



ELEMENTS

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THE KANSAS CITY REGIONAL BY-PRODUCT SYNERGY INITIATIVE

By-Product Synergy is a practical application of industrial ecology in which companies work together in a given region to match feedstock needs to unwanted by-products. Each regional project involves recruiting ten to twenty diverse companies as fee-paying participants and engaging local, state and federal government agencies as supporters. Through the BPS process, individual companies are transformed into a cross-industry team focused on turning every gram of material into product that has value.

In December 2002, the Mid-America Regional Council Solid Waste Management District (MARC SWMD) in Kansas City invited Andrew Mangan of the US Business Council for Sustainable Development and a team including the Elements consulting division of BNIM Architects, Franklin Associates and Bridging the Gap to determine the feasibility of launching a By-Product Synergy project in the Kansas City region. The project team is meeting with select private and public sector leaders in the region to determine project support. In June, the team will report its findings and recommendations to MARC SWMD.

AN INTRODUCTION TO BY-PRODUCT SYNERGY

Concept

By-product synergy (BPS) is the practice of matching under-valued waste or by-product streams with potential users, helping to create new revenues or savings for the organizations involved while simultaneously addressing social and environmental impacts. The US EPA and Business Council for Sustainable Development define the By-Product Synergy process as “The synergy among diverse industries, agriculture, and communities resulting in profitable conversion of by-products and wastes to resources promoting sustainability.”

Purpose

BPS brings neighboring industrial companies and organizations together to exchange elemental information about their processes in order to create synergies. The synergies uncovered can produce added revenues, new business opportunities, cost-savings, and environmental and regulatory benefits to the group and to the region as a whole.

Process

The process begins by cataloging each organization’s inflows and outflows in a confidential, uniform database that is analyzed for synergies by an experienced project team and through facilitated working sessions with the participants. Participants discover many valuable connections between themselves and other industries in the region. They create action plans for synergies judged commercially viable, and organize strategies for addressing technical, regulatory or other barriers. The group continues to convene for as long as participants are interested.

In the initial stages of a BPS project, participating company engineers and operations staffs are exposed to the production processes, raw material needs, and waste streams of one another’s businesses and industries. Through extensive collaboration, coordinated and facilitated, these participating organizations discover innovative ways to integrate their operations that cut pollution, and reduce material costs, improve internal processes and improve the bottom line.

The BPS process generally lasts for one year. In that time, potential synergies are identified, barriers are encountered, and opportunities are realized to convert by-products into raw materials for processes in other industry sectors. This collaborative business driven approach also enlists industry’s capabilities in addressing waste and pollution issues. In return, regulators have shown a willingness to explore ways of permitting reuse options that can be shown to produce higher environmental results.



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Benefits

Benefits of the process are the achievement of balanced social, economic and environmental goals such as:

- Reduce operating expense
- Reduced energy use
- Reduced emissions
- Waste transformed into product
- Surpassed regulatory targets
- Improved community
- Improved productivity
- Improved profitability

Barriers

There can be numerous barriers that may be encountered and overcome during the BPS process. Each synergy will have its own unique set of barriers. If the barriers can be identified through the process, sometimes they can be overcome through collaboration. The barriers that are often identified can be divided into five categories:

- Technical barriers
- Economic barriers
- Regulatory barriers and liability
- Perception and reputation
- Lack of Incentives

Regulatory Issues

From the earliest days of work on By-Product Synergy in 1995, the United States Environmental Protection Agency (EPA) has been a supporter, led by the Office of International Activities and Region VI (Texas). The EPA has been willing to explore alternative to regulations that block organizations from developing environmentally beneficial synergistic activities. The EPA has also recognized potential for emission reductions resulting from synergies. In the New Jersey By-Product Synergy Initiative, the EPA and state regulators are working as a synergy review team looking for environmentally beneficial synergies. For these synergies baseline estimates of emissions without the synergy are being developed using site-specific data. The solid waste, energy and air emissions implications of the synergy will be projected and measured against the baseline to estimate incremental changes associated with implementing the synergy.

Involving the state regulators is a key element of the strategy, since it is the states that implement and enforce the federal regulations. Opportunities have emerged to replicate the NJ regulatory approach with other states in partnership with EPA, which could lead to a national program.

Keys to Success

There are three keys to a successful by-product synergy process. The first is diversity. The participants brought together in these projects represent a wide variety of industries and organizations, which broaden the markets in which participants find business opportunities.

The second is communication. The BPS project provides a forum in which participants are comfortable sharing ideas. The process stimulates creative thinking to look beyond company fence-lines for opportunities.

The third is partnerships. By leveraging the relationships with technical consultants, regulatory agencies, research organizations, and funding sources to assist participants the barriers to implementing the synergies are overcome. Participating in the project also exposed to opportunities for synergies with companies in other BPS projects.