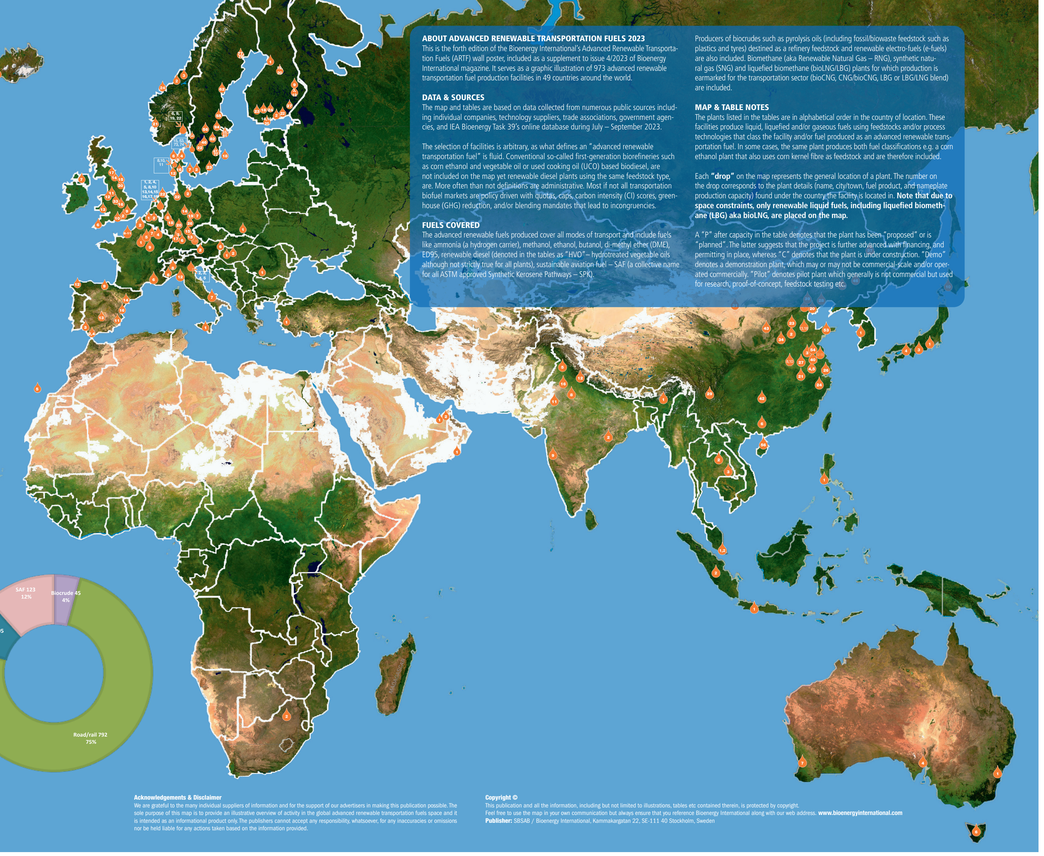
Bioenergy International's ARTF Map 2023

Advanced Renewable Transportation Fuels



ABOUT ADVANCED RENEWABLE TRANSPORTATION FUELS 2023

This is the forth edition of the Bioenergy International's Advanced Renewable Transportation Fuels (ARTF) wall poster, included as a supplement to issue 4/2023 of Bioenergy International magazine. It serves as a graphic illustration of 973 advanced renewable transportation fuel production facilities in 49 countries around the world.

DATA & SOURCES

The map and tables are based on data collected from numerous public sources including individual companies, technology suppliers, trade associations, government agencies, and IEA Bioenergy Task 39's online database during July – September 2023.

The selection of facilities is arbitrary, as what defines an "advanced renewable transportation fuel" is fluid. Conventional so-called first-generation biorefineries such as corn ethanol and vegetable oil or used cooking oil (UCO) based biodiesel, are not included on the map yet renewable diesel plants using the same feedstock type, are. More often than not definitions are administrative. Most if not all transportation biofuel markets are/will be driven with climate, crop, carbon intensity (CI) scores, greenhouse (GHG) reduction, and/or blending mandates that lead to incongruencies.

FUELS COVERED

The advanced renewable fuels produced cover all modes of transport and include fuels like ammonia (a hydrogen carrier), methanol, ethanol, butanol, di-methyl ether (DME), EDHS, renewable diesel (denoted in the tables as "HVO"– hydrotreated vegetable oils although not strictly true for all plants), sustainable aviation fuel – SAF (a collective name for all ASTM Approved Synthetic Kerosene Pathways – SPK).

Producers of biocrudes such as pyrolysis oils (including fossil/biowaste feedstock such as plastics and tyres) destined as a refinery feedstock and renewable electro-fuels (e-fuels) are also included. Biomethane (aka Renewable Natural Gas – RNG), synthetic natural gas (SNG) and liquefied biomethane (bioLNG/LBG) plants for which production is earmarked for the transportation sector (bioCNG, CNG/bioCNG, LBG or LBG/LNG blend) are included.

MAP & TABLE NOTES

The plants listed in the tables are in alphabetical order in the country of location. These facilities produce liquid, liquefied and/or gaseous fuels using feedstocks and/or process technologies that class the facility and/or fuel produced as an advanced renewable transportation fuel. In some cases, the same plant produces both fuel classifications e.g. a corn ethanol plant that also uses corn kernel fibre as feedstock and are therefore included.

Each **"drop"** on the map represents the general location of a plant. The number on the drop corresponds to the plant details (name, city/town, fuel product, and nameplate production capacity) found under the country/ies the facility is located in. **Note that due to space constraints, only renewable liquid fuels, including liquefied biomethane (LBG) aka bioLNG, are placed on the map**.

A "P" after capacity in the table denotes that the plant has been "proposed" or is "planned". The latter suggests that the project is further advanced with financing, and permitting in place, whereas "C" denotes that the plant is under construction. "demo" denotes a demonstration plant, which may or may not be commercial-scale and/or operated commercially. "Pilot" denotes pilot plant which generally is not commercial but used for research, proof-of-concept, feedstock testing etc.

ARTF PRODUCTION BY SECTOR

A total of **973 plants** in **49 countries are listed** on the 2023 edition of the ARTF, up **142 facilities (and four countries).** Note that the total in the sector breakdown is 1,055 plants. This is due to the fact that plants with more than one fuel type produced e.g."HVO/SAF" are counted both in the "Road/rail" and "SAF" categories.

Most if SAF facilities co-produce or can produce other transportation fuels, depending on the process pathway – conversely, by adding an extra step (and gaining the necessary approvals) an HVO plant could produce SAF via the Hydro-processed Esters and Fatty Acids (HEFA) Synthetic Kerosene Pathway (SPK), or an ethanol plant could use an ethanol-to-jet (ETJ). It is also the reason why "Biocrude" is a separate catagory, and plants that have pyrolysis oil, biocrude, syncrude, are only counted in this category.

Of the 973 plants listed, 123 facilities (12 percent) produce/plan to produce sustainable aviation fuel (SAF), while an additional 45 facilities (4 percent) produce/plan to produce a biocrude for further refining. When it comes to renewable fuels for the road/rail and marine sectors, the numbers are far less certain and the selection into one or another category is even more arbitrary. Unlike SAF which is a dedicated fuel type, there is certain interchangeability between road and marine transportation fuels, for example LBG/bioLNG, and biodiesel both of which are only counted in the "Road/rail" category.

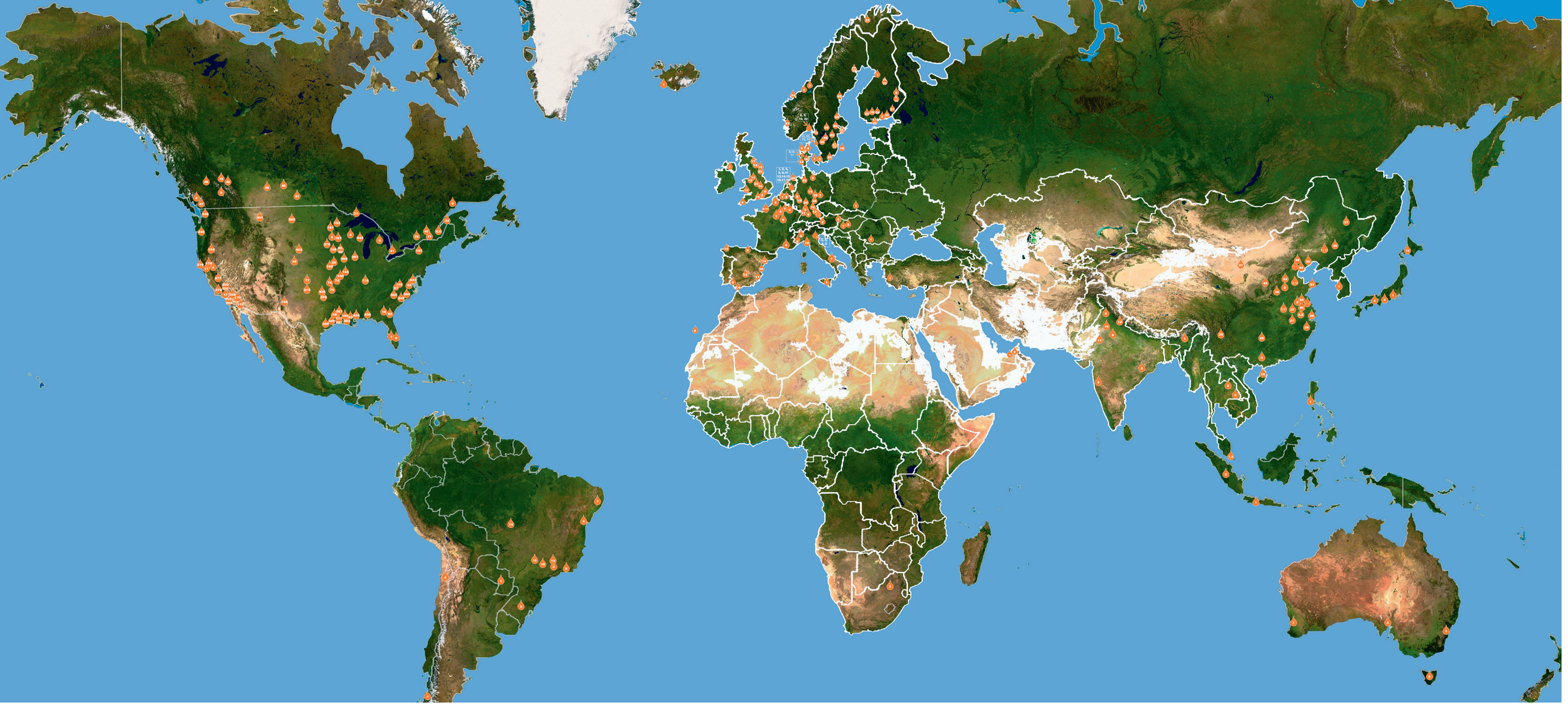
The vast majority, 75 percent or 792 of the plants listed plants produce/plan to produce renewable fuels for the road/rail transportation markets, of which biomethane aka renewable natural gas (RNG) including compressed and liquefied forms (CBG and LBG respectively) is the largest fuel in terms of production facilities, especially in the United States. The remaining 9 percent or 95 facilities would seem to be targeting the inland waterway/ marine sector. Methanol is one such fuel that is counted in the marine sector even though methyl tertiary-butyl ether (MTBE) is used in gasoline (as an octane booster), and high blend methanol (M100) is used for road transportation, especially in China. Ammonia, Biofuel Oil (BFO) and lignin-ethanol oil (LEO) are all dedicated marine fuels.

Nonetheless, the ARTF map illustrates that advanced renewable transportation fuel production and activity is ongoing around the world. They range from stand-alone greenfield or brownfield projects to refinery retrofits and "bolt-on" to existing biofuel facilities utilizing a diversity of feedstocks and technologies.

Acknowledgements & Disclaimer
We are grateful to the many individual suppliers of information and for the support of our advertisers in making this publication possible. The sole purpose of this map is to provide an illustrative overview of activity in the global advanced renewable transportation fuels space and it is intended as an informational product only. The publishers cannot accept any responsibility, whatsoever, for any inaccuracies or omissions nor be held liable for any actions taken based on the information provided.

Copyright ©
This publication and all the information, including but not limited to illustrations, tables etc contained therein, is protected by copyright.
Feel free to use the map in your own communication but always ensure that you reference Bioenergy International along with our web address. **www.bioenergyinternational.com**

Publisher: SBSAB / Bioenergy International. Kammakargatan 22, SE 111 40 Stockholm, Sweden

85	Udobno BWTP, Luisa	CBG	200 Nm³/hr
86	UEAD WTTP, Ulrichemo	CBG	20 Nm³/hr
87	Vachso Biogas, Marienstad	CBG	400 Nm³/hr
88	VaSaMBiO Biogas, Vlatanilo	CBG	700 Nm³/hr
89	VaSaMBiO Biogas, Vlatanilo	LBG	2 t/d
90	Vihiongas AB, Vårgårda	CBG	2 million Nm³/yr
92	Visby WTTP, Gotland	CBG	230 Nm³/hr
93	VMAB, Mörrum	CBG	650 Nm³/hr
89	Wemlandamaat, Hagfors	methanol	375 000 l/d (P)
90	Västervik WWTP, Västervik	CBG	130 Nm³/hr
52	Ämnesnäs WWTP, Helsingborg	RNG/CBG	350 Nm³/hr
	SWITZERLAND		
1	Aamatt WTTP, Solothurn	RNG	30 Nm³/hr (demo)
2	Biogasanlage Frutigland GmbH, Frutigen	CBG	12 Nm³/hr
3	Biogasanlage Reiden, Reiden	CBG	15 Nm³/hr
4	Lighthouse, Dietikon	RNG	n/a (demo, C)
	THAILAND		
4	BSGF, Bangkok	SAF	1 million l/d (P)
2	Cellulosic Biomass Technology Co, Udon Thani	ethanol	4 tpd (demo)
3	PTT-ATL,Ayothaya	ethanol	n/a (pilot,P)
3	SCI LBM, Ubon Ratchathani	ethanol	1 million l/yr (pilot)
	TRINIDAD & TOBAGO		
1	Proman, Point Lisas Ind. Est	methanol	n/a (P)
	TUNISIA		
1	TREEN, Soma, Manouz	syncrude/syngas	n/a (demo)
	UAE		
1	SDAS WWTP, Masdar City, Abu Dhabi	SAF	n/a (pilot)
2	TAQA Group/Abu Dhabi Ports, Khalifa Port	ammonia	n/a (P)
3	TX CCZ, Al Ruwais Industrial City, Abu Dhabi	methanol	1.8 million tpa (P)
	UK		
11	AB3L, Cheshire	biocrude	n/a (demo, P)
12	ABSL, Swindon	SNG	2.2 million Nm³/yr (demo)
2	Albany Landfill, Surrey	LBG	5 000 tpa
3	Altalto Immingham, Immingham	SAF	200 000 tpa (P)
4	Butamax Advanced Biofuels, Hull	butanol	5 tpa (demo)
14	Carbon Engineering/LanzaTech UK	SAF	100 million l/yr (P)
5	Celtic Renewables Grangemouth, Grangemouth	acetone/butanol/ethanol	1 million l/yr
19	Celtic Renewables Speyside	acetone/butanol/ethanol	n/a (P)
6	Chrysbeth Farm, Cornwall	LBG	n/a (C)
24	Ocean Planet Energy, Teesside	syncrude	20 000 tpa (P)
20	Drimsta Tees works, Teesside	rDME	50 000 tpa (C)
12	Fulcrum BioEnergy/Essar Oil, Ellesmere Port, Stanlow	SAF	100 million l/yr (P)
7	Global Energy Group, Nigg	methanol	20 000 tpa (P)
16	Green Fuels Research/Petrostar/Cranfield University	SAF	n/a (demo, P)
21	Greenergy, Teesside	SAF	n/a (P)
9	Greenergy, Thames Enterprise Park, London	biocrude	22 000 tpa (P)
7	Greenville Energy Ltd, Co. Tyrone, NI	LBG	1 000 tpa
13	LanzaTech UK, Port Talbot, Wales	SAF	100 million l/yr (P)
15	LanzaTech UK/Nova Pangaea	SAF	100 million l/yr (P)
10	Lighthouse Green Fuels, Altmar Energy Tees Valley	SAF/naphtha	125 000 tpa (P)
11	Phillips 66 Humber Refinery, Immingham	SAF	n/a (C)
7	Quantafuel UK, Sunderland	syncrude	n/a (P)
8	Viridor Dunbar Landfill, Dunbar	CBG	n/a (demo, C)
23	Zero Petroleum, Plant Zero.1, Bicester	syncrude	n/a (C)
	USA		
121	Regional Disposal, Melrose, TX	RNG/CBG/LBG	3.4 million scfd
285	4K Dairy (WEM), Pixley, CA	CBG	n/a
2	ABEC Lakeview Farms, Bakersfield, CA	RNG/CBG/LBG	360 000 scfd
3	Ace Ethanol, Stanley, WI	ethanol	54 mgy
395	Aemetis Biogas, Keyes, CA	RNG	600 000 MMBtu/yr
4	Aemetis Riverbank Biorefinery, Riverbank, CA	ethanol	40 mgy (C)
5	AgPower Jerome, Jerome, ID	RNG/CBG/LBG	1.067 scfm
6	Agri-Energy, Luverne, MN	ethanol/butanol/SAF	n/a (demo)
433	Air Company, Brooklyn, NY	methanol	400 tpa (demo)
364	Alder Fuels, Washington DC	SAF	n/a (P)
7	Algenol, Fort Myers, FL	ethanol	n/a (demo)
331	Align RNG Milford, Milford, UT	RNG	623 000 scfd
390	Alien Farms (Cascade RNG), Cascade, NY	RNG	233 000 scfd
8	Alliance Bio-Products, Vero Beach, FL	ethanol	8 mgy
9	Alpena BioenErgy, Alpena, MI	ethanol	0.9 mgy (demo)
11	Altamont Landfill & Resource Recovery, Livermore, CA	LBG	8.33 million scfd
12	American Landfill, Waynesburg, OH	RNG/CBG/LBG	4.48 million scfd
13	Apex Environmental Landfill, Amsterdam, OH	RNG/CBG/LBG	2670 mbtu/d
365	Arbor Renewable Gas, Houston, TX	methane/n-glaseline	15 mgy (P)
14	Arlington Landfill RNG, Eulless, TX	RNG/CBG/LBG	2.9 million scfd
286	Aukemann Farms Dairy (CalBioGas), Tulare, CA	RNG/CBG	n/a (C)
420	Aurum Renewables, CES Landfill, Hughes, IN	RNG	5 000 MMBtu/yr (C)
16	AVAPCO, Thomaston, CA	ethanol	180 tpa (demo)
17	Bakersfield Renewable Fuels, Bakersfield, CA	HVO/naphtha	15 000 b/d (C)
18	Bayou Fuels, Natchez, MS	HVO	25 mgy (P)
525	Beaver Creek Dairy (Brightmark), Canjoharie, NY	RNG	n/a (C)
74	ELEMENT, Colwich, KS	ethanol	70 mgy
75	Ellis Creek WWTP, Petaluma, CA	CBG/LBG	n/a (C)
384	Emerald Biofuels, Port Arthur, TX	HVO	110 mgy (C)
408	Emerald RNG, Arbor Hills Landfill, MI	RNG	2.5 million MMBtu
76	ENNA Energy, East Oak landfill Oklahoma City, OK	HVO/naphtha/SAF	200 bpd
77	ESE Alcohol, Leoti, KS	ethanol	2 mgy
78	Eugene-Springfield WWTP, Eugene, OR	CBG/LBG	n/a (P)
79	Fair Oaks Dairy Digester, Fair Oaks, IN	RNG/CBG/LBG	1.2 million scfd
80	Fairless 1, Morrisville, PA	RNG/CBG/LBG	n/a (P)
81	Fairless 2, Morrisville, PA	RNG/CBG/LBG	n/a (P)
82	Fairless 3, Morrisville, PA	RNG/CBG/LBG	n/a (P)
83	Fiberight Plot Demo, Lawrenceville, VA	ethanol/RNG	n/a (demo)
299	Fine H Dairy (WEM), Merced, CA	CBG	n/a (C)
84	Five Points, Riverdale, CA	RNG/CBG/LBG	n/a (P)
85	Flint Hill Resources, Iowa Falls, IA	ethanol	120 mgy (total)
86	Flint Hill Resources, Shell Rock, IA	ethanol	120 mgy (total)
300	FM Jerseys Dairy (WEM), Tipton, CA	CBG	n/a (C)
87	Foothills Renewables, Lenoir, NC	CBG/LBG	n/a (P)
88	Fort Bend Landfill, Needville, TX	RNG/CBG/LBG	n/a
89	Fort Smith SLF, Fort Smith, AR	RNG/CBG/LBG	3.332 million scfd
90	Forward Landfill, Manteca, CA	RNG/CBG/LBG	4.426 million scfd (P)
91	Franklin County SLF, Grove City, OH	RNG/CBG/LBG	6.8 million scfd
92	Fremont Wastewater RNG, Fremont, NE	RNG	n/a (C)
94	Fresh Kills Landfill, Staten Island, NY	RNG/CBG/LBG	3.835 million scfd
95	Fresno-Clovis WWTP, Fresno, CA	RNG/CBG/LBG	n/a (P)
385	Full Circle RNG (Brightmark), Hurley, SD	RNG	156 000 MMBTU/yr (C)
96	Galveston County Landfill, Alta Loma, TX	RNG/CBG/LBG	n/a (P)
98	Garland Illinois, Rewalt, TX	RNG/CBG/LBG	n/a (C)
97	Garland, Garland, TX	CBG/LBG	n/a (P)
99	Georgia Project, Vienna, GA	biocrude	20 mgy (P)
370	Geos Red Zero 1, Lake Preston, SD	SAF	55 mgy (C)
369	Geos Northwest Iowa, IA	RNG	355 000 MMBtu/yr
100	Geos, St. Joseph, MO	isobutanol	n/a (demo)
101	GGP, Stanfield, AZ	RNG/CBG/LBG	n/a (C)
102	Glacier Ridge Landfill, Mapville, WI	RNG/CBG/LBG	4.082 million scfd
327	Goodrich Family Farm, Salisbury, VT	RNG	383 562 scfd (C)
103	Grand Rapids WWTP, Grand Rapids, MI	RNG	n/a (P)
437	Green Carbon Synthetics Kansas, Lyons, KS	SAF	4 000 bpd (P)
329	Green Hills Farm (RNG), Unionville, MO	RNG	n/a (C)
275	GreenGas Colorado, Weld County, CO	RNG	800 MMBtu/d
104	Greentree LFG (Fortistar), Greentree, PA	RNG	6 550 Nm³/hr
105	Greenwood Farms Landfill, Tyler, TX	RNG/CBG/LBG	2.3 million scfd
367	Gelo Fuels, Port of Baton Rouge, LA	HVO/SAF	60 000 b/d (P)
106	H.W. Hill RNG, Roosevelt, WA	RNG/CBG/LBG	9.4 million scfd
107	Hadley, Hadley, MA	CBG/LBG	n/a
108	Hamm SLF, Lawrence, KS	RNG/CBG/LBG	n/a (C)
302	Hamton Dairy (CalBioGas), Tulare, CA	RNG	n/a
109	Hansen RNG, Hansen, ID	RNG/CBG/LBG	n/a (C)
110	Haverhill Landfill, Haverhill, MA	CBG/LBG	720 000 scfd
111	Haviland Digester, Haviland, OH	CBG/LBG	n/a
383	Heartwell Renewables, Hastings, NE	HVO	80 mgy (C)
303	Hemrema Dairy, Fair Oaks, IN	CBG	n/a
114	HF Sinclair Cheyenne Refinery, Cheyenne, WY	HVO	6 000 bpd
158	HF Sinclair Navajo Refinery, Artesia, NM	HVO	9 000 bpd
403	HF Sinclair, Sinclair, WY	HVO	10 000 b/d
445	HF Wabaunsee, Matagorda, TX	SAF	11 000 bpd (P)
112	Hilarides Dairy Digester, Linden, CA	RNG/CBG/LBG	n/a (P)
304	Holtzclaw Farms (WEM), Hanford, CA	CBG	n/a (C)
113	Holsum Dairy, Hilbert, WI	RNG/CBG/LBG	363 000 scfd
114	Homan Farm (RNG), King City, MO	RNG	n/a
305	Hoogendam Dairy (WEM), Merced, CA	CBG	n/a (C)
115	Hooks,Therwood, OR	RNG	n/a (P)
114	Horizon Jersey Dairy (CalBioGas), Tipton, CA	RNG/CBG	n/a (C)
116	Humble Renewable Energy, Humble, TX	RNG/CBG/LBG	n/a
117	Huntington AD, Huntingdon, PA	RNG/CBG/LBG	n/a (C)
118	Imperial LFG (Fortistar), Imperial, PA	RNG	10.3 million scfd
306	Indaba Renewable Fuels 1, Imperial, CA	HVO/SAF	6 500 b/d (C)
387	Indaba Renewable Fuels II, MO	HVO/SAF	6 500 b/d (P)
315	Jacobus De Groot 2 (CalBioGas), Visalia, CA	RNG/CBG	n/a (C)
119	Janesville WWTP, Janesville, WI	CBG/LBG	n/a
120	JBS Longview, Dalhart, TX	RNG/CBG/LBG	n/a
121	JC Biomethane, Junction City, OR	RNG	n/a (C)
122	Jefferson Davis Parish Landfill, Welsh, LA	RNG/CBG/LBG	2.5 million scfd
123	Johnson County Landfill, Shawnee, KS	RNG/CBG/LBG	9.732 million scfd
124	K & M Dairy (WEM), Pixley, CA	RNG	n/a
125	Keithville Landfill, Keithville, LA	RNG/CBG/LBG	n/a
126	Keller Creek Landfill, Pittsburg, CA	RNG/CBG/LBG	n/a (P)
127	Kent County Landfill RNG, Bakersfield, CA	RNG/CBG/LBG	350 Nm³/hr
128	Kewaunee-Kenard, Casco, WI	RNG/CBG/LBG	n/a
129	Keystone Sanitary Landfill, Dunmore, PA	RNG/CBG/LBG	17 million scfd (P)
130	King County South WWTP, Renton, WA	CBG/LBG	n/a
412	Pine Creek RNG, Bayview Landfill, Elberta, UT	RNG	1.6 million MMBtu/yr (C)
413	Pine Creek RNG, Rom Rapids Landfill, Richland, WA	RNG	1.5 million MMBtu/yr (C)
414	Pine Creek RNG, Lamb Weston, Richland, WA	RNG	1 million MMBtu/yr (C)
183	Pine Hill Landfill, Kilgore, TX	RNG/CBG/LBG	1.581 million scfd
359	Pioneer Dairy (Brightmark), Minnehaha County, SD	RNG	n/a (C)
333	Pixley Dairy (WEM), Pixley, CA	CBG	n/a (C)
184	Pleasant Grove WWTP, Roseville, CA	CBG/LBG	n/a (P)
185	Point Breeze, Philadelphia, PA	RNG/CBG/LBG	n/a (P)
186	Portland WWTP, Portland City, OR	RNG/CBG/LBG	n/a (C)
334	Prairie's Edge Dairy 2, Fair Oaks, IN	CBG	n/a
187	Project Liberty, Emmetsburg, IA	ethanol	20 mgy (demo)
189	Purefield Ingredients, Russell, KS	ethanol	55 mgy (total)
189	Quad County Corn Processors, Galva, IA	ethanol	36 mgy (total)
318	Rancho Sierra Vista Dairy (CalBioGas), Visalia, CA	RNG/CBG	n/a (C)
335	Rancho Tenaza Dairy (CalBioGas), Tulare, CA	RNG	n/a (C)
191	RDF 2, Fair Oaks, IN	RNG/CBG/LBG	n/a
192	RDF Stanwix, Morris, MN	RNG/CBG/LBG	n/a (C)
190	RDF, Fair Oaks, IN	RNG/CBG/LBG	n/a
276	ReadFirst-Iowa, Sioux Center, IA	HVO/SAF	36 mgy (P)
281	Red Arrow RNG (Brightmark), Hartford, WI	RNG	128 000 MMBtu/yr (C)
193	Red River Biorefinery, Grand Forks, ND	ethanol/RNG	17 mgy
336	Red Rock Dairy (WEM), Merced, CA	CBG	n/a (C)
195	Red Top, Madera, CA	CBG/LBG	n/a (P)
196	REG Geismar Biorefinery, Gesimar, LA	HVO/propane	75 mgy
197	Rennatis JPE, Rome, NY	ethanol	500 tpa (demo)
198	Renewar Arlington LTD, Landenberg, PA	RNG/CBG/LBG	7.2 million scfd
199	Richfield Landfill, Davison, MI	RNG/CBG/LBG	2.03 million scfd
200	River Birch Landfill, Westwego, LA	RNG/CBG/LBG	5.111 million scfd
337	River Ranch Dairy (WEM), Hanford, CA	CBG	n/a (C)
357	River Ridge Farm (Brightmark), Cooperstile, MI	RNG	n/a (C)
319	Riverbend Dairy (CalBioGas), Tulare, CA	RNG	n/a (C)
339	Riverview Dairy (Arogal), Morris, MN	RNG	n/a
338	Riverview Dairy, Pixley (WEM), CA	CBG	n/a
201	Riverview Land Preserve 2, Riverview, MI	RNG/CBG/LBG	6.26 million scfd
320	Rob Van Grouw Dairy (CalBioGas), Visalia, CA	RNG/CBG	n/a (C)
202	Robert Ivester Erk Dairy Pixley, CA	RNG	n/a
340	Rock River Jersey, Doon, IA	CBG	n/a (C)
321	Rocking Horse Dairy (CalBioGas), Hanford, CA	CBG	n/a (C)
341	Rockstar Dairy (WEM), Merced, CA	CBG	n/a (C)
204	Rosendale Biodigester, Pickett, WI	CBG/LBG	576 000 scfd
205	Roxana Landfill, Roxana, IL	RNG/CBG/LBG	n/a (P)
400	RTI International, Triangle Park, NC	pyrolysis oil	240 kg/d (pilot)
206	Ruckman Farm (R&D), Albany, MO	RNG	n/a
207	Rumpke SLF, Cincinnati, OH	RNG/CBG/LBG	15 million scfd
208	Ryze Renewables Las Vegas, Las Vegas, NV	HVO	100 mgy (C)
209	Ryze Renewables Reno, Reno, NV	HVO	50 mgy (C)
342	S & S Dairy (CalBioGas), Visalia, CA	RNG	n/a
210	S & S Jerseyland, Sturgeon Bay, WI	RNG	n/a
211	Sacramento BioDigester, Sacramento, CA	CBG/LBG	n/a
410	San Joaquin Renewables, McFarland, CA	RNG	4 billion scfy (P)
212	Sarpy County SLF, Springfield, NE	RNG/CBG/LBG	2.16 million scfd
213	Sauk Trail Hills Landfill, Canton, MI	RNG/CBG/LBG	4.6 million scfd
214	SARS Dos Rios WWTP, San Antonio, TX	CBG	n/a
332	Schwendra Dairy (CalBioGas), Tulare, CA	RNG/CBG	n/a (C)
215	Seaboard Energy Kansas, Hugoton, KS	HVO	25 mgy
216	Seminole RE Renewable Fuels Facility, Elenwood, GA	RNG/CBG/LBG	3.168 million scfd
405	Senca Nation, Niagara Falls, NY	syncrude	32 000 1/d (P)
217	Seneca Meadows DAME Waterloo, NY	RNG/CBG/LBG	14.5 million scfd
218	Shade Landfill, Carnbrook, PA	RNG/CBG/LBG	1.306 million scfd
362	Shell Downstream Bowsrus, Wendell, ID	RNG	450 000 MMBtu/yr (C)
361	Shell Downstream Gailoway, Plains, KS	RNG	450 000 MMBtu/yr (C)
273	Shell New Energies Junction City, Junction City, OR	RNG	736 000 MMBtu/yr
219	Shoosmith SLF, Chester, VA	RNG/CBG/LBG	6.13 million scfd
220	Sierra BioFuels WZF, Reno, NV	syncrude	11 mgy
221	Silsbee bioenthanol, Silsbee, TX	ethanol/butanol/SAF	120 mgy (pilot)
222	Simi Valley Landfill, Simi Valley, CA	CBG/LBG	n/a (P)
223	Sioux City WTTP, Sioux City, IA	RNG/CBG/LBG	n/a (C)
224	Skyline, Ferris, TX	RNG/CBG/LBG	n/a
225	Snowflake, Snowflake, AZ	RNG/CBG/LBG	n/a (P)
226	SoCalGas/Electrochaea/NREL, Golden, CO	RNG	1 MW (pilot, P)
227	Somerset Farm (R&D), Mercer, MO	RNG	n/a (C)
228	Sonoma County Landfill, Petaluma, CA	RNG/CBG/LBG	2.808 million scfd
343	Sousa & Sousa Dairy (WEM), Tipton, CA	RNG	n/a
229	South WWTP, Dodge City, KS	RNG	1.000 Mbtu/hr
230	South East CKC, Oklahoma City, OK	RNG/CBG/LBG	n/a
231	South Meadows Farm (R&D), Browning, MO	RNG	n/a
232	South Platte Water Renewal, Englewood, CO	RNG/CBG/LBG	n/a (P)
233	South Shelby Landfill, Memphis, TN	RNG/CBG/LBG	4.331 million scfd
234	South Side Landfill, Indianapolis, IN	RNG/CBG/LBG	7.2 million scfd
235	South Sioux City Digester, Sioux City, NE	CBG/LBG	n/a
236	SoutheEast Fort Worth, TX	CBG/LBG	n/a (P)
237	Southern Allegheniens Landfill, Dandavillle, PA	RNG/CBG/LBG	2.88 million scfd
238	Spencer, Spencer, NA	RNG/CBG/LBG	n/a
239	Spruce Haven Farm (Brightmark) RNG, Canaga, NY	RNG	137 000 scfd
239	St Landry Parish Landfill, Washington, LA	RNG/CBG/LBG	358 000 scfd
363	St. Bernard Renewables, New Orleans, LA	HVO	306 mgy
344	Star BioEnergy Huntington, Rock Creek, IN	CBG	n/a
345	Stats Dairies, Marshall, MI	CBG	n/a (P)
345	Still Water Ranch (WEM), Hanford, CA	CBG	n/a
241	Stony Hollow Landfill, Dayton, OH	RNG/CBG/LBG	2.797 million scfd
406	Sumeet Next Gen, "Gulf Coast"	SAF	n/a (P)
242	Sunoma Renewable Biofuels (Fortistar), Gila Bend, AZ	HVO	n/a (P)
282	Sunlitz RNG (Brightmark), Moreno, WI	RNG	n/a (C)
243	SWACO,Franklin County, Columbus/Grove City, OH	RNG/CBG/LBG	n/a
303	Synthica Houston RNG, Houston, TX	RNG	250 000 MMBTU/yr (P)
432	Synthica Lebanon Junction, Lebanon Junction, KY	RNG	650 000 MMBtu/yr (C)
302	Synthica San Antonio RNG, San Antonio, TX	RNG	350 000 MMBTU/yr (C)
409	Synthica St. Bernard, St. Bernard, OH	RNG	250 000 MMBtu (C)
346	T&M Dairy (CalBioGas), Bakersfield, CA	RNG	n/a (C)
244	Tessman Rd Landfill, San Antonio, TX	RNG/CBG/LBG	4.555 million scfd (P)
245	Threemile Canyon Farms, Boardman, OR	RNG	1.8144 million scfd
246	Thunderbolt Racing Fuel, Cornelius, OR	ethanol	1 000 tpa
247	Timberlane Landfill, Oakville, LA	RNG/CBG/LBG	n/a
430	Trans World Energy, Vero Beach, FL	methanol	875 000 tpa (P)
248	Treo Ross WWTP, Tucson, AZ	CBG/LBG	n/a (P)
347	Tringly Dairy (CalBioGas), Bakersfield, CA	RNG	n/a (C)
250	Twin Chimneys Landfill, Monroe Park, TC	CBG/LBG	n/a (P)
249	Tyton NC Biofuels, Raeford, NC	ethanol	60 mgy (total)
323	Ustler Dairy (CalBioGas), Visalia, CA	RNG/CBG	n/a (C)
251	Union County Green Energy Bayou Park, Monroe, NC	RNG	n/a (C)
252	Upper Piedmont Renewables, Rougemont, NC	RNG	n/a (P)
277	Urban R Renewables, Bakersfield, CA	RNG	75 mgy (P)
324	Valadao Dairy (CalBioGas), Hanford, CA	RNG/CBG	n/a (C)
253	Valley Landfill, Harrison City, PA	RNG/CBG/LBG	2.87 million scfd
254	Valley View Farm (FRG), Green city, MO	RNG	n/a
348	Vander Poel Dairy (WEM), Pixley, CA	CBG	n/a
350	Vander Woude Dairy (WEM), Merced, CA	CBG	n/a (C)
255	Vaughn AD, Hudson Island, NY	RNG	n/a (C)
256	VERBIO North America, Nevada, IA	ethanol/RNG	30 mgy/7 GWh/y
430	Vertex Energy, Mobile, AL	SAF	143 million a/y
271	Victor Valley WRA, San Bernardino, CA	RNG	6 000 t/y
257	Vinnet (Manteca), Manteca, CA	ethanol	38 million l/yr (pilot)
419	Vivid Energy, ADE, Yapharik, NY	RNG	n/a (C)
418	Vivid Energy, Baldwin County Landfill, Summerdale, AL	RNG	160 000 MMBtu/yr (C)
417	Vivid Energy, MCSM Ringle Landfill, Marathon, WI	RNG	n/a (C)
349	Vista Verde Dairy (WEM), Chowchilla, CA	CBG	n/a (C)
286	Waste Connections, Delaware, WI	RNG	420 GWh/yr
284	Waste Connections, Rockford, IL	RNG	380 GWh/yr (C)
353	West River Dairy (Arogal), Morris, MN	RNG	n/a
257	Western Sky Dairy (CalBioGas), Bakersfield, CA	RNG	n/a (C)
258	Westmoreland Landfill, Belle Vernon, PA	RNG/CBG/LBG	n/a (P)
259	Westover AD, Westover, MD	RNG/CBG/LBG	n/a (C)
260	Wetzel County Biogas, Hundred, WV	RNG/CBG/LBG	2.5 million scfd
330	Whitetail Farm (R&D), Unionville, MO	RNG	n/a (C)
261	Williams Family Dairy, Pixley, CA	CBG	n/a (C)
262	Willamson County, Williamson, TN	RNG/CBG/LBG	n/a (C)
263	Wilson County Green Energy Bayou Park, Stantonsburg	RNG	n/a (C)
332	Winding Meadows Dairy, Rock Valley, IA	CBG	n/a (C)
353	Windy Ridge Dairy, Fair Oaks, IN	CBG	n/a (C)
264	Woodland Meadows Landfill, Weyers, MI	RNG/CBG/LBG	11.8 million scfd
265	Wooster Digester, Wooster, OH	RNG/CBG/LBG	250 000 scfd
266	World Energy Paramount 1, Paramount, CA	HVO/SAF	45 mgy
267	World Energy Paramount 2, Paramount, CA	HVO/SAF	260 mgy (C)
268	World Energy Houston, TX	HVO/SAF	250 mgy (C)
354	Wrexen Ridge Dairy (CalBioGas), Hanford, CA	RNG	n/a (C)
399	WTE Carpenter RNG, Carpenter, WY	RNG	960 Nm³/yr (C)
288	WTE Wolf Creek RNG, Wolf Creek, CO	RNG	900 000 scfd (C)
269	Yellow Jacket, Byron, NY	RNG	n/a (C)
268	Yuma County AD, Yuma, CA	RNG	n/a (P)
269	Zanesville Energy, Zanesville, OH	RNG	n/a (C)
270	Zion RNG, Zion, IL	RNG/CBG/LBG	n/a (P)
432	Bristol ED North America, WA	ethanol	300 000 tpa (P)

1	Ecoboxa Biogas AB, Alvesta	CBG	400 Nm³/hr
2	Användningen WWTP, Torkelstorp	CBG	200 Nm³/hr
3	Biogas Bräkanda, Mellerud	CBG	300 Nm³/hr
4	Biokraft Söderström B, Hudiksvall	CBG	500 Nm³/hr
5	Biokraft Sjöstorp, Hudiksvall	CBG	2 000 Nm³/hr
6	Blond Helsingborg, Helsingborg	CBG	1 400 Nm³/hr
7	Bromma Stadsgård, Stockholm	CBG	1 000 Nm³/hr
8	BroGas, Gotland	CBG	230 Nm³/hr
9	Bromma WWTP, Stockholm	CBG	1 410 Nm³/hr
8	Cortus Energy/Swedish Biofuels, Arlanda	SAF	6 million l/yr (pilot,P)
9	Dusbusen WW