Solid Waste Management in NH and Bridgewater

This link is to the 2019 biennial report from the NH legislative study committee in its entirety at:

http://gencourt.state.nh.us/statstudcomm/committees/1476/reports/2019%20Final%20Report.pdf

Summarize below on how this has influenced the decision making relative to solid waste in Bridgewater.

We all generate waste!

RSA 149-M: 17 requires that “each town shall either provide a facility or assure access to another approved solid waste facility for its residents'' and may make bylaws “governing the separation and collection of refuse within the municipality.” The state, through the Department of Environmental Services (DES), remains responsible for adopting regulations for the operation of such facilities. This includes not only landfills but also transfer stations, recycling centers, scrap yards, composting facilities, and incinerators. DES manages and enforces this through a permitting system. Solid waste management is a highly regulated and increasingly expensive undertaking, which is monitored and regulated as to how facilities function, but remains silent on decision making. One major shortcoming in the existing system is how it focuses at the “end of the tunnel” disposal rather than diversion of waste, ignoring the sources of waste generated (i.e. manufacturing). For example, if a company double shrink wraps its product, the customer bears the cost of disposing the plastic wraps. The retailer uses plastic bags rather than paper, then the customer bears the cost of disposal. Paper is recyclable – polyethylene bags, not so much. U.S. recycling processors and the companies making cheap plastic and paper packaging, are placing the cost of managing recycling on cities and towns – taxpayers like you and me.

Currently in NH, there are 260 solid waste facilities (mostly municipalities) and 120 auto salvage yards. At one time, 270 unlined landfills existed – one for each town. Currently, only 3 commercial solid waste landfills exist in the State of New Hampshire. There are 600+ closed solid waste sites, mostly of inactive unlined landfills and asbestos disposal sites. We have 3: A pre-1958 landfill/open burn site, a closed ash landfill, a construction and a demolition landfill.

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Factoid:

1960-2018 Data on Plastics in US Municipal Solid Waste (MSW) by Weight (in thousands of U.S. tons)

Year	1960 (Tons)	2018 (Tons
Plastics Generated	390,000	35,680,000
Plastics Recycled	0	3,090,000
Plastics Incinerated*	0	5,060,000
Landfilled	390,000	26,970,000

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Disposal vs Diversion. The basic policies that form the framework of solid waste management in NH and were established by the Legislature nearly 30 years ago. They are:

a. Solid waste is to be managed using the preferred hierarchy of methods: source reduction, recycling and reuse, composting, waste-to-energy technologies (including incineration), incineration without resource recovery, and landfilling.
b. The methods listed higher in the hierarchy, source reduction, recycling, reuse, and composting, should be used to divert, by weight and on a per capita basis. At least 40% of materials disposed of at landfills or incinerators.
c. It is important to reserve landfill and incineration capacity for solid wastes which cannot be otherwise reduced, reused, recycled or composted.

Sadly, over the last 30 years, the state diversion rates appear well below the 40% goal as set by the legislature. It is worth mentioning, that waste management infrastructure in NH has NOT significantly shifted from disposal (mostly landfilling) toward more preferred management methods (source reduction). For example, Bridgewater compacts a minimum 400 lb. bale every week (higher from June to October) of

polyethylene plastic bags. It is eventually shipped to a landfill since there is no market for the item. Tossing plastics into a landfill to be buried, which won't degrade, is also tossing a small amount of oil with the item.

Why the big deal? Commercial landfills in NH entomb 2.38 million tons annually, 50% of that amount (1.16 Million tons) comes from out-of-state. That inflow cannot be stopped or taxed because of the interstate commerce clause of the US Constitution. Massachusetts has recently closed a number of landfills and other sites. These closings in conjunction with the increased economic activity and other demographics in NH, compound the landfill capacity issue, exacerbating the problem. Commercial expansion of the existing landfills is met with stiff public opposition. Proposing a new landfill meets even greater antagonism.

Recycling Issues: In late 2017, China greatly reduced the import of certain recycling commodities due to unacceptable contaminated recyclables. That greatly impacted the recycling market. Single stream recycling and MRF's (Materials Recovery Facility) have been impacted as they are prone to a higher rate of contamination. Municipalities that did not adopt those programs have fared better. Bridgewater never adopted a single stream.

Net result: Increasing disposal and shipping costs into the future. Our "report card" relative to the aforementioned: Declining supply with increasing demand increases price.

See our recycling/diversions rates below.

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HB Refuse District Solid Waste Annual Facilty Report

Year 2020

Ton = 2000

Quantity of Waste Received				Quantity of Waste Shipped						
Non Recyclables				Non Recyclables						
NH Source (From)	Lbs	Tons		NH Source (To)	Lbs	Tons				
Dumpster	563,460	281.73		Dumpster	0	0				
Incineration	63,474	31.737		Ash	21,400	10.7				
Other	21,400	10.7		Other-Incin.	63,474	31.737				
Out State Souurce	0	0		To Out State Souurce						
Sub Total	648,334	324.17		Dumpster	563,460	281.73	W&M			
				Sub Total	648,334	324.17				
Recyclables In				Recyclables Out						
NH Source (From)				To NH Source				To: Out of State		
Cardboard	81,930	40.965		Glass	67,015	33.508		Cardboard	81,930	40.965
Paper	24,949	12.475		Aluminum	9,480	4.74		Paper	24,949	12.475
Plastics	20,549	10.275		Batteries	365	0.1825		Electronics	12,345	6.1725
Glass	67,015	33.508		C&D RFD	362,000	181		Plastics	25,546	12.773
Aluminum	9,480	4.74		Other 2	0					72.385
Batteries	365	0.1825		Other 2	0					
Electronics	12,345	6.1725		Sub Total	578,633	219.43				
C&D RFD	362,000	181						In State Recy		219.43
Other 2	0	0		Ash		58.412		Out of State Recy		72.385
Other 2	0	0								291.82
Sub Total	578,633	289.32								
Totals	1,226,967	613.48		Totals In & Out	1,226,967	602.01				
				Percent Recycled/Diverted		47.16%				

Incineration: After, separation and recycling the residual waste – mostly kitchen and bathroom waste remains. That is organic material, and, if landfilled, would decay into leachate and gas. When landfill waste degrades and rain rinses the resulting products out, leachate is formed. The black liquid contains organic and inorganic chemicals, heavy metals as well as pathogens In addition, Landfill gas contains many different gases. Methane and carbon dioxide make up 90 to 98% of landfill gas. The remaining 2 to 10% includes nitrogen, oxygen, ammonia, sulfides, hydrogen and various other gases. Landfill gases are produced when bacteria break down organic waste.

Our incinerator gas is processed by a scrubber which filters out the pollution. We produce no methane and about 7% carbon-dioxide. We measure other pollutants in micrograms. We are significantly below all the air regulations except one. Salt (NaCl)!

In order to prevent acid (HCL) from polluting, we treat the gas with a neutralizer. Combustion, by its nature is acidic. The by-product of that process is salt. It is a

particulate and we have to meet a strict guideline. We exceeded the limit by 0.0112 grains/dscm during our annual test. We are in the process of upgrading our mist eliminator and will bring the system back on line later this year. (It is time consuming and not expensive) Much of our equipment in the building is quite old and we expect some downtime due to its age.

How does this process differ from waste to energy plant? Mainly we do not burn plastics. Waste to energy plants want the energy release from the plastics in the waste stream to drive a turbine. That's what produces dioxins and other pollutants. The pollution control for those plants is very expensive in order to meet EPA regulations.

We initiated these waste upgrades since 2000. We developed a new solid waste plan and permit; closed 3 landfills; created a ground water management plan; obtained and managed an air resource permit. Most of that permitting process was done in house.

New Equipment: Mid-January, we installed a pre-crusher compactor. Its purpose is to lower our costs associated with shipping of non-recyclable items. Pre-Crushers are designed to efficiently reduce the trash volume before it is compacted into a trash container. The goal is to reduce shipping costs. Last year we spent $51,000 to ship and dispose of non-recyclables to landfills. That consisted of 41 trips at about $1,241 per trip; 40% of that cost was shipping, fuel surcharges and environmental fees. Increasing the shipping container size while increasing the weight shipped by compaction, lowing costs by having fewer trip cycles.

Speaking of equipment: The approach that has evolved since the mid-seventies is an integrated solid waste management program. It is dependent on, not only labor, but its capital intensive. We have a number of bailers, shredders, material handling equipment, truck and an incinerator. We are responsible to process the waste and maintain the equipment. The bailers compact and produce bundles to be stored for shipping. The shredder processes the construction and demolition debris into a 2" chip which is certified as a refuse derived product and is used as landfill cover in one of the commercial landfills. That reduces the disposal cost by about $ 70/ton.

This is not your grandfather's dump anymore! That concept left the building long ago!!