

Hudson Valley Circular Biogas Systems

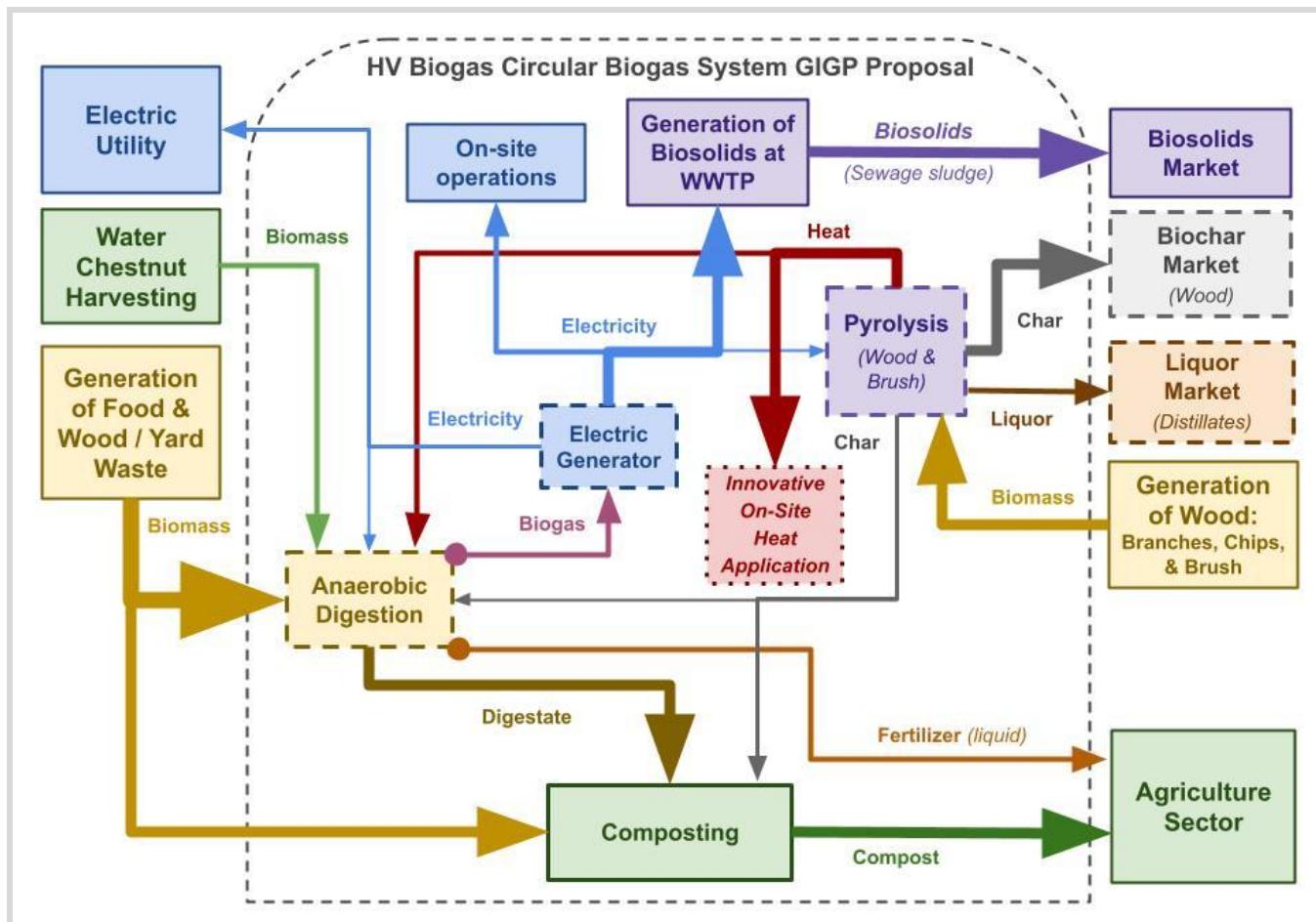
NYS CFA: GIGP for July 30th, 2021 - [Presentation](#)

[Hudson Valley Biogas](#) is proposing a pilot circular economy solution for managing local organic waste streams so that these valuable resources can be redirected for beneficial use within the county. The team overseeing this project is called the [Cultivator](#) and is offering the necessary economical, engineering, environmental, and social expertise. Together, with the municipality, this group aims to demonstrate an innovative way of configuring existing technologies that will inspire a regional initiative, build capacity among local communities, and create a pathway for attracting additional investment.

A schematic of the proposed system is displayed with this overview. There are three basic elements to the diagram; boxes represent processes, arrows represent material flows, and the dashed line frames all of the activity which would take place within the system boundary of the host facility. The two primary infrastructure investments for this GIGP are 1) a shipping container anaerobic digester and 2) a small-scale wood pyrolysis unit. On an annual basis, the digester would accept approximately 900-tons of feedstock which is intended to primarily consist of 1) invasive aquatic water chestnut and 2) excess food waste. The wood pyrolysis is a batch solution technology which could manage approximately 750 cubic yards of wood waste per year inclusive of branches and brush.

This circular economy solution will output a variety of products that can be re-utilized on site as well as sold to market. These include 1) compost material, 2) a nutrient-rich liquid fertilizer, 3) biochar from wood, and 4) liquid distillates from the pyrolysis process. In addition, the digester will produce biogas which will be converted to electrical energy and is expected to net approximately 250,000 kWh per year. According to the GIGP conditions, this electricity must be applied to a POTW either at the site-location or on the same electrical grid. Three locations are of primary consideration; the A) Wappingers Highway Department, the B) Village Biomass Staging Area, and the C) Village Highway Garage. A power purchase agreement (PPA) would be arranged with the town's Wildwood SD and / or the Midpoint Park SD and a respective financier.

Support for this management solution is guided by A) the local need to restore local water systems, B) the upcoming NYS Excess Food Waste legislation, C) the CLCPA renewable energy initiatives, and D) the need to actively address environmental justice (EJ) - several sections of the Village have been identified as potential EJ areas by [NYS DEC CP-29](#). The Cultivator has adopted an Environmental & Social Governance (ESG) approach that is modeled after the Triple Bottom Line; people, planet, profit. An oversight system of checks and balances will be executed according to a quantitative environmental impact analysis and a qualitative UN Sustainable Development Goal (SDG) examination. The installation is anticipated to be financially self-sustaining and capable of scaling with new technologies.



| GENERAL Stakeholders | SPECIFIC Stakeholders |
|--|---|
| <p><u>New York Department of Environmental Conservation:</u> Division of Materials Management Climate Change Invasive Species Council & Advisory Committee Region 3 Environmental Permits</p> <p><u>US Army Corps of Engineers (USACE)</u></p> <p><u>Research & Educational Institutions:</u> NYS Pollution Prevention Institute (NYSP2I) NYS Energy Research & Development Authority (NYSERDA) Cornell Waste Management Institute (Cornell University) C-Change (Iowa State University) Ithaka Institute for carbon intelligence Cary Institute</p> <p><u>Regional Organizations:</u> Sustainable Hudson Valley Hudson Valley Regional Council</p> <p><u>Associations:</u> American Biogas Council International Biochar Initiative World Biogas Association</p> | <p><u>Partnerships for Regional Invasive Species Management:</u> Lower Hudson PRISM SLELO PRISM - St Lawrence</p> <p><u>Land Conservancy Groups (Land Trusts):</u> Columbia Land Conservancy Dutchess Land Conservancy Hudson Highlands Land Trust Stony Kill Foundation</p> <p><u>Cornell Cooperative Extension(s):</u> Dutchess County</p> <p><u>Universities (Colleges):</u> Vassar College Dutchess County Community College Marist College The Culinary Institute of America</p> <p><u>Regional Organizations:</u> Beacon Institute for Rivers & Estuaries (Clarkson University) Hudsonia (Bard College) Hudson River Sloop Clearwater Hudson River Watershed Alliance Scenic Hudson</p> |