Norfolk Integrated Waste-Energy Framework

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Client:
City of Norfolk, Nebraska
NPPD

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Introduction:

a) Vision: Prepare Nebraska communities to mitigate and adapt to climate change.

b) Collaborate with community professionals in acquiring data, developing energy inventories, assessing greenhouse emissions, calculating energy burdens, etc.

c) Assist in the development and implementation of long-term community projects

Goal:

Develop an integrated approach to the management of waste and energy in Norfolk, Nebraska

Objectives:

a) Create an Integrated Waste-Energy Framework

b) Provide a preliminary analysis of the economic viability of the Waste-Energy model

c) Assess pathways to expand innovative energy technologies in collaboration with NPPD

Development of NPPD's Survey for Electric Vehicle Readiness Plan:

Approach: We've collaboratively worked with NPPD to develop a survey. This survey will be sent to about 300 contractors to obtain baseline data.

Example Questions:
- Have you used this incentive in the past during home construction?
- If yes, what was your main reason for participating in the program?
- If no, what has stopped you from participating?

Accomplishments

Figure 1 illustrates the waste-energy framework

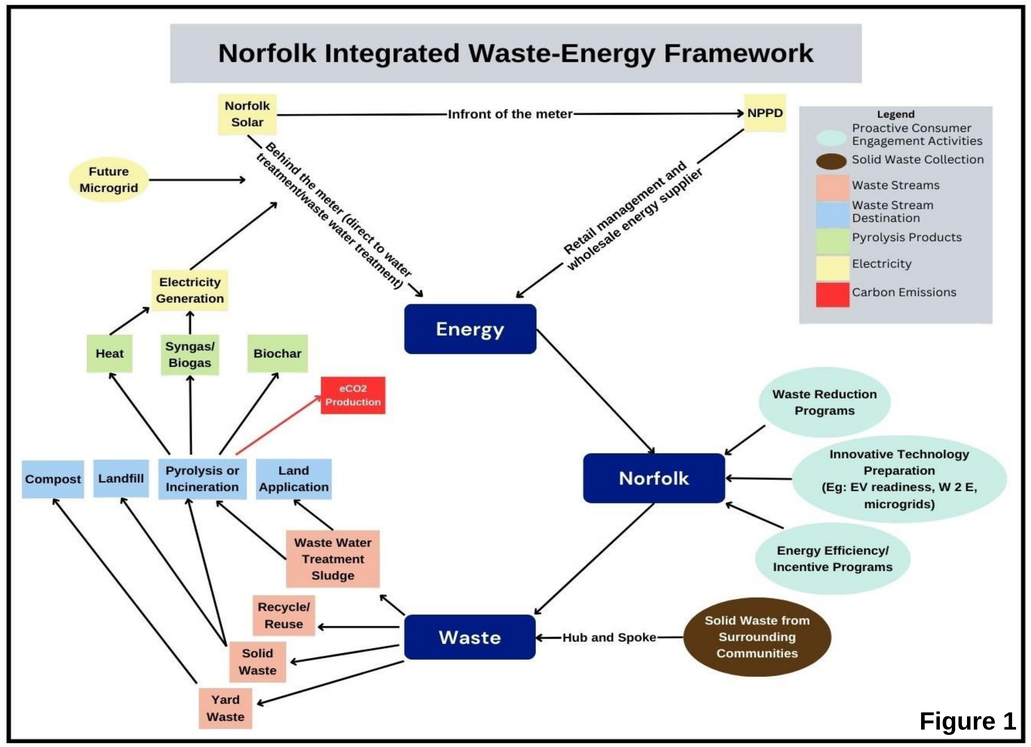

Figure 1

Figure 2 illustrates potential waste material flow pathways highlighting potential sources and outputs for the integrated approach. It eliminates ~135,100 miles/year to and from the transfer station & landfill (70-mile roundtrip, 1,930 trips/year), and the $24 fee/ton for dumping at the landfill. See **Figures 3 and 4** for more information.

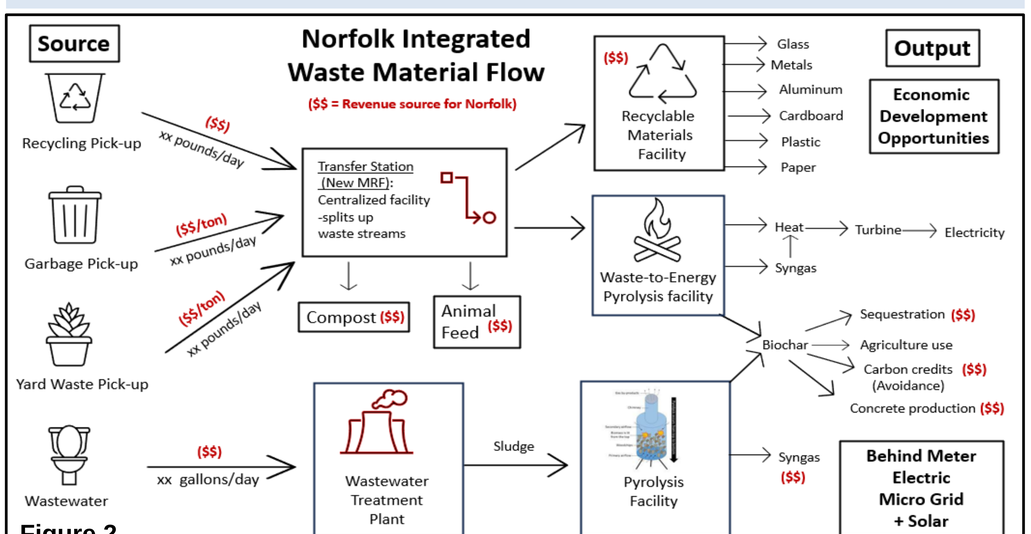

Figure 2

Figure 3 compares tipping fees to the mass of waste as waste is diverted from the Coalition Landfill. Business as usual (0%) is compared to a 25%, 50%, and 75% reduction in waste, respectively. The graph highlights how associated costs of tipping fees will decrease with the reduction.

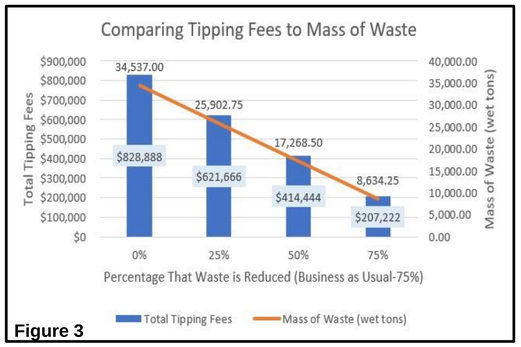

Figure 3

Figure 4 compares transportation costs to CO2e emissions as waste is diverted from the Coalition Landfill. Business as usual (0%) is compared to a 25%, 50%, and 75% reduction in waste, respectively. The graph highlights how associated costs of transportation will decrease with the reduction.

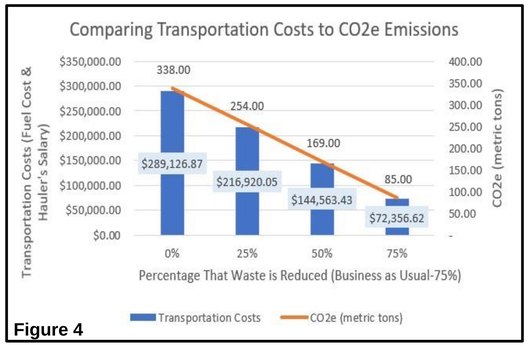

Figure 4

Figure 5 illustrates the potential incorporation of biochar as a waste pathway illustrating potential outputs and income generators

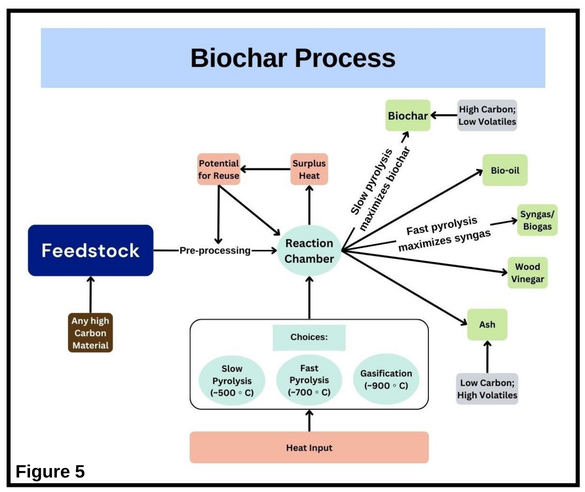

Figure 5

Next Steps:

a) Analyze the current waste stream for potential use in a pyrolysis facility

b) Conduct a high-order economic analysis for the integrated waste-energy framework

c) Continue supporting NPPD in their electric vehicle readiness plan

References and Sources: Contact authors for details

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