A Systems Approach to Urban Community-Scale Composting

**Objective:** Design a system prototype for a scalable urban composter with widespread application in backyard or rooftop locations, and construct an in-vessel composter to be incorporated into the design of City College’s entry in Solar Decathlon 201.

**Background:** The next version of New York City’s PlaNYC is expected to incorporate composting goals and strategies. These include lowering solid waste transfer costs and environmental impacts, reducing landfill gas emissions, and recapturing and up-cycling of vital nutrients obtained from residential food and landscaping waste. A well-conceived and managed composting system must take into account a variety of issues relating to scale, closed-loop systems, and complex social and community relationships. What is the population size and geographic area of the target community? Does this community consist of homes and restaurants? What kind of waste will be collected? How does this system affect and develop community? How does it engage community to change behavior at home? How do we evaluate the carbon footprint of the entire composting operation that results—encompassing construction, collection, and transport? These questions are merely an introduction to the broad array of considerations involved in designing urban composting systems.

**Suggested Approaches:** In Phase 1, research best practices; identify a prototype project site; study and establish typical waste stream potential from site area; identify local sources of high-carbon material; identify barriers to composting and identify those barriers to be overcome by design; conduct a product literature search for currently available components that could be used as models or adapted; consider additional innovative components that could complement and advance the project. In Phase 2, from the perspective of biology and ecology assess ecological needs/benefits as well as appropriate design and operating criteria. In Phase 3, from the perspective of policy and economics assess community need/benefits and develop a comprehensive analysis of system operation. In Phase 4, from the perspective of architecture and engineering design an in-vessel composting system and/or adapt an existing product to fit the needs outlined by initial research and to serve as a prototype for City College’s entry in Solar Decathlon 2011. Throughout all phases of the project, consider additional ideas and designs that bring this initiative closer to the central goal—a zero-carbon, integrated and self-reliant system.