

Renewable Energy Revenues, Carbon Credits, and Subsidies in Agricultural Waste Treatment Economic Decisions

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All environmental waste has societal cost, and mitigation is difficult to transfer into benefits that economically justify action. Current subsidies and carbon credit financing have grown to developed within our society to actually put economic resources that are representative of the benefits, and now advanced waste treatment is viable through new economic possibilities related to methane capture and energy production. An economic model was constructed to evaluate the financial potential of anaerobic digestion for swine waste considering initial investments, the associated costs and new revenue streams of carbon credits, renewable energy credits, electricity sales and current available subsidies. The model was formulated based on case-specific inputs and was applied to three case studies in central Missouri. The model inputs were also evaluated by experienced vendors (who have developed similar projects) for validity. The results revealed that the present prices of carbon credits and electricity are not enough to prove the financial feasibility of applying AD technology in all cases without the availability of subsidies. The endeavor also showed that electricity prices have modest impacts on the corresponding Net Present Value of the projects. On the other hand, the carbon credit market projections affect the NPV to a greater degree. Clearly, carbon credit markets may play a pivotal role in widespread development and implementation of the technology. In all the three scenarios the projects were profitable with the presence of the current state and federal subsidies. However, since the subsidies may not be available for many years, high Carbon Credit and electricity prices are needed for future profitability of the technology.