

AAALA - Agricultural Law Symposium

Nov. 7-9, 2019

No Bull---Monetizing the Environmental Attributes of Dairy Gas, Ag Waste, and Renewable Energy Projects on Farmland

Quick Reference Sheet

Renewable Energy Production and CO₂ Reduction on Agricultural Lands

- 1. There are several opportunities to consider when maximizing value on agricultural land.** Farmland that is underperforming or lacks sufficient water resources may be suitable for energy development or carbon offset projects.
- 2. This presentation will address several categories associated with different opportunities.**
 - a. Electricity.** Over the last decade, there have been significant utility-scale energy projects build on agricultural land.
 - i. Technologies:** Producing renewable electricity on agricultural lands usually takes one or more of the following forms.
 - 1. Wind.** Wind developers will lease agricultural land for the construction of wind turbines and related infrastructure. Often, wind development allows much of the parcel to still be farmed or grazed.
 - 2. Solar.** Ground-mount solar photovoltaics are generally more cost-effective than solar thermal generation (i.e., large mirrors aimed at a central tower). While on a per-Megawatt basis ground-mount solar takes less land than a similarly-sized wind development, the parcels often cover the land, such that there are less opportunities for agricultural activities to take place on the same land at the same time.
 - 3. Biomass/Gasification.** Biomass projects take woody and other agricultural wastes and heat them in a low oxygen environment to produce a fuel gas, which is then burned to produce electricity. While these facilities are sometimes located on agricultural land, much of the feedstock comes

from agricultural wastes (brush clearing, tree trimming, etc.). Biomass operators look to farmers and timber companies for steady, dependable sources of fuel for their boilers.

ii. Types of credits. Producing renewable electricity generates “Renewable Energy Credits,” or RECs. A REC is proof that 1 MWh of renewable electricity was generated and delivered to the power grid. Most states require their retail electric utilities to procure a certain amount of power from renewable generating facilities. In some circumstances, RECs are bought and sold on the secondary market among generators, obligated parties, and speculators.

b. Renewable Natural Gas (“RNG”). More recently, agricultural and dairy entities have become active in the production of renewable natural gas, or biogas, which is methane generated from the anaerobic digestion of renewable feedstocks or recycled from waste streams. At least domestically, these projects are mostly driven by the federal Renewable Fuel Standard and California’s Low Carbon Fuel Standard (LCFS), which offer valuable environmental compliance credits. For RNG that is not cleaned to “pipeline-quality,” it can be burned for electricity (see above) or used in fleet vehicles.

i. Technologies. Producing RNG requires the addition of microorganisms that break down biodegradable material in the absence of oxygen, resulting in the production of methane.

1. Dairy Digesters. Dairy digesters gather manure into lagoons, where the off-gas is cleaned and converted into pipeline-quality methane. The methane can be used on-site to power fleet vehicles (dairy trucks, etc.) or can be interconnected into a natural gas transmission or distribution network.

2. Wastewater or Food Waste treatment plant. Off-gas is collected from wastewater settlement ponds or compost heaps, and then cleaned and converted into pipeline-quality methane. The methane can be used on-site to power fleet vehicles (municipal buses, etc.) or can be interconnected into a natural gas transmission or distribution network.

3. Landfill gas. Off-gas is collected from pipes buried within the landfill, and then cleaned and converted into pipeline-

term compliance monitoring requirements associated with generating and tracking these offsets.

- i. **Types of offsets.** To generate offsets, you typically have to meet a specific Compliance Offset Protocol (“COP”), which are a series of rules and requirements developed by a non-profit entity like the Climate Action Reserve, American Carbon Registry, or a government agency like the California Air Resources Board.
 1. **Protocols (non-exhaustive list).** Forestry management; livestock management; nitrogen management; organic waste management; rice cultivation.
 2. Natural Resource Conservation Service (NRCS) & Agricultural Conservation Easement Program (ACEP)

e. Conservation Banking

- i. Many infrastructure projects, including renewable energy projects, require the developer to “mitigate” any significant environmental impacts associated with project development.
 1. To mitigate means to reduce the severity of something, in this case, the damage caused to the environment due to project construction, operation, or maintenance.
- ii. Mitigation banking is a system of credits and debits devised to ensure that ecological loss, especially to wetlands and streams resulting from development, is compensated for by the preservation and restoration of wetlands, natural habitats, streams, etc. in other areas so that there is no net loss to the environment.
- iii. Two main types of banks:
 1. Wetland or stream banks that offer credits to offset ecological losses that occur in wetlands and streams. These are regulated and approved by the USACE (U.S. Army Corps of Engineers) and the USEPA (U.S. Environmental Protection Agency).
 2. Conservation banks that offer credits to offset losses of endangered species and/or their habitats. These are

regulated and approved by U.S. FWS (Fish and Wildlife Service) and NMFS (National Marine Fisheries Service)

- iv. Agricultural and natural lands landowners may have incentives to convert environmentally degraded or damaged areas of their property to a mitigation bank.
 - 1. To do so, the landowner (or a contracted third party) would work with interagency regulatory bodies like the MBRT (Mitigation Banking Review Team) and the CBRT (Conservation Banking Review Team) that approve plans for building, maintaining and monitoring a mitigation bank.
 - 2. The MBRT and CBRT approve the number of mitigation credits that the bank may earn and sell with a particular restoration project. Landowners may then sell these mitigation credits to project developers who plan to undertake commercial development within the mitigation bank's service area.
 - 3. The mitigation banker is responsible for the development, and also the future upkeep and maintenance, of the mitigation bank, to ensure that development impacts are offset permanently.
- v. Challenge to the success of mitigation banking is ensuring that regulatory agencies correctly assess ecological loss in economic or monetary terms: i.e., the credits offered by a mitigation banks have to be appropriately priced and evaluated by regulators. It is not an easy task to fully capture the economic impact of such damage caused to natural resources.

Glossary

ACR	American Carbon Registry, a nonprofit founded in 1996 as the first private voluntary greenhouse gas registry in the world.
CAFO	Concentrated Animal Feeding Operation
CAR	Climate Action Reserve, a non-profit carbon offset registry that publishes protocols to verify carbon reductions across a variety of industries and practices
CARB	The California Air Resources Board, a state agency that develops and enforces many different emissions and greenhouse gas goals across a variety of industries
CBRT	Conservation Banking Review Team
CCO	California Compliance Offset or Carbon Compliance Offset
CFP	Oregon's Clean Fuels Program, similar to the California LCFS
COP	Compliance Offset Protocol, or a set of rules you must follow for your project to generate a particular type of offset.
LCFS	Low Carbon Fuel Standard, California's "cap and trade" for transportation fuels that generates credits for the production or importation of low-carbon fuels
MBRT	Mitigation Banking Review Team
REC	Renewable Energy Credit or Renewable Energy Certificate
RFS	The federal Renewable Fuels Standard
RIN	Renewable Identification Number, a compliance credit under the federal Renewable Fuel Standard
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
USFWS	United States Fish & Wildlife Service