

Oregon Department of Agriculture

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Methane Digesters

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Factsheet - ODA

Could a methane digester be an effective part of your livestock operation?

Anaerobic methane digesters have been around a long time. The adoption of manure digesters at animal operations is much more advanced in Europe than in the U.S. But there are many successful digesters in operation throughout the U.S. (see some of the resources below), and the number of anaerobic digesters on U.S. farms has doubled in the past five years. There are also new tax incentives for digester construction and biomass (manure) usage to produce energy.

Benefits and advantages of digesters

1. Greatly reduce odor levels, by 90% or more.
2. Reduce bacteria/pathogens: heated digesters reduce pathogen populations dramatically in a few days; additional post-digester composting can ensure pathogen-free end products.
3. Nutrient management - In the process of anaerobic digestion, the organic nitrogen in the manure is largely converted to ammonium, the primary constituent of commercial fertilizer, which is readily available and taken up by plants. Much of the phosphorus is removed through the solids in the process, requiring less N application to land to balance the nutrients. This technology may allow operators to support more animals on the same acreage.
4. Co-generation and energy cost reduction - Anaerobic digesters produce methane gas which can be captured for generating electricity for on-farm use. If the operation is large enough, potential sales of excess power back to the grid may be possible.
5. Final products - the final products of anaerobic digestion are quite suitable for composting and use either on the farm as bedding material or as a soil amendment, or sold off the farm as an organic-based fertilizer/soil enhancer.

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What to know before proceeding

1. Check out other successful operations, talk to operators who are doing it. Find out what works and what doesn't, and estimated costs per cow for the type of design you are planning.
 - <http://www.mnproject.org/pdf/Haubyrptupdated.pdf>
 - <http://www.epa.gov/agstar>
 - <http://lpe.unl.edu/alternative4.html>
2. Large initial capital costs associated with design, construction, and testing mandate careful planning. Cost per cow will vary depending on the type of system and size of operation.
3. Consider partnering on both inputs and outputs - some geographic areas have multiple farms that can utilize one facility, or other agricultural industries can provide additional feedstocks (vegetable or fruit processing, rendering/slaughter facilities, distillers, etc.) - any industry generating non-toxic organic wastes can be added as an accelerant for methane production, increasing methane outputs substantially. Also, there may be opportunities to market the end fiber products of the digesters as compost, soil amendments, or fertilizer.
4. Management - digesters require maintenance and management; and solids handling/composting and removal need to be planned for. Be sure to develop a total plan of operation and marketing before you get too far along!
5. Requirements for permitting - check with county/city planners, your local power company, ODA, DEQ, and the Oregon Office of Energy for their digester permitting requirements in advance of beginning your project. This will ensure a smooth process and allow for construction without

unnecessary delays.



Financial assistance

Business Energy Tax Credit

Tax credit up to 50% of project cost, depending on project life which can be taken over 5 years against Oregon business excise (income) tax. Projects must be pre-certified by the OR Dept. of Energy (Evan Elias, 503-378-6044)

<http://www.energy.state.or.us/bus/tax/taxcdt.htm>

The 2007 Legislature adopted a new tax credit for manure to energy (\$5 per wet ton) that is available to the dairy farm producer of the feedstock (manure).

Calculation:

Estimating 15 tons of manure per cow per year (NRCS number), a 400 cow dairy could channel 6,000 tons of manure through a digester. This would create a \$30,000 tax credit PER YEAR. This is an estimate and would need to be checked against the digester capacity and operational run time of the digester.

The tax credit is claimed on taxes owed when filing against Oregon income taxes. There is no application process, but records must be kept for 5 years verifying the volume, calculations, and delivery of product/feedstock.

If the dairy farmer does not need the credit, it can be negotiated for a "pass through" to another entity that owes Oregon income taxes. This is a one-time credit, with up to a 4-year carry-forward option. If negotiating a pass-through, be sure to file on the approved forms provided by the Oregon Dept. of Revenue for this process.

See: <https://secure.dor.state.or.us/piti/index.cfm?action=topic&id=128>

Tax Credits: Biomass production/collection

ORS Chapter 315.141

[Credit code 743]

Energy Loan Program

Low-interest, fixed-rate, long-term loans with terms from 5-20 years; up to \$20 million. (OR Dept. of Energy, Jeff Keto, 503-373-7981)

Energy Trust of Oregon

ETO administers an energy surcharge that all retail customers of PGE and Pacific Power pay to support energy conservation and renewable resources. Up to 20% of available funds will be spent on unsolicited proposals. Projects must benefit PGE and Pacific Power customers but it may not be necessary for projects to be sited in those territories if PGE and Pacific Power customers receive the power from the facility or project.

(ETO) (503-493-8888)

<http://www.energytrust.org/>

USDA

Value-added Grants funding (1:1 match) are eligible for use with renewable energy projects. This grant opens around January each year. These are competitive grants.

<http://www.rurdev.usda.gov/rbs/coops/vadg.htm>

Check with NRCS - EQIP funds may be applicable in some circumstances.



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