National Waste & Recycling Association℠
Collect. Recycle. Innovate.

SWANA®
SOLID WASTE ASSOCIATION of North America

Briefing for Elected Officials
Effective Responses to Emerging Waste Management Technology Proposals

As an Elected Official, we know it is important to you that decisions made on behalf of your taxpayers improve the reputation and sustainability of your community. That is why the Solid Waste Association of North America (SWANA) and the National Waste & Recycling Association (NWRA) wrote this brief on responding to unsolicited proposals to implement facilities based on emerging or locally unfamiliar waste-related technologies. Our goal is to provide you with a process and to recommend resources to help you make an informed decision that will create a win for you, the voters, and your community.

SWANA and NWRA support the development of new facilities and new technologies for managing municipal solid waste, especially when those technologies return a resource. These efforts offer the potential for increased waste diversion, revenue and jobs. However, the implementation of such projects is complex and can also be risky. By leveraging the lessons learned from both successful and unsuccessful projects across North America, we hope to help you respond to unexpected or unsolicited opportunities in ways that minimize the potential for a failed project and/or negative press.

Read below for the first, easy steps you can take to protect your interests and where you can go for more help.

Starting with an understanding of the technology being proposed is appropriate and will set parameters around this guidance.

Your community is already familiar with many practices and technologies currently used to manage solid waste - everything from recycling to composting to landfilling. The depth of experience in your area and across North America makes these tried and true systems appealing in many ways. Even when you are familiar with a proposed waste-related technology, project development, siting, permitting and implementation remain complex and will require you to be diligent in reviewing unexpected or unsolicited proposals for the elements of a solid business relationship.

NWRA is the trade association that represents the private sector solid waste and recycling industry. www.wasterecycling.org
SWANA is the leading professional association for individuals working in solid waste management in the United States and Canada. www.swana.org

New technologies or new applications of long-existing technologies for managing portions of the solid waste stream are being developed all the time. These technologies, which we sometimes call "emerging" because they don't yet have the same level of North American experience behind them, are seeking ways to use solid waste as a feedstock to create useful outputs like energy, fuels, chemical, and building products. You may hear some of these processes called "conversion technologies" because they seek to convert portions of the waste stream into useful products through thermal, chemical, mechanical and/or biological processes.

Among the processing systems receiving heightened attention in the industry are anaerobic digestion, mixed waste processing, transesterification, gasification, and pyrolysis with outputs like syngas (synthesis gas), Renewable Natural Gas (RNG), biochar, and a variety of liquid fuels such as ethanol and biodiesel. Regardless of familiarity, these production processes – like other approaches to managing solid waste – are complex and require a large capital investment. As the systems become complex, they may also need increasingly specific inputs and require the development of new markets to provide the projected economic returns.

NWRA and SWANA support the development of technologies, consistent with the US EPA Waste Management Hierarchy and similar requirements in other countries, intended to minimize the final disposal of solid waste. Many of the technologies cited above advance that goal and offer environmental and economic opportunities for your community. However, the accompanying risk should not be disregarded. Because solid waste is regulated and because some technologies are not widely used in the United States and Canada, it is important to ask thoughtful questions and to complete a thorough evaluation of the proposed business deal and processing systems. Following the due diligence steps outlined in this document and the accompanying checklist will help you identify and understand the associated risks and challenges.

Initial steps to consider when presented with an unsolicited proposal or an unfamiliar waste management technology:

1. Require the company or developer to provide reference projects for the proposed technology that process municipal solid waste at a commercial scale in a similar environment. Scale is important in identifying a technology that will operate with the consistent throughput necessary to handle the amount of waste provided by a city or county. References with feedstocks other than municipal solid waste and projects in other countries may be less valid because of variations in waste characterization and regulatory requirements. For example, although Europe is using more waste conversion technologies, their permitting and air emissions requirements differ from those in North America, which makes seemingly similar projects have different levels of viability. Please refer to the attached checklist for further questions.

2. Direct the company or developer offering the unsolicited proposal to meet with your solid waste agency or contracted waste service provider. If necessary organize a meeting between the solid waste agency and the company or developer. The agency/vendor will be able to exchange insights about local conditions, the proposed systems, and provide value in project conversations.

3. Ask the company or developer about their interactions with regulatory agencies and their understanding of the approval/permitting requirements for the proposed technology. Ask if they will assume the permitting and regulatory risks as part of their role in project development. Have municipal, waste agency, and regulatory representatives offer similar feedback on approval/permitting requirements. Be skeptical of claims of accelerated timeframes or simplified approval processes. In general, solid waste processing technologies – especially those that are unfamiliar to regulators or considered emerging -- make it more likely for an approval process to be extended rather than shortened.

4. Perform an online search on the company name, the names of the principals, and the technology. Elected Officials should request the solid waste agency perform research as well. This will result in one of three outcomes:

- The company or developer will have a history of successful projects and relationships with the proposed technology solution. With new and emerging technologies, it is obviously difficult to have a long history of success.
- There is very little information, which typically indicates that the company is new and your municipality will be on the leading edge of an emerging technology; or,
- The company or developer may be identified in conjunction with one or more projects with a seemingly questionable track record. Experiences of previous projects and partners in developing those projects provide good indications about issues to be addressed, and may be a sign to proceed with caution.

5. If the company or developer is promising revenue and new jobs for your municipality, it is well worth the cost to hire an independent consultant to evaluate the proposed technology, the financial pro formas and review the underlying assumptions related to feedstocks. Waste processing technologies are at various levels of technical maturity and municipalities should understand and be comfortable with their level of financial exposure to the underlying risks. In particular, the questions and risks may be heightened with first or second-of-a-kind implementations in North America. Here too, your solid waste agency/vendor can help with the evaluation.

There are several recent examples of municipalities that have accepted risk and/or issued bonds for waste processing projects that later failed. Their experiences offer useful insights.

Montgomery, Alabama IREP MRF
http://www.montgomeryadvertiser.com/story/news/local/community/2016/07/20/cost-doing-business-irep/87348250/

Ottawa, Ontario - Plasma Gasification
http://ottawacitizen.com/news/local-news/plasco-energy-group-files-for-creditor-protection

Glendale, Arizona - Gasification
http://www.azcentral.com/story/news/local/glendale/2015/09/18/glendale-million-trash-war-energy-firm/72398882/

6. Experiences from other cities have shown that waste processing projects require significant support and resources from various divisions within the municipality. As an example, the City of Houston's One-Bin-For-All program took three years of analysis and evaluations and, as of early 2017, has not yet moved forward. It is important to determine whether your municipality has the sustained financial resources, technology expertise, political will and community support to move forward with a new waste processing project.

Houston OBFA –
https://www.houstonpublicmedia.org/articles/news/2016/01/18/134410/what-happened-to-houstons-one-bin-for-all-program/

Summary

Whenever and wherever management of solid waste is proposed, there are likely to be concerns and objections. If opposition develops, it may be very local (objecting to siting facilities very near a community is called Not In My Backyard or NIMBY) or for a variety of other reasons. With an unsolicited proposal or the use of new or less established technology, these objections may be even greater as the public may lack trust in some essential aspect of project development, including the vendors, the regulations or the proposed technology itself.

Therefore, we again encourage you as an Elected Official to conduct the due diligence necessary to fully establish the feasibility and suitability of a waste-related proposal for your community. Understand the challenges that face your municipality or county as you move through the approval and implementation process. Asking the right initial questions when a project is proposed is a critical first step.

Case studies and other information as of 2016:

1. Portland Metro - http://www.oregonmetro.gov/sites/default/files/Phase%203%20Final%20Report%20March%202015.pdf
2. LA County – http://ladpw.org/epd/tf/conv_tech.cfm
3. NYC EDC/DOS – http://www.nyc.gov/html/dsny/downloads/pdf/swmp_implement/otherinit/wmtech/phase2.pdf
4. King County, WA – http://your.kingcounty.gov/solidwaste/about/planning/documents-planning.asp
5. City/County of Santa Barbara, CA – http://www.conversiontechnologystudy.com
6. CalRecycle – http://www.calrecycle.ca.gov/Organics/Conversion
7. Global Alliance for Incinerator Alternatives – http://www.no-burn.org/article.php?id=731
8. Waste to Energy Article (GBB Waste Advantage Magazine): http://www.gbbinc.com/media_publications/WasteAdvantage-Dec2010-Gershman.pdf

Emerging Waste Management Technology
Project Development Checklist

To assist your evaluation of opportunities to utilize emerging waste management technologies or to use existing technologies in new applications as part of your overall environmental services offering, here are a set of questions to consider. We recommend sharing this with your public works department, any other agency responsible for solid waste management and any third party solid waste experts you engage.

1) **Technology – describe the technology and what it is designed to do.**
   a) What is it?
      i) Is this a "proven technology"? (i.e. has it been in commercial operation for minimum of two years using typical municipal waste and no regulatory issues with emissions)
      ii) Where has the system been in operation?
   b) What are the benefits?
      i) Energy production, waste diversion?
      ii) Is the process designed to generate excess energy or does it require a net energy input?

2) **Feedstock – describe the type of material and amount needed (MSW, C&D etc.).** As the project becomes developed, more detailed questions should include the following:
   a) What are the specifications for incoming material to be processed (feedstock) a At a minimum, preprocessed specifications should establish:
      i) Moisture levels
      ii) Particle size
      iii) Physical and chemical contamination limits
      iv) Prohibitives.
   b) What is considered unacceptable?
   c) How will upstream supply changes (ex: flexible packaging, bottle light-weighting), waste industry changes (ex: Organics diversion, other process technology implementations), demographic changes (population up/down, average age, recycling habits, etc.) impact the long-term availability of the desired feedstock?
   d) Do you have any existing long-term waste supply agreements in place?
   e) Are there any local regulations that restrict the ability of the community to commit the necessary waste quantities or qualifying feedstock? (i.e. Flow Control)

3) **Preprocessing – describe modifications needs to incoming waste material.**
   a) What preprocessing is required? Describe the preprocessing required from the point of the waste disposal to entry into the main conversion process.

b) For the required preprocessing, what is the estimated operations and maintenance cost, including but not limited to power, labor, media replacements, overhauls, etc.
c) What is the staffing level and plan?
d) Who will be responsible for preprocessing and how are they incentivized to produce the quantity and quality of preprocessed input material the process requires?
e) What are typical contaminants in the feed?
f) How will the preprocessing system account for the low quantity of "other" items whose characteristics may impede operations of proposed Waste Conversion processes (engine blocks, bowling balls, VHS tapes, ropes, CFL lightbulbs, household hazardous waste etc.)
g) Will the preprocessing stages be operating at full-scale prior to bringing the conversion process online?
h) Are there alternate markets to which the preprocessing material can be marketed to in the event that the regular process is delayed?

4) Process – describe the process.

a) Please provide:
   i) Process Flow Diagram
   ii) Mass Balance (basis clearly defined: dry/wet, raw/preprocessed)
   iii) Energy Balance – describe anticipated energy use and energy production
   iv) Air emissions, describe the anticipated volume of emissions and the anticipated quality
   v) Water balance - for water discharges describe the nature of the discharge in terms of biological and chemical characteristics
b) For the process, what is the estimated operations and maintenance cost, including but not limited to power, labor, parts, maintenance, media replacements, overhauls, etc?
c) What is the staffing level and plan?
d) Technology readiness/ reference projects: Are they running on comparable feedstocks under comparable market conditions? This is particularly important if all the reference projects are located outside of the US and Canada
e) Technology guarantee – is solid and from credit-worthy entity?
f) Given that feedstock availability, technology and markets evolve over time, how would the selection of the process fit in this evolving landscape? In other words, why should one select the process now rather than wait for alternative and improved processes that may (or may not) be developed in the future?
g) How does the process mitigate odors?
h) What differentiates the process from other processes in the same space?
i) Is there a facility similar to the one proposed in commercial-scale operation in North America? Please provide contacts and describe relationships.

5) **Outputs – Describe the products and by-products that result from the process.**
   a) Is there currently an outlet market for selling the product produced? If the markets do not yet exist, who is responsible for establishing them? What is the impact to the project if the markets do not materialize?
   b) Describe the markets for products. What prices can be anticipated over the life of project? What evidence can be provided to support the proposed product value?
   c) Does the process produce any byproducts requiring disposal? Are or could any be considered hazardous waste?
   d) Who will be responsible for disposing of non-processible waste and/or non-salable products?
   e) Will the vendor guarantee recovery rates for the processed waste?
   f) What and how much are the air and water emissions of concern?
   g) What products are produced and is the project reliant on revenue from their sale to cover all or a portion of the operating and capital expenses? To what extent?
   h) Is there an existing market for the product(s)?
   i) What byproducts and waste streams will the operation generate? How, if at all, will they be handled in our area?

6) **Project – Describe the location, land area and impacts on the waste stream and movement of materials.**
   a) Where will the project be located? Has property been acquired or are there existing land leases in place?
   b) How much area is required for the project and all related support operations and traffic?
   c) Who is responsible for acquiring the property, the approvals to use it, and for the costs of site selection and development?
   d) What is the backup plan for the waste supply if the project gets delayed, cannot process the amount of material expected or the project fails?
   e) What role does this project play in the longer-term goals (recycling rate, diversion rate, GHG reduction, etc.)?
   f) Has the impact to other municipal/other government assets as a result of the selected Conversion Technology been fully evaluated? (i.e. Refuse collection fleet, Municipally-owned WWTP for co-digestion, etc.)
   g) Have current opportunities to improve the existing system (i.e. SS Recycling vs MWPF) been maximized?

7) **Financial – Describe capital and operational costs and responsibilities and term assumed for the project.**
   a) Capital Expenditures:
      i) What are the estimated capital costs associated with the project?
      ii) How much contingency is on the project, including all preprocessing steps?

iii) What are the additional development needs and expenses of the project such as new or improved roads and additional utility or wastewater services? Are they factored into the project capital costs? If not, who will be responsible?

b) Revenue sources; fraction fixed vs variable?
c) What is the minimum annual tonnage of the desired on-spec feedstock required to build the facility? To keep a fully-construction facility running?
d) Who will invest (debt and equity) in the project, including project development expenses?
e) Role of State/Federal Environmental Attributes, Grants, low-cost loans, etc.?
f) What taxes/fees will the project be subject to (Host fees, Environmental Fees, Landfill Taxes, etc.)?
g) Commodity prices – what exposure do you and the project partners have to changes in commodity prices?
h) Does project account for a realistic construction and startup time that may stretch over several years?
i) Has there been an objective analysis done (eg., switching to CNG trucks regardless whether an AD+CNG fueling station is constructed)?
j) Does the financial analysis include the impact on both waste collections and waste processing?
k) What resources are needed from our agency/municipality and from other local partners to make the effort successful? What portion of the total funding and feedstock are required do we represent?
l) What are the region's tip fees?

8) Regulatory – describe the permits required to move forward with the project.

a) What are the regulatory requirements for the project/technology?
b) What permits are required, what is the timeline, cost and likelihood to get them?
c) Are there any Environmental Justice concerns associated with the project?
d) Does the project align with likely future regulations (ex: micro-contaminants in compost)
e) Have state and federal regulatory requirements been evaluated for this project in this location? Provide a synopsis.
f) What state agencies have jurisdiction? Have they been contacted? If so, please provide the name(s), titles, and contact information of the individuals and a synopsis of the interaction.
g) Do the current regulations allow this technology? Or will they need to be changed?