

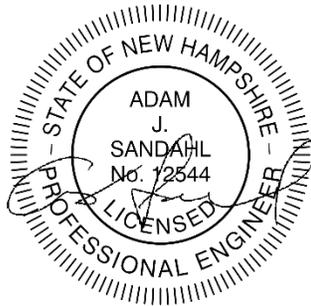


**NHDES Waste Management Division  
29 Hazen Drive; PO Box 95  
Concord, NH 03302-0095**



**Standard Permit for Solid Waste Landfill  
Granite State Landfill  
Douglas Drive  
Dalton, NH 03598  
NHDES Site #: TBD  
Project Type: SW-LNDFILL  
Project Number: TBD  
Permit: DES-SW-SP-XX-XXX (TBD)  
Volume 6  
Public Benefit, Signature, Fee Calculation**

Prepared For:  
Granite State Landfill, LLC  
1855 VT Route 100  
Hyde Park, VT 05655  
Phone Number (802) 651-5454  
RP Contact Name: John Gay  
RP Contact Email: [john.gay@casella.com](mailto:john.gay@casella.com)



Prepared By:  
CMA Engineers, Inc.  
35 Bow Street  
Portsmouth, NH 03801  
Phone Number: (603) 431-6196  
Contact Name: Adam Sandahl, P.E.  
Contact Email: [asandahl@cmaengineers.com](mailto:asandahl@cmaengineers.com)

Date of Report: October 16, 2023

Cover Sheet for Reports Template - Revised December 2020

## SECTION XI

### **PUBLIC BENEFIT DEMONSTRATION Granite State Landfill, LLC Dalton, New Hampshire**

#### **1.0 INTRODUCTION**

By statute, an applicant seeking approval for a solid waste facility must establish that the proposed facility will provide a substantial public benefit to the State of New Hampshire. The criteria for this determination are set forth in RSA 149-M:11, III(a)-(c).

A subsidiary of Casella Waste Systems, Inc. (“CWS”), Granite State Landfill, LLC (“GSL”), intends to construct a first-in-class commercial landfill in Dalton, Coos County, New Hampshire. This application is the second of its kind for this proposed facility. GSL previously applied for approval of the facility on February 9, 2021, but after receiving initial comments from NHDES and gathering more information from the department regarding its expectations for permitting across various programs, GSL elected to withdraw its application on December 10, 2021.

This new application reflects a revised footprint for the proposed facility that will operate in a single phase to provide 18 years of disposal capacity for New Hampshire communities. The 70-acre lined footprint proposes accepting 600,000 cubic yards of waste per year. GSL expects to commence operations in 2028 so that there is a seamless transition from the capacity now being provided by North Country Environmental Systems, Inc. (“NCES”) at its landfill in Bethlehem, New Hampshire, once the NCES facility closes.

If the GSL facility is permitted by NHDES and other authorities, CWS will construct a materials recovery facility (“MRF”) in southern New Hampshire to complement the operations of the new landfill. This recycling facility will also advance the company’s ongoing objectives to promote recycling, divert recyclable waste from landfills, and reduce greenhouse gas emissions. GSL will also commit to conserving more than 50% of its capacity for disposal of in-state waste over the life of the proposed landfill.

As demonstrated in this analysis, GSL satisfies the statutory criteria for providing a substantial public benefit to the state with its proposed landfill development in Dalton and advances the state’s goals and initiatives for managing solid waste.

#### **2.0 STATUTORY PUBLIC BENEFIT CRITERIA**

RSA 149-M:11, III(a)-(c) prescribes the criteria by which public benefit is to be assessed. These criteria are:

- (a) The short- and long-term need for a solid waste facility of the proposed type, size, and location to provide capacity to accommodate solid waste generated within the borders of New Hampshire, which capacity need shall be identified as provided in paragraph V.

(b) The ability of the proposed facility to assist the state in achieving the implementation of the hierarchy and goals under RSA 149-M:2 and RSA 149-M:3.

(c) The ability of the proposed facility to assist in achieving the goals of the state solid waste management plan, and one or more solid waste management plans submitted to and approved by the department under RSA 149-M:24 and RSA 149-M:25.

### **3.0 CAPACITY NEED (RSA 149-M:11, III(a))**

#### **3.1 Role of Capacity in Determining Public Benefit**

In enacting the public benefit requirement, the general court declared as its purpose ensuring “that adequate capacity exists within the state to accommodate the solid waste generated within the borders of the state.” RSA 149-M:11, I(b). Ensuring adequate capacity is quite different, however, from restricting capacity to accommodate only in-state waste. Nothing in RSA ch. 149-M directs the department to use the public benefit requirement to permit waste disposal facilities only to the extent necessary to meet New Hampshire’s capacity needs.

As a result, if a proposed facility assists the state in providing adequate capacity for New Hampshire waste and otherwise meets the public benefit criteria, the facility’s public benefit is established. The statute does not reserve all permitted capacity for disposal of New Hampshire waste, nor does it burden interstate commerce by restricting permitting to capacity required solely for disposal of the state’s waste. It therefore passes constitutional muster in that it does not discriminate against out-of-state waste. A public benefit scheme that restricted permitted capacity to in-state requirements would violate the commerce clause of the United States Constitution. As the United States Supreme Court has held:

Even assuming that landfill space is a “natural resource,” “a State may not accord its own inhabitants a preferred right of access over consumers in other States to natural resources within its borders.” . . . However serious the shortage of landfill space may be, . . . “[n]o State may attempt to isolate itself from a problem common to the several States by raising barriers to the free flow of interstate trade.”

*Oregon Waste Systems, Inc. v. Department of Environmental Quality of the State of Oregon*, 511 U.S. 93, 107 (1994), quoting *City of Philadelphia v. New Jersey*, 437 U.S. 617, 627 (1978). See also *Fort Gratiot Landfill v. Michigan Dep’t. of Natural Resources*, 504 U.S. 353, 367 (1992) (“no valid health and safety reason for limiting the amount of waste that a landfill operator may accept from outside the State but not the amount that the operator may accept from inside the State.”); *C&A Carbone, Inc. v. Town of Clarkston*, 511 U.S. 383, 394 (1994); but see *United Haulers Assoc., Inc. v. Oneida-Herkimer Solid Waste Management Authority*, 504 U.S. 353 (2007) (under some circumstances municipalities owning waste management facilities may impose flow control over waste generated within their municipal boundaries to those facilities).

#### **3.2 Statutory Methodology for Determination of Capacity Need for N.H. Waste (RSA 149-M:11, III(a))**

RSA 149-M:11, III(a) specifies the methodology the department must employ to determine the “capacity [needed] to accommodate solid waste generated within the borders of New Hampshire.” That determination is to be made pursuant to RSA 149-M:11, V, which requires the department to:

- (a) Project, as necessary, the amount of solid waste which will be generated within the borders of New Hampshire for a 20-year planning period. In making these projections the department shall assume that all unlined capacity within the state is no longer available to receive solid waste.
- (b) Identify the types of solid waste which can be managed according to each of the methods listed under RSA 149-M:3 and determine which such types will be received by the proposed facility.
- (c) Identify, according to type of solid waste received, all permitted facilities operating in the state on the date a determination is made under this section.
- (d) Identify any shortfall in the capacity of existing facilities to accommodate the type of solid waste to be received at the proposed facility for 20 years from the date a determination is made under this section. If such a shortfall is identified, a capacity need for the proposed type of facility shall be deemed to exist to the extent that the proposed facility satisfies that need.

GSL examines each component of this analysis in the following subsections.

### **3.2.1 Projected Waste Generation and Diversion for the 20-Year Planning Period (RSA 149-M:11, V(a))**

New Hampshire law requires consideration of the amount of solid waste to be generated within the borders of New Hampshire during a 20-year planning period. RSA 149-M:11, V(a). The department must also identify any shortfall in the capacity of existing facilities to accommodate the type of waste to be received by the proposed facility for 20 years “from the date a determination is made” as to whether the proposed solid waste facility provides a substantial public benefit. RSA 149-M:11, V(d). For purposes of this analysis, GSL assumes that it will receive a decision on June 1, 2025, and that the 20-year planning period commences on that date and runs through May 31, 2045.

New Hampshire’s waste disposal needs for the requisite 20-year period may be derived from waste generation and diversion data provided to NHDES and population data projections developed by the New Hampshire Department of Business and Economic Affairs. The waste generation data are obtained from annual facility reports submitted by each disposal and processing facility handling New Hampshire-generated solid waste. GSL has utilized reporting data from 2021 to calculate the projections necessary for this analysis, as that is the most recent year for which complete data is available from all relevant facilities and municipalities. 2021 therefore is the baseline year for projecting waste quantities. The 2021 New Hampshire-generated waste quantities and types of waste are shown in Table 1 for each disposal and processing facility.

GSL projected waste quantities during this formulation of the 20-year planning period using New Hampshire population data set forth in a document titled “State, County, and Municipal Population Projections: 2020-2050,” which was prepared by the Office of Planning and Development (“OP&D Report”) at the New Hampshire Department of Business and Economic Affairs and released in September 2022. This is the most recent document reflecting population data and growth projections in New Hampshire.

As a starting point for projecting population change in New Hampshire, GSL utilized the 2020 census data reported in the OP&D document. *See* OP&D Report at Table 6. This document reports that the state’s population in 2020 was 1,377,533 people. OP&D estimated the state’s population projections at five-year intervals, forecasting growth in the population through 2040 and a contraction in 2045 and 2050 as the state’s population ages. For the purposes of the waste projections set forth in Table 2 of this public benefit demonstration, GSL determined the percentage of population change between five-year intervals and assumes that this change will occur linearly during each five-year period. Accordingly, the total percentage of projected change between each five-year interval is divided by five and allocated to each year in that interval. GSL then applied that projected change in population to each year, commencing with the 2020 census data, to project the population of New Hampshire for each year of the 20-year planning period. *See* Table 2.

After determining the projected population for the planning period, GSL projected the amount of waste to be generated during that time. NHDES’s recent biennial solid waste report, published in November 2022, estimates the waste generation rate per capita in New Hampshire as of 2020 to be 1.46 tons per year. GSL utilizes this figure to project the volume of waste that will be generated in the state during the 20-year planning period by multiplying the projected population for each year of the planning period by 1.46 tons per year; the product of that calculation is set forth in Table 2 under the column titled “Total Waste (T).”

Because GSL characterized the waste received at New Hampshire facilities utilizing AFR data in 2021 by type in Table 1, it carries forth that same characterization of waste to the forecasted volumes reflected in Table 2. To project what portion of the total volume of waste was represented by each category, GSL determined each category’s representative percentage of the total tonnage of waste in 2021 and carried those same percentages forward throughout the planning period. This approach utilizes the documented 27% recycling rate throughout the entire planning period. With these calculations, the state will generate approximately 31,877,979 tons of waste requiring disposal between June 1, 2025 and May 31, 2045. Table 2.

### **3.2.2 Types of Waste to be Received at GSL Facility (RSA 149-M:11, V(b))**

The following types of waste will be received by GSL during the life of the facility: MSW, C&D, ACM, solid wastes subject to the special waste profiling and acceptance procedures in the Approved Operating Plan of Record (such as waste from industrial processes, pollution control processes, residue from a spill of chemical substances or commercial chemical products, and waste produced during the demolition or dismantling of industrial process equipment), friable and non-friable asbestos, wastewater treatment sludge, and NHDES-certified waste derived products, such

as MSW incinerator ash, auto shredder alternative daily cover, and biosolids incinerator ash. Wastes authorized for disposal at the facility are described in more detail in Section 2.1 of the Facility Operating Plan included with the application.

### **3.2.3 Disposal Capacity in New Hampshire (RSA 149-M:11, V(c))**

RSA 149-M:11, V(c) requires the department to identify “according to type of solid waste received, all permitted facilities operating in the state” as of the time of the public benefit determination. RSA 149-M:11, V(d) provides that the permitted disposal capacity for each facility must be identified for a 20-year period to determine whether a capacity shortfall exists. Table 3 identifies authorized waste types for each of the six existing lined landfills in New Hampshire.

Permitted waste disposal facilities in New Hampshire include six lined landfills and one waste-to-energy (WTE) facility. In addition, there are two C&D processing facilities in southern New Hampshire: ReSource Waste Services of Salem, Inc. (formerly LL&S) and ReSource Waste Services of Epping Inc. (formerly ERRCO). Any C&D processed at these facilities that is not recycled is landfilled and is captured in the receiving facility’s AFR, but the two ReSource Waste Services facilities are not themselves disposal facilities. C&D cannot be processed in a WTE facility. The capacity provided by the C&D processing facilities, unlined landfills (*see* RSA 149-M:11, V(a)) and incinerators without waste-to-energy was not included in the evaluation of permitted disposal capacity in New Hampshire.

### **3.2.4 Shortfall in Capacity (RSA 149-M:11, V(d))**

The statute instructs NHDES to “[i]dentify any shortfall in the capacity of existing facilities to accommodate the type of solid waste to be received at the proposed facility for 20 years from the date a determination is made” as to public benefit. RSA 149-M:11, V(d). “If such a shortfall is identified, a capacity need for the proposed type of facility shall be deemed to exist to the extent that the proposed facility satisfies that need.” *Id.*

As a preliminary matter, the department must determine what the general court meant by “permitted facilities” in RSA 149-M:11, V(c). While the statute does not define “permitted facilities,” the Solid Waste Rules of the Waste Management Division define “permitted facility” as “a facility with a valid permit issued pursuant to RSA 149-M and the solid waste rules.” Env-Sw 104.05. A “permit” is “an authorization from the department for the construction and operation of a facility.” Env-Sw 104.01; RSA 149-M:4, XIV. A standard permit or a Type I-A permit modification authorizes only the “future construction and operation” of new landfill capacity.<sup>1</sup> *See, e.g.,* Type I-A Record of Permit Modification Issued to NCES (8-15-14) §III(2). Such approvals typically include as a condition that the permittee seek and obtain a separate approval to construct any of the new capacity (Env-Sw 1104.01), and by rule the permittee must notify the department that it intends to operate new capacity and cannot commence operation until the department has stamped and returned the notice of intent. Env-Sw 1105.01-.03. Thus, even if a

---

<sup>1</sup> An applicant can seek and obtain construction approval simultaneously with the standard permit or Type I-A modification. In such a situation, the permittee still cannot operate the facility under Env-Sw 1105.01-.03 until it has submitted a notice of intent to operate and received a stamped copy from NHDES.

landfill facility has a permit for a specific design footprint, only those cells for which an applicant has received construction and operating approvals from the department may be considered “permitted facilities” for purposes of determining public benefit.

This is confirmed by the language of RSA 149-M:11, V(c) which requires the department to assess the amount of disposal capacity in the state by identifying “all permitted facilities *operating* in the state” (emphasis supplied) in connection with its public-benefit analysis. Only a landfill cell with construction and operating approvals may “operate” in the State of New Hampshire. *See* Env-Sw 305.05 (b); Env-Sw 1105.03. It would be speculation to assume that all capacity for which NHDES has granted design approval will also eventually receive construction or operating approval.

Historically, however, NHDES has projected capacity on the basis of the design approved by standard permits or, in some cases, by Type I-A permit modifications. Table 4 therefore provides totals for the 20-year planning period from the expected date of a decision on the application of both the capacity for which NHDES has issued a permit for operating approval and the capacity for which NHDES has issued only design approval. It is important to recognize that to the extent the department includes capacity that has only received design approval, it overstates capacity for purposes of applying the public-benefit criteria.

Utilizing 2021 AFR data and updating that data to reflect a recent approval for the Nashua facility, the facilities reported the following estimates of remaining capacity from which GSL can project the life of the state’s remaining landfill capacity based on *design* capacity:

NCES	5 years
TLR-III (including Stages 15-17)	12.5 years
Mt. Carberry (through Phase IIIA)	21.39 years
Nashua	30+ years
Conway/Mt. Washington	17 years
Lebanon	9 years

*See* Section 5 of 2021 AFRs. To conduct the analyses in this section, GSL utilized the following fill rates<sup>2</sup> (which appear to be equivalent to what NHDES calls “allowable capacity depletion rates” at page 41 of the October 9, 2020 Application Review Summary for NCES’s Stage VI permit):

NCES	175,000 TPY
TLR-III	1,355,475 TPY
Mt. Carberry	221,448 TPY
Nashua	80,000 TPY
Conway/Mt. Washington	10,000 TPY
Lebanon	38,000 TPY

The total estimated landfill capacity with design approval for the 20-year planning period is the sum of the products of each facility’s annual fill rate and the number of years of its remaining

<sup>2</sup> *See* Table 4, notes 4-10 for a discussion of how these rates are determined.

lifespan, up to 20 years. This equates to about 20,732,280 tons of capacity with design approval over a 20-year planning period commencing June 1, 2025. Table 4.

The estimates of the life of the state’s remaining landfill capacity (as set forth in each facility’s 2018 annual facility report) updated by GSL to January 1, 2022, for which *operating approval* has been granted produce a significantly different result. Those estimates are:

NCES	5 years
TLR-III (excluding Stages 15-17)	2.5 years
Mt. Carberry (through Phase II)	5.05 years
Nashua	30+ years
Conway/Mt. Washington	17 years
Lebanon	9 years

Using the same applicable fill rates, the total estimated landfill capacity with operating approval for the 20-year planning period as of June 1, 2025, is about 4,981,880 tons. Table 4.

The permitted nominal disposal capacity of the Concord waste-to-energy facility is 575 tons per day (TPD) (209,875 TPY). In 2021, it accepted 161,217 tons of waste from New Hampshire sources, which is generally consistent with typical years, and the facility generally does not exceed 200,000 TPY. Incineration, again, does not “dispose” of waste; rather, it reduces its weight by two-thirds by exporting ash to out-of-state facilities. In 2021, the WTE shipped 50,859 tons of residual waste to out-of-state destinations. As a result, the actual disposal capacity of the Concord facility (rounded) is 111,000 TPY. Table 4.

Under RSA 149-M:11, V(d), NHDES is required to “[i]dentify *any* shortfall in the capacity of existing facilities to accommodate the type of solid waste to be received at the proposed facility *for 20 years from the date a determination is made* under this section. If *such* a shortfall is identified, a capacity need for the proposed type of facility shall be deemed to exist to the extent that the proposed facility satisfies that need.” Emphasis supplied. RSA 149-M:11, V(d).

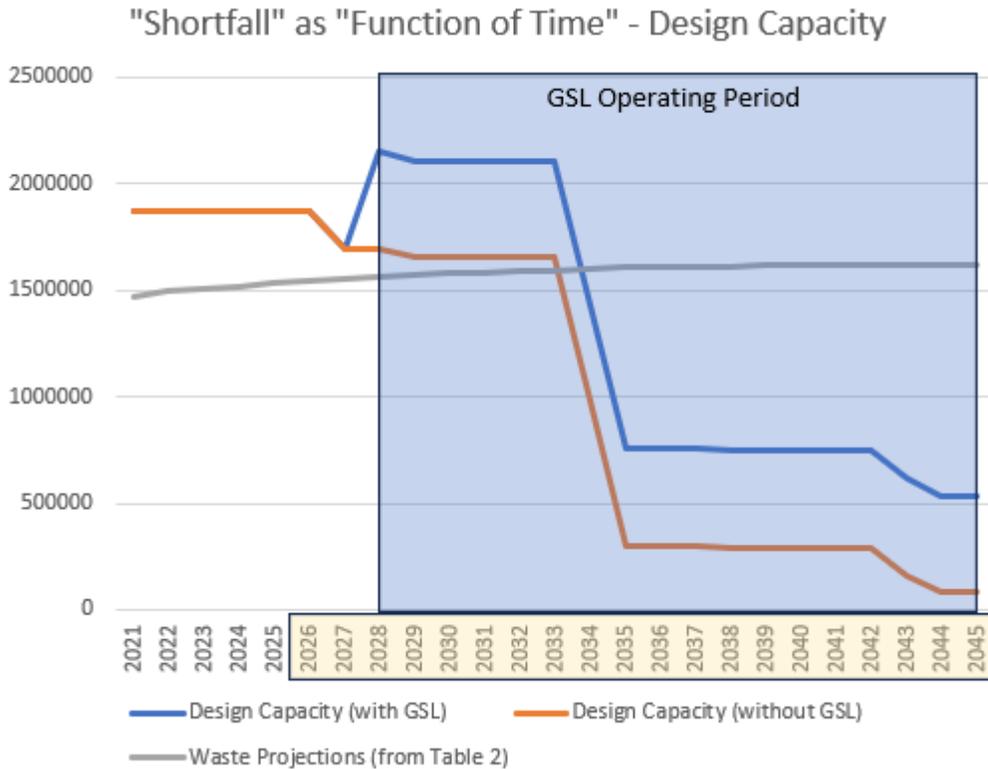
By its express terms, then, the statute requires NHDES to determine whether there is *any* shortfall *over the 20-year planning period*. If there is any such shortfall, the proposed capacity is “deemed” to provide a public benefit so long as the applicant provides that capacity during the planning period. In 2020, NHDES added a second temporal element to this analysis resulting in its examination of capacity need and disposal capacity in the planning period to determine *when* the shortfall is likely to occur. As GSL understands NHDES’s current construction of the statute, a facility’s provision of disposal capacity for some period after a shortfall occurs is a factor the department considers, in its discretion, to be supportive of a finding of capacity need. While GSL disagrees with NHDES that a finding of capacity need is discretionary and that when the shortfall occurs in the planning period is relevant to determining capacity need, GSL nonetheless addresses NHDES’s current interpretation of the statute below.

The magnitude of the shortfall depends on whether one uses permitted operating capacity or approved design capacity in the calculation. The waste disposal capacity through the planning period from the date of expected approval is the sum of projected landfill capacity and the capacity

of the Concord waste-to-energy facility as of June 1, 2025 (as set forth in Table 4). As of June 1, 2025, New Hampshire will have operating capacity of 2,761,880 tons and design capacity of 18,512,280 tons at its landfills, and the Concord facility will have 2.2 million tons of available capacity during the planning period. Table 4. The range of total statewide permitted capacity as of June 1, 2025, for the planning period is 4,981,880 to 20,732,280 tons. Deducting this range of capacity from the state's projected waste generation less diversion value of 31,877,979 tons (Table 2) produces an estimated 20-year shortfall of 11,145,699 tons (design capacity) to 26,896,099 (operating capacity).

Based on these calculations and using design capacity instead of permitted operating capacity, GSL anticipates that a shortfall as NHDES now defines it will occur in 2034. At that point, the projected waste disposal need for the state (1,601,266 tons as set forth in Table 2) will exceed the projected permitted waste disposal capacity (979,225 tons, assuming that fill rates set forth in Section 3.2.4 remain constant over the remaining lives of the facilities). If permitted operating capacity is used in performing the calculation, there will be a shortfall in 2034 when the approved operating capacity at TLR-III expires. Of course, the shortfall analysis presumes that all capacity will be consumed by New Hampshire generated waste, when in fact some portion of the capacity is utilized for waste originating from other jurisdictions. For example, approximately 62% of the waste accepted by TLR-III in 2021 originated from other jurisdictions. *See* TLR-III 2021 AFR at Attachment 3.

Because GSL expects to commence operations in 2028, it will provide disposal capacity to accommodate New Hampshire waste during 10 years of shortfall as now defined by NHDES (using design capacity and assuming current fill rates) over the 20-year planning period. This shortfall “as a function of time” (as described in NHDES’s Application Review Summary dated October 9, 2020 for the NCES Stage VI permit at 41-43) is depicted in the following figure (Figure 1):



### 3.3 Short-Term and Long-Term Impact

RSA 149-M:11, III(a) requires NHDES to consider the “short- and long-term need” for a proposed facility as part of the public benefit analysis. Although paragraph III(a) explicitly says that such “capacity need shall be identified as provided in paragraph V,” it is evident that the legislature wanted NHDES to consider short- and long-term impacts on the need for capacity as part of its analysis. This enables NHDES to take into account the sufficiency of the state’s disposal capacity in more comprehensive terms. This is consistent with the overall objectives of the public benefit statute which includes express findings that the purpose of the statute is to discharge the legislature’s responsibility “to provide for the solid waste management need of the state and its citizens” and “ensure that adequate capacity exists within the state to accommodate the solid waste generated within the borders of the state.” RSA 149-M:11, I(a) and (b). Interpretation of the statute should be in furtherance of the legislature’s stated objectives.

For example, RSA 149-M:11, V, is designed to ensure that there is – at least notionally – adequate disposal capacity in the state over the 20-year planning period for waste generated in the state. RSA 149-M:11, III(a), however, gives NHDES the authority to account for the effect of New Hampshire’s net importation of solid waste for disposal. NHDES can only assess the short-term and long-term need for new capacity if it considers how much New Hampshire capacity will actually be consumed by imported waste.

The Biennial Solid Waste Report prepared by NHDES in November 2022 indicates that approximately 913,833 tons of solid waste were imported from out-of-state sources in 2020. According to the report, approximately 47% of the solid waste received at New Hampshire landfills originated from out of state in 2020. NHDES Biennial Solid Waste Report (Nov. 2022) at 4. Assuming that net imports remain at 2020 levels over the 20-year planning period, imported waste will consume over 18,276,660 tons<sup>3</sup> of New Hampshire capacity over that period. *Id.* This increases the capacity shortfall calculated under RSA 149-M:11, V, for the planning period from a range of 11,145,699 to 26,896,099 tons to a range of 29,422,359 to 45,172,759 tons. It is fair to say that a shortfall of such magnitude would create crisis conditions. Any disposal capacity provided during the planning period mitigates this crisis and promotes the express findings and declarations of the general court.

Another shortcoming of the analysis performed under RSA 149-M:11, V, is that it assumes implicitly that all disposal capacity in the state is fungible and, consequently, if a disposal facility ceases operations the remaining facilities will accept the volume of New Hampshire waste previously accepted at the closed facility. Each permitted facility, however, has a limit on the average tonnage of waste it can accept each year. WTE facilities have finite throughput capacities, municipal landfills have limited-service territories, and commercial landfills have permit conditions setting average annual acceptance (or depletion) rates. The Concord WTE facility has historically operated at or near capacity, the municipal landfills cannot accept waste generated outside their boundaries, and the commercial landfills ordinarily accept *at least* their annual permitted average. As a consequence, closure of a WTE or commercial landfill facility could well result in a situation in which waste generated in New Hampshire cannot be disposed of in the state. Even if the remaining facilities could accommodate the volume of waste previously accepted at the closed facility, moreover, the consumption of their remaining capacity would obviously be accelerated, hastening a statewide capacity shortfall.

Long-term planning for solid waste disposal capacity should also contemplate natural disasters and similar unforeseeable events. The State Emergency Operations Plan (SEOP) includes multiple provisions requiring NHDES to coordinate the disposal of hazardous waste and other debris generated during a disaster. One such incident can dramatically affect the amount of the state's disposal capacity, and NHDES should take such contingencies into account in assessing the need for the GSL Facility.

RSA 149-M:11, III(a), authorizes NHDES to consider the overall impact upon the state's waste management and disposal resources of any decision on an application for new capacity in the state. Permitting a new commercial facility in Dalton, which will be operational shortly after NCES's projected closure, will help the state to ameliorate the effects of net waste imports on its long-range capacity planning and avoid the stepped-up depletion of the state's disposal capacity if NCES were to cease operations without another new facility available to take its place. These considerations support the conclusion that the GSL facility will assist in meeting both a short-term and long-term need for waste disposal in New Hampshire, while also advancing objectives in the new solid waste

---

<sup>3</sup> GSL calculated this value by multiplying the tonnage of out-of-state waste received in 2020 (as shown on Table 1 of the 2022 Biennial Solid Waste Report) by 20 years to project the waste that will be imported during the planning period.

management plan to promote local and regional diversion markets and practices. *See* 2022 Solid Waste Management Plan at Goal 5.

### 3.3.1 Type and Size of the Facility

GSL proposes the construction of a state-of-the-art commercial landfill in Dalton, New Hampshire. The estimated disposal capacity provided by the GSL Facility over its projected life is 10.75 million cubic yards. At an estimated waste density of 1,520 pounds per cubic yard, GSL will provide capacity for about 8,170,000 tons of waste. The estimated total of GSL capacity would provide about 18 years of capacity at the projected fill rate of 600,000 annual cubic yards.

This facility is positioned to be a successor to the NCES landfill in Bethlehem, New Hampshire, after it exhausts its permitted capacity. The new GSL facility will provide disposal capacity for municipalities and customers currently directing waste to NCES for disposal while also providing a disposal resource for other waste generators in New Hampshire and New England.

If the GSL facility capacity is permitted, GSL can commit to providing capacity available for New Hampshire generated solid waste throughout the entire operating life of the GSL facility. Over the projected life of the facility, GSL intends that at least fifty-one percent (51%) of the waste accepted for disposal shall originate in New Hampshire and proposes the inclusion of this commitment as a condition in the permit. This will ensure that the Dalton facility becomes a reliable waste disposal resource for the state and its residents.

### 3.3.2 Location of the Facility and the CWS “Wasteshed”

The proposed GSL facility will be located in the northwestern portion of New Hampshire. It is accessed through nearby Interstate Routes 91 and 93 and U.S. Routes 3, 116, and 142. These major roadways will provide efficient transportation of waste generated in the region and throughout the state to GSL. Figure 2 appended to this application shows the location of the proposed GSL facility and the access routes for reaching the property. It also depicts the nearby location of the existing NCES landfill in Bethlehem. Because GSL expects to provide successor service to many of NCES’s existing customers when that facility exhausts its capacity, the close proximity of these facilities is relevant to an assessment of the public benefit provided by GSL.

GSL’s location in the North Country positions the company to provide continued service to NCES customers in the region once that facility concludes its operations. The following 24 municipalities have historically sent waste directly to NCES for disposal through curbside programs, utilizing their own transportation vehicles, CWS affiliate hauling services, or third party haulers:

Ashland	Easton	Landaff	Plymouth
Bethlehem	Ellsworth	Lincoln/Woodstock	Rumney
Campton	Franconia	Lisbon	Sugar Hill
Charlestown	Goffstown	Littleton	Sunapee
Dalton	Groton	Lyman	Thornton
Dorchester	Hebron-Bridgewater Regional District	Manchester (sludge)	Warren
			Waterville Valley

In assessing public benefit, NHDES must consider where the waste currently directed to NCES will go after that facility exhausts its capacity. The public landfills in Lebanon, Nashua, and Conway cannot accept waste from towns or cities outside of their districts. The Concord WTE facility is typically run at or near full capacity; in 2021, the facility accepted 188,156 tons of waste.

Other facilities that could theoretically accept waste from the NCES service area are thus limited to the Mt. Carberry Landfill and TLR-III, but transportation costs discourage directing waste from the immediate NCES service area to those facilities. The Mt. Carberry Landfill is located approximately 58 miles east of GSL in a sparsely populated area of the state. The potential for Mt. Carberry to serve large portions of the NCES service area to the south is limited by transportation costs, and the fact that waste originating in the North Country is typically hauled by packer trucks or in rolloffs, making all-in disposal pricing particularly sensitive to increased transportation costs. Mt. Carberry also is limited by its permit to using only 305,000 CY (which amounts to about 220,000 TPY at its current in-place density) of its capacity per year on a rolling three-year average. Further, Mt. Carberry currently receives a large volume of out of state waste, thereby limiting its ability to accept an increased volume of in-state tonnage. Of the 329,448 tons of waste that Mt. Carberry received in 2021, approximately 109,301 tons – or 33% – of that waste originated in other New England states (including ADC). *See* 2021 AFR of AVRRDD-Mt. Carberry Landfill at “Annual Waste Receipts by State of Origin” table. As recently as April 25, 2023, AVRRDD sent a letter to the House Environment and Agriculture Committee explaining that Mt. Carberry operates at or near capacity and would be unable to take some portion of the waste stream presently accepted by other landfills in New Hampshire.

The location of TLR-III also limits its potential to accept waste from NCES service areas in the northern and western portions of the state due to transportation costs. Waste Management’s haulers in the northern portion of its service area already dispose of MSW at NCES rather than at TLR-III, likely due to transportation costs to Rochester. GSL will be a cost-effective successor to the NCES facility after it concludes operations to facilitate disposal for the North Country. This is one of many factors NHDES should consider in its evaluation of this application.

Like NCES, GSL is a subsidiary of CWS and thus part of an integrated waste management company providing services to New Hampshire and other states in the region. The following CWS affiliates operate in New Hampshire to collect waste and direct materials to the NCES landfill in Bethlehem:

- Gobin Disposal Systems in Newport;
- NCES transfer station in Bethlehem;
- All Waste C&D Transfer Station in Lebanon;
- Bestway Disposal Services in Belmont;
- Bestway Disposal Services in Raymond; and
- CWS Allenstown Transfer Station.

Another CWS affiliate, Northeast Waste in White River Junction, Vermont, also hauls waste from New Hampshire communities. GSL expects that these CWS affiliates will direct New Hampshire

waste from these communities to GSL after the NCES landfill exhausts its capacity, and thus GSL will continue to provide a benefit by providing disposal capacity to these communities.

These CWS entities provide valuable services to New Hampshire. Gobin and White River Junction collected and transferred municipal solid waste and construction and demolition debris from 44 New Hampshire towns in 2020. Approximately two-thirds of the waste collected and transferred by Gobin was disposed of at NCES. CWS subsidiaries in Massachusetts also provide value to New Hampshire. Casella Waste Management of Massachusetts, Inc. includes the hauling operations and transfer stations in Salem, Raymond, Allenstown, Concord, and Belmont, New Hampshire.

NCES has a business relationship with Monadnock Disposal Services (“MDS”) in Jaffrey, which is a private hauler and transfer station operator not affiliated with CWS. The MDS transfer station serves 58 communities in the south-central portion of the state. NCES is one of four disposal facilities used by MDS.

CWS and NCES thus have a service area encompassing large areas of New Hampshire. A total of 154 towns and cities out of 234 have historically utilized the disposal services of NCES, either directly or through affiliated or unaffiliated intermediaries. Because GSL is located less than ten miles away from the NCES landfill, GSL is well-positioned to provide the same quality service to these cities and towns after the NCES facility closes.

Collectively, GSL’s location and its role in an integrated waste and recycling management company enable it to provide cost-effective disposal capacity to the lightly-populated northwestern part of the state. RSA 149-M:11, III (a), requires NHDES to take account of the advantages created by GSL’s location in making its public benefit determination. This factor also supports a finding of substantial public benefit.

### **3.3.3 Proposed Benefits to Town of Dalton**

CWS subsidiaries like NCES and GSL regularly enter into host community agreements with the municipalities in which their facilities are located to provide financial benefits out of the facility’s revenue to offset any adverse impacts on the residents of those municipalities. GSL has had discussions with the Town of Dalton concerning the terms of a host community agreement. Although no agreement has been finalized or negotiated, GSL has offered the following benefits (among others) to the Town of Dalton:

- Free curbside collection of municipal solid waste and comingled recyclables for all Town residents, non-industrial small businesses, and town-owned buildings, beginning when operations start at the GSL Facility. This represents a \$150,000 benefit in the first year of service alone.
- A property value protection plan to ensure that the owners of homes in the vicinity of the landfill do not lose value as a result of the presence of the facility.
- \$2 million per year in tax reduction benefits.
- Free acceptance of up to 1,000 tons per year of municipal solid waste and construction and demolition debris from the Town transfer station, beginning when the host

community agreement is signed by GSL and the Town. This is a total benefit of approximately \$16,000 in the first year of service.

- Creation of a \$50,000 fund, replenished annually, for improvements to enhance the Town’s aesthetics or promote the health, safety, and welfare of Town residents.

In addition to the proposals presently before the Town, GSL intends to compost leaf and yard waste on site and provide single stream recycling for Dalton residents and other local communities serviced by CWS and third parties. The benefits proposed to the Town will assist the community and also advance the State’s environmental justice initiatives. *See* Section 5.1.7.

#### **4.0 IMPLEMENTATION OF STATE HIERARCHY AND GOALS (RSA 149-M:11, III (b))**

This portion of the application demonstrates that the GSL Facility will assist the state in achieving the implementation of the hierarchy and goals under RSA 149-M:2 and M:3, as required by RSA 149-M:11, III(b). To demonstrate its satisfaction of this criterion, GSL highlights the efforts of CWS company and its subsidiaries in advancing those goals and initiatives in New Hampshire, while also proposing solutions and services GSL will provide if it is approved for operations.

In response to recent changes by the legislature to the solid waste reduction goal and the introduction of a new and expanded solid waste management plan, GSL and CWS have prepared an innovative slate of proposed initiatives intended to harness the companies’ knowledge, expertise, and resources to promote the state’s goals with actions and deliverables. To advance the new solid waste management plan and promote the state’s goals and hierarchy, CWS and GSL have developed a Strategic Resource Management Plan (“SRMP”) identifying four opportunities for new programs, resources, and initiatives to promote diversion and facilitate new services:

- Element 1: Residential Recycling Outreach and Education
- Element 2: Resource Management Planning for Large Generators
- Element 3: Innovation and Circularity Pilot Programs for Target Material Streams
- Element 4: Infrastructure Needs Assessment for the State of New Hampshire

These elements are summarized in Attachment 1. GSL intends for these elements to be incorporated into a solid waste permit as permit conditions. The information gathered through these initiatives will assist the state in its effort to pursue its goals and obtain valuable performance metrics for actions intended to advance the hierarchy and promote the solid waste management plan. The elements of the SRMP are discussed throughout the remainder of this public benefit demonstration.

#### **4.1 State Solid Waste Reduction Goal**

In 2021, the general court revised the State’s solid waste reduction goal, which is codified in RSA 149-M:2. That statute states, in its entirety:

- I. The general court declares its concern that there are environmental and economic issues pertaining to the disposal of solid waste in landfills and incinerators. It is important to

reserve landfill and incinerator capacity for solid wastes which cannot be reduced, reused, recycled or composted. The general court discourages the disposal of recyclable materials in landfills or processing of recyclable materials in incinerators.

- II. The general court further declares a goal to reduce the quantity by weight of solid waste disposed by 25 percent by the year 2030, and by 45 percent by the year 2050. For the purposes of this goal, disposal reduction targets shall apply, on a combined basis, to disposal of municipal solid waste and construction and demolition debris, and shall be measured against baseline quantities of these wastes disposed of in the year 2018. For the purposes of this goal only, municipal solid waste means solid waste generated at residences, commercial or industrial establishments, and institutions, but excludes automobile scrap and other motor vehicle waste, infectious waste, asbestos waste, contaminated soil and other absorbent media, sludge, industrial process waste, and ash other than ash from household stoves. Disposal reduction may be achieved through source reduction as well as diversion including but not limited to reuse, recycling, and composting. For the purposes of this section "goal" shall not establish a mandate.
  
- III. In exercising any and all powers conferred upon the department under this chapter, the department shall use and consider criteria relevant to the disposal reduction goal and solid waste management hierarchy established in this section and RSA 149-M:3. The department shall not take any action relative to the reduction goal which causes the municipalities organized under RSA 53-A and 1986, 139 or RSA 53-B to violate or incur penalties under legal obligations existing on June 26, 1990.

The 2021 amendment to this statute altered the way in which the state will measure its progress in meeting this goal. As NHDES explained in its recent biennial waste report, “the former goal [aimed at 40% diversion] was focused on tracking the quantity of New Hampshire’s solid waste diverted from disposal (that is, recycled, composted, etc.), [while] this new goal tracks the quantity of solid waste disposed in New Hampshire’s landfills and incinerators,” which NHDES expects will be easier to track over time. NHDES Biennial Solid Waste Report (Nov. 2022) at 1.

Utilizing the definitions set forth in RSA 149-M:2, III for “municipal solid waste,” and referencing the biennial solid waste report, the baseline volumes for waste reaching New Hampshire disposal facilities in 2018 are 1,202,916 tons for municipal solid waste and 297,751 tons of construction and demolition debris. *Id.* at 5. Applying the projected reductions to this baseline, this means the state aims to reach the following combined volumes by 2030 and 2050:

	<b>MSW (T)</b>	<b>C&amp;D (T)</b>	<b>Total (T)</b>
2018	1,202,916 <i>(80.16% of total)</i>	297,751 <i>(19.84% of total)</i>	1,500,667
2030	902,200 <i>(80.16% of total)</i>	223,299 <i>(19.84% of total)</i>	1,125,500
2050	601,466 <i>(80.16% of total)</i>	148,866 <i>(19.84% of total)</i>	750,333

This is an ambitious goal, and meeting these objectives will require significant reductions to volumes of MSW and C&D materials reaching the landfill facilities. This is not an outcome that

one facility or one waste generator alone can achieve, but GSL will commit resources and efforts with the SRMP to help the state work towards these objectives as a condition of its solid waste permit. Construction of the proposed MRF will also reduce the volume of waste entering the waste stream and thus advance this goal, as it will create a local destination for recycling waste that can be diverted from disposal in a landfill.

Of course, the GSL facility also satisfies the statement of purpose for the solid waste diversion goal. The statute seeks to “reserve landfill and incinerator capacity for solid wastes which cannot be reduced, reused, recycled or composted,” meaning landfill capacity must be available to receive that waste which cannot be managed otherwise. GSL is poised to serve as a successor to NCES when it ceases operations, and in that regard it will satisfy RSA 149-M:2, I by providing capacity in the North Country to the customers who need it and a destination for waste that cannot be managed by other means in the solid waste hierarchy.

## **4.2 State Solid Waste Hierarchy**

RSA 149-M:11, III(b) requires consideration of the statutory solid waste hierarchy<sup>4</sup> set forth in RSA 149-M:3, which states:

The general court supports integrated solid waste disposal solutions which are environmentally safe and economically sound. The general court endorses, in order of preference, the following waste management methods:

- I. Source reduction.
- II. Recycling and reuse.
- III. Composting.
- IV. Waste-to-energy technology (including incineration).
- V. Incineration without resource recovery.
- VI. Landfilling.

RSA 149-M:11, III(b) therefore consists of two inquiries: (1) whether the proposed facility is part of an integrated set of solid waste disposal solutions providing safe and economical waste management and (2) whether the integrated set of solutions of which the facility is a part is consistent with the hierarchy and promotes diversion to advance the state’s solid waste goals.

It would be contrary to the statutory scheme to consider GSL’s public benefit demonstration outside of the context of the integrated set of solutions in which it participates. Indeed, to do so would be to ignore the first sentence of RSA 149-M:3. The legislature’s support of integrated solutions recognizes that the widespread availability of waste diversion options at the top of the hierarchy depends upon the infrastructure, economies of scale, and cross-subsidies produced by vertical integration of management of the waste stream. For purposes of applying the hierarchy, there is a vast difference between permitting a stand-alone landfill like the Mt. Carberry facility

---

<sup>4</sup> The passage of time has called into question the scientific validity of this decades-old ranking of waste management methods. Attachment 2 to this analysis demonstrates, for example, that in terms of greenhouse gas (“GHG”) emissions, incinerators generate over sixty percent more GHG than low emission landfills with renewable natural gas production such as the GSL facility do.

and permitting a landfill that takes the waste that remains after affiliated companies have deployed multiple strategies to reduce waste production and to recycle, reuse, and compost substantial portions of the waste stream. Like NCES, GSL will become part of CWS's integrated system of disposal and diversion solutions.

This section of GSL's public benefit demonstration provides an overview of the role CWS plays in the coordinated management of solid waste throughout its service territory, including New Hampshire, to advance the State's goals and hierarchy. It is essential that the GSL facility be assessed in this broader context so that NHDES does not overlook the culling and diversion of the waste stream that GSL's affiliates achieve beginning before waste arrives at the curb. Similarly, it is critical to consider the temporal context in which this application is being made. Properly conceived, waste management is not a static science. Improvements in waste management techniques depend not only upon advances in technology but also upon the willingness of individual companies to invest in those technologies and to commit to specific plans to improve sustainability. Hence, it is not simply CWS's current substantial contributions to implementing the hierarchy that NHDES should take into account in analyzing the net benefit to the state from approving GSL's application. Rather, because the public benefit analysis is forward-looking, NHDES should also consider GSL's commitment to increasing opportunities for the diversion of waste to determine how the approval is likely to assist the state in implementing the hierarchy and meeting its goals. CWS's 2020 sustainability report (<https://www.casella.com/blog/casella-releases-2020-sustainability-report>) provides the details of CWS's commitment to the continued attenuation of the fraction of the waste stream requiring disposal.

#### **4.2.1 Source Reduction and Interception**

As a CWS affiliate, GSL is part of an integrated system of resource management facilities located throughout New Hampshire and the region. CWS also manages waste collected by unaffiliated companies, enabling them to "plug into" the integrated system. Among the more recent examples of the accomplishments of GSL's affiliates in reducing or intercepting waste from the source are the following:

- NCES currently operates a transfer station in Bethlehem that diverts solid waste streams that are not allowed to be landfilled. In 2022, NCES had a documented diversion rate of 35%, exceeding the State's documented recycling rate across facilities. *See* NCES AFR (2022) and Table 1. In 2022, NCES received and diverted more than 27,000 tons of clean wood, contaminated soils, and other materials from the waste stream at the site before they could be landfilled; in the first five months of 2023, NCES diverted an additional 9,300 tons of clean wood and contaminated soils. These soils were used for alternate daily cover, and the wood was ground and used for road base to help fortify the roads for the trucks going in and out of the working face. GSL similarly plans to find innovative and proactive solutions to identify waste received at the facility for alternate use at the landfill and in its operations.
- CWS's All-Waste C&D Transfer Station in Lebanon removes wood from the waste stream and processes it into wood chips to be utilized at the Lebanon landfill to stabilize

internal landfill roads and working areas.<sup>5</sup> These efforts reduce the amount of C&D to be disposed in the landfill and put materials that would otherwise be discarded to an alternate, productive use. Where the new solid waste reduction goal distinguishes C&D from MSW in connection with the goals to be met, these achievements in intercepting C&D from the waste stream are of particular relevance following the general court's amendment to RSA 149-M:2.

- CWS and its subsidiaries diverted more than 400,000 tons of food waste and biosolids from the waste stream in 2021, and Casella's Aggregation and Recovery Collaborative ("ARC") in Burlington, Vermont includes the state's first organics depackaging system, which separates non-edible food from packaging so the organics and recyclable packaging can be recovered before entering the waste stream destined for a landfill. NCES also collected and recycled 17.55 tons of food waste in 2022.
- CWS provides food waste collection services for New Hampshire institutions including Dartmouth College, Southern New Hampshire University ("SNHU"), Phillips Exeter Academy, and Dartmouth-Hitchcock Medical Center.
  - The recent implementation of Grind2Energy at St. Paul's School in 2020 offers a snapshot of this technology in action. St. Paul's School is the first high school in the country to utilize this technology, which grinds food waste into an energy-rich slurry from which methane can be extracted for energy production. The biosolid byproduct can be used as fertilizer. Food waste from St. Paul's School is now eliminated from trash cans, rolloffs, and landfill deliveries and converted into energy and fertilizer. This advances two key environmental objectives: source reduction and renewable energy production. Since the installation of Grind2Energy on campus in 2020, the school has captured more than 100 tons of food waste, extracted over 3 tons of fertilizer, and generated more than 9,900 kWh of power.
- CWS collaborates with SNHU and Phillips Exeter Academy for "green move-out" events at the end of each school year to promote the reuse and donation of furniture and other goods as students leave campus. CWS typically provides roll-off containers, transportation services, and signage to encourage participation in this program. The company also coordinates the donation of large materials to organizations like Goodwill NNE, ensuring that such items remain in use and out of the waste stream, and organizes staff and volunteers to manage these green logistics on the date when students leave campus. Participation in "green move-outs" has diverted approximately 100 tons of goods and products to donation and reuse in recent years.
- CWS has cultivated a strong and growing partnership with Goodwill NNE since 2011. In 2019, for example, Goodwill diverted more than 350 tons of material out of the waste stream with CWS's Zero-Sort<sup>®</sup> recycling program. CWS also collaborates with Goodwill NNE to promote the donation and reuse of furniture, textiles, and other goods throughout the region.
- Wood ash is diverted from the waste stream to agriculture, animal bedding, and composting. Casella has historically diverted approximately 8,500 tons of wood ash

---

<sup>5</sup> See Permit No. DES-SW-SP-00-002; permit modification approved September 10, 2018.

- per year from the Granite Shore Power Schiller Station. This diversion is performed through CWS's Casella Organics Group affiliate.<sup>6</sup>
- CWS and its affiliates seek unique opportunities for waste diversion. NCES, for example, recently established a drop box for American flags at the Bethlehem Transfer Station. Operating in conjunction with a local veterans' non-profit group, NCES assists in the proper disposal for American flags to keep them out of the landfill. This is a pilot project GSL and CWS could implement at other locations, as well.
  - In 2021, Casella collaborated with Chinburg Properties in Newmarket, New Hampshire to divert more than 22,000 used books from the waste stream. After coordinating with volunteers, Casella worked with Goodwill NNE to donate many of the books and otherwise keep an estimated 20 tons of paper and cardboard out of the disposal stream.

In addition to solutions and services that reduce the generation of waste, CWS also creates and distributes educational materials intended to promote best practices.

The proposed SRMP also advances the hierarchy by prioritizing recycling and diversion. With Element 2 of the SRMP, for example, CWS and GSL will collaborate with ten large generators across five sectors of the New Hampshire economy to establish performance baselines, goals for reduction, and an implementation plan for meeting those goals. By interfacing with large generators like hospitals, performance venues, or industrial facilities, CWS will identify opportunities to eliminate single-use items and generate operational goals to eliminate redundancies.

Each of these efforts reduces the volume of waste that reaches a landfill, thus advancing the State's solid waste diversion goal and favoring the first method of waste management contemplated in the hierarchy.

#### **4.2.2 Recycling and Reuse**

GSL will be a new component of CWS's integrated solutions for waste reduction and management in New England. As such, CWS and its affiliates – including GSL – are well-positioned to promote recycling in this state and encourage greater implementation of recycling across the private and public sectors. This section of the public demonstration explains how CWS, GSL, and other Casella affiliates will advance the hierarchy's statutory preference for recycling and reuse, which will in turn reduce the volume of the waste stream and bolster the State's efforts to meet the new solid waste reduction benchmarks.

##### **4.2.2.1 Zero-Sort<sup>®</sup> Recycling at GSL and Proposed MRF in Southern New Hampshire**

CWS and its affiliates are innovators in recycling. Like NCES and other Casella facilities, GSL will participate in CWS's single stream recycling program, Zero-Sort<sup>®</sup> recycling. Through this

---

<sup>6</sup> CWS also holds contracts to divert ash from Whitefield Power and Springfield Power, but those facilities closed in the summer of 2019. If the facilities reopen and wish to resume this diversion effort with the company, CWS will accommodate them.

program, GSL will accept commingled clean and broken-down recyclable material such as cardboard, glass, metal, paper, and plastic. The Zero-Sort<sup>®</sup> process separates these materials using state-of-the-art technology, and the materials are then sold and recycled. Zero-Sort<sup>®</sup> makes recycling easier for the customer and thus encourages recycling practices; from 2005 to 2015, when New Hampshire municipalities began incorporating Zero-Sort<sup>®</sup> collection into their waste plans, the volume of recyclables increased by an average of 15%. CWS and its affiliates captured more than 1.213 million tons of recyclables and organics from the disposal stream in 2021.

If the GSL facility is permitted, Casella intends to construct a new single stream recycling processing facility in southern New Hampshire to complement operations of the new Dalton facility and advance the state's goals and hierarchy. GSL proposes that NHDES include the submittal of plans and application materials for the construction of this MRF as a condition to the solid waste permit sought by this application. The new MRF is expected to process approximately 40,000 tons of recyclables per year, which would include approximately 29,000 tons of materials collected in New Hampshire that are currently processed at another facility in Massachusetts. The new facility will thus reduce the time and costs associated with delivering New Hampshire recyclables from the curb to the recovery center, but it will also incentivize additional recycling by New Hampshire municipalities and businesses. The goal would be to source another 11,000 tons annually from New Hampshire municipalities and businesses, thus promoting recycling and diverting additional waste from landfills to pursue the new solid waste diversion goal. The climate change impact associated with recycling this additional volume of materials is significant, creating a reduction in greenhouse gas emissions of 29,441 metric tons of carbon dioxide equivalent annually based on the US EPA Warm Model.

In addition to promoting, facilitating, and encouraging the recycling of New Hampshire materials within the boundaries of the state, the proposed MRF will also create 25 new jobs for local residents and generate projected revenues of approximately \$4.6 million. Looking ahead twenty years, the new facility would generate an estimated \$212 million in new wages and revenues for New Hampshire. By encouraging and facilitating local recycling in the State of New Hampshire, the proposed MRF will also assist the state in meeting its ambitious waste diversion goal benchmarks by eliminating more materials from the waste stream that would otherwise reach a landfill.

#### **4.2.2.2 Recycling and Reuse Initiatives at NCES to be Implemented at GSL**

New projects and initiatives in Dalton will complement the ongoing efforts of CWS and its regional subsidiaries to encourage recycling and the reuse of materials. NCES currently engages in the following recycling initiatives, each of which will be implemented at the GSL facility, as reflected in its operating plan.

- NCES provides town-wide, free curbside services to Bethlehem residents for ZeroSort<sup>®</sup> single stream recycling, which in turn promotes recycling by making it free and convenient to local residents. GSL has proposed a comparable service for Dalton residents in its host community agreement negotiations. *See* Section 3.3.3.

- Bethlehem and Franconia send recycling directly to NCES for processing, and the facility provides a local and affordable resource for those recycling initiatives. NCES also receives approximately 10 tons of recyclables per week from various commercial locations in the White Mountains Area via a third-party contract. Given GSL's proximity to the NCES facility, GSL can provide commensurate services to these towns after NCES ceases operations.
- A summary of NCES's recent diversion and extraction practices includes:
  - NCES extracts wood pallets and glass from the waste stream. It grinds these materials for use in roadways and gas trenches, rather than depositing it in the landfill.
  - NCES removed more than 118 tons of scrap metal and 41 tons of tires from the waste stream for recycling in 2022. In the first five months of 2023, NCES diverted approximately 10 tons of wood pallets and 36 tons of scrap metal from the waste stream.
  - Last year, NCES collected 10,000 pounds of televisions, 1,209 pounds of computers and laptops, and more than 8,000 pounds of miscellaneous electronics for recycling.

GSL will also extract scrap metal and similar materials as part of its working face operations to reduce the volume of materials entering the landfill.

- NCES coordinates the recycling of potentially hazardous materials such as used oil, CFC-containing appliances, compact and full-size fluorescent lamps, mercury-containing devices, antifreeze, auto and rechargeable batteries, cathode ray tubes and video screens. In 2022, NCES received and recycled 413 pounds of batteries, including lithium-ion batteries, and 707 pounds of lamps, including those with fluorescent, halogen, and LED lights. It also recycled 18,000 pounds of large appliances that contained Freon and diverted those items from the landfill.
- In 2022, NCES diverted 11,000 pints of paint, pesticides, and flammable material from the landfill through its annual hazardous waste collection event. It also recycled approximately 600 gallons of used oil that were reused in the furnace for the facility's on-site maintenance shop and 50 gallons of antifreeze collected from residents. GSL will hold similar collection events to coordinate the recovery and recycling of these materials twice per year, offering the service to Dalton and abutting communities.
- NCES recently implemented a recycling service for all schools in the SAU 16 School District, which includes schools in Exeter, Stratham, Newfields, Brentwood, and East Kingston. This is an opportunity to encourage recycling and facilitate the service for large generators. GSL will pursue opportunities to work with schools and similar large-scale generators to promote recycling and other elements of the hierarchy with Element 2 of the SRMP.

NCES recently partnered with Apparel Impact, a veteran-owned enterprise that utilizes drop-boxes for textiles and clothing. The Bethlehem Transfer Station now includes a drop-box so customers may donate lightly-used clothing or materials, rather than putting them in the waste stream for disposal at the landfill. Casella has also donated recycling services to the Veterans 2 Veterans Group Thrift Store in Franconia. This is a non-profit thrift store and another destination for clothing and materials that might otherwise be thrown away.

GSL will assist at least ten New Hampshire solid waste generators per year with establishing or improving programs to promote recycling and other solid waste disposal methods listed in the hierarchy. NCES already does this with its current in-state customers by providing recycling services, promoting composting, and facilitating the safe disposal of hazardous waste, and GSL intends to improve on that existing obligation with additional services through the SRMP to carry on that initiative after NCES concludes its operations.

NCES has always welcomed opportunities to educate the public about recycling and the waste stream. In 2022, it hosted an educational “open house” at the Bethlehem facility. Members of the public received guided tours of the landfill and an opportunity to meet the engineers and experts assisting NCES with environmental safeguards, gas collection, hauling, and other aspects of operations. Approximately 300 attendees from thirteen communities and Plymouth State University attended this event, making it a unique opportunity to share resources and information directly with a broad audience. NCES frequently hosts open houses, public meetings, and school field trips with members of the public to educate the community about waste management and recycling, and GSL will facilitate similar visits and opportunities at the proposed Dalton facility.

#### **4.2.2.3 CWS Recycling and Reuse Efforts**

Casella’s recycling operations with NCES in Bethlehem and the North Country reflect only a fraction of the work CWS undertakes to promote and encourage recycling throughout New England. This section provides an overview of CWS’s continued recycling and reuse initiatives, which will complement and support the work GSL proposes to do to promote recycling in New Hampshire.

CWS has cultivated a strong and growing partnership with Goodwill NNE since 2011 in which CWS optimizes recycling at Goodwill NNE facilities and arranges for the organization to provide reuse/donation services to CWS customers. In 2019, Goodwill honored CWS with the Spirit of Goodwill Award for innovative work that prioritizes the sustainability of the earth and the stability of people. In 2020, CWS and Goodwill NNE were awarded the 2020 Innovation Award at the New Hampshire Businesses for Social Responsibility’s annual spring conference. Casella has invested volunteer time and industry resources to assist Goodwill in meeting its sustainability goals. Goodwill is also engaged in a broader resource management strategy prepared by Casella. As part of that strategic planning, Goodwill is transitioning to reusable containers for storing and transporting its donated materials, creating a more sustainable system for managing products that is expected to pay for itself in under three years.

In 2022, CWS diverted 34,000 tons of New Hampshire recyclables to Casella’s ZeroSort<sup>®</sup> materials recovery facilities. A snapshot of the company’s 2022 recycling efforts in the state follows:

- Collection of over 500 tons of recyclables from New Hampshire communities by CWS’s division in Montpelier.
- Casella works with commercial accounts throughout the state of New Hampshire to assist in improving recycling practices and managing recycled waste. For example, CWS contracts with Coca-Cola in Londonderry and Belmont to divert industrial

- recyclables out of the waste stream. In 2021, the Coca-Cola Northeast recycled more than 570 tons of industrial recyclables using Casella's depackaging capabilities to separate liquid material from packaging.
- CWS operates waste and recycling transfer stations in Allenstown, Raymond, Concord, Newport, Lebanon, and Belmont, which are available to New Hampshire residents and businesses for disposal of both recyclables and other difficult to manage materials such as e-waste, tires, and waste oils, in addition to MSW and C&D. These transfer stations also accept municipal recycling collected curbside by Casella haulers from Danville, Laconia, Concord, Hebron, and Belmont and third-party haulers traveling from other towns and cities. CWS provides hauling and transfer services for recyclables from other municipally operated transfer stations in towns like Pembroke, Sanbornton, and Alton. Casella then delivers these recyclables to materials recovery facilities for processing. The convenience of these services encourages additional recycling, thereby diverting more waste from the waste stream, and provides logistical support to municipalities to help them provide recycling services to local residents.
  - CWS provides free recycling services for large events to encourage recycling and divert materials from the waste stream. In 2022, CWS donated recycling services for the "Girls on the Run NH" races, which hosted more than 7,500 racers and their supporters at outdoor community events. CWS provided similar services to the CHAD Half Marathon at Dartmouth Children's Hospital, the Prouty Cancer Walk and Ride, and the Rescue Me 5K in Lincoln. Casella provided receptacles for recycling so materials that would have otherwise ended up on the ground or in a waste bin were directed to a recycling facility, thus reducing the volume of trash gathered at these large-scale events.

Casella's regional recycling practices also inform the work it can do in New Hampshire with the GSL facility. For example, CWS has partnered with Boston University to promote resource management and zero waste strategies, including on-campus thrift events to encourage the reuse of clothing, the "Goodwill, Not Landfill" program, and a lab plastics recycling pilot program. CWS and GSL will pursue similar projects to collaborate with large-scale generators, including schools and educational facilities, with the SRMP when the GSL facility is permitted.

Casella's brokerage division provides recyclables marketing services for many towns in New Hampshire and leverages its professional knowledge of commodity markets to help these municipalities receive the best possible prices for the recycled commodities that they collect and process from local customers. The brokerage division at Casella coordinates direct shipment of these materials to domestic mills which then use the recycled commodities as raw material. The brokerage division works with customers in Wolfeboro, Ossipee, Thornton, Peterborough, and Conway to educate them on ways to "clean up" their plastics so they can be processed and directed to final end sites.

These recycling efforts will be economized and streamlined when CWS proceeds with plans to establish a new materials recovery facility in southern New Hampshire. Materials currently diverted to the Charlestown, Massachusetts MRF, for example, could be directed to the local New Hampshire facility, reducing travel time and transportation costs and helping NHDES realize its

objective to advance recycling efforts in the state and pursue the benchmarks in the waste diversion goal.

The collapse of foreign recycling markets has temporarily made municipal recycling programs uneconomic, leading some New Hampshire towns to begin dismantling their programs. CWS has counseled against this reaction. It has informed municipal customers considering a cessation of recycling that facilities are being developed in North America to replace the capacity formerly provided in Asia and through its Recycle Better initiative it has disseminated guidance to the public on how to avoid contamination of recyclables and which wastes are in fact recyclable. It has also taken steps to assist New Hampshire municipalities to improve their recycling practices, thereby avoiding some of the impact of the downturn in the market. For example:

- Laconia faced economic pressures because it had multiple recycling drop-off locations in the city that attracted highly contaminated material. CWS collaborated with Laconia to install centralized compaction equipment in a location easily monitored by local officials, ensuring the continued practice of recycling in the city, improved quality of the recycled materials, and reduced hauling costs for the city. CWS has also worked with Laconia to transition to automated collection in April 2023. Automated collection increases efficiency by combining waste collection and recycling with a single truck, which in turn makes waste collection and recycling more convenient for customers.
- CWS worked with the City of Concord to install specialized container lids to prevent the contamination of recyclables collected in the downtown district; this effort allowed downtown businesses to continue productively recycling and diverting materials out of the waste stream.
- NCES recently won business to accept residential recycling from curbside collection and transfer stations in Pembroke, Newmarket, and Danville, expanding its service area for facilitating recycling and providing a cost-effective destination for recyclables.
- NCES assisted the town of Belmont in its transition to automated collection and coordinated with the town to adjust the recycling service schedule to manage customer costs while still providing continued service.
- NCES is presently working with the Town of Raymond's selectboard to install a Casella recycling compactor at the town's transfer station. This will increase capacity for recyclables and minimize the number of roll-off hauls at the facility, thus promoting more recycling and efficiencies for the community.

In addition to its municipal accounts, CWS collaborates with commercial accounts in New Hampshire to improve their recycling practices. For example, Hypertherm, Inc. generates industrial waste in Hanover that is difficult to recycle through conventional means. Each month, the facility processes over 50 tons of loose, baled, supersacked or ground film plastics, rigid plastics, plastic tubing and hosing, plastic and wooden reels, label backing, cardboard, metal, and other unique and hard-to-recycle items. CWS worked with Hypertherm to establish an innovative recycling program called an Aggregation and Recovery Collaborative (ARC), which, in conjunction with Zero-Sort recycling, has helped to increase substantially Hypertherm's recycling rate for these materials. Multiple industrial waste generators, including hospitals and manufacturers, use the Casella ARC at Hypertherm to sort, segregate, and process hard-to-recycle materials, thus providing a destination and recycling solution for materials that would otherwise

be disposed of in a landfill. The ARC model presently enables nearly 1,000 tons per year of recycling for customers in the region, and Hypertherm's recycling rate exceeds 98%. This partnership has made it easier for Hypertherm to recycle these items and substantially reduce the waste it sends to disposal facilities. This partnership received the 2016 New Hampshire Governor's Award for Innovative Partnership. Casella Waste Management of Massachusetts, Inc. also manages waste for notable industrial businesses within New Hampshire.

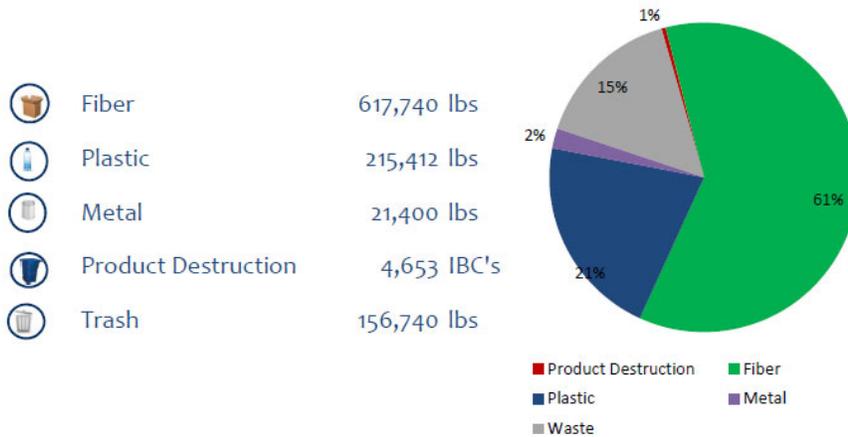
CWS encourages its commercial accounts to continue improving their recycling practices by providing periodic Recycling & Diversion Progress Reports, which describe the type and quantities of materials diverted from a customer's facility and provide insight into diversion practices over time. This report keeps customers informed about the productivity of their recycling and diversion efforts and thus encourages continued adherence to these practices. An anonymized exemplar of this report is set forth below.

## Recycling & Diversion Progress Report

Prepared For: **[[Manufacturer in NH]]**  
 Time Period: **January 2019 - December 2019**

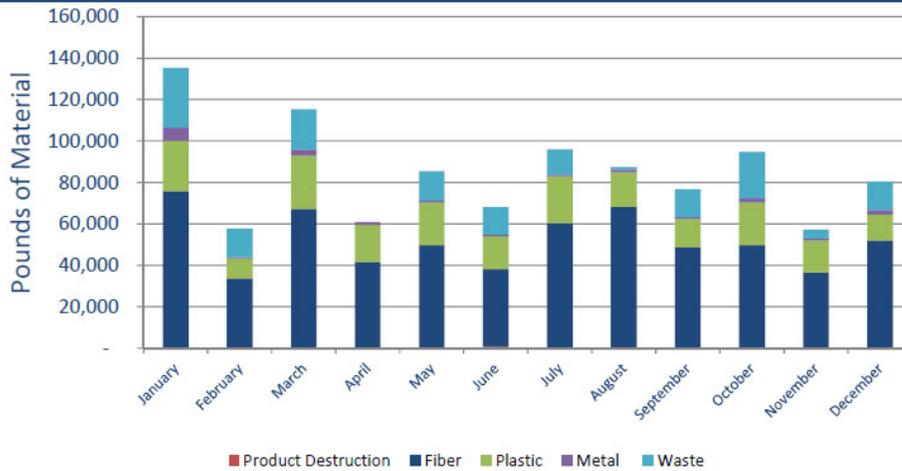


### Breakdown



1,015,945 lbs      Diversion Rate: 84.6%

### Trend



Sample Recycling & Diversion Progress Report provided to a CWS customer

These efforts to identify opportunities and improvements in recycling practices are not limited to industrial producers and customers. CWS has also taken steps to improve individual residents' recycling practices with pilot programs and curbside tagging. In 2022, CWS partnered with the Biddeford Public Works Department in Biddeford, Maine to reduce recycling contamination, as contamination rates are among the factors that increase the price and reduce the opportunities for recycling. In this initiative, a group tagged over 5,000 bins over a three-week period to educate the public about contamination. Through this effort, CWS and Biddeford were able to reduce the contamination rate from 24% to 12%.

CWS proposes a similar initiative in Element 1 of the SRMP if GSL is approved, as it will launch a pilot program in three New Hampshire municipalities to develop key performance indicators, educate the public through different media and platforms, and conduct a follow-up audit to track progress. In addition to creating real-time results in three New Hampshire communities, the resulting data will better inform NHDES's efforts to promote recycling across the state to advance the solid waste management plan's goals and promote the statutory hierarchy. In this regard, CWS can leverage its resources and skills to assist the state with tangible metrics, thus advancing the state's goals with actual results and information NHDES could employ to develop future programs.

#### **4.2.2.4 Recycling Education and Outreach**

CWS and its subsidiaries proactively engage with the public to educate people about the importance of recycling and sustainable disposal measures. The NCES facility in Bethlehem holds informational events at the landfill, including "open houses," school field trips, and tours for members of the public. Last year, the facility hosted an "open house" for over 300 attendees and held multiple site tours for the public. GSL looks forward to hosting similar events at its Dalton facility and engaging with residents, educators, and local organizations about recycling initiatives.

CWS estimates that its employees spend more than 1,400 hours per year performing recycling outreach and education events with local administrators, officials, and members of the public. These events include conversations with town recycling coordinators, working with customers to improve signage, and speaking at local government meetings about diversion practices. The company has held events to promote recycling awareness at local school systems in Auburn, Derry, Stratham, Newfields, East Kingston, and Allenstown. CWS also sponsors an annual calendar art contest for students in New Hampshire and other Casella service areas. Students can submit artwork related to the environment, recycling, re-use of materials, reduction of waste, or landfills and recycling trucks for consideration in the company's annual calendar. Students must create their artwork in the classroom, and teachers have incorporated this contest into their curricula with conversations about reducing waste in the waste stream and reusing and recycling materials to benefit the environment. These programs inculcate awareness of the reasons for waste diversion among children and can instill lifelong commitment to diversion. GSL intends to offer educational opportunities to students and members of the community at its state-of-the-art facility in Dalton. If the MRF is constructed in southern New Hampshire in conjunction with this project, CWS also intends to open that facility for educational opportunities.

Educational opportunities do not always involve face to face conversations. CWS uses "Oops tags" at the curb to educate customers about materials in their disposal bin that could have been set aside for recycling. CWS also promotes recycling and sustainability initiatives on its social media pages. CWS and its affiliates routinely invest time and resources to conduct extensive auditing, outreach, and education initiatives to help customers throughout the state address contamination in their recycling streams to ensure the ongoing sustainability of recycling in the state.

CWS has generated a comprehensive library of posters, flyers, and video materials to support and promote recycling. These materials include:

- A “Truth About Recycling” flyer that addresses common misconceptions about recycling. This flyer has been shared with large institutional accounts like SNHU, St. Paul’s School, and Phillips Exeter Academy to promote recycling for those customers, and local communities seeking to promote recycling and reuse have used these materials to raise awareness with local citizens.
- Educational materials for students in higher education and elementary school, like the “Green Sports Playbook” providing best practices and strategies to make sports complexes and events “go green,” and an interactive sorting game teachers can print and distribute to teach young children how to recycle.
- As a result of the COVID-19 pandemic, more people are utilizing single-use personal protective equipment, such as gloves and face masks. The US EPA has advised that these materials, as well as disinfectant wipes and medical waste, should be kept out of recycling bins.<sup>7</sup> CWS has created decals that customers can affix to their recycling bins to encourage the proper disposal of these items while also alerting customers that improper disposal can prevent the recycling of other materials.
- Seasonal tips for zero-waste recycling for each season of the year. Readers can find tips for recycling children’s school supplies at the end of the school year in spring or get ideas for sustainable holiday giving in the winter.

Examples of these educational materials are provided in Attachment 3 to this public benefit demonstration. All of these materials are hosted for free on the CWS website at its “Recycle Better” hub for public education, best practices, tips, and educational resources.<sup>8</sup>

Casella’s new “Resource Rover” launched in 2021 and provides another opportunity to inform and educate audiences about recycling. Made from a repurposed shipping container, the Resource Rover is an educational arcade on wheels containing two games, four interactive displays, and a life-size garbage truck cab. The Resource Rover provides helpful tips about recycling and sustainability and can be moved to different locations.



<sup>7</sup> EPA.gov, “EPA Stresses the Importance of Recycling and Proper Disposal of Personal Protective Equipment,” May 12, 2020 (<https://www.epa.gov/newsreleases/epa-stresses-importance-recycling-and-proper-disposal-personal-protective-equipment>) (last accessed October 16, 2020).

<sup>8</sup> These materials are available on demand online at <https://www.casella.com/services/recycling/recycle-better>

CWS is also leveraging mobile applications to reach consumers where they already are and promote good recycling practices. CWS launched “Beyond the Bin” podcasts to provide stakeholders with additional information about the company, the industry, and CWS partners that create sustainable solutions. Episode titles include “Food Waste Meets Recycling,” “Closing the Loop on Composting,” and “Waste & Recycling: Society’s Mirror.”<sup>9</sup> These are dynamic tools to connect with the public and reach a larger audience to provide education about waste management in new media.

### **4.2.3 Composting**

Both the solid waste management hierarchy and the state’s solid waste management plan acknowledge the vital importance of managing organic waste. Food waste alone presently accounts for nearly 24% of the waste stream. Encouraging and facilitating composting is an important tool for managing organic waste and diverting it from landfills for disposal.

NCES provides composting services to residents and customers in the North Country. By way of illustration, NCES received and processed approximately 4 tons of yard waste for composting in the first four months of 2023. It grinds those materials together for residential use and beneficial uses at the NCES landfill site, thus diverting it from the landfill itself. Last year, NCES also commenced receiving food waste sent to a composting facility in Maine. In 2022, NCES distributed 55 cubic yards of nutrient-rich biosolids generated by Casella Organics to local community members. GSL plans to offer composting services to regional residents commensurate with those provided to NCES customers, and it will also partner with Casella Organics to distribute composted biosolids to local community members for beneficial use.

CWS also promotes composting in New Hampshire and is a member of the U.S. Composting Council. In Massachusetts and Vermont, CWS developed new tools to promote and encourage composting. In partnership with Casella, Fairfax, Vermont has utilized a waste and recycling app powered by Recollect with a searchable tool for recycling and composting education. As of December 2022, more than 400 people had installed the app, and over 5,600 items had been searched. In partnerships with Boston University and University of Massachusetts-Lowell, CWS developed and implemented on-campus composting programs for those large-scale waste generators. CWS and GSL will expand on the creativity and expertise drawn from past experience to develop programs in New Hampshire to promote composting.

### **4.2.4 Waste-to-Energy Technologies (Including Incineration)**

CWS has partnered with RUDARPA, Inc. to develop a plant that would convert methane generated by the landfill into a clean and renewable form of natural gas. RUDARPA received its temporary permit from the NHDES Air Resources Division on January 24, 2020 for the emission unit that will convert landfill gas generated by the NCES landfill into renewable natural gas, and CWS and RUDARPA broke ground on the project on May 19, 2021. Upon full implementation of the RUDARPA project the NCES facility will make substantial progress toward zero emissions from the landfill. This will complete the evolution during CWS’s ownership of NCES from passive venting of landfill gas to increasingly efficient extraction and destruction or beneficial use of the

---

<sup>9</sup> For more about “Beyond the Bin,” visit <https://www.casella.com/beyondthebin>

gas. NCES is presently commissioning the renewable natural gas plant and aims to send pipeline quality gas to market in the coming weeks.

GSL intends to develop a renewable energy program in association with the landfill based on landfill gas production or thermal energy, and it has offered to share any income stream it receives in excess of its capital and operating costs after a period of twelve consecutive months with the Town of Dalton. Such an arrangement would thus benefit the environment by harnessing and utilizing byproducts of the landfill while also directing a financial benefit to the local community. This proposal is one of many concepts set forth in the draft host community agreement that is currently before the town but has not yet been accepted by it.

CWS also engages in waste-to-energy projects like Grind2Energy and other technologies for food waste recovery that convert food scraps into an energy source. *See* Section 4.2.1, above. materials to Envirem Organics for recovery and reuse.

#### **4.2.5 Incineration without Resource Recovery**

GSL does not propose to utilize this solid waste disposal method.

#### **4.2.6 Landfilling**

Although landfilling is the last means of waste management in the hierarchy that does not mean that development of landfill capacity is to be discouraged by NHDES. The need for landfill capacity is driven by many factors, including federal, state, and local policy decisions, economic costs associated with the alternatives to landfilling, the state of technology, and the willingness of individuals to make the effort to reduce, reuse, and recycle. However, landfills are a necessary component of an integrated system of waste management used to dispose of wastes that are not or cannot be managed with the more preferred methods listed in the hierarchy. Properly viewed, landfilling is an essential element of the hierarchy, not a disfavored alternative. Even if the state were to eventually meet the target diversion rates set forth in RSA 149-M:2, disposal capacity will still be needed for at least 50% of the waste stream. Incineration does not dispose of waste but reduces its quantity and creates ash residuals that must be landfilled, and some waste is simply incapable of being recycled for alternative uses under current technology. The GSL facility, then, will play an indispensable role in the state's waste management scheme.

### **5.0 ASSIST IN ACHIEVING GOALS OF STATE AND DISTRICT SOLID WASTE MANAGEMENT PLANS (RSA 149-M:11, III(c))**

To the extent possible, this Section 5.0 demonstrates how the proposed GSL facility will be consistent with state and district solid waste management plans and assist in achieving their goals. RSA 149-M:11, III(c) requires NHDES to consider the following factor in determining public benefit:

The ability of the proposed facility to assist in achieving the goals of the state solid waste management plan, and one or more solid waste management plans submitted to and approved by the department under RSA 149-M:24 and RSA 149-M:25.

As a preliminary matter, at least one aspect of this requirement has to a large extent been mooted by the passage of time. The GSL facility is located in the planned but never formed Upper Grafton Lancaster Area Solid Waste District. The district was to consist of the Towns of Bethlehem, Dalton, and Lancaster, and has long been inactive. This is consistent with the statewide trend over the last 25 years away from regional districts and from the preparation and approval of formal solid waste plans.

## **5.1 State Solid Waste Management Plan**

NHDES adopted a new solid waste plan in 2022, revising the plan it had previously utilized for nearly 20 years since its adoption in 2003. The new plan proposes “goals, strategies and actions . . . [which] are intended to inform actions and decision-making by NHDES as well as the regulated solid waste industry, municipalities, the New Hampshire General Court, businesses, non-governmental organizations and the general public.” NHDES Solid Waste Management Plan (September 30, 2022) (“SW Plan”) at 2. NHDES seeks to “manage our waste to minimize negative consequences while reducing, recycling and recovering to the greatest extent possible.” *Id.* This objective is reflected in the eight goals set forth in the new plan:

- Goal 1: Reduce the Quantity of Solid Waste Generated
- Goal 2: Reduce the Toxicity of the Solid Waste Stream
- Goal 3: Maximize Diversion of Residential, Commercial, and Industrial Solid Waste
- Goal 4: Ensure Adequate Capacity for Management of New Hampshire-Generated Waste
- Goal 5: Develop Local Markets for Waste Diversion
- Goal 6: Encourage Solid Waste Infrastructure and Practices That Support State and Federal Climate Change Initiatives
- Goal 7: Ensure That Solid Waste Policies and Regulations Support State and Federal Environmental Justice Initiatives
- Goal 8: Ensure Sustainable Funding Sources to Support Solid Waste Management Initiatives

The new solid waste plan contemplates collective efforts from “residents, businesses, and other stakeholders engaged in solid waste management, and engagement by public and private partners to achieve the goals. SW Plan at 1. To this end, then, GSL is one of many entities whose actions can advance those plans in conjunction with other entities, government officials, and individuals. This application thus examines how GSL will assist the State in achieving each of these goals and how GSL can advance the “action” items associated with each goal, either with its own operations or in partnership with CWS affiliates and other stakeholders.

### **5.1.1: Goal 1: Reduce the Quantity of Solid Waste Generated**

This goal focuses on approaches to prevent waste from being generated in the first place. SW Plan at 9. CWS engages in extensive reduction efforts throughout its service territories as demonstrated elsewhere in this demonstration of GSL’s public benefit. It is the availability of its own waste

disposal capacity in the state that enables CWS to pursue these strategies. Without disposal capacity, CWS would experience a significant reduction in the volumes of waste over which it would exercise the control necessary to maximize diversion.

CWS and GSL will promote several of the “actions” enumerated in the state’s solid waste management plan to further this goal.

- *Action 1.1 – Development of Public Education Materials, Including Online Resources*

With this goal and action item, NHDES intends to develop a library of educational materials to educate residents, municipalities, and businesses about the waste management hierarchy and source reduction. *Id.* Potential topics include promotion of waste reduction and reuse, avoiding single-use items, and identifying community-wide events for reuse.

CWS has already prepared a large volume of educational outreach materials for publication and circulation. These materials are available for free on the “Recycling Better” hub at the Casella website.<sup>10</sup> CWS materials include:

- Posters and flyers describing the proper disposal of recyclables, trash, food waste, and personal protection equipment, which can be placed near receptacles to inform the public and reduce contamination of waste and recycling streams;
- Blogs and podcast episodes describing nuances of the waste stream, expert opinions, and deep dives on issues of sustainability and waste management;
- Informational videos about sustainability and best practices for recycling, which can be shared on social media networks or municipality websites (among other uses); and
- Toolkits for students of all ages to promote recycling to young learners.

CWS presently distributes these materials to a large and diverse audience. The “Truth About Recycling” flyer, for example, has been shared with institutional accounts like SNHU, St. Paul’s School, and Phillips Exeter Academy to promote recycling for those customers. A similar flyer was also distributed to every individual resident in the towns and cities serviced by CWS in Vermont and New Hampshire, ensuring broad distribution of these educational materials that promote recycling and inform the public about reduction of the waste stream. NHDES could similarly utilize these educational materials, prepared with the resources and subject matter expertise of an integrated waste management company, to advance Goal 1 of the new solid waste plan.

GSL also intends to educate the public about recycling and source reduction with site tours and open house events, similar to the NCES facility in Bethlehem. These events provide an opportunity to experience a state-of-the-art facility firsthand while talking with experts and engineers familiar with the operations of the landfill. GSL will also continue the practices of NCES and GSL to promote reuse with local swap shops, non-profits, and donation events to make the public aware of alternative ways to donate goods.

---

<sup>10</sup> These materials are available on demand online at <https://www.casella.com/services/recycling/recycle-better>. A sampling of the materials provided on the “Recycle Better” hub are provided in Attachment 3.

GSL and CWS have also developed plans to expand and develop additional recycling outreach and education in New Hampshire with Elements 1 and 2 of the SRMP, and Element 3’s proposal to target certain material streams and hard-to-recycle items will also promote recycling in the state.

- *Action 1.2 – Promotion of Food Rescue and Donation*

Food waste and the management of organics are important priorities at CWS today. Indeed, this waste presently comprises 24% of the waste stream, and the decomposition of this organic material is a key generator of methane gas in landfills. In 2021, CWS and its subsidiaries diverted more than 400,000 tons of food waste and biosolids from the waste stream. The company’s efforts to manage food waste include:

- The implementation of Grind2Energy technology at St. Paul’s School and other institutions captures food waste and converts it into energy-rich slurry with anaerobic digestion technology;
- Diversion of wastewater treatment plant byproducts to an organics recovery center for reuse; and
- Installation of depackaging technology at CWS’s Burlington, Vermont ARC to advance recycling of plastics and diversion of organic food waste.

Element 3 of the SRMP reflects a focus on food waste and the elimination of that material from the waste stream. CWS and GSL intend to establish pilot program in some New Hampshire communities to explore and expand access to curbside food waste collection, neighborhood drop-off for those scraps, and backyard composting education. To this end, CWS proposes a targeted pilot program for organic materials to maximize the diversion of those items from the waste stream altogether, thus reducing the volume of waste that must be managed in New Hampshire. Like NCES, GSL also intends to facilitate on-site composting for leaf and yard waste.

CWS has developed educational materials to promote food rescue and reduce food waste. The “Recycle Better” hub on the CWS website features information sheets explaining what kinds of food items can be composted. Composting diverts materials from ever reaching the waste stream, thus advancing the state’s solid waste diversion goal, and it also advances the waste management hierarchy.



NHDES can utilize CWS's free user-friendly flyers to promote effective composting and the reduction of food waste that reaches landfills.

- *Action 1.5 – Directory of Organizations Facilitating Reuse of Surplus Items*

With this action item, NHDES indicates an interest in promoting the visibility of reuse organizations like Habitat For Humanity and the Reuse Network. To this end, the State intends to “research and compile a directory” of such organizations serving businesses and institutions. As GSL has indicated throughout this public benefit demonstration, NCEC and CWS presently collaborate with several organizations centered on reuse, and thus GSL reiterates those organizations here for inclusion in NHDES's directory:

- Goodwill NNE – Collaborating with CWS for green move-out events on college campuses, extraction of reusable items from the waste stream, and other customer-specific projects to divert materials to reuse, rather than a landfill.
- Veterans to Veterans Group Thrift Store (Franconia) – Non-profit thrift store for the reuse of clothing and materials.
- Apparel Impact – A veteran-owned enterprise utilizing drop-boxes to divert textiles and clothing to reuse.

- *Action 1.6 – Assist Schools, Businesses, and Manufacturing Facilities with Waste Audits*

CWS provides waste audits to identify opportunities for waste reduction and cost savings. CWS presently prepares Recycling & Diversion Progress Reports for customers to describe the type and quantities of materials diverted from a facility and provide insight into diversion practices over time. An exemplar of this report is shown in Section 4.2.2.3 of this public benefit demonstration, and continuing this practice of providing audit reports for GSL and CWS customers will educate the public about diversion and identify practices that could be altered to avoid generating waste in the first place.

Element 2 of the SRMP will further leverage these waste audits to improve source reduction. CWS proposes targeting ten large waste generators across five sectors of the New Hampshire economy: industrial, college/university, healthcare, retail, and events/performance venues. CWS will work with these generators, offering subject matter expertise and industry resources, with the goal of establishing performance baselines to then develop a plan for implementing goals for waste reduction and reuse. This includes efforts to eliminate the use of single-use products, prioritization of reduction opportunities, and promoting culture changes that favor sustainability and zero-waste initiatives. By including this proposal as a permit condition of the GSL permit, GSL will have an opportunity to gather data about the efficacy and viability of these efforts in New Hampshire businesses while also identifying strategies that work to effect change in consumer practices.

- *Action 1.8 – Permitting Provisions for Maximizing Waste Reduction*

The state solid waste plan contemplates including provisions in facility permits that require permittees to “assist and educate their customers and the general public in maximizing waste reduction.” GSL encourages NHDES to include such a provision in the GSL permit, as GSL

welcomes the opportunity to continue educating the public on these issues. It is also consonant with existing permit conditions for other facilities; the NCES permit modification for the Stage VI facility, for example, requires NCES to assist ten or more New Hampshire waste generators with establishing or improving programs that assist in the implementing of the goals and hierarchy. *See* NCES Permit Modification, Permit No. DES-SW-SP-03-002, Oct. 9, 2020, at Condition 27(e). A similar requirement for GSL will promote the goals of the new state solid waste plan while also developing important connections between GSL and New Hampshire generators to encourage better practices and source reduction.

### **5.1.2: Goal 2: Reduce the Toxicity of the Solid Waste Stream**

This goal seeks to reduce the toxicity of the waste stream with source reduction and the diversion of household hazardous wastes (“HHW”) and materials containing chemicals like PFAS. SW Plan at 10. As part of this effort, NHDES seeks to develop educational materials and gather valuable information to guide its efforts to reduce the toxicity of the waste stream. GSL and CWS can assist in both efforts.

- *Actions 2.1 and 2.2 – Coordinate with NHDES for Education and Outreach about HHW and Toxic Chemicals; and Action 2.6 – Data Collection for HHW*

Transfer stations managed by CWS affiliates in Bethlehem and other communities aid the state in achieving its goal of reducing the toxicity of the waste stream by providing residents and businesses with a convenient alternative to landfill disposal for universal and other wastes prohibited from being landfilled. These include wastes such as antifreeze, auto and rechargeable batteries, cathode ray tubes and video screens, compact and full-size fluorescent lamps, mercury-containing devices, used oil, and CFC-containing appliances.

CWS will continue operating these transfer stations, and GSL – like NCES – will host periodic hazardous waste collection events so the public will have a destination for toxic materials that would otherwise enter the waste stream. This, in turn, presents an opportunity for GSL to quantify the types of waste collected and the sources from which it is derived, information that can be gathered at the source by GSL and shared with NHDES to advance this goal. GSL also intends to perpetuate the public outreach efforts employed at the NCES facility to educate local residents about the importance of proper disposal for hazardous waste.

### **5.1.3: Goal 3: Maximize Diversion of Residential, Commercial, and Industrial Solid Waste**

This goal focuses on “downstream” approaches to diversion, such as recycling, composting, and other methods to divert waste away from landfills and incinerators. SW Plan at 11. NHDES directs solid waste facilities like GSL to provide “clear information” about diversion programs while also directing investments to new and existing infrastructure consistent with the waste management hierarchy. *Id.* GSL, in partnership with CWS and its subsidiaries, is well-positioned to advance this goal and create results for several of the action items therein.

The majority of the towns that dispose of municipal solid waste at NCES have active recycling programs, as documented in historical AFRs for municipalities (NHDES is no longer tracking individual recycling commodities from AFRs for municipal recycling, making it difficult to determine the degree to which the state is maximizing diversion). GSL is positioned to act as a successor facility to NCES when it concludes operations, so it will be prepared to support measures similar to those presently taken by NCES and its affiliates to maximize waste diversion and aid the state in meeting this goal. These steps are detailed in Section 4.2.2.2 of this analysis and include:

- The proposal to provide the Town of Dalton with town-wide, free residential curbside services for ZeroSort® single stream recycling.
- Collecting leaf and yard waste at the GSL site that can be processed for residential use and beneficial use on site and the conversion of biosolids to beneficial use.
- Collecting scrap metals, tires, propane tanks, and electronics at the Dalton town transfer station for recycling.
- Providing recyclables marketing services for many towns in New Hampshire, ensuring the best possible prices for commodities in towns choosing to process recyclables.
- Providing transportation services to towns and businesses for transportation of recyclables to processing facilities and markets

CWS operates a series of six transfer stations that include management of recyclables and serve broad regions of New Hampshire. These facilities recycle about 15,000 tons of other solid wastes per year.

By permitting the GSL project, NHDES will also be greenlighting the creation of a new, state-of-the-art MRF in southern New Hampshire. This proposed facility will be a local resource for the processing of recyclables. Fewer materials will have to be shipped out of state for processing, thereby reducing the cost of transportation in terms of time, expense, and gas mileage spent by trucks delivering those materials to other facilities. It will also create further incentive for the recycling of New Hampshire generated waste in the state. See Section 4.2.2.1. The Zero-Sort® MRF contemplated in conjunction with the GSL application will help the state meet Goal 3 and nurture a local market for recyclable commodities.

GSL intends to maintain NCES's efforts to divert clean wood and C&D from the waste stream for alternate uses, including as alternative daily cover. After commencing operations, GSL proposes to provide free acceptance of waste from the transfer station operated by the Town of Dalton, thus encouraging local residents to direct their waste to that facility where it can first be evaluated and processed for potential diversion. CWS will also continue developing waste-derived products from power plant wood ash used for agricultural and animal bedding purposes; because GSL intends to accept waste derived products (see Section 4.2.2.2), it will direct those products out of the waste stream in Dalton and to alternative productive uses.

CWS also promotes the diversion of solid waste with services that encourage customers to be mindful about the waste they throw away in both practice and from a financial standpoint. In addition to the purple Pay-as-You-Throw bags familiar to residents in municipalities like Concord,

individual residences or businesses in other New Hampshire towns sign up for collection services from CWS. These customers can select the size of their waste receptacle and the frequency of waste collection pickup; smaller receptacles and less frequent collection times are offered at the cheapest price, incentivizing waste reduction and disposal through other methods, such as recycling, composting, and donation of goods to companies like Goodwill or the Salvation Army. If a household needs to dispose of more waste than the receptacle can hold, the customer must pay for the disposal, either by purchasing bags from local stores or placing a sticker on the waste to indicate that the customer has paid for the collection. This is another iteration of the Pay-as-You Throw program that encourages customers to be mindful of the waste they generate while also incentivizing reduction of the waste that ultimately reaches the landfill.

CWS and GSL will advance several of the “action” items contemplated in this goal.

- *Action 3.1 – Increase Composting of Organic Wastes*

CWS and GSL are committed to the increased composting of organic wastes. NHDES’s solid waste plan aims to develop fact sheets and guidance documents to equip stakeholders with the latest information about composting of organic wastes. In addition to providing technical assistance for such disposal with the programs and efforts described below, CWS already has a suite of educational materials about what can and cannot be composted on the “Recycling Better” hub. *See supra* at Footnote 8. These materials advance the State’s direction that solid waste facilities should provide “clear information about . . . what is acceptable and not acceptable” in diversion programs. SW Plan at 11. NHDES can utilize these materials to promote that information to a broader audience, and CWS will continue to provide those materials to large audiences on social media and across its customer accounts.

In addition to these public education efforts and outreach, CWS will continue to develop and expand its existing efforts to compost and divert organic wastes from the waste stream. These efforts include:

- Anaerobic digestion for food scraps and organic waste, including Grind2Energy technology, at large waste generators like Phillips Exeter Academy, St. Paul’s School, SNHU, and other accounts in neighboring states;
- On-site composting opportunities for leaf and yard waste at NCES and GSL;
- Extraction of clean wood, contaminated soils, and other organic materials from the waste stream for beneficial use at the landfill site, which currently occurs at NCES and will be implemented at GSL;
- Continued diversion of clean wood for chipping at All-Waste C&D facilities; and
- Community cleanups, like CWS’s recent partnership with Trout Unlimited and the Town of Littleton, which resulted in 100 attendees pulling over 4 tons of litter from the river district and rail trail area in Littleton.

- *Action 3.3 – Develop Best Management Practices for Negotiating Recycling Contracts*

CWS and NCES are active partners to New Hampshire municipalities seeking to negotiate recycling contracts and manage costs. NCES has historically negotiated contracts with Allenstown,

Belmont, and the Pemi-Baker Solid Waste District (comprised of 19 member towns) to provide recycling services, and CWS collaborated with communities like Laconia, Hebron, and Hanover to continue recycling despite mounting economic pressures. More recently, NCEC negotiated with the towns of Belmont, Laconia, and Raymond to introduce new recycling technologies to their operations to increase capacity and efficiencies and thus better control costs. The GSL facility is an opportunity for CWS to continue its relationship with New Hampshire communities and advance those relationships further to promote recycling.

CWS and GSL will share insights drawn from these experiences to aid NHDES in its effort to formalize best management practices for the negotiation of municipal recycling contracts and can provide multiple case studies to inform the state's analysis on that issue.

- *Action 3.4 – Develop Educational Resources for Recycling Awareness and Best Practices*

The state's new solid waste management plan seeks to increase awareness of recycling and best practices for recycling, thus avoiding "wish-cycling" and contamination which increase processing expenses and result in less diversion. SW Plan at 12. To this end, NHDES encourages solid waste facilities to share educational resources on their websites for consistent messaging. *Id.*

As discussed throughout this public benefit demonstration, CWS is ahead of the curve on this goal, as it already hosts a suite of content on its "Recycle Better" hub to provide free educational materials to the public about recycling, diversion, and best practices to avoid contamination. For example, multiple videos are available to educate viewers about the public about what belongs in the recycling bin. Short informative videos explain why items like plastic bags, liquid waste, and batteries do not belong in the recycling bin. CWS has also prepared flyers with photographs to identify items that should not be placed in a recycling bin. *See, e.g.,* Attachment 3 and *supra* at Footnote 8. By educating the public on what should and should not be placed in recycling bins, CWS can better manage costs and also discourage contamination that reduces the volume of materials that are actually recycled.

This action item also encourages technical assistance with site visits, trainings, and informational sources. CWS is an active partner in assisting customers with waste reduction and diversion. In addition to the audit reports described in this demonstration, CWS has proactively worked with customers like Hypertherm, Inc. to identify opportunities and solutions for more efficient recycling. CWS also partnered with a municipality in Maine to address contamination in residential recycling, and through that effort reduced the contamination rate by 12%. With the proposed SRMP, CWS and GSL will employ resources to conduct a recycling audit for three New Hampshire municipalities and then deploy targeted education to those communities. This will provide measurable outcomes in recycling that can be utilized in other towns or referenced to develop additional best practices.

- *Action 3.5 – Assist Large Generators with Recycling, Food Diversion, and Waste Audits*

This action item prioritizes assisting schools, universities, businesses, and manufacturing facilities with recycling programs, food diversion, and waste audits. CWS and its affiliates routinely invest time and resources to conduct extensive auditing, outreach, and education initiatives to help

customers throughout the state address contamination in their recycling streams to ensure the ongoing sustainability of recycling in the state. CWS encourages customers to continue improving their recycling practices by providing periodic Recycling & Diversion Progress Reports, which describe the type and quantities of materials diverted from a customer's facility and provide insight into diversion practices over time.

Existing partnerships with schools like St. Paul's School and Phillips Exeter Academy deployed the use of anaerobic digestion technology to large-scale generators for food waste. In 2022, CWS added compactor monitors to twelve recycling units at SNHU, reducing hauls and improving efficiencies while also supporting recycling education and outreach on campus. The company's award-winning collaborating with Hypertherm, Inc. is a flagship example of how CWS resources can be utilized in an industrial setting to maximize recycling opportunities and implementation. CWS also works with commercial accounts like Dartmouth-Hitchcock Medical Center and Dartmouth College to divert large volumes of recycling. Approval of the GSL facility will extend CWS's relationship with New Hampshire customers and create opportunities to continue and expand these recycling services with large generators.

Moving forward, CWS and GSL have developed a proposal to deploy additional resources and tools to large generators in New Hampshire. Element 2 of the SRMP targets ten large generators across five sectors in New Hampshire to provide technical assistance, improve diversion, and reduce the handling costs of recycling in furtherance of this goal.

- *Action 3.11 – Identifying Challenges with Contamination in Recycling*

GSL and CWS can leverage resources, relationships, and expertise to aid the State in identifying issues and solutions for waste contamination in the recycling stream. CWS previously took steps to collaborate with Laconia and Concord with tailored solutions to address contamination in the waste stream. In Laconia, CWS installed centralized compaction equipment in a location easily monitored by local officials, ensuring the continued practice of recycling in the city, improved quality of the recycled materials, and reduced hauling costs. CWS assisted the City of Concord with installing specialized container lids to prevent contamination of recyclables in downtown containers.

CWS and GSL will quantify the average contamination rate for selected municipalities with Element 1 of the SRMP, and thus it is another opportunity to identify new challenges and issues causing contamination to assist NHDES in its efforts to create innovative solutions. CWS will continue to provide free educational materials on its website describing good recycling practices that reduce contamination in the recycling stream. Customers are encouraged to print these materials for on-site use; placing a flyer describing what should not go in a recycling bin next to the receptacle, for example, could discourage a person from placing nonrecyclables in a recycling bin.

#### **5.1.4: Goal 4: Ensure Adequate Capacity for Management of New Hampshire- Generated Waste**

Permitting GSL will create approximately 8,170,000 tons of capacity over eighteen years of the planning period. At least 51% of the waste accepted at the facility over its lifespan will originate in New Hampshire. With the state facing a shortfall no later than 2034 when TLR-III's capacity will be exhausted, the GSL facility will assure disposal capacity for New Hampshire through the planning period and beyond. GSL will also advance two action items for this goal articulated in the state solid waste plan.

- *Action 4.1 – Developing Alternative Technologies and Facilities to Increase Capacity and Action 4.5 – Statewide Waste Studies to Understand Waste Stream*

NHDES intends to engage with public and private entities to “explore options for developing alternative technologies and centralized processing facilities” to increase capacity with methods preferred by the waste management hierarchy. SW Plan at 14. Among the options is consideration of a state-of-the-art MRF for single-stream recycling in New Hampshire. GSL and CWS have proposed the construction of a new MRF in southern New Hampshire since the earliest development of the proposed GSL facility, and permitting the GSL project will greenlight the creation of a new MRF in this state.

This proposed facility will be a local resource for the processing of recyclables. Fewer materials will have to be shipped out of state for processing, thereby reducing the cost of transportation in terms of time, expense, and gas mileage spent by trucks delivering those materials to other facilities. It will also create further incentive for the recycling of New Hampshire generated waste in the state. *See* Section 4.2.2. The Zero-Sort® MRF contemplated in conjunction with the GSL application will help the state meet this goal, nurture a local market for recyclable commodities, and – by diverting more materials from the waste stream – create more capacity for waste that cannot be managed with more preferred methods in the hierarchy. Establishing the MRF in southern New Hampshire will also satisfy the action item by “enabling wastes to be locally and efficiently sorted, processed, reused, recycled, or formed into new products.” SW Plan at 14.

CWS also implements anaerobic digestion in New Hampshire for organic solid wastes, removing more material from the waste stream to preserve space for New Hampshire waste that cannot be disposed of otherwise. The Casella ARC in Lebanon, New Hampshire recently received an upgrade with a new plastics grinder to promote the recovery of clean, quality plastics from business customers across the region.

If the GSL facility is permitted, GSL and CWS will continue introducing and implementing these innovative solutions to create additional capacity. Element 4 of the SRMP contemplates a statewide infrastructure study to map out existing infrastructure capabilities, identify underserved areas, and propose a build-out to promote the State's goals. This effort will generate a report highlighting gaps in infrastructure and recommended paths for expanding capacity to achieve the goals in the solid waste plan. It is another opportunity for CWS to support the state in its initiatives and inform NHDES's efforts to meet the waste diversion goal, advance the hierarchy, and pursue the goals in the new solid waste plan.

#### **5.1.5: Goal 5: Develop Local Markets for Waste Diversion**

This goal, coupled with Goal 4, aims to develop and bolster recycling and diversion across New England to present economic opportunities and minimize disposal need. SW Plan at 15. To the extent this goal aims to benefit New Hampshire’s economy with opportunities that will create new jobs, the GSL project presents two such opportunities. The GSL facility in Dalton will create jobs in the North Country, while the proposed MRF complementing GSL operations will create approximately 25 new jobs and projected revenues exceeding four million dollars. GSL will also aid NHDES’s efforts to expand local and regional diversion markets by establishing a new, state-of-the-art MRF in southern New Hampshire, thus eliminating the necessity for several tons of recyclables to be shipped out of state for processing.

Goal 5 also pursues a more circular economy. *Id.* Casella is actively pursuing ways to support the idea of a circular economy.<sup>11</sup> CWS trucks visit homes and businesses on a regular schedule, delivering waste to processing facilities located throughout the region for sorting and diversion. CWS’s integrated approach to waste management, together with its ZeroSort recycling program, ARC facilities, and diversion practices, makes strides towards a more circular economy, and CWS is prepared to partner with NHDES to further develop this strategy in New Hampshire. Element 3 of the SRMP also aims to improve circularity of the economy with pilots for target material streams, thus developing and improving local recycling practices and identifying opportunities to eliminate hard-to-recycle materials from the waste stream.

- *Action 5.1 – Participation in Discussions About Materials Management and Action 5.10 – Facility Permits Supporting Recycling and Diversion Markets*

CWS is in constant contact with customers, municipalities, and stakeholders to improve materials management and improve recycling markets. In addition to waste audits, which educate customers and identify solutions to improve diversion, CWS also provides a suite of educational materials to customers to improve the quality of recyclables and reduce contamination. Educational opportunities do not always involve face to face conversations. CWS uses “Oops tags” at the curb

---

<sup>11</sup> Casella’s comprehensive 2022 Sustainability Report includes a snapshot of how CWS initiatives advance a circular economy and create opportunities for diversion to minimize disposal need. *See* Excerpt of Sustainability Report at Attachment 4.

to educate customers about materials in their disposal bin that could have been set aside for recycling. CWS also promotes recycling and sustainability initiatives on its social media page. CWS and its affiliates routinely invest time and resources to conduct extensive auditing, outreach, and education initiatives to help customers throughout the state address contamination in their recycling streams to ensure the ongoing sustainability of recycling in the state.

NHDES seeks to participate in regional and national discussions about materials management to reach key stakeholders. CWS is a publicly-traded company operating throughout the eastern United States, so it is well-positioned to assist NHDES in making those connections and engaging in a productive conversation about these important topics. Further, CWS brings its subject matter expertise from regional efforts to promote diversion and improve recycling to New Hampshire and remains open to dialogue with NHDES about these issues.

To this end, CWS and GSL are open to permit conditions intended to advance regional recycling and diversion markets. NCES is currently required to assist ten or more generators per year with programs to assist in implementing the statutory goals and hierarchy. *See* NCES Permit Modification, Permit No. DES-SW-SP-03-002, Oct. 9, 2020, at 8. GSL is committed to satisfying the same permit condition and furthering those goals with efforts to assist local generators in improving their recycling practices with Elements 1 and 2 of the SRMP.

- *Action 5.3 – Compile Educational Materials About Recyclables and Action 5.4 – Compile Information on Diversion Outlets*

CWS’s “Recycle Better” program can assist the state in its efforts to develop and distribute educational materials about how recyclables are used and opportunities to reuse and recycle. CWS partners with organizations like Goodwill NNE and local thrift shops to encourage diversion, and it can provide additional data about those efforts to NHDES to further its efforts to educate the public about these opportunities.

The ARC facility at Hypertherm, Inc. in Lebanon, New Hampshire is another opportunity to educate the public and large generators about how recyclable materials can be managed and utilized for other purposes. This facility, equipped with a high-efficiency plastic grinder, manages plastics and recyclable materials from large-volume generators and eliminates them from the waste stream. Through collaboration, ARC participants are able to access recycling services that would never be viable for an individual customer. CWS is prepared to work with NHDES to identify and

**OOPS! It's ok - we all make mistakes!**  
Please review the checked boxes below to help improve the collection process.

Address: \_\_\_\_\_

Your material WAS collected, but please correct for next time.  
 Your material WAS NOT collected.

**ZERO-SORT RECYCLING (these items DO NOT belong in your bin):**

Plastic Bags (includes bagged recyclables)  
 Tanglers (cords, ropes, hoses, clothing, VHS tapes, etc.)  
 Clothing (includes textiles)  
 Food Waste/Liquids (includes dirty recycling)  
 Bulky Items (scrap metal, wood, plastic furniture, etc.)  
 Electronics (includes batteries of any kind)  
 Other: \_\_\_\_\_

**TRASH (these items DO NOT belong in your bin):**

Bulky Items (furniture, appliances, etc.)  
 Hazardous Items (aerosol paints, pesticides, used oil, etc.)  
 Electronics (includes batteries of any kind)  
 Non-Conforming Trash Bag(s)  
 Other: \_\_\_\_\_

**CASELLA** For questions and more information, please call us at 800-CASELLA or visit [casella.com/recyclebetter](http://casella.com/recyclebetter)

**OOPS! TAG RECIPIENT**

Address: \_\_\_\_\_

Driver/Date: \_\_\_\_\_

Reason: \_\_\_\_\_

Contaminated Stream (circle):  Trash  Recycling

develop opportunities to expand access to facilities like the ARC in Lebanon, New Hampshire, and to develop new outlets for diversion, like the proposed MRF.

#### **5.1.6: Goal 6: Encourage Solid Waste Infrastructure and Practices That Support State and Federal Climate Change Initiatives**

The new state solid waste plan includes a specific focus on efforts to combat climate change. In 2020, Casella unveiled its sustainability goals and targets for the year 2030. These goals include:

- Growing the Resource Solutions business to reduce, reuse, or recycle over two million tons of solid waste management materials per year by 2030.
- Improving fuel efficiency by reducing the fuel consumed per ton of waste and recycling collected by 20% against a 2019 baseline. CWS reduced that metric by 7.3% between 2019 and 2021.
- Reduce greenhouse gas emissions by 40% against a 2010 baseline.

In 2022, CWS was named the Most Sustainable Company in Waste Management by *World Finance Magazine*. Judges were impressed by the 2030 Sustainability Goals, which align with the Paris Agreement, Global Reporting Initiative, Sustainability Accounting Standards Board, CDP Disclosure, and ESG Reporting.

CWS remains focused on developing and implementing new solutions to mitigate climate impacts in New Hampshire and New England. These include:

- CWS and its subsidiaries are actively pursuing innovative technologies to harness landfill gas emissions and put them to work. For example, NCES partnered with RUDARPA to refine and compress landfill gas to produce renewable natural gas, which will be used for a variety of off-site uses. NCES also utilizes innovative landfill heat recovery technology to heat the maintenance shop on the premises.
- If GSL is permitted, CWS intends to develop an MRF in southern New Hampshire, creating a local destination for the sorting and processing of recyclables. This, in turn, eliminates the fuel and emissions associated with delivering those New Hampshire materials to facilities in other states for processing.
- CWS installed compactor monitors on 12 units at SNU, improving efficiencies and thereby reducing hauls by 30%.

CWS and GSL's efforts to increase recycling and diversion with pilot programs, like those proposed in the SRMP, and continued access to CWS recycling services following the closure of the NCES facility will also advance climate change initiatives.

#### **5.1.7: Goal 7: Ensure That Solid Waste Policies and Regulations Support State and Federal Environmental Justice Initiatives**

The State's new solid waste management plan places specific attention on environmental justice. Cognizant that measures to address environmental justice will evolve and increase in the coming years, the plan lays a foundation for considering environmental justice initiatives and advancing

the NHDES Civil Rights and Nondiscrimination Implementation Plan, which was issued in February 2023. Referencing EPA standards, the department’s statement on environmental justice is intended to address the environmental health disparities that may exist in the state when certain communities bear a “disproportionate impact from the implementation of environmental policies.” NHDES Nondiscrimination Plan, Statement on Environmental Justice (10/25/22). The state’s environmental justice workplan aims to support the inclusion of EJ principles in agency practices and policies, but the state solid waste plan acknowledges that these goals are advanced by aligning solid waste programming with those EJ plans and policies. *See* SW Plan at 17, Action 7.1.

To this end, CWS and GSL will advance EJ initiatives by ameliorating the impact of solid waste management activities on individuals in the state. CWS already does this with the host community agreement in Bethlehem, New Hampshire. CWS recognizes that host communities may bear some impacts from the operation of a solid waste facility in the community, and thus NCES operates a transfer station on the landfill site for the Town of Bethlehem and surrounding communities, which accepts universal wastes, used oil, and CFC appliances. Leaf and yard waste is composted on site. Municipal solid waste single stream recycling is provided at the site for Bethlehem residents and various other local communities serviced by NCES, CWS affiliates, and third parties. NCES also provides free roadside collection to more than 1,000 households within the town and accepts waste generated by residents at the transfer station for no charge (with the exception of C&D). Collectively, then, NCES’s location and its role in an integrated waste and recycling management company enable it to provide cost-effective disposal capacity to the lightly populated northwestern part of the state.

GSL intends to provide commensurate benefits to residents of Dalton to provide financial benefits out of the facility’s revenue to offset any adverse impacts on the residents of the town. The proposed – but not yet finalized – host community benefits to Dalton include tax reduction benefits, free solid waste collection, and establishment of a \$50,000 fund (replenished annually) to pay for improvements to enhance community aesthetics and promote health, safety, and welfare of local residents. In this regard, GSL aims to elevate a community impacted by solid waste management activities and improve its operations and quality of life with financial benefits it would not otherwise realize without the new facility. *See also* Section 3.3.3.

CWS and GSL will also advance Action 7.3, seeking to promote equitable access to reuse and diversion opportunities. GSL will be sited in a rural part of the state that is distant from other permitted facilities. By establishing a new facility to come online after NCES concludes its operations, GSL is poised to provide cost-effective service to North Country residents, who would otherwise incur increased costs and impacts if they must direct their waste to distant facilities or even to other states for disposal. CWS and NCES also work with local municipalities to provide resources and guidance for continued recycling services, despite the increased costs of that service. If GSL is permitted, that support will continue with CWS and GSL to provide additional resources and guidance to smaller towns and promote equitable access to reuse and diversion opportunities.

#### **5.1.8: Goal 8: Ensure Sustainable Funding Sources to Support Solid Waste Management Initiatives**

The new solid waste plan recognizes that the department and stakeholders require sufficient resources, staffing, and oversight to carry out the plan and pursue the statutory goals. GSL, with the assistance and resources of CWS, will complement the department's efforts. In 2022, NCES worked with the towns of Belmont and Laconia to improve recycling program, and the towns obtained grant funding from the Recycling Partnership. GSL, like NCES, will continue collaborating with municipalities and customers to identify opportunities to expand diversion and sustainability with the assistance of grant funding. This furthers Action 8.2 of the plan.

## **5.2 District Solid Waste Plans**

The GSL facility is located in the planned but never formed Upper Grafton Lancaster Area Solid Waste District. The district was to consist of the Towns of Bethlehem, Dalton, and Lancaster, and has long been inactive. This is consistent with the statewide trend over the last 25 years away from regional districts and from the preparation and approval of formal solid waste plans.

The formation of solid waste districts in New Hampshire was prompted by the federal Resource Conservation and Recovery Act (RCRA). Among other things, RCRA required states to encourage regional efforts to manage solid waste.<sup>12</sup> One of the ways New Hampshire responded to this requirement was by enacting statutes mandating participation in regional districts. The state backed away from this mandate in what is now RSA 149-M:24 and :25. Those sections of the solid waste act provide for the formation of single- or multi-member solid waste districts, and require each town or district to adopt a solid waste management plan approved by the department.

While numerous solid waste districts were formed in the 1980s, most have since disbanded and strict adherence to RSA 149-M:24 and :25 has waned. The most recent list of New Hampshire solid waste districts, prepared in 2013, does not identify any districts in which Dalton is a member.<sup>13</sup> Notwithstanding the lack of approved plans, municipalities are nonetheless making planning decisions about solid waste issues. These plans are sometimes reduced to writing and contained in, for example, municipal master plans. Whether contained in a formal document or not, however, the conduct of many municipalities evidences that they are planning ahead for the solid waste disposal needs of their citizens with an emphasis on recycling and on the economical disposal of waste that is not recycled. For example, nineteen municipalities now belong to one of the largest and most active solid waste districts, the Pemi-Baker Solid Waste District, the principal purpose of which has been to take advantage of economies of scale to provide cost-effective waste management for its member municipalities, including negotiation of contracts for long-term services. Whether through a multi-member solid waste district or as individual municipalities, however, many New Hampshire cities and towns have entered into long-term contracts for disposal

---

<sup>12</sup> 42 U.S.C.A. § 6946.

<sup>13</sup> NCES contacted NHDES to determine whether any towns or districts had submitted district solid waste plans pursuant to RSA ch. 149-M. NHDES provided a list of New Hampshire solid waste districts that was last updated on December 23, 2013. None of the districts identified on this list include Dalton as a constituent member, and the applicant has been unable to locate any plan prepared by the Town of Dalton as a single-town district.

of their solid waste, evidencing that they have planned how to manage their solid waste disposal needs.<sup>14</sup>

The NCES landfill in Bethlehem is currently a vital resource to the solid waste management planning of New Hampshire municipalities and solid waste districts. This is manifested in at least two ways. First, whether pursuant to a long-term contract or not, NCES receives solid waste originating in a large majority of New Hampshire's municipalities, showing that the facility is important to the management of solid waste statewide. Some of the waste is transported directly by municipal sanitation departments (e.g., Sunapee), some through the waste-hauling and transfer station operations of NCES's affiliates, and some through unaffiliated third parties.

Many New Hampshire municipalities, moreover, have entered into long-term contracts, either directly or through a multi-member solid waste district to provide for the disposal of their solid waste at NCES's facility on favorable terms into the foreseeable future. In some cases, NCES's municipal contracts extend for as long as ten years. In the aggregate, the terms currently under contract total nearly 200 years.

Thus, the NCES landfill is an integral part of the long-term planning of numerous New Hampshire municipalities and solid waste districts. It is therefore important that a plan be in place to serve those municipalities and solid waste districts after the NCES landfill closes. GSL is well-positioned to provide the same services to communities currently utilizing the NCES facility.

## **6.0 CONCLUSION**

Because the GSL facility will provide disposal capacity at a time when there will be a shortfall in capacity in the state and because permitting the facility is consistent with the other criteria in RSA 149-M:11, GSL satisfies the public benefit requirement.

---

<sup>14</sup> Strictly speaking, the contracts and other arrangements made by these communities are not the kinds of plans contemplated by the statute. Given that such plans are now rare, contracts and other arrangements for waste disposal provide the best approximation of a plan available.

## **Tables, Figures, and Attachments**

**Table 1**  
**2021 Documented Solid Waste Generation in New Hampshire**

<b>Facility Accepting NH Waste</b>	<b>MSW/General Waste (Non-Recyclable) (Tons)</b>	<b>C&amp;D (Tons) from NH Sources</b>	<b>Other Non-Hazardous Wastes (Tons) from NH Sources</b>	<b>Total (Tons)</b>
NCES	101,574	88,213	0	189,787
TLR-III	314,769	60,418	221,913	597,100
Mt. Carberry	93,401	76,304	50,423	220,129
Nashua	66,425	18,685	28,439	113,549
Lebanon	24,978	1,557	0	26,535
Mt. Washington/Conway	3,607	430	10,674	14,710
Hebron-Bridgewater Refuse District	501	215	0	716
Wheelabrator Concord Co.	110,358	0	0	110,358
<b>2021 Solid Waste Generated in NH</b>	<b>715,614</b>	<b>245,821</b>	<b>311,450</b>	<b>1,272,884</b>
Exported Waste	192,755	-	-	192,755
Recycled Waste	350,429	184,431	-	534,860
<b>2021 Documented Waste Generation</b>	<b>1,258,798</b>	<b>430,252</b>	<b>311,450</b>	<b>2,000,499</b>
<b>Documented Recycling Rate</b>	<b>27%</b>			

*Notes*

1. This table is prepared with data obtained from 2021 Annual Facility Reports (“AFR”) on file with NHDES. This table summarizes the volume of waste originating from New Hampshire that is documented in those reports.
2. Where a facility provided the table titled “Annual Waste Receipts by State of Origin” with the AFR, the value provided in this table under “MSW/General Waste” is the sum of volumes listed under “MSW-R” and “MSW-C/I” in the AFR table. The value provided under “C&D” is the tonnage provided for “CDD” in the AFR table. All other waste types set forth in that table, including ADC, are captured in this table under “Other Non-Hazardous Wastes.”
3. *NCES* – Data is drawn from Section 7 of the facility’s March 31, 2022 AFR.

4. *TLR-III* – Data is drawn from the table titled “Annual Waste Receipts by State of Origin,” appended to the facility’s March 31, 2022 AFR.
5. *Mt. Carberry* – Data is drawn from the table titled “Annual Waste Receipts by State of Origin,” appended to the facility’s March 28, 2022 AFR.
6. *Nashua* – Data is drawn from the table titled “Annual Waste Receipts by State of Origin,” appended to the facility’s March 9, 2022 AFR.
7. *Lebanon* - Data is drawn from Section 7 of the facility’s March 30, 2022 AFR.
8. *Mt. Washington-Conway* – Data is drawn from the table titled “Annual Waste Receipts by State of Origin,” appended to the facility’s February 8, 2022 AFR.
9. *Hebron-Bridgewater Refuse District* – Data is drawn from Section 7 of the facility’s February 10, 2022 AFR.
10. *Wheelabrator* – Data is drawn from Sections 7 and 9 of the facility’s March 30, 2022 AFR. Wheelabrator reported that it accepted 161,217 tons of mixed solid waste and general refuse from New Hampshire sources, but the facility shipped 50,859 tons of residual waste (ash) to out-of-state destinations for disposal. GSL thus reduced the volume of waste received by the volume of residual waste exported to New Hampshire; the difference of 110,358 tons is reported in this table.
11. *Exported Waste* – Data for exported waste is drawn from NHDES’s compilation of 2021 AFR data reported by New Hampshire municipalities. This report was last updated on August 26, 2022. Exported waste is drawn from the compilation of data corresponding to Section 7(b) of the AFR report and, specifically, the values for MSW/General Refuse and C&D Debris that were shipped to out-of-state destinations.
12. *Recycled Waste* - Data for recycled waste is drawn from the NHDES compilation of AFR data described above in Note 11. Specifically, this information is found in the section of the report corresponding to Section 7(b) of the AFR and reflects the sum of recyclables received from New Hampshire sources, with the following adjustments:
  - a. NHDES’s compilation includes an entry stating that the Town of Gilmanton received 255,000 tons of recycling in 2021. While this value is also reflected in the facility’s 2021 AFR, it is inconsistent with past reports and can only be understood as an error in data entry. Accordingly, the applicant has deducted that tonnage from the sum of recycled materials set forth in this report when determining the value to include in this table.
  - b. GSL obtained 2021 AFR data from OneStop for the Chester Transfer Station, ESMI, and Lamberts Auto & Truck Recyclers, Inc. that was not reflected in the aggregated report that NHDES prepared. GSL added those values to the Section 7(b) data to calculate the sum of recycled waste in this table.
  - c. NHDES’s compilation does not indicate what portion of those recyclables were general refuse and which were C&D debris, so the total sum is included under MSW/General Refuse.

The values of C&D recycling received by ReSource Waste Services of Epping Inc. and ReSource Waste Services of Salem Inc. (formerly EERCO and LL&S), as reported in their 2021 AFRs, are documented here as recycled C&D.

13. *Documented Recycling Rate* – This is determined by dividing the volume of waste recycled in New Hampshire (534,860 tons) by the total documented waste generated in New Hampshire (2,000,499 tons) in 2021.

**Table 2**  
**Waste Projections for Planning Period**

<b>Year</b>	<b>Annual Rate of Population Increase</b>	<b>Projected Population</b>	<b>MSW/Year (T)</b>	<b>C&amp;D/Year (T)</b>	<b>Other Waste (T)</b>	<b>Recycling (T)</b>	<b>Total Waste (T)</b>	<b>Waste Requiring Disposal (T)</b>
2020	-	1,377,533						
2021	0.770%	1,388,147	908,369	245,821	311,450	534,860	2,000,499	1,465,639
2022	0.770%	1,398,842	927,354	250,958	317,959	546,039	2,042,309	1,496,271
2023	0.770%	1,409,620	934,499	252,892	320,409	550,246	2,058,045	1,507,799
2024	0.770%	1,420,481	941,699	254,840	322,877	554,485	2,073,902	1,519,416
2025	0.770%	1,431,425	948,954	256,804	325,365	558,757	2,089,881	1,531,123
2026	0.597%	1,439,967	954,617	258,336	327,307	562,092	2,102,352	1,540,260
2027	0.597%	1,448,559	960,313	259,878	329,260	565,446	2,114,897	1,549,451
2028	0.597%	1,457,203	966,044	261,429	331,224	568,820	2,127,517	1,558,697
2029	0.597%	1,465,899	971,809	262,989	333,201	572,214	2,140,213	1,567,998
2030	0.597%	1,474,646	977,608	264,558	335,189	575,629	2,152,984	1,577,355
2031	0.377%	1,480,204	981,292	265,555	336,452	577,798	2,161,097	1,583,299
2032	0.377%	1,485,782	984,990	266,556	337,720	579,975	2,169,241	1,589,266
2033	0.377%	1,491,381	988,702	267,560	338,993	582,161	2,177,416	1,595,255
2034	0.377%	1,497,001	992,427	268,569	340,270	584,355	2,185,621	1,601,266
2035	0.377%	1,502,642	996,167	269,581	341,553	586,557	2,193,858	1,607,301
2036	0.143%	1,504,790	997,591	269,966	342,041	587,395	2,196,993	1,609,598
2037	0.143%	1,506,940	999,016	270,352	342,530	588,235	2,200,132	1,611,898
2038	0.143%	1,509,093	1,000,444	270,738	343,019	589,075	2,203,276	1,614,201
2039	0.143%	1,511,250	1,001,874	271,125	343,509	589,917	2,206,425	1,616,508
2040	0.143%	1,513,409	1,003,305	271,512	344,000	590,760	2,209,578	1,618,818
2041	-0.024%	1,513,046	1,003,064	271,447	343,918	590,618	2,209,047	1,618,429
2042	-0.024%	1,512,683	1,002,824	271,382	343,835	590,476	2,208,517	1,618,040
2043	-0.024%	1,512,320	1,002,583	271,317	343,752	590,335	2,207,986	1,617,652
2044	-0.024%	1,511,956	1,002,342	271,252	343,670	590,193	2,207,456	1,617,264
2045	-0.024%	1,511,593	1,002,101	271,186	343,587	590,051	2,206,926	1,616,875

**Waste Generated in Planning Period: 31,877,979**

Notes

1. GSL forecasted the annual population increase by utilizing 2020 census data set forth in the report titled “State, County, and Municipal Population Projections: 2020-2050,” which was issued by the Office of Planning and Development (“OP&D”) in September 2022. The 2020 census total is found on Table 6 of that report and utilized as the starting point for making population projections.
2. *Annual Rate of Population Increase:* To calculate the annual rate of population increase, GSL utilized the “New Hampshire Projected Components of Change” data set forth in Table 6 of OP&D’s September 2022 report. This table projects population growth and contraction in five-year increments. To determine the rate of change, GSL determined the percentage change between each interval and divided it by five to estimate the annual rate of change. For the purposes of this table, GSL assumed a linear rate of change by allocating the change from the five-year interval equally across each year.
3. *Projected Population:* Using the 2020 census data as a starting point, GSL multiplied the previous year’s population by the relevant increment of the projection population increase or contraction to forecast the population for the following year:

$$(Year\ 1\ Population * Rate\ of\ Population\ Increase) + Year\ 1\ Population = Year\ 2\ Population$$

4. *Projected Waste Values:* GSL utilized the volumes of in-state waste and recycling produced, as reported in 2021 AFR data and summarized in Table 1 of this public benefit demonstration, for the 2021 waste values in this table. GSL then forecasted the volume of waste to be produced for each year that follows through the end of the planning period by multiplying the projected population for a particular year by 1.46 tons per person. That value is listed under “Total Waste” and drawn from page 3 of the 2020-2021 Biennial Solid Waste Report prepared by NHDES in November 2022, which estimates that each person will generate 1.46 tons of waste per year.

GSL then allocated the total waste to be generated between the four waste types: MSW, C&D, Other, and Recycling. GSL first determined the respective percentage of the total 2021 waste stream for each category of waste and applied those same percentages to the projected “Total Waste” for each year reflected in this table. In 2021, these percentages were as follows:

MSW (including exports)	908,369 T	45.4%
C&D	169,947 T	12.3%
Other	311,450 T	15.6%
Recycling	534,860 T	26.7%

5. *Waste Requiring Disposal:* GSL determined this value by subtracting the projected tonnage of recycling for a particular year from the “Total Waste” figure of that year.
6. *Waste Generated in Planning Period:* The total volume of waste requiring disposal during the planning period spanning June 1, 2025 to May 31, 2045 is 31,877,979 tons. To calculate this value, GSL adjusted the “Waste Requiring Disposal” values for 2025 and 2045 as follows to reflect that not all waste in that year is attributable to the planning period:

$$(2025\ Waste\ Requiring\ Disposal * .6) + \frac{(Waste\ Requiring\ Disposal\ for\ 2026\ through\ 2044)}{5} + (2045\ Waste\ Requiring\ Disposal * .4) = Waste\ Requiring\ Disposal\ during\ Planning\ Period$$

Table 3- Authorized Waste Types by Facility

Landfill	Location	Service Type	Authorized Waste Types
TLR-III Refuse Disposal Facility	Rochester, NH	Unlimited	MSW, C&D, bulky waste, bottom and fly ash, asbestos, infectious waste, sludge and septage solids, industrial waste, waste from pollution control devices, residue from non-hazardous chemical spills, contaminated residuals, off-specification commercial products, industrial process demo, contaminated soils, bulked liquid waste (1).
North Country Environmental Services, Inc. (NCES)	Bethlehem, NH	Unlimited	MSW, C&D, Pre-approved special wastes (e.g., industrial processes waste including WWTP sludge and APC wastes, remediation wastes, contaminated soils and media, off-specification materials, incinerator ash)(2,3)
Lower Mount Washington Valley Secure Solid Waste Landfill	Conway, NH	Limited	Solid waste (4), WWTP sludge from N. Conway Water Precinct (5), MSW, C&D(6)
Lebanon Regional Solid Waste Facility	Lebanon, NH	Limited	MSW, C&D, Bulky waste (7), WWTP sludge from Lebanon (8), WWTP grit/grease/screenings (9), Treated infectious waste (10)
Four Hills Secure Landfill Expansion	Nashua, NH	Limited	MSW, C&D, asbestos (11), bulky waste, street sweepings, WWTP sludge/grit/grease (12,13)
Mount Carberry Secure Landfill	Success, NH	Unlimited	MSW, C&D, asbestos, incinerator ash, contaminated soils and media (14), mill wastes (i.e., MSW, ash, grit,lime, WWTP sludge) (15), bulky waste, auto shredder and metal shredder residue (16), municipal WWTP sludge, treated infectious waste (17)

1 NHDES. Solid Waste Management Facility Standard Permit, Permit No. DES-SW-95-001, Approved June 11, 2018.

2 NHDES. Solid Waste Management Facility Standard Permit. Approved March 13, 2003.

3 NCES Facility Operating Plan: North Country Environmental Services, Inc. Dated July 2014.

4 NHDES. Authorization to Manage Solid Waste, Permit No. DES-SW-90-028. Approved October 22, 1990.

5 NHDES. Record of Modification to Solid Waste Management Facility Permit. Approved July 12, 1995.

6 CMA Engineers, Inc. Lower Mount Washington Valley Secure Solid Waste Landfill: Facility Operating Plan. Dated November 2012.

7 NHDES. Solid Waste Management Facility Standard Permit. Approved March 19, 1999.

8 NHDES. Record of Modification to Solid Waste Management Facility Permit. Approved August 9, 2000.

9 NHDES. Record of Modification to Solid Waste Management Facility Permit. Approved December 20, 1999.

10 City of Lebanon. Operating Plan: Phase II Secure Expansion. Revised April 2013.

11 NHDES. Solid Waste Management Facility Standard Permit. Approved June 26, 1995.

12 City of Nashua. Operating Plan: Phase II Secure Landfill Expansion. Revised June 2013.

13 NHDES. Record of Modification to Solid Waste Management Facility Permit. Approved February 7, 2003.

14 NHDES. Record of Modification to Solid Waste Management Facility Permit. Approved March 7, 2003.

15 NHDES. Record of Modification to Solid Waste Management Facility Permit. Approved August 12, 2002.

16 NHDES. Record of Modification to Solid Waste Management Facility Permit. Approved February 25, 2019.

17 NHDES. Record of Modification to Solid Waste Management Facility Permit. Approved April 22, 2022.

**Table 4****Range of Disposal Capacity Available for New Hampshire Waste for Twenty-Year Planning Period**

*This table illustrates the disparity between permitted operating capacity and design capacity for solid waste disposal facilities in New Hampshire. “Permitted operating capacity” refers to capacity for which a permittee has received design, construction, and operating approval. “Design capacity” refers to capacity for which the applicant has received approval for the landfill capacity and envelope but has not yet received construction and operation approval.*

<b>Landfill</b>	<b>Permitted Operating Capacity Remaining as of January 1, 2022 (T)</b>	<b>Permitted Operating Capacity Remaining as of June 1, 2025 (T)</b>	<b>Design Capacity Remaining as of January 1, 2022 (T)</b>	<b>Design Capacity Remaining as of June 1, 2025 (T)</b>
NCES	473,860	268,001	473,860	268,001
TLR-III	2,742,432	0	16,646,982	12,131,200
Mt. Carberry	1,117,950	403,400	4,737,150	4,022,600
Nashua	824,800	1,600,000	824,800	1,600,000
Lebanon	537,950	404,496	537,950	404,496
Mt. Washington/Conway	115,800	85,983	115,800	85,983
<b>Landfill Total (T)</b>	<b>5,812,792</b>	<b>2,761,880</b>	<b>23,336,542</b>	<b>18,512,280</b>
<b>Range of Disposal Capacity for Waste-to-Energy Facilities (WTE)</b>				
<b>WTE</b>	<b>Annual Disposal Capacity (TPY)</b>	<b>20-Year Disposal Capacity (TPY)</b>	<b>Annual Disposal Capacity (TPY)</b>	<b>20-Year Disposal Capacity (TPY)</b>
Wheelabrator Concord Co.	111,000	2,220,000	111,000	2,220,000
<b>Total Disposal Capacity Over Planning Period</b>				
		<b>Permitted Operating Capacity as of January 1, 2022 through June 1, 2025 (T)</b>	<b>Design Capacity as of January 1, 2022 through June 1, 2025 (T)</b>	
<b>Landfills and WTE</b>		<b>4,981,880</b>	<b>20,732,280</b>	

Notes

1. For the purposes of this analysis, the applicant assumes that the twenty-year planning period contemplated by RSA 149-M:11, V(a) commences on June 1, 2025.
2. Projections in this Table 4 are provided in tons and generally generated from each facility’s annual facility report (“AFR”) for the reporting year 2021. The AFRs provide each facility’s estimated remaining capacity in cubic yards (“cy”). Unless indicated otherwise, the applicant converted this amount into tons by first dividing the facility’s in-place density (in cubic yards per pound) by 2,000 pounds per ton. The applicant then multiplied that quotient by the estimated remaining operating capacity in cubic yards set forth in the 2021 AFR for each facility.

$$\text{Estimated remaining permitted capacity in cy as of December 31, 2021, as reported in the 2021 AFR} \times \frac{\text{In-place density in cy}}{2000 \text{ lbs. per ton}} = \text{Capacity (T) remaining as of January 1, 2022}$$

3. The applicant projected the estimated remaining capacity of each facility as of June 1, 2025 to determine capacity remaining at the start of the planning period. Unless otherwise indicated in the notes below, the applicant calculated this value by subtracting the actual amount of waste disposed at a facility in 2022 (as reported in the facility’s 2022 AFR) from the capacity remaining as of January 1, 2022 (as determined with the formula in Note 2) to account for capacity consumed through January 1, 2023. The applicant then multiplied the facility’s annual fill rate by 2.4 years to project the tonnage of capacity consumed between January 1, 2023 and the start of the planning period on June 1, 2025. That product was then deducted from the January 1, 2023 capacity:

$$\text{Capacity remaining as of January 1, 2022} - \text{Actual tons of waste disposed in 2022, as reported in 2022 AFR} - (\text{Annual fill rate} \times 2.4) = \text{Projected capacity (T) remaining as of June 1, 2025}$$

4. *NCES* – The applicant utilized the formula described in Note 2 to calculate the capacity remaining as of January 1, 2022. In its 2021 AFR, *NCES* reported that it had 623,500 cubic yards of capacity as of December 31, 2021, and 5 years of remaining life. To convert cubic yards into tons for this formula, *NCES* utilized an in-place density of 1,520/2,000 cy/lb.

To calculate the remaining capacity as of June 1, 2025, *NCES* performed the analysis described in Note 3. *NCES* disposed of 192,955 tons of waste from in-state and out-of-state sources in 2022 (excluding ADC). See “Annual Waste Receipts by State of Origin” table appended to *NCES*’s 2022 AFR. For the purposes of this analysis, *NCES* utilized an annual fill rate of 175,000 tons (rounded figure determined by converting the airspace limitation of 230,200 cubic yards per year in *NCES*’s Stage VI permit into tons). *NCES* also has permitted Stage VI capacity that had not yet received construction approval at the time of the 2021 AFR. *NCES* thus added an additional 535,653 cubic yards of capacity to the total to project capacity remaining as of June 1, 2025. Converting this into tons with the formula described in Note 2, *NCES* determined this constitutes an additional 407,096 tons of capacity, which *NCES* added to formula described in Note 3 to determine the capacity remaining as of June 1, 2025:

$$\begin{array}{r} \text{Capacity remaining as of} \\ \text{January 1, 2022} \end{array} - \begin{array}{r} \text{Actual tons of waste} \\ \text{disposed in 2022} \end{array} - \begin{array}{r} \text{(Annual fill rate x} \\ \text{2.4)} \end{array} + \begin{array}{r} \text{Remaining Stage} \\ \text{VI capacity (T)} \end{array} = \begin{array}{r} \text{Projected capacity (T)} \\ \text{remaining as of June} \\ \text{1, 2025} \end{array}$$

5. *TLR-III* - In June 2018, NHDES approved a 15.9 million cy expansion that will provide capacity for Stages 15-17 until June 30, 2034. This expansion has received design approval, but not permitted operating approval, and is thus only reflected in the design capacity calculations in Table 4.

The applicant first determined TLR-III's remaining permitted operating capacity figures. The permitted operating capacities set forth in Table 4 for TLR-III are generated with the formulas described in Notes 2 and 3. In its 2021 AFR, TLR-III reported that it had 19,036,000 cy of remaining capacity as of December 31, 2021, and 12.5 years of remaining life. Of this remaining capacity, 15.9 million cubic yards are attributable to the design approval, so the applicant reduced the remaining capacity reported in the 2021 AFR by that volume. The difference, 3,136,000 cubic yards, was then converted into tons utilizing the facility's average cumulative in-place density of 1,749/2,000 lb/cy provided in the facility's 2021 AFR. TLR-III reported that it disposed of 1,262,642 tons of waste from in-state and out-of-state sources in 2022. See Attachment 3 of TLR-III's 2022 AFR (excluding ADC). The applicant utilized the fill rate of 1.55 million cubic yards per year, as set forth in TLR-III's 2018 permit, which converts to 1,355,475 tons per year.

To calculate the design capacity as of January 1, 2022, the applicant converted the entire volume of remaining cubic yards reported in the 2021 AFR into tons using the formula described in Note 2 and utilized the in-place density provided in the previous paragraph. The applicant then employed the formula in Note 3, along with the fill rate, tonnage disposed of in 2022, and in-place density values stated in the previous paragraph, to project remaining design capacity for this facility as of June 1, 2025.

6. *Mt. Carberry* – In 2022, NHDES approved a 4.9 million cy expansion that will provide capacity for Phase IIIA of the facility. Although it has received design approval, it has not yet received operating approval, and thus the tonnage contemplated by this recent expansion is only reflected in the design capacity calculations in Table 4.

To calculate the figures for this facility set forth in Table 4, the applicant utilized the formulas described in Notes 2 and 3. The applicant first determined the waste remaining as of January 1, 2022. Because the facility had not yet sought a permit for Phase IIIA at that time, the calculations for 2022 capacity reflect the capacity available through Phase II. In its 2021 AFR, Mt. Carberry reported that it had 1,542,000 cy of remaining capacity in Phase II as of December 31, 2021, and 5.05 years of remaining life. The applicant employed the fill rate of 305,500 cubic yards or 221,488 tons per year reported in Item 5 of Mt. Carberry's 2021 AFR assumed and an in-place density of 1,450/2,000 cy/lb for this facility, as set forth in NHDES's October 9, 2020 Application Review Summary for NCES's Stage VI permit application, to convert cubic yards into tons for this facility.

To determine capacity remaining as of June 1, 2025, the applicant performed two analyses. To determine the available permitted operating capacity, the applicant utilized the formula in Note 3 and the capacity values for Phase II. Mt. Carberry reported that it disposed of 182,980 tons of waste from in-state and out-of-state sources in 2022 (excluding ADC). See “Annual Waste Receipts by State of Origin” table appended to Mt. Carberry’s 2022 AFR. The applicant utilized the fill rate and in-place density values set forth in the previous paragraph. To calculate remaining design capacity as of June 1, 2023, the applicant utilized AFR data projecting remaining capacity through Phase IIIA; specifically, Mt. Carberry reported 6,534,000 cy of remaining capacity and 21.39 years of operating life remaining. The applicant utilized these values, along with the fill rate and in-place density noted in the previous paragraph, to calculate remaining design capacity according to Note 3.

7. *Nashua* - The applicant first determined Nashua’s remaining permitted operating capacity figures. In its 2021 AFR, Nashua reported that it had 1,031,000 cy of remaining capacity as of September 1, 2021, and 7.7 years of remaining life. In 2021, Nashua had an in-place density of 1,200/2,000 lb/cy, as reported in its August 26, 2022 “Remaining Waste Capacity Evaluation” filed with NHDES on September 9, 2022. The applicant determined the operating capacity as of January 1, 2022, by calculating the amount of capacity attributable to the last quarter of the 2021 reporting year and adding it to the value obtained with the formula described in Note 2:

$$\text{Capacity remaining as of September 1, 2022 (determined with Note 2 formula)} + \frac{\text{Capacity remaining as of September 1, 2022}}{3} = \text{Permitted operating capacity as of January 1, 2022}$$

The facility’s permitted operating capacity remaining as of June 1, 2025 is impacted by the Type I-A approval it received on January 19, 2023, adding another 3.9 million cubic yards of capacity to the facility. Converted into tons with the applicable in-place density variable, this is an additional 2,340,000 tons that will be available beyond the planning period, as the January 19, 2023 permitting decision adds another 30 years of operating life to the facility. For the purposes of calculating Nashua’s capacity at the start of the planning period, then, the applicant multiplied Nashua’s annual fill rate by 20 years.

8. *Lebanon* - The applicant utilized the formula described in Note 2 to calculate the capacity remaining as of January 1, 2022. In its 2021 AFR, Lebanon reported that it had 768,500 cy of remaining capacity as of December 31, 2021, and 9 years of remaining life. To convert cubic yards into tons for this formula, the applicant utilized an in-place density of 1,400/2,000 cy/lb, as set forth in NHDES’s October 9, 2020 Application Review Summary for NCEC’s Stage VI permit application.

To calculate the remaining capacity as of June 1, 2025, the applicant performed the analysis described in Note 3. Lebanon reported that it disposed of 42,254 tons of waste from in-state and out-of-state sources in 2022. See “Annual Waste Receipts by State of Origin” table appended to Lebanon’s 2022 AFR. To determine the annual fill rate, the applicant averaged the total volume of waste received by the facility over the last three years (as reported in the facility’s AFRs for reporting years 2020-2022), resulting in 37,872 tons per year, which the applicant rounds up to 38,000 tons per year for the formula in Note 3.

9. *Mt. Washington/Conway* - To calculate the figures set forth in Table 4, the applicant utilized the formulas described in Notes 2 and 3. In its 2021 AFR, Conway 193,000 cy of remaining capacity as of December 31, 2021, and 17 years of remaining life. Conway also reported that it disposed of 5,817 tons of waste from in-state and out-of-state sources in 2022. See “Annual Waste Receipts by State of Origin” table appended to Conway’s 2022 AFR. The applicant utilized a fill rate of 10,000 tons per year and an in-place density of 1,200/2,000 cy/lb for this facility, as set forth in NHDES’s October 9, 2020 Application Review Summary for NCES’s Stage VI permit application.
10. *Wheelabrator-Concord* – The Concord WTE facility reported receiving 188,217 tons of non-recyclable waste in its 2021 AFR, with 161,217 tons of that waste generated in New Hampshire. A significant volume of this material becomes ash each year that is then transported to an out-of-state facility for disposal. It is therefore not included in this table to document Wheelabrator’s remaining capacity. To calculate the remaining capacity at the WTE facility for this Table 4, the applicant rounded the volume of New Hampshire-generated waste to 162,000 tons and reduced that amount by 51,000 tons to account for the residual waste shipped out of state in 2021 (see Sections 7 and 9 of the WTE’s 2021 AFR). The resulting difference of 110,000 tons was then multiplied by 20 years to project the capacity remaining for June 1, 2025.



## ATTACHMENT 1

### Overview of Strategic Resource Management Plan (“SRMP”)

<b>Element 1: Residential Recycling Outreach &amp; Education</b>	
GSL and CWS will select three New Hampshire municipalities for targeted outreach and education about recycling programs and practices. This could include targeted mailers, social media, school programs, and curbside tagging (i.e. “Oops!” tags to identify items that do not belong in the bin). GSL and CWS will perform a recycling audit before and after the outreach program for each municipality to identify improvements and suggest ways to scale the program to other municipalities.	Targeted to address Goals 3, 4, and 6 of the new state solid waste management plan
<b>Element 2: Resource Management Planning for Large Generators</b>	
GSL and CWS will identify ten large generators in New Hampshire representing five areas of the economy: industrial, college/university, healthcare, retail, and industrial. GSL and CWS will then perform a baseline audit of each generator or venue, set achievable goals, and establish an implementation plan for changing existing practices. Each generator will receive a tailored roadmap to improving waste reduction, reuse, and recycling goals, which could potentially be utilized by other organizations throughout the state.	Targeted to Address Goals 1, 3, 5, and 6 of the new state solid waste management plan
<b>Element 3: Innovation and Circularity Pilot Programs for Target Material Streams</b>	
GSL and CWS will identify one or more communities with well-established programs for basic recycling to introduce three innovative collection pilots aimed at capturing targeted materials like textiles, food waste, and hard-to-recycle plastics. GSL and CWS will then generate a report summarizing the results of these efforts, changes in key performance indicators, and recommendations for future implementation of similar projects.	Targeted to address Goals 1, 2, 3, 5, and 6 of the new state solid waste management plan
<b>Element 4: Infrastructure Needs Assessment for the State of New Hampshire</b>	
GSL and CWS will complete or commission an infrastructure needs assessment to identify existing infrastructure and capabilities, identify underserved areas, and propose an infrastructure build-out to support the state’s goals. This includes consideration of new Aggregation and Recovery Collaboratives (like Casella’s initiative with Hypertherm, Inc. in Lebanon), developing a MRF, and developing specialty recycling infrastructure for diverting food waste, textiles, mattresses, and other hard-to-recycle products.	Targeted to address Goals 4, 5, and 6 of the new state solid waste management plan; also reduces waste generation and toxicity and maximizes diversion to further Goals 1, 2, and 3.

# **Attachment 2**

**SOLID WASTE MANAGEMENT IN NEW HAMPSHIRE  
REVISING THE HIERARCHY TO MANAGE GREENHOUSE GAS  
EMISSIONS**

*Reducing Emissions Per Ton of Waste and Reducing the Emission Rate*

*Prepared for Casella Waste Systems, Inc.*

*File No. 4924.00*

*January 2021*

# TABLE OF CONTENTS

1.0	INTRODUCTION .....	1
2.0	BACKGROUND.....	1
3.0	SOLID WASTE MANAGEMENT HIERARCHIES .....	2
4.0	SITE DATA AND METHODOLOGY .....	3
5.0	RESULTS AND CONCLUSIONS.....	3

## TABLES

Table 1    Landfill Summary – Net Emissions Assuming Renewable Natural Gas

Figures    USEPA Map of RNG projects  
              Examples of biogas that can be used as an energy source  
              Production of Renewable Natural Gas (RNG) from landfill gas

## 1.0 INTRODUCTION

On behalf of Casella Waste Systems, Inc., (Casella), Sanborn, Head & Associates, Inc. (Sanborn Head) prepared this appendix to our study comparing greenhouse gas (GHG) emissions from modern solid waste landfills and incinerators (the original study) to show the additional benefit of using landfill gas (LFG) to produce Renewable Natural Gas (RNG). The North Country Environmental Services (NCES) Landfill in Bethlehem, New Hampshire has an air license with an option to deliver landfill gas to an RNG facility. NCES' contracted partner has an air permit to produce RNG and the facility is scheduled to commence construction during 2021.

To provide additional perspective for New Hampshire, we have also included in this appendix examples of landfills in the state not classified as modern or low-emission landfills (LELFs). LELF in the original study was defined as a site with reported gas collection efficiency greater than 75 percent.

For this appendix, we are modeling the emissions offsets from modern landfills based on production of RNG. RNG from the NCES Landfill in Bethlehem or at Casella's proposed landfill in Dalton, New Hampshire could be used in vehicles to offset diesel fuel (diesel) or used to offset natural gas from hydraulic fracturing (frack gas). We have assessed the benefit of producing RNG to offset diesel or to offset frack gas to compare to the LFGTE beneficial use assumed in the original study. Licensing and economic factors have contributed to shifting the LFG beneficial use industry away from LFGTE toward RNG.

Based on the findings of the original study and this appendix, we are proposing that the Solid Waste Management Hierarchy in New Hampshire be revised to reduce GHG emissions per ton of waste and to reduce the rate of GHG emissions by eliminating the preference for incinerators.

## 2.0 BACKGROUND

According to the United States Environmental Protection Agency (USEPA) Landfill Methane Outreach Program (LMOP), as of August 2020, 52 of the 67 LFG energy projects reported to be in the planning or construction phase are RNG projects. A map of the locations is attached. Also attached are figures illustrating how landfill gas is produced and converted to RNG.

Landfills refine LFG to RNG using filtering technology to remove carbon dioxide (CO<sub>2</sub>) and contaminants and to increase the concentration of methane (CH<sub>4</sub>) in the gas to natural-gas-pipeline quality for use in vehicles, homes, and power plants. In a similar way to LFGTE facilities, RNG is used to offset fossil fuel use, reducing net emissions from landfills.

For the NCES Landfill in Bethlehem, when the RNG plant begins operation, the flare system that is currently used to combust the gas collected from the landfill will become a backup device, and most of the collected methane will be transported offsite. Flare emissions of LFG at the site include combustion byproduct emissions such as carbon monoxide (CO) and nitrogen oxides (NO<sub>x</sub>) that will be reduced to improve local air quality.

RNG projects are typically designed with natural-gas-assisted thermal oxidizers to control waste gases from the plant that have been removed from the RNG stream. The plants require power that may come from the grid or from on-site generation.

### 3.0 SOLID WASTE MANAGEMENT HIERARCHIES

Solid waste management hierarchies provide guidance on the prioritization of options for managing waste, setting the tone for the forms of handling and disposal that are perceived as better for the environment and public health.

The USEPA promotes a solid waste management hierarchy (see Figure 1) in which waste reduction/reuse and recycling/composting are the top two sets of waste management priorities<sup>1</sup>. The next level on the USEPA hierarchy includes waste management practices that include energy recovery, followed by the least desirable strategy of treatment/disposal. Modern landfills with energy recovery, such as LFGTE and RNG, and incinerators are considered energy recovery facilities.

The solid waste management hierarchy in the State of New Hampshire is also shown in Figure 1<sup>2</sup>. The preference for incineration over landfilling in the New Hampshire hierarchy is inconsistent with the USEPA hierarchy. For this study, incinerators are modeled with energy recovery and the New Hampshire category of incineration without resource recovery is not included.

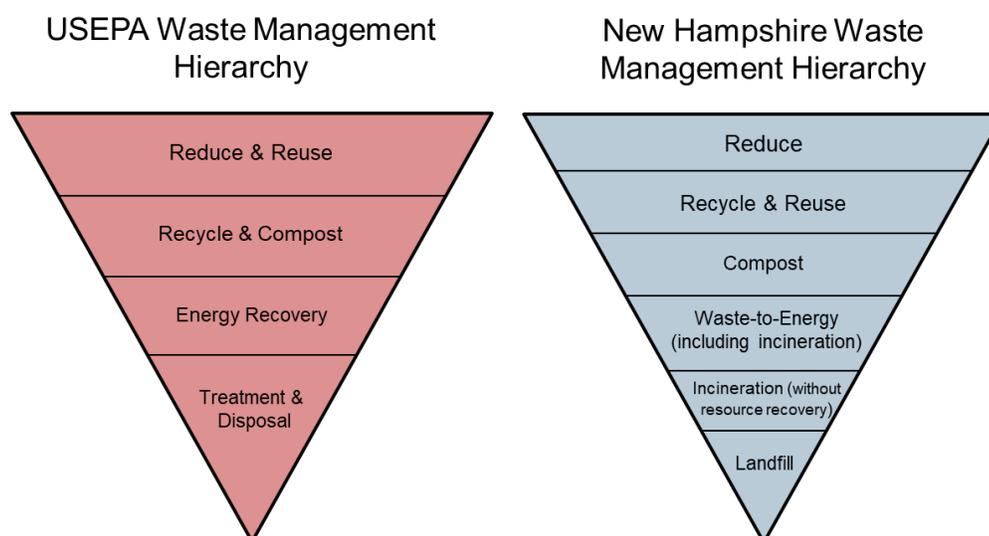


Figure 1 - USEPA ranks landfills with energy recovery on par with incinerators with energy recovery

The New Hampshire Waste Management Hierarchy was established in 1996 prior to the recent growth of RNG as a landfill technology, and before USEPA established facility-level annual GHG emissions reporting in 2010. Federal GHG data reported by landfills and incinerators have been used in this study to compare GHG emissions per ton of waste.

<sup>1</sup> <https://www.epa.gov/smm/sustainable-materials-management-non-hazardous-materials-and-waste-management-hierarchy>

<sup>2</sup> <http://www.gencourt.state.nh.us/rsa/html/X/149-M/149-M-3.htm>

## 4.0 SITE DATA AND METHODOLOGY

The site data and methodology presented in the original study are used in this appendix, except the landfill offsets in this appendix are based on production of RNG to offset diesel fuel in vehicles (long-haul trucks) or to offset frack gas. We assumed RNG plant emissions from a waste gas thermal oxidizer and from power to run each plant. Based on USEPA guidance, we assumed RNG plant energy consumption of 0.009 kilowatt-hours per standard cubic foot (scf) of LFG<sup>3</sup>.

For the emissions reductions associated with reduced diesel fuel emissions, offset by natural gas-powered vehicles, we used Argonne National Laboratory's Greenhouse gases, Regulated Emissions, and Energy use in Technologies model<sup>4</sup> (GREET®). For this appendix, only direct emissions of GHG are considered, and not the lifecycle emissions. Therefore, when RNG is used to offset diesel fuel, only the exhaust emissions are considered, and reduced emissions associated with diesel fuel production are not included.

When the RNG is assumed to offset frack gas, the reduced emissions from pre-production, production, processing, and transmission of frack gas of 17.2 grams CO<sub>2e</sub> per megajoule of natural gas (g CO<sub>2e</sub>/MJ)<sup>5</sup> are not included, and the direct emissions are assumed to be equal, so there is no offset.

$$\text{Net Landfill Emissions} = \frac{\text{Direct Emissions} - \text{Direct Emissions Energy Offset}}{\text{Tons of Waste Accepted}}$$

To include examples of landfills in New Hampshire not classified as LELFs, we used the Federal GHG report for the Mt. Carberry Landfill in Berlin, New Hampshire from 2010, when the reported gas collection efficiency was 64 percent. We have also estimated GHG emissions per ton of waste from landfills with no gas collection, such as the sites in Farmington and Conway, New Hampshire. For these additional sites, we assumed the default soil oxidation factor from USEPA GHG reporting guidance of 10 percent.

For the waste incinerator in Bridgewater, New Hampshire, we were not able to find data for the site to estimate tons of GHG per ton of waste.

## 5.0 RESULTS AND CONCLUSIONS

This appendix comparing GHG emissions from incinerators and landfills has been prepared to present estimated emissions per ton of waste from a landfill producing RNG to offset diesel or frack gas. The beneficial use for LFG in the original study was LFGTE. The results for incinerators in this appendix are unchanged from the original study. Incinerators emit an estimated 0.65 tons CO<sub>2e</sub>/ton of waste (see the incinerator table in the original report).

The average estimated net GHG emissions for RNG landfills varies depending on whether the assumed offset is diesel or frack gas. Offsets for diesel are estimated based on direct offsets.

<sup>3</sup> [https://www.epa.gov/sites/production/files/2020-07/documents/lmop\\_rng\\_document.pdf](https://www.epa.gov/sites/production/files/2020-07/documents/lmop_rng_document.pdf)

<sup>4</sup> <https://greet.es.anl.gov/>

<sup>5</sup> <https://iopscience.iop.org/article/10.1088/1748-9326/6/3/034014/pdf>

When offsetting frack gas, because only direct emissions are considered, the emissions offset is zero. Results are shown in the following table and the attached landfill summary table. The results include GHG emissions defined as biogenic and non-biogenic and are based on the average of the 26 landfills and 13 incinerators listed in the original report.

<b>Disposal Option</b>	<b>Estimated Emissions (ton CO<sub>2</sub>e/ton of waste)</b>
RNG Landfills (with diesel offset - direct emissions only)	0.40
RNG Landfills (with frack gas offset - direct emissions only/no offset)	0.42
LFGTE Landfills from original study	0.43
Flare-only Landfills from original study	0.60
Incinerators from original study	0.65

To provide additional background on landfill emissions, for this appendix we estimated GHG emissions per ton of waste for an example flare-only non-LELF in New Hampshire with reported collection efficiency less than 75 percent and for sites with no collection. The following table shows the results.

<b>Disposal Option</b>	<b>Estimated Emissions (ton CO<sub>2</sub>e/ton of waste)</b>
Example Flare-only Non-LELF	0.83
Landfills with no Gas Collection	1.69

Figure 2 shows the results with emissions decreasing with technological advances from a landfill with no collection, to a landfill with a flare system, to LELFs with energy recovery. For RNG Landfills, we included the result with the direct diesel emissions offset.

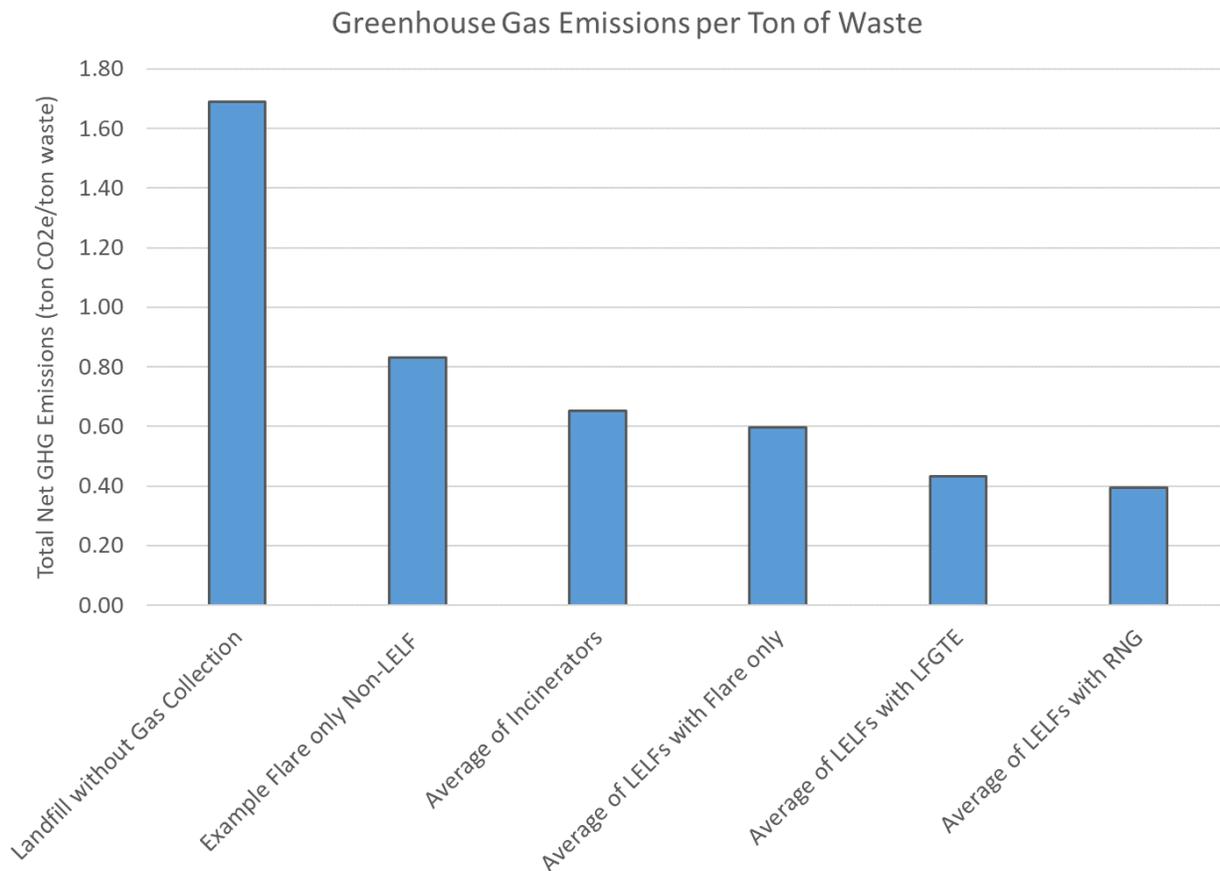


Figure 2 – Improving technology has reduced GHG emissions per ton of waste

The results for specific facilities from the original study and from this appendix are shown in Figure 3. The results for the NCES Landfill are shown with flare only from the original study and with RNG. The reported collection efficiency for NCES increased from 76 percent in 2018 to 78 percent in 2019, and 78 percent is used for the proposed NCES Landfill with RNG. Also, moving forward, Casella intends to use the USEPA option to report soil oxidation greater than the default of 10 percent, and considers 25 percent most representative.

Casella has proposed a modern RNG Landfill in Dalton, New Hampshire. The low emission landfill design for the site would target early attainment of 80 percent collection efficiency and 25 percent soil oxidation, with those numbers improving in subsequent years as the ratio of capped area to uncapped area rises.

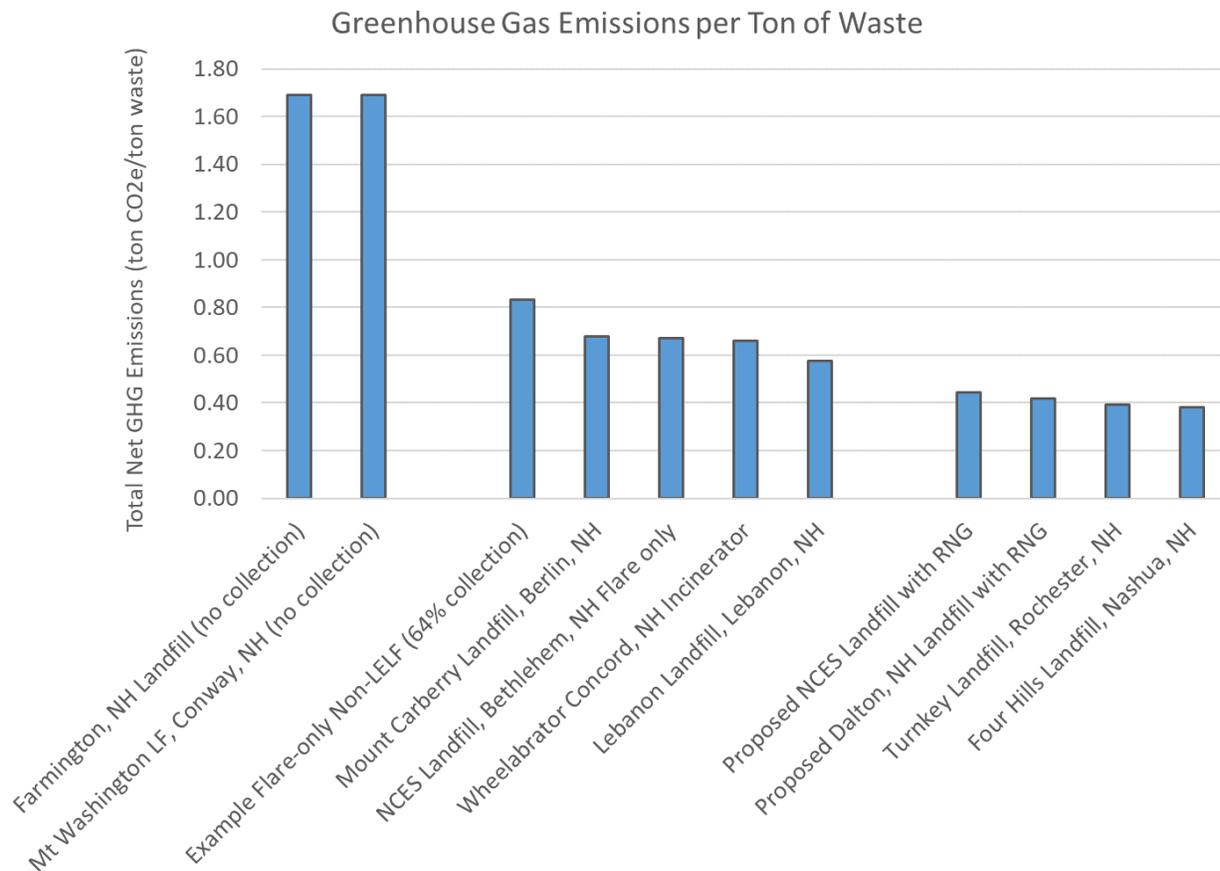


Figure 3 - Estimated GHG emissions per ton of waste for disposal facilities in New Hampshire

Figure 4 shows how a single ton of waste incinerated or placed in a modern RNG landfill today (year zero) would produce emissions over the following 100 years. With an incinerator, the emissions are released immediately upon combustion, whereas in a landfill, the emissions are spread over time. Landfill offsets in Figure 4 are based on direct diesel offsets.

### GHG Emissions per Ton of Waste

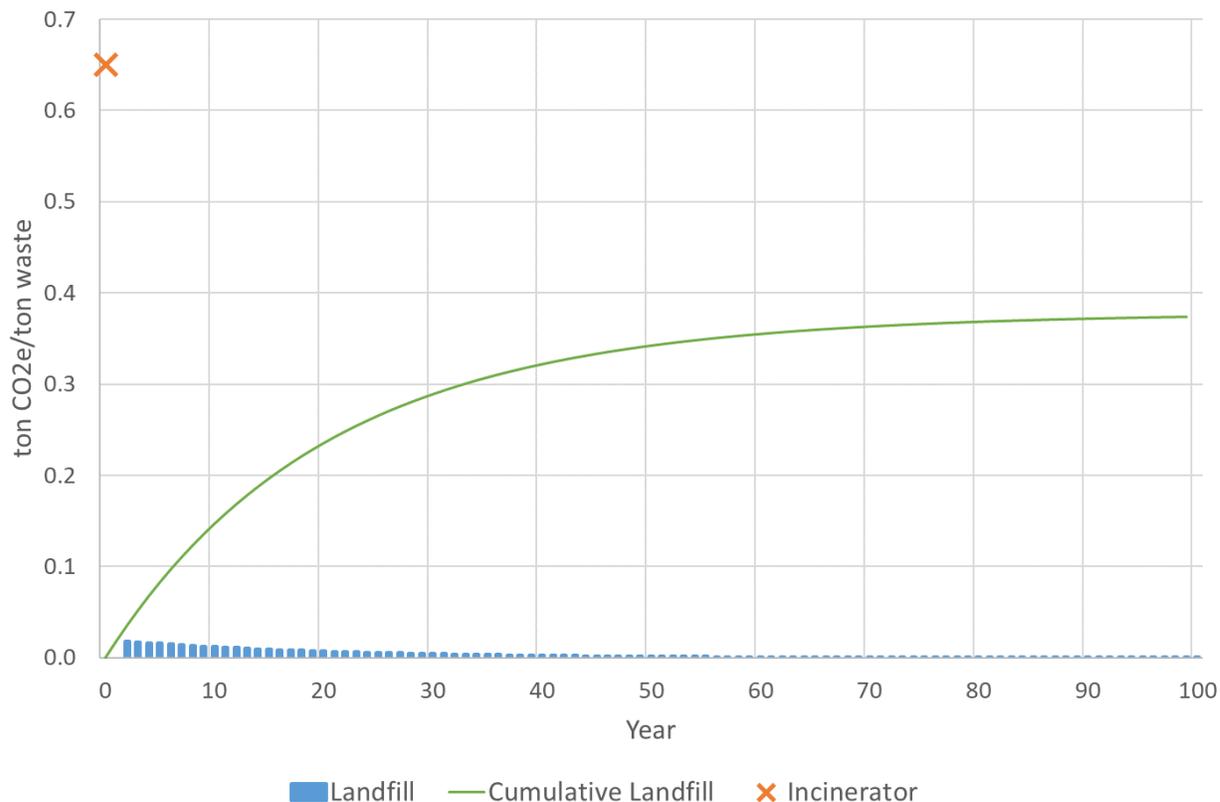


Figure 4 – Landfills with RNG produce less GHG per ton of waste and reduce the rate of release

These results support the USEPA waste hierarchy that considers the benefit of energy recovery from LFG and demonstrates how advancements in landfill operations can contribute to the global effort of limiting GHG emissions.

We propose removing the preference for incinerators in New Hampshire’s Solid Waste Management Hierarchy to match the EPA hierarchy. This change would help recognize and promote the value of energy recovery from landfills and the innovative technological advances, such as RNG, that reduce GHG emissions from landfills. Removing the preference for incinerators would help state and local planners effectively manage solid waste in an environmentally conscious manner.

P:\2300s\2343.20\Source Files\Environmental Benefit of Energy Recovery\Policy Position Paper\New Hampshire Appendix\20210126 Waste Hierarchy in NH rpt.docx

## TABLES

**Table 1 - Landfill Summary - Net Emissions Assuming Renewable Natural Gas**

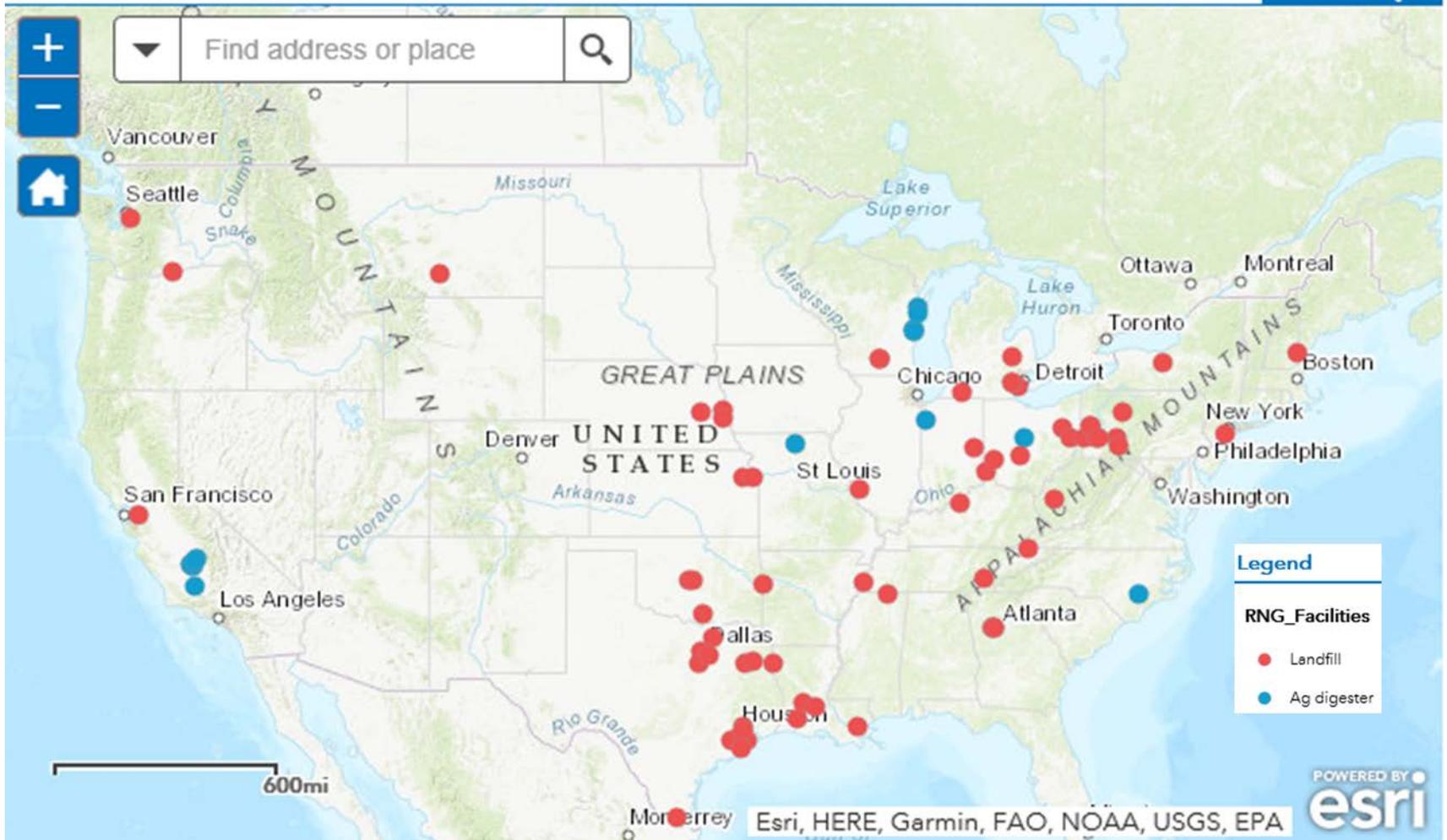
Landfill Number	Modeled LFG Generation (scf at 50% CH <sub>4</sub> /ton waste)	Modeled LFG Generation (Mg CH <sub>4</sub> /ton waste)	Reported Soil Oxidation	Reported Collection Efficiency	Modeled Landfill Emissions (ton CO <sub>2</sub> e/ton waste)	Modeled Diesel Direct Emissions Offset (ton CO <sub>2</sub> e/ton waste)	Modeled Net Emissions with Diesel Lifecycle Offset (ton CO <sub>2</sub> e/ton waste)
1	6,407	0.0614	0.25	0.77	0.47	0.018	0.45
2	6,407	0.0614	0.1	0.87	0.38	0.020	0.36
3	6,407	0.0614	0.1	0.82	0.45	0.019	0.43
4	6,407	0.0614	0.1	0.76	0.54	0.017	0.52
5	6,407	0.0614	0.1	0.90	0.33	0.021	0.31
6	6,407	0.0614	0.25	0.84	0.39	0.019	0.37
7	6,407	0.0614	0.35	0.79	0.42	0.018	0.40
8	6,407	0.0614	0.25	0.82	0.42	0.019	0.40
9	6,407	0.0614	0.1	0.92	0.30	0.021	0.28
10	6,407	0.0614	0.25	0.77	0.48	0.018	0.46
11	6,407	0.0614	0.25	0.83	0.40	0.019	0.38
12	6,407	0.0614	0.25	0.82	0.41	0.019	0.39
13	6,407	0.0614	0.1	0.85	0.41	0.020	0.39
14	6,407	0.0614	0.1	0.86	0.39	0.020	0.37
15	6,407	0.0614	0.25	0.89	0.32	0.020	0.30
16	6,407	0.0614	0.25	0.84	0.39	0.019	0.37
17	6,407	0.0614	0.1	0.82	0.45	0.019	0.43
18	6,407	0.0614	0.1	0.84	0.42	0.019	0.40
19	6,407	0.0614	0.25	0.85	0.38	0.020	0.36
20	6,407	0.0614	0.1	0.80	0.48	0.018	0.46
21	6,407	0.0614	0.1	0.90	0.33	0.021	0.31
22	6,407	0.0614	0.1	0.76	0.54	0.017	0.52
23	6,407	0.0614	0.1	0.83	0.44	0.019	0.42
24	6,407	0.0614	0.1	0.90	0.33	0.021	0.31
25	6,407	0.0614	0.1	0.83	0.44	0.019	0.42
26	6,407	0.0614	0.0	0.78	0.55	0.018	0.53
<b>Average</b>					<b>0.42</b>	<b>Average</b>	<b>0.40</b>

Example RNG Landfill Design Target	Modeled LFG Generation (scf at 50% CH <sub>4</sub> /ton waste)	Modeled LFG Generation (Mg CH <sub>4</sub> /ton waste)	Reported Soil Oxidation	Collection Efficiency	Modeled Landfill Emissions (ton CO <sub>2</sub> e/ton waste)	Modeled Diesel Direct Emissions Offset (ton CO <sub>2</sub> e/ton waste)	Modeled Net Emissions with Diesel Lifecycle Offset (ton CO <sub>2</sub> e/ton waste)
Proposed NCES Landfill with RNG	6,407	0.0614	0.25	0.78	0.46	0.018	0.44
Proposed Dalton, NH Landfill with RNG	6,407	0.0614	0.25	0.80	0.44	0.018	0.42

Examples of Non-Low Emission Landfills	Modeled LFG Generation (scf at 50% CH <sub>4</sub> /ton waste)	Modeled LFG Generation (Mg CH <sub>4</sub> /ton waste)	Soil Oxidation	Collection Efficiency	Combustion Efficiency	Modeled Landfill Emissions (ton CO <sub>2</sub> e/ton waste)	Modeled Diesel Offset (ton CO <sub>2</sub> e/ton waste)	Modeled Net Direct Emissions with Diesel Offset (ton CO <sub>2</sub> e/ton waste)
Flare Only	6,407	0.0614	0.1	0.64	0.99	0.83	0.0	0.83
No Collection	6,407	0.0614	0.1	0.00	0.00	1.69	0.0	1.69

## FIGURES

# U.S. RNG Production Facilities



USEPA Landfill Methane Outreach Program (LMOP) Map of Renewable Natural Gas (RNG) projects

# Waste Types Used to Make RNG

Municipal Solid Waste



Sewage Sludge



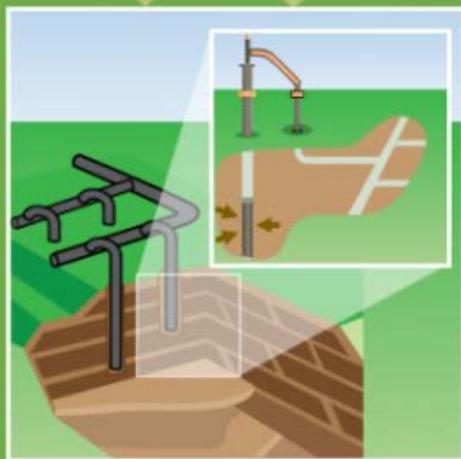
Yard and Crop Wastes



Food and Food Processing Wastes



Manure

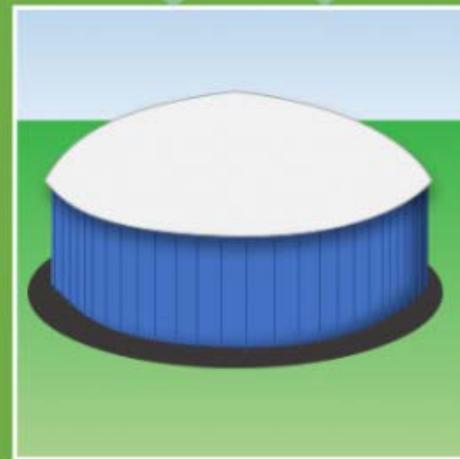


Landfills

Biogas made from organic sources through anaerobic processes contains 45–65% methane.

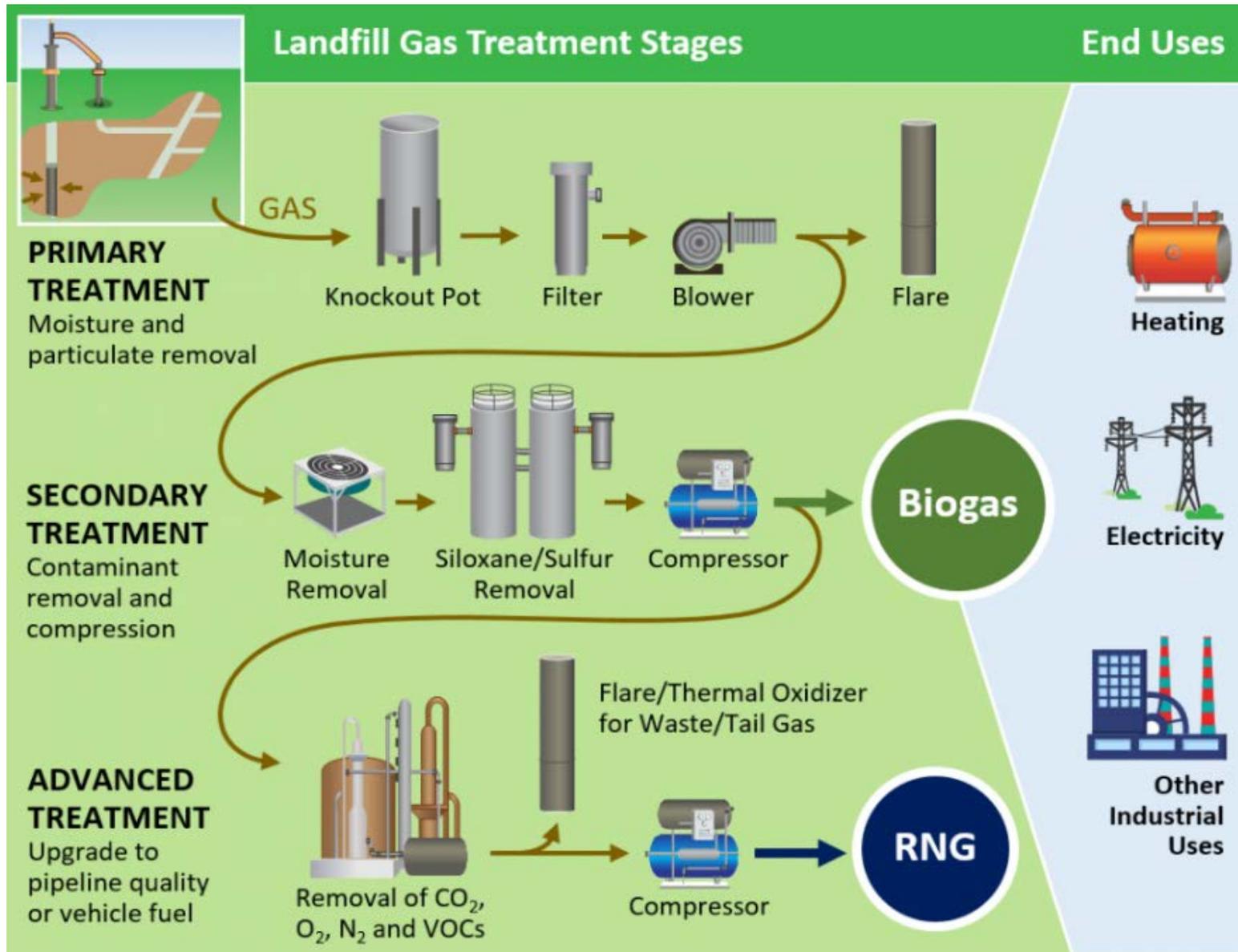
Biogas is treated to remove moisture, particulates, contaminants and other gases ( $\text{CO}_2$ ,  $\text{O}_2$ ,  $\text{N}_2$  and VOCs); this increases the methane content to 90% or greater—typically 96–98% for pipeline injection.

The resulting product is renewable natural gas (RNG).



Anaerobic Digesters

LMOP Biogas Figure



LMOP RNG Figure

# **Attachment 3**

# RECYCLING

TOSS ONLY THE ITEMS LISTED BELOW INTO YOUR RECYCLING BIN

## CARDBOARD/PAPER



**Cardboard & Boxboard**  
(Clean & dry)



**Junk Mail, Periodicals, & Office Paper**  
(Paper bags, envelopes, & catalogs)

## PLASTIC

## METAL

## GLASS



**Plastic Bottles, Jugs, Tub, & Lids**  
(Empty kitchen, laundry, & bath containers & clamshells)



**Aluminum & Steel Cans**  
(Foil & empty food & beverage cans)



**Glass Bottles & Jars**  
(Empty food & beverage bottles & jars)

## REMEMBER TO RECYCLE BETTER!

No items smaller than 2" in size

All containers are empty, rinsed, & dry

Cardboard is flattened & broken down

There are NO items from the **NOT ACCEPTED** list in the recycling bin



ESTABLISHED 1975

For recycling tips and resources, visit [casella.com/RecycleBetter](http://casella.com/RecycleBetter)



# RECYCLING

Toss **ONLY** the recyclable items listed below into your recycling bin

## CARDBOARD/PAPER



**Cardboard & Boxboard**  
(Clean & dry)



**Junk Mail, Periodicals, & Office Paper**  
(Paper bags, envelopes, & catalogs)

## PLASTIC



**Plastic Bottles, Jugs, Tubs, & Lids**  
(Empty kitchen, laundry, & bath containers & clamshells)

## METAL



**Aluminum & Steel Cans**  
(Foil & empty food & beverage cans)

## GLASS



**Glass Bottles & Jars**  
(Empty food & beverage bottles & jars)

## REMEMBER TO RECYCLE BETTER!

- ✓ No items smaller than 2" in size
- ✓ All containers are empty, rinsed, & dry
- ✓ Cardboard is flattened & broken down
- ✓ There are NO items from the **NOT ACCEPTED** list in the recycling bin



ESTABLISHED 1975

For recycling tips and resources, visit [casella.com/RecycleBetter](http://casella.com/RecycleBetter)

## NOT ACCEPTED



**DO YOUR PART TO RECYCLE BETTER™**  
THE ITEMS LISTED BELOW **DON'T** BELONG IN YOUR RECYCLING BIN



PLASTIC BAGS



BAGGED RECYCLABLES



CLOTHING/TEXTILES



TANGLERS



SCRAP METAL ITEMS



BATTERIES



MEDICAL WASTE



FOOD WASTE/LIQUIDS



ELECTRONICS



HAZARDOUS MATERIALS OR EXPLOSIVES



PLASTIC WRAP, FILMS, OR TARPS



WOOD, WASTE, OR TIRES



DISPOSABLE ITEMS



WAXY COATED PAPER ITEMS



CERAMICS OR BAKING GLASS



# **KEEP THESE ITEMS OUT** OF ZERO-SORT® RECYCLING

---

***Place these items in the trash!***



**Gloves**



**Face Masks**

---

**For contamination purposes, if these items end up in recycling, it will all end up in the trash!**



# KEEP THESE ITEMS OUT OF ZERO-SORT® RECYCLING



**PLASTIC BAGS**  
**DON'T BELONG**



**BAGGED RECYCLABLES**  
**DON'T BELONG**



**CLOTHING/ TEXTILES**  
**DON'T BELONG**



**FOOD WASTE/ LIQUIDS**  
**DON'T BELONG**



**TANGLERS**  
**DON'T BELONG**



**SCRAP METAL ITEMS**  
**DON'T BELONG**



**BATTERIES OF ANY KIND**  
**DON'T BELONG**



**ELECTRONIC WASTE ITEMS**  
**DON'T BELONG**



**NO Medical Waste**  
(Rubber gloves, sharps, pills, etc.)



**NO Plastic Wrap, Films, or Tarps**  
(Food bags or wrappers, plastic wrap, shrink wrap, or tarps)



**NO Hazardous Materials or Explosives**  
(Find safe and secure disposal near you)



**NO Wood, Waste, or Tires**  
(Wood, diapers, human/pet or yard waste, or rubber)



**NO Toys, Hangers, or Shoes**  
(Donate gently used items)



**NO Disposable Items**  
(Styrofoam™, napkins, paper towels, tissues, plastic utensils, dirty recycling, register tape, condiment packets, straws, stirrers, & coffee pods)



**NO Coated Paper Items**  
(Items with a plastic lining such as waxed coffee or soda cups, & waxed paper plates)



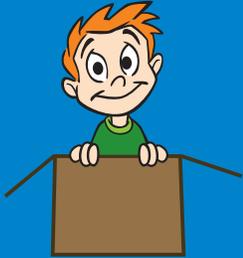
**NO Ceramics or Baking Glass**  
(Donate gently used items)



For more tips and resources, visit [casella.com/recyclebetter](http://casella.com/recyclebetter)

# GIVING RESOURCES NEW LIFE®

Recycling puts more of your discarded material back into the world and less of it into the landfill.



**CARDBOARD**  
BECOMES



**PRESENT  
BOXES**



**PAPER**  
BECOMES



**EGG  
CARTONS**



**PLASTIC**  
BECOMES



**FLEECE  
JACKETS**



**GLASS**  
BECOMES



**NEW  
ROADWAYS**



**METAL**  
BECOMES



**NEW  
CANS**



Zero-Sort recycling is Casella's state-of-the-art process which enables paper, cardboard, plastic, glass, metal, and more to be collected together in one bin without the need to separate.



ESTABLISHED 1975

RECYCLING • SOLUTIONS • ORGANICS • COLLECTION • ENERGY • LANDFILLS

800-CASELLA • [casella.com](http://casella.com) • [fb.com/CasellaWaste](https://www.facebook.com/CasellaWaste)



# Recycle Better™ Sorting Game

---

## Instructions:

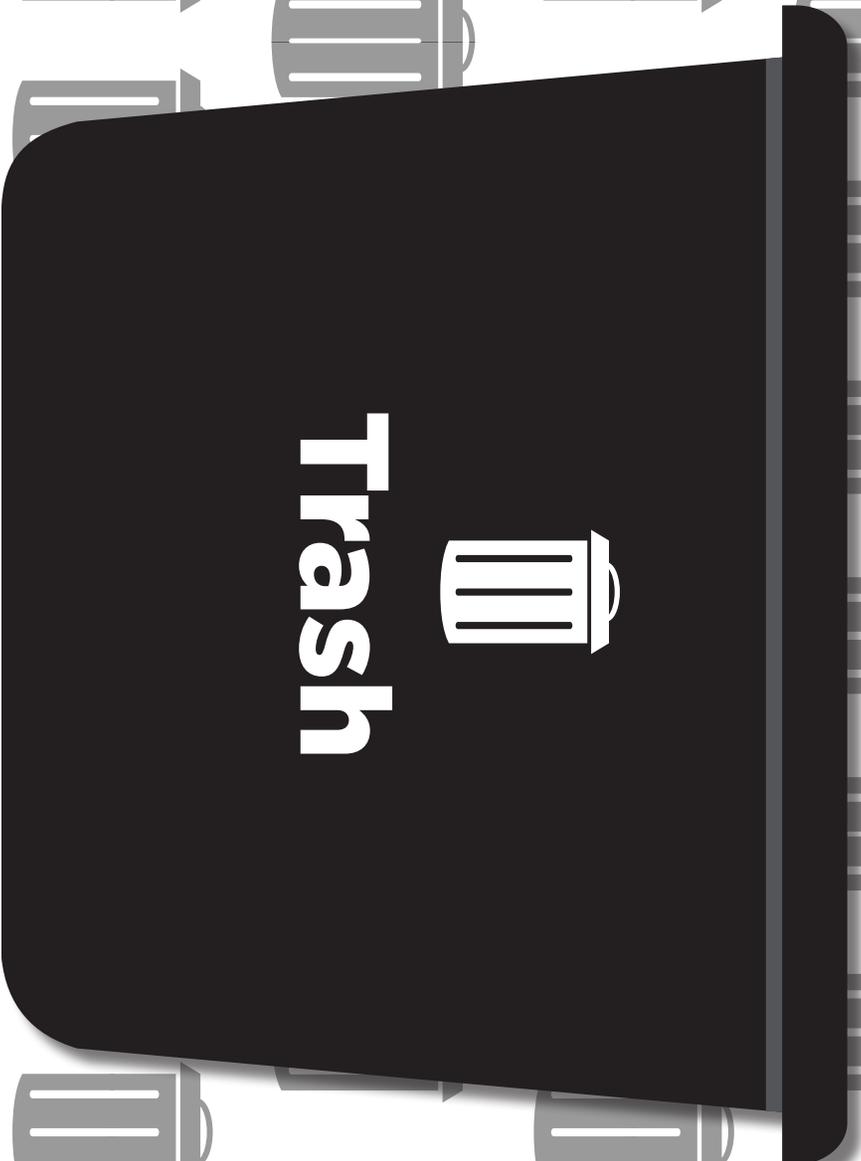
1. Start by cutting out the 5 bin cards and the 48 item cards.
2. Designate a Recycling Rockstar. This person will be in charge of telling the players after each turn if they've put the item into the correct bin.
3. Place the stack of item cards facedown on the table and line up the 5 bins.
4. Take turns going around in a circle. When it's your turn, pick up one item card from the pile.
5. Look at your item card and place it in the bin you think it goes into after it is no longer of use to you.
6. If you placed the item into the correct bin, award yourself one point. Keep a tally of your score. The player with the highest point total at the end wins.



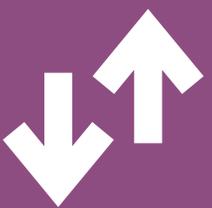
ESTABLISHED 1975

Let's **Recycle Better™** Together! Learn more at [casella.com/RecycleBetter](https://casella.com/RecycleBetter)





**Local Drop  
Off or Store  
Recycling**



**Reuse or  
Donate**





# Recycling Rockstar Reference Guide

 <b>Recycling</b>	 <b>Trash</b>	 <b>Food Waste</b>	 <b>Reuse or Donate</b>	 <b>Local Drop Off or Store Recycling</b>



ESTABLISHED 1975

Let's **Recycle Better™** Together! Learn more at [casella.com/RecycleBetter](https://casella.com/RecycleBetter)



**Cardboard**



**Toys**



**Eggshells**



**Rubber Gloves**



**Metal Cans**



**Plastic Bottles**





**Plastic Containers**



**Apple Core**



**Mail**



**Art Supplies**



**Glass Bottles**



**Batteries**





**Notebook  
Paper**



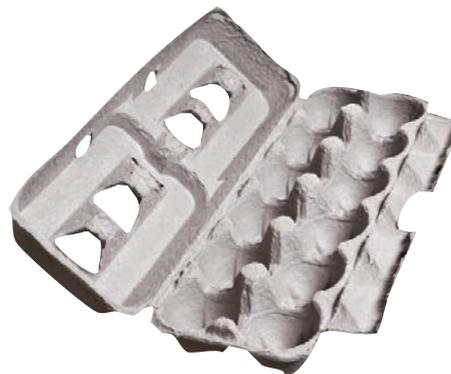
**Aluminum  
Trays**



**Clothes  
& Shoes**



**Cereal Boxes**



**Egg Cartons**



**Scrap  
Paper**





**Construction Paper**



**Garden Hose**



**Soda Cans**



**Plastic Bags**



**Milk Jugs**



**Used Paper Cups**





**Paper Bags**



**Spray Cans**



**Face Masks**



**Banana Peels**



**Plastic Jars**



**Used Paper Plate**





**Foam Containers**



**Newspapers**



**Potato Chip Bags**



**Plastic Utensils**



**Plastic Zip Bags**



**Magazines**





**Toast**



**Paint  
Can**



**Cell  
Phone**



**Compact  
Fluorescent  
Light Bulbs**



**Potato  
Peels**



**Cooking  
Pot**



**Corn Cob**



**Bicycle**



**Carrots**



**Table Lamp**



**Laptop**



**Hammer**



# OOPS!

**It's ok - we all make mistakes!**

Please review the checked boxes below to help improve the collection process.

Address: \_\_\_\_\_

Your material WAS collected, but please correct for next time.

Your material WAS NOT collected.

## ZERO-SORT® RECYCLING (these items DO NOT belong in your bin):

Plastic Bags (includes bagged recyclables)

Tanglers (cords, ropes, hoses, clothing, VHS tapes, etc.)

Clothing (includes textiles)

Food Waste/Liquids (includes dirty recycling)

Bulky Items (scrap metal, wood, plastic furniture, etc.)

Electronics (includes batteries of any kind)

Other: \_\_\_\_\_

## TRASH (these items DO NOT belong in your bin):

Bulky Items (furniture, appliances, etc.)

Hazardous Items (aerosol paints, pesticides, used oil, etc.)

Electronics (includes batteries of any kind)

Non-Conforming Trash Bag(s)

Other: \_\_\_\_\_



For questions and more information, please call us at **800-CASELLA** or visit [casella.com/recyclebetter](http://casella.com/recyclebetter)

# OOPS! TAG RECIPIENT

Address: \_\_\_\_\_

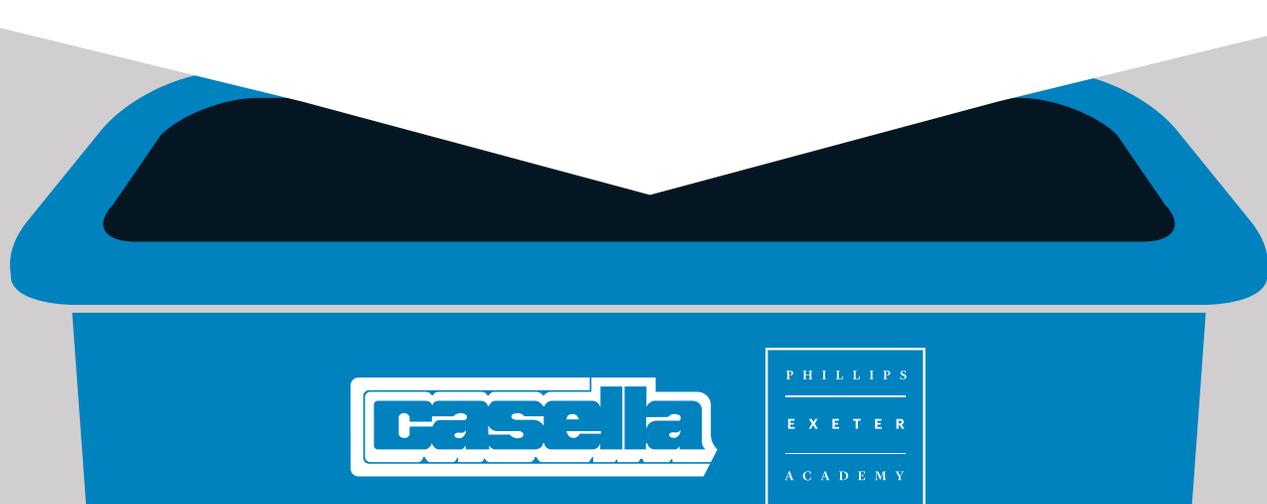
Driver/Date: \_\_\_\_\_

Reason: \_\_\_\_\_

Contaminated Stream (circle): **Trash** **Recycling**

# THE EXONIAN NEWSPAPER

Once you have finished reading The Exonian, please recycle it in the bin below



*It's your campus, Phillips Exeter Academy. Do your part to recycle!*

Figure 5

# **Attachment 4**

SERVICE • TRUST • RESPONSIBILITY • INTEGRITY • CONTINUOUS IMPROVEMENT • TEAMWORK  
TRUST • RESPONSIBILITY • INTEGRITY • CONTINUOUS IMPROVEMENT • TEAMWORK • SERVICE  
RESPONSIBILITY • INTEGRITY • CONTINUOUS IMPROVEMENT • TEAMWORK • SERVICE • TRUST  
INTEGRITY • CONTINUOUS IMPROVEMENT • TEAMWORK • SERVICE • TRUST • RESPONSIBILITY  
CONTINUOUS IMPROVEMENT • TEAMWORK • SERVICE • TRUST • RESPONSIBILITY • INTEGRITY  
TEAMWORK • SERVICE • TRUST • RESPONSIBILITY • INTEGRITY • CONTINUOUS IMPROVEMENT  
SERVICE • TRUST • RESPONSIBILITY • INTEGRITY • CONTINUOUS IMPROVEMENT • TEAMWORK  
TRUST • RESPONSIBILITY • INTEGRITY • CONTINUOUS IMPROVEMENT • TEAMWORK • SERVICE  
RESPONSIBILITY • INTEGRITY • CONTINUOUS IMPROVEMENT • TEAMWORK • SERVICE • TRUST  
INTEGRITY • CONTINUOUS IMPROVEMENT • TEAMWORK • SERVICE • TRUST • RESPONSIBILITY  
CONTINUOUS IMPROVEMENT • TEAMWORK • SERVICE • TRUST • RESPONSIBILITY • INTEGRITY  
TEAMWORK • SERVICE • TRUST • RESPONSIBILITY • INTEGRITY • CONTINUOUS IMPROVEMENT  
SERVICE • TRUST • RESPONSIBILITY • INTEGRITY • CONTINUOUS IMPROVEMENT • TEAMWORK  
TRUST • RESPONSIBILITY • INTEGRITY • CONTINUOUS IMPROVEMENT • TEAMWORK • SERVICE  
RESPONSIBILITY • INTEGRITY • CONTINUOUS IMPROVEMENT • TEAMWORK • SERVICE • TRUST  
INTEGRITY • CONTINUOUS IMPROVEMENT • TEAMWORK • SERVICE • TRUST • RESPONSIBILITY



**casella**  
ESTABLISHED 1975

# Sustainability Report

— 2022 —



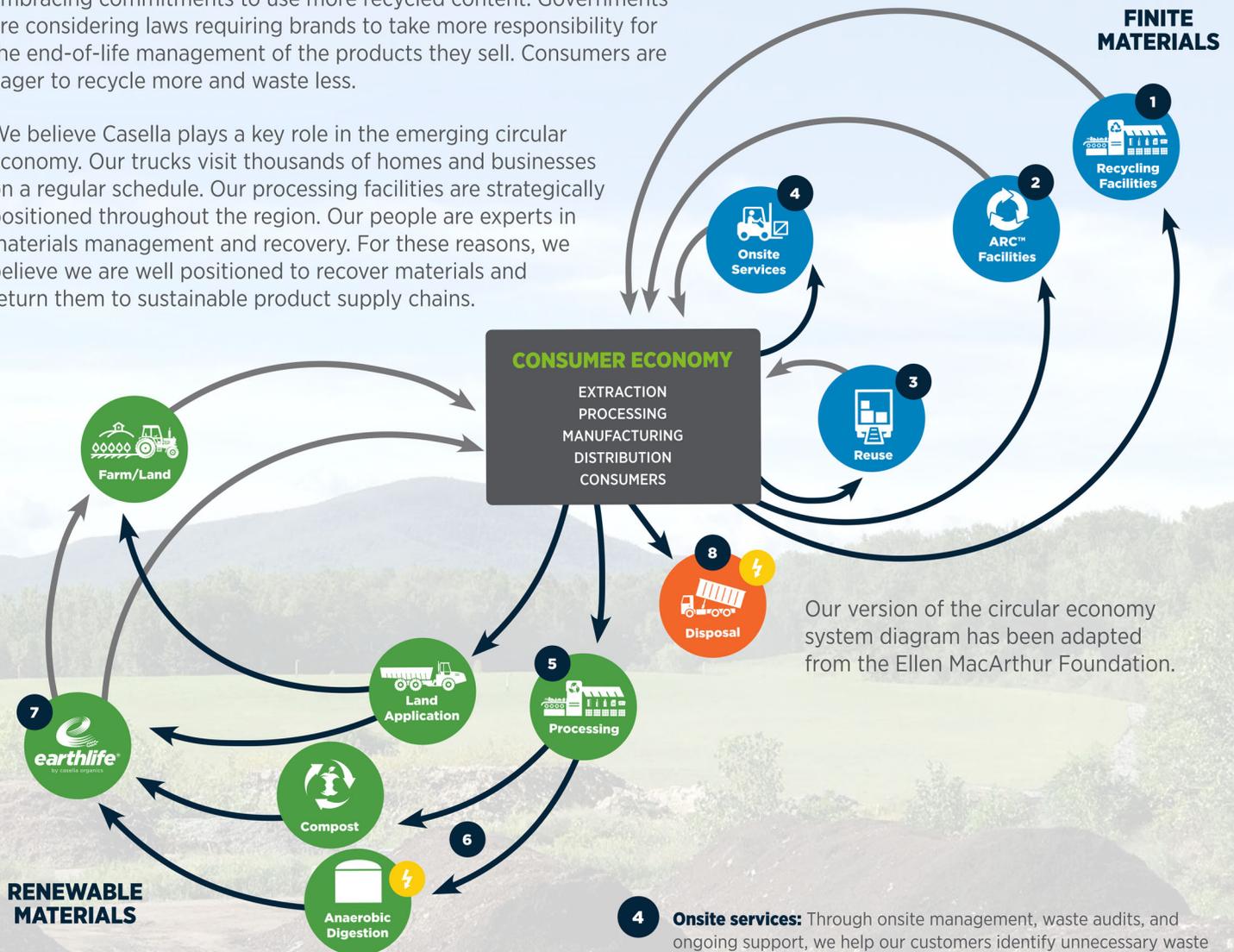
**Serving local communities since 1975**



# SUPPORTING A CIRCULAR ECONOMY

The idea of a circular economy is gaining momentum. Brands are embracing commitments to use more recycled content. Governments are considering laws requiring brands to take more responsibility for the end-of-life management of the products they sell. Consumers are eager to recycle more and waste less.

We believe Casella plays a key role in the emerging circular economy. Our trucks visit thousands of homes and businesses on a regular schedule. Our processing facilities are strategically positioned throughout the region. Our people are experts in materials management and recovery. For these reasons, we believe we are well positioned to recover materials and return them to sustainable product supply chains.



Our version of the circular economy system diagram has been adapted from the Ellen MacArthur Foundation.

On these two pages, you will learn the many ways we are innovating to capture more value from society's waste streams so we can return high quality raw materials to the economy.

- 1 Recycling facilities:** Our recycling facilities serve thousands of businesses and households throughout the northeast. Each year, we use these facilities and partner operations to recover over 700,000 tons of household, commercial, and industrial recyclables.
- 2 Casella ARC™ facilities:** Our unique aggregation and recovery collaborative model enables the capture of specialty recyclables from manufacturing, hospitals, colleges, and more.
- 3 Promoting reuse:** Many items – cardboard cartons, drums, pallets, and more – can be reused extensively prior to recycling. We work with vendors to provide this service.
- 4 Onsite services:** Through onsite management, waste audits, and ongoing support, we help our customers identify unnecessary waste that can be eliminated at the source.
- 5 Organics processing:** To recover value from food waste and other organics, we invest in on- and off-site processing equipment. One example is depackaging, which is designed to separate food and beverages from packaging to maximize recovery.
- 6 Organics recovery:** We capture nearly 400,000 tons per year of organic residuals including food waste, wastewater biosolids, wood ash, paper mill fiber, and more. Through methods such as composting, anaerobic digestion, or land application, organic wastes are renewed as resources.
- 7 earthlife® products:** We produce an extensive line of branded agricultural, horticultural, and landscaping products that we sell to a wide variety of customers.
- 8 Safe and secure disposal:** For materials that are not yet suitable for recycling or recovery, our landfills continue to provide responsible containment. Several of our facilities have landfill gas to energy infrastructure that generates renewable energy.

## Section XII – Signatures

---

Information for Section XII is provided on the application form.

## Section XIII – Fee Calculation Form

---

Information for Section XIII is provided on the application form.