List of Site-Specific Inputs

AMPRENEW OFFTAKE I LLC (9041)
RDF STEVENS LLC (71701)

Tier 1 Simplified CI Calculator for Biomethane from Anaerobic Digestion of Dairy and Swine Manure

The applicant has conducted its analysis of carbon intensity for this pathway using an unmodified version of the Tier 1 Simplified CI Calculator for Biomethane from Anaerobic Digestion of Dairy and Swine Manure.

The standard inputs and parameters specified in CA-GREET3.0 remain unchanged. The input table below specifies the spreadsheet location of the calculator inputs and other parameters that were claimed as confidential business information by the applicant, but it does not disclose the actual value of such inputs and parameters because they are claimed to be confidential business information or trade secret.

This information can also be found in LCA Report. (Locations of cells containing Confidential Business Information are shown, but the actual values of such confidential information are not disclosed):

Parameter	Unit	Cell Location
Section L1: [Equation 5.3 in LOP] Baseline Methane Emissions from Anaerobic Storage/Treatment Systems (BECH4,AS)		
Livestock Category (L)	Drop Down List	Manure-to-Biogas (LOP Inputs) B7,P7,
Reporting Month	MM/YYYY	Manure-to-Biogas (LOP Inputs) C8-C19; R8-R19
Livestock Population	PL	Manure-to-Biogas (LOP Inputs) D8-D19; R8-R19;
Calendar Days of the Month	Days	Manure-to-Biogas (LOP Inputs) E8-E19; S8-S19:
Number of Reporting Days	RDrm (days)	Manure-to-Biogas (LOP Inputs) F8-F19; T8-T19;
Average Temperature	T2 (°C)	Manure-to-Biogas (LOP Inputs) G8-G19; U8-U19
Fraction of Volatile Solids Sent to Anaerobic Storage/Treatment System	MSAS,L (fraction)	Manure-to-Biogas (LOP Inputs) I8-I19; W8-W19
Retention Time and Drainage	Drop Down List	Manure-to-Biogas (LOP Inputs) K8-K19; Y8-Y19
Carryover from Previous Month	(VSavail-1,AS VSdeg-1,AS) (kg)	Manure-to-Biogas (LOP Inputs) L8; Z8
Section L2: [Equation 5.4 in LOP] Baseline Methane Emissions from Non-Anaerobic Storage/Treatment Systems (BECH4,nAS)		
Non-anaerobic Storage/Treatment Systems	Drop Down List	Manure-to-Biogas (LOP Inputs) B39
Manure Managed in Non-Anaerobic Storage/Treatment System	MSL,nAS, (fraction)	Manure-to-Biogas (LOP Inputs) D39-F39

Section L3: [Equation 5.6-Venting in LOP] Project Methane Emissions from Venting Events (CH4 vent) in the Biogas Control System (BCS)		
Reporting Month	MM/YYYY	Manure-to-Biogas (LOP Inputs) B52 to B56
Section L4: [Equation 5.8 in LOP] Project Methane Emissions from the BCS Effluent Pond(s) (PECH4,EP)		
Fraction of Volatile Solids Sent to BCS System	MSL,BCS (fraction)	Manure-to-Biogas (LOP Inputs) F82 to F83
Section L5: [Equation 5.9 in LOP] Project Methane Emissions from Non-BCS Related Sources (PECH4,nBCS)		
L5.1.b Non-anaerobic Storage/Treatment Systems	Manure Managed in Non-BCS (Other) Systems (MSL,S, fraction)	■■■■
L5.1.b Non-anaerobic Storage/Treatment Systems	Manure Managed in Non-BCS (Other) Systems (MSL,S, fraction)	■■■■
Section P1. Results from the "Manure-to-Biogas (LOP Inputs)" tab		
Digester Type	Drop Down List	Avoided Emissions C4
Section 1. Applicant Information		
Company Name	Name	Biogas-to-RNG C15
Company ID	#	Biogas-to-RNG C16

Facility ID	#	Biogas-to-RNG C17
Digester Location	Digester Location	Biogas-to-RNG C18
CNG Dispensing Station(s) Location	Street, City, State	Biogas-to-RNG F15
LNG Dispensing Station(s) Location	Street, City, State	Biogas-to-RNG F16
Average Annual Temperature	°C	Biogas-to-RNG F20

Section 2. Biomethane Production Data		
2.1 Select Electricity Mix for Biomethane	Drop Down List	Biogas-to-RNG D24
2.2 Provisional Pathway	Yes or No	Biogas-to-RNG H24
2.4 Raw Biogas Production	Standard Cubic Feet @ 60oF, 1 atm	Biogas-to-RNG C28 to C32
2.5 Raw Biogas Production	% Methane	Biogas-to-RNG D28 to D32
2.6 Raw Biogas Feedstock (at Inlet to cleanup/upgrading)	Standard Cubic Feet @ 60oF, 1 atm	Biogas-to-RNG E28 to E32
2.7 Raw Biogas Feedstock (at Inlet to cleanup/upgrading)	% Methane	Biogas-to-RNG F28 to F32
2.8 Baseline energy use - Diesel (baseline manure transport and handling)	Gallons, HHV	Biogas-to-RNG G28 to G32
2.10 Grid Electricity (baseline manure pumping and solids)	kWh	Biogas-to-RNG I28 to I32
2.11 Grid Electricity (baseline manure pumping and solids)	kWh	Biogas-to-RNG J28 to J32
2.13 Utility Sourced NG (digester project)	MMBtu, HHV	Biogas-to-RNG L28 to J32
2.14 Digester energy use (Project) - Diesel (digester project manure transport and handling)	Gallons, HHV	Biogas-to-RNG M28 to M32
2.15 Utility Sourced NG (upgrading and compression)	MMBtu, HHV	Biogas-to-RNG N28 to N32
2.18 Upgrading and compression energy use (Project) - Grid Electricity (upgrading and compression)	kWh	Biogas-to-RNG Q28 to Q32
2.21 Upgrading and compression energy use (Project) - Flared gas including tailgas from upgrading	Standard Cubic Feet @ 60oF, 1 atm	Biogas-to-RNG T28 to T32
2.22 Upgrading and compression energy use (Project) - Flared gas including tailgas from upgrading	% Methane	Biogas-to-RNG U28 to U32
2.23 Upgrading and compression energy use (Project) - Biomethane Injected into Pipeline for Transportation Fuel Production (metered), (subtract buyback NG and Propane if used to boost Btu)	MMBtu, HHV	Biogas-to-RNG V28 to V32
2.27.a NG pipeline Transmission - From upgrading facility to CNG station.	Miles	Biogas-to-RNG Z34

Calculator Modifications			
Parameter	**Original Value**	**Modification**	**Cell Location**
Avoided Emissions			
Net methane emissions avoided (Calculation)	=C37-C32*COUNTIF('Manure-to-Biogas (LOP Inputs)'!B52:B75,">0")	=IF((C37-C32*COUNTIF('Manure-to-Biogas (LOP Inputs)'!B52:B75,">0"))<-C40,-C40,C37-C32*COUNTIF('Manure-to-Biogas (LOP Inputs)'!B52:B75,">0"))	C38
Avoided CO2 diverted from land application	=-(C40-C32*COUNTIF('Manure-to-Biogas (LOP Inputs)'!B52:B75,">0"))*(44/16)	=IF((-C38=C40),0,-(C40-C32*COUNTIF('Manure-to-Biogas (LOP Inputs)'!B52:B75,">0"))*(44/16))	G37
EF Table			
Fugitive Methane from Upgrading Requested by CARB	=2%	=MAX(IFERROR(1-(('Biogas-to-RNG'!V55+'Biogas-to-RNG'!W55+'Biogas-to-RNG'!U55)/('Biogas-to-RNG'!F55)),0),0.02)	EF Table E86

Section L4: [Equation 5.8 in LOP] Project Methane Emissions from the BCS Effluent Pond(s) (PECH4,EP)			
Volatile Solids to Effluent Ponds	=C82*D82*E82*F82* 0.3	████████████ ███	Manure-to-Biogas (LOP Inputs) G82
Volatile Solids to Effluent Ponds	=C82*D82*E82*F82* 0.3	████████████ ███	Manure-to-Biogas (LOP Inputs) G83
Section 2: Biomethane Production Data			
Raw Biogas Production	=Iferror(avg(d28:d51) ,0)	=sumproduct(c28:c51, d28:d51)/sum(c28:c51)	Biogas-to-RNG D52
Raw Biogas Feedstock (at Inlet to cleanup/upgrading)	=Iferror(avg(F28:F51) ,0)	=sumproduct(E28:E51 ,F28:F51)/sum(E28:E5 1)	Biogas-to-RNG F52
Upgrading and compression energy use (Project) - Flared gas including tailgas from upgrading	=Iferror(avg(U28:U51),0)	=sumproduct(T28:T51, U28:U51)/sum(T28:T5 1)	Biogas-to-RNG U52
Propane	N55*N57	█████	Biogas-to-RNG E70
2.15 Propane	74654.759650136	██████	Biogas-to-RNG N57
2.5 Biomethane Content (% Methane)	=IFERROR(AVERAG E(D28:D51),0)	=IFERROR(SUMPROD UCT(D28:D51,C28:C5 1)/SUM(C28:C51),0)	Biogas-to-RNG D52
2.7 Biomethane Content (% Methane)	=IFERROR(AVERAG E(F28:F51),0)	=IFERROR(SUMPROD UCT(F28:F51,E28:E51)/SUM(E28:E51),0)	Biogas-to-RNG F52
2.22 Biomethane Content (% Methane in Flared Gas)	=IFERROR(AVERAG E(U28:U51),0)	=IFERROR(SUMPROD UCT(U28:U51,T28:T51)/SUM(T28:T51),0)	Biogas-to-RNG U52

Additional Tab: Allocation	
2.4 Total Raw Biogas Flow, (metered)	Allocation of total raw biogas from District 45 to the upgrading facility
2.5 Biomethane Content (% Methane)	Methane content of total raw biogas from District 45 to the upgrading facility
2.6 Raw Biogas Flow to Upgrading, (metered)	Allocation of gas from District 45 to the upgrading facility
2.7 Biomethane Content (% Methane)	Methane content of raw biogas from District 45 to the upgrading facility
2.18 Grid Electricity (upgrading and compression)	Allocation of grid electricity for District 45 for the upgrading process
2.13 Utility Sourced NG (digester project)	Allocation of natural gas for District 45 for the upgrading process
2.15 Propane	Allocation of propane for District 45 for the upgrading process

2.18 Grid Electricity (upgrading and compression)	Allocation of grid electricity for District 45 for the upgrading process
2.21 Flared gas including tailgas from upgrading (metered biogas)	Allocation of flared gas for District 45 for the upgrading process
2.22 Biomethane Content (% Methane in Flared Gas)	Methane content of biogas from District 45 to the upgrading facility
2.23 Biomethane Injected into Pipeline	Allocation of gas injected into the pipeline for District 45
Added Tab – Energy Allocation	
Tab/Worksheet/Section Name	Description
Upgrading Allocation	Total energy use, quantities of biomethane injected, allocation factor based on biomethane quantities and energy used at digesters and upgrading facilities

List of Site-Specific Inputs

AMPRENEW OFFTAKE I LLC (9041)

RDF STEVENS LLC (71701)

Tier 1 Simplified CI Calculator for Biomethane from Anaerobic Digestion of Dairy and Swine Manure

The applicant has conducted its analysis of carbon intensity for this pathway using an unmodified version of the Tier 1 Simplified CI Calculator for Biomethane from Anaerobic Digestion of Dairy and Swine Manure.

The standard inputs and parameters specified in CA-GREET3.0 remain unchanged. The input table below specifies the spreadsheet location of the calculator inputs and other parameters that were claimed as confidential business information by the applicant, but it does not disclose the actual value of such inputs and parameters because they are claimed to be confidential business information or trade secret.

This information can also be found in LCA Report. (Locations of cells containing Confidential Business Information are shown, but the actual values of such confidential information are not disclosed):

Parameter	Unit	Cell Location
Section L1: [Equation 5.3 in LOP] Baseline Methane Emissions from Anaerobic Storage/Treatment Systems (BECH4,AS)		
Livestock Category (L)	Drop Down List	Manure-to-Biogas (LOP Inputs) B7,P7,
Reporting Month	MM/YYYY	Manure-to-Biogas (LOP Inputs) C8-C19; R8-R19
Livestock Population	PL	Manure-to-Biogas (LOP Inputs) D8-D19; R8-R19;
Calendar Days of the Month	Days	Manure-to-Biogas (LOP Inputs) E8-E19; S8-S19:
Number of Reporting Days	RDrm (days)	Manure-to-Biogas (LOP Inputs) F8-F19; T8-T19;
Average Temperature	T2 (°C)	Manure-to-Biogas (LOP Inputs) G8-G19; U8-U19;
Fraction of Volatile Solids Sent to Anaerobic Storage/Treatment System	MSAS,L (fraction)	Manure-to-Biogas (LOP Inputs) I8-I19; W8-W19;
Retention Time and Drainage	Drop Down List	Manure-to-Biogas (LOP Inputs) K8-K19; Y8-Y19;
Carryover from Previous Month	(VSavail-1,AS VSdeg-1,AS) (kg)	Manure-to-Biogas (LOP Inputs) L8; Z8,
Section L2: [Equation 5.4 in LOP] Baseline Methane Emissions from Non-Anaerobic Storage/Treatment Systems (BECH4,nAS)		
Non-anaerobic Storage/Treatment Systems	Drop Down List	Manure-to-Biogas (LOP Inputs) B39
Manure Managed in Non-Anaerobic Storage/Treatment System	MSL,nAS, (fraction)	Manure-to-Biogas (LOP Inputs) D39-F39

Section L3: [Equation 5.6-Venting in LOP] Project Methane Emissions from Venting Events (CH4 vent) in the Biogas Control System (BCS)		
Reporting Month	MM/YYYY	Manure-to-Biogas (LOP Inputs) B52 to B56
Section L4: [Equation 5.8 in LOP] Project Methane Emissions from the BCS Effluent Pond(s) (PECH4,EP)		
Fraction of Volatile Solids Sent to BCS System	MSL,BCS (fraction)	Manure-to-Biogas (LOP Inputs) F82 to F83

Section L5: [Equation 5.9 in LOP] Project Methane Emissions from Non-BCS Related Sources (PECH4,nBCS)		
L5.1.a Other Anaerobic Storage/Treatment Systems	Manure Managed in Non-BCS (Other) Systems (MSL,S, fraction)	████████
L5.1.a Other Anaerobic Storage/Treatment Systems	Manure Managed in Non-BCS (Other) Systems (MSL,S, fraction)	████████
L5.1.b Non-anaerobic Storage/Treatment Systems	Manure Managed in Non-BCS (Other) Systems (MSL,S, fraction)	████████████
L5.1.b Non-anaerobic Storage/Treatment Systems	Manure Managed in Non-BCS (Other) Systems (MSL,S, fraction)	████████
L5.1.b Non-anaerobic Storage/Treatment Systems	Manure Managed in Non-BCS (Other) Systems (MSL,S, fraction)	████████████
L5.1.b Non-anaerobic Storage/Treatment Systems	Manure Managed in Non-BCS (Other) Systems (MSL,S, fraction)	████████████
L5.1.b Non-anaerobic Storage/Treatment Systems	Manure Managed in Non-BCS (Other) Systems (MSL,S, fraction)	████████
L5.1.b Non-anaerobic Storage/Treatment Systems	Manure Managed in Non-BCS (Other) Systems (MSL,S, fraction)	████████████
Section P1. Results from the "Manure-to-Biogas (LOP Inputs)" tab		
Digester Type	Drop Down List	Avoided Emissions C4
Section 1. Applicant Information		
Company Name	Name	Biogas-to-RNG C15
Company ID	#	Biogas-to-RNG C16
Facility ID	#	Biogas-to-RNG C17
Digester Location	Digester Location	Biogas-to-RNG C18
CNG Dispensing Station(s) Location	Street, City, State	Biogas-to-RNG F15
LNG Dispensing Station(s) Location	Street, City, State	Biogas-to-RNG F16
Average Annual Temperature	°C	Biogas-to-RNG F20

Section 2. Biomethane Production Data		
2.1 Select Electricity Mix for Biomethane	Drop Down List	Biogas-to-RNG D24
2.2 Provisional Pathway	Yes or No	Biogas-to-RNG H24
2.4 Raw Biogas Production	Standard Cubic Feet @ 60oF, 1 atm	Biogas-to-RNG C28 to C32
2.5 Raw Biogas Production	% Methane	Biogas-to-RNG D28 to D32
2.6 Raw Biogas Feedstock (at Inlet to cleanup/upgrading)	Standard Cubic Feet @ 60oF, 1 atm	Biogas-to-RNG E28 to E32
2.7 Raw Biogas Feedstock (at Inlet to cleanup/upgrading)	% Methane	Biogas-to-RNG F28 to F32
2.8 Baseline energy use - Diesel (baseline manure transport and handling)	Gallons, HHV	Biogas-to-RNG G28 to G32
2.10 Grid Electricity (baseline manure pumping and solids)	kWh	Biogas-to-RNG I28 to I32
2.11 Grid Electricity (baseline manure pumping and solids)	kWh	Biogas-to-RNG J28 to J32
2.13 Utility Sourced NG (digester project)	MMBtu, HHV	Biogas-to-RNG L28 to L32
2.14 Digester energy use (Project) - Diesel (digester project manure transport and handling)	Gallons, HHV	Biogas-to-RNG M28 to M32
2.15 Utility Sourced NG (upgrading and compression)	MMBtu, HHV	Biogas-to-RNG N28 to N32
2.18 Upgrading and compression energy use (Project) - Grid Electricity (upgrading and compression)	kWh	Biogas-to-RNG Q28 to Q32
2.21 Upgrading and compression energy use (Project) - Flared gas including tailgas from upgrading	Standard Cubic Feet @ 60oF, 1 atm	Biogas-to-RNG T28 to T32
2.22 Upgrading and compression energy use (Project) - Flared gas including tailgas from upgrading	% Methane	Biogas-to-RNG U28 to U32
2.23 Upgrading and compression energy use (Project) - Biomethane Injected into Pipeline for Transportation Fuel Production (metered), (subtract buyback NG and Propane if used to boost Btu)	MMBtu, HHV	Biogas-to-RNG V28 to V32
2.27.a NG pipeline Transmission - From upgrading facility to CNG station.	Miles	Biogas-to-RNG Z34

Calculator Modifications			
Parameter	**Original Value**	**Modification**	**Cell Location**
Avoided Emissions			
Net methane emissions avoided (Calculation)	=C37-C32*COUNTIF('Manure-to-Biogas (LOP Inputs)'!B52:B75, ">0")	=IF((C37-C32*COUNTIF('Manure-to-Biogas (LOP Inputs)'!B52:B75,">0"))<-C40,-C40,C37-C32*COUNTIF('Manure-to-Biogas (LOP Inputs)'!B52:B75,">0"))	C38
Avoided CO2 diverted from land application	=-(C40-C32*COUNTIF('Manure-to-Biogas (LOP Inputs)'!B52:B75, ">0"))*(44/16)	=IF((-C38=C40),0,-(C40-C32*COUNTIF('Manure-to-Biogas (LOP Inputs)'!B52:B75, ">0"))*(44/16))	G37
EF Table			
Fugitive Methane from Upgrading	=2%	=MAX(IFERROR(1-(('Biogas-to-RNG'!V55+'Biogas-to-RNG'!W55+'Biogas-to-RNG'!U55)/('Biogas-to-RNG'!F55)),0),0.02)	EF Table E86
Section L4: [Equation 5.8 in LOP] Project Methane Emissions from the BCS Effluent Pond(s) (PECH4.EP)			
Volatile Solids to Effluent Ponds	=C82*D82*E82*F82*0.3	███████████████	Manure-to-Biogas (LOP Inputs) G82
Volatile Solids to Effluent Ponds	=C82*D82*E82*F82*0.3	███████████████	Manure-to-Biogas (LOP Inputs) G83

Section 2: Biomethane Production Data			
Raw Biogas Production	=Iferror(avg(d28:d51),0)	=sumproduct(c28:c51, d28:d51)/sum(c28:c51)	Biogas-to-RNG D52
Raw Biogas Feedstock (at Inlet to cleanup/upgrading)	=Iferror(avg(F28:F51),0)	=sumproduct(E28:E51,F28:F51)/sum(E28:E5 1)	Biogas-to-RNG F52
Upgrading and compression energy use (Project) - Flared gas including tailgas from upgrading	=Iferror(avg(U28:U51),0)	=sumproduct(T28:T51, U28:U51)/sum(T28:T5 1)	Biogas-to-RNG U52
Propane	N55*N57	███████	Biogas-to-RNG E70
2.15 Propane	74654.759650136	███████	Biogas-to-RNG N57
2.5 Biomethane Content (% Methane)	=IFERROR(AVERAGE(D28:D51),0)	=IFERROR(SUMPRODUCT(D28:D51,C28:C51)/SUM(C28:C51),0)	Biogas-to-RNG D52
2.7 Biomethane Content (% Methane)	=IFERROR(AVERAGE(F28:F51),0)	=IFERROR(SUMPRODUCT(F28:F51,E28:E51)/SUM(E28:E51),0)	Biogas-to-RNG F52
2.22 Biomethane Content (% Methane in Flared Gas)	=IFERROR(AVERAGE(U28:U51),0)	=IFERROR(SUMPRODUCT(U28:U51,T28:T51)/SUM(T28:T51),0)	Biogas-to-RNG U52

Additional Tab: Allocation	
2.4 Total Raw Biogas Flow, (metered)	Allocation of total raw biogas from Riverview to the upgrading facility
2.5 Biomethane Content (% Methane)	Methane content of total raw biogas from Riverview to the upgrading facility
2.6 Raw Biogas Flow to Upgrading, (metered)	Allocation of gas from Riverview to the upgrading facility
2.7 Biomethane Content (% Methane)	Methane content of raw biogas from Riverview to the upgrading facility
2.18 Grid Electricity (upgrading and compression)	Allocation of grid electricity for Riverview for the upgrading process
2.13 Utility Sourced NG (digester project)	Allocation of natural gas for Riverview for the upgrading process
2.15 Propane	Allocation of propane for Riverview for the upgrading process
2.18 Grid Electricity (upgrading and compression)	Allocation of grid electricity for Riverview for the upgrading process
2.21 Flared gas including tailgas from upgrading (metered biogas)	Allocation of flared gas for Riverview for the upgrading process
2.22 Biomethane Content (% Methane in Flared Gas)	Methane content of biogas from Riverview to the upgrading facility
2.23 Biomethane Injected into Pipeline	Allocation of gas injected into the pipeline for Riverview

Added Tab – Energy Allocation	
Tab/Worksheet/Section Name	**Description**
Upgrading Allocation	Total energy use, quantities of biomethane injected, allocation factor based on biomethane quantities and energy used at digesters and upgrading facilities

List of Site-Specific Inputs

AMPRENEW OFFTAKE I LLC (9041)

RDF STEVENS LLC (71701)

Tier 1 Simplified CI Calculator for Biomethane from Anaerobic Digestion of Dairy and Swine Manure

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Parameter	Unit	Cell Location
Section L1: [Equation 5.3 in LOP] Baseline Methane Emissions from Anaerobic Storage/Treatment Systems (BECH4,AS)		
Livestock Category (L)	Drop Down List	Manure-to-Biogas (LOP Inputs) B7,P7,
Reporting Month	MM/YYYY	Manure-to-Biogas (LOP Inputs) C8-C19; R8-R19
Livestock Population	PL	Manure-to-Biogas (LOP Inputs) D8-D19; R8-R19;
Calendar Days of the Month	Days	Manure-to-Biogas (LOP Inputs) E8-E19; S8-S19:
Number of Reporting Days	RDrm (days)	Manure-to-Biogas (LOP Inputs) F8-F19; T8-T19;
Average Temperature	T2 (°C)	Manure-to-Biogas (LOP Inputs) G8-G19; U8-U19;
Fraction of Volatile Solids Sent to Anaerobic Storage/Treatment System	MSAS,L (fraction)	Manure-to-Biogas (LOP Inputs) I8-I19; W8-W19;
Retention Time and Drainage	Drop Down List	Manure-to-Biogas (LOP Inputs) K8-K19; Y8-Y19;
Carryover from Previous Month	(VSavail-1,AS VSdeg-1,AS) (kg)	Manure-to-Biogas (LOP Inputs) L8; Z8
Section L2: [Equation 5.4 in LOP] Baseline Methane Emissions from Non-Anaerobic Storage/Treatment Systems (BECH4,nAS)		
Non-anaerobic Storage/Treatment Systems	Drop Down List	Manure-to-Biogas (LOP Inputs) B39
Manure Managed in Non-Anaerobic Storage/Treatment System	MSL,nAS, (fraction)	Manure-to-Biogas (LOP Inputs) D39-F39

Section L3: [Equation 5.6-Venting in LOP] Project Methane Emissions from Venting Events (CH4 vent) in the Biogas Control System (BCS)		
Reporting Month	MM/YYYY	Manure-to-Biogas (LOP Inputs) B52 to B56
Section L4: [Equation 5.8 in LOP] Project Methane Emissions from the BCS Effluent Pond(s) (PECH4,EP)		
Fraction of Volatile Solids Sent to BCS System	MSL,BCS (fraction)	Manure-to-Biogas (LOP Inputs) F82 to F83

Section L5: [Equation 5.9 in LOP] Project Methane Emissions from Non-BCS Related Sources (PECH4,nBCS)		
L5.1.a Other Anaerobic Storage/Treatment Systems	Manure Managed in Non-BCS (Other) Systems (MSL,S, fraction)	███████
L5.1.a Other Anaerobic Storage/Treatment Systems	Manure Managed in Non-BCS (Other) Systems (MSL,S, fraction)	███████
L5.1.b Non-anaerobic Storage/Treatment Systems	Manure Managed in Non-BCS (Other) Systems (MSL,S, fraction)	█████████
L5.1.b Non-anaerobic Storage/Treatment Systems	Manure Managed in Non-BCS (Other) Systems (MSL,S, fraction)	██████
L5.1.b Non-anaerobic Storage/Treatment Systems	Manure Managed in Non-BCS (Other) Systems (MSL,S, fraction)	█████████
L5.1.b Non-anaerobic Storage/Treatment Systems	Manure Managed in Non-BCS (Other) Systems (MSL,S, fraction)	█████████
L5.1.b Non-anaerobic Storage/Treatment Systems	Manure Managed in Non-BCS (Other) Systems (MSL,S, fraction)	███████
L5.1.b Non-anaerobic Storage/Treatment Systems	Manure Managed in Non-BCS (Other) Systems (MSL,S, fraction)	█████████
Section P1. Results from the "Manure-to-Biogas (LOP Inputs)" tab		
Digester Type	Drop Down List	Avoided Emissions C4
Section 1. Applicant Information		
Company Name	Name	Biogas-to-RNG C15
Company ID	#	Biogas-to-RNG C16
Facility ID	#	Biogas-to-RNG C17
Digester Location	Digester Location	Biogas-to-RNG C18
CNG Dispensing Station(s) Location	Street, City, State	Biogas-to-RNG F15
LNG Dispensing Station(s) Location	Street, City, State	Biogas-to-RNG F16
Average Annual Temperature	°C	Biogas-to-RNG F20

Section 2. Biomethane Production Data		
2.1 Select Electricity Mix for Biomethane	Drop Down List	Biogas-to-RNG D24
2.2 Provisional Pathway	Yes or No	Biogas-to-RNG H24
2.4 Raw Biogas Production	Standard Cubic Feet @ 60oF, 1 atm	Biogas-to-RNG C28 to C32
2.5 Raw Biogas Production	% Methane	Biogas-to-RNG D28 to D32
2.6 Raw Biogas Feedstock (at Inlet to cleanup/upgrading)	Standard Cubic Feet @ 60oF, 1 atm	Biogas-to-RNG E28 to E32
2.7 Raw Biogas Feedstock (at Inlet to cleanup/upgrading)	% Methane	Biogas-to-RNG F28 to F32
2.8 Baseline energy use - Diesel (baseline manure transport and handling)	Gallons, HHV	Biogas-to-RNG G28 to G32
2.10 Grid Electricity (baseline manure pumping and solids)	kWh	Biogas-to-RNG I28 to I32
2.11 Grid Electricity (baseline manure pumping and solids)	kWh	Biogas-to-RNG J28 to J32
2.13 Utility Sourced NG (digester project)	MMBtu, HHV	Biogas-to-RNG L28 to L32
2.14 Digester energy use (Project) - Diesel (digester project manure transport and handling)	Gallons, HHV	Biogas-to-RNG M28 to M32
2.15 Utility Sourced NG (upgrading and compression)	MMBtu, HHV	Biogas-to-RNG N28 to N32
2.18 Upgrading and compression energy use (Project) - Grid Electricity (upgrading and compression)	kWh	Biogas-to-RNG Q28 to Q32
2.21 Upgrading and compression energy use (Project) - Flared gas including tailgas from upgrading	Standard Cubic Feet @ 60oF, 1 atm	Biogas-to-RNG T28 to T32
2.22 Upgrading and compression energy use (Project) - Flared gas including tailgas from upgrading	% Methane	Biogas-to-RNG U28 to U32
2.23 Upgrading and compression energy use (Project) - Biomethane Injected into Pipeline for Transportation Fuel Production (metered), (subtract buyback NG and Propane if used to boost Btu)	MMBtu, HHV	Biogas-to-RNG V28 to V32
2.27.a NG pipeline Transmission - From upgrading facility to CNG station.	Miles	Biogas-to-RNG Z34

Calculator Modifications			
Parameter	**Original Value**	**Modification**	**Cell Location**
Avoided Emissions			
Net methane emissions avoided (Calculation)	=C37-C32*COUNTIF('Manure-to-Biogas (LOP Inputs)'!B52:B75, ">0")	=IF((C37-C32*COUNTIF('Manure-to-Biogas (LOP Inputs)'!B52:B75,">0"))<-C40,-C40,C37-C32*COUNTIF('Manure-to-Biogas (LOP Inputs)'!B52:B75,">0"))	C38
Avoided CO2 diverted from land application	=-(C40-C32*COUNTIF('Manure-to-Biogas (LOP Inputs)'!B52:B75, ">0"))*(44/16)	=IF((-C38=C40),0,-(C40-C32*COUNTIF('Manure-to-Biogas (LOP Inputs)'!B52:B75, ">0"))*(44/16))	G37
EF Table			
Fugitive Methane from Upgrading	=2%	=MAX(IFERROR(1-(('Biogas-to-RNG'!V55+'Biogas-to-RNG'!W55+'Biogas-to-RNG'!U55)/('Biogas-to-RNG'!F55)),0),0.02)	EF Table E86

Section L4: [Equation 5.8 in LOP] Project Methane Emissions from the BCS Effluent Pond(s) (PECH4,EP)			
Volatile Solids to Effluent Ponds	=C82*D82*E82*F82* 0.3	██████████████ ██	Manure-to-Biogas (LOP Inputs) G82
Volatile Solids to Effluent Ponds	=C82*D82*E82*F82* 0.3	██████████████ ██	Manure-to-Biogas (LOP Inputs) G83
Section 2: Biomethane Production Data			
Raw Biogas Production	=Iferror(avg(d28:d51) ,0)	=sumproduct(c28:c51, d28:d51)/sum(c28:c51)	Biogas-to-RNG D52
Raw Biogas Feedstock (at Inlet to cleanup/upgrading)	=Iferror(avg(F28:F51) ,0)	=sumproduct(E28:E51 ,F28:F51)/sum(E28:E5 1)	Biogas-to-RNG F52
Upgrading and compression energy use (Project) - Flared gas including tailgas from upgrading	=Iferror(avg(U28:U51),0)	=sumproduct(T28:T51, U28:U51)/sum(T28:T5 1)	Biogas-to-RNG U52
Propane	N55*N57	███████	Biogas-to-RNG E70
2.15 Propane	74654.759650136	████████	Biogas-to-RNG N57
2.5 Biomethane Content (% Methane)	=IFERROR(AVERAG E(D28:D51),0)	=IFERROR(SUMPROD UCT(D28:D51,C28:C5 1)/SUM(C28:C51),0)	Biogas-to-RNG D52
2.7 Biomethane Content (% Methane)	=IFERROR(AVERAG E(F28:F51),0)	=IFERROR(SUMPROD UCT(F28:F51,E28:E51)/SUM(E28:E51),0)	Biogas-to-RNG F52
2.22 Biomethane Content (% Methane in Flared Gas)	=IFERROR(AVERAG E(U28:U51),0)	=IFERROR(SUMPROD UCT(U28:U51,T28:T51)/SUM(T28:T51),0)	Biogas-to-RNG U52

Additional Tab: Allocation	
2.4 Total Raw Biogas Flow, (metered)	Allocation of total raw biogas from West River to the upgrading facility
2.5 Biomethane Content (% Methane)	Methane content of total raw biogas from West River to the upgrading facility
2.6 Raw Biogas Flow to Upgrading, (metered)	Allocation of gas from West River to the upgrading facility
2.7 Biomethane Content (% Methane)	Methane content of raw biogas from West River to the upgrading facility
2.18 Grid Electricity (upgrading and compression)	Allocation of grid electricity for West River for the upgrading process
2.13 Utility Sourced NG (digester project)	Allocation of natural gas for West River for the upgrading process
2.15 Propane	Allocation of propane for West River for the upgrading process
2.18 Grid Electricity (upgrading and compression)	Allocation of grid electricity for West River for the upgrading process
2.21 Flared gas including tailgas from upgrading (metered biogas)	Allocation of flared gas for West River for the upgrading process
2.22 Biomethane Content (% Methane in Flared Gas)	Methane content of biogas from West River to the upgrading facility
2.23 Biomethane Injected into Pipeline	Allocation of gas injected into the pipeline for West River
Added Tab – Energy Allocation	
Tab/Worksheet/Section Name	Description
Upgrading Allocation	Total energy use, quantities of biomethane injected, allocation factor based on biomethane quantities and energy used at digesters and upgrading facilities