

Advancing Urban Sustainability through Biochar, Mulch, and Food Waste Composting: A Collaborative Innovation Pilot

Partner Office:

City of Grand Rapids – Office of Innovation in collaboration with Environmental Services, Public Works and Office of Sustainability

I. Overview

The City of Grand Rapids has prioritized sustainability and climate change mitigation as part of its 2025–26 Strategic Plan. This proposal outlines a pilot project to develop a circular waste management system that combines biochar production, mulch application, and food waste composting. The initiative will divert organic waste from landfills, sequester carbon, and create regenerative products for city use in parks, landscaping, and urban agriculture.

Through the John H. Logie Fellowship, the City of Grand Rapids Office of Innovation seeks to Partner with Grand Valley State University to research, prototype, and implement this integrated waste-to-resource strategy. This experience will provide a meaningful contribution to the City's sustainability goals while advancing a Fellow's professional development in public service and environmental policy.

II. Alignment with Goals (Score Area 1 & 2)

Focus shall be in local or regional government as an environmental policy analyst, focusing on sustainable infrastructure and circular economies. The Logie Fellowship offers a unique opportunity to directly contribute to city operations and gain practical experience in systems thinking, policy development, and implementation.

This project will enable the Fellow to assist in:

- Design and analyze public sustainability programs
- Engage in cross-departmental collaboration within city government
- Participate in community-based solution building
- Apply academic knowledge in environmental studies to real-world municipal challenges

III. Community Needs Addressed (Score Area 3)

The City of Grand Rapids faces several intersecting challenges:

- High volumes of food and organic waste ending up in landfills
- Rising greenhouse gas emissions associated with waste and energy systems
- A need for low-cost, locally produced soil amendments for green infrastructure and tree planting
- This project will directly address these needs by:
 - Prototyping a localized composting and biochar model to reduce waste
 - Creating a strategy for carbon sequestration using biochar in city landscapes
 - Reducing municipal costs for mulch and soil products
 - Supporting food sovereignty and urban agriculture through improved soil health

IV. Skills and Experience Brought to the Fellowship (Score Area 4)

Strong foundation in environmental science, policy analysis, and sustainability systems. Our project includes research in urban ecology, waste systems, and public administration. Fellow will gain experience with:

- Research and data analysis in environmental systems
- Organizing community waste reduction events
- Participating in campus composting and food recovery programs
- Communication and collaboration across diverse stakeholders

Contributions to include:

- Policy briefs and presentations to city leaders
- Draft frameworks for permitting or implementation
- Pilot evaluation metrics and visual reporting tools
- Community engagement strategies for outreach and education

V. Learning Objectives (Score Area 5)

Through this the Logie Fellow will have immersive opportunities to:

- Understand how local government integrates innovation and sustainability goals into daily operations
- Learn the practical barriers and enablers of implementing environmental policy at the city level
- Build professional skills in stakeholder engagement, systems thinking, and interdisciplinary project management
- Develop data-driven tools for measuring environmental and social impacts
- Translate academic knowledge into civic impact

VI. Project Metrics & Deliverables

- Proposed Outcomes and Metrics Aligned with the City's Strategic Priorities in sustainability and innovation:

Objective	Metric	Target
Reduce organic waste sent to landfill	Lbs diverted/month	2,000 lbs (pilot)
Carbon sequestration via biochar	Metric tons CO ₂ e	0.5 tons/month
Soil health improvement	% organic matter	+15% in test plots
Community engagement	Participants in workshops	50+ individuals
Cross-departmental collaboration	Meetings & memos	10 documented outputs

Final Deliverables

- Pilot design and implementation plan
- A written report with policy recommendations
- A public presentation to City executive staff
- A data dashboard prototype summarizing environmental metrics