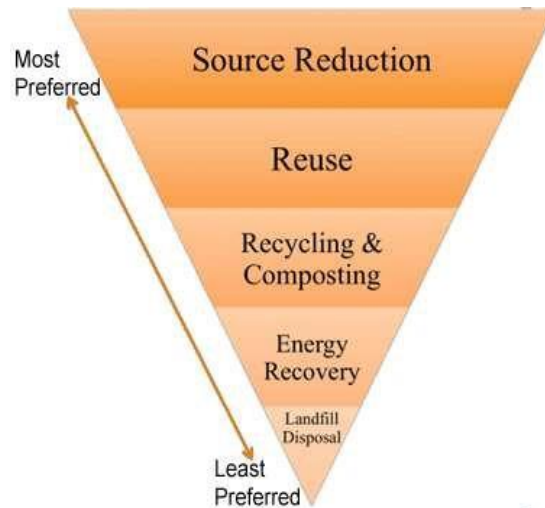

We acknowledge this goal is aggressive. Our Committee thinks it is useful to have a clear numerical goal that can be achieved via a multi-faceted approach featuring (i) reduction of waste at its source (e.g., reduction in packaging waste), (ii) reuse,

(iii) recycling (including finding outlets for additional recyclable materials), and (iv) organic waste recycling (e.g. composting and/or anaerobic digestion). This is consistent with the first guiding principle of the framework we presented March 2, which is to ***“make solid waste decisions based on the Maine solid waste hierarchy.”***



There were seven Guiding Principles included in the framework document, which are included as Appendix A. The recommendations to follow are based on these statements of principle.

When applying the guiding principles, there are a limited number of things to consider. These include:

1. While the coronavirus is a major contemporary health threat, the world (including Brunswick) is confronted with a long-running, deepening climate crisis. This has been recognized by the Town Council several times, including the Climate Change Resolution adopted on December 2, 2019. The latest resolution ***“urges all governments and people to initiate social and economic mobilization to reverse global warming.”*** This overriding reality should be applied to solid waste management, like all other town activities. All solid waste decisions should be viewed through this lens and the net effect on greenhouse gas (GHG) emissions considered.
2. Solid waste management accounts for a major portion of a community’s GHG footprint. Due to the physical characteristics of the Graham Road landfill, and the difficulty of controlling its GHG emissions, ceasing landfilling solid waste at this location will reduce Brunswick’s overall generation of GHG immensely¹. All future options for Brunswick’s

¹ Brunswick’s 2009 Climate Action Plan, as presented to the Town Council, included an inventory of GHG emissions from municipal operations (including schools). Inventoried emissions totaled 5,303 metric tons per year of CO₂ equivalents (MT CO₂e). Notably missing from that analysis was the Town’s landfill. Using EPA data, the Town’s landfill presently adds an estimated additional 3,230 MT CO₂e per year (not including waste accepted from other communities). It is by far the largest source of GHG emissions generated by municipal operations in the Town.

solid waste offer far less GHG emissions than continuing to landfill solid waste at the Town's landfill. Each future option can be evaluated in this respect and there is a straightforward approach to compare the GHG footprint of various options based on an established EPA model. A preliminary review of Brunswick's potential options and each option's associated GHG footprint is included in **Appendix E** of this report.

3. There are major solid waste data gaps (volume, cost, and environmental impact) that need to be filled in order to make medium and long-term management recommendations for Brunswick's solid waste. Obtaining this essential contextual data should be a major objective over the next year, providing a factual foundation for medium and long-term Committee recommendations and town decisions.
4. Currently there are a very limited number of recycling, composting, incineration (waste-to-energy), and landfilling options available to Brunswick. Over time, it may be feasible to expand these options through both cooperative regional and public education initiatives, making it important not to foreclose any future options in the short-term.
5. Most of the solid waste management options available to Brunswick will depend on a local (or nearby regional) transfer station to create vendor contract options and manage total costs. In this respect the Graham Road location is a valuable town asset, as it has many of the required permits and some of the infrastructure necessary to be a diversified waste stream transfer station. Its permits are worth preserving.

Brunswick Solid Waste Vision Statement

The Committee thinks it would be useful to have the town articulate a vision of its solid waste future. Our recommendation is to base such a vision on Maine's solid waste hierarchy, which the Town of Brunswick, and most of its residents, already have embraced. Therefore we propose the Town of Brunswick adopt the following solid waste vision statement:

To fulfill on a town-wide commitment to (i) reduce waste at its source; and (ii) reuse, recycle and compost an increasing percentage of the waste generated; making continuous progress toward a future with minimal waste-to-energy or landfill disposal.

A further explanation of this vision statement is included at Appendix B.

Brunswick Short-Term Solid Waste Management Plan (Key Elements)

Based on current realities – notably (i) the intent to close the Graham Road landfill in the spring of 2021, (ii) the prospect of reduced municipal revenues and budget pressures from the effects of the coronavirus and other factors (e.g., school construction), and (iii) the need for better data to plan a rational future – the Committee thinks the short-term solid waste management plan essentially should be a “holding action.” This means closing the Graham Road landfill as scheduled and holding everything else in place, essentially buying more time to explore and document the best options for the medium and long-term.

Key elements of a short-term plan that would mark such an approach are:

- 1. Enter into a one-year contract extension with Pine Tree Waste (Casella) for collection of trash and Single Stream Recyclables pickup for FY 2020-2021, with provisions for the trash to go to Juniper Ridge Landfill when the town landfill closes.***

This is consistent with the “holding action” strategy. As we understand it, it would entail taking a one-year extension option on the current contract with Pine Tree Waste.

- 2. Initiate the process of Graham Road landfill closure (spring 2021).***

This is self-explanatory. It is continuing to implement the Graham Road landfill closure plan.

- 3. Maintain the existing Graham Road scale, scale-house, and supporting infrastructure.***

The Committee understands the landfill closure process can proceed while continuing to have access to and use of the existing scale and scale-house, for recycling and potentially other purposes. We think it is essential to protect this asset, at least for the time being, to maximize the Town’s options going forward. This is a key element in the “holding action” strategy and would result in minimal, if any, cost to the Town.

- 4. Maintain all permits and operations at Graham Rd for the short-term (1-2 years).***

This is another essential aspect of the “holding action” strategy, necessary to maximize the medium and long-term options available to the town, specifically relating to the use and potential scope of operations at this location. This site’s potential use as a local and/or regional transfer station must not be discarded.

- 5. Continue the existing single-stream recycling program with Pine Tree (Casella) for the next year, possibly with thoughtful adjustments to reduce costs, and maintain other existing material recycling, and green waste composting activities, at the Graham Road and Public Works sites.***

Even though it is tempting to eliminate recycling to save money in the current budget crisis, this is no time to be backsliding or abandoning recycling efforts, either temporarily or permanently. However, we do believe it is possible to make clear and thoughtful adjustments in the Town's recycling program to reduce costs in this period of unusual budget pressure. There are also strong indications that demand for several recycled materials are increasing the price for certain commodities (e.g., cardboard and paper) due to already planned changes already occurring in US manufacturing. The Town and its citizens should be redoubling their recycling efforts, not going backwards. The Committee does, however, acknowledge some adjustments may have to be made to contain costs.

6. *Initiate educational programs to improve the quality of single-stream recyclables, and reduce the volume (and cost) of solid waste going to landfill (e.g., composting).*

Brunswick residents have demonstrated a high commitment to recycling, despite limited amount of public education through our current Town systems (e.g. the Town website) and processing contract. Experience around the country indicates high-quality public education about recycling has a major impact on cost reduction. This undoubtedly will be a key component of any solid waste management plan. The Town can and should take initial, simple steps during the coming year to start improving practices in this area. The Committee concludes this could be accomplished by reducing the amount (and cost) of contamination in the single-stream recycling program, and introducing residents to new and improved ways to reduce and recycle materials out of the landfilled stream, further reducing overall the Town's solid waste costs.

7. *Complete a clear analysis of Brunswick's current residential, municipal, and public-school solid waste management costs.*

Current data on the Town's specific activities and costs are not centralized and must be aggregated. We need more accurate, transparent information on the volumes and components of solid waste of all municipal sectors (residential, town, and school waste generators); GHG emissions and other environmental impacts of various solid waste management options; and most assuredly financial revenues and costs. This information is essential to make smart, long-term decisions about solid waste. All stakeholders should dedicate themselves to improving the scope and quality of the data we have during the next two years.

8. *Issue a Request for Information (RFI) to the limited number of entities which provide Municipal Solid Waste disposal services [incineration (waste-to-energy) and landfill disposal] and the processing of single-stream recyclables.*

It is imperative to get the best contemporary information possible on the very limited number of options available to the Town of Brunswick, once the Town's Graham Road landfill closes. These options include only a few (2-3) waste-to-energy plants, two (2)

landfills, and two (2) single stream recyclables facilities (see Appendix C). This non-binding request would be for information only, including data on tip fees, contract terms, energy production, greenhouse gas emissions, commodity market outlooks, and other basic information. A draft RFI document is attached as Appendix D.

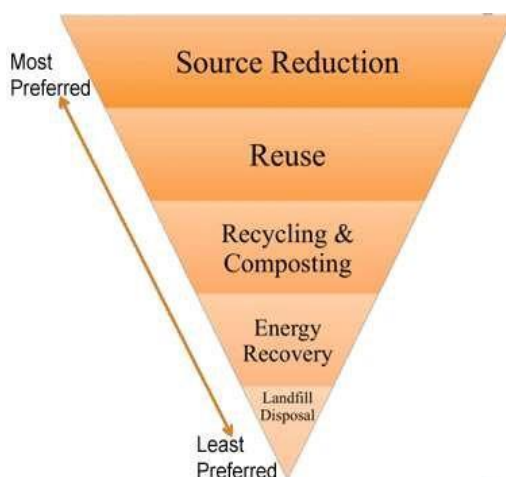
Implemented decisively and thoughtfully, the Committee thinks the above Actions will lead to the best integrated plan for waste reduction, recycling and consistency with the Town's proposed solid waste management vision statement (see above), and the need for long-term environmental and economic sustainability.

This is the essential task to move beyond a short-term “holding action.” The Committee considers this one of its essential tasks, working in close collaboration with the Director of Public Works and Town Manager. Obtaining the data specified above, defining all benefits and costs of various options, and assisting the town in making good economic decisions consistent within State of Maine climate and solid waste management goals is our mutual challenge moving forward.

Appendix A

GUIDING PRINCIPLES FOR TOWN-WIDE WASTE MANAGEMENT PLAN

1. Make Solid Waste Decisions Based on the Maine Solid Waste Hierarchy - All solid waste decisions should first be passed through the filter of the Maine Solid Waste Hierarchy (see: www.maine.gov/dep/sustainability/sw-hierarchy.html) which recommends the following order of consideration 1. *Reduce* 2. *Reuse* 3. *Recycle* 4. *Compost* 5. *Waste to Energy* 6. *Landfill*. Consider a ranking system for decisions impacting our solid waste management efforts, so decisions do not get based solely on short term cost implications.



2. Embrace Waste Reduction as a Foundation of the Town's Waste Management Plan - To make fact-based decisions, we should not just consider how much we recycle, but most importantly, how much we reduce the amount generated. Consider tracking not just waste recycled, but percent waste **diversion** (waste not made) from a benchmark year of 2018 from the "end of life" disposal options of incineration and landfilling. Support efforts locally and at the state level to reduce the creation of all forms of waste.
3. Focus on Waste Separation at the Source – Despite recent shifts in the commodities markets, separation of recyclables, organics and other wastes at the source (at homes, businesses, institutions) has proven to be an extremely resilient approach to waste recovery. Although several mixed-waste processing facilities have been developed in the U.S. to sort recyclable materials from the trash stream, few have proven to operate at scale with high recovery rates.

4. **Support Community Education Efforts** - Outside of the Brunswick School Department almost no community solid waste education effort exists in Brunswick today. A portion of the solid waste management budget should be dedicated each year to sustained and defined outreach efforts, such as website maintenance, workshops, community education events, etc.
5. **Develop “Whole Community” Options** – Although this Plan is focused on the residential, municipal and public school sectors, other parts of the Brunswick community (e.g. Bowdoin College, Brunswick Landing, businesses) should be part of our long-term thinking. Economies of scale for certain programs may help with affordability, etc.
6. **Support State Initiatives** – Monitor and support policies and legislation that align with Brunswick’s Guiding Principles, including support of the Maine Solid Waste Hierarchy, waste reduction, expansion of recycling programs, and material or product bans where appropriate.
7. **Control Our Destiny** – Consider solid waste reduction and management options and approaches that allow us flexibility and the ability to take advantage of options and innovation over time.

Appendix B

EXPLANATORY NOTES PERTAINING TO THE VISION STATEMENT

This vision is consistent with the priorities of Maine’s Solid Waste Management Hierarchy. Fulfilling on this vision will require a serious, long-running, effective process of community education, to get widespread commitment to the actions required. Over time, this means getting commitment to this vision from all waste generators in Brunswick, including (i) residential, (ii) municipal, (iii) public school, (iv) commercial, and (v) institutional sectors. It means supporting public policy initiatives, both in Brunswick and the wider world, consistent with this vision that will enable Brunswick to move along this path.

It means planning and implementing creative programs to facilitate waste reduction, reuse, and recycling of all kinds at a sustainable cost. It means retaining the flexibility (and control) of our waste stream so we can continuously innovate and improve the portion of our waste stream being reused beneficially. It will require a shift in our consciousness about “waste,” and our responsibility to manage it in **both** an environmentally and economically sustainable manner.

Appendix C

SOLID WASTE FACILITY OPTIONS

Single Stream Recycling (SSR) Facilities

1. Pine Tree Recycling (Casella), Lewiston
2. Ecomaine Materials Recovery Facility, Portland

Waste-to-Energy (WTE) Facilities (for Municipal Solid Waste)

1. Mid-Maine Waste Action Corporation (MMWAC), Auburn
2. Ecomaine WTE Facility, Portland
3. Penobscot Energy Recovery Facility Company (PERC), Orrington

Landfills (for Municipal Solid Waste)

1. Waste Management Crossroad Landfill, Norridgewock
2. Juniper Ridge Landfill, Old Town

Appendix D

DRAFT REQUEST FOR INFORMATION

Town of Brunswick

Request for Information

Municipal Solid Waste Disposal & Single Stream Recycling Services

May ____, 2020

I. Intent

The Town of Brunswick's Recycling & Sustainability Committee is evaluating options for both the disposal of Municipal Solid Waste (MSW) and the processing of Single Stream Recyclables (SSR). This is prompted by several factors, including the expected closure of the Town's Graham Road Landfill in the spring of 2021. The Recycling & Sustainability Committee will use information gained from this Request for Information process to inform the Committee, Town officials and the public about the costs and benefits associated with various options for the two (2) identified material streams.

The purpose of this Request for Information is to gain preliminary information only and is non-binding on all parties. Interested proposers do not have to guarantee any future pricing, terms, service and/or intent to respond to any future Town solicitations.

Interested proposers may provide questions in writing to the Director of Public Works, Mr. Jay Astle at jastle@brunswickme.org

II. Background

In 2018, the Town generated approximately 5,534 tons of MSW from residential curbside collection and municipal facilities (including public schools). In addition, residential curbside collection and municipal facilities generated approximately 2,519 tons of SSR. This Request for Information specifically does not consider or include any waste or recycling from the commercial sector.

The Committee is evaluating disposal and processing options for the potential future transfer of the two identified material streams from its Graham Road Facility (or other location in the Brunswick Area) to qualified disposal or processing facilities in the state.

For the purposes of this Request for Information, proposers do not need to consider the cost of transfer or transport of the material to their disposal and/or processing location(s). The Committee will develop the cost associated with transfer and transport of the materials separately. This Request for Information is only seeking the cost per ton at the Proposer's designated disposal or recycling facility (the "Tip Fee").

III. Information Requested

A. Tip Fees at Proposer's Facility

Complete the chart below based on the contract term indicated assuming the approximate annual tonnages indicated in the Background section are delivered to your Facility.

	Facility Name/Location	Contract Term			
		1 Year	3 Year	5 Year	10 Year
MSW Tip Fee (Per Ton)					
SSR Tip Fee (Per Ton)					

B. Price Escalators

Please provide the proposed escalator or index if willing to enter into a multi-year agreement.

C. Energy Recovery from MSW

If the proposer's disposal facility for MSW includes any form of energy recovery for electricity generation from MSW, please provide the expected kw-hours per ton of MSW disposed or processed. Any figure provided should be based on an average of at least three (3) years actual operating data.

D. SSR Processing Information

Please provide information on the following details related to SSR processing and pricing:

- SSR pricing formula based upon the Average Commodity Revenue per ton (ACR), contamination rate, and/or other regularly measurable indicators.
- Detail exactly which specific single stream recyclable materials are acceptable today at the Proposer's facility. Please be as specific as possible (e.g. types of plastics, grades of paper, etc.).
- Name the disposal facility where any residuals or rejected material from SSR processing will be disposed.
- Detail exactly what services your company will provide to support community education efforts to reduce SSR contamination, adjust to changeable market conditions for commodities, and encourage overall waste reduction.
- Expected residuals (contamination) rate based upon implementation of the Proposer's expected community education program.
- Your company's outlook for recovered commodities over the next 2-5 years. Be brief but as specific as possible based on your firm's experience and knowledge.

IV. Due Date

Please provide your response no later than 5 PM, May __, 2020. Responses should be e-mailed to Mr. Jay Astle, Director of Public Works at jastle@brunswickme.org

APPENDIX E

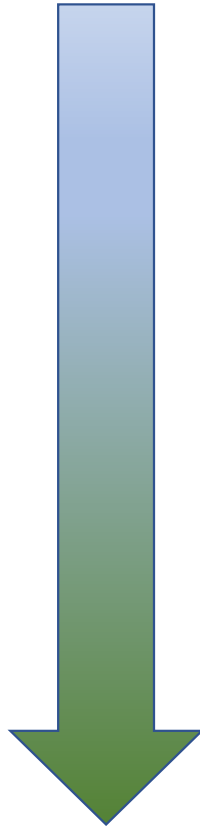
Municipal Solid Waste (Trash) & Single Stream Recycling Options

GREENHOUSE GAS (GHG) EMISSIONS ANALYSIS SUMMARY

PRELIMINARY DRAFT

Option #	Municipal Solid Waste (MSW) Disposal Facility / Location	Single Stream Recycling (SSR) Facility / Location	Total GHG Emissions (CO2 eq MTPY) ¹	Improvement From Baseline (CO2 eq MTPY) ¹
Current (Baseline)	Brunswick Landfill	Casella, Lewiston	3,230	
1A	Juniper Ridge Landfill/Casella, Old Town	Casella, Lewiston	(927)	4,157
1B	Juniper Ridge Landfill/Casella, Old Town	Ecomaine, Portland	(1,857)	5,087
2A	Waste Management Landfill, Norridgewock	Casella, Lewiston	(2,175)	5,405
2B	Waste Management Landfill, Norridgewock	Ecomaine, Portland	(3,104)	6,334
3A	Mid-Maine Waste-to-Energy Facility, Auburn	Casella, Lewiston	(3,282)	6,512
3B	Mid-Maine Waste-to-Energy Facility, Auburn	Ecomaine, Portland	(4,212)	7,442
4A	Ecomaine Waste-to-Energy Facility, Portland	Casella, Lewiston	(3,454)	6,684
4B	Ecomaine Waste-to-Energy Facility, Portland	Ecomaine, Portland	(4,384)	7,614

HIGHEST EMISSIONS



LOWEST EMISSIONS

1. CO2 MT eq MTPY = Carbon Dioxide Metric Tons Equivalent per Year