

**Feasibility Study of Renewable Natural Gas (RNG) Production  
from Organic Wastes for Local Transportation in Bloomington-Normal, Illinois**

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This project, in alignment with the requirements of the FOA Topic Area 1: Feasibility Study Development, aims to assess the economic feasibility and environmental sustainability of replacing fossil fuel-derived compressed natural gas (CNG) with renewable natural gas (RNG) produced from organic waste. The study supports our long-term goal of reducing organic waste and greenhouse gas (GHG) emissions while enhancing the economic and environmental sustainability of waste treatment facilities and transportation fuels.

Key factors for success include: (1) ensuring the availability of organic waste feedstock within a reasonable transportation distance; (2) enabling the efficient production, storage, and utilization of RNG through anaerobic digestion (AD) and biogas upgrading for local transportation; and (3) engaging local communities in waste collection and RNG use. This project will quantify local organic waste availability and recycling rates, estimate energy savings in transportation and waste management, and assess the environmental and social impacts of this proposed system compared to the current practices, using techno-economic analysis (TEA) and life cycle assessment (LCA).

To achieve the goal of converting organic waste into RNG via AD for local transportation in Bloomington-Normal, IL—thereby lowering GHG emissions from both wastewater treatment facilities and the city's transportation sector—the project will focus on the following tasks: (1) identifying critical sustainability indicators and establishing baselines in Bloomington-Normal, IL; (2) researching organic waste availability and associated costs; (3) reviewing existing facilities and designing the AD, RNG, and waste-receiving systems; (4) assessing operational impacts at the proposed Water Resource Recovery Facility (WRRF); (5) evaluating transportation applications with partners like Connect Transit, BNWRD, and GFL Environmental; (6) conducting a comparative economic and environmental analysis; and (7) collaborating with stakeholders to share project results.

Expected outcomes include: (1) improved organic waste recycling and reuse rates in Bloomington-Normal, IL; (2) a database of organic waste sources within a 75-mile radius of the city; (3) preliminary designs of AD, biogas-to-RNG, RNG deployment, and waste receiving systems; and (4) a comprehensive assessment of economic, environmental, and social sustainability through surveys, panel discussions, TEA, and LCA.

Funding from the Department of Energy (DOE) will bring together experts from various disciplines to collaborate on organic waste management, biogas production, and sustainable transportation fuels. The proposed technology aims to help communities, wastewater treatment plants, and transit authorities produce RNG from organic waste for local transportation, fostering synergies between waste infrastructure and sustainable transport. This approach offers an integrated solution to environmental, energy, and economic challenges, an opportunity that is often overlooked by private funding sources.