implementation Plan (SIP) as this federal legislation requires.

Air Emissions: New Source Review (NSR) Permitting Process

Importance: New LFGTE projects may be required to obtain construction permits under New Source Review (NSR). Depending on the area in which the project is located, obtaining these permits may be the most critical aspect of project approval.

Applicability: The combustion of LFG results in emissions of carbon monoxide and oxides of nitrogen. Requirements vary for control of these emissions depending on local air quality. The relevant standards for a particular area will be discussed in Section 2, State Standards and Permits. Applicability of these standards to LFGTE projects will depend on the level of emissions resulting from the technology used in the project and the project's location (i.e., attainment or non-attainment area).

Description: CAA regulations require new stationary sources and modifications to existing sources of certain air emissions to undergo NSR before they can operate. The purpose of these regulations is to ensure that sources meet the applicable air quality standards for the area in which they are located. Because these regulations are complex, a landfill owner or operator may want to consult an attorney or expert familiar with NSR for more information about permit requirements in a particular area.

The existing CAA regulations for attainment and maintenance of ambient air quality standards regulate six criteria pollutants – ozone, nitrogen dioxide (NO₂), carbon monoxide (CO), particulate matter (PM-10), sulfur dioxide (SO₂), and lead. The CAA authorizes the EPA to set both health and public welfare-based national ambient air quality standards (NAAQS) for each criteria pollutant. Areas that meet the NAAQS for a particular air pollutant are classified as being in “attainment” for that pollutant and those that do not are in “non-attainment.” Because each state is required to develop an air quality implementation plan (called a State Implementation Plan or SIP) to attain and maintain compliance with the NAAQS in each Air Quality Control Region within the state, specific permit requirements will vary by state. (See 40 CFR 51.160-51.166 for more information.)

The location of the LFGTE project will dictate what kind of construction and operating permits are required. If the landfill is located in an area that is in attainment for a particular pollutant, the LFGTE project must undergo Prevention of Significant Deterioration permitting. Nonattainment Area permitting is required for those landfills that are located in areas that do not meet the NAAQS for a particular air pollutant. Furthermore, the level of emissions from the project determines whether the project must undergo major NSR or minor NSR. The requirements of major NSR permitting are greater than those for minor NSR. The following provides more detail on new source permits.

¹ Landfills with less than 2.5 million Mg are required to file a design capacity report.

Prevention of Significant Deterioration Permitting

Prevention of Significant Deterioration (PSD) review is used in attainment areas to determine whether a new or modified emissions source will cause significant deterioration of local air quality. The State air office can assist LFG project developers in determining whether a proposed project requires PSD approval.

All areas are governed to some extent by PSD regulations because no location is in nonattainment for all criteria pollutants. Applicants must determine PSD applicability for each individual pollutant. For gas-fired sources, PSD major NSR is required if the new source will emit or has the potential to emit any criteria pollutant at a level greater than 250 tons per year.

For each pollutant for which the source is considered major, the PSD major NSR permitting process requires that the applicants determine the maximum degree of reduction achievable through the application of available control technologies. Specifically, major sources may have to undergo any or all of the following four PSD steps:

- Best Available Control Technology (BACT) analysis
- Monitoring of local air quality
- Source impact analysis/modeling
- Additional impact analysis/modeling (i.e., impact on vegetation, visibility, and Class I areas)²

Minor sources and modifications (i.e., below 250 tons per year) are exempt from this process, but these sources must still obtain construction and operating air permits (see CFR. 40 CFR 52.21 for more information on PSD).

Nonattainment Air Permitting

An area that does not meet the NAAQS for one or more of the six criteria pollutants is classified as being in “nonattainment” for that pollutant. Ozone is the most pervasive nonattainment pollutant, and the one most likely to affect LFGTE projects. A proposed new emissions source or modification of an existing source located in a nonattainment area must undergo nonattainment major NSR if the new source or the modification is classified as major (i.e., if the new or modified source exceeds specified emissions thresholds). To obtain a nonattainment NSR permit for criteria pollutants, a project must meet two requirements:

- Must use technology that achieves the Lowest Achievable Emissions Rate (LAER) for the nonattainment pollutant
- Must arrange for an emissions reduction at an existing combustion source that offsets the emissions from the new project at specific ratios

As of October 1999, all of South Carolina was in attainment, but if any section of the state were to be designated as being non-attainment, then all of the above would apply to those sections.

Potential Exemptions

EPA recently furnished a guidance document to state and regional permitting authorities that provides an exemption from major NSR permitting requirements for landfill projects that qualify as “pollution control projects.” An existing landfill that plans to install a LFGTE recovery project may qualify as a pollution control project as long as it reduces non-methane organic compounds (NMOC) at the site. Under the guidance, the permitting authority may exempt the project from major NSR, provided it meets all other requirements under the CAA and the state, including minor source requirements. In nonattainment

²Class I areas are specified under the Clean Air Act and include national parks. Projects situated within a certain distance from Class I areas are subject to more stringent criteria for emissions levels.

areas, offsets will still be required, but need not exceed a 1:1 ratio. States have discretion to exercise the increased flexibility allowed by the guidance on a case-by-case basis.

Title V Operating Permit

Importance: Many LFGTE projects must obtain operating permits that satisfy Title V of the 1990 CAA Amendments.

Applicability: Any LFGTE plant that is a major source, as defined by the Title V regulation (40 CFR Part 70), must obtain an operating permit.

Description: Title V of the CAA requires that all major sources obtain new federally enforceable operating permits. Title V is modeled after a similar program established under the National Pollution Discharge Elimination System (NPDES). Each major source must submit an application for an operating permit that meets guidelines spelled out in individual state Title V programs. The operating permit describes the emission limits and operating conditions that a facility must satisfy, and specifies the reporting requirements that a facility must meet to show compliance with the air pollution regulations. A Title V operating permit must be renewed every 5 years.

1.2 Resource Conservation and Recovery Act Subtitle D

Importance: Before a LFGTE project can be developed, all Resource Conservation and Recovery Act (RCRA) Subtitle D requirements (i.e., requirements for non-hazardous waste management) must be satisfied.

Applicability: Methane is explosive in certain concentrations and poses a hazard if it migrates beyond the landfill facility boundary. Landfill gas collection systems must meet RCRA Subtitle D standards for gas control.

Description: Since October 1979, federal regulations promulgated under Subtitle D of RCRA required controls on migration of landfill gas. In 1991, EPA promulgated landfill design and performance standards; the newer standards apply to municipal solid waste landfills that were active on or after October 9, 1993. Specifically, the standards require monitoring of LFG and establish performance standards for combustible gas migration control. Monitoring requirements must be met at landfills not only during their operation, but also for a period of 30 years after closure.

Landfills affected by RCRA Subtitle D are required to control gas by establishing a program to periodically check for methane emissions and prevent offsite migration. Landfill owners and operators must ensure that the concentration of methane gas does not exceed:

- 25 percent of the lower explosive limit for methane in facilities' structures
- the lower explosive limit for methane at the facility boundary

Permitted limits on methane levels reflect the fact that methane is explosive within the range of 5 to 15 percent concentration in air. If methane emissions exceed permitted limits, corrective action (i.e., installation of a LFG collection system) must be taken. Subtitle D may provide an impetus for some landfills to install energy recovery projects in cases where a gas collection system is required for compliance (see 40 CFR Part 258 for more information).

1.3 National Pollutant Discharge Elimination System (NPDES) Permit

Importance: LFGTE projects may need to obtain NPDES permits for discharging wastewater that is generated during the energy recovery process.

Applicability: LFG condensate forms when water and other vapors condense out of the gas stream due to temperature and pressure changes within the collection system. This wastewater must be removed from the collection system. In addition, LFGTE projects may generate wastewater from system maintenance and cooling tower blowdown.

Description: NPDES permits regulate discharges of pollutants to surface waters. The authority to issue these permits is delegated to state governments by EPA. The permits, which typically last five years, limit the quantity and concentration of pollutants that may be discharged. To ensure compliance with the limits, permits require wastewater treatment or impose other operation conditions. The state water offices or EPA regional office can provide further information on these permits.

The permits are required for three categories of sources and can be issued as individual or general permits. A LFGTE project would be included in the “wastewater discharges to surface water from industrial facilities” category and would require an individual permit. An individual permit application for wastewater discharges typically requires information on:

- Water supply volumes
- Water utilization
- Wastewater flow
- Characteristics and disposal methods
- Planned improvements
- Storm water treatment
- Plant operation
- Materials and chemicals used
- Production
- Other relevant information.

1.4 Clean Water Act, Section 401

Importance: LFGTE projects may need CWA Section 401 certification for constructing pipelines that cross streams or wetlands.

Applicability: LFG recovery collection pipes or distribution pipes from the landfill to a nearby gas user may cross streams or wetlands. When construction or operation of such pipes causes any discharge of dredge into streams or wetlands, the project may require Section 401 certification.

Description: If the construction or operation of facilities results in any discharge into streams or wetlands, such construction is regulated under Section 401. This requirement may affect the construction of LFGTE project facilities or pipelines to transport LFG.

The applicant must obtain a water quality certification from the State in which the discharge will

originate. The certification should then be sent to the U.S. Army Corps of Engineers. The certification indicates that such discharge will comply with the applicable provisions of Sections 301, 302, 303, 306, and 307 of the Clean Water Act (CWA).

1.5 Other Federal Permit Programs and Regulations

The following are brief descriptions of how other federal permits and regulations could apply to LFGTE project development.

- RCRA Subtitle C could apply to a LFGTE project if it produces hazardous waste. While some LFGTE projects can return condensate to the landfill, many dispose of it through the public sewage system after some form of on-site treatment. In some cases, the condensate may contain high enough concentrations of heavy metals and organic chemicals for it to be classified as a hazardous waste, thus triggering federal regulation.
- The Historic Preservation Act of 1966 or the Endangered Species Act could apply if power lines or gas pipelines associated with a project infringe upon an historic site or an area that provides habitat for endangered species.
- The federal pipeline safety regulations (Title 49 Code of Federal Regulations) issued under the Natural Gas Pipeline Safety Act apply when landfill gas is transported through pipelines. These regulations are enforced in South Carolina by the South Carolina Public Service Commission. For more information, contact:

Office of Pipeline Safety
Research and Special Programs Administration
U.S. Department of Transportation
400 Seventh Street, SW Room 7128
Washington, DC 20590
(202) 366-4595
<http://ops.dot.gov>

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2.**State Regulations and Permits**

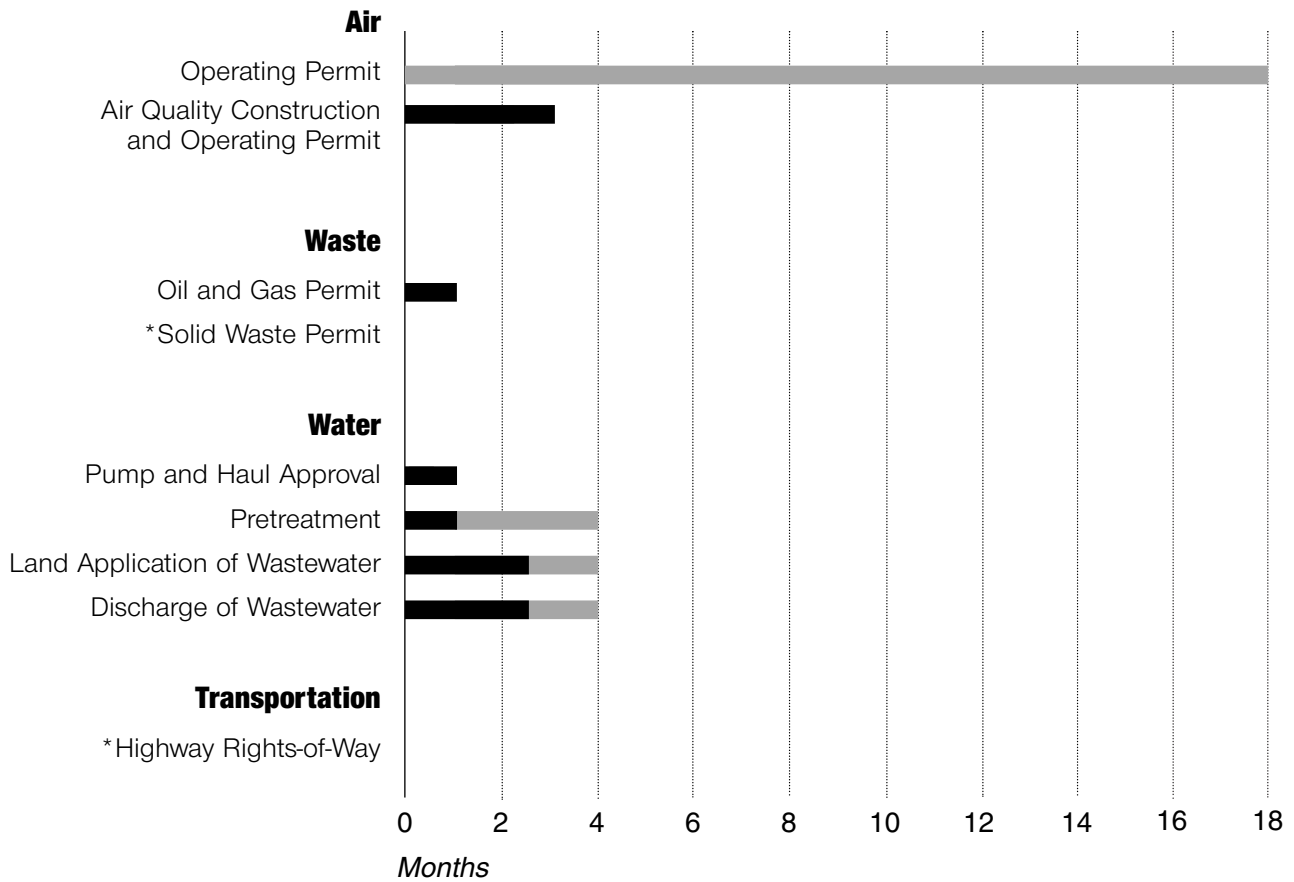
This section provides information on permits required by the State of South Carolina for the development of a LFGTE project.³ Information provided on each permit includes how the permit is applicable to LFGTE projects, the appropriate agency contact, a description of the permit, the statute/regulation, information required and suggestions for a successful application, the application and review process, the review/approval period, and any fees required. For an overview of required permits, contact information, and length of the review period, see Tables 2.1 and 2.2.

³The permits contained in this handbook were suggested by state permitting agencies.

Table 2.1 Summary Table of State Standards/Permits

Standard	Permit	Agency/Contact	Appropriate Review Period
Air	<i>Operating Permit</i>	South Carolina Department of Health and Environmental Control (SCDHEC) Bureau of Air Quality	Up to 18 months
	<i>Air Quality Construction and Operating Permit</i>	SCDHEC Bureau of Air Quality	3 months
Waste	<i>Oil and Gas Permit</i>	SCDHEC Bureau of Land and Waste Management	30 days
	<i>Solid Waste Permit</i>	SCDHEC Bureau of Land and Waste Management	varies
Water	<i>Pump and Haul Approval</i>	SCDHEC Federal, Energy, and Pretreatment Section	30 days
	<i>Pretreatment</i>	SCDHEC Federal, Energy, and Pretreatment Section	30–120 days
	<i>Land Application of Wastewater</i>	SCDHEC Industrial Wastewater Permitting Section	75–125 days
	<i>Discharge of Wastewater</i>	SCDHEC Industrial Wastewater Permitting Section	75–125 days
Transportation	<i>Accommodating Utilities on Highway Rights-of-Way</i>	South Carolina Department of Transportation Districts (Appendix A)	varies

Table 2.2 Permit Approval Timeline



Notes

Solid black line denotes the minimum review/approval period (where applicable); gray line denotes the maximum.

* Varies

The remainder of Section 2 contains information about each of the permits required by the State of South Carolina for LFGTE project development. The information is organized into tables and each table contains the following information:

- Applicability to LFG Projects
- Agency Contact
- Description of the Regulation
- Statute/Regulation
- Information Required/Suggestions
- Application Process
- Review Process
- Review/Approval Period
- Fees

Table 2.3 Title V (Part 70) Operating Permits

Applicability to Landfill Gas Projects	<p>Facilities defined as “major” with potential to emit 100 tons/year or more of any regulated pollutant, 10 tons/year or more of any single hazardous air pollutant (HAP), or 25 tons/year or more of any combination of HAPs.</p> <p>Facilities subject to Section 111 (New Source Performance Standards) and 112 (HAPs) of the Clean Air Act (CAA). (Those facilities not deemed “major” by the regulations listed above are not currently required to obtain Title V Operating Permits.)</p> <p>Facilities subject to Title IV of the CAA.</p>
Agency Contact	<p>South Carolina Department of Health and Environmental Control Bureau of Air Quality Carl Richardson 2600 Bull Street Columbia, South Carolina 29201-1708 (803) 898-4123</p>
Description	<p>Title V is a comprehensive operating permit program that specifies all federally enforceable air regulations applicable to a facility in one document.</p>
Statute/Regulation	<p>The Clean Air Act (42 USC §§ 7401 et seq.); 40 CFR Part 70</p>
Information Required/Suggestions	<p>Facilities subject to Part 70 must submit an application that describes all sources of air pollution and quantify emissions from those sources. The application must identify all applicable federally enforceable requirements to those sources as well.</p>
Application Process	<p>The facility submits an application of forms developed by the department. These forms will contain the information necessary to describe all air pollution sources and quantify emissions from these sources.</p>
Review Process	<p>Within 60 days of receipt of a Title V application, a completeness review is made. After the application is deemed administratively complete, a technical review is performed. When a permit is drafted, it undergoes several reviews, including one by the facility. A public notice of the draft permit is then issued; if comments are received, the draft is either revised and re-noticed or a reply to the comments is issued and the permit is then finalized.</p>
Review/Approval Period	<p>All Title V operating permits must be issued within 18 months of receipt.</p>
Fees	<p>Collection of fees is necessary to fund the Title V program. Operating permit fees are levied at a rate of \$25 per ton of actual emissions (up to 4,000 tons/year), adjusted for the Consumer Price Index. There are no application fees.</p>

Table 2.4 Air Quality Construction and Operating Permits

Applicability to Landfill Gas Projects	All equipment used to collect, handle, or treat landfill gas where there is an applicable state or federal regulation.
Agency Contact	South Carolina Department of Health and Environmental Control Bureau of Air Quality Carl Richardson 2600 Bull Street Columbia, South Carolina 29201-1708 (803) 898-4123
Description	Construction and operating permits may be necessary for equipment that collects, handles, or treats landfill gas. Before any air pollution source is constructed, a construction permit must be obtained from the Bureau of Air Quality. An operating permit for the facility is obtained afterwards. Operating permits have a lifespan of 5 years and may be renewed upon review by the bureau.
Statute/Regulation	The Clean Air Act (42 USC §§ 7401 et seq.). S.C. Regulation 61-62.1. Section II A. (Construction) and B. (Operating)
Information Required/Suggestions	A description of the landfill, the collection system, and control devices, if any. Quantification of LFG production rates and the accompanying air pollutant emission rates are necessary. Permit application forms developed by the bureau facilitate the gathering of this information. An air dispersion modeling analysis for the air pollutant emissions is also necessary.
Application Process	The facility submits an application of forms developed by the bureau. These forms will contain the information necessary to describe all landfill-oriented air pollution sources and quantify emissions from these sources. They should also contain drawings and other supporting material as necessary. A professional engineer's signature is required for all construction permits for landfills.
Review Process	A completeness review is made upon receipt of an application package. After the application is deemed administratively complete, a technical review is performed. Deficiencies and/or questions are posed to the applicant during this review as needed. A draft permit is usually issued for the landfill to review before it is finalized.
Review/Approval Period	All construction and operating permits must be issued within 90 days of receipt of application, excluding days the bureau is waiting for information from the applicant.
Fees	Operating permit fees are levied at a rate of \$25 per ton of actual emissions (up to 4,000 tons/year), adjusted for the Consumer Price Index. There are no application fees.

Table 2.5 Oil and Gas Permits

Applicability to Landfill Gas Projects	An oil and gas permit is specifically required by the South Carolina Oil and Gas Act. It requires that all municipal solid waste landfills prevent the waste of gas and use this gas in a beneficial manner.
Agency Contact	South Carolina Department of Health and Environmental Control Ken Taylor, Director Division of Hydrogeology Bureau of Land and Waste Management 2600 Bull Street Columbia, South Carolina 29201 (803) 896-4011 Van Keisler, Section Manager Solid Waste Section Bureau of Land and Waste Management 2600 Bull Street Columbia, South Carolina 29201 (803) 896-4014
Description	Production and utilization of landfill gas is specifically regulated by the South Carolina Department of Health and Environmental Control. The intent is to minimize the waste of this resource and prevent pollution of the state's land and water.
Statute/Regulation	<i>State Statute:</i> Oil and Gas Exploration, Drilling, Transportation and Production Act, Section 48-43-10 through 850. <i>State Regulation:</i> Oil and Gas Exploration, Drilling and Production Regulation R. 121-8-0 through 28.
Information Required/Suggestions	Design diagrams and plans should be submitted to the department. In addition, a financial assurance mechanism should be submitted capable of financing the operation and/or abandonment of the system by a third party. Requests should also be made for permits to drill wells. Interested individuals are encouraged to contact the department at the beginning of the permitting process.

Application Process

All information required by the Oil and Gas Act should be submitted to the department for review and comment. This should include all necessary forms (Organization Report, Application for Permit to Drill, and Affidavit of Ownership or Control), along with requests for approval to drill wells.

Review Process

All information submitted to the department will be assigned to a project manager for review. Typically a question and comment letter will be sent to the applicant if clarification of issues is necessary. Upon completion of the review, a public notice will be sent to interested parties. A public hearing may or may not be held by the department depending on the response to the public notice.

Review/Approval Period

Review and approval will be completed consistent with the time frames outlined in the Oil and Gas Act. Permits will typically be issued within 30 days of submittal of complete information on the project. Well drilling permits will also be issued within 30 days of a completed application.

Fees

No fees are associated with this activity.

Table 2.6 Solid Waste Permits

Applicability to Landfill Gas Projects

A municipal solid waste (MSW) permit is required for all operating MSW landfills. A post-closure care permit is also required for all closed MSW landfills. As a requirement of these two permits, control of landfill gas (methane) to prevent offsite migration is required. Landfill gas-to-energy (LFGTE) projects would be considered a minor modification to the solid waste permit.

Agency Contact

South Carolina Department of Health and Environmental Control

Bob Gill, Section Manager
Facility Engineering Section
Bureau of Land and Waste Management
2600 Bull Street
Columbia, South Carolina 29201
(803) 896-4210

Van Keisler, Section Manager
Solid Waste Section
Bureau of Land and Waste Management
2600 Bull Street
Columbia, South Carolina 29201
(803) 896-4014

Description

Devices installed for the control of landfill gas and methane would fall under the MSW permit as they relate to long-term, post-closure care of the facility. In order to add or change the landfill gas control devices, owners are required to obtain approval of a modification of the existing landfill permit.

Statute/Regulation

State: Municipal Solid Waste Landfill Regulation, R. 61-107.258.

Federal: Federal Resource Conservation and Recovery Act (RCRA) Subtitle D and 40 CFR Parts 257 and 258.

Information Required/Suggestions

Design diagrams and specifications of the landfill gas control and collection system should be submitted for department review and approval. An operational plan may be required which addresses system maintenance and safety issues. Discussion of the project with the department prior to submittal of plans is recommended.

Application Process Design drawings and specifications should be submitted to the department as part of the post-closure care plan.

Review Process Information related to the projects should be submitted to the department where it will be assigned to a project manager. Upon review, the applicant is notified of any deficiencies. Upon final review, approval of the system will be granted.

Review/Approval Period No specific review and approval time frames are assigned to these projects. However, every effort will be made to expedite the review process.

Fees No fees are associated with this activity.

Table 2.7 Pump and Haul Approval

Applicability to Landfill Gas Projects	This is applicable when condensate or other wastewater is hauled by vehicle, vessel, or aircraft from the site of production to a Publicly Owned Treatment Works (POTW) or other means of disposal. Where there is existing approval for leachate disposal by pump and haul, hauling of condensate would require additional written approval.
Agency Contact	South Carolina Department of Health and Environmental Control Bill Botts, Manager Federal, Energy, and Pretreatment (FEP) Section Industrial Wastewater 2600 Bull Street Columbia, SC 29201 (803) 898-3982 bottswc@columb32.dhec.state.sc.us
Description	N/A
Statute/Regulation	S.C. Code Title 48, Chapter 1, The Pollution Control Act S.C. Regulation 61-67, "Standards for Wastewater Facility Construction," §300.G, Pump and Haul Operations.
Information Required/Suggestions	N/A
Application Process	A written description of the operation must be prepared by a S.C. Registered Engineer and submitted for approval before a facility stores or hauls waste.
Review Process	Review of the submittal will be coordinated by an engineer associate in the FEP Section and a letter of approval will be sent if the activity is appropriate.
Review/Approval Period	Approximately 30 days from receipt of a complete submittal.
Fees	There is no fee for review and approval of a pump and haul request.

Table 2.8 Pretreatment

Applicability to Landfill Gas Projects	This requirement is applicable if wastewater is discharged to a publicly owned treatment works (POTW) and there is any treatment of the wastewater by the discharger or the wastewater pipeline does not consist of a “service connection” per S.C. Reg. 61-67.
Agency Contact	South Carolina Department of Health and Environmental Control Bill Botts, Manager Federal, Energy, and Pretreatment (FEP) Section Industrial Wastewater 2600 Bull Street Columbia, SC 29201 (803) 898-3982 bottswc@columb32.dhec.state.sc.us
Description	A “Pretreatment Permit” must be obtained from the POTW as the permit restricting the quantity and quality of the wastewater. Also, a Wastewater Facility Construction Permit must be obtained from the FEP Section of DHEC before beginning construction of wastewater facilities. The construction permit will not be issued by DHEC until the Pretreatment Permit is issued, but review of a construction permit application can proceed based on a draft Pretreatment Permit.
Statute/Regulation	S.C. Code Title 48, Chapter 1, The Pollution Control Act S.C. Regulation 61-67, “Standards for Wastewater Facility Construction” S.C. Regulation 61-30, “Environmental Protection Fees”
Information Required/Suggestions	N/A
Application Process	An engineering report and detailed plans and specifications for wastewater facilities along with a construction permit application must be submitted to the FEP Section of S.C. DHEC. The permit must be issued before wastewater facility construction begins.
Review Process	Review of the submittal will be coordinated by an engineer associate in the FEP Section and a Construction Permit will be issued if the activity is appropriate.
Review/Approval Period	Review must be completed within 120 days; however, the normal review time after receipt of a complete submittal is about 30 days.
Fees	Fees for pipelines, where a permit is required, range from \$100 to \$350. For simple treatment systems, the fee is \$200, and for more complex treatment, \$600.

Table 2.9 Land Application of Wastewater

Applicability to Landfill Gas Projects	This requirement is applicable to any source that discharges pollutants directly or indirectly into groundwaters of the state and to the land of the state.
Agency Contact	<p>South Carolina Department of Health and Environmental Control</p> <p>Melinda Vickers, Manager Industrial Wastewater Permitting (IWP) Section 2600 Bull Street Columbia, SC 29201 (803) 898-4186 vickermg@columb32.dhec.state.sc.us.</p>
Description	<p>For this type of discharge of wastewater (including condensate from landfill methane collection), two different permits are required from this office. The first of these is a State No-Discharge (ND) permit defining and limiting the quantity and quality of the discharge and stating the monitoring requirements for the permittee. The second permit is a wastewater facility construction permit for any treatment facilities and for piping for land application.</p>
Statute/Regulation	<p>S.C. Code Title 48, Chapter 1, The Pollution Control Act</p> <p>S.C. Regulation 61-9.505, "Land Application Permits and State Permits"</p> <p>S.C. Regulation 61-67, "Standards for Wastewater Facility Construction"</p> <p>S.C. Regulation 61-30, "Environmental Protection Fees"</p>
Information Required/Suggestions	<p>Groundwater evaluations by a geologist are usually necessary for approval.</p>
Application Process	<p>Separate applications are required for the ND Permit and the Construction Permit. The engineering report under S.C. Reg. 61-67 is needed for both the ND Permit and the Construction Permit.</p>
Review Process/ Approval Period	<p>An engineer associate in the IWP Section will coordinate review of the submittal. A draft of the ND Permit would be sent to the permittee 30 to 60 days after receipt of a complete application. A public notice of the ND Permit must be issued for 30 days after agreement with the permittee before issuance. Occurrence of significant public concern about the land application would necessitate holding a public hearing, requiring an additional 30-day notice period and 30 additional days for review and determination. A Construction Permit could be issued 15 days after issuance of the ND Permit.</p>
Fees	<p>The construction permit fee for a small, new wastewater treatment system for an ND discharge is \$700, which must be submitted with the construction permit application. The annual operating fee for an ND Permit is \$400, and this must be submitted before the ND Permit is issued.</p>

Table 2.10 Discharge of Wastewater

Applicability to Landfill Gas Projects	This requirement is applicable to any source which discharges pollutants into waters of the state or to a conveyance to waters of the state.
Agency Contact	South Carolina Department of Health and Environmental Control Melinda Vickers, Manager Industrial Wastewater Permitting (IWP) Section 2600 Bull Street Columbia, SC 29201 (803) 898-4186 vickermg@columb32.dhec.state.sc.us.
Description	For this type of discharge of wastewater (including condensate from landfill methane collection), two different permits are required from this office. The first of these is an NPDES permit defining and limiting the quantity and quality of the discharge and stating the monitoring requirements for the permittee. The second permit is a wastewater facility construction permit for any wastewater facilities.
Statute/Regulation	S.C. Code Title 48, Chapter 1, The Pollution Control Act S.C. Regulation 61-9, "Water Pollution Control Permits" S.C. Regulation 61-67, "Standards for Wastewater Facility Construction" S.C. Regulation 61-30, "Environmental Protection Fees"
Information Required/Suggestions	Whole effluent toxicity will be a concern for this type of discharge; limits and periodic monitoring may be required.
Application Process	Separate applications are required for the NPDES Permit and the Construction Permit. NPDES application consists of U.S. EPA Forms 1 and 2D and S.C. supplements. The engineering report under S.C. Reg. 61-67 is needed for both the NPDES Permit and the Construction Permit.
Review Process/ Approval Period	An engineer associate in the IWP Section will coordinate review of the submittal. A draft of the NPDES permit would be sent to the permittee 30 to 60 days after receipt of a complete application. A public notice of the NPDES permit must be issued for 30 days after agreement with the permittee before issuance. Occurrence of significant public concern about the discharge would necessitate holding a public hearing, requiring an additional 30-day notice period and about 30 additional days for review and determination. A Construction Permit could be issued 15 days after issuance of the NPDES permit.
Fees	The construction permit fee for a small, new wastewater treatment system for an NPDES discharge is \$700, which must be submitted with the construction permit application. The annual operating fee for a small (50,000 gallons per day) NPDES Permit is \$400, and this must be submitted before the NPDES permit is issued.

Table 2.11 Accommodating Utilities on Highway Rights-of-Way

Applicability to Landfill Gas Projects	An encroachment permit must be issued before any utility is installed or any other work is performed on a state highway right-of-way.
Agency Contact	District Engineering Administrators or Resident Maintenance Engineers (See Appendix A for a list of District Engineering Administrators.)
Description	N/A
Information Required/Suggestions	The application should contain a concise description of the work to be performed, along with a sketch showing a north arrow, pavement width, the right-of-way lines, and location of work to be performed.
Application Process	A Form 637 permit application can be obtained from the District Engineering Administrator's or Resident Maintenance Engineer's office. Application is submitted to the local Resident Maintenance Engineer.
Review Process/ Approval Period	Permits are issued after complete review and approval of the South Carolina State Highway Engineer or his/her designee. Once this process is complete, the document becomes the approved permit. Should additional permits be required, they will be identified during the review process.
Fees	N/A

Overview of Local Regulations and Permits

Within the framework of federal and state regulation, local governments will have some jurisdiction over LFGTE development in nearly all cases. Typically, local permits address issues that affect the surrounding community. These permits generally fall under the categories of construction, environment and health, land use, and water quality/use. Local governments are also responsible for administering some permits for federal and state regulations in addition to their own. For example, many local governments are responsible for ensuring compliance with federal air quality regulations. It should be noted, however, that some local standards and regulations are more strict than state or federal regulations.

Steps to Successful Local Permit Approval:

The following six steps will assist LFGTE project developers to achieve successful local permit approval:

- Step 1** Determine which local authorities have jurisdiction over the project site.
- Step 2** Contact local, city, and/or county planning and public works departments to obtain information about applicable permits and to discuss your plans. Meeting with agency staff to discuss the landfill gas project and required permits often helps expedite the permitting process.
- Step 3** Obtain essential information regarding each permit, including:
 - What information is required
 - The permitting process that should be followed
 - Time frames (including submittal, hearing, and decision dates)
- Step 4** Obtain copies of the regulations to compare and verify what is required in the permit applications. If they differ, contact the appropriate permitting agency.
- Step 5** Submit a complete application. Incomplete applications typically result in processing delays.
- Step 6** Attend meetings or hearings where the application will be discussed to respond to any questions that are raised. Failure to do so could result in delays.

Typical Local Permits

The table on the following page provides information about typical local permits and approvals required for LFGTE projects.

Table 3.1 Local Regulations and Permits

Permit	Description
Building Permit	Most county/local governments require building permits for construction, which entail compliance with several types of building codes, such as plumbing and electrical. A typical building permit application may require detailed final plans for structures, including electrical and plumbing plans, floor layout, sewage facilities, storm water drainage plan, size and shape of lot and buildings, setback of buildings from property lines and drain field, access, size and shape of foundation walls, air vents, window access, and heating or cooling plants (if included in the design).
Zoning/Land Use	Most communities have a zoning and land use plan that identifies where different types of development are allowed (i.e., residential, commercial, and industrial). The local zoning board determines whether a particular project meets local land use criteria, and can grant variances if conditions warrant. A landfill gas project may require an industrial zoning classification.
Storm Water Management	Some local public works departments require a permit for discharges during construction and operation of a LFGTE project. Good facility design that maintains the pre-development runoff characteristics of the site will typically enable the project to meet permitting requirements easily.
Solid Waste Disposal	A LFGTE project may generate solid wastes, such as packaging material, cleaning solvents, and equipment fluids. If the landfill is closed, disposal of these solid wastes may be subject to review by a local authority.
Wastewater	The primary types of wastewater likely to be generated by a LFGTE project include maintenance wastewater and cooling tower blowdown. The city engineer's office should be contacted to provide information about available wastewater handling capacity, and any unique condensate treatment requirements or permits for landfills.
Fire Hazards and Precautions	The mix of gases in landfill gas has a moderate to high explosion potential; methane is explosive in concentrations of 5 to 15 percent in air. Because methane has the potential to migrate from the landfill to onsite or offsite structures, it poses a significant public safety hazard. EPA requires that methane concentrations be less than 5 percent at a landfill property line, and less than 25 percent of the lower explosive limit (LEL) in a facility's structures. County regulations may call for as strict or stricter standards to be observed at the landfill.
Noise	Most local zoning ordinances stipulate the maximum allowable decibel levels from noise sources. These levels vary depending on the location of the site. For example, LFG energy recovery projects located near residential areas will likely have to comply with stricter noise level standards than projects located in non-populated areas.

Part 2: Incentive Programs

1. Overview of Federal Incentive Programs

Currently, two federal incentive programs may apply to LFGTE projects: the Renewable Energy Production Incentive (REPI), the Qualifying Facilities (QF) Certification, and the Section 29 Tax Credit. Each program is described below.

1.1 Renewable Energy Production Incentive (REPI)

The Renewable Energy Production Incentive (REPI), mandated under the Energy Policy Act of 1992, may provide a cash subsidy of up to 1.5 cents per kilowatt hour to owners and operators of qualified renewable energy sources, such as landfills, that began operation between October 1993 and September 2003.⁴ Private sector entities may qualify to earn tax incentives based on a tier system. Tier 1 facilities (solar, wind, geothermal, or closed loop biomass) receive full payments or pro rata payments if funds are too minimal to match all requests. Any remaining funds fall to Tier 2 which includes landfill gas facilities. If there are insufficient funds to cover Tier 2 applicants, a pro-rata system is implemented. The Department of Energy (DOE) will make incentive payments for 10 fiscal years, beginning with the fiscal year in which application for payment for electricity generated by the facility is first made and the facility is determined by DOE to be eligible for receipt of an incentive payment. The period for payment under this program ends in fiscal year 2013. REPI payments are subject to adjustment because they are appropriated by Congress each year.

For further information, contact:

U.S. Department of Energy
National Renewable Energy Laboratory
Golden Field Office
Golden, Colorado 80403
(303) 275-4795

U.S. Department of Energy
Efficiency and Renewable Energy
Forrestal Building, Mail Station EE-10
1000 Independence Avenue, S.W.
Washington, DC 20585
Phone: (202) 586-2206

1.2 Qualifying Facilities Certification

LFGTE projects that generate electricity will benefit from Qualifying Facilities (QF) certification, which is granted through the Federal Energy Regulatory Commission (FERC). The following describes the benefits of QF status and the steps for applying for such status.

The Public Utility Regulatory Policies Act (PURPA) — one of five parts of the National Energy Act of 1978 — was designed to promote conservation of energy and energy security by removing barriers to the development of cogeneration facilities and facilities that employ waste or renewable fuels. Such facilities are called Qualifying Facilities, or QFs. Under PURPA, utilities are required to purchase electricity from

⁴ Final Rule Making, 10 Federal Register Part 451, July 19, 1995, Vol. 60, No. 138.

QFs at each utility's avoided cost of generating power. PURPA provides that a small power production facility, such as a LFGTE project that meets FERC standards, can become a QF.

In order to apply for QF status, applicants must prepare either (1) a Notice of Self-Certification, which asserts compliance with the FERC's technical and ownership criteria, or (2) an Application for Commission Certification of Qualifying Status, which requires a draft Federal Register notice and which provides actual FERC approval of QF status. In either case, the applicant must also file Form 565, which is a list of questions about the project, and must pay any filing fees associated with certifications, exemptions, and other activities. FERC will provide the QF "Info Packet" that describes the necessary steps, requirements, and background information. After submittal of the initial application, further justifications and submittal of information may be required.

For the QF Info Packet and applications, contact:

Federal Energy Regulatory Commission
Qualifying Facilities Division
825 North Capitol Street, N.E.
Washington, DC 20426
Phone: (202) 208-0577
<http://www.ferc.fed.us>

1.3 Section 29 Tax Credit

Developers of LFGTE projects who sell LFG to an unrelated third party may qualify for a tax credit under Section 29 of the Internal Revenue Service (IRS) tax code. In order to take advantage of the credits, project developers may bring in an outside party when developing power projects. The Section 29 tax credit was established in 1979 to encourage development of unconventional gas resources, such as land-fill gas. Section 29 tax credits are available through 2007 to LFG projects that have a gas sales agreement in place by December 31, 1996, and are placed in service by June 30, 1998. The credit has been extended several times by the U.S. Congress, but currently it is discontinued.

2. State Incentive Programs

2.1 EnerFund Business Energy Improvement and Recycling Market Development Revolving Loan Fund

The South Carolina Energy Office, an office of the State Budget and Control Board, Division of Regional Development, administers a business loan fund. EnerFund A provides low-interest loans for energy efficiency improvements in facilities and equipment. EnerFund B loans are available for installation of equipment and technology for conversion of recyclable materials. Eligible EnerFund B projects include use of waste material as an energy source, manufacture of new products from recycled materials, and processing of recyclable materials for specified end users.

Loans range in size from \$25,000 to \$500,000. The maximum duration for EnerFund A loans is 10 years and for EnerFund B loans, 15 years. Interest rates are calculated based on 90% of the average of rates for comparable duration U.S. Treasury Notes issued during the past 12 months. The current (November 1999) Enerfund rate for a 10-year loan is 4.7 percent. A loan origination fee equal to 1% of the loan amount is charged and payable at closing. Also, an irrevocable letter of credit is required for loan security.

To apply for a loan, a business completes a loan application form and submits it with a project description prepared by a registered South Carolina Professional Engineer to the South Carolina Energy Office. Audited financial summaries for the past three years and a current financial statement are also required. Once the application is complete, the Energy Office prepares a statement of proposed loan terms. Technical and credit reviews are conducted by Energy Office staff and then by an external Loan Review Committee. Recommended loans are approved by the Directors of the Energy Office and the Division of Regional Development and then reported to the State Budget and Control Board. The review/approval period is approximately 30 days from receipt of a complete loan application package.

Once a loan is approved, Energy Office staff prepare a standard loan closing package and submit it for review to the client's counsel. Upon satisfactory review, the client's counsel conducts the closing.

Electricity Restructuring and LFGTE

What Is Electricity Restructuring?

Electricity restructuring refers to the introduction of competition into both the wholesale and retail electricity markets. Until now, electric utilities operated as monopolies authorized by federal and state regulatory authorities as the sole provider of electric service to consumers within a specific service territory. Under restructuring, utilities will lose these monopolies, enabling other energy providers to compete for their customers. The result may be more energy options for consumers, lower energy prices, and greater use of renewable energy sources.

Efforts to restructure the electric utility industry began in 1978 with passage of the Public Utilities Regulatory Policies Act (PURPA), which required utilities to buy a portion of their power from unregulated power generators in an effort to encourage the development of smaller generating facilities, new technologies, and renewable energy sources. The National Energy Policy Act of 1992 (EPACT) expanded on PURPA, allowing more types of unregulated companies to generate and sell electricity, effectively creating a competitive wholesale market for electric power.

Restructuring at the retail level has been a hot issue in many states since the passage of EPACT, which delegated states the authority to introduce competition among electric utilities within their borders. As of January 1999, 22 states have enacted some form of restructuring legislation, while the remaining 28 are considering such legislation.

How Do These Changes Affect Landfill Gas Recovery?

Many states are including renewable energy provisions in their restructuring legislation. Such provisions mandate utilities to include a certain percentage of electricity generated from renewable, or “green energy,” sources into their energy mixes. LFGTE is one such green energy source.

In March 1998, the Clinton Administration unveiled its “Comprehensive Electricity Competition Plan” to restructure the electricity industry nationwide. Contained in that proposal is a Renewable Portfolio Standard (RPS) that would guarantee that a minimum percentage of the nation’s electricity be powered by green energy. Energy service providers would be required to cover a percentage of their electricity sales with generation from non-hydroelectric renewable sources such as wind, solar, geothermal, and biomass (which includes LFGTE).

Marketing Landfill Gas Recovery as Green Power

One of the emerging areas and most promising mechanisms to encourage utilities and other energy marketers to participate in LFGTE projects is the development of green marketing programs. Green marketing programs are designed to enable energy marketers to position renewable energy products (including LFGTE) as premium products, and therefore, collect a premium price from their customers. In addition, green marketing allows energy marketers in competitive marketplaces to differentiate their energy product, and allows utilities in non-restructured marketplaces to gain critical product marketing experience in preparation for competition. However, the general public is less familiar with LFGTE than other sources of renewable energy; support from the LMOP can help to ensure the success of early LFGTE green marketing efforts.

Get the Latest Information on Electricity Restructuring in South Carolina

South Carolina has not yet enacted electricity restructuring legislation. For up-to-date information on electricity restructuring in South Carolina, visit <http://www.state.sc.us/energy/deregulation.htm>.

Appendix A: South Carolina Department of Transportation Contacts

Headquarters

South Carolina Department of Transportation
955 Park Street
Post Office Box 191
Columbia, South Carolina 29202-0191
(803) 737-2314

District Engineering Administrators

District One

1400 Shop Road
Columbia, SC 29201
(803) 737-6660

District Two

510 W. Alexander Avenue
Greenwood, SC 29646
(864) 227-6971

District Three

Post Office Box 6608 - Station B
Greenville, SC 29606
(864) 241-1010

District Four

J.A. Cochran Bypass
Post Office Box 130
Chester, SC 29706
(803) 377-4155

District Five

Post Office Box 1911
Florence, SC 29501
(803) 661-4710

District Six

6355 Fain Blvd.
North Charleston, SC 29406-4989
(803) 740-1665

District Seven

US Route 178 East
Bowman Road
Drawer 1086
Orangeburg, SC 29116-1086
(803) 531-6850

Note: Engineering districts are shown on page 28.

Appendix A: South Carolina Department of Transportation Contacts (continued)

Engineering Districts

