Assessing Fit, Opportunities and Impediments for Food Waste Co-Digestion at Water Resource Recovery Facilities: Diagnostic Screening Questions

Chapter 3 of the Environmental Law Institute report, funded by the Water Research Foundation, ***Food Waste Co-Digestion at Water Resource Recovery Facilities: Business Case Analysis***, provides a diagnostic framework for WRRFs to analyze the organization fit and opportunities for co-digestion in their own organizational, market, and policy contexts and, if indicated, to develop a long-term co-digestion business strategy that advances their mission and long-term goals. The chapter also highlights case study examples of different strategies. The full chapter is available here.

A. Fit with Long-Term Strategic Goals and Organizational Culture and Resources

1. Over-arching strategic question: Could co-digestion create value for the ratepayers, the environment and the community, and help achieve utility mission and long-term goals?
2. Is co-digestion consistent with the mission of the WRRF? Its long-term strategic goals?
3. What criteria will utility decision makers use to evaluate projects to implement co-digestion and recover resources (biogas, energy, nutrients/soil amendments)?
4. What are the drivers for co-digestion at the WRRF? Which stakeholders will benefit? Which stakeholders may have concerns?
5. Does the utility have an organizational culture that supports innovation?
6. Does the utility have the resources to manage the co-digestion program (using internal resources and/or managing contracted resources) and to develop stakeholder support for the program - or a strategy to attain them?
7. If additional or upgraded facilities will be needed to implement co-digestion, such as hauled-in waste receiving, AD, energy generation and biosolids management facilities, does the utility site have sufficient, suitable space onsite? Or, if developing new sites not on current WRRF property, is there suitable zoning classification and political/public acceptance?

B. Anaerobic Digestion Capacity, Space, and Siting Assessments

1. Over-arching strategic question: What strategy for AD capacity utilization can ensure wastewater services for the utility's core customers, and optimize the opportunities to create value with the residual capacity?
2. Does the plant have sufficient AD capacity to accept additional feedstocks for co-digestion?
    a. YES - Are co-digestion considerations part of utility planning for AD upgrades to improve the efficacy and cost- effectiveness of the digester?
    b. NO (includes plants with no AD) - Are co-digestion considerations part of the utility planning to invest in (additional) AD capacity?
3. Truck access:
    a. Are there adequate routes and access for tractor-trailer access to deliver hauled-in wastes?
    b. Are there nearby commercial truck weigh stations if on-site weigh scales are not used?

C. Organics Feedstocks

1. Overarching Strategic Question: What feedstock strategy can meet utility goals for biogas production and revenue generation, and address constraints on biosolids management, without causing operational issues?
2. What are the options for feedstocks: (how) can the utility acquire supplies of them, with predictable quantity, quality and price?
3. What on-site investments (e.g., receiving station and pretreatment capacity) and operating changes (e.g., acceptance criteria, mixing/loading procedures) could:

a. Mitigate operating risk?
b. Mitigate regulatory compliance risks?
c. Optimize biogas recovery?
d. Optimize biosolids production?

4. What strategy can the utility use to set tip fees, in order to achieve feedstock quantity, quality and revenue goals?
5. What strategies can the utility use to manage the operational, regulatory and financial risks?

D. Energy Products, Uses, and Technologies

1. Overarching strategic question: What energy strategy can meet utility goals for energy neutrality and for cost savings or revenue generation, without causing operational issues?
2. How much additional biogas could result from feedstock strategy options?
3. Does the plant currently have capacity in energy generation equipment to beneficially use the additional biogas?
4. What options are available for generation and onsite or external end-use of renewable energy from the biogas? For each option:
   a. What additional onsite investments are required? Does the plant have the necessary space? How much will they cost?
   b. What operational and regulatory challenges does it pose?
   c. What is the potential for energy cost-savings and/or revenue generation?
   d. Are there challenges with gaining market access for external sales? What energy tariff and green
   e. payment options exist?
5. What strategies are available to manage operational and financial risks?

E. Biosolids Management

1. Overarching strategic question: What biosolids strategy can meet utility goals?
2. What potential changes in quantity and quality of biosolids production could result from feedstock strategy options?
3. Does the plant have capacity in its current biosolids management approaches to handle any anticipated increase in quantity? If not, what alternatives are available?
4. What capital investments or operating adjustments may be needed to handle operating or regulatory challenges from any changes in quality (increased grease or nutrients)?
5. Can the increase in biogas or the operating challenges in biosolids management attributable to co- digestion motivate the adoption of new strategies to recover resources and create valuable products from biosolids?
6. What strategies can the utility use to manage operational and financial risks?

F. Contracting and Public-Private Partnerships

1. Overarching strategic question: Can contracts be designed to address the barriers to moving forward with a co- digestion project, such as lack of expertise, operating risks, financial risks, or difficulty in public financing approvals?
2. What aspects of risk are of greatest concern, for example:
   a. Uncertain construction costs and time to completion
   b. Uncertain feedstock sources and tip fee revenue streams
   c. Uncertainty about operating challenges with equipment (including periods of downtime) and effects on other operations

    d. Financial risks with equipment operations: uncertainty about O&M costs of managing the equipment, energy cost-savings or revenues
3. Are there any regulatory constraints on the use of public-private partnerships in the state? In the utility charter?
4. Which elements of the project would you consider for a performance-based PPP: designing and building? Operating? Financing?
5. What are the needed investments to co-digest, and produce energy?

G. Financing and Funding Options

1. Overarching strategic question: What financing strategy can utility goals for implementing investments that will create value while minimizing financial risks to ratepayers?
2. How much external funding is needed (net of grant monies available, and internal funds)?
3. What public sector loan options are available?
    a. Clean Water State Revolving Fund (CWSRF): Does the project qualify for the below-market SRF loan program in the state (based on type of activity, financial requirements, etc.)?
    b. Are other state or federal loan programs available to finance the project?
    c. Municipal loans: What is the credit situation of the utility authority (or the municipality): what is their current debt burden, and credit rating?
4. What private options are available through PPP?
5. Do important advantages accrue with private financing through PPP that make the tradeoff of incurring a higher interest rate worthwhile?
6. Evaluating the options:
    a. What interest rate and loan terms are available?
    b. What auxiliary conditions must be met?
7. What streams of revenues (or cost-savings) can the utility generate to pay back the loan?