Report of the Committee to Study Recycling Streams and Solid Waste Management in New Hampshire

HB 617, Chapter 265, Laws of 2019

November 1, 2019

Membership

Rep. Karen Ebel, Chair
Rep. Megan Murray, Clerk
Rep. John O'Connor
Senator David Watters

DUTIES

The committee shall study:[1]

- The state of recycling programs in New Hampshire in light of changing market conditions.
- Challenges faced by the state and municipalities in running recycling programs and solid waste management.
- Such other related issues as the committee deems necessary, including potential legislation.

INTRODUCTION

To say that the subject of solid waste is vast and complex is an understatement. As weeks of hearings passed, the study committee increasingly realized the extent to which the issue touches every aspect of our society. The generation of products, use of our resources and disposal of unwanted materials has ramifications for our towns, state, nation and world, with broad, important economic, public health and environmental impacts. The impacts require our immediate attention. Many are passionate about how we use our resources and how we dispose of the waste we generate. The study committee did its best to do justice to the magnitude of our state's solid waste challenges in the short time it had for review, holding 14 meetings and taking testimony from over 50 stakeholders. The committee greatly appreciates the support of those who assisted it in its work.

Based on testimony and research, the committee found that our state's solid waste management planning and education efforts have fallen far behind that of our neighboring states and nationally, primarily due to deep budget cuts at the New Hampshire Department of Environmental Services' Solid Waste Management Bureau. The inability of resource-strapped

[1] Taken verbatim from bill.

DES to adequately perform its long-range planning and related responsibilities has left our state in a difficult predicament (some have termed it a developing waste emergency), born primarily by our municipalities and property taxpayers, as global recyclable markets roil, prices for recyclables fall, our solid waste disposal tonnage increases, our landfills fill and we continue to produce untold, arguably inexcusable, amounts of waste that is increasingly difficult and expensive to handle. Our state must adjust its laws and programs to reflect the new economic, environmental and public health realities of solid waste management. This will take commitment, foresight, collaboration and funding.

The study committee hopes the following findings and recommendations spotlight both the challenges and opportunities that lay ahead, enabling the state to do a better job in the future. Testimony submitted to the committee and related materials can be found at the committee's NH General Court website here: http://gencourt.state.nh.us/statstudcomm/committees/1476/

BACKGROUND

The regulation of solid waste has a long history in New Hampshire, beginning in 1799 when the state imposed a fine of up to ten dollars upon any person who, in the Town of Portsmouth, "shall throw, place or leave … any filth, garbage, putrid animal or vegetable substance, or any matter of an offensive nature … injurious to the health of said inhabitants, in any highway, street, lane, or open alley, or on any common, or into any dock, or on any wharf, or in any shoal water in said town, where the tide will not remove and carry the same away …" This law was the basis for solid waste management for the next 150 years with relatively minor modifications along the way. Over such time, this basic prohibition was expanded to the entire state.

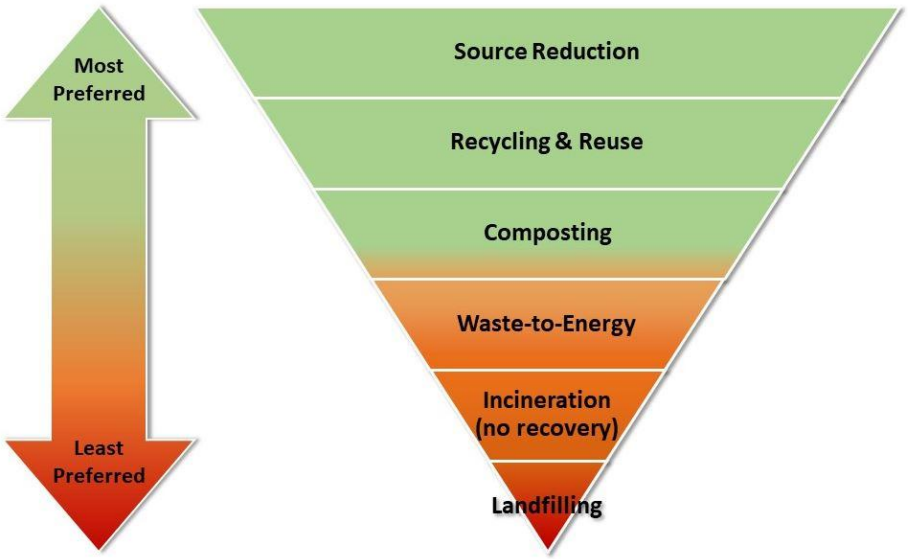
In the 1949 to 1955 time period, the Legislature established the basic bifurcation which exists to this day between municipal and state responsibilities for the management of solid waste in New Hampshire. Municipalities were required to provide and maintain public dumping facilities (aka landfills) for their residents, and the state was tasked with establishing the regulations for such facilities. Though most towns landfills are now closed because they were unlined and contaminating groundwater, RSA 149-M:17 still 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, which now includes not only landfills, but also transfer stations, recycling centers, scrap yards, composting facilities, and incinerators. DES manages this through a permit system and is responsible for enforcement.

The primary statutory laws governing solid waste management are found in RSA 149-M. The chapter's Statement of Purpose reads that "it is the declared purpose of the general court to protect human health, to preserve the natural environment, and to conserve precious and

dwindling natural resources through the proper and integrated management of solid waste." Over the years, the Legislature has incorporated into RSA 149-M various provisions that are aimed at achieving this purpose. Some have focused on the state's responsibility to prevent pollution from disposal facilities (landfills and incinerators), thereby protecting public health and the environment. Others are tailored toward the conservation of natural resources, which is accomplished upstream from the disposal facilities by municipalities, residents, and businesses taking action to reduce the waste they produce.

The New Hampshire Department of Environmental Services ("DES") has used the authority granted to it to close all of the unlined landfills in the state that were opened prior to modern environmental standards. These unlined landfills, many of which were owned by municipalities, were contaminating groundwater and associated surface waters as water in the environment moved in an unrestricted manner through the refuse, carrying pollutants offsite. These landfills were capped with an impervious layer to keep precipitation out and monitoring wells were installed around the sites to periodically test for pollution migrating offsite. Much higher standards are now in place for the construction and operation of solid waste landfills and so groundwater contamination from landfills has been largely abated. In addition, significant methane emissions to the air from decaying waste are now either captured as an energy resource or else flared, which reduces the severity of greenhouse gas emissions.

In an effort to "conserve precious and dwindling natural resources" as stated in RSA 149-M's purpose statement, the Legislature established two interdependent objectives in 1990. One was a preferred hierarchy of waste management methods, namely source reduction, recycling and reuse, composting, waste-to-energy technologies (including incineration), incineration without resource recovery, and landfilling.



The other objective was to achieve by the year 2000 "a 40 percent minimum weight diversion of solid waste landfilled or incinerated on a per capita basis" by means of source reduction, recycling, reuse, and composting. These are the more preferred methods listed in the hierarchy. Doing so would not only conserve natural resources used in the making and packaging of products, but also help accomplish another declaration made by the Legislature − that "it is important to reserve landfill and incinerator capacity for solid wastes which cannot be reduced, reused, recycled or composted." The Legislature made clear the importance of these two interdependent objectives by requiring that "in exercising any and all powers conferred upon the department under this chapter, the department shall use and consider criteria relevant to the waste reduction goal and disposal hierarchy."

Since these objectives were first established back in 1990, the focus of waste reduction/diversion has been on increasing recycling rates. Recycling has been popular with the public and many municipalities have done an admirable job at establishing well-run recycling programs within their communities. Most of the smaller municipalities (those without curbside collection) relied on residents sorting their own recyclables by material type such as glass, aluminum cans, metal cans, plastics by number (i.e., #1 - PETE, #2 – HDPE, etc.), newspaper, cardboard, and office paper, and then dropping it all off at the local landfill, transfer station, or recycling center. This resulted in a fairly clean product that required little further processing by the municipality beyond baling each commodity, as needed, and then storing it for later shipment into the recycled materials market.

Larger communities with curbside service could not readily pick up sorted materials because of the impracticality of having the necessary number of separate compartments on a truck. Some provided a recycling center to which residents could bring their sorted recyclables, but this was not ideal since the residents were accustomed to the ease of curbside collection. The development of materials recovery facilities (MRFs) that use sophisticated machinery and technology to separate co-mingled recyclables provided a solution to this problem. Residents only had to separate their recyclables into one bin, which would then be conveniently picked up at the curb along with their regular trash. In turn, municipalities needed to devote only one compartment on their trucks to recyclables.[2] The recyclables would subsequently be delivered to a MRF for further processing.

Single stream recycling is now widely used in larger communities in New Hampshire. It has even proven attractive to a few municipalities with traditional drop-off facilities because of its simplicity, low processing costs, and ease of use by residents. This includes municipalities

[2] As opposed to single stream recycling as was being described, some communities engage in dual stream recycling in which the fiber products (paper and cardboard) are kept separate from the other recyclables. This makes the process of sorting at the MRF simpler, theoretically resulting in lower costs and better end-product materials. However, curbside collection becomes more costly as a two-compartment truck needs to make a separate run just to pick up recyclables.

with well-established programs, where residents did the sorting, that switched to single stream recycling. However, most municipalities without curbside pickup have stayed with source separation by their residents.

ISSUE

MRFs do a remarkable job of separating out the various recyclable commodities from a co-mingled, single stream input, but it is inevitable that there will be some contamination in the end products. Much of this is due to consumers putting unacceptable materials into their recycling bins that the MRFs cannot entirely eliminate through processing. Oftentimes, consumers are confused as to what is acceptable due the myriad assortment of items for disposal that do not always fit neatly into well defined recycling categories. Consumers can also suffer from a desire to recycle everything possible because it is the right thing to do, and therefore err on the side of throwing it into the recycling bin when in doubt (aka wish-cycling). There is also a financial incentive to put as much in the recycling bin as possible in those communities that charge for trash, but not for materials recycled by the resident. These are known as pay-as-you-throw programs which have become quite popular and are meant to encourage recycling.

The contamination in the end products produced by MRFs was not a problem as long as China, a world leader of importing recyclable materials for use in its own manufacturing economy, was willing to tolerate it. That was the case until late in 2017 when China decided to no longer accept the levels of contamination found in most MRF produced materials, in particular those found in mixed plastics and mixed paper, thereby effectively closing off this critical market for these materials. The repercussions from this decision by China have been profound. There is now a glut of certain recyclable materials on the world market causing prices to tumble. For example, the average price of mixed paper in the northeast has dropped from a high of $85 per ton in March 2017 to below zero now according to the Northeast Resource Recovery Association (NRRA). Both New Hampshire municipalities that source separate and those that rely upon single stream/MRF recycling have been hurt by this precipitous fall in price. Some communities with ongoing contracts involving MRFs are protected for now but will be negatively affected when contract renegotiations occur.

These financial challenges being faced by municipalities were the primary impetus for the creation of this study committee in the hopes of finding possible actions, including legislation, that might help with the situation. In the process of conducting this study, the committee has also explored other challenges concerning solid waste management that have seemingly lied dormant for many years, at least at the Legislature. The 40% waste diversion goal through source reduction, recycling, reuse, and composting was set by the Legislature back in 1990 and was supposed to be achieved by 2000. Has that been accomplished and are there adequate ways of measuring it? Has landfill and incinerator capacity been reserved to only those materials that cannot be otherwise diverted, as called for by the Legislature? If not, what can be

improved upon? Composting possibly? Is the state committing sufficient resources to the issue of solid waste management?

PROCESS

The committee met a total of 14 times at which it took extensive testimony from various stakeholders, including municipal facility operators, private landfill and incinerator operators, conservation organizations, recycling organizations, state agencies, composters, regional planning commissions, a hospital, a grocery store, a product manufacturer, a plastic container manufacturer, middle school students, and concerned citizens.[3] The committee organized its meetings with each primarily focused on a different aspect of solid waste management. The committee also toured Turnkey Landfill in Rochester, NH and the MRF in Billerica, MA, both of which are owned and operated by Waste Management.

FINDINGS

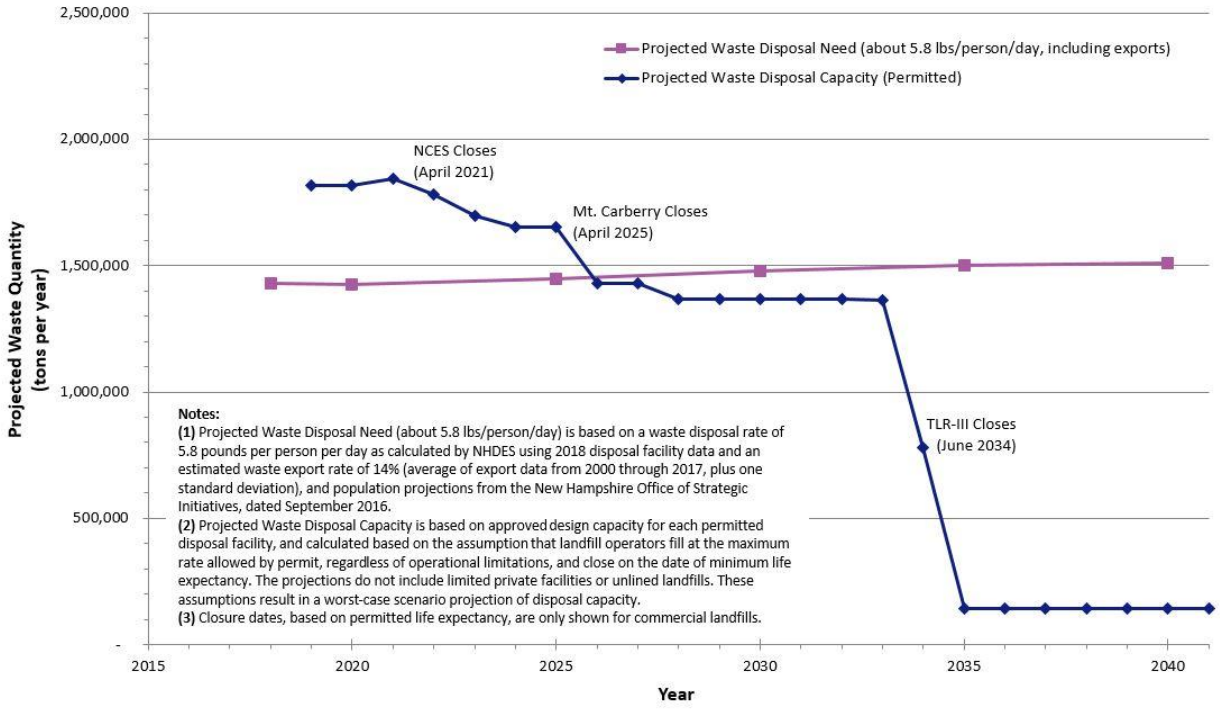
1. **Fundamental policies.** The basic policies mentioned earlier that form the framework of solid waste management in the state and were established by the Legislature nearly 30 years ago are still sound ones, at least in concept. They are: a) Solid waste should be managed using the preferred hierarchy of methods, namely 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 percent of materials disposed of at landfills or incinerators; c) It is important to reserve landfill and incinerator capacity for solid wastes which cannot be otherwise reduced, reused, recycled or composted; and d) In exercising any and all powers conferred upon DES, the department shall use and consider criteria relevant to the waste reduction goal and disposal hierarchy.
2. **40% diversion standard.** DES has found that calculating the percentage of solid waste diverted is inherently difficult in that it includes source reduction which involves changes made in the manufacture of products. DES does not regulate at the point of manufacture, but rather at the solid waste facilities which it permits. It receives data from permitted facilities, but not manufacturers. DES does not know, in part due to this issue, what our current diversion rate is and so the level of success in achieving the 40 percent diversion goal is unknown.
3. **Landfills.** Landfills are the least favored method of solid waste disposal. Land used for disposal has other worthwhile uses. To ensure public health, landfills must be permanently

[3] All those who testified in front of the committee are listed in Appendix A. All materials provided to the committee can be found at: http://www.gencourt.state.nh.us/statstudcomm/committees/1476/documents.html

and securely sealed on both the bottom and top. While there is some decomposition of solid waste once it is landfilled (testimony indicated the volume of a landfill will decrease about 20% only), most solid waste, including much plastic, construction and demolition debris and innumerable other types of waste, remain entombed in perpetuity, requiring ongoing maintenance and always a potential threat without proper monitoring.

4. **Landfill capacity.** Landfill capacity in New Hampshire is currently provided by 3 public landfills that only accept waste from specific NH municipalities (plus some VT municipalities in the case of the Lebanon landfill), and 3 private landfills with unlimited service areas, including areas outside of New Hampshire. Landfills, or later expansions, are permitted by DES with specific waste disposal boundaries and height restrictions. The permit conditions for many of them, including all of the private ones, require that facilities operate for a specified minimum number of years. Based on these permit conditions, and assuming no further expansions of landfill capacity or changes in diversion rates, DES predicts a limited shortfall in disposal capacity between 2025 and 2034, and a significant shortfall after that.[4] About 50% of the solid waste disposed of in New Hampshire comes from out-of-state.[5] Landfill capacity in the region is becoming tighter as landfills close, causing an upward pressure in tipping fees.

Projected Waste Disposal Need & Capacity for New Hampshire (2020 - 2040)
(Fig. 2 from DES Biennial Solid Waste Report, October 2019)



[4] See Biennial Solid Waste Report, October 2019, Department of Environmental Services, 6-7.
[5] Ibid. 9.

5. **New landfills and landfill expansion.** Our state's landfill capacity is rapidly dwindling. Permitting new landfills is difficult for a variety of reasons, including topographical siting hurdles and due to understandable public opposition. The Town of Bethlehem recently declined to permit expansion of a Casella-owned landfill. Area residents oppose attempts by Casella to place a landfill in Dalton adjoining Forest Lake State Park. The recent DES approval of Rochester's Turnkey landfill has been appealed to the Waste Management Council on a number of grounds. The appeal failed, but the Council's decision has again been appealed. Legislative efforts to protect New Hampshire's future landfill capacity can be accomplished if such laws do not unjustifiably discriminate against out-of-state waste as prohibited the Interstate Commerce Clause of the U.S. Constitution.[6] In permitting, the Bureau must assess the public benefit of the request pursuant to RSA 149-M to ensure no constitutional violations.

   DES provided the following table to the study committee illustrating total amounts of waste disposed of from 2015-2018 at New Hampshire's landfills and one waste-to-energy facility. Disposal tonnage has increased, and the ratio of in-state compared to out-of-state waste is about 50%. But at Waste Management's Turnkey landfill in Rochester, for example, the percentage of in-state waste has been between 36% and 40%. The table shows only the currently permitted disposal capacity. It may increase in the future.

Year	In-State	Out-of-State	% In-State	Est. Remaining Capacity	
	tons	tons	%	Cubic Yards	Years
Landfills - Unlimited Service Area					
North Country Environmental Services (NCES) Bethlehem, NH			Permitted life expectancy through at least April 2021		
2015	242,924	101,164	71%	-	-
2016	251,699	181,307	58%	1,335,000	4.3
2017	237,853	134,075	64%	916,000	3.3
2018	231,515	120,770	66%	599,000	2.0
TLR-III Refuse Disposal Facility (aka Waste Management, Turnkey) Rochester, NH			Permitted life expectancy through at least June 2034		
2015	392,362	703,961	36%	-	-
2016	392,460	698,250	36%	9,494,000	7.3
2017	569,329	845,339	40%	8,134,000	6.3
2018	569,558	918,798	38%	6,987,000	5.4
Mt. Carberry Landfill Success, NH			Permitted life expectancy through a least April 2025		
2015	120,447	95,680	56%	-	-
2016	148,466	96,023	61%	2,184,000	7.1
2017	138,129	93,621	60%	1,928,000	6.3
2018	145,222	90,209	62%	1,673,000	5.7
Total (Landfills - Unlimited Service Area)					
2015	**755,733**	**900,805**	**46%**	-	-
2016	**792,624**	**975,580**	**45%**	**13,013,000**	**-**
2017	**945,311**	**1,073,035**	**47%**	**10,978,000**	**-**
2018	**946,295**	**1,129,777**	**46%**	**9,259,000**	**-**

[6] U.S Supreme Court case, Philadelphia vs. New Jersey, 1978, https://caselaw.findlaw.com/us-supreme-court/437/617.html

Year	In-State	Out-of-State	% In-State	Est. Remaining Capacity	
	tons	tons	%	Cubic Yards	Years
Landfills - Limited Service Area					
Lower Mount Washington Valley Secure Solid Waste Landfill Conway, NH				No minimum permitted life expectancy	
2015	2,290	0	100%	-	-
2016	2,302	0	100%	262,000	20
2017	2,426	0	100%	249,000	19
2018	2,486	0	100%	238,000	18
Lebanon Regional Solid Waste Facility Lebanon, NH				No minimum permitted life expectancy	
2015	31,150	12,031	72%	-	-
2016	29,007	11,547	72%	1,128,000	13
2017	27,518	11,312	71%	850,000	10
2018	28,394	11,625	71%	810,000	9
Four Hills Secure Landfill Expansion Nashua, NH				Permitted life expectancy through at least April 2023	
2015	68,129	0	100%	-	-
2016	68,471	0	100%	794,116	9
2017	75,579	0	100%	687,054	7
2018	76,971	0	100%	553,172	4.5
Total (Landfills - Limited Service Area)					
2015	**101,569**	**12,031**	**89%**	-	-
2016	**99,780**	**11,547**	**90%**	**2,184,116**	-
2017	**105,523**	**11,312**	**90%**	**1,786,054**	-
2018	**107,851**	**11,625**	**90%**	**1,601,172**	-
Incinerators - Unlimited Service Area					
Wheelabrator Claremont Claremont, NH	Stopped operating on 9/29/2013				
Wheelabrator Concord Penacook, NH					
2015	195,828	7,595	96%	-	-
2016	189,734	7,391	96%	-	-
2017	174,531	20,233	90%	-	-
2018	174,673	18,656	90%	-	-
Total (All Disposal Facilities: Landfills & Incinerators - Unlimited & Limited Service Areas)					
2015	**1,053,130**	**920,431**	**53%**	**-**	**-**
2016	**1,082,138**	**994,518**	**52%**	**-**	**-**
2017	**1,225,366**	**1,104,580**	**53%**	**-**	**-**
2018	**1,228,819**	**1,160,058**	**51%**	**-**	**-**

Notes:

1. All data from annual facility reports submitted to NHDES-SWMB. Some estimated remaining capacities noted herein may not include approved additional capacity.
2. Alternate Daily Cover (ADC) is not included in any of the amounts presented in this table.
3. WMNH-Turnkey expansion was approved on 6/11/2018 for an additional 15.9 million cubic yards; life expectancy through 2034.
4. Mt. Carberry reports additional remaining capacity for conceptual expansion (Phase III) of about 7,718,000 cubic yards or 32 years.
5. Mt. Carberry expansion application approved February 2019; about 2 years additional capacity to 2025.
6. Expansion application under review for NCES; application requests approximately 2 additional years of capacity.
7. Boscawen Corn Hill Road C&D Landfill and Epping Bulky Waste Disposal Area not included (small amounts relative to facilities included; operations expected to cease by 2025)
8. Merrimack Station Coal Ash Landfill, located in Bow, NH, not included (small amounts relative to facilities included; limited private facility)
9. Bridgewater incinerator not included (small amounts relative to facilities included).

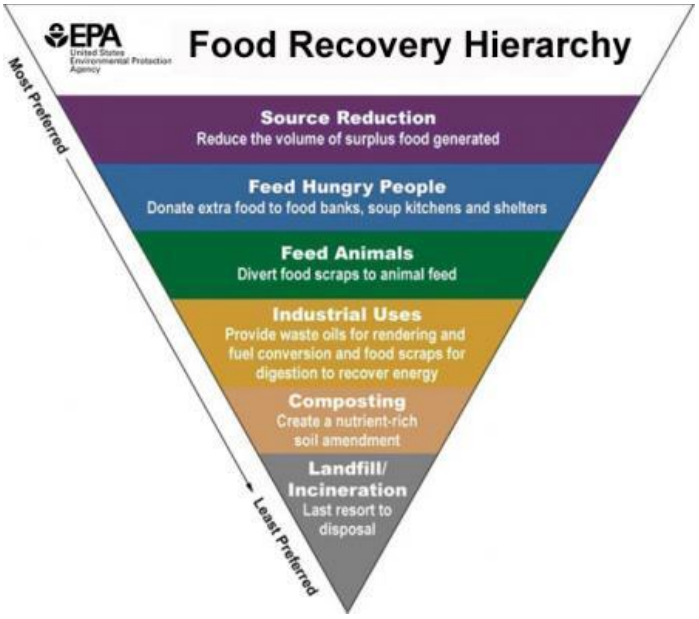
6. **Landfill leachate and gas.** Landfills generate leachate, including PFAS, which must be assiduously and carefully handled to protect the public health. During the study committee's visit to Turnkey, it learned that Waste Management (WM) processed approximately 100,000 gallons of leachate per day. It has gone to great expense to process this leachate, but toxins removed are concentrated into a cake and then must be placed back in the landfill where it is secured. Landfills also generate landfill gas, about 50% of which is methane, a potent greenhouse gas and a contributor to climate change. Many landfills, including Turnkey, have equipment that creates electricity from the landfill gas, but many do not. It requires a large investment. In many cases, the gas is flared. An innovative, well-considered New Hampshire collaboration between Turnkey facility and UNH involves the piping of methane to the university for energy. Again, however, market forces play a major role. If fossil fuels are cheaper, electricity generated from landfill gas and waste-to-energy processes must be sold at a less profitable price. This undermines the economic use of these methodologies, making them less popular.

7. **Waste-to-energy.** Per the New Hampshire statutes, waste-to-energy plants are better alternatives for dealing with solid waste than landfills. Assuming air quality standards are met, waste-to-energy plants provide a good alternative energy source, and are a method used widely where there is little land available for landfills. Although the ash from these plants must be deposited in landfills, Wheelabrator testified that it is working on ways to reduce what is put in landfills, such as removing ferrous materials. This makes economic sense.

8. **Economics**. As long as the cost of recycling, composting, or other means of diversion is less expensive than the tipping fees charged by landfills and incinerators and associated hauling costs, then it makes economic sense to engage in those activities. However, the recent collapse in prices of certain recycled material commodities, caused by China enacting stricter contamination standards through its National Sword policy, has made the economic viability of recycling less clear to municipalities, especially those that rely on single stream recycling and MRF processing.

9. **Reducing contaminants in recyclables.** In general, recyclables that are not contaminated with non-recyclable materials have greater market value. MRFs that receive co-mingled, single stream materials that have less contamination will produce cleaner end products with greater value. Achieving a less contaminated single stream source requires educating those seeking to recycle as to what is acceptable to throw in the recycling bin.

10. **Food recovery hierarchy.** The following food recovery hierarchy developed by EPA[7] is an excellent policy guide for reducing the amount of food waste disposed of in landfills or incinerators.



11. **Food waste regulations.** Food waste represents an economic loss to the consumer who bought the food but did not eat it, or the store that purchased the food for resale, but was unable to do so. In some circumstances, it is also a lost opportunity to feed those struggling to put food on the table. Regulations of NH Department of Health and Human Services, in conjunction with federal regulations, sometimes make it difficult to share food that would otherwise become a waste product. Finding ways through education or needed regulatory reform of getting the food eaten rather than thrown away should have the highest priority.

12. **Composting preserves landfill capacity.** Composting is an excellent method of diverting organic materials from the waste stream and being landfilled or incinerators. Organics are the feedstock for the creation of methane in landfills, an energy source when captured but a potent greenhouse gas when released to the atmosphere. New Hampshire has already banned the disposal of leaf or yard waste in landfills and incinerators which has resulted in the materials being composted on-site or else collected and composted relatively inexpensively elsewhere. However, very little unused food, which constitutes 22% of discarded solid waste according to EPA,[8] is diverted for composting or other use. This constitutes a huge opportunity for additional diversion by various means. Municipalities could also save money in tipping fees by doing more composting.

13. **Challenges to decreasing food waste.** There are two primary obstacles hindering the more widespread composting of food waste. One is that it must be kept separate from the rest of the waste or recyclables, both by the generator and the collector. This constitutes more work

[7] https://www.epa.gov/sustainable-management-food/food-recovery-hierarchy
[8] https://www.epa.gov/sustainable-management-food/sustainable-management-food-basics

by all involved and potentially greater transportation costs, especially if collected at the curb which requires a separate pickup. The other obstacle is that current DES rules prohibit the inclusion of meat and dairy from being composted at most facilities, unless the facility has obtained a standard permit for such composting. Obtaining a standard permit is a more complex and expensive process than the more commonly used permit-by-notification, and to date, no one has applied for a standard permit to allow composting of meat and dairy.

14. **Composting regulations.** In the hopes of making it easier for composting facilities to open and operate in New Hampshire, in particular smaller operations, the Legislature in 2015 required DES to adopt rules relative to "requirements and best practices for facilities that compost organics, including vegetable matter, meat, meat byproducts, dairy products, or dairy product derivatives." DES held a series of stakeholder meetings in 2017 and 2018 to work on the issue, but has not yet proposed or adopted rules due to, among other factors, resource (staffing) deficiencies as stated by the department. The need for adopting such rules was a common refrain from those who testified before the committee, including from the farming community. In fact, farmers saw the ability to engage in commercial composting as a good way to augment their tight income streams. Farmers asserted that businesses and municipalities could use the farms for composting to dispose of collected food waste more economically than by landfilling. Until the regulations are amended, DES has offered to consider waiver requests from the meat and dairy prohibition under the permit-by-notification process.

15. **DES deficient due to lack of funding**. The State of New Hampshire is not doing nearly enough to prepare for an evolving solid waste emergency. Our landfill capacity is rapidly diminishing. Local communities have increasingly little inclination to host them and local land use ordinances control. Our waste management and planning statutes are out of date. Virtually everyone who testified bemoaned the troubling lack of forward-looking planning, technical assistance and education done by DES due to staff shortages. They convincingly asked the committee to find a way to increase financial support to the agency to enable it to better do its job. The Solid Waste Bureau now has two primary functions: permitting and compliance. Without additional funding, it is unclear what the future holds for our state and our municipalities as they deal with their solid waste disposal challenges.

16. **Former DES Planning and Community Assistance Section.** Over a decade ago, Solid Waste Management Bureau of DES's Waste Management Division (the "Bureau") had an active Planning and Community Assistance Section. It was composed of five individuals who operated in a non-regulatory fashion and assisted municipalities with solid waste management issues and promoted recycling and composting throughout the state. They also worked on updating the state's Solid Waste Management Plan as required every 6 years by statute (the last update was in 2003.) Unfortunately, budget cuts over the years eliminated all of these positions except one, the Solid Waste Operator Training Coordinator. In addition, there used to exist a Recycling Market Development Coordinator within the former

Department of Resources and Economic Development, as well a Governor's Recycling Program, which focused on school recycling and outreach as a whole.

17. **New Hampshire falling behind.** The state's reduced support for solid waste management planning and assistance over the years has left it incapable of adequately responding to the various challenges that have arisen. Many municipalities feel they receive inadequate state direction and have to go it alone in a complex situation where they have minimal control. Other states are moving ahead with their recycling and composting programs, whereas New Hampshire, for instance, does not have an in-state MRF for single stream recycling or commercial composting facility permitted to take meat and dairy. The absence of such facilities makes it much more expensive to single stream recycle or compost food waste because of transportation costs. Surrounding states have also instituted certain disposal bans at landfills, such as on food waste and construction and demolition debris. The Northeast Resources Council provided a comprehensive, eye-opening list of regional disposal bans in its testimony.[9] This makes New Hampshire's commercial landfills, with no such bans, a more attractive disposal option for waste that has been banned in that state. Additionally, other states, such as Massachusetts, have closed landfills, making New Hampshire a cheaper, nearby alternative for landfill disposal. As tipping fees increase regionally, more pressure is put on NH's landfills. Other states have devoted significant funds to developing creative, effective solutions to enable better use of resources, recycling and composting to preserve landfill capacity.

18. **Disposal surcharges.** Testimony indicates that most states in the nation impose disposal surcharges on solid waste disposed of in their state. While the specific uses of these dedicated funds varies, funds provide vital support to state government for its long-range planning, education, rule-making, grant-making and technical assistance capabilities. New Hampshire stands almost alone by not charging a disposal surcharge. In our revenue-strapped state, it is unlikely the Bureau can be adequately funded with general funds to do its statutory responsibility. A dedicated fund financed by all who dispose of solid waste in our state or some other source of funding is necessary for the public health of our citizens.[10]

19. **DES Waste Management Council**. As further elucidated in the RSA 21-O:9, the Council is responsible for hearing all administrative appeals of DES decisions concerning waste management, advising the Director of the Waste Management Division on a broad range of long-range policy and planning issues, and reviewing proposed administrative rules. Members receive no compensation except for mileage and expenses. The council meets at least four times per year. A considerable amount of its time is devoted to hearing appeals,

[9] Comments provided by the Northeast Recycling Council, http://www.gencourt.state.nh.us/statstudcomm/committees/1476/documents/NERC%20comments.pdf

[10] A chart of Solid Waste Disposal and Operating Fees in U.S. States generated by DES, 2013, http://gencourt.state.nh.us/statstudcomm/committees/1476/documents/Solid%20Waste%20Disposal%20and%20Operating%20Fees%20-%20Comparison%20US%20States%20-%202013.pdf

especially recently. The director provides an overview of Division activities on a regular basis. Proposed rules are also presented periodically.

20. **Solid Waste Management Plan update vital.** Pursuant to RSA 149-M, the Bureau is required to produce a solid waste management plan every six years. The last plan was issued in 2003. The Bureau testified that the primary reason for the continual delay is staffing and financial resource constraints. As indicated in the 2019 Biennial Solid Waste Plan (page 12), the Bureau now is basically only doing permitting and compliance work. It is impossible to adequately anticipate and plan for our myriad solid waste challenges without preparing a timely solid waste management plan. The bare bones Bureau staff is consistently pulled in multiple directions, including providing legislative support. It makes it extraordinarily difficult to produce a plan. One cannot overemphasize the importance of this document to our state's future with respect to solid waste. Our landfill capacity is plummeting. Approximately 50% of our landfill capacity goes to out-of-state waste. Forward-thinking, creative planning is vital.

21. **Glass and processed glass aggregate.** Glass presents another opportunity for improved management of a waste material. It is heavy, thereby making it expensive to haul any distance and expensive to dispose of at a landfill or incinerator where tipping fees are based on weight. It can also be a source of contamination when co-mingled with other recyclables and broken during handling and processing. Markets for recycling the material are limited and of low value, yet still require that the glass have little contamination. NRRA has a long-standing and simpler program for handling glass which is to crush it unsorted, along with other glass like materials (ceramics, Pyrex, etc.), which produces a processed glass aggregate (PGA) that may be used as a replacement for or as a mixture with construction aggregate (e.g. gravel and sand) in various projects, as long as it is not left exposed on the surface. Presently, the use of the material in private construction requires a professional engineer's or architect's approval, as required by DES's current Certified Waste Derived Product specification for the product. NRRA is working with DES to remove this requirement from the specification for NRRA's PGA in hopes of encouraging broader use of the product. In addition, the state Department of Transportation (DOT) requires that the product be more finely crushed (to 3/8 inch) before it can be used on a state road project. NRRA is unlikely to commit to having the material crushed to this dimension, as it is more costly, unless DOT makes a commitment to its use.

22. **Plastics.** Plastics are another major component of the waste stream that can be managed better. They have been increasingly used in the past few decades for packaging consumer products, such as food, into bottles, jars, packets, and bags of various shapes and sizes. They are also used as films to cover or encase foods such vegetables and meats to preserve freshness. Plastics are popular, versatile in application, relatively inexpensive, and are lighter than most other packaging materials, especially glass. This lightness results in lower transportation costs due to reduced energy (fuel) consumption, which also benefits the environment through lower greenhouse gas emissions. While others may disagree,

Stonyfield Farm's Director of Sustainability Innovation testified that the company's packaging research indicated that using plastic containers had the least impact from a climate change standpoint. Others asserted that the creation of plastics from fossil fuels and their manufacture can present significant health issues. Research also indicates an alarming increase in the pollution of our environment by plastic litter and microplastics. This is gravely concerning, given the lengthy lifespan of plastic materials.

23. **Recycling plastics.** Plastics are often marked with a numbered recycling logo (#1 - 7) indicating the type of resin they are made of, and can be either rigid or flexible. Though in theory, all of plastics may be recyclable, in reality it is very challenging to successfully do so. Consumers are often confused by all of the resin numbers and variations in form (rigid vs. flexible) that affect what can and cannot be recycled in their community. Mistakes are commonplace causing contamination that decreases value. Since plastics are so light, municipalities that process their own recyclables must have large storage areas to accumulate enough of a specific plastic to make a compressed bale of the material. The process is also labor intensive. In addition, viable or price-competitive markets may not be readily available either. China modified its acceptable levels of contamination to among the lowest levels worldwide. This has created a global supply glut of materials and this, along with the availability of low-cost virgin materials, depresses the value of recycled plastic. The fact that plastics are so light compared with other components found in solid waste means that there is less of an economic incentive to recycle them since disposal fees at landfills and incinerators are based on weight. In contrast, plastics take up considerable volume for their weight and thereby take up a disproportionate amount of landfill space.

24. **Circular economy for plastics needed.** The plastics industry is working towards "a circular economy for plastics"[11] with the aim of capturing the vast amounts of plastic packaging that is being landfilled, or worse, being released into the environment, and repurposing it. Research is underway into methods to collect and process more kinds of plastics, including flexible plastic packaging (ie, plastic film bags and shrink wrap), which has traditionally been considered a contaminant in single-stream, curbside recycling programs. Finding new and expanded markets for all types of used plastic once collected and processed is also being investigated. This is extremely important because of the on-going increase in the use of plastics due to their versatility and popularity, especially for single uses.

25. **Decrease single use plastics.** Plastics present singular, concerning environmental issues. Although certain types of plastics are highly recyclable, not enough is recycled. Testimony indicates that by some estimates 91% of all plastic ever produced has been disposed of in landfills or litters our land and seas.[12] Complicated plastic packaging is constantly evolving and is increasingly hard to recycle. Dart Container Corporation and the American Chemical Society testified that the industry is working hard in find recycling solutions, as many turn an

[11] American Chemistry Council plastics webpage, https://plastics.americanchemistry.com/recycling-and-recovery/
[12] We Made Plastic. We Depend on It. Now We're Drowning in It. by National Geographic, https://www.nationalgeographic.com/magazine/2018/06/plastic-planet-waste-pollution-trash-crisis/

increasingly critical eye toward plastics, but recycling alone is not the solution. Reduction of single use plastics in our waste stream is necessary. Other states in the region are taking action to decrease plastics. As noted in an earlier finding re: disposal bans by other states, this may mean more plastics being sent to New Hampshire for disposal. The committee appreciates the recent decision by waste management companies, including Waste Management, to stop sending plastics to poverty-stricken countries.[13]

26. **State procurement.** For recycling to work, all recyclables need good markets. The state of New Hampshire, through its procurement process, can help promote recycling by increasing its purchase of products with high recycled material content. This takes advantage of the significant purchasing power of state government and demonstrates leadership on this important issue. The state also needs to do what it can to incentivize increased use of recycled materials statewide.

27. **Aluminum and tin.** The markets for recycled tin and aluminum remain strong and are good sources of revenue for communities.

28. **Healthcare.** New Hampshire's hospitals and other medical facilities dispose of multiple tons of solid waste per day, much of it in landfills. Some hospitals are leading the effort to reduce their waste. Dartmouth-Hitchcock (D-H) has instituted aggressive programs to reduce its waste stream, by decreasing consumption where possible, recycling, and composting.[14] D-H also tries to identify possible closed loop systems where a waste product is repurposed or recycled into a product, which is then bought by the hospital. For example, D-H contracts with the Bradford-based company, Circular Blu, to recycle its sterilization wrap by reprocessing it and using the material to create tote bags that are provided or sold at the hospital to patients, employees, and visitors. Testimony by the New Hampshire Hospital Association indicates an awareness of the waste problem and a desire to seek ways to improve. Organizations like Practice GreenHealth and Health Care Without Harm are helping lead the way.

29. **Education on recyclability.** Recycling's success depends on consumers. There is a great deal of consumer confusion and frustration as to what can be recycled, and how and where to do it. Municipalities, large and small, businesses and residents all testified to the need for standardization of signage that could be used universally to clarify recycling opportunities. Standardization of recycling signage and uniform recycling guidelines should help increase recycling. Education regarding best recycling practices will also help those collecting and processing recycled materials to decrease the amount of contamination by non-recyclable materials, thereby facilitating the development of markets and increasing prices for recycled goods. This in turn should decrease costs for municipalities, directly effecting consumer

[13] https://www.huffpost.com/entry/waste-management-plastic-export_n_5da9ce43e4b0e0f0378ae647
http://rorr.btownwebclients.com/wp-content/uploads/2019/09/wm_01080-Plastic-Export-Policy_r1.pdf
[14] "Sustainability at Dartmouth Hitchcock Medical Center" in Green Energy Times.

costs. Many businesses are consulting to improve their solid waste challenges trying to do the right thing and save money, too. Casella, for instance, provides consulting services.[15]

30. **Coordination to promote recyclability.** The success of source reduction, reuse and recycling goods depends on consumers who face a blizzard of different sorts of products and packaging, from chip bags to toothpaste containers, juice boxes to single use applesauce containers. Many of these items end up at MRFs, as contamination, landfills or waste-to-energy plants. A much higher level of coordination is needed among those who make packaging, particularly plastics-based, businesses who design packaging for safe delivery and to attract sales, and those who must process the waste. If materials can be recycled, more cash can be generated which will decrease disposal costs, save landfill space and reduce litter. This will take a concerted national effort and much commitment. States are also taking action. Reacting to the large amount of unrecyclable packaging in its landfills, Maine has passed legislation seeking to promote extended producer responsibility.[16]

31. **Business opportunities.** The loss of the Chinese market for our mixed paper and plastics presents real, domestic economic opportunities that are beginning to evolve. In New Hampshire, we have a great deal of experience with paper processing that could be utilized to do more recycling. For instance, a Chinese company, Nine Dragons, has purchased US paper mills, including one in Rumford, Maine.[17] Domestic plastic recycling plants are also starting to come online. New Hampshire could work with entrepreneurs to develop such businesses and become an incubator for solid waste recycling and reduction innovation. The committee had insufficient time to research the University System's activities regarding sustainability, but the System could increase engagement on these issues. There are also opportunities related to the development of anaerobic digesters and better uses for biogas in the creation of electricity. Business opportunities also exist for developing and promoting sustainable packaging.

32. **Waste management industry.** Waste management companies play a significant role in our society. Society generates a vast amount of refuse of a mindboggling variety. Virtually everyone, directly or indirectly, pays for private or public waste management services to deal with their garbage. While many are critical of waste management companies and the fact that they bury or burn unrecycled trash, what would happen if they did not? Where would it go? Until such time as society can achieve the laudable goal of zero waste, solid waste will continue to exist. Many throw things away and are unaware of or care little about where their trash goes. The study committee members were at times, overwhelmed when witnessing the sheer magnitude of trash being handled by the Waste Management's Billerica MRF (100,000 tons/year) and the amount being buried at Turnkey (approximately 1,500,000 tons/year). Companies like Waste Management and Casella are doing the job they are expected to do for

[15] https://www.casella.com/about-casella/innovation
[16] Maine DEP to draft legislation designed to strengthen recycling, Recycling Times, https://www.recyclingtoday.com/article/maine-explores-epr-legislation-for-packaging/
[17] Nines Dragon Paper website, https://us.ndpaper.com/

society, as regulated and overseen by our government. The study committee agrees that systems to decrease wasteful refuse generation must be developed and better methods of reuse and recycling must move ahead rapidly.

33. **Waste management industry adaptation.** Waste management companies recognize that to thrive as businesses, they, too, must work with all entities to better utilize materials that are banned from landfills (ie, food waste) or to recycle more materials. Economics will continue to drive these efforts. Casella, for example, is working to find alternative ways to handle waste it is called upon to dispose of through its sustainability program, described in great detail on its website.[18]

34. **Municipalities are islands.** NRRA works closely with municipalities to find markets for sorted recyclables. Municipalities rely heavily on their efforts to make recycling pay for itself, if not, to generate funds. This organization does an excellent job trying to facilitate better use of recyclable materials, but it is challenging work. Municipalities repeatedly asserted that they are on their own trying to figure out what to do with their solid waste and recyclables, negotiating individual contracts for solid waste hauling and disposal and recycling in a roiling global market with major fiscal pressures from property taxpayers. This is a tremendous burden for our cities and towns.

35. **Transportation costs.** One of the major expenses to municipalities is transportation of recycled goods. When municipalities were able to get a good return on recyclables, the transportation costs did not present such an obstacle. But now it can cost as much or more than what is paid for recyclables than the transportation costs. Many municipalities attempt to do the right thing and keep recycling, but for some, the economics do not work and they elect to throw items that they otherwise would recycle away. This uses up dwindling landfill capacity and is a waste of resources. The creation of an in-state MRF either through a private-public partnership or by private industry could decrease the transportation costs of recycled goods and promote more recycling. A regional recycling hauling system for smaller towns could ensure their recycling gets to market rather than to landfills.

36. **Regional Planning Commissions and Solid Waste Districts**. Regional planning commissions already play an important role in supporting the solid waste management efforts of New Hampshire's communities in a variety of ways, including acquisition of US Department of Agriculture Solid Waste Management grants, pilot programs, coordinating educational and recycling efforts and more. Additionally, RSA 53-B provides a mechanism whereby municipalities can join to form solid waste management districts. Somewhat unpopular in New Hampshire, these districts can help municipalities work collaboratively as they face the many hurdles of solid waste management in today's global turmoil.

37. **School districts**. School solid waste generation, recycling, food packaging, food waste and composting presents particular challenges. But as evidenced by the Somersworth Middle

[18] Casella 2018 Sustainability Report, https://www.casella.com/sites/default/files/pdfs/Casella-SustainabilityReport-2018.pdf

School's impressive presentation, students in partnership with supportive school boards and administrations, can save money, accomplish much and learn a great deal working to better manage the solid waste generated. Their work could be a model for other school districts. One issue noted was that kitchen services are frequently contracted out and some private companies are slow to adopt composting and other beneficial efforts.[19]

38. **Sustainability efforts by private businesses.** It is encouraging that many businesses recognize the important of reducing their solid waste footprint. Here in New Hampshire, Hannaford, Stonyfield Farm, Hypertherm and Walmart are trying to become more sustainable. This is the right thing to do, but also companies are feeling public pressure to do more. Multistate businesses, especially large, multistate organizations, prefer predictability and uniformity in solid waste requirements. Hannaford testified as to its work with Maine on a statewide plastic bag ban bill because it had difficulty complying with multiple local ordinances. Casella testified as to the issues presented by varying state laws. In deciding whether to pursue more aggressive legislation to ensure source reduction and recycling, the legislature should understand that in doing so, it would join neighboring states and that businesses seeking uniformity could be supportive of these efforts. There are many organizations working on sustainability, such as the Sustainability Packaging Coalition members.

39. **Zero waste efforts**. Testimony indicates that our state and our world benefit from consistently pushing toward source reduction and reuse. The public, our municipalities, businesses and state agencies want to do the right thing. Many pathways to improvement to exist. We need to consistently strive to improve and be given the tools to do so. Zero waste is a worthy goal.

RECOMMENDATIONS

1. The state must accept its statutory responsibility under RSA 149-M and resume its leadership role in long-range planning, technical assistance and public education to foster the better management of New Hampshire's solid waste challenges and recycling opportunities.
2. New Hampshire's solid waste management statutes and related programs must be updated to properly reflect current local, state, national and global conditions. They must also be updated to reflect our better understanding of the economic, environmental and public health costs of different types of solid waste and the effects of burying and incinerating our waste. **Legislation recommended to update solid waste management laws.**
3. DES Solid Waste Management Bureau must be provided with adequate funding to perform its vital, statutory long-range planning duty and, because general funds have proven to be an

[19] Somersworth Farm to School initiative, https://docs.google.com/presentation/d/12-wB86S0fpPmPmQJzBKsEr6BoTtoTOUg7DeZ7CIgSCk/edit#slide=id.g4bab56338b_1_0

unreliable funding source, a new method of funding must be developed. Like most other states, New Hampshire should create a dedicated fund to support the vital activities of the Bureau based on a per ton disposed surcharge. Such a surcharge should be based on all in-state and out-of-state solid waste tonnage delivered for disposal at any in-state landfill and waste-to-energy plant. The expenditure of these funds must first and foremost include financial support of the Solid Waste Bureau, so that it can perform its statutory duties and support our municipalities. DES should refine how these funds will be expended through rulemaking. **Legislation recommended to create a funding source through the institution of a dedicated fund based on per ton disposal surcharges on all waste landfilled or incinerated in New Hampshire. Such legislation would include a method of reimbursing surcharges paid by New Hampshire municipalities back to them for solid waste-related uses.**

4. To promote the state's solid waste hierarchy, as stated in RSA 149-M:3, and because misunderstanding leads to more solid waste disposal, the Bureau should take an active leadership role, including outreach, in education of residents, municipalities and businesses in developing simplified guidance on what is recyclable, and how and where to do it. The Bureau should continue to seek opportunities to work with and seek the support of stakeholders to educate on solid waste management-related subjects as they arise. **Legislation recommended.**

5. To assist the Bureau in the performance of its long-range planning responsibilities and other recommendations of this study committee, the Legislature should create a statutory commission, working group or similar entity that includes a variety of stakeholders. This entity should include at least one member of the DES's Waste Management Council, which also has long-range planning and public education responsibilities. The entity should have no more than a 5-year lifespan. **Legislation recommended to create a 5-year or less statutory commission, working group or similar entity, including at least one member of the Waste Management Council and other stakeholders, to work with DES to develop sound forward-looking, solid waste management policies, educational outreach and technical assistance programs and similar endeavors, as necessary.**

6. DES must put the necessary resources into updating the 2003 Solid Waste Management Plan no later than September 30, 2020. The Legislature should reconsider the requirement of revising the plan every 6 years with a view toward doing so every 10 years for better planning. **Legislation recommended to amend the 6-year requirement to 10 years and to require prompt completion of a new solid waste plan no later than September 30, 2020.**

7. The Legislature should revise RSA 149-M:29, II in accordance with the analysis, conclusions and recommendations of the DES's Biennial Solid Waste Report from a 40% waste diversion goal to a disposal reduction goal with specified targets and timelines to reduce annual tonnage disposal. **Legislation recommended to amend RSA 149-M:29, II to replace the 40% waste diversion goal with disposal reduction goals with specified targets and**

timelines. The committee supported a minimum of 25% disposal reduction by 2030 and 45% disposal reduction by 2050.

8. Like other states, NH should institute disposal bans of various types of waste over a carefully considered time frame and work to create markets and an infrastructure to accommodate the banned items. Such bans would prohibit identified waste from being disposed of in landfills or incinerators. Items to consider are food waste, any electric device with a cord, rechargeable batteries, various types of plastics, glass, and construction and demolition debris. Currently, NH bans leaf and yard waste and electronic waste, among other things, by statute. (RSA 149-M:27) The state should also closely assess the extent to which solid waste banned in other states is being disposed of here and whether that should be permitted. **Legislation recommended to institute disposal bans.**
9. Because domestic recycling is a job creator and provides ample business opportunities, the state should incentivize and develop methods to support new and existing businesses that seek to engage in the production of new products from recycled goods, such as plastics and paper products, and ways to reduce and reuse solid waste. Similarly, the state and private entities should work to develop markets for recycled goods, working with groups such as the Northeast Recycling Council. The state should also promote the development of corporations producing sustainable packaging. **Legislation recommended.**
10. Because food waste takes up so much landfill capacity, drives methane release and would be far better consumed than wasted, the Department of Health and Human Services should create internally or the Legislature should create a task force to review and improve food safety regulations with a view to maximizing beneficial use of what is now viewed as waste. This regulatory review should include stakeholder input from food banks, food sellers, schools and restaurants. NH should join other states in their efforts to decrease food waste. **Legislation recommended to require DHHS to review and improve food waste-related regulations in an attempt to reduce food waste and feed the hungry.**
11. As funding becomes available, the Long-Range Planning and Community Assistance Section of the Bureau must promptly be reactivated, per Finding #16, to assist municipalities, non-profits and others with long-range planning, technical assistance with respect to their solid waste challenges (including finding recycling material outlets) and contract negotiations.
12. Based on testimony from a variety of stakeholders, municipalities should strongly consider instituting pay-as-you-throw programs to reduce property taxes and to decrease what is landfilled and incinerated, to encourage source reduction and to increase recycling.
13. The Department of Administrative Services should work with the Legislature to review and update state laws to reflect current solid waste challenges and opportunities and to coordinate disposal and recycling effects. Decentralized waste disposal policies should be reviewed and adapted to improve currently centralized recycling efforts. The state should be a leader in procurement of recycled products, waste reduction and recycling. This work should begin immediately and should include measures to comply with the Legislative Budget Assistant's

performance audit of DAS's Statewide Recycling Program, May 2015, to the extent the agency has not yet complied with the audit findings.[20] **Legislation recommended to update state procurement policies, reduce solid waste and improve recycling.**

14. Recognizing the staffing challenges this presents, the Legislature should require the Bureau to send proposed, revised composting rules to the Joint Legislative Committee on Administrative Rules (JLCAR) no later than September 30, 2020. These rules should be finalized promptly once approved by JLCAR. The state should also work to facilitate the creation of an infrastructure to promote commercial, municipal and other composting efforts. **Legislation recommended to require regulations to be promulgated by September 30, 2020.**

15. The state and private businesses should collaborate on ways to incentivize increased coordination between packaging designers, brand owners, manufacturers and waste management/recycling companies to enhance recyclability and reuse so as to reduce waste disposal, particularly with respect to plastics, including extended producer responsibility. **Legislation recommended.**

16. To assist municipalities in reducing costs associated with the management of recyclables, statewide efforts should be made to decrease related transportation costs and storage shortages for recycled materials by working to promote regional pickups and transport to recyclers, as well as the creation of an in-state MRF, perhaps through a private-public partnership. **Legislation recommended**

17. The state should try through legislation, procurement, education and otherwise to decrease the amount of plastic waste generated and disposed of in landfills, incinerators and left as litter. Every effort should be made to ensure that those plastics that are recyclable, such as HTPE and PETE, be recycled, particularly as testimony indicates that certain types are more readily recycled. **Legislation recommended.**

18. The DOT should endeavor to use as much glass aggregate as possible in its projects, by creating a pilot project to do so, and subsequently to require a certain percentage of glass cullet to be used in state projects. The state and industry should work to create an adequate supply of PGA to ensure that the requirement is met. **Legislation recommended to require DOT to promote the use of PGA, including a pilot project, ultimately ensuring PGA to be used in state projects.**

19. State government and other private organizations should develop methods to recognize and encourage those entities that reduce, reuse and recycle products, thereby keeping them out of the waste stream.

20. Recognizing the value of single use plastics in certain contexts, such as healthcare, single use plastics should be regulated and reduced where possible. To promote recycling, organizations selling goods involving the use of flexible plastic film, such as single use plastic bags and

[20] http://www.gencourt.state.nh.us/LBA/AuditReports/PerformanceReports/DAS_2015.pdf

wraps, should provide opportunities for the collection of such plastics for recycling similar to the "return to retailer" program or WRAP (Wrap Recycling Action Program) described by the American Chemistry Council. Those that do must clarify for and educate consumers as which of those items can be recycled, thereby decreasing contamination of the recycled items and to answer a desire of the public to recycle their flexible plastic film products. **Legislation recommended.**

21. As major generators of various forms of solid waste, healthcare organizations should continue to seek ways to reduce consumption and increase recycling and composting. The state should work with healthcare organizations to accomplish this task, perhaps through incentivizing reduction.
22. Municipalities should continue to work with Regional Planning Commissions to develop better solid waste management tools. Municipalities should also consider the potential benefits of joining into solid waste districts.
23. School districts should consider the model used by the Somersworth Middle School to develop better systems to reduce, reuse, recycle and compost solid waste as a way of educating students, improving the environment and saving money. School districts should work with independent kitchen services organizations serving their cafeterias to reduce food waste and to operate more sustainably, including the use of reusable trays, dishes and silverware.

ACKNOWLEDGEMENTS

While the study committee did extensive work to highlight the state's increasing recycling and solid waste management challenges per its mandate, it had neither the expertise nor the time to adequately research and review this extraordinarily complex, multifaceted subject that touches every part of our society. The committee's findings and recommendations show that much more work needs to be done and hopes that this report helps lead the way. The study committee would like to thank the many, many stakeholders who shared their time and knowledge over the course of the past several weeks. It is deeply appreciated. The study committee is grateful to Waste Management for providing an informative field trip to its Turnkey landfill and Billerica MRF. The study committee would like to extend special thanks to Michael Nork, DES, Reagan Bissonette, NRRA, and Joel Anderson, NH House Committee Services, for their continual, vital support and assistance.

Appendix A

List of Those Who Provided Testimony to the Committee

First Name	Last Name	Organization
Nancy	Amato	Town of Milford
Chris	Asbell	Somersworth Middle School - Science Teacher/Project Mentor
Deb	Augustine	NH Hospital Association
Jeanne	Beaudin	Town Administrator Town of Belmont
Heather	Billings	Center for Ecotechnology (Mass.)
Reagan	Bissonette	NRRA - N.E. Resource Recovery Assn
Steve	Brewer	Town of Raymond
Bob	Cappadona	Casella Resources
Bill	Cass	NH DOT
Christine	Cassidy	DART
Chip	Chesley	City of Concord
Bonnie	Christie	Hopkinton Recycling Committee
Adam	Clark	City of Concord
Zachary	Conaway	Dartmouth-Hitchcock Medical Center
Joan	Cudworth	Town of Hollis Solid Waste Supervisor
Lisa	Drake	Stonyfield Yogurt - Director of Sustainability
John	Early	Public Works New London
Patrick	Ellis	Casella Organics
Amy	Farnum	N.H. DAS State Recycling Coordinator
Alex	Freid	Post-Landfill Action Network - Dover NH
Mark	Gomez	City of Manchester Solid Waste Mgmt Council
Matt	Hughes	Wheelabrator
Bret	Ingold	Warner Public Market
Tom	Irwin	Conservation Law Foundation
Cheryl	Jensen	Resident Town of Bethlehem
Cordell	Johnston	NHMA
Lucas	K.	Somersworth Middle School
Aaron	Kerr	Rainbow Bridge Composting - Deerfield
Judy	Knapp	Hannaford - Government Relations Manager
Jeff	Lafleur	City of Nashua Solid Waste Supervisor
Katie	LaJoie	Resident - Charlestown, N.H.
John	LaRiviere	Wheelabrator
Chris	Lucarelle	Waste Management
Rebecca	McWilliams	Lewis Farm
Larry	Melanson	NH The Beautiful
Paula	Minnehan	NH Hospital Association
Marc	Morgan	City of Lebanon
Michael	Nork	NHDES Solid Waste Management Bureau
George	Parmenter	Hannaford - Sustainability Manager

First Name	Last Name	Organization
Adam	Peer	American Chemistry Council
Steve	Poggi	Waste Management
Lynn	Rubinstein	Northeast Recycling Council
Jessica	Saturely-Hall	Upper Valley Composting - Lebanon, NH
Kevin	Sheppard	City of Manchester - Public Works Director
Colleen	Smith	NH DHHS, Public Health Services, Food Protection
Solid Waste Advisory Board		Hillsborough, Deering, Windsor
Jon	Swan	Save Forest Lake
Eric	Thibodeau	N.H. DOT
John	Tuthill	Resident - Acworth, N.H.
Zack	W.	Somersworth Middle School
Ed	Walsh	Town of Rollinsford - Transfer Station
Duncan	Watson	City of Keene - Asst. Public Works Director
Josh	Whipple	Swanzey Solid Waste Manager
Paige	Wilson	Lakes Region RPC
Michael	Wimsatt	Director, Waste Management Division - NHDES
Barry	Zitser	Resident Bethlehem, N.H.

Appendix B

Internet Resources Related to Solid Waste Management

Casella Organics
https://www.casella.com/casella-organics

Casella Recycle Better
https://www.casella.com/services/recycling/recycle-better

Circular Blu
http://www.circularblu.com/

EPA: Food Recovery Challenge
https://www.epa.gov/sustainable-management-food/food-recovery-challenge-frc

DES Solid Waste Bureau
https://www.des.nh.gov/organization/divisions/waste/swmb/index.htm

Feeding America
https://www.feedingamerica.org/

How2Recycle
https://how2recycle.info/

Northeast Recycling Council
https://nerc.org/

Northeast Resource Recovery Association
https://nrra.net/

Northeast Waste Management Officials' Association
http://www.newmoa.org/

Post Landfill Action Network
https://www.postlandfill.org/

Practice Greenhealth
https://practicegreenhealth.org/

Sustainable Packaging Coalition
https://sustainablepackaging.org/

US Composting Council
https://www.compostingcouncil.org/

USDA: Food Loss and Waste
https://www.usda.gov/foodlossandwaste

Maine Composting School
http://composting.org/

New Hampshire The Beautiful
https://www.nhthebeautiful.org/

Zero Waste Home
https://zerowastehome.com/

Terracycle
https://www.terracycle.com/en-US/

Lebanon solid waste and recycling
https://lebanonnh.gov/450/Solid-Waste-Recycling

Hannaford sustainability
https://www.hannaford.com/about-us/sustainability

Stonyfield sustainability
https://sustainablepackaging.org/

Waste Management sustainability consulting
https://www.wm.com/us/en/services/business-services/sustainability-consulting

America's Biggest Trash Hauler Stops Shipping Plastic To Poor Countries, Huffington Post article
https://www.huffpost.com/entry/waste-management-plastic-export_n_5da9ce43e4b0e0f0378ae647

Waste Management Position On Plastics
http://rorr.btownwebclients.com/wp-content/uploads/2019/09/wm_01080-Plastic-Export-Policy_r1.pdf

California legislature wraps session with unprecedented recycling action, WasteDive
https://www.wastedive.com/news/california-legislature-wraps-session-with-unprecedented-recycling-action/563136/