7. Permits and Regulations for a Dairy Biomethane Plant

A facility to upgrade dairy biogas to biomethane has several components that involve permitting and regulations. The dairy itself is subject to a number of air and water quality regulations, which are described in this chapter, whether or not it produces biogas. Some dairies, both new and existing, may be exempt from certain permit requirements based on dairy size, design, and location. In certain situations, dairies may also be subject to regulations other than those discussed in this chapter.

Most California dairies capture their wastewater in on-site lagoons and thus avoid discharging wastewater to water bodies except during severe storms. Until 2003, California dairies were not required to have water permits, but by April 2006 most California dairies will require water permits (CRWQC, 2003). Even if a dairy has a water permit, a new permit is required for the installation of an anaerobic digestion system. If a dairy has a digester that combusts biogas, or upgrades biogas to biomethane, an air permit will be required. Depending on the county, a local administrative permit or conditional use permit may also be required. New dairies or digesters will need to have a building permit prior to construction activities.

Because the focus of this report is on alternate uses of biogas, particularly through upgrading to biomethane, we will not review the permits and regulations required for dairies or anaerobic digesters. Instead our emphasis will be on permits and regulations applicable for installing a biogas upgrading facility and for storing and using biomethane produced by such a facility.

Permits for a Biogas Upgrading Plant

A biogas upgrading facility is subject to federal, state, and local regulatory requirements. Any required water permits are issued by the regional water board. Unless exempted by local regulations, a biogas upgrading plant must obtain an air pollution permit from the local air district. If an upgrading facility uses or disposes of chemicals that are characterized as hazardous wastes, a permit must be obtained from the California Department of Toxic Substance Control (DTSC). Likewise, if the upgrading plant is off-dairy in an industrial area that is not already permitted, the facility must go through the same permitting process as any other stationary industrial facilities.

No specific additional permits are needed by an upgrading facility to compress or liquefy biomethane to produce CBM or LBM. However, there may be emission or safety issues associated with the production of these fuels that require other permitting or approvals.

At the local level, an upgrading facility should verify that it complies with city or county planning ordinances and meets zoning requirements. Facilities must also meet building code requirements and any new construction must be authorized through a building permit. The regional air district, water board, or other local authority must be contacted to determine if an environmental review is necessary under the California Environmental Quality Act (CEQA).

Table 7-1 provides an overview of the permits that may be required for a biogas upgrading (biomethane) plant and the parties responsible for permit issuance. Each type of permit is discussed in more detail below.

Table 7-1 Permitting Information for Biogas Upgrading Plant

Permit or Requirement	Issuer	Needed?
Water permit	Regional water board	
If facility is located on previously permitted site		Not likely
If there is no discharge to water body		No
If there is discharge to receiving body and site is not previously permitted		Yes
Stormwater permit	Regional water board	No
Stormwater construction permit	Regional water board	Maybe
Air permit	Local air district	Yes
Hazardous waste permit	California Department of Toxic Substance Control	Maybe
CEQA process	Lead agency	Maybe
Solid waste permit	Local enforcement agency	No
Use permit based on zoning	County or city	Yes
Building and related permits	County or city	Yes

Water Permits

According to regulations, most dairies in California are confined animal feeding operations (CAFOs) and will be required to apply for NPDES water permits by April 13, 2006 (CRWQCB, 2003). More specifically, the regulations state that dairies with CAFOs that have more than 700 cows, or that have more than 300 cows and discharge wastewater to a water body or have surface water running across the dairy, will need permits, unless they prove that wastewater from their operations never, under any circumstances, enters a water body (US EPA, 2003). In some cases, smaller CAFOs may also require permits.

However these regulations were successfully challenged in a lawsuit, *Waterkeeper Alliance, et al., v. US EPA*, which was decided in the U.S. Court of Appeals, Second Circuit, on February 28, 2005. Among other aspects the Court ruled that CAFOs do not have a duty to apply for NPDES permits or otherwise demonstrate that they have no potential to discharge. It also eliminated the

700 cow threshold. A full analysis of the implications of this decision is beyond the scope of this report.

If a CAFO dairy (or other dairy without an existing water permit) plans to build a biogas upgrading facility, it will typically need a water permit from the regional water board. Even if the dairy has a water permit, the installation of an anaerobic digestion system requires a new water permit for the plant. If the plant will be off-dairy at a centralized site such as a publicly owned treatment works (POTW) that already has a water permit, a separate permit is probably not required. However, if the biogas upgrading facility will discharge to a water body or a POTW, and is at a location that is not otherwise permitted, then it must obtain the appropriate permit from the local regional water board as discussed below.

The statutory basis for federal water permits are the amendments to Federal Water Pollution Control Act of 1972 (P.L. 92-500), also referred to as the Clean Water Act. This act created the National Pollution Discharge Elimination System (NPDES) permit program, which is the basic regulatory structure for *point sources* that discharge pollutants. The NPDES requires all facilities that discharge pollutants into surface water from a point source to obtain a permit. It categorizes pollutants into *conventional pollutants* such as fecal coliform, toxic or *priority pollutants* such as metals or anthropogenic organic chemicals, and *nonconventional pollutants* such as ammonia, nitrogen, and phosphorus.

Publicly owned treatment works, including water or wastewater treatment plants, and industrial facilities are considered point sources. Most agricultural activities are considered *nonpoint sources* of pollution and are thus exempt from NPDES permitting; however, CAFOs (including large dairies) are defined as point sources. Point sources can discharge to bodies of water directly or indirectly. Direct sources discharge wastewater directly into the receiving water body. Indirect sources discharge to a POTW, which in turn discharges into the body of water. If an industrial facility discharge is a direct source, a general NPDES permit is required, but if the facility discharges to a POTW, it is regulated under the National Pretreatment Program (US EPA, 1999a). Stormwater that runs off a facility or construction site into a water body requires an NPDES stormwater permit (US EPA website <http://www.epa.gov/npdes/pubs/101pape.pdf>).

The Clean Water Act allows the US EPA to authorize state governments to permit, administer, and enforce the NPDES program. The US EPA has delegated NPDES permitting to regional boards, thus allowing regional regulation of water discharges. In California, the Porter-Cologne Water Quality Control Act, also known as the California Water Code (CWC), is the principal law governing water quality regulations. The CWC set up the State Water Resources Control Board and the nine regional water quality control boards.

A Water Discharge Requirement Permit, also issued by the regional board, is required for discharges that are not subject to NPDES, such as those affecting groundwater or those from nonpoint sources (e.g., erosion from soil disturbance or waste discharges to land).

Most upgrading plants will not need these water permits because they will be on a CAFO dairy site that already has a water permit. If there is no permit in place and the upgrading plant discharges water to a water body, it will require a general NPDES permit. If the plant connects to a sewer or other system that discharges to a POTW, it will require a permit under the National Pretreatment Program. The Code of Federal Regulations (CFR) lists specific categories of industrial facilities that require stormwater permits (40 CFR 122.26(b)(14)(i)-(ix)). A biomethane plant does not fit into any of the defined categories; therefore, such a plant should not require a stormwater discharge permit. It may, however, require a stormwater construction permit while it is being built.

Air Emission Permits

The Clean Air Acts of 1970 (P.L. 91-604) and 1990 (P.L. 101-549) are the major federal laws that regulate air emissions. This legislation sets standards for air emission regulation and enforcement, and authorizes states to administer the rules.

The criteria air pollutants regulated under the Clean Air Act are ozone (O_3), nitrogen oxide and dioxide (NO_x), carbon monoxide (CO), particulate matter (PM-10 and PM-2.5), sulfur dioxide (SO_x), and lead (Pb). Volatile organic compounds are defined by the Clean Air Act as precursors of ozone, a respiratory toxicant. The 1990 Clean Air Act also regulates the emission of air toxics, currently a list of 188 pollutants (see US EPA air toxics website at <http://www.epa.gov/ttn/atw/188polls.html>).

The Clean Air Act regulations are enforced in California by the local air districts. Most California dairies are located within the San Joaquin Valley Air Pollution Control District (San Joaquin District). In this district, an industrial plant, such as a biogas upgrading facility, that “emits or may emit air contaminants” is required to obtain an air permit, unless it is a facility that is specifically exempted (SJVAPCD, District Rule 2020, Sections 2, 6 and 7; see <http://www.valleyair.org/rules/currntrules/r2020.pdf>). The extensive list of exemptions does not include any descriptions of a biogas upgrading plant or take into consideration similar facilities in this type of agricultural location.

Since a biogas upgrading facility does not actually combust any gases, it is unlikely to release any of the criteria air pollutants other than VOCs. Depending, however, on the type of upgrade technologies used (see Chapter 3), the facility may release air toxics. If the facility will exceed the legal threshold for one or more air toxics, it will be subject to a “New Source Review,” a preconstruction permitting program established by the 1977 Clean Air Act Amendments. Thresholds for air toxics vary depending on the particular pollutant and the air basin in which the facility is located. Thresholds are lower in air basins with the worst air quality.

If the dairy combusts biogas for electricity instead of upgrading it to biomethane, it is still required to obtain an air permit because engine combustion of biogas (to generate electricity) produces criteria air pollutants, notably NO_x.

As mentioned, most dairy-based upgrading facilities are likely to be located in the Central Valley (San Joaquin District); the second most likely location would be along California's South Coast (South Coast District). Both of these districts have been classified as nonattainment areas for ozone and particulate matter. Best available control technologies, as defined by the local air district, must be used in nonattainment areas to control criteria air pollutant emissions if total emissions exceed the designated threshold for that pollutant. For an upgrading plant located on-farm, total emissions include those generated from dairy operations, anaerobic digestion, and upgrading processes. In some districts, dairies with upgrading plants may also be required to purchase emission reduction credits.

Hazardous Waste Regulations

The Resources Conservation and Recovery Act (RCRA) of 1976 and its amendments govern the generation, transport, disposal and recycling of hazardous waste. The US EPA has authorized the California DTSC to carry out the RCRA program in California including permitting, inspection, and compliance. If a biogas upgrading plant will handle or produce any hazardous waste products, it must obtain a Hazardous Waste Facilities Permit from the local office of the DTSC. Hazardous chemicals that might be used at biogas upgrading plants, depending on the technology employed, include ethylene glycol.

California Environmental Quality Act Requirements

The construction of a biogas upgrading plant in California will require an approval by one or more public agencies, who in turn will decide if a CEQA review is required. A CEQA review requires the lead public agency on a project to consider and document any environmental impacts, including means of avoiding or mitigating these impacts where feasible. The first step is to perform an "Initial Study" to determine if there will be significant impacts. If none are anticipated, or if they can be avoided or mitigated, the agency can file a Negative Declaration or a Mitigated Negative Declaration. If, however, the impacts will be significant and cannot be avoided or substantially mitigated, an Environmental Impact Report (EIR) will be required (CRA, 2001).

Local Land Use Regulations

Before beginning construction of a biogas upgrading facility, the builder should check with the local city or county planning department to determine any zoning restrictions on the building site. Most dairies are located outside of city boundaries, on properties zoned for agriculture by the

local county. Each county has its own zoning regulations that identify the kind of uses allowed in agriculture zonings and the permits required for these uses.

Merced County, for example, specifically allows “Energy Generation Facilities, Wind Farms, Biomass Fuel Manufacturing” in areas zoned for agriculture (County of Merced, 2004, p. 30). If the energy is to be used on-farm the plant requires an administrative permit; if it is to be used off-farm a conditional use permit is needed (County of Merced, 2004). In addition, construction of a biogas upgrading plant will require a building permit. This permit will ensure that the facility meets the local building code and is built to all appropriate safety standards, including seismic and fire standards. Other counties may require additional permits such as grading permits.

Permits for a Centralized Upgrading Facility

A biogas upgrading plant may be a centralized facility. In this case, the manure is hauled or piped to the digester and the digested sludge and effluent may be disposed of off-site or, in the case of liquid effluent, in a water body. Because the facility is considered a point source, an NPDES permit will be required. A permit from the local air district will also be needed, but a solid waste permit will not be necessary unless the facility stores sludge on-site for more than a year or makes compost from the sludge or effluent (Jeff Paalsgard, County of Merced, personal communication, 24 September 2004). If hazardous wastes may be released during the upgrade process, a hazardous waste permit from the California DTSC is required. At the local level, an administrative or conditional use permit will be required and the local agency responsible for these permits will probably require an EIR that identifies issues involved with transport of the dairy manure or digester wastes on public rights-of-way. A building permit will also be required.

Permitting and Regulation of Biomethane Storage and Transport

Biomethane vehicle fuels such as CBM and LBM are subject to the same federal, state, and local standards as their fossil-fuel counterparts, CNG and LNG. The remainder of this chapter discusses the standards and regulations that apply to biomethane when it is kept in on-vehicle storage tanks, transported over-the-road or distributed through a pipeline.

On-Vehicle Storage Systems

On-vehicle fuel delivery and storage systems for compressed and liquefied natural gas (and biomethane) are subject to federal and state motor vehicle safety standards. In addition, there are a number of industry safety standards and codes associated specifically with the design of CNG- and LNG-fueled vehicles. In general, determining which standards are applied is dependent on whether the biomethane fuel is in compressed or liquefied form as well as the type and GVW rating of the vehicle.

Multiple organizations specify safety standards for CNG- and LNG-fueled vehicles. Manufacturers are legally required to comply with federal and state standards as well as those adopted at the municipal level. Some of the major organizations involved with CNG and LNG component/system/vehicle standards are listed below:

- The National Highway Traffic Safety Administration, under the Department of Transportation (DOT), specifies Federal Motor Vehicle Safety Standards. This organization focuses primarily on light-duty passenger vehicles, pickup trucks, school buses, and other non-commercial vehicles.
- The Federal Motor Carrier Safety Administration, also under DOT, specifies Federal Motor Carrier Safety Regulations for commercial vehicles, primarily large trucks and buses.
- State motor vehicle regulations may include requirements for CNG and LNG vehicles, either explicitly or by reference to existing standards.
- The Society of Automotive Engineers specifies U.S. automotive industry design and safety standards including standards for CNG and LNG vehicles.
- The National Fire Protection Association specifies fire safety codes, including CNG and LNG vehicular fuel systems.
- The American National Standards Institute specifies voluntary standards across a range of industries and products including CNG tanks and CNG/LNG fuel system components.

Table 7-2 summarizes the major safety standards pertaining to CNG and LNG vehicles.

Although there are no specific permits required for retrofitting a CNG or LNG fuel system on a vehicle, retrofitters are responsible (e.g., from a liability perspective) for using certified components and systems, installing these components and systems according to manufacturer instructions, and doing so in a way that does not compromise the safety of the original vehicle.

In addition to complying with applicable safety standards, all new and retrofitted vehicles (including CNG- and LNG-fueled vehicles) must be certified to meet exhaust emissions standards. At the federal level, vehicle emissions requirements are specified by the US EPA. The EPA's Federal Test Procedure (FTP) is used to determine compliance with federal emissions requirements:

- *Light-duty vehicles*. Emissions certification involves chassis testing of the entire vehicle. Manufacturers are responsible for complying with exhaust emissions standards.
- *Medium- and heavy-duty vehicles*. Testing is required of the engine only. Manufacturers are responsible for complying with exhaust emissions standards.

The California Air Resources Board is responsible for setting exhaust emissions standards and overseeing emissions certification of vehicles and engines sold in California. California follows the EPA FTP testing procedure but requires chassis-based testing for medium-duty as well as light-duty vehicles.

There are no specific permits associated with emissions certification testing of CNG and LNG vehicles (including retrofits); however, companies performing such tests in California must be approved by the US EPA and CARB.

Table 7-2 Summary of Major Safety Standards for Compressed and Liquefied Natural Gas Vehicles

Standard or Code	Applicability	Comments
FMVSS 303 – Fuel system integrity of compressed natural gas vehicles	CNG vehicles ≤ 10,000 lb GVW School buses	DOT FMVSS for crash test of light-duty vehicle and school bus CNG fuel systems
FMVSS 304 – Compressed natural gas fuel container integrity	CNG vehicles	DOT FMVSS for CNG tanks (light-, medium- and heavy-duty vehicles)
FMCSR, Part 393.65 – All fuel systems	Medium- and heavy-duty commercial trucks and buses including CNG and LNG vehicles	General requirements for fuel systems including CNG and LNG fuel systems
13 CCR 2, Chapter 4, Article 2	CNG fuel systems in 13 CCR 934; LNG fuel systems in 13 CCR 935	California state requirements for CNG and LNG vehicles
SAE J2343 – Recommended practices for LNG-powered heavy-duty trucks	Heavy-duty LNG vehicles	Adopted by reference in CA state requirements for LNG vehicles.
SAE J2406 – CNG-powered medium- and heavy-duty trucks	CNG vehicles > 14,000 lb GVW	---
NFPA 52 – Compressed natural gas (CNG) vehicular fuel system code, 2002	CNG vehicles	---
NFPA 57 – Liquefied natural gas (LNG) vehicular fuel system code, 2002	LNG vehicles	---
ANSI/CSA NGV2-2000 – Basic requirements for compressed natural gas vehicle fuel containers	CNG vehicles	CNG tank requirements in addition to FMVSS 304
ANSI/AGA NGV3I.1-95 – Fuel system components for natural gas powered vehicles	Fuel system components for natural gas vehicles excluding LNG components upstream of vaporizer	Primarily for converted vehicles

FMVSS = Federal Motor Vehicle Safety Standards
LNG = Liquefied natural gas
CNG = Compressed natural gas
CCR = California Code of Regulations
DOT = Department of Transportation
SAE = Society of Automotive Engineers
FMCSR = Federal Motor Carrier Safety Administration
NFPA = National Fire Protection Association
ANSI = American National Standards Institute

Transportation of Biomethane

In Chapter 5, we estimated that the theoretical maximum potential on-farm demand for biomethane would be about 75% of the potential supply from a typical dairy farm, but concluded that this level would not be achieved in practice. The expense to convert all farm equipment and vehicles to run on biomethane is substantial, and even so at least some of the biomethane would have to be used off-farm. Therefore, it would probably not be economically feasible to build on-farm fueling stations (because of the significant capital equipment costs for such stations). To be an economically viable commodity, biomethane produced on dairy farms should be transported to an off-farm fueling station where there is sufficient demand for biomethane fuel.

As discussed in Chapter 4, biomethane can be transported from a dairy farm to an off-farm fueling station in one of four ways:

- Over-the-road transportation, as compressed biomethane
- Over-the-road transportation, as liquefied biomethane
- Distribution via the natural gas pipeline network
- Distribution via dedicated biomethane pipelines ("raw" or partially upgraded biogas may also be transported via dedicated pipelines to a remote biogas upgrading facility)

The regulations pertaining to each of the above transportation/distribution methods are discussed below, along with applicable permitting requirements.

Over-the-Road Transportation of Compressed Biomethane

Regulations pertaining to over-the-road transportation of CNG are assumed to be fully applicable to over-the-road transportation of CBM. These regulations are enforced by the DOT (49 CFR 171 – 180, Hazardous Materials (HAZMAT)). The DOT HAZMAT tables classify CNG as a flammable gas hazardous material (Class 2, Division 2.1).

Vehicles that transport CNG in bulk, often referred to as "tube trailers," are used when over-the-road transportation of CNG (or CBM) is required. Tube trailers are typically class 8 vehicles consisting of a tractor and a trailer that has multiple CNG storage cylinders connected in parallel, often within an enclosed body or metal cage. Since natural gas has a low energy density at standard pressure, practical and economic considerations require that it be compressed to very high pressures (e.g., 3,000 to 3,600 psi) for over-the-road transportation in these storage cylinders.

Some of the critical HAZMAT vehicle requirements for over-the-road transportation of CNG/CBM include:

- Use of DOT-approved tanks (e.g., DOT-3AAX seamless steel cylinders) that do not exceed rated tank pressure
- Less than 0.5 lb water vapor/million scf
- Minimum methane content of 98%
- Appropriate HAZMAT markings, (i.e., markings for Class 2, Division 2.1 flammable gas).

In addition to these requirements, California DMV regulations require that drivers operating CNG bulk transportation vehicles possess a Class A commercial driver's license with endorsements for driving tank vehicles that contain hazardous materials.

Over-the-Road Transportation of Liquefied Biomethane

The regulations pertaining to over-the-road transportation of LNG are assumed to be fully applicable to over-the-road transportation of LBM (49 CFR 171 – 180, Hazardous Materials). Since LNG is a liquefied version of natural gas, DOT HAZMAT tables classify it as a flammable gas hazardous material (Class 2, Division 2.1).

Bulk LNG is transported in LNG tankers, typically class 8 vehicles consisting of a tractor towing a 10,000 gallon tanker. Because it is liquid, and therefore denser than CNG, LNG is transported at lower pressures (e.g., 20 to 150 psi); however it is a cryogenic liquid and must be kept at extremely low temperatures (e.g., around -260° F). This requires the use of insulated, double-walled tankers and special equipment capable of operating under extremely low temperature conditions. Some of the critical HAZMAT vehicle requirements for over-the-road transportation of LNG (and therefore, LBG) include:

- DOT-approved tanks (e.g., double-walled, insulated steel tank)
- Two, independent pressure-relief systems
- Appropriate HAZMAT markings (i.e., markings for Class 2, Division 2.1 flammable gas)
- Maximum one-way travel time marking

In addition to these requirements, California DMV regulations require that drivers operating LNG bulk transportation vehicles must possess a Class A California driver's license with endorsements for driving tank vehicles that contain hazardous materials.

Distribution via Natural Gas Pipeline Network

We are currently unaware of any federal, state, or local regulations expressly prohibiting the distribution of biomethane via the natural gas pipeline network; however in practice, this has been attempted only once in the USA (at the King County South Wastewater Treatment Plant in Renton, Washington). California law requires the CPUC to regulate the use of biomethane from

landfills (landfill gas) because of its vinyl chloride content. These regulations set extremely stringent standards for use of biomethane from landfill gas in a natural gas pipeline.

Local natural gas distribution networks (i.e., mains and service pipelines) are owned by local gas utilities (regulated/investor-owned or municipal), which distribute the gas to customers but do not own the gas production facilities. These utilities require that any gas transported through their systems conform to specific gas quality and interchangeability requirements at the point of receipt.

The two major regulated gas utilities in California are PG&E and SoCalGas; these utilities provide natural gas for most of northern and southern California, respectively. Default gas quality and interchangeability requirements are set forth in PG&E's Rule 21 and SoCalGas's Rule 30 (although these requirements may be superseded by specific agreements). Key default requirements are summarized in Table 7-3.

Table 7-3 Basic Pipeline Quality Standards for Major California Distributors

Gas Component or Characteristic	Pacific Gas and Electric Company	Southern California Gas Company
Carbon dioxide (CO_2)	≤1%	≤3%
Oxygen (O_2)	≤0.1%	≤0.2%
Hydrogen sulfide (H_2S)	≤0.25 grains/100 scf	≤0.25 grains/100 scf
Mercaptan sulfur	≤0.5 grains/100 scf	≤0.3 grains/100 scf
Total sulfur	≤1 grain/100 scf	≤0.75 grains/100 scf
Water (H_2O)	≤7 lb/million scf	≤7 lb/million scf
Total inerts	No requirement	≤4%
Heating value	Specific to receipt point	970 – 1,150 Btu/scf
Landfill gas	Not allowed	No requirement
Temperature	60 – 100º F	50 – 105º F
Gas Interchangeability [a]		
Wobbe number	Specific to receipt point	Specific to receipt point
Lifting index	Specific to receipt point	Specific to receipt point
Flashback index	Specific to receipt point	Specific to receipt point
Yellow tip index	Specific to receipt point	Specific to receipt point

scf = Standard cubic feet
Btu = British thermal units
[a] The various indices— Wobbe number, Lifting index, Flashback index, and Yellow tip index—are all means of determining the gas interchangeability (AGA, 1946)

Additional contractual requirements between a gas utility and a biogas producer would cover quality control, flow metering, and safety items. In all likelihood, a gas utility would resist accepting biomethane from a dairy biogas producer because of gas quality and production reliability concerns. Detailed permitting requirements would be dependent on the contractual

arrangement between the biogas producer and the gas utility and would include, for example, the ownership and physical location of the pipeline connection equipment.

Distribution via Dedicated Pipelines

It is unclear whether state and county regulations pertaining to local pipeline distribution of natural gas would be applicable to local distribution of biomethane (or biogas) via dedicated pipelines. Because these dedicated pipelines would be used for relatively short transport distances, regulations governing interstate transmission of natural gas would not apply.

The California Public Utilities Commission regulates distribution of natural gas through regulated gas utilities such as PG&E and SoCalGas. Establishment of an alternate natural gas pipeline network within an established service territory for a regulated utility is normally prohibited (Richard Myers, California Public Utilities Commission, personal communication, 14 December 2004). It is not clear if biogas or biomethane would be considered natural gas if an attempt were made to distribute it via a dedicated pipeline. If the issue arises, a CPUC ruling might be required.

If we assume that biogas and biomethane are not considered to be natural gas from a local distribution perspective, transporting “raw” or pipeline-quality biogas via a dedicated pipeline within a regulated or unregulated service area (e.g., a municipal gas utility service area) would be subject to the standard city and county regulations and permitting process for underground pipe installations. There is another potential obstacle, however; some local regulations specify that permits for underground pipelines carrying gas can only be granted to public utilities. For this reason, having a local utility company as a partner in a biogas/biomethane project could be an important asset during the permitting process.

Obtaining the necessary permits for siting, constructing, and operating dedicated biogas/biomethane pipelines could be an extremely complex, time-consuming, and expensive process depending on the location of the proposed pipelines (i.e., what land they will cross). Permits from state, local, and possibly federal agencies may be required. Some of the key agencies, regulatory bodies, and other parties that may become involved are listed below:

- Bureau of Land Management — responsible for granting natural gas pipeline rights-of-way on federal lands
- Municipal governments — responsible for granting local land-use permits, approval of pipeline siting plans, granting of encroachments on public lands, granting of construction permits, and granting of operating permits
- California state or municipal government agencies — must comply with CEQA, which may require an EIR
- U.S. Army Corp of Engineers — responsible for granting Section 404 permit for pipeline excavation projects that discharge dredged or fill material into public waters (per the Clean Water Act)

- Private property owners — negotiate easements for underground pipelines on their property

Additional federal agencies that may be involved in the permitting and review process include the US EPA, US Fish and Wildlife Service, and the Bureau of Reclamation. State agencies that may be involved include the California Coastal Commission, California Regional Water Quality Review Board, and California Department of Fish and Game.

In the simplest case, where biogas pipelines are to be buried along public rights-of-way (e.g., public roads), the pipeline operator would contact the local department of public works and file for an encroachment permit. If the pipeline crosses private property, the pipeline operator will need to negotiate an easement with the property owners. If the land that the pipeline crosses is not zoned to allow underground biogas pipelines (e.g., agricultural land), the pipeline operator will need to contact local planning commission and apply for a conditional use permit. In addition, any modifications to property owned by the pipeline operator will require a building permit from the city or county planning commission. Finally, the pipeline operator will need to subscribe to the appropriate local “dig alert service” and register the locations of all underground pipelines that it operates.