

Introduction to Bioenergy Funding through Public Private Partnerships

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Background

With a growing interest in adopting more sustainable practices to minimize environmental impact, elected officials, municipal leadership, constituents and ratepayers are increasingly looking to their municipalities' water resource recovery facility (WRRF) as an area to make meaningful changes. These changes could include adopting anaerobic digestion for facilities that are incinerating, land filling or land applying biosolids or may consist of making improvements to existing anaerobic digestion facilities such as incorporating outside feedstocks or utilizing and monetizing biogas for the highest and best use. However, often these projects have high capital costs and struggle to be financed when competing for limited funds against other higher priority projects that are needed to maintain environmental compliance. Furthermore, some of these activities take municipal administration and WRRF operators further from their core job functions and skillsets. This fact sheet will provide an introduction on how various constructs of public private partnerships can be a key tool in galvanizing the funding and execution of these impactful projects.

Biosolids Management Services

Many private entities are willing to make bioenergy investments that benefit WRRF operations in exchange for long term contracts to manage the facility's biosolids. This allows for municipalities to realize a project without a capital expenditure, to shift responsibility and risk to a third party, and to stabilize biosolids management costs over the long term. For some projects, the biosolids management costs are lower than what is currently incurred and responsibility for operations and maintenance can also be shifted to the private entity, if desired, as shown in Figure 1 below. Moreover, biogas revenue sharing can be implemented as well.

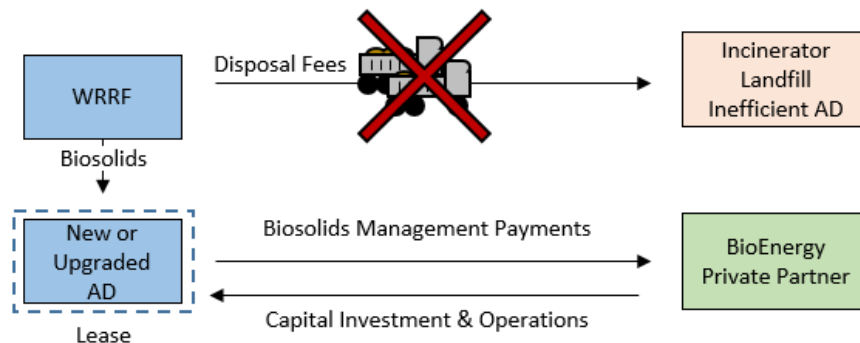


Figure 1: Biosolids Management Example

Feedstock Sourcing

With several states and municipalities enacting legislation which bans or reduces organics to landfills combined with zero waste initiatives from many leading companies, WRRFs with anaerobic digestion are consistently being asked to process outside feedstock sources. However, many municipalities are not interested in the marketing, sales, and accounting resources needed to secure these feedstock sources and implement a successful program. Certain WRRFs are restricted in the activities they can pursue outside of their core function of treating wastewater given their charter, bylaws and fiduciary responsibility to rate payers. Other municipal actors may not have full knowledge of how to price the services being offered. Private entities can supply feedstock sourcing services, sharing the value of tip fees and increased biogas production value with the municipalities, as illustrated in Figure 2 below. Some suppliers will prescreen and preprocess these waste streams offsite of the WRRF and bring clean liquid streams, or they may be willing to invest in feedstock receiving facilities at the WRRF. These programs can often be implemented with no incremental cost to the municipality and the revenue generated can help fund expansions or biogas utilization upgrades.

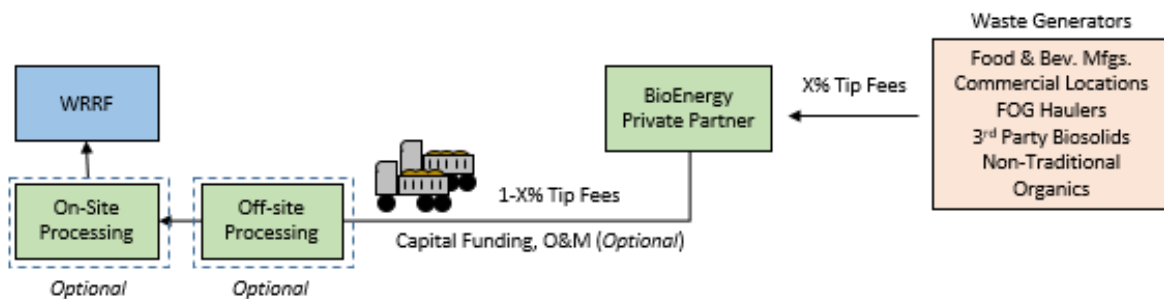


Figure 2: Feedstock Sourcing Example

Biogas Use-Power Purchase Agreements (PPA)

WRRFs with anaerobic digestion assets often have excess biogas which is flared or used only for digester heating. A significant opportunity exists to generate both electricity and heat through combined heat and power (CHP) systems. In the event of not having the funding or staff competency to manage a complex CHP system, a private entity can make an investment in, and/or operate the CHP system in exchange for a long term contractual arrangement, such as a power purchase agreement (PPA), from the utility to buy the power (and heat) produced from the CHP system, which is shown in Figure 3 below. For the private entity to recoup capital investments while operating the system, these agreements are often a minimum of 10-20 years in length, which allow the wastewater utility to purchase energy at a reduced and stable rate while also implementing a more sustainable use for their biogas fuel. These arrangements are intended to reduce the cost and risk associated with implementing the program while meeting environmental stewardship goals. It is common for wastewater entities or municipalities to have a number of different factors influencing the desire of the projects, so project implementation is often based on multiple criteria analyses including economic, environmental, social, and technological factors.

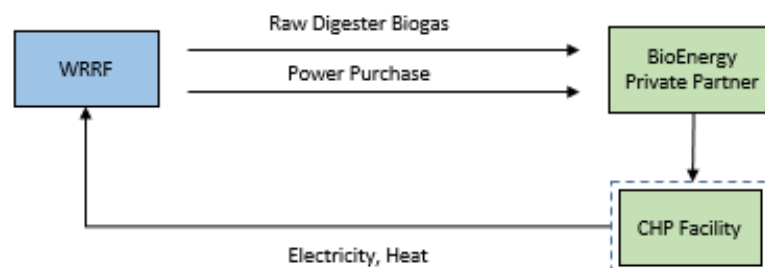


Figure 3: Biogas Use-Power Purchase Agreement Example

Biogas Monetization-Renewable Natural Gas (RNG)

Wastewater biogas derived RNG has significant value as a transportation fuel by generating valuable renewable attributes through programs such as the Renewable Fuel Standard (RFS) and state specific Low Carbon Fuel Standard (LCFS), most notably in California. RNG also has a value outside of these programs as more companies and institutions seek a low carbon fuel to replace conventional natural gas to meet sustainability goals. Monetizing the economic benefits of these programs can be challenging for a municipality to navigate and represent risk (through the uncertainties associated with market fluctuation, significant changes in legislation, and changes in the interpretation of the rules) than the municipality is willing to accept. As with power and heat contracts, private entities will enter into a long-term contract to buy biogas from a WRRF and invest in the infrastructure needed to monetize it, as shown in Figure 4 below. There are many contractual options and permutations; however, a common alternative approach to an outright purchase is a revenue share from the monetization.

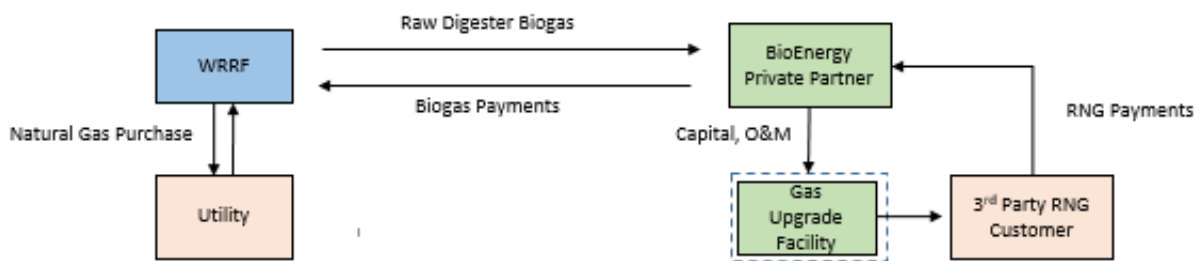


Figure 4: Biogas Monetization-RNG Example

Funding Unique to Private Parties

A public private partnership may also provide access to additional funding resources that otherwise would not have been available to a publicly owned and financed project. Funding mechanisms unique to the private sector include:

- Tax Financing, Depreciation
- State-specific grant programs
- USDA Rural Energy for America Program
- Depreciation

Additional Resources

- [Introduction to Funding Opportunities: Bioenergy and GHG Reducing Projects](#)
- [Renewable Identification Numbers: A Guideline for Water Resource Recovery Facilities](#)

Contact

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