



**Fishers Island Waste Management District
Draft Local Solid Waste Management Plan
The 2030 Plan**

**Board of Commissioners
Fishers Island Waste Management District
P.O. Box 22
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March 2019

Fishers Island Waste Management District

Draft

Local Solid Waste Management Plan

The 2030 Plan

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Glossary of Terms

The following glossary of terms have been excerpted from 6 NYCRR Part 360.2 and supplemented, as necessary, to coincide with the contents of this Plan:

Agricultural waste - Manure, crop residue, animal carcasses, and other similar waste that is generated on a farm.

Biodegradable – Material that can be broken down naturally, including by living organisms and bacteria. Biodegradable wastes can be broken down into components by biological processes, for reuse.

Biosolids - Accumulated semi-solids or solids resulting from treatment of wastewaters from publicly or privately owned or operated sewage treatment plants

Composting – Aerobic, thermophilic decomposition of organic waste to produce a stable, humus-like material.

Composting and other organics processing facility - A facility that treats the readily biodegradable organic components in waste to produce a mature product for use as a source of nutrients, organic matter, liming value, or other essential constituent for a soil or to help sustain plant growth.

Construction and demolition debris or C&D debris - Waste resulting from construction, remodeling, repair and demolition of structures, buildings and roads. C&D debris includes fill material, demolition wastes, and construction wastes.

Container - A portable piece of equipment in which waste is stored, transported, treated, disposed of, or otherwise handled.

eWaste – Waste comprised of electronic products, such as computers, televisions, monitors, fax machines, stereos and copiers.

Facility - A location and associated devices employed in the management of solid waste beyond the initial collection process. The term includes all structures, appurtenances or improvements on the land used for the management or disposal of solid waste.

Hazardous waste - A material that is defined in 6 NYCRR Part 371 to be both a solid waste and a hazardous waste.

Household - Single and multiple-family residences, hotels and motels, bunkhouses, ranger stations, crew quarters, campgrounds, picnic grounds, and day use recreation areas.

Household Hazardous Waste or HHW - Waste from a household which, but for its point of origin, would be a hazardous waste under 6 NYCRR Part 371, and includes all pesticides as defined in ECL article 33.

Leachate - Any solid waste in the form of a liquid, including any suspended components, that results from contact with waste.

Leachate Collection and Removal System - A system or device that is designed, constructed, maintained, and operated to collect and remove leachate from a facility.

Local Solid Waste Management Plan or LSWMP - A plan prepared by a planning unit pursuant to 6 NYCRR Part 366.

Mulch - Materials produced from tree debris, yard trimmings or other suitable materials and intended for use on soil surfaces to prevent the growth of weeds and erosion.

Municipal solid waste or MSW - Residential waste, commercial waste, or institutional waste, or any component or combination thereof, excluding construction and demolition debris and biosolids unless they are commingled.

Organic - Derived from living matter or living organisms and is readily biodegradable.

Organics recycling facility - A facility that processes the organic components in waste to produce a mature product for use as a source of nutrients, animal feed, organic matter, liming value, or other essential constituent for a soil to help sustain plant growth.

Planning Unit - For locations within New York State, a county; two or more counties acting jointly; a local government agency or authority established pursuant to State Law for the purposes of managing solid waste; any city in the county of Nassau; any of the above in combination with one or more neighboring cities, towns, or villages; or two or more cities, towns, or villages, or any combination of them, that the department determines to be capable of implementing a regional waste management program. In order for a county to be a planning unit, it must include all cities, towns, and villages within its borders.

Product stewardship - The act of producer responsibility, which may be voluntary, mandatory or shared with all product stakeholders, for minimizing a product's health and environmental impacts throughout all stages of the product's life cycle including end-of-life management.

Receiving facility - The solid waste management facility or hazardous waste management facility authorized to accept the specified waste for transfer, storage, treatment or disposal.

Recyclable - A component of waste which exhibits the potential to be recycled.

Recyclables handling and recovery facility - A facility that processes source-separated non-putrescible recyclables.

Recycle - The series of activities by which recyclables are collected, sorted, processed, and converted into raw materials or used in the production of new products, or, in the case of organic recyclables, used productively for soil improvement. This term excludes thermal treatment (other than anaerobic digestion) or the use of waste as a fuel substitute or for energy production, alternate operating cover, or within the footprint of a landfill.

Reuse - Reuse, as defined in the Beyond Waste. A Sustainable Materials Management Strategy for New York State, is the recovery of materials and products for the same or a similar use for which they were originally produced. It involves the collection and distribution of useful products, such as household and office furniture, food, building materials, books, sporting equipment and appliances, from those who no longer want or need them to those who can put them to use.

Single-stream recycling - Single-stream recycling is a system in which all recyclables are handled in a single bin.

Solid waste - Discarded materials including solid, liquid, semi-solid, or contained gaseous material, resulting from industrial, municipal, commercial, institutional, mining or agricultural operations or from residential activities including materials that are recycled or that may have value.

Source-separated organics - Organic material that has been separated at the point of generation including, but not limited to, food scraps, food processing waste, soiled or unrecyclable paper, and parts, and yard trimmings. Source-separated organics do not include animal mortalities, biosolids, sludge, or septage.

Source-separated recyclables - Recyclables that have been separated from the waste stream at the point of generation pursuant to State or local law or ordinance or a voluntary program where the transporter manages the materials in a source-separated manner.

Thermal treatment – Exposure of waste to elevated temperatures or chemicals for the purpose of changing the chemical, physical or biological character or composition of the waste, and includes combustion, pyrolysis, gasification, hydrolysis or other similar processes, but does not include composting or anaerobic digestion.

Transfer facility or station – A facility that receives solid waste for the purpose of subsequent transfer to another facility for further processing, treatment, transfer, or disposal.

Total expenditures - All expenditures excluding capital outlays and debt repayment.

Total revenues - Revenues from all taxes and fees but does not include the proceeds from borrowing or asset sales, excluding revenue from funds managed by a municipality on behalf of another party.

Waste – See Solid Waste

Yard trimmings - Grass, leaves, and tree and brush trimmings from residential, institutional, and commercial sources.

Executive Summary

The Fishers Island Waste Management District (FIWMD or District) is a special improvement garbage district created by the Town of Southold for the purpose of managing solid waste generated on Fishers Island. While Fishers Island is part of the Town of Southold, its isolation from Long Island with direct access only from the State of Connecticut purposely led to the creation of the special district in 1952. The FIWMD operates two facilities on Fishers Island – a transfer station and a compost station/receiving facility. With no disposal facilities on the Island, the District relies upon various handling and disposal facilities in the State of Connecticut. A five-member Board of Commissioners, elected by the registered voters on Fishers Island, operates, manages and controls the solid waste management activities, including the establishment of waste hauling and disposal contracts, user fees, and the implementation of the District’s programs and policies.

The FIWMD has prepared this updated Local Solid Waste Management Plan in accordance with 6 NYCRR Part 366. Section 366-1.2(a)(4) requires a Local Solid Waste Management Plan “to provide for or take into account all the solid waste generated within the planning unit for a ten-year period.” The District has elected to consider the solid waste generation, facility and management needs to 2030. This Plan considers the waste generation and composition on the Island, the seasonal variations and unique circumstances to an Island of less than 240 full-time residents, but a seasonal population that exceeds 2,500 persons. It also considers the facilities available to the District and how they can be adapted to meet the waste management goals set forth in this Plan, as well as those set forth in the New York State’s Beyond Waste - A Sustainable Materials Management Strategy (*Beyond Waste Plan*), adopted in 2010 by the New York State Department of Environmental Conservation (NYSDEC).

The *Beyond Waste Plan* recognizes that materials management requires a change in the planning approach from responsive actions to waste generation to the need to identify methods and programs to reduce waste generation, as well as to increase reuse, recycling and composting. As detailed in this Plan, these goals are consistent with those of the District given the geographic isolation from the mainland, the costs of hauling and disposal, as well as the limited land area available for on-Island disposal.

As stated on Page 1 of the *Beyond Waste Plan*,

“New York State’s Beyond Waste Plan sets forth a new path for solid waste management. The plan shifts from a perspective of focusing on “end-of-the-pipe” waste management techniques to looking “upstream” and more comprehensively at how materials that would otherwise become waste can be more sustainably managed through the state’s economy. This shift is central to the state’s ability to adapt to an age of growing pressure to reduce demand for energy, reduce dependence on disposal, minimize emission of greenhouse gases and create green jobs.” (pg. 1)

The *Beyond Waste Plan* identifies a quantitative goal for municipal solid waste (MSW) disposal volumes, with “a progressive reduction in the amount of MSW destined for disposal to reach the ultimate goal of reducing disposal to 0.6 pounds per person per day by 2030.” In 2010, the MSW disposal average in New York State was 4.1 pounds (lbs.) per person per day. The *Beyond Waste Plan* seeks to create a sustainable materials management (SMM) economy that relies not only upon waste prevention by the individual generators, but improved methods by local governments and waste handling facilities to reduce disposal volumes, including the implementation of reuse, recycling, and composting and organic materials recycling programs.

This Plan sets forth changes in programs and policies, which are projected to accomplish the *Beyond Waste Plan* MSW goal of 0.6 lbs./person/day although doing so will require significant effort. Based on the programs and policies set forth herein, the *Beyond Waste Plan* goal of 0.60 lbs./person/day could be achieved on Fishers Island by 2026 and then remain constant for the balance of the planning period. Integral to the program are significant programmatic undertakings, including but not limited to elements such as source separation of compostable organics for processing either on-Island or shipment to an off-Island digester or composting facility, adoption of the pay-by bag approach to spur recycling and further diversion, and an initiative to urge residents and businesses to implement new source reduction efforts. These programs would reduce the amount of waste disposed while increasing amounts diverted to recycling and beneficial reuse; however, depending upon the processing approach

taken they may not have an impact upon volumes of waste sent off-Island for management and disposal. Public education and participation in new programs are also essential to the success of the waste generation and management goals set forth herein. This Plan evaluates options for successful implementation and achievement of the District's goals.

The preparation of this Plan included technical studies, plans, and previous reports and documents for background information and research. The following were the main sources of information:

- Solid Waste Management Plan of the Fishers Island Refuse & Garbage District, February 1997;
- Beyond Waste - A Sustainable Materials Management Strategy for New York State, prepared by the New York State Department of Environmental Conservation, 2010;
- 2015 Statewide Waste Characterization Study, Connecticut Department of Energy and Environmental Protection;
- Consolidated Facilities Planning Report, Fishers Island Waste Management District, 2016;
- Records provided by the District regarding quantities of wastes and recyclables managed at its facilities, including records of user visits; and
- Pay As You Throw (PAYT) in the US: 2006 Update and Analysis, December 30, 2006. (EPA/SERA Report)

Since the 1997 LSWMP, the Island's full-time resident population has steadily declined while the seasonal population has continued to climb annually. The last three US census periods showed a seasonal population ranging from 1,875 to 2,635. However, the full-time population has declined, ranging over the last three census periods from 329 to 236. Population projections indicate that in 2020, the seasonal population will increase to 3,010 persons and in 2030, this number will rise to 3,390 persons. In contrast, the full-time population of the Island has steadily declined, due to the continuing challenge of attracting year-round residents in the face of high housing costs, limited employment opportunities, and routine cost of ferry transit to the mainland. This trend, however, has been identified as a key issue to be addressed by the Island community and therefore, for the purpose of this Plan, it is assumed that the Island will succeed in this effort with an estimated increase of 20 full-time persons by 2030.

The District has introduced new programs since the 1997 LSWMP to increase the re-use and recycling of wastes generated on the Island. One such program is the acceptance of source-separated glass at its transfer station. Once collected, the District transports the glass containers to the compost station, where the material is fed into a grinder that brings the product down to a sand-like size and texture. The equipment includes a screen that aids in removal of labels, which results in a final product that can be used as fill at the compost station. Such practice is consistent with the State's *Beyond Waste Plan* where recommendations for improved recycling include the "...local use of processed, mixed glass...in engineering applications." (Page 152)

The District also now provides containers for wood waste and oversized MSW, and has implemented a composting program at the compost station. The District processes brush and yard waste resulting in a usable compost product made available for use on the Island. The importance of this practice is the creation of a valuable soil amendment for on-Island properties. As recognized in the State's *Beyond Waste Plan*, "Because compost contains high levels of organic carbon, which can fuel key ecosystem functions like nutrient cycling, water retention, and erosion control, it can also help rebuild soils." (Page 158). The District recognizes the benefit in improving its composting program to include organics and in 2016, presented a plan to the community for a composting program (among other things) that would require the source separation of organics.

The District has also improved its community engagement process. Several times per year, the District delivers presentations to the community on the status of the facilities, its desired plans for improvements, and program changes to increase recycling and composting. The District also maintains a current website to provide up-to-date information for the community and is active on social media platforms.

The 1997 LSWMP identified a five-year goal of recycling approximately 42% of the MSW stream. The FIWMD's programs and policies have managed to achieve an overall recycling rate of 46% and a MSW off-Island thermal disposal rate of approximately 1.09 lbs./person/day, when averaged annually, meaning that the current disposal rate on a per-capita basis, while commendable, remains close to double that of the State's goal.

The 1997 LSWMP identified the co-location of the transfer station and compost station as a key facility goal. As of the current date, the consolidation of these two facilities has not occurred; however, between 2016 and 2018, the District prepared site development plans, undertook a comprehensive environmental review of the project, and filed with the Town of Southold for approval. In November 2018, the District withdrew its plan in response to community concerns and questions regarding the potential impact of a facility consolidation plan. It has now elected to form a committee, which will be comprised of members of the full-time and seasonal populations, as well as District staff, to develop a consensus-based plan for improved solid waste management facilities, based on the District's goals.

This Plan sets forth the District's current programs and policies, and its planned activities and improved programs to decrease its MSW disposal volumes, while significantly increasing its diversion from the MSW disposal stream to recycling and related uses. Furthering employee education and training, as well as improvements to public education programs, are also integral to this Plan.

Chapter 1 of this Plan describes the District, as the Planning Unit, and the population it serves. The current population and the projected changes in 2030 are presented. The seasonal variations in waste generation and the unique circumstances affecting solid waste management are also discussed. Finally, the 1997 LSWMP and the changes in waste generation, waste composition, and programs are included.

Chapter 2 of this Plan provides the current waste generation and composition, and the projected changes in the planning period to 2030 based on the current programs and policies. An assessment of such data is also provided.

Chapter 3 of this Plan describes the District's two facilities – the Transfer Station located at 58 Town Road and the Compost Station and Receiving Facility located at 2760 Whistler Avenue. The programs and initiatives at each of the two facilities, and an assessment are also included.

Chapter 4 of this Plan provides the administrative and financial structures of the Planning Unit. The revenues and expenditures of the District are also discussed. The current policies, regulations and local laws are described, as well as an assessment of any required changes for the achievement of the goals set forth in this Plan.

Chapter 5 of this Plan includes a qualitative assessment of alternatives and modifications to the existing solid waste management program for the achievement of the waste reduction, re-use and recycling goals over the term of the planning period.

Chapter 6 of this Plan sets forth the implementation plan and schedule.

Chapter 7 of this Plan sets forth the corresponding waste stream projections, including types and quantities, as well as the disposal, reduction, and recovery projections through phased participation in the proposed programs.

Chapter 1. Planning Unit Description

1.1 The Planning Unit - Introduction

Fishers Island is part of the Town of Southold, a municipal corporation of New York State located on the easternmost portion of the north fork of Long Island, in the County of Suffolk. The Island is located approximately 12 miles northeast of Orient Point, Long Island, and four (4) miles from the coast of Connecticut. The Island is bordered by the Long Island Sound to the east and west, Fishers Island Sound to the north, and Block Island Sound to the south. Fishers Island is less than seven miles in length and averages 0.75 mile in width, covering approximately 2,586 acres or four square miles.

There is no bridge connection to Fishers Island. Access to Fishers Island is limited to the Fishers Island Ferry District from the City of New London, Connecticut, private boats or boat taxis, and private air charters to the Elizabeth Field Airport, located on the west end of the Island.

The Island's isolation from the Town of Southold led to the Town Board's creation of a special waste management district in March 1952 (then referred to as the "Fishers Island Garbage & Refuse District"), having sole responsibility for the operation and management of solid waste management activities on the Island. The geographic isolation of the Island also renders it impractical for the District to integrate its recycling and waste management activities with those of the Town of Southold. Consequently, the District has developed a network of relationships with public and private parties in Connecticut to meet its solid waste management needs. The facilities and organizations with which the District has established relationships are included in Chapter 4 of this Plan.

Fishers Island consists primarily of residential land use (approximately 36% of land area) and undeveloped land (approximately 26% of land area). Recreational land and open space account for approximately 18% of the total land area. Transportation land use, which consists primarily of the Town of Southold-owned Elizabeth Field Airport and the Fishers Island Ferry District, occupies approximately 13% of the land area. The remaining seven percent of the Island is comprised of institutional, waste handling and management, industrial, commercial and utility uses. Table 1 below includes the acreage and percent of total land area by land use type, as included in the Town of Southold Comprehensive Plan Update – Land Use Draft Chapter (March 15, 2017).

Table 1 - Fishers Island Land Uses by Acreage (2017)

Land Use	Acreage	Percentage of Total Land Area
Residential	940	36.3
Vacant (Undeveloped)	669	25.9
Recreation & Open Space	471	18.2
Transportation	329	12.7
Institutional	95	3.7
Waste Handling & Management	28	1.1
Industrial	24	0.9
Commercial	22	0.9
Utilities	7	0.3
Total:	2,586	100

1.2 Members of the Planning Unit and Functions

1.2.1 Fishers Island Waste Management District

The FIWMD is a municipal special improvement garbage district created by the Town of Southold in 1952, pursuant to Chapter 69 of the Laws of New York, and established a separate Board of Commissioners pursuant to Chapter 378 of the Laws of New York. Chapter 69 authorized the Town Board of the Town of Southold to establish the then referred to as “Fishers Island Garbage & Refuse District” and states in pertinent part as follows:

The Town Board of the Town of Southold in the County of Suffolk is hereby authorized and empowered to establish a garbage and refuse district for that portion of such town known as Fishers Island and to vest the operation, management and control thereof in a Board of Commissioners in such district.

In April 2003, the Town of Southold elected to rename the District from the “Fishers Island Garbage & Refuse District” to the “Fishers Island Waste Management District,” with no change in function or purpose.

The Board of Commissioners is comprised of five members elected by the registered voters of Fishers Island. The District also employs six staff members for administration and facility operation. The Board of Commissioners has full contractual authority for the execution of waste management contracts, as well as the establishment and execution of solid waste management programs and policies on the Island. The Board of Commissioners also operates, manages and controls two facilities on the Island - a transfer station located at 58 Town Road, and a compost station/receiving facility located at 2760 Whistler Avenue. A description of these facilities is included in Chapter 3 of this Plan. Chapter 4 of this Plan provides additional information for the District, including its organizational structure and staff responsibilities.

There is no public collection of refuse or recyclables on the Island. Rather, all residents and businesses are responsible for delivering wastes to the District’s facilities either on their own or by hiring a contractor of which a small number are known to operate on the Island. Other than these two facilities, there are no other waste handling or disposal sites currently active on Fishers Island that serve the public; however, there are limited composting programs conducted by two local landscaping companies. The only local waste processing activities of the District are the crushing and re-use of source-separated glass and the composting program. All other wastes and recyclables are transported off-Island by licensed carters to permitted facilities in the State of Connecticut.

1.2.2 Town of Southold

The Town of Southold has a limited role in the planning unit. Specifically, the Town levies the financing for the FIWMD operations through taxation of the Fishers Island residents and maintains jurisdiction for site and building improvements.

1.3 Fishers Island Population and Housing - Current and Ten-Year Projections

1.3.1 Current Population and Housing

Fishers Island, as a largely seasonal or second-homeowner ownership community, presents unique planning challenges. With no hospitality uses, tourists who do not own but wish to vacation on Fishers Island rely on home rental properties. Based on U.S. Census decennial data, approximately 80 percent of housing units on the Island are categorized as seasonal (see Table 2), thus resulting in a significant seasonal population that has ranged from 1,875 to 2,635 over the last three census periods (see Table 3). The remaining 20 percent of the housing units are those occupied by the relatively small, full-time population that has ranged over the last three census periods from 329 to 236 (see Table 3).

Table 2 - Fishers Island Full-Time and Seasonal Housing Units, 1990 – 2010

Housing Unit Type	1990 Housing Units (A)	2000 Housing Units (B)	2010 Housing Units (C)	Percentage Change	
				1990 - 2000	2000 - 2010
Full-Time	152	138	120	-9.2	-13.0
Seasonal	375	448	527	+19.5	+17.6
TOTAL:	527	586	647	+11.2	+10.4

Sources:

- (A) IPUMS NHGIS, University of Minnesota, www.nhgis.org (Note: This data source was used to procure 1990 census data for Fishers Island as the U.S. Census Bureau’s American Fact Finder only provides data from the year 2000 through the present; Fishers Island was not identified as a Census Designated Place in the 1990 census, and thus, housing unit data for all census blocks comprising Fishers Island in the 1990 census was obtained and summed)
- (B) United States Census Bureau (2000). *General Housing Characteristics: 2000*. [<https://factfinder.census.gov/>]
- (C) United States Census Bureau (2010). *General Housing Characteristics: 2010*. [<https://factfinder.census.gov/>]

Table 3 - Fishers Island Full-Time and Seasonal Population, 1990 – 2010

Population Type	1990 Population (A)	2000 Population (B)	2010 Population (C)	Percentage Change	
				1990 - 2000	2000 – 2010
Full-Time	329	289	236	-12.2	-18.34
Seasonal ¹	1,875	2,240	2,635	+19.5	+17.6
Guests & Lodging ²	104	97	88	-6.7	-9.3
TOTAL PEAK:	2,308	2,626	2,959	+13.8	+12.7

Sources:

- (A) IPUMS NHGIS, University of Minnesota, www.nhgis.org
- (B) United States Census Bureau (2000). *Age Groups and Sex: 2000*. [<https://factfinder.census.gov/>]
- (C) United States Census Bureau (2010). *Age Groups and Sex: 2000*. [<https://factfinder.census.gov/>]

¹ Based on an estimated average of 5.0 persons per seasonal household, as published by the Suffolk County Planning Department.

² Guests in full time housing units and occupancy of lodging units. From housing unit data and other factors developed by the Suffolk County Planning Department.

As shown in Table 3 above, the population of the Island currently increases by over 1,000 percent in the peak season. In reviewing Table 2, the steady growth in the number of seasonal housing units while full-time housing units have declined somewhat indicates that the ratio of seasonal-to-permanent residents has likely gradually increased for many years.

1.3.2 *Projections of Population*

A. Full-Time Population

As indicated in Table 3, the full-time population of the Island has steadily declined, according to the past three most recent US Census counts, which reflects a continuing challenge of attracting year-round residents in the face of the high housing costs, limited employment opportunities, and routine cost of ferry transit to/from Connecticut for shopping and other services. If one were to use the long-term trends demonstrated by the past U.S. Census data, the forecast would show an expectation for continuing decline of full-time population. However, this trend has been identified as a key planning issue to be addressed by the Island community, including but not limited to the following:

- The Fishers Island Strategic Plan: 2007- 2017, Prepared for: Fishers Island, Town of Southold included a goal of fostering: “A sustainable year-round population of up to 500 people, with sufficient diversity (in terms of age, sex and ability) to maintain a self-sufficient Island community.” The Plan addressed a range of factors that would contribute to achievement of the goal; and,
- On-going activities of the Walsh Park Benevolent Corporation, which was founded in 1987 to promote the viability of the year-round community of Fishers Island by creating and maintaining a supply of attractive and affordable housing.

It has been assumed for the purpose of this Plan that the Island will succeed in its effort to stabilize the full-time population of the Island, with the potential for an additional 20 persons (from the 2010 US Census count of 236 persons³) by 2030. As noted in Table 4, the projected 2030 population for this Plan is 256 persons. Whether this occurs or not will have minimal impact upon the waste management goals of the District, given the much larger seasonal population, which is expected to continue to grow based upon long term and continuing recent trends.

B. Seasonal Population

A projection of seasonal peak population levels is based upon the forecasted change in seasonal housing units. The future housing unit levels were based upon linear regression analysis with the 1990 Census, 2000 Census, and 2010 Census data as inputs. The resulting forecast of housing units was combined with the assumed population per unit in seasonal dwellings (i.e., 5.0 persons per unit) to yield an estimated future population.

Table 4 contains a summary of historical population and the projected growth.

³ The U.S. Census publishes not only its decennial counts of population and housing units (along with other demographic data) but also the periodic American Community Survey (ACS), which contains estimates of population and housing units based upon sampling data. Unfortunately, the sampling method used in the ACS publications yields a large margin of error for small population areas, such as Fishers Island. Based on the ACS, the estimated full-time population in 2016 was 303 persons; however, the reported margin of error is +/- 151 persons. For this reason, the ACS estimates were not used.

Table 4 - Population Projections – Full-Time and Seasonal

Population Element	1990	2000	2010	2020	2030
Full time	329	289	236	246	256
Seasonal	1,875	2,240	2,635	3,010	3,390
Guests & Lodging	104	97	88	89	91
Total Peak	2,308	2,626	2,959	3,345	3,737

C. Seasonal Profile

In order to complete the analysis of the waste stream from a population perspective, the amount of time the seasonal population spends on the Island is necessary. Table 5 contains the assumed monthly profile for seasonal dwellers on the Island.

Table 5 - Estimated Duration of Stay for Seasonal Population by Month

Month	Seasonal - % Occupied
January	0%
February	0%
March	5%
April	10%
May	30%
June	70%
July	100%
August	100%
September	70%
October	50%
November	25%
December	0%

The estimated duration of stay, in combination with the above estimates of the size of the seasonal and full-time population yield an estimated annual average population of 1,280 at this time, increasing to 1,590 in 2030.

D. Population Density

The population density of a community can also have an impact on the generation and waste stream composition. The NYSDEC defines rural areas as communities with a population density of less than 325 people per square mile, suburban areas as communities with a population density between 325 and 5,000 people per square mile, and urban areas as communities with a population density greater than 5,000 people per square mile (*Beyond Waste Plan*, p. 96). Fishers Island is approximately 4.04 square miles with a full-time population of 236 persons, at present, which would categorize the planning unit as rural (see Table 6). However, the seasonal population

increase of over 1,000 percent alters the community to a suburban area (see Table 6) during that timeframe. As discussed in Chapter 2, the waste stream generation and composition significantly change in the peak season.

Table 6 - Fishers Island Population, Land Area and Population Density

Population	Land Area (sq. mi.)	2010 Total Population	2010 Population Density (persons/sq. mi.)	2030 Total Population	2030 Population Density (persons/sq. mi.)
Full-Time (Oct – April)	4.04	236	58	256	63
Peak Season (May – Sept)	4.04	2,959 Total	732	3,737 Total	925

Population Density Notes:

Rural Community: Less than 325 people/square mile [Noted in Yellow above]

Suburban Community: Between 325 and 5,000 people/square mile [Noted in Blue above]

Urban Community: Greater than 5,000 people/square mile [N/A]

As indicated in Table 6 above, the 2030 projections do not alter these designations. Fishers Island remains rural in the off-season and suburban in the peak season.

1.4 The Neighboring Planning Units

Given Fishers Island’s isolation from the mainland, the District must develop and administers its own programs. The District relies upon transportation and disposal contracts with entities within the State of Connecticut; however, the negotiation and execution of these contracts are performed solely by the Board of Commissioners.

1.5 Seasonal Variations and Unique Circumstances Affecting Solid Waste Management

- ***Geographic Isolation*** - Fishers Island is located a short distance from the Connecticut coastline, off the Town of Groton, Connecticut. It is geographically isolated from the Town of Southold, having no transportation links with Southold, or any other New York State location. The Fishers Island Ferry District provides routine service to the City of New London, Connecticut. Vehicular traffic between Fishers Island and Southold must rely upon two ferry systems: (1) Fishers Island Ferry District; and (2) Cross Sound Ferry Services, which provides service between New London, Connecticut and Orient Point, Long Island. These geographic realities have resulted in the Island's primary employment, commerce, and transportation links to be established with the State of Connecticut. Moreover, Fishers Island is dependent upon Connecticut facilities for its waste management and recycling services.
- ***No Solid Waste Disposal On-Island*** - Fishers Island contains no solid waste disposal locations. The Fishers Island landfill operated for some 40 years, until its closure in 1991. After the rejection of a plan to construct incinerators and an ash landfill on the Island, the District proceeded with the construction of the current transfer station, while also managing the compost station/receiving facility. All wastes for disposal are shipped off-Island via various haulers. The District maintains contracts and agreements with the Fishers Island Ferry District for transportation costs, as well as separate contracts with various haulers and

tipping/processing facilities in the state of Connecticut (see Appendix 2). The reliance upon the Fishers Island Ferry for transport off-Island and the mainland for disposal results in high transportation costs for the District, as well as the inherent environmental impacts associated with hauling trucks (e.g., direct emissions, energy demand). The District recognizes the State’s *Beyond Waste Plan* in that “avoiding transportation impacts by managing materials closer to the point of generation is often a better environmental and economic choice.” (Page 52) This Plan sets forth various goals to reduce the amount of waste requiring transport off-island, thus decreasing the number of trucks having to travel to and from the island to facilities in Connecticut.

- **High Seasonal Population** - As explained in Section 1.2 of this Plan, Fishers Island has a small, full-time population that has ranged over the last 30 years from a high of 329 persons to a low of 236 persons. In the peak season that typically runs from the end of May through September, the population increases by over 1,000 percent. Table 7 below, provides the percent of annual municipal solid waste shipped off-Island for each month for a recent year of data.

Table 7 - Percent Annual MSW Shipped Off-Island by Month

Month	Percent Annual Tons
Jan	3.0%
Feb	0.0%
Mar	7.7%
April	3.5%
May	7.7%
June	10.8%
July	21.4%
Aug	19.8%
Sept	12.3%
Oct	7.2%
Nov	3.5%
Dec	3.2%

In addition to the higher waste volumes to be handled, the seasonal rental population presents challenges with solid waste management. Given the small full-time population, there is an Island-wide “awareness” to reduce household disposal volumes, as well as to separate recyclables. As methods to reduce disposal volumes, the District implements a composting program and accommodates household reusable goods for the community through a “leave and take area.” The management of solid wastes requires the cooperation of the short-term tenant rather than the owner of the home, as opposed to a hospitality use that can actively manage and recycle its wastes.

- **Limited Land Area** - The District leases the land on which the transfer station is located and the land area is inadequate for the equipment required for a single-stream recycling program. Unless the facility is modified to accept and compact single-stream recyclables into higher density truckloads, the District will continue to ship more truckloads of less-dense mixed containers (glass, plastic and metal food containers) and mixed paper than would otherwise be the case. The District could accomplish this either by arranging to expand the transfer station facility to provide another “slot” for a single-stream compactor, or by relocating this activity to the compost station, which would provide the land area for making the desired program changes.

Such changes include the implementation of single-stream recycling. In addition, this Plan concludes that to meet the NYSDEC goal of reducing MSW sent to disposal to .6 lbs./capita/day by 2030, it will be critical to begin source-separating organic waste for processing by digestion or composting, either on-Island or off-Island. Similarly, if this additional stream were to be accepted at the transfer station site, space would need to be identified to accommodate one or more containers. Alternatively, residents could be asked to source-separate this additional stream for delivery to the compost site, which has ample space to accommodate additional containers. Chapter 5 includes information on improvements to reduce disposal volumes.

1.6 Changes to the Planning Unit since the 1997 Local Solid Waste Management Plan

1.6.1 Implementation of the 1997 LSWMP

The 1997 LSWMP identified the co-location of the transfer station and compost station. As of current date, the consolidation of these facilities has not been implemented.

The 1997 LSWMP also identified a five-year goal of recycling approximately 42% of the MSW stream. The FIWMD’s programs and policies have managed to achieve an overall recycling rate of 46% and a MSW off-Island thermal disposal rate of approximately 1.09 lbs./person/day, when averaged annually.

1.6.2 New Solid Waste Management Facilities

There have been no new solid waste management facilities established on Fishers Island since the 1997 LSWMP. The District continues to operate two facilities on the Island – a transfer station and a compost station/receiving facility.

1.6.3 Waste Generation and/or Composition Changes

During preparation of the 1997 LSWMP, the operations had recently transitioned from a former landfill to use of the then-new transfer station and continued use of the “burn dump,” which is now the current compost station. Table 8 provides a comparison of the data included in the 1997 LSWMP to the current⁴ data recorded by the District.

Table 8 - Waste Generation Comparison of 1997 LSWMP to 2017 Conditions

Item	1997 LSWMP	Current	Change
Net Tons MSW Disposed:	318	255	-19.8%
Tons Recyclables Includes Mixed Paper plus Plastic, Metal, & Glass Food Containers:	109	109	--
Tons Cardboard Recycled:	51	45	-12%
Tons Wood Waste To Off-Island Facility:	19	86	455%
Tons Oversized MSW:	Not reported	130	
Scrap Metal Recycled:	Not reported	65	

⁴ This Plan was initially prepared during the Spring and Summer of 2018, and base calculations contained in the document utilize 2017 full-year data. As the final review (including public comment and hearing process) progressed, increasing amounts of 2018 data became available for consideration. Where noteworthy, this final draft contains comments regarding new data where it differs materially.

The reasons for the changes noted in Table 8 may be attributed to a variety of factors. First, there may be less commercial activity on the Island at this time than was the case in 1994, which, if true would follow the continuing decline in full-time population over the approximately 25 years. Other factors that likely contribute to these changes are the on-going changes in waste composition (one example is the continuing trend in shifting from glass to plastic containers) and the significant decline in both the size and distribution of newspapers and magazines. Further, it is possible that more contractors are taking advantage of the District’s wood waste and oversized MSW services to dispose more of its Commercial & Demolition (C&D) wastes. It is difficult to draw direct conclusions from the information in this table. For example, while at first glance one might assume there is less recycling participation on the Island, it is possible to have more recycling participation while at the same time reducing tonnages recovered (e.g., smaller newspapers and fewer magazines in circulation, shifts in food container materials from glass to plastic, etc.).

Certainly, the overall composition of the MSW waste stream has changed over time, which can also contribute to varying amounts of waste. Table 9 provides a summary of available information on waste composition from 1996 to the present.

Table 9 - Comparison of MSW Composition - 1996 to Present

Waste Type	1996 US EPA Estimate (A)	Current DEC Estimate (B)
Paper	31.10%	31%
Organics	27.40%	15%
Miscellaneous	1.90%	15%
Plastics	12.30%	14%
Metal	6.40%	9%
Wood	6.80%	6%
Rubber & Leather	3.70%	Not Stated
Glass	6%	5%
Textiles	4.40%	5%

Sources:

(A) Characterization of Municipal Solid Waste in the United States, 1997 Update prepared for US EPA by Franklin Associates.

(B) ftp://ftp.dec.state.ny.us/dshm/Planning/Waste_Composition_Calculators/popandmswcompcalc.xlsm. See Figure 5 in this Plan.

1.6.4 *New or Enhanced Programs*

Since the 1997 LSWMP, the District has introduced new programs. As noted earlier, the District now provides containers for wood waste and oversized MSW at the compost station. In addition, the District now accepts source-separated glass at its transfer station. With the introduction of a separate container for collection as well as providing homeowners and business with recycling totes for glass bottles, the District is now able to process glass for reuse. Specifically, once collected, the District transports the glass containers to the compost station, where operating staff feed the glass container stream into a grinder that brings the product down to a sand-like size and texture. The equipment includes a screen that aids in removal of labels, which results in a final product that can be used beneficially as fill at the compost station. Such practice is consistent with the State’s *Beyond Waste Plan* where recommendations for improved recycling include the “...local use of processed, mixed glass...in engineering applications.” (Page 152)

Over this period, the District has also purchased and deployed a shredder and compost screen to allow for the processing of brush and yard waste for a usable compost product. The compost is then made available to the Island. The importance of this practice is the creation of a valuable soil amendment for on-Island properties. As recognized in the State's *Beyond Waste Plan*, "Because compost contains high levels of organic carbon, which can fuel key ecosystem functions like nutrient cycling, water retention, and erosion control, it can also help rebuild soils." (Page 158). The District recognizes the benefit in improving its composting program to include organics. As discussed later in this Plan (see Section 5.2.2), the District has presented a plan to the community for a composting program requiring the source separation of organics and desires to implement a more aggressive plan to increase its composting material, while decreasing its MSW disposal rate.

The District is also active with education and outreach for its staff and operations. Relevant to staff training for the composting operation, FIWMD has invited experts in composting system operation and maintenance practices to the Island to train its staff in good operating practices. These experts have come from the New York State Pollution Prevention Institute (Rochester Institute of Technology), Cornell Waste Management Institute, and the US Composting Council.

The District has also improved its community engagement process. Several times per year, the District delivers presentations to the community on the status of the facilities and its recently proposed plan for consolidation (now withdrawn) and programs to increase recycling and composting. The District is also active on social media platforms (Facebook and Instagram) and maintains an active website for up-to-date community information.

1.6.5 Changes in Surrounding Land Use and Development

As illustrated on Figure 1, the compost station is bordered on its west side by the Fishers Island Sound. The Elizabeth Field Airport is located to the south and east, and residential uses are located to the north, all of which existed in 1997. Beyond these land uses to the north and east include the Community Center, public recreational areas (including tennis and basketball courts), Fishers Island School, residential, municipal and commercial uses. The Fishers Island Ferry with associated offices and storage space, contractor storage, artist studios, and an active US Coast Guard Station, are situated further north and east.

It is noted that several of the now existing residential, municipal and commercial uses commenced after the 1997 LSWMP, replacing what were once commercial and industrial uses, or vacant land. Specifically,

- Artist studios and gallery space replaced ferry offices and other offices and/or storage.
- Community Center replaced contractor space and storage.
- Residential adjacent to Community Center converted a vacant building into a home.
- Town Salt Barn and Propane Company

As of the preparation date of this LSWMP, there are also new uses planned, including a community art and food complex (currently under construction) as well as residential homes and apartments. With the changes in land uses occurring after adoption of the 1997 LSWMP and the continued changes in land use, the FIWMD is well aware of the community's interest in the activities that occur on the compost station property.

Figure 1 – Land Uses Surrounding Compost Station



Chapter 2. Waste Generation and Materials Recovery Data

2.1 Current Waste Generation and Composition

This section provides a summary of waste generation on the Island, including that portion handled by the District. The volumes of waste and recyclables received and managed are based upon records maintained by the District that originate at destination processing facilities in Connecticut for respective streams. Where data is not available, an estimated amount has been provided based upon facility knowledge.

2.1.1 MSW

The District receives MSW from generators on the Island, including residents and the small number of business enterprises (which may include a small number of haulers). The waste is deposited by the user into compactor hoppers at its transfer station and because there are no other waste facilities on the Island, the volume likely reflects all MSW generated on Fishers Island. The annual rate is approximately 260 tons, which is exported off-Island in approximately 30 separate truck-trips, with an average net weight of approximately 8.8 tons/trip.

The District also has an open-top container at its compost station where users deposit oversized MSW items. Categorized as “bulky waste” in the District’s database, this includes some amount of non-wood demolition waste from smaller projects. Records show approximately 130 tons/year of this material is removed annually in approximately 16 truck trips with an average net weight of 8.2 tons/trip.

2.1.2 Recyclables

The District accepts source-separated recyclables from users of its facilities. Table 10 provides a summary of the categories of recyclables received and the amounts according to District records:

Table 10 - Summary of Current Recyclables Handled⁵

Recyclable Stream	Est. Yearly Tons	Off-Island Trips	Net Weight/Trip (tons)
Old Corrugated Cardboard	45	12	3.6
Mixed Paper	30	9	3.5
Plastic, Metal, & Glass Food Containers ⁶	79	31	2.5
Scrap Metal	55	6	9.2
Mattresses	152 units	Managed with Oversized MSW	Managed with Oversized MSW
eWaste	54 units	Managed with Oversized MSW	Managed with Oversized MSW

Appliances are one element of the scrap metal stream. When appliances are received, they are accumulated until the District mobilizes a contractor to the Island to remove refrigerants from refrigerators, air conditioners and dehumidifiers. After the refrigerant is removed, these items become part of the scrap

⁵ The District currently separates mixed fibers from mixed glass, metal and plastic food containers in a traditional dual-stream recycling approach. For this reason, these two streams are presented separately in the table where most local planning units would consider these together as “single-stream” recyclables.

⁶ As noted previously, full-year 2017 data was relied upon as this Plan was being drafted. At the same time this work was on-going, the District began receiving source-separated glass containers, which are being crushed and used on-site for clean fill purposes. Part-year data from 2018 indicates that approximately one-half this amount is now being diverted for beneficial use on-Island.

metal stream sent directly to scrap metal recyclers. It is noted that the District is preparing to have its own staff trained and certified to perform the refrigerant removal process, thus eliminating the need to hire and await arrival of an off-island contractor to perform the service.

2.1.3 Construction and Demolition (C&D) Debris

The District receives the following C&D materials at the compost station:

- Wood waste (source-separated). This stream includes a range of construction and demolition materials, including doors, cabinets, framing material and any type of woody materials;
- Inert materials – Such materials include brick, block and similar materials; and
- Metals (discussed separately as metal recyclables).

These wastes are primarily from C&D activity, where the waste is separated at the point of generation and then delivered to the District⁷. In this manner, the District receives approximately 86 tons/year of wood waste, which requires approximately 12 off-Island truck trips with 7.2 tons/trip net weight. No record is kept of the amount of inert material accepted at the station. A small amount of C&D waste that generated on the Island is likely disposed of with the bulky (oversized MSW) waste shipments, and to a much lesser extent, where the material fits into the bags and bin, included along with the MSW waste shipments as is typically the case with MSW disposal programs.

As with other jurisdictions, contractors generate most of the C&D debris from the Island and the contractors arrange to remove the majority of this material off-Island, either with their own equipment or through hiring a separate hauler. Containers are placed at the job site and then taken off-Island directly to a processing and recovery facility. In addition, as is typical, the District is not involved with contractor-facility disposal arrangements.

Recognizing the large seasonal growth in population on the Island, a traditional estimate of the amount of C&D waste produced using a pounds/capita/year generation factor is not reliable given the number of vacant housing units during much of the year. Therefore, the approach used for this purpose was to first derive an average per-housing unit generation factor, which in combination with the total number of dwelling units on the Island (647), resulted in a potential estimated total of 573 tons/year of C&D debris generated on the Island.

A recent compositional study done by the Connecticut Department of Energy and Environmental Protection⁸ concluded that approximately 21% of C&D debris was being co-disposed of with MSW, and not being sent directly to C&D processing facilities. If applied to Fishers Island, this would suggest 453 tons/year of C&D debris are being sent directly by various contractors from job sites on the Island to C&D debris processing facilities in Connecticut. The remainder, 120 tons/year, could then reflect the wood waste handled by the District (86 tons), plus 34 tons of the bulky waste shipments.

In most municipalities, some amount of residential C&D waste can be placed into automated MSW carts collected curbside, or in larger MSW containers emptied with front-arm loading collection vehicles. However, neither collection approach is used on the Island. Further, the District supervises the loading of MSW into the hoppers at the transfer station. It can therefore be concluded that very little C&D waste is

⁷ A small portion of the scrap metal may be furniture or similar materials not related to construction or demolition projects however, details on this breakdown are not available. In addition, some portion of the wood waste may be pallets or crating also not from C&D activity.

⁸ Connecticut Department of Energy and Environmental Protection, *2015 Statewide Waste Characterization Study*

comingled with the MSW stream as compared to typical municipal systems. The actual amount of C&D waste independently handled by contractors is somewhat higher.

2.1.4 Brush & Yard Waste

The District does not have a scale and therefore has no weigh records of the amount of brush and yard waste produced on the Island and managed at the compost station. Using information from the USEPA⁹ in combination with U.S. Census data,¹⁰ an average of 0.25 tons/housing unit per year¹¹ are estimated to be produced annually of yard trimmings. Using the 2010 Census of total housing units on the Island, the current total estimated generation on the Island would be approximately 134 tons. There exists a private brush and yard waste operator on the Island with its own facility. Assuming the District captures 50% of the stream, approximately 67 tons/year of this waste category are estimated to be handled by the District.

2.1.5 Industrial waste

There are no industrial waste generators on the Island, and thus, the District does not handle any such waste.

2.1.6 Biosolids

There are no publicly or privately owned treatment works on the Island and all septage pumped are removed from the Island by pumpers for disposal and management.

2.1.7 Scrap Tires

The District received 44 tires during 2017 for management, likely due to the small full-time population and limited repair shops. Typically, approximately 40-to-50 tires are received annually, with recent amounts ranging up to 55 tires. The District contracts with a hauler for removal off-Island.

2.1.8 Scrap Autos

The District does not manage scrap autos. Rather, the Fishers Island Ferry District manages the transport of scrap autos off-Island.

2.1.9 Medical Wastes

There is one medical office on the Island; however, staff of the office arrange for the transport of its medical waste off-Island. As such, the District does not handle any medical waste.

2.1.10 Household Hazardous Waste and Other Certain Special Wastes

The District sponsors a Household Hazardous Waste (HHW) collection event every two years, which also includes receipt of waste oil from generators on the Island. Generators must store their waste during the interim periods. There are very limited amounts of other special wastes generated on the Island. One example is the utility district, which takes responsibility for shipping used transformers to off-Island

⁹ Advancing Sustainable Materials Management: 2014 Tables and Figures, Assessing Trends in Material Generation, Recycling, Composting, Combustion with Energy Recovery and Landfilling the United States, December 2016.

¹⁰ American Factfinder, U.S. Census, 2016.

¹¹ 2014 is the most current year where both of these sources provide estimates. The calculation is based upon 34,500,000 tons divided by 132,741,033 housing units.

processors. They also make used telephone poles available for reuse on the Island; however, the District is not involved in the handling.

2.1.11 e-Wastes

The District accepts e-Waste at the compost station, which is then shipped off-Island with oversized MSW for the contractor to manage.

2.2 Projected Waste Generation and Composition

In this subsection, the estimated quantities of solid waste and recyclables that may be expected to be handled by the District during the planning period are presented. These projections assume there is no attempt made to increase diversion rates and are therefore, referred to as the “no-action” projections (see Table 11).

The waste projections consider the forecasted population growth, both full-time and seasonal (provided in Chapter 1 of this Plan). However, the amount of waste generated for management, recycling and disposal at any time is dependent upon many factors, population being just one factor. Other factors include the overall condition of the local economy and continuing changes in composition due to packaging and other trends. For example, lightweight packaging trends have affected the profile of MSW composition through increases in plastic containerized food and decreases in glass food containers. No information is available for the District to forecast how quantities may change on the Island due to these additional factors. As a result, the future no-action levels of waste generation have been prepared assuming population is the only driving factor. Table 11 provides an estimate of the quantities of each waste or recyclable material stream now handled by the District and the projected change over time due to population, assuming no change in the current operation and no new programs.

Table 11 - Estimated Future Quantities Handled by the District if No Action is Taken

Waste Stream*	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
MSW:	255	265	271	276	281	286	292	297	302	307	313	318	323
Old Corrugated Cardboard:	45	46	47	48	49	50	50	51	52	53	54	55	56
Mixed Paper:	30	31	31	32	32	33	34	34	35	35	36	37	37
Plastic, Metal & Glass Food Containers (1):	79	81	82	84	85	87	89	90	92	93	95	97	98
Scrap Metal:	55	56	57	58	59	61	62	63	64	65	66	67	68
Mattresses(Units):	152	155	158	161	164	167	170	174	177	180	183	186	189
e-Waste(Units):	54	55	56	57	58	59	61	62	63	64	65	66	67
Oversized MSW:	130	133	135	138	141	143	146	148	151	154	156	159	162
Wood Waste:	86	88	89	91	93	95	96	98	100	102	103	105	107
Brush & Yard Waste:	67	68	70	71	72	74	75	76	78	79	81	82	83

* Tons unless stated otherwise

(1) The District currently separates mixed fibers from mixed glass, metal and plastic food containers in a traditional dual-stream recycling approach. For this reason, these two streams are presented separately in the table where most local planning units would consider these together as “single-stream” recyclables.

If the District is to meet the State’s goal, the District must implement new programs to significantly reduce the quantities of waste shipped off-Island for management at disposal facilities in Connecticut. Chapter 7 of this Plan

provides the District's estimates on the amounts of waste to be handled after implementation of new programs and other operational recommendations for the planning period.

2.3 Assessment

As noted earlier in this Plan, the current overall recycling rate on the Island is estimated to be approximately 46%, which is commendable for a locality with a significant seasonal population element. This is calculated by deriving the fraction reflected by the total of all recovered recyclables¹² divided by the sum of recyclables recovered and MSW disposed of off-Island. Additionally, the District's hauling contractor sends its wood waste and bulky waste to a private processing facility in Bozrah, Connecticut.¹³ At that facility, these materials are processed and components recycled (metals and wood in particular). That facility also maximizes the processing of unrecovered residues at resources recovery facilities¹⁴ in preference to use of landfills.

For all of the significant waste streams produced on the Island, except C&D debris, it is believed the District receives and manages virtually all of the generation on the Island. With respect to C&D debris, the District has no involvement in managing C&D debris from larger project activities. This is a common approach throughout the State and region. Where such projects exist, the contractor or developer typically becomes responsible for C&D management and removal.

Assuming no action is taken to increase diversion of MSW components to composting and recycling, the projected future growth in average population of the Island will increase the amounts of waste and recyclables managed by the District by approximately 24% during this planning period.¹⁵

¹² 79 tons bottle/can containers plus 30 tons mixed paper plus 45 tons corrugated cardboard plus 55 tons metal divided by that amount plus 255 tons MSW shipped off-Island.

¹³ Superior Recycling LLC facility.

¹⁴ Sterling Superior Services, the hauling contractor, uses the Preston RRF and Lisbon RRF

¹⁵ 24% is derived from the estimated seasonal and full-time population corresponding to an estimated annual average population growth of 484 persons (current annual average population of 1,280 persons vs. projected 2030 annual average population of 1,590 persons).

Chapter 3. Existing Solid Waste Management System

3.1 District Facilities – Ownership, Location, Size, Capacity & Wastes Managed

Prior to 1990, landfilling was the primary method of managing wastes generated on the Island. The main landfill site (now closed) accepted a range of household and commercial waste, while another site was used to accumulate appliances and other scrap metals. This so-called “metals dump” on Town property has since been cleaned up. In 1991, after rejecting a plan to construct incinerators and an ash landfill on the Island to manage combustible wastes from residents and businesses, the District built a transfer station on Town-owned property at 58 Town Road, which is located approximately $\frac{3}{4}$ mile from the Fishers Island Ferry dock (see Figure 1). The District also operates a compost station and receiving facility at 2760 Whistler Avenue, which is located approximately 0.2-mile distance from the Fishers Island Ferry dock (see Figure 2). A description of the two facilities, including the wastes managed, are included below.

3.1.1 Transfer Station

The transfer station facility occupies a relatively small land area of approximately 1.44 acres, which is leased from the Town of Southold. This facility is registered under NYSDEC’s General Registration program. See Appendix 1 for a copy of the existing General Registration for this facility.

Figure 2 - FIWMD Transfer Station Location



The transfer station is a gated facility accessed via an entrance driveway from Town Road. It has appropriate signage displaying the hours of operation and the acceptable wastes. The facility is structured with an upper and lower level. At the upper level, users deposit MSW and corrugated cardboard into their respective hoppers that connect with the compactor containers that accept, compress and store the waste streams. Once full, the units are picked up and taken off-island, with the MSW units brought to disposal facilities and the corrugated cardboard units to recycling facilities.

After depositing MSW and corrugated cardboard, users proceed down to the lower level to deliver separated mixed fibers (old newspaper, books and other recyclable paper products), bottles, cans and glass. At that level, the users access containers using elevated platforms. Once full, the containers are removed from the Island and delivered to recyclable processing facilities. The source-separated glass is transported to the compost station for processing. A detailed description of the materials accepted are included in Table 12.

Table 12 - List of Materials Accepted at the Transfer Station

<i>Upper Level</i>	<i>Lower Level</i> NO plastic bags of any kind in Recycling Dumpsters. Recycling must be emptied out of plastic bags. You may dispose of plastic bags in the garbage can by the recycling dumpsters.
<p><u>Household Trash Containers</u> -Kitchen Trash -Bathroom & Bedroom Trash -Styrofoam packaging, Containers, Egg Cartons and peanuts/popcorn/beans: Must be bagged -Used Cooking Oil, bacon grease</p>	<p><u>Glass Receiving Bin</u> Source-Separated Glass Color Bottles or Jars, All Colors</p> <p><u>Bottles & Cans (B & C) Container</u> - All Containers; Bottles, Can, Plastic - Must be Emptied and Rinsed - Glass Containers not source separated - All Plastic Containers and Bottles (examples: plastic planters, shampoo and conditioner bottles, yogurt containers, fruit containers, plastic food take-out containers, etc.) - Aluminum Cans, Clean Aluminum Foil - Tin Cans - Food Cans - Milk and Juice Cartons</p>
<p><u>Corrugated Cardboard Container</u> -Cardboard should be empty -Cardboard should be cut or flattened 2ft X 2ft prior to arrival at the station</p>	<p><u>Paper Products Container</u> -Newspapers -Books -Cereal Boxes, Cookie Boxes -Food Product Boxes -Egg cartons (made of paper) -Magazines -Gift Boxes -Paper Products -Beer can cases 12 pk, 24 pk and 30 pk cases</p>

Based on District user logs, the transfer station receives approximately 18,000-to-20,000 user visits each year, with approximately 409 tons of MSW and recyclables handled annually. Table 13 summarizes the number of customer visits each month for the past two recent years. Of noted importance is the significant increase in user visits from June through September.

Table 13 - Customer Visits to Transfer Station Site by Month

Month	2016	2017
January	790	744
February	660	649
March	813	766
April	896	1,014
May	1,537	1,705
June	1,995	3,168
July	3,242	3,888
August	3,080	3,243
September	1,891	2,082
October	1,504	1,507
November	1,061	1,172
December	823	672
Total:	18,292	20,610

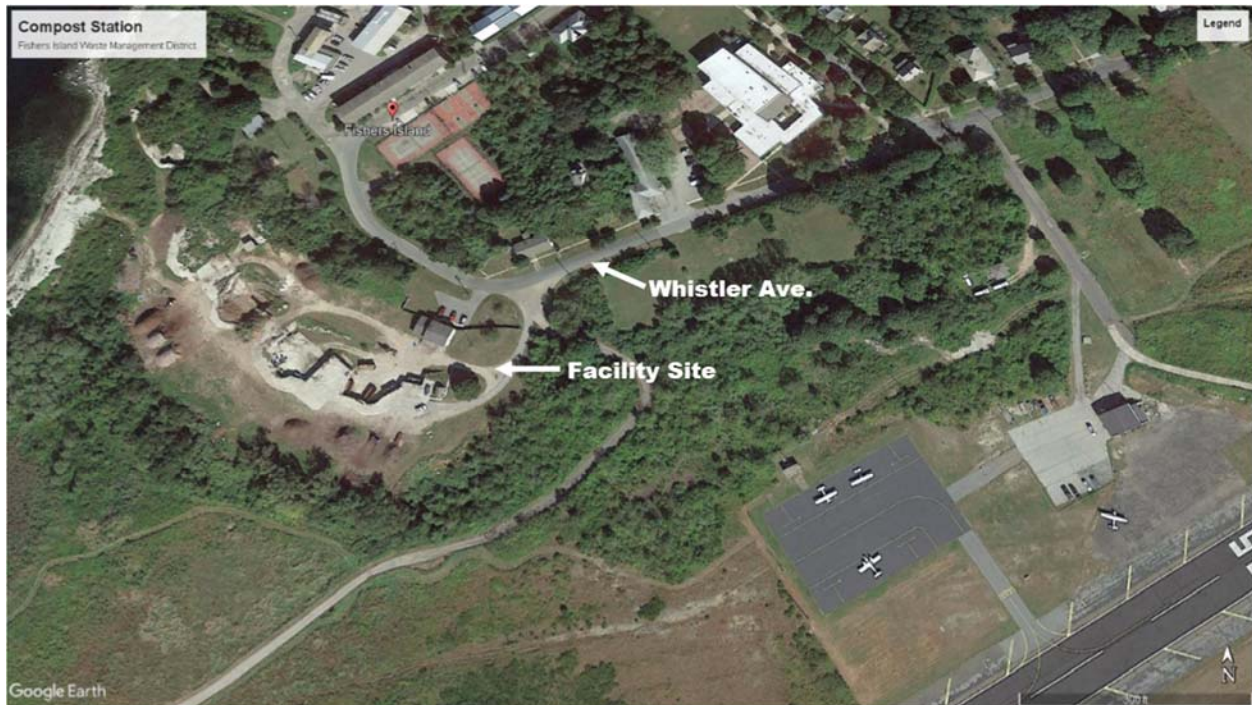
3.1.2 Compost Station and Receiving Facility

The Compost Station and Receiving Facility is on 9.33 acres of land located at the westernmost portion of the Island and has 1,200± feet of frontage on Fishers Island Sound. The District handles an estimated 337 tons/year of waste and recyclables at the compost station, comprised of the following: yard waste, construction debris, household items: toys, clothing, lamps, brooms, mops, broken down garbage cans, appliances, bikes, landscaping machines, rugs, metal/plastic clothes hangers, furniture & tires, etc. The operation and site are registered with the NYSDEC under the general permit registration program (see Appendix 1).

Historically, the U.S. Military used the compost station property as a coastal defense installation and included concrete bunkers, underground ammunition storage structures, and gun batteries. While some of the historical structures are still present and largely undisturbed on the site, the District has modified, to the extent possible, two of the bunkers for waste receiving purposes. The structures include walls that create a grade separation originally providing protection to the coastal gun battery. These walls have been adapted to the extent possible as an area to receive deliveries of bulky waste materials (C&D debris, furniture, mattresses, etc.), eWaste, and scrap metals at the upper level by residents, with open roll-off containers at the lower level to receive waste materials.

The facility consists of: (1) an attendant shed; (2) elevated locations where users deposit wood waste, bulky waste and scrap metal into containers for off-Island shipment; (3) shredding and composting equipment, as well as an area of the site used to manage yard waste, brush and other organic materials delivered by users to the facility; and (4) a combined administrative and equipment maintenance facility. Equipment at the facility includes a towable wood chipper (RAYCO Horizontal Grinder), compost screen, skid steer, and pay loader.

Figure 3 - FIWMD Compost Station Location



The facility entrance is approximately 0.2 mile from the Fishers Island Ferry dock, which allows for minimal use of Island roadways by trucks removing waste and recyclables destined for the ferry dock, and by returning trucks bringing empty containers. To the south of the facility is the Elizabeth Field Airport, which is Town-owned and used primarily by private aircraft visiting the Island. As indicated in Figure 2, the current facility configuration with the access road at the end of Whistler Avenue, and existing administration building and general limit of operating area for the facility. Also visible in the upper portion of the image are industrial buildings used by contractors on the Island. Just off the image to the north is the Fishers Island Ferry dock, which is used for all vehicle travel to/from the Island.

The main access road is gated and closed when wastes and recyclables are not being received at the facility. The District maintains a sign at the entrance, noting the acceptable wastes and hours of operation.

There is no scale at the site. Users advance through the site as follows:

- Users may leave-and-take reusable items at the elevated area of the site;
- Users proceed to the upper level and then deposit wood waste, bulky waste and scrap metal into containers positioned at the lower level;
- Users delivering brush and yard waste proceed along the access road to the brush/yard waste receiving area where the material is unloaded;
- Users of the station then return to the gate and exit the facility;
- Trucks coming to the site to remove full containers and deliver empty containers proceed to the lower working level of the facility where empty containers will be unloaded and full containers picked up for removal; and
- Trucks and cars removing compost product proceed to the finished compost storage pad where the material is loaded and then proceed to the exit.

The compost station is well used by residents and other customers of the District. Table 14 provides a summary of the number of customer visits by month to the compost station for each of the two most recent years, by month.

Table 14 - Customer Visits to Compost Station by Month

Month	2016	2017
January	76	186
February	142	245
March	209	290
April	249	473
May	224	560
June	503	683
July	646	867
August	593	787
September	524	645
October	394	599
November	320	397
December	257	325
Total:	4,137	6,057

3.2 Agricultural Operations

The District processes brush and yard waste, and then composts the combined stream through use of the windrow method. The resulting product is screened on-site and then made available, as processed mulch and compost, at a per-yard fee. There are no other District programs directed to support agriculture on the Island.

3.3 Programs and Initiatives

3.3.1 Waste Reduction, Reuse and Recycling Programs

A. Waste Reduction & Reuse

The District provides a leave-and-take area at the compost station, which residents use on a regular basis.

B. Recycling

As discussed in Section 1.6.4 of this Plan, the District accepts brush and yard waste at the compost station and uses its own equipment and staff to process the material, which is then composted with a windrow approach. The District also transports source-separated glass containers that are received at the transfer station to the compost station for processing and re-use.

The District accepts source-separated recyclables including old corrugated cardboard, other mixed fibers, and glass, metal and plastic food waste containers. Users of the transfer station source

separate and deliver approximately 154 tons/year of these materials. These recyclables are then hauled off-island by truck (and ferry) to a recycling processing facility in Connecticut, where they are separated and marketed.

Users of the compost station also deposit an additional 55 tons of scrap metal (which includes appliances), which is then delivered to an off-Island scrap metal processor. There are no on-Island recyclable processing facilities or markets for recyclables, other than the compost/mulch product the District now produces.

C. Public Education

The District maintains an active web site (<https://fishersislandwastemanagement.com/>) that provides information regarding:

- Which recyclables and other wastes are received at each facility;
- Instruction on how to minimize contamination in the recyclables stream;
- Direction on following instructions of the attendants;
- Information on fines and penalties for failure to following waste and recycling instructions at the transfer station;
- Board of Commissioner meetings and agendas; and
- Facility improvement plans and program changes, including its plans to improve its facilities including plans to receive source-separated food and other compostable materials (<https://fishersislandwastemanagement.com/facility-upgrades-information/>).

Additionally, the District takes advantage of other Island-based publications and websites (<http://fishersisland.net>) to promote its programs and activities from time-to-time.

Finally, the District takes advantage of social media platforms such as Facebook¹⁶ and Instagram. Postings on these platforms include reminders of upcoming events (such as HHW collection events), general information about the District's activities, and videos to illustrate specific operations and features of the District's program.

3.3.2 *Enforcement*

The District staffs both facilities with attendants that enforce its policies. As noted on the District's webpage (<https://fishersislandwastemanagement.com/compost-station/>):

"Do not dispose of anything until the station attendant has reviewed items. If attendant is busy, please get their attention and wait until they can assist you. Any home owner, island contractors and off island contractors: must make arrangements in advance with attendant at the compost station if they plan to bring large and/or heavy loads to the station.¹⁷"

To bolster the effectiveness of the attendant's supervision of on-going use of the transfer station, the District has adopted the following penalty structure for the transfer station: First offense: \$50; Second offense: \$100; and Third offense: Denied usage of the facility.

¹⁶ Facebook address is: <https://www.facebook.com/Fishers-Island-Waste-Management-District-483819195318838/>

¹⁷ <https://fishersislandwastemanagement.com>

3.3.3 Volume-Based Pricing Incentives or Other Financial Incentives

The District does not have a volume-based or similar incentive-pricing program at this time. However, there is a per-item fee system for select oversized MSW items.

3.3.4 Recycling Market Agreements

The District does not have agreements with the end-user markets that receive recyclables handled at the District's facilities. Those market arrangements are with the recyclables processing entities with which the District has contracts for processing and marketing services. See Appendix 2 for such contracts and services.

3.3.5 Local Hauler Licensing

There are no local hauler licensing requirements on Fishers Island. Residents and businesses either deliver their own wastes and recyclables to the District's facilities, or elect to engage one of two-or-three local contractors to pick up and dispose of their wastes.

3.3.6 Recycling Data Collection

The District does not own a scale. It therefore relies upon scale weigh data from outbound destination facilities for information about amounts recycled.

3.4 Assessment

The following is an assessment of the existing solid waste management program set forth and operated by the District:

1. The District accepts a broad range of materials and provides a means for the generators on the Island to recycle and manage waste streams in an effective manner. Additionally, little to none of the waste streams managed by the District are landfilled. All unrecovered MSW is processed at a resources recovery facility.
2. The District has been inventive in adapting the historical configuration of the former coastal gun battery facility to receive users bringing waste and recyclables to the compost station, and to implement a composting program at that site. This has been accomplished with minimal expense in altering the former concrete structures at the site, although repairs and improvements have been identified for implementation (see Section 5.2.2 of this Plan).
3. The District's current public education program is somewhat passive at this time, indicating the current overall recycling and diversion success of the program may in part be attributed to its close monitoring of activities at the facilities and the overall environmental awareness of its residents and visitors. Nonetheless, the commitment of resources to develop and implement an extensive program to advocate for waste reduction and recycling may improve participation and diversion rates.
4. The District has thus far operated without developing licensing and permit procedures for collectors and other users. A license/permit to use the District's facilities could require users to participate in its programs. Additionally, such procedures may also provide a means to penalize or deny use to parties that do not comply with the District's policies.

Chapter 4. Existing Administrative, Legislative and Financial Structures

4.1 Administrative and Legislative Structure

The Town of Southold created the District in 1952 to oversee the collection and disposal of garbage and refuse for all Fishers Island residents. The operation, management and control of the District is through a five-member Board of Commissioners elected by the Fishers Island residents. The District maintains several positions, including an Operations Manager, Business and Administrative Manager, mechanic and facility attendants. The District's Operations Manager is responsible for overseeing the daily operations at both facilities. The District's Business Manager is responsible for business office operations, including overseeing payment of invoices and submitting reports to the Board. Both managers are authorized to purchase goods and services and are responsible for ensuring compliance with all District purchasing guidelines. Legal and other consulting services are contracted out and not employees of the District. The organizational structure and a detailed description of the responsibilities for the Board and staff positions are included below.

Figure 4 - Fishers Island Waste Management District - Organizational Structure

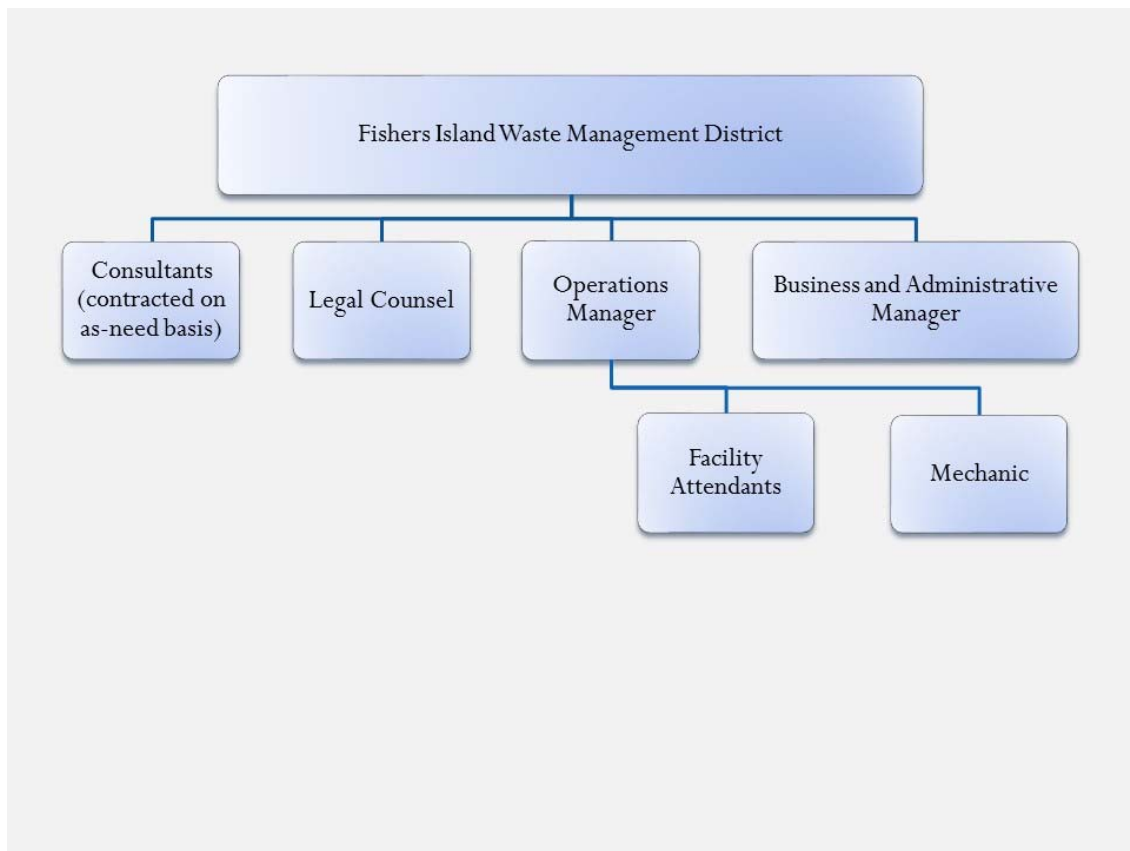


Table 15 - FIWMD - Board of Commissioners and Staff Responsibilities

FIWMD - BOARD OF COMMISSIONERS	
<ul style="list-style-type: none"> (1) Administer the Local Solid Waste Management Plan. (2) Approval/Execution of contracts and operating agreements with carters and facilities for off-Island waste transport and disposal. (3) Oversight of budgets and staffing. (4) Planning, management and implementation of any necessary or required modifications to District policies, practices or programs, including facility upgrades. (5) Undertake monthly public meetings. (6) Consult/Engage legal counsel and consultants on an as-need basis for projects/tasks. 	
OPERATIONS MANAGER	
<ul style="list-style-type: none"> (1) Oversees the daily operations at the transfer station and compost station. (2) Oversight of the day-to-day operations of the two waste facilities. (3) Monitor for compliance with regulatory programs and permits, and implement modifications, as necessary. (4) Implement education programs for recycling and waste reduction. 	
BUSINESS & ADMINISTRATIVE MANAGER	FACILITY OPERATORS AND MECHANIC
<ul style="list-style-type: none"> (1) General administration tasks, including daily paperwork, correspondence, filing and recordkeeping. (2) Preparation and filing of applications, permits and reports. (3) Plan and implement semi-annual Household Hazardous Waste Collection days. 	<ul style="list-style-type: none"> (1) Receiving and inspection of wastes. (2) Preparation of logs. (3) Coordinate waste pick-up with carters. (4) Composting activities. (5) Repairs and maintenance of equipment.

4.2 Financial Structure

4.2.1 *Revenues*

The District is a component unit of the Town of Southold, which is financially accountable for the District. The operations (including staff salaries) of the District are funded through the collection of a Refuse Tax by Fishers Island residents, as well as the collection of user fees for certain wastes. User fees include income from the compost station, including brush, stumps, construction debris, appliances, mattresses, carpets, eWaste, tires, furniture, and the sale of compost and mulch.

4.2.2 *Expenditures*

The expenditures of the District include waste hauling and disposal, composting, facility operations and maintenance costs, payroll, legal and professional consulting fees, insurances, and other administrative costs.

As noted in Chapter 1 of this Plan, the District contracts with facilities and carters for all waste hauling and disposal from the Island, including MSW, Mixed Source-Separated Container Recyclables, Newsprint & Paper, Corrugated Containers, Used Wood & Lumber, Metals, Oversized & Bulky Wastes, and C&D Debris. On a semi-annual basis, the District coordinates the removal and disposal of HHW. In 2017 and 2018, the

waste hauling and disposal costs were approximately \$137,000. The contracts and costs are included in Appendices 2 and 3, respectively, and are summarized below.

- *MSW Disposal Services*: The District has entered into a long-term agreement with the Southeastern Connecticut Regional Resources Recovery Authority (SCRRA) for MSW disposal services. SCRRA is a consortium of 12 southeastern Connecticut municipalities with the goal of fostering best waste management practices for its member towns. MSW disposal services are provided at a waste-to-energy facility located in Preston, Connecticut. The total cost of MSW disposal services to the District are quite high, both from the direct tipping fees at SCRRA's Waste-to-Energy facility (WTE) (\$58.00/ton) and from the cost paid to the Fishers Island Ferry District for transporting waste off-Island to the mainland (\$513.00/trip). Finally, a fee of \$380.00 is paid to a hauler (Sterling Superior Services, LLC) to retrieve full MSW containers from the transfer station and deliver refuse by Ferry to the Preston WTE. Consequently, the cost of MSW disposal (excluding on-Island transfer station operation, and other expenses) is approximately \$155.00/ton.
- *Mixed Source-Separated Container Recyclables and Newspaper & Paper*: The District maintains a contract with Willimantic Waste Paper Co. Inc. (WWP) for the separation, processing and marketing services for source-separated metal and plastic food and beverage containers, as well as newspaper and print (N&P). At WWP's facility, N&P is sorted, baled and shipped to markets. At this time, the District is currently paying \$25.00/ton for recycling of old newsprint and mixed paper. An extension to the contract is currently being executed.
- *Corrugated Cardboard*: The District maintains a contract with WWP for its corrugated cardboard.
- *Used Wood & Lumber*: Wood wastes are accepted from residents and businesses at the compost station and are placed into an open-top roll-off container. Sterling Superior Services, LLC, the contractor who provides transportation services to the District, operates a facility where the District's wood wastes are segregated by type and are chipped for markets. At the facility, clean wood wastes are segregated and chipped for local market/users.
- *Metals*: Two types of metal wastes are accepted at the compost station: a mixed metal stream (primarily large items) and appliances. Mixed metals are delivered directly to scrap dealers in Connecticut. Outside contractors are relied upon for the removal of refrigerants and capacitors before being delivered to scrap markets. The District periodically bids the removal of certain materials from the transfer station and compost station, including metals. The current contract hauler for this material (Sterling Superior Services LLC) is responsible to locate and place the metals with a suitable scrap metal operator.
- *Oversized & Bulky Wastes*: The District has a leave-and-take area at the compost station for reusable items. For oversized, non-recyclable items, the District maintains a hauling contract with Sterling Superior Services, LLC, which transport the items to a processing facility operated by a related entity, Superior Recycling, LLC, which is located in Bozrah, Connecticut.
- *Construction & Demolition Debris*: The District accepts deliveries of C&D wastes generated on the Island. The District is accepting C&D wastes at the compost station, from contractors operating on the Island, and imposes a fee and associated policies to perform this service. The compost station houses roll-off containers to accommodate this material. Sterling Superior Services, LLC is under contract to haul and dispose of C&D debris to various facilities in the State of Connecticut.

The average per ton costs, based on ferry, hauling, and destination arrangements are as follows¹⁸:

Waste	Haul	Tip	Ferry	Total
MSW	\$38.22	\$58.00	\$58.79	\$155.02
B/C ¹⁹	\$127.66	\$25.00	\$206.18	\$358.84
Paper	\$82.60	\$25.00	\$148.29	\$255.89
Cardboard	\$109.21	\$ -	\$144.84	\$254.05
Bulky	\$ 35.27	\$81.33	\$63.29	\$179.89
Metal	\$31.15	\$ -	\$55.89	\$87.05
Wood	\$ 40.28	\$81.33	\$72.27	\$193.87

When all fees for operating the District, including consulting expenses, insurance and legal fees, the total budget for 2018 was \$908,975, of which \$53,400 is obtained from user fees and the balance through a Refuse Tax. Overall, based on 2018, the cost per ton of waste and recyclables is approximately \$1,140.00 per ton (based upon an estimated 750 tons annually). This high cost per ton of waste for overhead expenses is due to the relatively low amount of waste produced on the Island, coupled with its geographical isolation and the disposal costs incident thereto.

2018 Budget: \$908,975

2018 User Fees: \$53,400

2018 Net Cost – Refuse Tax: \$855,575

Estimated Tons: 750

Net Cost/Ton: \$1,140.76

4.3 Regulations, Ordinances and Local Laws

4.3.1 Town of Southold Local Laws

Chapter 233 of the Town Code for the Town of Southold regulates solid waste activity; however, many of the provisions relate specifically to the use of the Town of Southold transfer station on the mainland, and not facilities on Fishers Island (which are managed by the District). Included is a requirement for transfer station users to obtain a permit and the hauler licensing provision mandates that haulers obtain a town carter’s license to collect waste in Southold. Importantly, the Town’s hauler licensing requirement specifically excludes those operating within the Fishers Island Waste Management District.²⁰ The Town of Southold also created the Southold Town Solid Waste Management District in 1993, which is responsible

¹⁸ At the time of preparation of this Plan, National and international markets for recyclable materials have been disrupted through global economic factors and the future cost of managing recyclable materials diverted from the wastestream may be much higher than has historically been the case.

¹⁹ Plastic, Metal and Glass Food Containers

²⁰ Chapter 233. Section 233-3.1. B. (1)

for ensuring the proper management of solid waste (i.e., residential and commercial waste and recyclables) generated within the Town of Southold. The Southold Town Solid Waste Management District manages a transfer station and compost station.

4.3.1 Source Separation Program

The District has an active recyclables recovery program for old corrugated cardboard, mixed paper, metal, glass and plastic food containers, and scrap metals. There are also strict policies in place for the separation of wastes at the transfer station. The District also has strict inspection instructions, which prohibit disposal before inspection by a facility attendant. For any homeowner, island contractor or off-island contractor, they are required to schedule deliveries in advance with District staff if they plan to bring large and/or heavy loads to the station. To bolster the effectiveness of the attendant's supervision of on-going use of the transfer station, the District has adopted the following penalty structure for the transfer station: First offense: \$50; Second offense: \$100; and Third offense: denied usage of the facility.

4.3.2 Waste Importation and/or Disposal Prohibitions, Flow Control or Local Hauler Licensing Laws

There are no local hauler licensing requirements on Fishers Island. Residents and businesses either deliver their own wastes and recyclables to the District's facilities, or elect to engage one of two-or-three local contractors to pick up and dispose of their wastes.

The general concept of flow control relates to establishing local laws requiring that wastes or recyclables be delivered to specified facilities. Given the nature of the Island, there is no ready means to deliver waste or recyclables off-Island except through the use of the Fishers Island Ferry and the cost is high, due in large part to the additional travel time and cost of the ferry travel. In addition, there are no alternative transfer stations or similar solid waste management facilities on the Island. Finally, contractors on large construction and demolition projects manage debris on-site and arrange for the removal of debris off-Island.

4.4 Required Changes to Local Laws, Ordinances, and/or Regulations for Plan Implementation

Recommendations contained in this Plan call for certain changes to the District's adopted policies, including:

1. Development of a formal permit/license program for haulers that use the facilities;
2. Adoption of a pay-by-bag program for MSW disposal by residents and small-quantity generators; and
3. Adoption of requirements for generators to source separate compostable food and other organic materials.

While a legal analysis of specific form of these actions is outside the scope of this review, the District may wish to obtain legal advice as it approaches these matters in the course of implementing the Plan.

4.5 Existing Solid Waste Management Policies

4.5.1 Local Product Stewardship, Green Procurement and Sustainability Initiatives

According to the Product Stewardship Institute: "Product stewardship is the act of minimizing the health, safety, environmental, and social impacts of a product and its packaging throughout all lifecycle stages, while also maximizing economic benefits. The manufacturer, or producer, of the product has the greatest

ability to minimize adverse impacts, but other stakeholders, such as suppliers, retailers, and consumers, also play a role. Stewardship can be either voluntary or required by law.²¹ New York State has adopted product stewardship programs for the following waste streams:²²

- Electronic Waste (eWaste)
- Rechargeable Batteries
- Mercury Thermostats

Elements of product stewardship have been adopted for other waste streams as well. While it is not practical for the District to implement product stewardship at the scale of its operations, cooperation with State and National programs can contribute to the success of the District’s mission to reduce the volume and impact of its wastes upon the environment. It is also understood that the District currently follows a long-standing practice of using recycled products, and products with high recyclable content in its day-to-day operations.

4.5.2 Local Environmental Justice Requirements

The NYSDEC Commissioner Policy 29 on Environmental Justice and Permitting (CP-29) identifies Potential EJ Areas based upon the 2000 Census block groups of 250 to 500 households each that, in the 2000 Census, had populations that met or exceeded at least one of the following statistical thresholds:

- At least 51.1% of the population in an urban area reported themselves to be members of minority groups; or
- At least 33.8% of the population in a rural area reported themselves to be members of minority groups; or
- At least 23.59% of the population in an urban or rural area had household incomes below the federal poverty level.

The NYSDEC does not identify Fishers Island as being located within a potential EJ area. Further, the following information for Fishers Island, as offered by the U.S. Census Bureau, underscores the absence of environmental justice matters:

Table 16 - U.S. Census Environmental Justice Related Information

<u>Median Household Income:</u>	<u>\$152,652</u>
<u>Individuals below poverty level:</u>	<u>0.7%</u>
<u>Race and Hispanic Origin</u>	
White alone	297
Black or African American alone	0
American Indian and Alaska Native alone	0
Asian alone	0
Native Hawaiian and Other Pacific Islander alone	0
Some Other Race alone	0
Two or More Races	6
Hispanic or Latino (of any race)	0
White alone, Not Hispanic or Latino	297

²¹ See: <http://www.productstewardship.us/?55>

²² See: <https://www.dec.ny.gov/chemical/66746.html>

4.6 Assessment

The FIWMD has an active recyclables recovery program with strict policies in place for the separation of wastes at the transfer station. The success of this program is, in part, due to strict inspection instructions by facility staff and penalties for not adhering to the separation requirements. The FIWMD also maintains an active website that provides detailed information and guidance on recycling and acceptable waste practices. Further, the Fishers Island community actively participates in good waste management practices. Through the current programs and policies, and an active community, the District has been able to achieve a recycling rate of 46% a relatively low MSW disposal volume of 1.09 lbs./person/day.

With the adoption of a pay-by-bag program for MSW disposal by residents and small-quantity generators, the disposal volumes would likely decrease. As discussed in Chapter 5, the source-separation of compostable food and other organic materials requires facility improvements.

As noted earlier, other than a per-item fee system for select oversized MSW items, the District does not have weight-based programs at this time. With large commercial generators on the Island, the District could implement a fee system, although such program would require the installation of a scale. At this time, the facilities are not equipped with scales.

There are no local hauler licensing requirements on Fishers Island, as the on-Island haulers are local contractors or similar, whom have agreements with certain residential properties. A license/permit to use the District's facilities could require users to participate in its organics and glass source separation program and other practices. Additionally, such procedures may also provide a means to penalize or deny use to parties that do not comply with the District's policies. This licensing and procedural change is achievable with little capital investment by the District.

Chapter 5. Alternatives Evaluation and Selection

The District performed an assessment of the solid waste and recycling management alternatives available to the Island, together with an evaluation and identification of preferred options and recommendations for consideration.

When considering options for recycling and management of solid waste handled by the District, it must be emphasized that Fishers Island, while a part of the Town of Southold in New York, has transportation access only to and from the State of Connecticut. Moreover, access to the mainland of Southold requires two separate ferry segments - first, from Fishers Island to New London, Connecticut and then, from New London over to Orient Point in Southold. By road, the distance from New London to Southold is approximately 225 miles or over four hours in travel time. For all practical purposes, residents and businesses on Fishers Island are dependent upon the District to manage solid waste and recyclables, including its partnerships with public and private Connecticut entities.

Another complicating factor for the District is the modest year-round population relative to its customer base. The 2010 Census reported just 236 persons, contributing to low volumes of material for much of the year. Even with the reported many-fold increase in population during peak summer months, the average annual population of the Island remains small when compared to most municipalities. These volumes prohibit the development of capital intensive, modern facilities with higher operating costs to process and manage most waste streams.

Even if the District had a land connection with the main portion of the Town of Southold, the Town as a whole would nonetheless be challenged to implement stand-alone modern solutions, since the combined population would still be less than 22,000 people according to the 2010 Census Bureau report. Again, this amount would nonetheless make most facility options impractical.²³ Fishers Island's volumes of waste streams and recyclables are consequently too small to support stand-alone cost-effective management of waste and recyclables in modern processing facilities. Only activities that can be performed effectively at very small-scale, such as composting, are deemed viable on-Island options for the District. Below is an assessment of the alternatives considered, as well as the viability, advantages, and disadvantages of each.

5.1 Alternatives Assessment

5.1.1 Waste Reduction

According to the USEPA, "the most effective way to reduce waste is to not create it in the first place."²⁴ Waste reduction involves elimination of waste at the point of generation through changing one's practices. For the Island, waste reduction can help minimize truck-trips off-Island for waste and recyclables processing services, thus reducing costs, among other benefits. On a larger scale, waste reduction avoids pollution and consumption of raw materials and energy.

Examples of strategies available to residents and businesses on the Island to reduce waste include:

- Packaging - Seek to purchase products that have less packaging. This could be accomplished through bulk purchasing and careful product selection.
- Avoid Disposable Items - Wherever possible, avoid the purchase and use of disposable items in favor of reusable items. Simple strategies can include the avoidance of single-use plastic bottles, and disposable plates, cups, and eating utensils, in favor of reusable products.

²³ For example, a 500 tons/day facility for MSW such as an RRF, could serve approximately 250,000 people based upon typical disposal rates.

²⁴ <https://www.epa.gov/recycle/reducing-and-reusing-basics>

- Electronic vs. Paper - Promote on-line newspapers over paper, the use e-billing, and double-sided printing.
- Catalogues and Other Junk Mail - Contact companies to cease unsolicited mailings to your address.
- Yard Waste – Rather than bag in plastic, consider leaving grass clippings on the lawn.

The above waste reduction practices can be summarized in a flyer sent to all dwelling units and business owners, with appropriate guidance. The reduction of waste by the seasonal population can also be encouraged with a poster and/or flyers on the Fishers Island Ferry and community center, explaining the importance of waste reduction, recycling and reuse on the Island.

Waste reduction must be undertaken by the individual generator but can be encouraged through educational programs, as discussed in more detail below. The waste management challenges that the District faces (in particular the need to transport off-Island all waste and recyclables that cannot be locally managed or beneficially used) support the need to examine strategies to encourage waste reduction by its residents and commercial entities.

5.1.2 Reuse

Like waste reduction, a reuse practice also eliminates waste at the point of generation and keeps materials out of the waste stream. Some waste reduction strategies are linked to waste reduction approaches, such as discontinuing the use of single-use plastic bottles and disposable eating utensils. In addition, like waste reduction, reuse can also minimize pollution and consumption of raw materials and energy on a broad scale.

Examples of reuse strategies to eliminate waste include:

- Donate items you no longer want rather than discarding them.
- Consider used items and materials rather than new, including building materials.
- Selection of durable products over less durable.
- Consider borrowing over purchase, such as use of a library.

There are two consignment/thrift shops on the Island, one each at two different churches. Each is open half-days twice per week, from Memorial Day until Labor Day. There are no other similar organizations or benevolent organizations (such as Goodwill or Salvation Army) that have drop-off facilities or provide truck pick-ups on the Island.

The District supports reuse of discarded items by providing a leave-and-take area at the compost station. Users of the facility frequently place unwanted furniture and other items in that area, and, in turn, subsequent visitors remove those items for further use. However, the leave-and-take area is outdoors, and thus, many items eventually become unusable.

The District had recently adopted a plan of improvement, which included the installation of a formal “swap-shop” modular building, which could provide a designated, out-of-the-weather location for usable items that are no longer wanted. Given this practice is already active at the District’s site, and it has the interest of its customers, the improved approach would be expected to advance reuse on the Island and remains an important goal of the District.

5.1.3 *Recyclables Recovery for Paper, Metal, Glass, Plastic, and Textiles*

The District has an active recyclables recovery program for old corrugated cardboard, mixed paper, metal, glass and plastic food containers, and scrap metals. The program includes:

1. Dedicated containers at the transfer station - a compactor container for cardboard, and standard recycling containers for mixed fibers (paper, books, etc.) and source-separated metal, glass and plastic food containers.
2. A dedicated container for scrap metal at the compost station.

The District's program results in approximately 209 tons/year of recyclables being recovered and recycled. There are no recyclable processing facilities or markets that could consume recyclable materials on the Island. As such, all recyclables must be delivered to off-Island processors in Connecticut.

The facility that currently receives, processes and markets the District's mixed recyclables is located in Willimantic, Connecticut. The facility includes a modern, single-stream sort system. While the District effectively manages the recovery and processing of these recyclables, it is at significant cost (relative to most local planning units) due to the need to transport the material off-Island by ferry and then truck deliver the material to a recycling facility. As with all waste and recyclables sent off-Island to processing facilities in Connecticut, these activities necessarily involve addition of truck traffic, exhaust emissions, and at times may displace other traffic desiring to use the ferry system. Given the location of the Island, and lack of a local economy to consume recovered recyclables, many of these impacts are unavoidable with respect to off-Island shipments.

Recent costs have approached approximately \$170.00/ton to recycle old corrugated cardboard, and approximately \$150.00/ton for other recyclables. These amounts may understate on-going costs as the value of recovered materials is cyclical and the cost of recycling can be very high from time-to-time.

The District developed but withdrew from implementation a plan to divert the compostable portion of the source-separated recyclables it receives, which would then be managed as follows:

- Old corrugated cardboard and compostable paper and other fiber materials would be source-separated and received in bins at the compost station. Examples of compostable fiber materials that will then be diverted from the disposal stream include the following:
 - Pizza boxes
 - Paper egg cartons
 - Paper bags
 - Paper towels and rolls
 - Paper cushion packaging
 - Shredded documents
 - Other similar uncontaminated organic wastes.
- These recovered organics would then be processed with a grinder and mixed with other compostable materials.
- Composting would be accomplished with a proprietary system featuring a cover and automatically controlled aeration of the composting mass.

Should this plan ever be implemented, the District would transform these materials into compost product for beneficial use on the Island. At a minimum, this program could capture up to 43 tons/year of cardboard, and much of the approximately 30 tons/year of mixed paper now handled.

Alternatively, the District could accept and manage a new stream of source-separated organics now part of the MSW disposal stream, and ship this material to an off-Island facility that processes this material. The stream would be comprised of food waste, green wastes, and some compostable papers now disposed of as MSW. There are digester and composting operations in the New England region that would likely be interested in accepting this new stream.

The District does not offer textile-recycling services to its residents. Assuming approximately 5%²⁵ of the MSW handled by the District is textiles; this would result in an estimated 13 tons/year of textiles currently being disposed of with MSW shipments off-Island for processing. This could be captured by accepting source-separated textiles in a container at the compost station or a consolidated facility. The District is in preliminary discussions with a party interested in supplying such containers for source-separated textiles, which the District would oversee filling and coordinate transport off-island to the New London Ferry Dock. The party would then collect and arrange to recycle the material. It is to be noted that the actual volume of textiles is too small to attempt to market this as a baled product stream directly to textile markets. However, should the District's current effort prove unsuccessful, it could potentially seek to work with an organization such as Goodwill Industries, which is known to accept donated clothing and has locations in Southeastern Connecticut.

5.1.4 Organics Recovery of Food Scraps & Yard Trimmings

The District currently accepts yard waste and brush at the compost station. This material is processed in an industrial grinder and then composted using a traditional windrow system. In order to meet the NYSDEC 2030 goal, the District will need to reduce significantly the amount of MSW sent to disposal and food/organic waste in the MSW stream is considered the best candidate to increase diversion from the MSW stream and provide for separate receipt and management, either off-Island or on-Island.

The District had planned to expand the composting program to accept this material, which would have included the following:

- Receipt of source-separated food waste and other compostable materials;
- Processing this new stream in a grinder that will break up the material and size it for mixing with other compostable material; and
- Combine the new stream with currently composted materials, all of which would then be placed in a modern, covered and controlled aeration compost system.

As an alternative, there is a commercial food waste digester facility under development in Southington, Connecticut (and others) that could be accessed by the District. This would involve receipt of source-separated materials and maintenance of a container for temporary storage and off-Island transportation of collected food waste. However, those facilities are distant from the District, indicating that, when combined with the tipping fees at those new facilities, the overall cost will be higher than current MSW disposal costs. Further, use of an off-Island food waste composting facility would likely require frequent (i.e., small payloads) removal of the source-separated waste to minimize on-site odor generation during off-peak

²⁵ NYSDEC provides guidance to local planning units indicating that textiles are 5% of the MSW stream. Additionally, confirming this level, in a 2015 study of MSW composition, the Connecticut Department of Energy and Environmental Protection found that approximately 4.1% was textiles in 2010 and 5.7% was textiles in 2015.

seasons. This would further drive up costs due to the fixed expenses of the ferry service and the contract hauling company. While the current cost of disposing of MSW is approximately \$155.00/ton (tip fee, trucking and ferry fees), this alternative would be expected to cost upwards of \$245.00/ton or more to deliver source-separated organics to the Southington facility.

5.1.5 Supporting Local & Regional Markets for Recyclables

As discussed in Chapter 1 of this Plan, Fishers Island is primarily residential, with a small number of commercial operations such as golf courses with restaurants, grocery store, a gas station and similar operations.

There are no users of raw materials on the Island that could consume recyclable materials in the form handled by the District. Further, the amount of all recyclables (bottles, cans, mixed paper, and old corrugated cardboard) handled by the District averages only 3 tons/week, with dramatic seasonal swings. These facts combine to support the conclusion that the District is not practically able to promote a local market for any traditional recyclable item that can be diverted from the MSW stream (e.g., cardboard, paper, bottles, cans and containers, etc.). Consequently, the District must rely upon market conditions that exist in Connecticut, and, where such programs exist, as supported by the efforts of the State of Connecticut. The District does not have influence over Connecticut's recycling programs. However, as is the case throughout North America, recyclable processors in the State rely upon national and international markets, key of which are Canada and Asia.

The FIWMD management personnel regularly attend Solid Waste Association of North America (SWANA) technical conferences and sessions where information is exchanged on the status of the industry and markets in general. This includes the annual meeting of the New York State Chapter of SWANA, which includes three days of technical presentations on a range of recycling and solid waste practices and programs. Through this effort, the District keeps abreast of emerging technologies for the handling and processing of recyclables to meet emerging markets and optimize its program.

The District is also a member of the New York State Association for the Reduction, Reuse and Recycling (NYSAR3). Personnel from the District attend the Annual Recycling Conference and the NYS Organics Summit. Both conferences allow the District to keep up with the latest State regulations and practices in the Waste Management field. NYSAR3 has also allowed the District to work with other organizations such as the Cornell Waste Management Institute and the New York State Pollution Prevention Institute. The District is also a member of the U.S. Composting Council and has had their personnel trained as Compost Technicians.

5.1.6 Enforcement

The District enforces its policies by placing an attendant at its facilities to regularly observe activities of users and provide general oversight of deliveries of wastes and recyclables. This oversight function includes educational guidance on where recyclables are to be placed and which items can and cannot be recycled. As stated in Section 3.3 of this Plan, to encourage good practices and compliance with the District's program, there are fees imposed for violations (first offense: \$50 fine; second offense: \$100 fine; and third offense: denial use of the facility).

As discussed above in Chapter 2, the District enjoys an overall recycling rate of approximately 46% of MSW materials.²⁶ This recovery rate is particularly noteworthy in light of the fact that the majority of the Island's

²⁶ The total of mixed glass, metal and plastic food containers plus scrap metal plus old corrugated cardboard plus mixed paper, all divided by that amount plus MSW disposed of.

annual average population is comprised of seasonal residents that one may normally expect to be less committed to recycling and waste reduction.

The District may benefit from development and adoption of an even more aggressive enforcement policy targeting the removal of additional recyclables from the MSW disposal stream. Since there is no publicly sponsored curbside collection program, all enforcement would need to be conducted at the District's facilities, and in particular, the current transfer station, or at a consolidated facility. Such an enforcement program could include one or more of the following:

- Mandate the use of transparent bags, which will allow attendants to visually inspect MSW deliveries to insure that recyclables are not being discarded.
- Open and inspect all bagged contents.
- Prohibit delivery of MSW without a corresponding delivery of recyclables.
- Impose a series of warnings, fines, and denial of service for non-compliant users.

Increased enforcement at the District's facilities will likely require additional personnel support, particularly during periods of peak arrivals by users.

5.1.7 Incentive-Based MSW Pricing

The District does not charge a fee for delivery of MSW or recyclables at the transfer station, rather a per-item pricing policy exists at the compost station (see Table 17).

Table 17 - District Pricing System at Compost Station

Item	Fee
<i>Yard Waste</i> Pickup truck delivery Knotweed Stumps Are Charged Depending On Size	\$10.00 or Per Cubic Yd. \$10.00 \$15.00 Per pickup truck/cubic Yd.
Construction Debris Pallets	\$40.00 Per Cubic Yd. \$5.00 Each
<i>Household Items</i> Carpets up to 5' x 8' Stuffed chair, Sofa, Similar Furniture Twin Mattress or Box Spring Double, QN, King Mattress, Box Spring Appliances; Washer, Dryer, Stove, Oil Tanks, Water Heaters, Dishwashers Freon; Freezer, Ice Maker, A/C, Dehumidifier	\$20.00 Each \$10.00 Each \$30.00 Each \$35.00 Each \$10.00 Each \$25.00 Each
<i>Misc. Items</i> Tires Cars, Pick-up Trucks, SUVs Heavy Equipment, Backhoe, Dump Truck	Depending on Size & Content \$10.00 Each \$50.00 Each
<i>E-WASTE</i> Computers & Any Components That Come With A Pc, Satellite Receivers, Fax Machines, Printers, TV's	\$25 Each

The above per-item fee system is not considered incentive-based pricing in the traditional sense, which would be designed to discourage disposal and encourage recycling and waste reduction. Instead, these fees are intended to assist in paying the cost of managing each of the listed wastes.

Incentive-based pricing can be structured to encourage diversion of materials from the MSW disposal stream to augment waste reduction, reuse, and recycling. A common approach used by many localities is

to charge a per-bag fee for refuse deliveries at transfer stations. This could involve use of an “official” sticker that residents affix to their bagged refuse, but more often includes use of a specific bag distinctive in color, size, and design, which is sold to residents for their use.

More than one size bag could be offered to provide residents more flexibility. In a pay-per-bag program, the resident purchases the bag at the stated price (e.g., \$2.00 per bag). With District-provided bags, program enforcement at the transfer station would consist of checking to insure residents use the proper bag, which often features a special, readily identifiable color with the District’s logo or name prominently displayed.

This kind of incentive pricing provides a direct financial incentive for users to divert as much recyclable material from the MSW disposal system thereby reducing the consumption of bags. Assuming approximately 25 pounds per 33-gallon bag, a \$2.00 per bag price would cover the District’s cost of hauling and disposal of MSW but not station operating and administration costs.²⁷ Another stated benefit of the approach is that those that generate less MSW and those that recycle more, pay less, or inversely; those that generate more waste for disposal contribute more to the operation of the system.

Another approach could involve installation of a scale certified to weigh commercial transactions at the level of weight for typical residential deliveries – in the range of 30 to 50 pounds. The District could then charge a fee; for example, \$.20/lb. for the actual weight of MSW delivered by each user. However, this approach involves not only the expense of installation of the resident-level scale, but also calls for the personnel expense of operating the scale and collecting payments from each residential customer.

A larger scale would then be used for commercial deliveries, which can then be managed with remote scale monitoring from the office due to the small number of transactions.

5.1.8 Education and Outreach

The District maintains an active website that provides detailed information regarding its services, fees, and most importantly, guidance on recycling services and acceptable waste practices. Other educational and outreach alternatives that could be performed include:

- Introduce recycling and effective waste management practices to the local school through special programs and classroom exercises that feature good practices. Through this approach, students not only bring those lessons home but also adopt at an early stage the benefits of waste reduction, reuse, and recycling.
- Provide educational materials to users as they visit each of the two facilities. This could be in the form of a handout that demonstrates the benefits to the Island of waste reduction, reuse and recycling.
- Special visits could be made to the few commercial generators on the Island to review current practices and explore whether there may be opportunities to divert materials from the disposal stream.
- With the approval and cooperation of the Fishers Island Ferry District, education could be provided to those travelling to and from the Island through displays, brochures and/or video.

5.1.9 Data Collection/Evaluation

The District does not have a scale and cannot weigh inbound materials to either of its two facilities. Consequently, it resorts to records of each outbound load of waste and recyclables, type of material, destination, and net weight as recorded at the destination. These records are used to evaluate the

²⁷ The District’s current trucking, ferry and disposal tip fee for MSW totals approximately \$155/ton.

performance of the system and for financial checks and balances. The District has periodically kept records of each user's arrival at each facility over the course of a day and week, which are used for facility planning purposes (i.e., peak usage).

The addition of a scale in the future to weigh inbound and outbound deliveries would generate additional data that could be used for billing inbound commercial users, outbound sales of products, incentive-based pricing, and monitoring outbound loads.

5.1.10 Collector Licensing

The District does not require the few, small MSW collectors (which are contractors that perform this service as a "side" business) operating on the Island to obtain a license or permit to use the District's facilities. It is understood that residents or the few commercial facilities that do not desire to self-deliver material to the District's facilities individually engage the smaller trucks. The establishment of a hauler permit/licensing program could benefit the District, as follows:

- A permit/license requirement could include a range of provisions allowing the District to insure users have proper insurance, follow all recycling and use policies, and provide a basis for denial of access to the facilities for those that do not comply.
- A licensing requirement could also require collectors to insure their customers are following recycling policies.

5.1.11 Flow Control

The general concept of flow control relates to establishing local laws requiring that waste or recyclables be delivered to specified facilities. Given the nature of Fishers Island:

1. There is no ready means to deliver waste or recyclables off-Island except through use of the ferry and the cost is high, due in large part to the additional travel time and cost of the ferry travel;
2. There are no alternative transfer stations or similar solid waste management facilities on the Island;
3. The District does not have significant investment in a large processing system, where, if some amount of waste or recyclables now handled were to evaporate, the net economics of the District's venture would be harmed. Just the opposite; any such reduction in waste would reduce the District's costs; and.
4. The net cost of operating the District's facilities are supported in substantial part by a special tax levy on Island property, meaning that any alternative facility, if one were proposed, would necessarily be more costly to the operator.

Contractors working large construction and demolition projects already remove container-sized loads of debris off-Island and this practice will continue, as the facilities are not designed to handle large debris volumes. For the above reasons, no discernable need is identified that would support the District's need to consider implementing flow control at this time.

5.1.12 C&D Debris Reduction, including Deconstruction, Reuse & Recovery

The District facilities are not designed to accept and manage C&D debris from larger projects on the Island. At those sites, contractors are responsible for the proper removal and disposal of C&D debris at off-Island facilities.

Users of the District's facilities for C&D debris are typically from smaller-scale projects and in many cases, "do-it-yourself" projects. One of the primary C&D streams accepted by the District is source-separated

wood, which is separated from other materials in the course of the construction/demolition activity and delivered separately to the District's compost station. As it is removed from the vehicle, the wood is placed in a dedicated container. The District contracts for removal and delivery of the wood waste to an off-Island, private C&D processing facility that recovers wood waste and other materials.

Since wood waste must be source separated before delivery to the District, generators necessarily must perform a degree of deconstruction. The District also accepts separate streams of metal waste, inert materials such as concrete and brick materials, and other mixed debris.

The nature of the Island is such that all raw materials for construction must be brought over by special trip on the ferry. Materials suppliers must either pay the additional cost of bringing a truck over by ferry, or, for smaller quantities and items, have the Fishers Island Ferry District move it from the dock in New London to the dock on Fishers Island. This measurable economic burden provides ample incentive to all parties to reuse construction materials and avoid waste generation whenever possible.

Given the District's limited role in handling the majority of C&D waste produced on the Island, and the dynamics of materials management on the Island, it is not recommended the District take further action on this waste stream at this time.

5.1.13 Private Sector Opportunities in Waste Management

The District currently selects private contractors through competitive procurement to perform the following services:

1. Removal of full MSW containers and delivery to a privately-owned and operated waste-to-energy facility;
2. Removal of full recycling containers and delivery to a privately-owned and operated recyclables processing facility;
3. Removal of full wood, metal, bulky/oversized waste, and mattresses, for delivery to a privately-owned and operated processing facility;
4. Removal of eWaste and delivery to private facilities for recycling and processing; and
5. Periodic deployment to the District's facility to collect and remove HHW from users.

The District relies upon its own staff for facility management and operation, as well as the oversight of users. The operations manager has direct supervisory control over the employees, and has direct influence to insure only acceptable waste is received and materials are placed in the appropriate containers. Also, through use of direct employees, the District is better able to receive feedback on user activities. Accordingly, no changes are recommended.

5.1.14 Thermal Treatment Technologies for Waste Management

Due to the small and highly variable seasonal population of the District, it is not feasible to consider implementing a thermal processing system on the Island. For over two decades, the District has arranged for its unrecovered MSW to be processed in a modern WTE facility in Preston, Connecticut. As explained in Section 4.2.2 of this Plan, this arrangement has been through a partnership with SCRRRA and its member municipalities in the region. The District's Agreement with SCRRRA expires on May 1, 2021; however, the District is currently executing an Amendment to the Agreement to extend services (see Appendix 2).

5.1.15 Waste Management Options

Table 18 provides a summary of waste disposal options that have been identified as available or potentially available to the District.

Table 18 - Waste Management Options

Waste/Recyclable	Options
MSW	- Waste-to-Energy (Current Practice) - Landfill
Recyclables (Old corrugated cardboard, mixed paper, metal, plastic and glass food containers, and similar items)	- Delivery to/Processing at a recyclables processing facility (Current Practice) - Processing and Preparation for Direct marketing of prepared products to markets - Receive compostable organics and create beneficial use products on-Island
Wood Waste	- Delivery to a processing and recovery facility
Oversized/Bulky Waste	- Delivery to a processing and recovery facility (Current Practice) - Landfill
Metal	- Delivery to a scrap metal recycler (Current Practice) - Processing and Preparation for Direct marketing of prepared products to markets
Food Waste	- Composting on-Island - Accumulation and delivery to an off-Island composting facility
eWaste	Delivery to eWaste Recycler (Current Practice)
HHW	Collection by a licensed HHW contractor (Current Practice)

A description of each waste and the management options follows.

A. MSW

As noted in Section 4.2.2 of this Plan, the District currently has a contract with SCRARRA that provides for disposal of MSW at a WTE facility that SCRARRA had participated in developing. It is now privately owned and operated in Preston, Connecticut. Under the terms of that agreement, the tipping fee is approximately \$58.00/ton of MSW delivered, which is an amount that is being subsidized by a reserve account that SCRARRA built up over a period of time during which the price paid for the electrical energy sold under a long-term contract for the plant was unusually high. The actual cost to SCRARRA is \$84.00/ton, resulting in a subsidy of \$26.00/ton. SCRARRA anticipates that its reserve account balance will continue to support participating municipalities at the same level through 2027, when agreements with participating towns expire. As noted, the District's current agreement with SCRARRA has a term to May 1, 2021. An extension to that agreement will be executed.

SCRARRA has not yet developed a plan for service to its participating municipalities after the current term of those agreements (ending 2027) and has no financial projections of cost thereafter. It is also noteworthy that the Preston WTE began operation in the early 1990's, indicating it will have been in operation of over 30 years if still in service at the time of expiration of the municipal agreements.

A second WTE is located in Lisbon, Connecticut and is operated by a private company. That facility is owned by the Eastern Connecticut Resources Recovery Facility, which was created by the City of Middletown, Connecticut. There exist three other WTEs in Connecticut, one of which is in Hartford. It is unclear what the nature of the operation will be in Hartford in the future since efforts are currently underway to develop a renewal/replacement plan for the facility, which would include more advanced technologies and investment at the site.

There are no MSW landfills economically accessible by trucks that take the MSW compactor containers from Fishers Island. While MSW landfills do exist in Western New York, Pennsylvania,

Ohio and other mid-western states, deliveries from private transfer and processing facilities in Connecticut to such facilities are typically accomplished by long-haul trucking (tractor-trailers) and rail transit. Many shippers bale MSW (and some also plastic-wrap it or put the bale in a large bag) to make the trip more cost-effective because with bales, they can ship the MSW on conventional flatbed trucks and van trucks one-way, with the truck then proceeding to another load and destination. If one were to ship MSW long-distance in an uncompacted transfer trailer, the truck would need to return empty to pick up another load, which makes the long distances more costly, and economically infeasible.

The District could potentially access private transfer station facilities as a means to access such landfills. The estimated tip fee for that service would be in the range of \$85.00-to-95.00/ton. This would not include the cost of baling, hauling the waste to the transfer station, or the ferry costs.

The cost of a baler setup typically starts at \$400,000-500,000. In addition, that approach requires a building of sufficient size to house the equipment and to store both uncompacted MSW and compacted bales awaiting out-shipment. The overall cost of such an installation is estimated to be in excess of \$2.5 Million, considering foundation requirements, push-walls, baler and related conveyor equipment, and sufficient floor space to store uncompacted MSW and bales. Depending upon the goal of the operation, costs can be significantly higher. Baling operations are also high electrical energy consumers and the overall costs of operation can approach \$25 to \$30/ton for high-volume operations. Assuming each long-haul trailer-truck manages approximately 22 tons/trip, the total amount of MSW shipped off-Island would require just 13 truck trips/year.

B. Recyclables

Recyclables from the District's transfer station are sent by truck and ferry and to a regional private recyclable materials recovery facility located in Willimantic, Connecticut. At that location, the individual components are separated, contaminants removed, and products are baled and prepared for marketing. The delivery arrangements are subject to a procurement by the District from time-to-time.

There are other, more distant recyclables processing facilities in Connecticut that the District could access if needed. All of these facilities typically receive and process more inbound recyclables in a day than the District generates in a year. It is not considered commercially feasible for the District to build and operate its own facility. For the same reason, it is impractical for the District to install baling equipment to allow it to market corrugated cardboard or mixed paper to mills or other international buyers of such material.²⁸ The District's plan to divert the acceptable organic fraction of its recyclables stream to an improved on-Island composting program is deemed viable and cost-effective.

C. Wood Waste, Mixed Bulky Waste, & Mattresses

The District handles just under 20 tons/month on average (under 240 tons/year) of this waste stream. This material is being transported off-Island to a processing facility that recovers acceptable wood, metal components, and similar material, with unrecovered waste going to a WTE. The delivery arrangements are subject to a procurement by the District from time-to-time. There are many such off-Island facilities accessible by truck and which provide similar processing

²⁸ The District handles less than 50 tons/year of corrugated cardboard and less than 40 tons/year of mixed papers.

and recovery services. There are no landfills available to the District within reasonable transportation distance of the ferry dock in New London (e.g. within 50 miles).

D. Metal

The District handles an average of approximately 5 tons/month (approximately 55 tons/year) of this material, which is delivered off-Island to a scrap metal recycler. The delivery arrangements are subject to a procurement by the District from time-to-time. This is the only realistic option for this recyclable material and no other option is considered.

E. Food Waste

The District does not accept source-separated food waste; however, in order to meet the NYSDEC goal of reducing the amount of MSW disposed to an average of 0.6 lbs./person/day, this component of the MSW stream is recommended to be targeted.

As discussed in this Plan, the District previously put forth a plan to dramatically expand and modernize its composting program. By accepting food waste and other source-separated organic matter, processing and combining this material in its composting program the plan would have resulted in management of this material on-Island, reducing the amount of material sent off-Island for thermal processing in a WTE facility. That plan has now been set aside pending the formation and recommendations of a committee. The District could nonetheless recover as much as one-third of the MSW stream by separately receiving and managing source separated organics such as food waste, green waste and certain compostable papers now part of the MSW disposal stream. If not processed on-Island, this material would be shipped to an off-Island organics processing facility, to either a digester or composting program. Anaerobic digesters can be capital-intensive operations; however, they can recover methane from the biologic process and produce a soil amendment.

F. eWaste

The District handles approximately 50-60 eWaste items per year. This material is presently shipped off-Island for recycling and processing. This is the only realistic option for this recyclable material and no other option is considered.

G. HHW

The District arranges for an HHW handling and disposal contractor to visit the Island periodically, where this material is received, properly manifested, containerized, and then taken off-Island for management. This is the only practically available option for this waste stream and no other option is considered.

5.2 Facility Improvements

5.2.1 Adopted Statement of Commitment

On September 25, 2017, the District adopted a statement of commitment to consolidate and modernize its facilities, in some form, while also setting forth numerous safety, environmental and operational goals. Furthering employee education and training, as well as the creation of a public education program were also included in this commitment. Such commitment was memorialized in an adopted Strategic Statement, which is summarized below; however, it must be noted that the consolidation plan has been withdrawn pending the formation of a committee to discuss the solid waste management goals for the Island. Appendix 4 provides a copy of the adopted statement, which was also posted on the District's website.

1. Combine the transfer station and the compost station at the current compost station location and use green technology to turn waste into usable products. The combined facility will allow for the following:
 - Grind and regrind all brush and logs to produce a usable product.
 - Store wood chips for reuse.
 - Crush glass for reuse.
 - Compost paper and cardboard for reuse.
 - Compost both yard and organics garbage for reuse.
 - Cut shipping garbage off island by 75%.
 - Reduce dependence on fossil fuels by producing and using heat from composting piles.
2. Reduce the amount of waste materials brought to the Island through education and financial incentives.
3. Reduce the amount of waste materials that leave the Island by using sophisticated composting techniques and crushing glass.
4. Increase collaboration opportunities with customers and contractors for mutual benefit.
5. Have employees who are enthusiastic about their contributions to waste management and earn a living wage. Included would be the following:
 - Conferences and certifications that increase knowledge, skills and morale.
 - Training as advocates for environmental solutions.
 - Improved training in the operation, repair and maintenance of equipment.
 - Training in CPR and emergency first aid.
6. Market the Commission to attract new Commissioners and constantly improve our positive public image. Commission improvements include:
 - Greater commitment from Commissioners to support and implement strategic outcomes.
 - Work as discussion based cohesive team.
 - Respect employees and avoid micromanaging.

- Spend time at facilities to see improvements and know employee contributions first hand.
- Advocating waste management solutions to the public.
- Create a Public Education Plan.

7. Be more energy efficient.

5.2.2 *Facilities Improvement Plan*

In early 2016, the District commenced a planning study and in December 2017, accepted a report entitled “Consolidated Facilities Planning Report Fishers Island Waste Management District,” prepared by Project Management Associates LLC and Anchor Engineering Services, Inc. (Facility Planning Report). The review considered the condition of the current facilities and operations and identified the following issues when considering an upgrade to the District’s operations and facilities:

1. The District has sought to maximize the amount of materials it composts with the available equipment and facilities. To perform this service, the District uses a shredder, screen, loader and related equipment. However, it does not have sufficient building space to store or maintain the composting equipment indoors and it is unable to process and manage some organic wastes that could potentially be compostable.
2. The metal chutes and closing systems at the transfer station are or have reached the end of their useful life.
3. The nearly century-old concrete walls and related structures at the compost station show evident weakness in some areas and there is no available information on the design of the structures. In one area under regular use, rebar is exposed and plainly compromised. In addition, fall protection should be upgraded with OSHA compliant barriers at the upper elevation positions where residents place bulky waste and other materials into the boxes and District employees actively manage operations.
4. For the first 10-15 years the Transfer Station was in operation, recycling in municipalities in the Northeast was conducted under a so-called “dual-stream” approach which involved separately handling mixed containers (bottles, cans and plastic containers) and fibers (newspaper, cardboard, mixed recyclable paper). These two streams were then separately transported to recycling plants that received and processed each stream separately. Beginning a decade or more ago, improvements in materials separation technology and collection (the curbside automated cart collection truck) combined to move the industry from that approach and there are no longer any dual-stream recycling plants in Connecticut or New England. Instead, the industry now uses a “single-stream” approach whereby recycling plants accept the two previous streams as one combined truck delivery.
5. Additionally, these new single-stream processing lines accept inbound material collected in compactor-trucks, which maximize the number of households they can serve on a route. If the District were able to transition to a compactor-box approach to handling single-stream recyclables it could reduce the number of off-Island truck trips. Unfortunately, the Transfer Station does not now have space to accommodate another compactor box without sacrificing a slot historically used

for trash or corrugated cardboard and reducing the flexibility the current three slots provide. Another compactor box is recommended.

6. The District's administrative building is limited to two offices, with no meeting space or general employee lockers or break areas.
7. The Transfer Station is at low grade and subject to flooding during large storm events, as was the case during Hurricane Sandy. Without some level of modification or reconstruction, there is no way to effectively change this condition. Further, drainage at the station does not properly manage seepage from the trash containers.
8. There is no engineered stormwater collection and treatment at either facility. Best management practice and common, as well as cost effective treatment of stormwater from solid waste operations includes use of a device with oil/water separation and sediment removal.
9. Without a scale, the District cannot use a weight-based approach to charging fees for inbound or to monitor shipments of outbound material.
10. The District has no way to effectively control moisture levels or aeration of the composting process at this time. There is also no means for operating staff to introduce moisture into the composting material, which is essential to maintaining ideal conditions to support the biological process. Finally, the compost windrows must be turned regularly to keep the process aerobic and minimize odor production.

Based upon the issues identified in the Facility Planning Report, and the additional studies and evaluations conducted at that time, improvements to the District's facilities were recommended and the following two options were evaluated:

Option 1: Perform the improvements at each of the two sites now operated by the District.

Option 2: As suggested in the 1997 LSWMP, consolidate the operations of the District at the larger, District-owned compost station, and perform the noted improvements.

Based upon the assessment that was undertaken, it was determined that the estimated capital cost of the two options was very similar. However, the consolidation of the District's activities at a single location offered greater management benefits and the potential to provide users with more hours of operation without an increase in overall staffing costs. This results from the present conditions where there are times when only one or the other of the current facilities is open for service, but not both.

The specific improvements in the improvement program included the following:

1. Improve the composting technology used at the site through installation of composting pads and compost heap enclosures with blower control system. For conceptual design and pricing purposes, the technology offered by Sustainable Generation was considered well suited to this scale of operation on the Island.
2. Replace/reinforce the concrete walls along the perimeter of the grade elevation between the upper level (resident area) and lower level (working area) and improve fall protection;

3. Locate new chutes and electrical connections for four compactor boxes (MSW, cardboard, single-stream recyclables) and five open top boxes (scrap metal, bulky waste, etc.).
4. Add a 40 foot-by-60-foot new maintenance building.
5. Add a 50-foot-by-90-foot new mixing building to process and mix organics including corrugated, food waste and similar materials. Inside the building will be a grinder to process cardboard and food waste, and reinforced concrete wall area to mix organics.
6. Add a 40-foot scale to weigh single-unit trucks (not tractor-trailers) together with remote hookup and speaker system.
7. Add a 20-by-30-foot building (modular structure) for use as a “swap shop” to allow residents to place useable items in for selection and taking by other customers.
8. Relocate an existing modular building now located at the Transfer Station to receive e-waste and other items.
9. Renovate the current District office/garage building by converting the garage area to a meeting room with second floor employee area.
10. Perform associated site grading, fencing, paving, lights and site security and monitoring system.
11. Install an integrated stormwater management system.

The cost of the above improvements was estimated at \$4.13 Million, not including the cost of bonding and related administrative expenses. The DEC maintains a grant program that the District could apply for to support implementation of the needed improvements. The District has applied for grants under this program in the past and this opportunity does appear well suited to the organics/composting portion of the project. A grant, if approved and funded, is for 50% of the eligible costs not to exceed \$2 Million. Based on the proposed projects and program, the preliminary estimate for grant funding is \$1.8 million. The Overall Layout Plan for the consolidated facility is included in Appendix 4.

Whether the District will implement a consolidation of the two operations is unknown as of the date of this Plan. Nonetheless, the District could make the necessary improvements to separately handle and manage wastes to meet the goals of the plan through Option 1 above, if that is the direction selected for implementation. Such improvements could include the following:

1. Undertake the safety and stormwater improvements identified above, including repair and replacement of chutes, hoppers and related equipment as required for both sites; and
2. Implement the necessary improvements to add containers for source separated food waste (which would then be shipped off-Island) and to manage single stream recyclables at the transfer station. This is likely to require additional space and modifications to the retaining wall structure at the site. A detailed review of the estimated cost of those improvements at the transfer station has not been undertaken at this time since, at the time the earlier work was performed, the recommendations contained in this Plan as necessary to meet the State’s goal had not been developed. In particular, it was not anticipated that a recommendation would be made to receive source-separated food waste and related organics and potentially manage that material for off-

Island shipment. When those plans were developed, the District intended to incorporate this material into an expanded composting program. Additional work is required to evaluate the impact of these recommendations upon the conditions at the transfer station site and would be undertaken at the time a committee is formed.

5.2.3 Additional Alternatives for Future Consideration

Given that the District has withdrawn its plan to improve the facilities and implement an expanded composting program on-Island, it is expected that a process will begin to discuss the program further with representatives of the community. The outcome of this undertaking is expected to include a revised facilities improvement plan, at a minimum to address safety and regulatory issues, but which may also include revisiting how many of the intended goals of that program could be achieved while reducing some of the impacts (cost, visual, noise, etc.) that residents have identified as issues of concern.

Following are a few items that could be considered as part of this effort:

1. The withdrawn plan included constructing a permanent organics building where food waste and other source-separated organic materials are processed with a grinder and then mixed with wood chips and processed yard waste for introduction into the compost system. That facility was proposed as approximately 4,500 square feet, and was to be located on the upper level. As an alternative, a less permanent structure (such as a fabric hoop structure) could be located in the third bunker, at the lower grade. This option would reduce or eliminate the visual impact of the structure and reduce the cost of the enclosure.
2. A similar approach could be taken to substitute a less permanent structure for the proposed new maintenance building, although there may not be a ready alternative to the location proposed in the past.
3. For safety reasons, it has been recommended that the District rehabilitate the current 100-year old bunker walls, which are showing signs of weakness in some areas. It may be possible to delay some of this work to a future time; however, this may increase the overall costs since doing the entire project at one time is likely most efficient given the challenges of mobilizing and conducting work on the Island.
4. The District could eliminate some of the services it provides to Island residents and businesses, and seek to reduce capital, operating and maintenance costs.
5. The plan had allowed for purchase and location of a small modular wood structure to be used for "leave-and-take" activities at the compost site, thereby reducing volumes of material taken off Island for disposal. This component could be eliminated.
6. The District could delay work proposed to improve the current administration/maintenance building, leaving employees without locker or personal space.
7. Notwithstanding the above, the District should make any improvements needed to comply with regulations.

It is expected that these and perhaps other options will be considered as the District re-develops its facility plans for the future. This plan has identified certain improvements needed to accept additional streams of

source-separated materials to meet the State's per-capita disposal goals, which should be considered as part of this process.

5.3 Alternatives Evaluation

5.3.1 Administrative/Technical Impacts

A summary of the administrative and technical impacts of the alternatives considered in this Plan follows in Table 19 below.

Table 19 - Administrative & Technical Impacts of Options

Item	Advantages	Disadvantages
Administration/Program Options		
<p>Promote Waste Reduction Activities & Programs</p>	<ul style="list-style-type: none"> - May contribute to reducing the amount of waste handled by the District that must be taken off-Island for disposal. Amounts to be reduced are uncertain given the already-high recycling rates. 	<ul style="list-style-type: none"> - Requires staff resources and development of public educational materials and on-going distribution and publication. However, if this effort were coupled with another educational effort, the marginal cost would be minimal.
<p>Promote Reuse Activities & Programs</p> <p>Promote Waste Reuse through Public Education</p> <p>Encourage Reuse through establishment of a formal swap-shop building</p>	<ul style="list-style-type: none"> - Public education may contribute to reducing the amount of waste handled by the District that must be taken off-Island for disposal. Amounts to be reduced uncertain. - Installation of the formerly planned structure would encourage reuse and divert materials from the disposal stream. Expected to modestly improve the success of the current leave-and-take program. 	<ul style="list-style-type: none"> - Requires staff resources and development of public educational materials and on-going distribution and publication. However, if this effort were coupled with another educational effort, the marginal cost would be minimal. - Nominal cost for a modular structure.
<p>Recyclables Recovery Programs For Paper, Metal, Glass, Plastic, & Textiles</p> <p>Continue to use an off-Island private facility to process source-separated recyclables received.</p> <p>Build and operate a stand-alone facility on the Island to process source-separated recyclables received.</p>	<ul style="list-style-type: none"> - Provides ready access to modern technology. - Contractor has a proven record of performance. - Avoids \$25 per ton processing fee otherwise paid. 	<ul style="list-style-type: none"> - Cost of shipment. - Cost prohibitive for a locality the size of Fishers Island.
<p>Organics Recovery Programs For Food Scraps And Yard Trimmings</p> <p>Implement the District's planned organics composting program expansion and associated technical approach.</p> <p>Separately collect and transport food waste off-Island.</p>	<ul style="list-style-type: none"> - Would divert approximately 50 tons/year of food waste plus other compostable material. - Incorporates a proven technology for controlling the composting process. - Can be operated with current staffing of the District. - Allows for beneficial use of these organic streams on-Island. - Could divert a similar amount of food waste plus other compostable material' - Avoids improving the District's facilities to the extent proposed but still would require improvements to the transfer station or compost site. Maximum participation is likely to be realized if this new stream is accepted at the same location where MSW is received. 	<ul style="list-style-type: none"> - Requires capital expenditure of approximately \$1.3 Million, however this amount includes managing other organic streams, not just food waste and yard trimmings. - Very high transportation and management costs- likely \$245/ton or more. - Requires storage of food waste on-site for longer periods (risk of odors).
<p>Develop and Implement a Program to Improve Local & Regional Markets for Recyclables</p>	<ul style="list-style-type: none"> - N/A 	<ul style="list-style-type: none"> - No markets on the Island. - District's limited quantities insufficient to have a meaningful impact on markets.

Item	Advantages	Disadvantages
<i>Implement an Enhanced Enforcement Program</i>	<ul style="list-style-type: none"> - Can increase the amount of material recovered for diversion to digestion, composting and recycling. 	<ul style="list-style-type: none"> - Requires more administrative action and procedures. - Takes effort to change habits; requires longer-term commitment. - The District is likely to get pushback from users of its facilities.
<i>Design and Implement an Incentive-Based Pricing Program Like Pay-by-Bag</i>	<ul style="list-style-type: none"> - In some circumstances, has been shown to be very effective to reduce waste and increase recycling. - Would create a financial incentive for users to cooperate fully with the increased source separation efforts associated with the District's planned organics program. - Would provide the District with another revenue source. - Has been shown to dramatically increase recycling and waste reduction in some communities; however, the District already enjoys a high recycling rate. Nonetheless, some increase is likely to be realized. 	<ul style="list-style-type: none"> - Requires design and public education to launch the program. - Administrative effort required to oversee bag sales and financial accounting.
<i>Improved Public Education and Outreach for Recycling and Cooperation with The District's Program</i>	<ul style="list-style-type: none"> - Will generate support and cooperation in good waste management and recycling practices. - Expected to improve the District's program success. 	<ul style="list-style-type: none"> - Requires development of public educational materials and on-going distribution and publication.
<i>Improved Data Collection at District Facilities & Evaluation Efforts</i>	<ul style="list-style-type: none"> - A scale would allow the District to double-check statements from off-Island processing and disposal facilities. - Could allow for weight-based pricing of larger quantity users that would not be captured by a pay-by-bag program. - Provides a means to track success of diversion efforts real-time. - Scale could be set up for remote operation and management to minimize administrative impacts. 	<ul style="list-style-type: none"> - Cost of truck scale installation is estimated at \$80,000. - O&M cost of staff and maintenance.
<i>Design and Implement a Local hauler Licensing Program</i>	<ul style="list-style-type: none"> - Could require demonstration of insurance and equipment in good operating condition. - Could impose obligations to help enforce recycling and other management approaches. 	<ul style="list-style-type: none"> - Requires administrative management.
<i>Adopt Flow Control</i>	<ul style="list-style-type: none"> - None perceived. 	<ul style="list-style-type: none"> - N/A
<i>Design and Implement a C&D Debris Reduction Program, including Deconstruction, Reuse and Recovery Activities</i>	<ul style="list-style-type: none"> - May reduce the amount of C&D generated on the Island. 	<ul style="list-style-type: none"> - The District has minimal involvement in the C&D debris management system.
<i>Consider Using the Private Sector For Waste Management & Coordination Efforts</i>	<ul style="list-style-type: none"> - Could reduce the day-to-day management responsibilities of the Board of Commissioners. 	<ul style="list-style-type: none"> - Engaging a private party to manage and operate the District's facilities could hamper enforcement efforts and limit incentives to reduce and recycle. - Loss of day-to-day control over activities at the facilities. - Could increase costs since a private entity would have tax obligations and naturally anticipate a profit in exchange for its undertaking.

Item	Advantages	Disadvantages
<i>Management of Waste via Thermal Treatment Technologies</i>	<ul style="list-style-type: none"> - The District already relies upon WTE for effective management of MSW. 	<ul style="list-style-type: none"> - No additional opportunities.
<i>Waste Disposal Options</i>		
<p data-bbox="201 730 418 758"><i>Municipal Solid Waste</i></p> <p data-bbox="201 779 358 806">Waste-to-Energy</p> <p data-bbox="201 978 277 1005">Landfill</p>	<ul style="list-style-type: none"> - A proven, reliable approach that the District has utilized for over 20 years. - Partnership with SCRRA provides reasonable cost (\$58 tip fee). Further, SCRRA indicates it will seek to keep tip fees stable for 10 years. - Facility is reasonably close to the New London Ferry Dock. - Also a proven approach; however, this method is not preferred. 	<ul style="list-style-type: none"> - At some point, the facility will require major upgrades or renewals/replacements. Future costs after 2027 are unsure. - Environmental impacts - Distant from the Island and therefore requires special processing. - Expected to cost far more than the WTE system now used. - Less desirable from a waste management hierarchy standpoint.

Item	Advantages	Disadvantages
<p data-bbox="201 226 477 373">Source-Separated Mixed Recyclables (Old Corrugated Cardboard, old newsprint, mixed paper, and plastic, metal and glass food containers)</p> <p data-bbox="201 401 415 449">Delivery to Recyclables Processor</p> <p data-bbox="201 747 402 795">Construct and Build A Processing Facility</p>	<ul data-bbox="522 401 961 695" style="list-style-type: none"> - A modern recyclables processing plant is reasonably close to the New London Ferry Dock and has provided the District with reliable service. - The above-mentioned facility accepts single-stream recyclables, which would allow the District to compact recyclables and reduce truck trips. - The cost of service at the facility is reasonable given current market conditions (\$25/ton). - If needed, there are other (though more distant) processors the District could use. <ul data-bbox="522 747 938 795" style="list-style-type: none"> - Avoids shipping unprocessed materials off-Island. 	<ul data-bbox="1002 401 1411 474" style="list-style-type: none"> - Requires transportation of materials off-Island including hauling and Fishers Island Ferry District expenses. <ul data-bbox="1002 747 1414 1094" style="list-style-type: none"> - Very costly to build and operate for the modest amount of material the District handles. - There are no local markets so all recovered products would still require off-Island shipment. - The very low annual volumes of material could result in lower prices from markets that value high-quantity generators. - The small amount of material handled may require storage of some smaller-content recovered materials (such as plastics) for a year or more before a truckload is accumulated.
<p data-bbox="201 1119 488 1146">Source-Separated Food Waste</p> <p data-bbox="201 1173 467 1247">Process and Combine with other Compostable Materials on-Island</p> <p data-bbox="201 1446 456 1495">Deliver to Distant off-Island Digester</p>	<ul data-bbox="522 1173 967 1419" style="list-style-type: none"> - The material will enhance the quality of the District's compost product and provide for on-Island beneficial use. - Will reduce costs of off-Island transportation and disposal of MSW. - The capital cost of the processing equipment and facilities to facilitate handling this item (and other compostable wastes) is potentially subject to a 50% reimbursement grant from the NYS DEC. <ul data-bbox="522 1446 976 1646" style="list-style-type: none"> - Will contribute an important amount toward reducing MSW sent to disposal and meeting the NYSDEC MSW per-capita disposal goal. - The best candidate material to divert from the MSW disposal stream other than conventional recyclables diversion. - Avoids the need to handle and process the material on-Island 	<ul data-bbox="1002 1173 1403 1222" style="list-style-type: none"> - Modest additional cost to incorporate this waste stream into the program. <ul data-bbox="1002 1446 1406 1619" style="list-style-type: none"> - Likely to cost upwards of \$240/ton or more. - May require improvements and special equipment at either the transfer station or the compost site to accept this material from generators on the Island, store, and then ship it to an off-Island facility.

Item	Advantages	Disadvantages
<p><i>Other Source-Separated Compostable Organics</i></p> <p>Recover, Process, Compost On-Island</p> <p>Leave Compostable Paper and Cardboard Unrecovered in Recyclables and Disposal Streams</p>	<ul style="list-style-type: none"> - The material will enhance the quality of the District's compost product and provide for on-Island beneficial use. - Will reduce costs of off-Island transportation and disposal of MSW. - The capital cost of the processing equipment and facilities to facilitate handling this item (and other compostable wastes) is potentially subject to a 50% reimbursement grant from the NYS DEC. - Avoids cost of handling separately and composting. - Acceptable to send to a recyclables processing facility as is the current practice. 	<ul style="list-style-type: none"> - Modest additional cost to handle this waste stream. - Long term continuing cost of transportation and processing fees. - Cost of Recycling has been shown recently to be subject to cyclical product market conditions.
<p><i>Brush, Logs, and Yard Waste</i></p> <p>Grind and Compost</p> <p>Shipment to off-Island Green Waste Processor</p>	<ul style="list-style-type: none"> - Current approach; equipment and systems already in place. - Allows for beneficial use of product on-Island. - Avoids District activities. 	<ul style="list-style-type: none"> - None - Loss of compost product now generated, which is beneficially used locally. - Other on-Island facilities are operated by landscapers and may not be equipped to handle the volume or size of materials received by the District. - Off-Island high cost of shipping is associated with this often-low-density waste off-Island.
<p><i>Scrap Metal</i></p> <p>Deliver to Off-Island Scrap Metal Yard</p> <p>Attempt to separate and process this material on-Island</p>	<ul style="list-style-type: none"> - Only feasible means to recycle this material, which must be further processed before delivery to markets. - Avoids shipping unprepared final products off-Island. 	<ul style="list-style-type: none"> - Cost of shipment off-Island. - Cost prohibitive and absence of any recycling markets on-Island means that all products would be shipped off-Island.
<p><i>eWaste, HHW</i></p> <p>Engage Specialized Collectors for Treatment</p>	<ul style="list-style-type: none"> - Only feasible means to manage these materials. 	<ul style="list-style-type: none"> - None other than the natural cost of transporting materials off-Island.
<p><i>Wood Waste and Mixture of Oversized MSW, other C&D received and Mattresses</i></p> <p>Deliver to Off-Island Processor /Recycler</p> <p>Landfill</p>	<ul style="list-style-type: none"> - Multiple Connecticut facilities available to manage and process this material. - None 	<ul style="list-style-type: none"> - Cost of shipment off-Island. - Facilities are very distant, All-in costs would be very high.

5.3.2 *Jurisdictional Impacts*

While not legally able to become a full participating member, the District has entered into an agreement with SCRRRA, which itself is a consortium of 12 southeastern Connecticut municipalities. For over two decades, the District has contracted with SCRRRA and sent its MSW to the WTE for which SCRRRA played an ongoing development and management role.

Due to the lack of transportation connections to the Town of Southold, it is not practical to consider participation with planning units in New York. Also, there are no other jurisdictions with which the District could cooperate with in order to implement or operate a solid waste management program or facility.

As indicated in Section 4.3.2 of this Plan, Fishers Island is not identified as a potential Environmental Justice area based upon the income and demographic characteristics of the Island. Also, this Plan does not include the creation of new facilities and would not expand the quantity of waste and recyclables that each facility manages. Rather, the District's intent to abandon the transfer station and consolidate its facilities to the compost station would include beneficial operational and programmatic changes. Of importance are the reduction of off-Island truck trips with waste reduction, reuse and composting programs, moving its composting operations indoors and processing under a state-of-the-art cover system (mitigating any impacts related to odors and dust), and moving equipment repairs to an exclusive building.

5.3.3 *Selected Alternatives and Programs*

A summary of the recommended/selected alternatives together with reasons and potential impacts follows.

1. The District develop and implement a public educational program that advocates the following best management practices:
 - a. Advocate waste reduction and reuse; and
 - b. Promoting source-separation of textiles and food waste and other compostable materials and separate delivery of those materials to the District.
2. The timing of the above programs may be impacted by decisions made regarding where these new streams will be received and managed, and the lead-time that may be required to implement any needed improvements to accommodate the new streams. The high recycling rate of the Island illustrates the willingness of residents to follow the District's policies. A renewed educational program should be focused on both improving waste reduction/reuse and converting residents to source separating textiles and food waste/ compostable organics for separate management and recovery by the District.
3. The District develop and implement a pay-by-bag incentive pricing system for residents that deliver MSW to its facilities. Other jurisdictions typically arrange for the purchase of special bags by residents for use at the transfer station, and charge a varying fee but often from \$1.50 to \$2.00 per bag. Adoption of a per-bag fee will provide residents with a financial incentive to reduce waste volumes and cooperate with source-separating food waste and other compostable organics that are now sent off-Island for diversion to the new compost program. It is also expected that a pay-by-bag approach would also increase diversion and recycling of non-compostable materials.
4. At the time the District implements the above incentive-pricing system for residents, a weight-based fee should be instituted for deliveries of MSW from commercial/business generators.

This would be implemented with the new scale system planned to be installed as part of the consolidated facilities improvement program. The scale could then be used to weigh and charge a fee for commercial customers that do not use a “bagged waste” approach, such as stores, contractors and clubs. The scale should also prove valuable in monitoring the weight of outbound materials, instead of only relying upon destination facilities reporting to the District.

5. The District develop and adopt rules/ordinances that provide for the following:
 - a. Require residents to purchase and use the District’s special bag should it implement incentive-based pricing;
 - b. Require residents and businesses to source separate textiles and food waste and other compostable organics as defined by the District and deliver to the designated areas of the District’s consolidated facility;
 - c. Implement a permit program for commercial haulers that requires demonstration of a minimum reasonable level of insurance for use of District facilities, and cooperation with the recycling program; and
 - d. Expand and incorporate the current enforcement program and fines into the above requirements.
6. The District continue its partnership with SCRRA for MSW disposal services at the Preston WTE or the facility with which SCRRA chooses to utilize. SCRRA indicates it has sufficient reserves to continue to subsidize the tip fee, bringing the cost to \$58.00/ton of MSW delivered to the facility through the term of the current contract. The facility is reasonably close to the Fishers Island Ferry dock and has been reliable. SCRRA will be negotiating a renewal contract for service in 2022. The District will monitor those discussions and determine if a change of course is needed thereafter. At some point, the WTE may prove unreliable and the District will need to evaluate options available at that time.
7. The District continue its use of a Connecticut recyclables processing facility for unrecovered, source-separated materials. Additionally, in keeping with the plan for its consolidated operations at the compost station, it is recommended the District convert to a single-stream recyclables product and utilize a compactor container to deliver the materials off-Island.
8. Continue the existing methods used for managing eWaste, HHW, scrap metal, single stream recyclables (following the consolidation of facilities) and for oversized/bulky waste items.

Chapter 6. Implementation Plan & Schedule

The foundation for the District's ability to meet the reduction and diversion goals outlined in this Plan is the implementation of the following programs and activities:

1. An active public educational program.
2. Design, bidding, funding, and construction of any improvements that the District identifies as desired or needed to fully implement the program elements.
3. Phased Implementation of those program elements that will drive recycling rates higher and divert more materials from the disposal stream, including:
 - Implementation of a pay-by-bag program for residential MSW and small commercial generators that deliver bagged waste;
 - Implementation of a scale and weight-based fee system for larger business deliveries that arrive on a bulk basis;
 - Source separation of textiles and separate management for recycling and/or re-use; and
 - Source separation of food waste from the MSW stream and separate management for either composting on-Island or delivery to an off-Island digester or composting operation.

This schedule discussion is based upon the District's intent to revisit the planning process for an expanded composting program and the consideration of other facility options in more detail than was previously undertaken. The potential schedule identified below is general in nature, and not associated with the previously planned development improvements. Additional information regarding steps to implement this Plan is provided below.

6.1 Public Education Program

The District will need to implement and maintain throughout the planning period a vigorous public education program in order to achieve the planning goals outlined in this Plan, and to reduce by nearly one-half the amount of MSW sent to disposal on a per-capita basis. The program will need to target both the year-round and seasonal residents of the Island (including renters), and to advance:

- Waste reduction;
- Source-separated delivery of glass containers to facilitate the District's processing of the stream for beneficial use on the Island;
- Source-separated delivery of textiles through separate handling and receipt of this material for off-Island shipment;
- Source-separated delivery of food waste and similar compostable organics so that this material can be processed for beneficial reuse either on-Island or off-Island; and
- Increased recovery of recyclables such as corrugated cardboard, office and mixed papers, metal, glass and plastic containers for recycling and beneficial use.

The elements and content of the public educational effort will follow the timing and details of the decisions made by the District regarding how each wastestream will be managed, including the role of each facility in its operations. The challenge of meeting recycling goals through public education targeting reduction and recycling is universally difficult for many municipalities. Some of the traditional challenges are not present on the Island, the fact that approximately 80% of the housing is seasonal with many rented by vacationers with no long-term tie to the Island presents special challenges to the District.

6.2 Facility Improvements

The District is embarking upon a re-evaluation of its facilities within the context of new neighboring development and the role of each in its long-term program. This review is expected to include the following potential actions:

1. Whether consideration will be made to relocate any of the current activities conducted at either the transfer station or compost site to a new site, or to consolidate current activities at one of the two existing locations.
2. Once conclusions are reached regarding the role of each site in its permanent program, it will be necessary to identify any improvements needed. This may include decisions such as:
 - a. At which location would source-separated textiles and food waste/organics be received and what improvements are needed for the placement and management of the associated equipment?
 - b. Where will a scale be installed to weigh and charge for larger deliveries?
 - c. If the District is to abandon either or both of its current sites, where will the operations be placed?
 - d. What safety deficiencies exist at current facilities that will be relied upon in the future?
 - e. What must be done to comply with stormwater or other regulations?
3. As each improvement is defined, the District will need to arrange for the design, bidding and funding.

6.3 Phased Implementation of Program Strategies

The District will likely implement the various elements of this Plan on a phased basis, taking into consideration the timing of any required facility improvements to accommodate each element. For example, an enhanced public education program could be designed to adapt over time to promote participation in the program, as each item is available. The initial effort could start with encouraging waste reduction and greater diversion to recycling, and then expanded to add information about a pay-by-bag undertaking, source separation of textiles, source separation of food waste/organics, all timed to coincide with the availability of facility improvements and the District's desired timing for each component.

6.4 Implementation Schedule

The following schedule has been developed based upon the above described implementation steps and individual tasks. This schedule assumes there will not be a move to a completely new site; if this were to occur, an extended process would follow associated with site selection, site acquisition, environmental permitting and review, and construction.

- Identify Desired Facility Improvements and Permitting Requirements: Through Summer 2019
- Permitting and Approvals: September 2019 through January 2020
- Design/Bid/Fund Improvements: September 2019 through January 2020
- Construction Activities: April 2020 through October 2020
- Phased Program Implementation, including Education: Mid-2019 through End of 2020

Chapter 7. Waste Stream Projections

The long-term goal of the State in its *Beyond Waste Plan* is “a progressive reduction in the amount of MSW destined for disposal to reach the ultimate goal of reducing disposal to 0.6 pounds per person per day by 2030.” The individual actions described in this Plan, when taken together are expected to active this goal. As noted earlier, the District does not rely upon landfills for disposal of MSW but instead has used waste-to-energy for MSW management over the approximately past two decades.

7.1 Waste Types and Quantities

Section 2.1 of this Plan provided a summary of the waste streams managed by the District and current quantities. Regarding future projections, the overall waste stream of the U.S. is under constant change due to evolutions in packaging and the ever-fluctuating economy. There is reason to expect that, for Fishers Island, the composition of the waste stream could contain more packaging materials like corrugated cardboard in light of the remote character of the Island and the associated transportation requirements. However, no compositional analysis has been undertaken as part of this planning effort.

7.2 Disposal, Reduction, and Recovery Projections

7.2.1 Phased Participation Rates

The Plan must take into account the pace at which residents and other users of the District’s facilities cooperate with increased requirements to source separate materials to allow the District to achieve its diversion goals. The District intends to spur participation in its Plan through a two-prong approach:

1. Establish and maintain a public education/informational program to spur waste reduction and diversion from disposal.
2. Implement of a pay-by-bag system, which will provide users with a direct financial incentive to source separate increasing amounts of materials in accordance with this Plan.

In light of the District’s close supervision of visitors to its facilities, and high current rate of recycling, which demonstrates a willingness to cooperate, there is reason to anticipate that a new public education program and implementation of pay-by-bag approach will spur rapid participation in the new system. However, there have been no decisions regarding the implementation dates of each strategy. For the purpose of this review, the following assumed phased implementation by the District and participation by users in adoption of new source separation requirements has been used in this Plan:

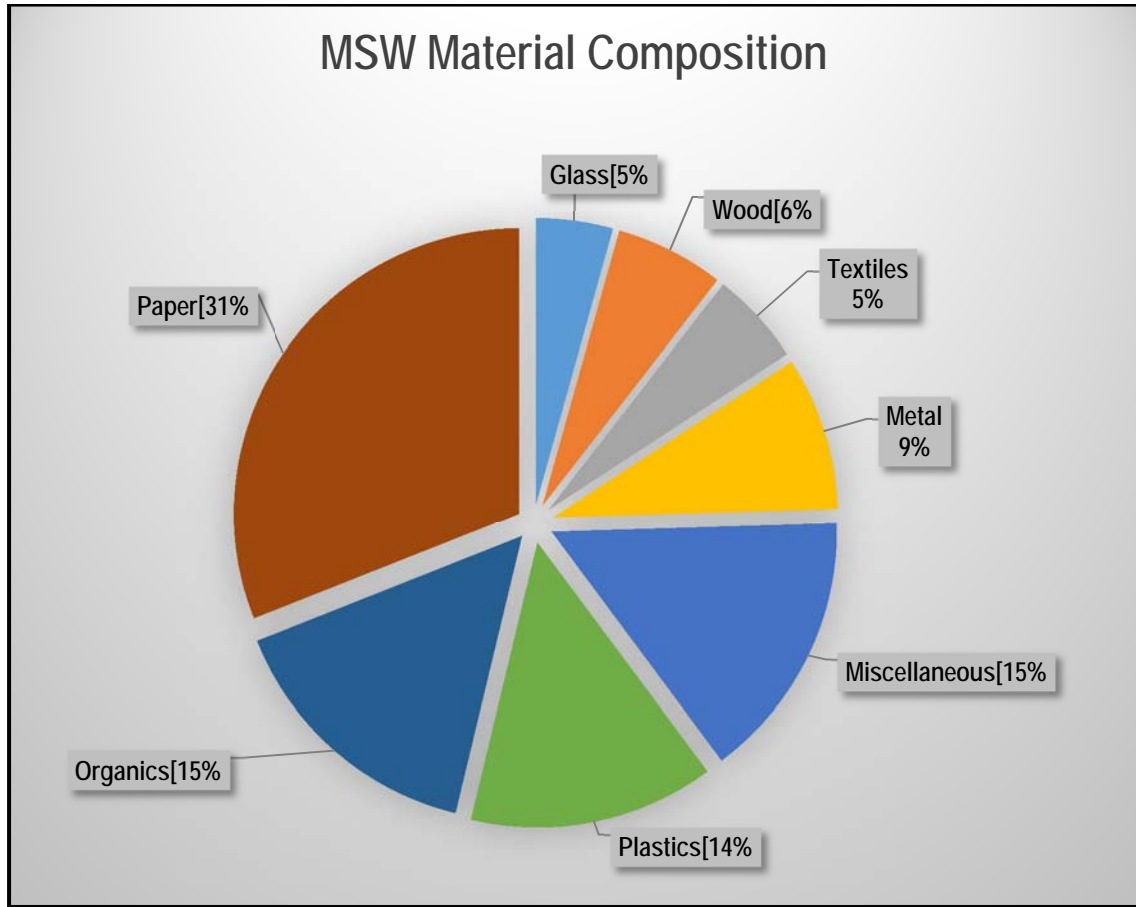
- A participation rate of 0% for 2019, reflecting a projected 3rd quarter start-up of the public education program;
- The potential first full year of implementation of these strategies is 2020, and it is assumed the District will realize only a 30% participation/success rate; and
- Thereafter, rates at which the District’s users will cooperate are to increase 10% per year to 2026, after which a maximum participation rate of 90% will be realized.

These assumed rates of participation are designed to take into consideration a combination of the rate at which the District adopts each of the recommended strategies, the rates at which residents and seasonal visitors begin to cooperate and comply, or a combination of both factors.

7.2.2 Projected MSW Quantities with Diversions

The NYSDEC provides a guidance document and tool for use by planning units in preparing projections of waste and recyclables managed. Unfortunately, the State’s planning tool could not be used in this effort since it does not provide a means to incorporate the very significant seasonal population changes on the Island, where 80% of the housing units are seasonal. Nonetheless, New York does provide the guidance on the composition of the overall MSW stream²⁹, as summarized in Figure 5, following.

Figure 5 - NYSDEC Estimated MSW Composition



The State of Connecticut, to which the Island is associated with for transportation and waste management purposes, has also examined MSW compositional issues through a 2015 compositional study.³⁰

Connecticut’s study provided an estimate of the amount of material that could be diverted from the MSW disposal stream to composting. In this study, the authors estimated the “compostable organics – which include food wastes, green wastes, and some compostable papers – are quite significant at 41.4 percent” as associated with curbside and site collected MSW. However, the study also concluded some of these materials may not be easily source separated (in the home before disposal) or separated after disposal.

²⁹ ftp://ftp.dec.state.ny.us/dsh/Planning/Waste_Composition_Calculators/popandmswcompcalc.xlsm

³⁰ Connecticut Department of Energy and Environmental Protection, 2015 Statewide Waste Characterization Study.

Connecticut's field-sort data is, therefore, consistent with the NYSDEC data in Figure 5, which itself indicates a total of 46% organic and paper content.

This Plan calls for the District to require users of the facilities to source-separate compostable organics, which would be received for separate management from the balance of the MSW stream. For the purpose of this Plan, it has been assumed that approximately 80% of the potentially recoverable organics will ultimately be diverted to composting, providing an estimated potential net reduction in MSW disposed of approximately 3.1%³¹, also depending upon the rate of participation achieved at any point in time.

Another component of the MSW stream that can be captured for recycling/reuse is textiles. As illustrated in Figure 5, NYSDEC estimates that approximately 5% of the MSW disposal stream is textiles.³² It is recommended that the District arrange to accept source-separated textiles for recycling and reuse. For this Plan, it is assumed that approximately 90% of the textiles in the MSW stream could potentially be captured, or 4.5% of the total MSW otherwise generated.

It is also assumed that an active public education program in combination with pay-by-bag can yield success in reducing the amount of waste generated on the Island through encouraging reuse and resident cooperation in avoiding waste generation. There is little overall data on the success of waste reduction advocacy upon volumes of waste disposed. However, for the purpose of this Plan, it is assumed that this strategy has the potential to reduce the amount of MSW generated by 10 percent.

Finally, it is also reasonable to recognize that implementation of a pay-by-bag program will have an effect upon the amount of recyclables diverted from disposal and captured for recycling. Unfortunately, data outlining the experience other communities realized that have adopted pay-by-bag programs is scarce. One USEPA study³³ indicates that typical communities with pay-by-bag realize on average 17.1% recycling rates compared to those without at 13.6%. While the District's recycling rate already exceeds these amounts, the current high rate of diversion on the Island illustrates that the Island's residents are inclined to participate in best management practices. For this Plan, it is assumed that a further 4% of the MSW stream could potentially be diverted to recycling through pay-by-bag adoption, matching the reported diversion success in other communities.

Table 20 provides a summary of the estimated amount of MSW that would be generated if no new programs are initiated, the estimated impact of the above MSW diversion opportunities, and projected amounts of MSW to remain for off-Island management and disposal. Additionally, the table shows the net disposed amount translated to calculated per-capita-per-day pounds using the estimated average annual population of the Island.

³¹ Of the otherwise generated amount based upon average population growth.

³² The Connecticut 2015 composition study estimated this component at 5.7%, which is consistent with the NYSDEC breakdown.

³³ Pay As You Throw (PAYT) in the US: 2006 Update and Analysis, December 30, 2006 (an EPA/SERA Report)

Table 20 - Forecasted MSW Quantities for the Planning Period

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
No Action MSW To Disposal:	255.0	260.2	265.3	270.5	275.6	280.8	285.9	291.1	296.3	301.4	306.6	311.7	316.9
No Action MSW Disposal Lbs./Capita/Day:*	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
New Program Participation or Success Rate:	0%	0%	30%	40%	50%	60%	70%	80%	90%	90%	90%	90%	90%
Organics Diverted From MSW:	-	-	26.4	35.8	45.6	55.8	66.3	77.1	88.3	89.8	91.4	92.9	94.5
Textiles Diverted from MSW:	-	-	3.6	4.9	6.2	7.6	9.0	10.5	12.0	12.2	12.4	12.6	12.8
Additional Recyclables Diverted:	-	-	3.18	4.33	5.51	6.74	8.01	9.32	10.67	10.85	11.04	11.22	11.41
Additional Source Reduction:	-	-	8.0	10.8	13.8	16.8	20.0	23.3	26.7	27.1	27.6	28.1	28.5
Total MSW Diverted:	-	-	41.1	55.8	71.1	87.0	103.3	120.2	137.6	140.0	142.4	144.8	147.2
Net MSW to Disposal:	255.0	260.2	224.2	214.6	204.5	193.8	182.6	170.9	158.6	161.4	164.1	166.9	169.7
Estimated Average Annual Population:	1,280	1,306	1,332	1,357	1,383	1,409	1,435	1,461	1,487	1,513	1,539	1,565	1,590
Net MSW To Disposal Lbs./Capita/Day:	1.09	1.09	0.92	0.87	0.81	0.75	0.70	0.64	0.58	0.58	0.58	0.58	0.58

(tons unless stated otherwise)

*Plan assumes waste quantities follow population changes. As such, the per capita per day factor remains the same.

7.2.3 Glass Captured for Beneficial Reuse

Clean glass is another category of waste/recyclable material historically shipped off-Island that could be received as a source-separated stream, processed and beneficially used on the Island. The District has recently purchased a glass grinder and begun processing clean source-separated glass. Of the current mixed glass/metal/plastic container stream now handled by the District, it is estimated that approximately 54% is glass. For this Plan, it is assumed that 60% of the glass is ultimately diverted, and processed for local consumption. See Table 21 below.

Table 21 - Forecasted Glass Diverted for Local Beneficial Use

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Mixed Glass/Metal/Plastic Containers:	79	79	83	85	88	90	93	95	98	99	101	103	105
Glass Container Portion:	43	43	45	46	47	49	50	51	53	54	55	56	56
Assumed Participation Rate:	30%	40%	50%	60%	70%	80%	90%	90%	90%	90%	90%	90%	90%
Mixed Glass Diverted:	8	10	13	17	20	23	27	28	29	29	29	30	30

(tons unless stated otherwise)

7.2.4 *On-Island Composting Program*

As noted above, the District had developed a plan to implement an expanded on-Island organics composting program, which plan has been set aside as of the date of this Plan. In the event this plan were to be implemented, the below information summarizes the effect of that activity upon the net amounts of waste and recyclables shipped off-Island for processing and management.

Because this Plan recommends the District implement source separation of compostable organics from the MSW disposal stream, whether the material is composted/digested off-Island or on-Island, the amount of MSW remaining for disposal would remain unchanged. However, an on-Island composting program could also target three other wastestream components for processing and management, and incorporate them into the District's composting program on-Island:

1. The mixed paper component of the recyclables stream is now sent off-Island at great expense for ferry, trucking, and processing fees. This material could be readily processed with a grinder and would be suitable for introduction into the composting program.
2. It is assumed that approximately 95% of the old corrugated cardboard that is shipped off-Island could also be processed and added to the organic mass subject to composting. This allows for exclusion from the composting program of certain corrugated cardboard items that may be wax or plastic-coated and, therefore, not good candidates for composting.
3. The District separately receives source-separated wood from residents and contractors, which is sent off-Island for processing and disposal/recycling. A reasonable portion of the wood is clean wood that, with sufficient planning, could be integrated into the new composting program. The vast majority of the wood is kiln dried, which needs to be incorporated with other organic materials and water to achieve good composting conditions. For this Plan, it is assumed that 40% of the wood is clean, untreated and unpainted and can be processed (shredded) and introduced into the composting program.

Table 22 provides a summary upon amounts of each of the above items that could potentially be recovered for composting if such a plan were pursued. Since the mixed paper and corrugated cardboard streams are already received source-separated, if facilities were available to process this material, there would be no need to provide for a phased-in participation rate in access to these streams.

Table 22 - Summary of Additional Materials Diverted To Composting

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Mixed Paper Received/Diverted:	0	0	31	32	33	34	35	36	37	38	38	39	40
SS Corrugated Cardboard:	45	45	46	47	48	49	49	50	51	52	53	54	55
Corrugated Cardboard Diverted:	0	0	44	44	45	46	47	48	49	50	50	51	52
Source-Separated Wood Waste:	86	86	88	89	91	93	95	96	98	100	101	103	105
Wood Waste Diverted:	0	0	35	36	36	37	38	39	39	40	41	41	42
Total Diverted to Compost:	0	0	110	113	115	118	120	123	125	127	129	132	134
Cardboard Recycled Off-Island:	45	45	2	2	2	2	2	3	3	3	3	3	3
Wood Waste Managed Off-Island:	86	86	53	54	55	56	57	58	59	60	61	62	63

*All volumes in tons

The above provides information regarding the amounts of each waste stream that could be recovered for beneficial use on the Island in some form according to the District’s previously adopted plan, which has now been withdrawn for further study. Table 23 below summarizes the remaining portion of each waste stream that would then be sent off-Island for recycling, processing and/or disposal as applicable to each material under this concept.

Table 23 - Summary of Material Remaining for Off-Island Management with Expanded On-Island Composting

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Net MSW Disposed:	255.0	260.2	224.2	214.6	204.5	193.8	182.6	170.9	158.6	161.4	164.1	166.9	169.7
Single Stream Recyclables:	101	99	69	68	66	65	63	65	66	67	69	70	71
Cardboard Recycled:	45	45	2	2	2	2	2	3	3	3	3	3	3
Wood Waste To Off-Island Facility:	86	86	53	54	55	56	57	58	59	60	61	62	63
Oversized MSW:	130	130	133	135	138	140	143	146	148	151	153	156	158
Scrap Metal Recycled:	55	55	56	57	58	59	60	62	63	64	65	66	67
Mattresses (Units)*:	152	152	155	158	161	164	167	170	173	176	179	182	185
e-Waste (Units)*:	54	54	55	56	57	58	59	60	62	63	64	65	66
Textiles:	0.0	0.0	3.2	4.3	5.5	6.7	8.0	9.3	10.7	10.9	11.0	11.2	11.4
Total Off-Island Tons:	679.8	682.6	547.3	542.7	537.4	531.5	524.9	520.8	516.2	525.2	534.2	543.2	552.2

(tons unless stated otherwise)

*It is assumed mattresses weigh 80 lbs. and eWaste items weigh 50 lbs., both on average.

7.2.5 No Expansion of On-Island Composting Program

Recognizing that the expanded composting program may not be implemented, it is important to estimate the amount of material requiring off-Island shipment and management given the assumptions and analysis outlined in this Plan.

Table 24 provides a summary of the estimated amount of each waste stream required to be sent off-Island for recycling, processing and/or disposal as applicable to each material under this option.

Table 24 - Summary of Material Remaining for Off-Island Management with Plan Strategies But Without Expanded On-Island Composting

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Net MSW Disposed:	255.0	260.2	224.2	214.6	204.5	193.8	182.6	170.9	158.6	161.4	164.1	166.9	169.7
Single Stream Recyclables:	101	99	101	101	101	101	101	104	106	108	110	112	114
Cardboard Recycled:	45	45	46	47	48	49	49	50	51	52	53	54	55
SS Organics to Digester/Composter:	0.0	0.0	26.4	35.8	45.6	55.8	66.3	77.1	88.3	89.8	91.4	92.9	94.5
Wood Waste To Off-Island Facility:	86	86	88	89	91	93	95	96	98	100	101	103	105
Oversized MSW:	130	130	133	135	138	140	143	146	148	151	153	156	158
Scrap Metal Recycled:	55	55	56	57	58	59	60	62	63	64	65	66	67
Mattresses (Units)(1):	152	152	155	158	161	164	167	170	173	176	179	182	185
e-Waste (Units) (1):	54	54	55	56	57	58	59	60	62	63	64	65	66
Textiles to Off-Island Processor:	0.0	0.0	3.6	4.9	6.2	7.6	9.0	10.5	12.0	12.2	12.4	12.6	12.8
Total Tons Shipped Off-Island:	679.8	682.6	685.2	692.9	700.4	707.6	714.5	724.2	733.8	746.6	759.4	772.1	784.9

(tons unless stated otherwise)

(1): It is assumed mattresses weigh 80 lbs. & eWaste items weigh 50 lbs., both on average.

As indicated above, the total amount of waste being shipped off-Island is approximately 680 tons per year. Over the forecasted planning period, it is estimated that the total annual waste shipment will increase to approximately 785 tons, an increase of 165 tons or 15% of the current off-island shipment.