Kern River Gas Transmission's
Pre-Flow Biomethane Requirements

REQUIREMENTS

The Operator of the biogas upgrading facility ("**Receipt Point Operator**" or "**Operator**") shall demonstrate, before gas flow starts or resumes into Kern's pipeline system, that the Receipt Gas[1] is merchantable, nontoxic, nonhazardous, meets the gas quality specifications required by Kern River's Tariff, and the Commission's interconnect policy by testing for the applicable constituents levels shown in Section 4 of Kern River's Tariff and Appendix A of this policy. The test results may be from 1) on-site, real-time, appropriate analytical instrumentation or, 2) test results ("**Acceptable Test**") from a third-party analytical laboratory approved by Kern River ("**Approved Laboratory**"). Prior to flowing gas to Kern River, Receipt Point Operator shall be responsible for costs associated with on-site analytical instrumentation, and field sampling/laboratory testing

Prior to the initial delivery of Receipt Gas into Kern River's pipeline, the Receipt Point Operator shall operate their installed on-site analyzers (real-time instrumentation owned and operated by the Operator, set at 5-minute analysis periods), **over a continuous four (4)-week period**, and provide Kern River with results of analyses. In addition, the Operator will provide Kern River with **weekly test results for the four (4) week period**, from an Approved Laboratory, of triplicate sample analyses (Appendix A) of the Receipt Gas for all trace constituents listed. All on-line, real-time on-site analyzer results and field sample results must be verified by Kern River, and must demonstrate an acceptable level for each of the constituents listed in Appendix A before Receipt Gas will be allowed into Kern River's pipeline system. The Receipt Point Operator must provide four (4) consecutive Acceptable Test results, over the period of four (4) weeks, before flowing gas on to Kern River's pipeline system. During this verification period of testing, the Receipt Point Operator shall make reasonable efforts to produce Receipt Gas continuously, with at least 70% uptime. Kern River requires 100% uptime for the final week of testing. Gas cannot be recycled during the pre-flow test period.

The Receipt Point Operator will provide Kern River with at least forty-eight (48) hours' notice of planned field sampling events, and allow Kern River the option of witnessing any Receipt Gas sample collection. All gas sampling must be performed by a qualified, experienced sampling team, and all samples must be sent to Approved Laboratories unless otherwise approved by Kern River in writing.

All test results will be shared with Kern River within five (5) calendar days of the laboratory test results being received by the Receipt Point Operator.

If on-site gas analysis of major components, or results of field sampling for trace constituents, listed in Appendix A indicate that the Receipt Gas is not merchantable, contains toxic, or hazardous substances, Kern River will not allow flow into Kern River's pipeline until testing confirms the abatement of the prohibited substance(s) to a level to be deemed merchantable, non-toxic and/or non-hazardous. The Receipt Point Operator may be required to repeat the pre-flow testing if there is (1) an expansion of the RNG generation process; (2) an indication of a significant change in the Receipt Gas composition; or (3) addition of a new biomass source.

[1] *Receipt Gas* is the biomethane to be delivered by the Operator into the Kern River pipeline system.

Sampling methods and analytical test methods may be modified or changed over time, based upon updates in test methods and instrumentation. Proposed alternative test methods, especially for trace constituents, must be approved by Kern River. Kern River reserves the right to modify the program based upon results of sampling. Kern River reserves the right to modify/waiver requirements of the program based upon specific conditions of the project.

Blending of Receipt Gas with natural gas supplies prior to analytical testing is strictly prohibited. Test methods for all on-site and laboratory testing are included in Appendix A.

Kern River prohibits Receipt Gas from a landfill containing hazardous waste, as defined in 40 CFR, part 261.3, from being delivered into its pipeline system. Development of landfills will be limited to fully and currently permitted RCRA Subtitle D landfills only.

The Receipt Point Operator shall not knowingly supply or cause to supply biomethane from a landfill containing hazardous waste. The Receipt Point Operator of a landfill receipt point has the responsibility to disclose whether the landfill is a site of hazardous waste, has ever been a site of hazardous waste, contains hazardous waste, or has ever accepted hazardous waste. The Receipt Point Operator of the landfill receipt point shall demonstrate verification that the biomethane does not originate from hazardous waste before gas flows into Kern River's pipeline system. This facility verification will be in the form of an environmental due diligence assessment (Period I Environmental Site Assessment/ESA) performed by a Kern River-approved third-party environmental company. The cost of the Assessment/ESA is to be paid by the Receipt Point Operator

Additionally, Commission policy on interconnects requires that the receipts will not either interfere with the safe operations of the pipeline system or cause the company to violate any environmental laws or regulations.

Flow Interruption Testing

Following sustained operation of the receipt point, if the Receipt Gas is idled or stopped from flowing into Kern River for more than sixty (60) consecutive days due to Operator's equipment, processing, gas quality issues or other reasons not due to the operation of Kern River, the Receipt Point Operator will be required to perform one Acceptable Test of all major components, measured through on-line analytical testing, and the required trace constituents, through laboratory testing, prior to resuming flow to Kern River. With respect to landfill, wastewater treatment sludge AD, [2] municipal organics AD, industrial-grade food waste AD and mixed organics AD biogas sources, Kern River must receive, review, and approve the results for one Acceptable Test prior to allowing the Receipt Gas to resume flow to Kern River. For LAM sources of biogas, the Receipt Gas may resume flow to Kern River prior to return of laboratory analyses, if continuous readings from the on-line analyzers are approved by Kern River. If the Receipt Gas is idled or stopped for more than one (1) year, the testing protocol will be required to *start over* at the pre-flow period set forth above for the biogas source.

The Receipt Point Operator shall be proactive in preventing non-conforming Receipt Gas from entering the Kern River system. The Receipt Point Operator is required to maintain its own

[2] AD means anaerobic digestion.

automatic shutoff/diversion protocols, including use of flares, etc. Design of shut-in recirculation loops and pipeline evacuation schemes should be considered.

The Receipt Point Operator shall operate and maintain analytical equipment in accordance with good industry practice.

Plant Start-Up Requirements – All Receipt Gas

Prior to actual delivery of the Receipt Gas and prior to the pre-flow testing, a Plant Start-Up document will be produced. This applies to all biogas sources. The Receipt Point Operator shall prepare and deliver to Kern River a *Biomethane RNG Plant Operation Document,* comprised of the following, at a minimum:

1. A detailed list of anticipated maintenance procedures which necessitate planned Plant shutdown, even for a very short period of time.
2. A detailed description of contingency plans for Plant disruptions, including key contact personnel, phone numbers and chains of command.
3. A listing of all gas analysis equipment and analysis cycles (time between analyses). Specifics pertaining to inspections, calibration, and adjustments to the equipment on a regular basis will be included.
4. Details of the remote transmittal of biomethane quality data/flow data to Kern River.
5. A detailed emergency plan, in case of system failure, fire, etc.
6. Details of the remote gas shut-in system (including process plan, schematics).
7. Details of the gas metering equipment.
8. Details of Maximum Allowable Operating Pressure – Over Pressure Protection equipment.
9. Process/plan for purging of off-specification gas from line upstream of the receipt point into Kern River's pipeline.
10. Other details as requested by Kern River specific to the site.

Receipt Gas produced during this period *does not enter the pipeline.* This startup period allows the Receipt Point Operator the flexibility to fully assess the Plant and modify engineering, equipment, etc. to meet the demands of the overall project. The length of time for this period is variable and depends upon the ability of the Operator to yield Receipt Gas which reliably meets the requirements for gas quality and provide the comprehensive above-mentioned documentation to Kern River.

Appendix A
Concentration Standards for Biomethane Gas Constituents

KERN RIVER RNG QUALITY PARAMETERS (BIOMETHANE) WITH TESTING METHODOLOGY*							Testing Required: Biogas Source	
Gas Quality Constituent	**Reference**	**Tariff Limit or Assigned Value**	**Field or Laboratory Instrument***	**Instrument/Analytical Method***	**Sampling Material or Device***	**Comments**	**Non-Animal Manure Sources*** **	**Live Animal Manure**** **
MAJOR COMPONENTS								
Minimum Higher Heating Value (HHV)	Published Tariff	By Pipeline	Online Gas Chromatograph	ASTM 3855, ASTM D1945/D1946	Continuous Online	--	X	X
Carbon Dioxide (CO_2)	Published Tariff	By Pipeline	Online Gas Chromatograph	ASTM D1945/D1946; Equipment Manufacturer's Recommended Practice	Continuous Online	--	X	X
Nitrogen (N_2)	Published Tariff	By Pipeline	Online Gas Chromatograph	ASTM D1945/D1946; Equipment Manufacturer's Recommended Practice	Continuous Online	--	X	X
Oxygen (O_2)	Published Tariff	By Pipeline	Online Gas Chromatograph/Online Analyzer	ASTM D1945/D1946; Equipment Manufacturer's Recommended Practice	Continuous Online	--	X	X
Total Inerts	Published Tariff	By Pipeline	Online Gas Chromatograph/Online Analyzer	ASTM D1945/D1946	Continuous Online	--	X	X
Water	Published Tariff	By Pipeline	Online Analyzer	ASTM D5454	Continuous Online	--	X	X
Hydrogen Sulfide	Published Tariff	By Pipeline	Online Analyzer	ASTM D5504 OR ASTM 6228	Continuous Online	--	X	X
Mercaptan Sulfur	Published Tariff	By Pipeline	Online Analyzer	ASTM D5504 OR ASTM 6228	Continuous Online	--	X	X
Total Sulfur	Published Tariff	By Pipeline	Online Analyzer	ASTM D5504 OR ASTM 6228	Continuous Online	--	X	X
Hydrocarbon Dewpoint	Published Tariff	By Pipeline	Online Analyzer	Calculated from gas composition via an Equation of State	Continuous Online	--	X	X
Delivery Temperature	Published Tariff	By Pipeline	Online Analyzer	RTD in gas stream	Continuous Online	Temperature of the injection gas	X	X
TRACE CONSTITUENTS								
Ammonia	Ref. 2, 3, 4	0.001 vol% 10 ppmV	AAS/Ion Chromatography	OSHA ID-188 NIOSH 6015 EPA M26	Glass Tubes Glass Tubes Mod. EPA Method 26 (Impingers)	Analytical Method pairs with Sampling Method; EPA Method is impinger method	X	X
Hydrogen	Ref. 2, 3	0.3 Vol %	Gas Chromatography/Thermal Conductivity Detector	ASTM D1945/D1946	Tedlar Bag/Cylinder/Check with Laboratory	Specific to pipeline integrity	X	X
Siloxanes	Ref. 1, 4	0.5 mg Si/m3	Gas Chromatography/Mass Spectrometry	ASTM D8230-19	Tedlar bag - Analysis within 72 hours; Sample cylinder - check with laboratory for holding times/options	ASTM recently approved method	X	
Halocarbons - Halogens	Ref. 4	Chlorine: 10 mg/m3 TOTAL Fluorine: 10 mg/m3 TOTAL	Gas Chromatography/Mass Spectrometry	EPA TO-15**	5-L Tedlar Bag; Summa Canisters. Check with laboratory. Impinger method in field: EPA Method 26/26A	Total Cl and F can also be quantified from TO-15 results.	X	
Mercury	Ref. 2, 3, 4	0.08 mg/m3	Atomic Adsorption Spectroscopy	ASTM D5954	Gold Plated Silica Beads		X	
Arsenic	Ref. 2, 3, 4	0.19 mg/m3 or 0.06 ppmv	Atomic Adsorption Spectroscopy/ICAP	EPA Method 29 Modified ASTM WK91049	EPA Method 29 Impingers ASTM WK91049 Sorbent Tubes		X	
Copper	Ref. 2, 3 4	0.60 mg/m3 or 0.23 ppmv	Atomic Adsorption Spectroscopy/ICAP	EPA Method 29 Modified ASTM WK91049	EPA Method 29 Impingers ASTM WK91049 Sorbent Tubes		X	

Specification References

Reference 1 CCST, 2018

Reference 2 Rules 30 and 45 (updated), SoCal

Reference 3 Rules 21 and 29 (updated), PG&E

Reference 4 CAN-BNQ 3672-100/2023

*Sampling methods and analytical testing methods for trace constituents may be updated over time. Alternative methods must be approved by Kern River.

**TO-15 with calculation for total chlorine and fluorine, considering molecular weight and % of total compound, unless impinger method is used.

***Landfill, Wastewater Treatment Sludge AD, Mixed Organic Wastes (MOW) ("Greeen Bin" wastes), Industrial-Grade Food Waste (IGFW), Mixed organics from various sources

****Agricultural waste may be considered for this program, if qualified as "clean"