

**COST ANALYSIS OF SOLID WASTE OPTIONS  
FOR THE  
TOWN OF BARNSTABLE**

**Comprehensive Financial Advisory Committee**  
Subcommittee on Solid Waste:

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## A. Overview.

On March 24<sup>th</sup>, 2011 the Comprehensive Financial Advisory Committee (CFAC) for the Town of Barnstable was requested by the President of the Town Council:

***“... to review and analyze the current cost of Barnstable’s solid waste program, projecting the cost after 2015 based upon the assumption that the current SEMASS contract will renew with similar terms and conditions. In addition, the Renewable Energy Commission (REC) is respectively challenged with reviewing and analyzing solid waste options for the town, including town-wide recycling in comparison with contracting with SEMASS.”***

The Council President requested that the two committees collaborate in their efforts with respect to the project’s mission.

Subsequent to receipt of the letter, the two groups established the following protocol for their joint effort:

1. *CFAC will be responsible for a review and analysis of the cost of Barnstable’s current solid waste program as well as a projection of probable future costs associated with the program after 2015. The post-2015 analysis is in the nature of a “base line” analysis; i.e., it assumes that the current contract will be renewed with SEMASS on terms and conditions similar to what is believed to be the current SEMASS offer to Cape Cod communities to renew existing contracts.*
2. *The Renewable Energy Commission (REC) will review and analyze solid waste program options for the Town of Barnstable, including recycling, with a view of determining the advantages and disadvantages of the set of options compared to the advantages and disadvantages of the “base line” option of simply continuing to contract with SEMASS.*
3. *Upon the issuance of the report describing alternative solid waste program options, CFAC will be responsible for analyzing and projecting costs for each of the alternatives.*

The first step of the analysis involved a series of questions for the Department of Public Works in order to develop a baseline of information pertaining to the operation of the Town’s solid waste program. A copy of the questions is attached as **Appendix A**. In April, 2011, CFAC completed Task 1, which is attached as **Appendix B**. The purpose of this report is to focus on Task 3, which is to make a determination of costs for various solid waste program options recommended by the Renewable Energy Commission. **Appendix C** presents a detailed matrix of assumptions and probable costs for several “base cases” and for each REC recommended option.

Several caveats to the information and analyses contained in this report are important to mention:

[1]. There are many cost elements associated with most of the options. Some of the elements have costs based upon fact; other cost analyses are based upon reasoned assumptions. While the reasoning behind the assumptions is explained, please keep in mind that if the assumptions change then the results will also change.

[2]. It is important to remember that the collection and disposal of solid waste as well as recycling efforts are primarily costs borne by users (i.e., Barnstable households) and, in general, not by Town taxpayers. While technically the Town does annually “appropriate” funds for Solid Waste Division, most of the programs within the Division are actually paid for through user fees. Unless the Town chooses to inject additional money from the General Fund, both existing and any new costs will continue to be borne by users of the service, though they may also benefit from potential savings or cost avoidances. Some new revenue opportunities may also present themselves.

[3]. The analysis points out a series of policy and management decisions which must be made by the Town Administration and Council in either keeping or restructuring the Town’s current solid waste program. When made, each decision will eliminate uncertainty and thus clarify the cost analysis. In addition, it is important to emphasize that CFAC focused almost exclusively on issues of cost. CFAC did not deal with environmental, legal or other considerations.

Last and as mentioned, there are many pieces to any solid waste program which currently are or may be managed by the Town. What CFAC hopes to accomplish in this report is to provide the Council and the Administration with a framework to analyze whatever solid waste program it desires to offer to some or all of the citizens of Barnstable. Those pieces can be assembled in a multitude of ways with each construct leading to a different cost and revenue result. Once Council and the Administration select their desired solid waste program it would be important to cost out the final choice with more precision.

## **B. Framework for policy options and cost analyses.**

### **1. Summary of Major Policy Questions.**

It is important for the Town Council and the Administration to spend time discussing and, hopefully, agreeing upon the goal or goals for the Town's solid waste program. In light of probable disposal cost increases in FY15, the objective of reducing solid waste costs is timely. Proponents of recycling will argue the merits of enhanced efforts. Others strongly desire to add curbside collection to the solid waste program. A robust discussion of precisely what the Town's solid waste program is intended to achieve is important.

The calculation of the cost of any new solid waste program – the sole goal of CFAC's efforts – becomes more complicated as one layers-on new program elements such as "Pay-As-You-Throw" (PAYT), and further complicated by the addition of curbside pickup, should either or both options be chosen. Major variables affecting tonnage at the transfer station need to be analyzed and major policy decisions need to be made prior to a final cost analysis. Critical cost-related questions for the Town leadership and public to consider are:

- 1. Does the Town intend to maintain a solid waste disposal program for its residents after FY15?**
- 2. Will the Town require residents with private haulers to switch and use the Town program? If not, does the Town intend to strengthen regulatory requirements for information reporting and the pricing of hauler services?**
- 3. Will the Town adopt a PAYT program or not?**
- 4. Will the Town adopt PAYT with curbside pickup or continue the use of the transfer station?**
- 5. If curbside pickup is chosen should the Town adopt single-stream or multi-stream recycling?**
- 6. Should the Town directly fund through an appropriation all or a portion of the solid waste program or should it be user supported through fees?**
- 7. Should the program be financially self-supporting?**
- 8. Will there be any fee reduction provisions for low-income households?**
- 9. What are the consequences of the policy choices in terms of customer behavior?**

When answered, all of these questions may lead to new and substantial program costs and some new revenue possibilities. They may also create the ability for households and, to a limited extent, the Town to avoid some solid waste disposal costs.

## **2. Analyzing Costs and Revenues.**

Until final decisions are made, and of necessity, the various analyses in this report have to be set out in various modes or permutations.

New **costs** may be produced by choosing various solid waste options, such as:

- a. curbside pickup, handling and collection costs for solid waste and recyclables;
- b. special PAYT bags or containers, sales commission (bags usually paid directly by customers);
- c. if “single stream” recycling program, potential loss in market availability/market value for recyclables sold by the Town, and potential increase in the rate of recycling due to the ease of single stream; if “dual stream”, possible increase in capital costs for specialized vehicles;
- d. new or increased operating and program management expenses (some one-time, other recurring); and,
- e. possible new facility-related capital costs.

New **revenue** may also be produced by choosing certain program options, from:

- a. one time grant money from the Commonwealth;
- b. user purchase of bags (though if bag sales handled by a private supplier some revenue is paid to the private supplier);
- c. fee revenue based on bag usage by whatever user pricing formula is chosen by Town including sticker fees;
- d. if greater participation in transfer station use or in the recycling effort, new recycling revenue amounts (though possibly offset by losses, if any); and,
- e. opportunity for program to compost commercial organic waste.

*If* the Town decides to impose a solid waste program for all residential properties, and *if* the Town chooses to not appropriate General Fund dollars for an expanded program, then the Town will need to establish a robust system of user fees or charges in amounts adequate enough to cover existing plus all additional collection, disposal, and operating costs resulting from the decision to significantly expand the scope of the solid waste program.

**C. Current Solid Waste Operations and Budgets – Basic Facts.**

**1. Users of the Marstons Mills Transfer Station.**

Presently, about 37% of Barnstable households utilize the Marston’s Mills transfer station to dispose of their household solid waste and to voluntarily participate in recycling. In contrast, approximately 63% of Barnstable property owners have chosen to be responsible for their own household solid waste and have contracted with a private waste hauler to provide whatever level or type of service they desire to purchase. Another way to view this important point is that virtually all of the costs for disposal of household solid waste and recycling are driven by the users of the Marston’s Mills facility, a significant minority of Town residents. A sizeable majority of Town residents do not use the facility. Commercial property owners also privately contract for their solid waste needs.

<b>ANALYSIS OF CURRENT CUSTOMER BASE:</b>	
<b>USERS OF TRANSFER STATION:</b>	37%
<b>USERS OF PRIVATE WASTE HAULERS:</b>	63%

*Chart 1*

<b>STICKER SALES (CY10):</b>	
“First” Stickers:	8,962
“Second” Stickers	2,305
Replacement Stickers:	1,216
Low Income Stickers:	189

*Chart 2*

In determining the number of discrete users of the Town’s solid waste services, it is not likely that the sticker categories “second” or “replacements” represent individual Barnstable properties. It is likely, though, that “first” and “low income” *do* represent an individual property or household in Barnstable. If true, it could thus be assumed that owners of 9,151 households (the total of “first” and “low income” stickers sold) used the transfer station in calendar year 2010. What is meant by “residential properties” in this context? Single family homes, certainly. Duplex homes, almost certainly. However, at some point larger multi-family properties (and the residents therein) are more likely to have the property owner hire a private commercial trash hauler for the needs of the building complex and thus not use the transfer station. It is also unclear whether some small businesses might be purchasing dump stickers for their needs, but most commercial properties use private trash haulers. Based upon Assessor Department information the

subcommittee suggests that the maximum number of residential properties which might, in theory and absent curbside collection, use the transfer station is approximately 25,000.

Calculating the number of households which either currently use, or might in the future use, Town solid waste programs is an essential fact as it drives most of the costs of any solid waste program option. For convenience, this memorandum will sometime refer to the users of the program as “properties” or “property owners”, but more accurately they should be thought of individual households, as there may be more than one actual user/household on a parcel of property. The chart which follows demonstrates how we arrived at the 25,000 property (i.e., household) figure.

**ASSESSMENT CLASSIFICATION REPORT – RESIDENTIAL UNITS IN BARNSTABLE:**

<b>Property Type/Code</b>	<b>Parcel Count</b>	<b>Household Multiplier</b>	<b>Adjusted Total</b>
101 – Single Family	20,671	1.0	20,671
102 – Condos	1,702	1.0	1,702
103 – Mobile & Multi-Homes	585	1.3	778
104 – 2 Family Homes	265	2.0	470
105 – 3 Family Homes	29	3.0	87
111-126 – Apartments	137	6.0	<u>822</u>
<b>TOTAL</b>			<b>24,530 households</b>

It is unclear if the household estimate should be further adjusted (lower) to account for seasonality and adjusted again (higher) for the increase in household population in the summertime. For the purposes of this analysis we are assuming that the two adjustments will tend to cancel each other out. Note also, a 1994 study of the Town solid waste program determined that the number of households then served was 23,370.

*Chart 3*

Commercial, developable parcels and municipal property have been excluded. The multiplier is an estimate of the number of families (again, households) that are located on a particular parcel of residential property. The Town will need to develop a policy for apartment buildings with smaller number of units being served by the Town and larger apartment complexes required to contract for their solid waste needs. Examples were found of communities collecting from buildings with up to 8 units; other communities set the number at 4. For the purpose of this analysis, we assumed that the “apartment” multiplier will be set at “6” as it is speculated that the larger the apartment or condominium complex the more likely it is for the property to have contracted with a private hauler for their solid waste requirements. How many of these residential unit complexes might migrate back to a Town collection program was not speculated upon.

## 2. System Costs.

In FY10 the cost of the solid waste *disposal* program associated with the current, long term contract with Covanta, Inc. (SEMASS) was \$136,095.00<sup>1</sup>. With the expiration of the current contract in FY15, and assuming no other changes to the program, it is expected that the cost of providing the same level of service in FY15 will increase approximately six-fold, to about \$836,200.00 for that fiscal year and thereafter increasing by some unknown inflation factor. See Appendix B for a more detailed analysis.

### FY10 VERSUS FY15 TIPPING FEE COSTS

FY10 Disposal Costs:	\$136,095.00	Tipping Fee: \$37.51/ton
FY15 Disposal Costs:	\$836,200.00	Tipping Fee: \$80.00/ton

Chart 4

One policy choice for the Town (actually, current users) to avoid solid waste costs – and one base line option analyzed in this report – would be to totally privatize solid waste collection and disposal and partially, but not completely, close the transfer station. If that was the Town’s decision and assuming that the Town no longer needed the services of the SEMASS facility for disposal of solid waste, in FY15 users of the transfer station will avoid spending almost the entire \$836,200.00.

Even presuming a partial closure of the transfer station, the Town will still have some disposal costs associated with Town government generated solid waste, approximately 500 tons per year. That amount does not include the school system which contracts for the transport and disposal of its own solid waste. However, for the 37% of town property owners who use the transfer station for solid waste and recycling, a decision to completely privatize the service will mean each household will have to contract with a private waste hauler, no doubt at a cost higher than the current sticker fee. The Town would presumably continue to use the Transfer Station, scaled back, for recycling efforts, the collection and disposal of construction debris and the household hazardous waste program.<sup>2</sup>

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<sup>1</sup> This number is misleading in the context of developing a solid waste program on and after FY15. The amount paid by the Town of Barnstable for SEMASS services is currently highly subsidized by grants from the Massachusetts Technology Collaborative. Those grants will expire on the same date as the expiration of the contract with Covanta and there is presently no reason to believe that they will be extended beyond that date. **Absent the grants, the Town (user) cost for the solid waste program for FY10 would have been \$416,894.00.** Thus, the expected huge increase in costs in FY15 are the result of both higher tipping fees and, more importantly, the disappearance of state grant funding.

<sup>2</sup> One variation of a privatization model is to maintain the transfer station as a locus for an active recycling program. The Town could also consider using the transfer station as a regional facility for recycling. This report does not analyze the latter option, however.



The three key cost elements of the Town’s solid waste disposal efforts are contained in the following chart:

<b>DISPOSAL COST ELEMENTS</b>		
	<b>FY10</b>	<b>FY15</b>
Tipping Fee paid to Covanta (SEMASS)	\$37.51/ton	\$80.00/ton
Yarmouth Transfer Station Fee	\$ 1.00/ton	\$ 1.00/ton
Childs Trucking to Yarmouth	\$ 6.19/ton	\$ 7.00/ton

*Chart 5*

Solid waste disposal costs represent a small part of the overall cost of the Solid Waste Division of the Department of Public Works. The approved total operating budget for the entire Solid Waste Division for FY11 was \$2,583,674.00, reflecting the range of programs operated by the Division, such as recycling, the disposal of hazardous material, composting, the removal and disposal of Town-generated trash, etc. Revenue for FY11 was expected to be approximately \$2,000,000.00, leaving a projected budget shortfall of \$583,674.00,<sup>3</sup> which is similar to the average shortfall in prior years. Division funding operates as an Enterprise Fund. The Division presently consists of five separately budgeted programs. For FY11 those programs, budgeted amounts and source of funding were as follows:

<b>NAME OF PROGRAM</b>	<b>AMOUNT BUDGETED</b>	<b>SOURCE OF REVENUE</b>
Construction and Demolition	\$ 576,626	User Fees
Recycling	\$ 499,855	Sale of product; User Fees
Residential Transfer Station	\$1,011,474	User Fees
Packer Services	\$ 129,952	GF Appropriations/Fees
Landfill Closure/Monitoring	\$ 365,658	Fund Balance

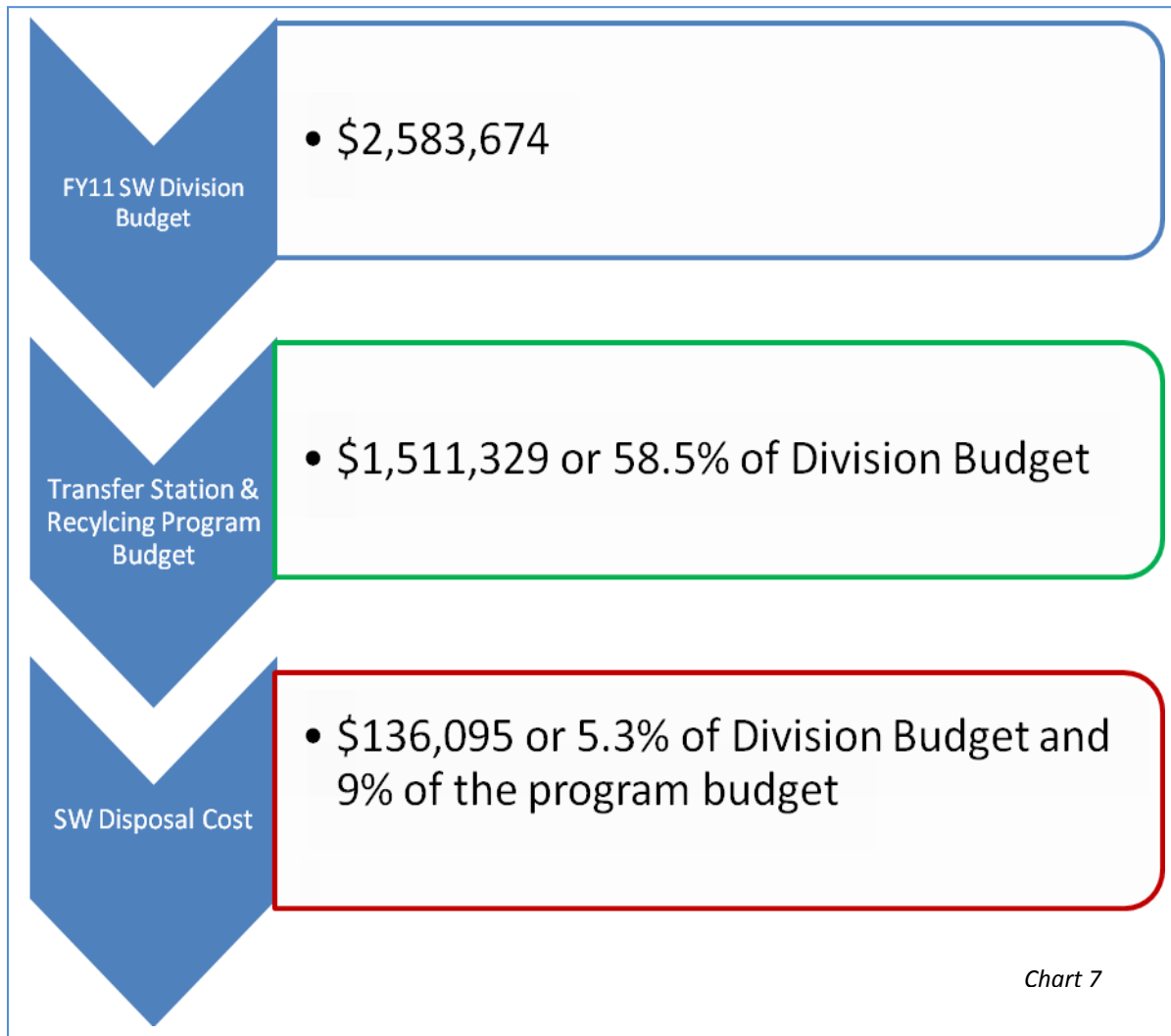
*Chart 6*

The cost of the Packer service is paid for out of General Fund appropriations and from user fees. Post-closure landfill monitoring and repayment of the loan to close the landfill are paid from the Enterprise Fund balance. The Construction and Demolition program is supported by user fees and appears to be self-supporting. The Recycling program receives revenue from the sale of recycled material that pays for about half of the costs of the program, with any program deficit paid from the existing Enterprise Fund surplus. The operation of the residential transfer station and the recycling program is

<sup>3</sup> FY11 final operating budget results saw an actual deficit of \$127,627, though the significant difference between budget and actual amounts is largely attributable to a one-time savings of about \$90,000 as well as a larger than projected amount of investment income of approximately \$61,000.

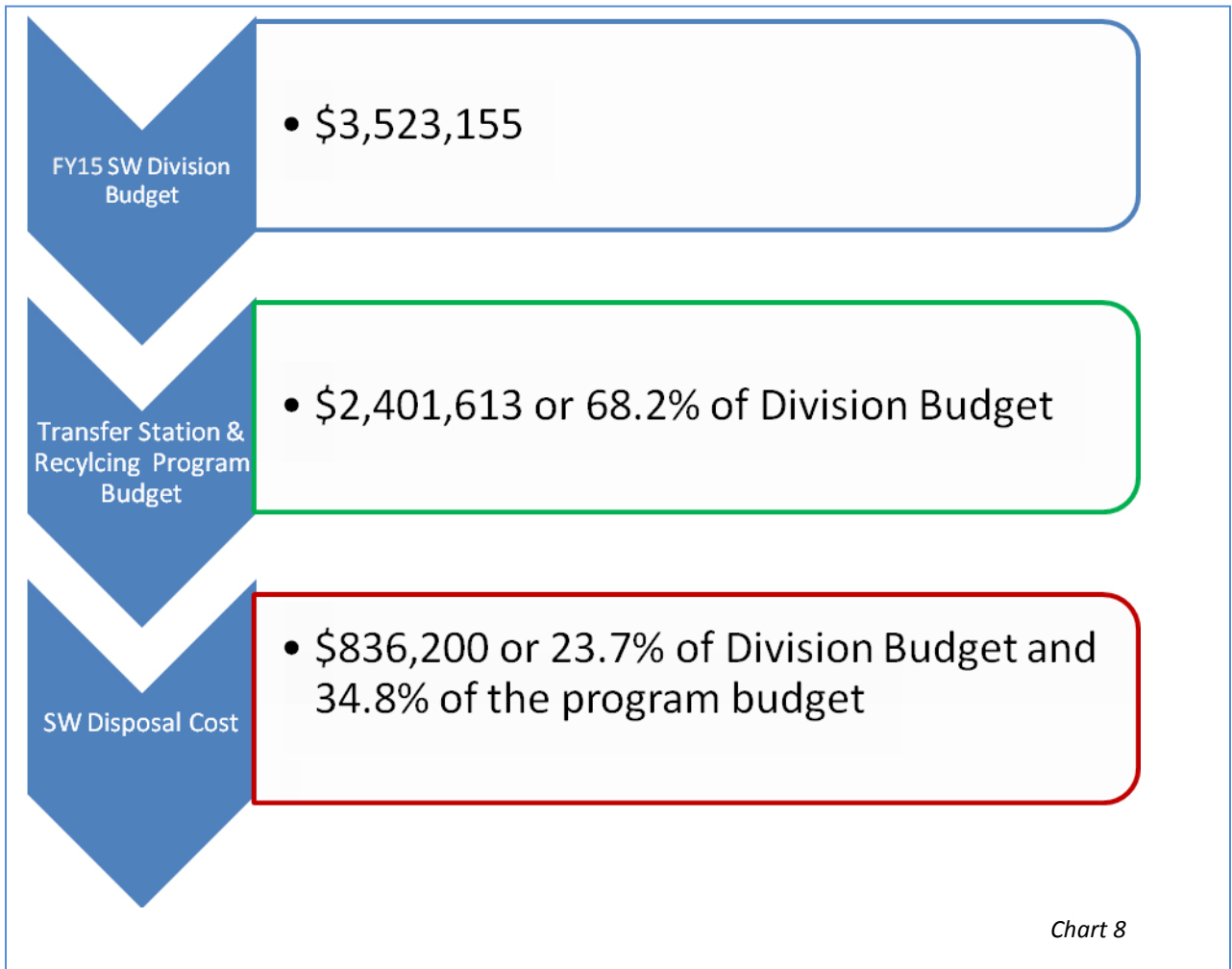
largely paid for by the sale of stickers. Landfill closure costs are currently paid from the existing Fund surplus. As a matter of Council policy and Town practice, the Town has for many years subsidized the cost of the stickers by the use of surplus funds in the Solid Waste Enterprise Fund. DPW has estimated that if the sticker price reflected the actual cost of service, the *current average* sticker price of \$114.00 would need to *average* about \$143.00.

It is important to understand that the current ability to alter the financial impact of the program through cost avoidance is limited due to the relatively small amount of budget allocated for solid waste disposal. For FY11 the following chart is illustrative on this point:



Presuming a huge increase in disposal costs in FY15 and a generic 3% ramp up of the operating budget from FY11 to FY15, the expected percentage of solid waste disposal

costs compared to the Division budget becomes a greater part of the program budget as can be seen in Chart 8. Efforts to avoid disposing residential solid waste at SEMASS become more important as disposal costs become a greater share of the Division and program budgets, though it is equally (if not more) important to reduce other costs if the goal of reshaping the solid waste program is to result in avoiding costs to the more than 9,150 household users of the program.



**D. Analysis of FY15 Transfer Station Sticker Fees – Renewed Covanta, Inc. Contract.**

A logical question which would arise as a result of renewing a disposal contract with Covanta, Inc., which is what would be the cost of a “first” sticker in FY15?

The basis for the FY15 sticker fee calculation can be discerned from past sticker prices for the household population currently using the Marston’s Mills transfer station. For CY10 there were 12,672 stickers sold in four different categories, with over 95% of the sticker revenue deriving from the sale of “first” stickers.

<b>TYPE OF STICKER</b>	<b>CY10 COST OF STICKER</b>
“First”	\$130.00 [\$140.00 in 2012]
“Second”	\$ 15.00
Low Income	\$ 55.00
Replacements	\$ 0 to \$20.00

*Chart 9*

If the Town simply accepted a renewal of the contract with Covanta, Inc. beginning in FY15, and assuming an \$80.00 tipping fee plus \$8.00 of other related and assumed disposal costs, reasonable inflation estimates and further presuming no other programmatic changes and no increase in the amount of recycled tonnage, a fully cost loaded “first” sticker fee will range from about \$230.00 to \$240.00 per household user.<sup>4 5</sup>

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<sup>4</sup> To calculate the expected cost of a sticker in FY15 requires a series of assumptions and cannot be precise. First, we estimated that the operating budgets for the Recycling and Transfer Station programs will increase by 3% each year until FY15, resulting in a FY 15 budget of \$562,591 and \$1,139,117 respectively. Added to the operating budget for the transfer station is the net increase in tipping fees and other expenses expected for FY15, \$699,905. The total for both in FY15 is thus \$2,401,613. That number should then be reduced by projected recycling revenue, also estimated to increase by 3% per year, or by \$275,750, for an adjusted total of \$2,125,863. That estimate was then divided by sticker sales resulting in a “first” sticker fee ranging from \$230.00 to \$240.00. The final number for “first” stickers will also depend on various policy choices as, such as cost of stickers for low-income households.

<sup>5</sup> Recent information from the Town of Yarmouth, the owner of the solid waste transfer station used by both Yarmouth and Barnstable, indicates their desire to convey the station to a private owner as they assert they are losing money. The financial impact of that financial and policy decision cannot be calculated, but it is possible and perhaps likely that the transfer station costs may increase more than anticipated.

**E. Calculating current and future solid waste tonnage and current and future amounts of solid waste recycling.**

These are complicated questions and future tonnage estimates are clearly dependent upon the solid waste program options ultimately selected by the Town leadership. The various options, when implemented, produce a wide variance in amounts of solid waste and recycling tonnage and, thus, create a wide variance in costs and program revenue.

Currently, there are two key tonnage numbers. The *first* is the amount of non-recycled solid waste tonnage and the *second* is the amount of recycled solid waste tonnage. According to DPW information, historic data on solid waste collection amounts at the Marstons Mills transfer station, from FY05 to FY10 are:

<b>YEAR</b>	<b>SOLID WASTE TONNAGE</b>	<b>RECYCLED TONNAGE</b>	<b>TOTAL TONNAGE</b>	<b>PER-CENT RECYCLED</b>
FY05	9,926	4,432	14,358	31%
FY06	10,184	4,444	14,628	30%
FY07	10,141	4,983	15,124	33%
FY08	9,630	4,867	14,497	34%
FY09	9,452	4,744	14,196	33%
FY10	9,496	4,888	14,384	34%

*Chart 10*

Tonnage amounts have been fairly stable for the current program. It appears that increases in sticker fees have not had much, if any, effect on tonnage amounts. It also appears that the soft economy has brought some new residential properties (i.e., households) to the transfer station as “first” and “low-income” sticker sales have gone from 8,437 in CY05 to 9,151 in CY10, an increase of 8.5%. The increase may also be due to the decision to have the transfer station open 7 days a week.

In terms of future options, the most significant cost variable is whether the Town’s option of choice affects only the base of current customer using the transfer facility (37% of properties) or whether the Town will choose an option that would require universal participation (100% of properties). That is a major policy choice and for the purpose of analysis we looked at the cost impact of both choices. In terms of a current year base case, for cost analysis purposes we used 9,500 tons for non-recycled tonnage (the amount which goes to SEMASS), and 4,650 tons for the amount of solid waste currently being recycled, and thus diverted from the SEMASS facility. Additionally, the percent of solid waste being currently recycled is about 33%. Again, remember these numbers are for the current user base.

If the future solid waste policy choice requires 100% household participation, the extrapolated amounts would be 26,400 tons and 12,900 tons respectively, before any financial impact from introducing a “Pay-As-You-Throw” (PAYT) program or adding curbside collection, and presuming a stable Town population.<sup>6</sup>

<b>PERCENT USERS</b>	<b>NON-RECYCLED TONNAGE</b>	<b>RECYCLED TONNAGE</b>
37%	9,500	4,650
100%	26,400	12,900

*Chart 11*

There has been comment with respect to Barnstable’s recycling efforts compared to other communities. In terms of what the Town actually knows – which is information gleaned from households using the Town Transfer Station – DPW data indicate that the amount of solid waste tonnage that is actually recycled is fairly robust. If DPW’s information is accurate, comparisons to other communities both on and off-Cape lead to the conclusion that we actually participate in recycling efforts comparatively well. Of course, only about 37% of households in Barnstable actually use the Transfer Station; 63% of our households contract privately for their refuse removal. In terms of the latter group and to the best of CFAC’s knowledge, other than the private companies themselves, neither DPW nor the Board of Health have any hard data which indicates total solid waste tonnages collected or tonnages recycled. After all, it is a private contract and reports are not required to be filed with either Department. There are two DEP reports showing conflicting information with respect to Barnstable’s recycling efforts...one has the 33% number and the other shows a 16% number for CY08. No one seems to be able to verify the 16% figure. Even DEP qualifies its information.<sup>7</sup> In sum, for Barnstable no one precisely knows the amount of waste actually recycled, other than amounts going through the Transfer Station. The Town should begin to collect key solid waste data from private trash haulers as part of its licensing requirements.

<sup>6</sup> Legal issues are beyond the scope of this analysis. Presuming a desire to continue to use the Marstons Mills Transfer Station, Town policy planners should review the impact of a significant increase in tonnage resulting from universal (i.e., 100%) household participation and the current DEP permit limits with respect to limiting solid waste disposal at the transfer station.

<sup>7</sup> DEP data contains the following disclaimer: “Information gathered from online surveys (are) completed by city and town solid waste/recycling officials...These survey results differ from the data MassDEP collected by other means for 2008 and earlier years in that they do not include recycling rates or the data needed to calculate rates as MassDEP has done in the past. For this reason, it is not possible either to compare data collected using the different methods, or to calculate municipal recycling rates from this survey data that can be compared to previously published rates.” And further, “MassDEP calculates recycling rates based on data submitted annually by municipalities. The accuracy of rates depends on the completeness and accuracy of data reported to MassDEP.”

**F. Comparative Data.**

Looking at the experience in other communities is helpful in determining our expected costs, but only up to a point. Population, community square miles and community road miles will tend to drive many of the costs associated with solid waste programs. It is difficult, though, to find another community which has adopted a PAYT model with as much geographic territory as the Town of Barnstable, as much road miles and where 63% or more of the property owners were using private waste haulers prior to the adoption of a PAYT program or curbside collection. The subcommittee made an effort, however, to compare the solid waste programs in six other communities, some of which have curbside collection, some PAYT, one with both and one with neither.

COMMUNITY	POPULATION	SQ. MILES	ROAD MILES	PARCELS	HOUSING/SQ. MILE
<b><i>Barnstable</i></b>	<i>45,193</i>	<i>60.04</i>	<i>448.71</i>	<b><i>27,702</i></b>	<i>416.69</i>
Attleboro	43,593	27.51	194.82	14,233	<b>601.74</b>
Falmouth	31,635	44.24	346.67	23,799	453.32
Franklin	31,635	26.74	170.45	10,779	386.20
Plymouth	<b>56,468</b>	<b>96.46</b>	<b>504.31</b>	25,563	220.30
Sandwich	20,675	43.04	216.25	10,563	203.25
Westford	21,951	30.61	165.40	8,491	226.76

*Chart 12*

Barnstable has a sizeable population, square mileage, lengthier road miles and number of parcels of land compared to the other communities in the chart which will tend to increase program costs compared to the others. Our housing density, though, will tend to make curbside collection, if desired, somewhat more efficient than the others. Keep in mind that compared to 351 cities and towns in the Commonwealth, Barnstable has the 26<sup>th</sup> largest population and is the 4<sup>th</sup> largest in square miles.

In terms of Attleboro and Sandwich, the models are precisely identical to the one presently used by each community, but inserts Barnstable’s projected FY15 disposal costs.

**1. Attleboro Cost Model:**

Handouts from the City of Attleboro, given to the members of REC, are helpful in terms of developing one hypothetical cost model for the Town of Barnstable. Two of the documents lay out the methodology and dollars associated with their PAYT and solid waste program. It should be again cautioned that among Massachusetts cities and towns there are many variations of PAYT as well as differing solid waste programs, services and sources of revenue.

There are two annual fees or charges in the City of Attleboro: a “Trash Fee” and a “Bag Purchase” charge. The Trash Fee pays for the cost of solid waste disposal, recycling processing costs, and the first container of solid waste from a household. The following is

Attleboro’s methodology for calculating costs, but modified to use our expected, FY15 solid waste disposal rate of \$80/ton.

<b><u>Attleboro Model:</u></b>		
<b>Disposal Cost/Ton:</b>	\$80.00/ton	
<b>One lb. Cost:</b>	0.04 cents/lb	[\$80 / 2,000 lbs]
<b>Weight of SW Bag:</b>	35 lbs.	Attleboro assumption
<b>Trash Fee/lb:</b>	\$1.40/bag	[35 lbs x 0.04 cents]
<b>Price Stabilizer</b>	0.20 cents/bag	add-on per bag
<b>Trash Fee/First Bag:</b>	\$1.60/bag	[\$1.40 + 0.20 cents]
<b>1 bag/household X 50 bags per year:</b>	\$80.00	[\$1.60 per bag x 50 weeks]
<b>2 Additional bags Per week X 50 weeks:</b>	\$160.00/100 bags	[\$3.20 two bags x 50 weeks]
	<b>TRASH FEE:</b>	<b>\$ 80.00</b>
	<b>BAG PURCHASE COST:</b>	<b><u>\$160.00</u></b>
	<b>TOTAL HOUSEHOLD COST:</b>	<b>\$240.00</b>
	For each bag exceeding 150, add \$1.60 to total cost	

Chart 13

Regardless of the model used or the selection of fees or charges, the total amount of revenue produced has to equal the cost of whatever solid waste program is desired by the Town Administration and Town Council. In the above model, the total amount of revenue produced by the Trash Fee and Bag Charges in Barnstable would be \$6,000,000, [\$240.00 x 25,000 users] presuming 100% properties are served and before adding other revenue. If the current 37% of the residents of the Town are the only users, the total would be \$2,196,240, [\$240.00 x 9,151] before adding in any other program revenue.

The underlying disposal cost for any trash hauler contracts for curbside pickup and solid waste disposal with the Town is assumed to be \$80/ton. Like Attleboro, the model presumes a bag weight of 35 lbs. which creates a revenue cushion. It is important to note that DEP estimates that the average bag weight is between 15 lbs. to 20 lbs. per “typical” bag. If the model used 20 lbs as the average bag weight, and assuming the same number of bags used by households, total revenue would be reduced by about 40%. The Attleboro model assumes an average household would create three bags of trash each week which, over time, may be reduced if households actively recycle their waste stream. Some households would, of course, use more and other households fewer bags. Finally, like



Attleboro, the adapted model does inflate the price of bags by 20 cents to raise additional revenue to achieve price stability for a period of years.

It is important to also note that Attleboro keeps its actual household fees low by appropriating, in FY11, \$2.153 million for the City's solid waste costs. Attleboro runs its solid waste program through its General Fund; it adopted a Revolving Fund for its recycling and related programs. General Fund expenses are not included in household costs in this analysis.

Note also, PAYT communities usually have two or more bag choices, priced differently. The bag price used in this model should be viewed as a blended rate.

## **2. Sandwich Cost Model.**

The Town of Sandwich recently adopted a Pay-As-You-Throw solid waste program option. Sandwich's PAYT program is significantly different from that of Attleboro for a range of reasons, the most important being that it does not have curbside collection and does not require universal participation. It is also interesting to note that the percentage of users of the transfer station is the mirror opposite of that of the Town of Barnstable as approximately 66% of Sandwich households utilize the facility, with the balance contracting privately for their solid waste needs. Finally, like Attleboro, the Town appropriates funds from the General Fund to pay for a large portion of the cost of their program, with user fees accounting for the balance.

Three aspects of the PAYT program in Sandwich are important to mention in order to comprehend the Sandwich household cost calculation. First, as noted, the Town directly appropriates funds amounting to about 55% of the cost of the program.<sup>8</sup> Second, the projected pricing is dependent upon achieving an initial household recycling rate of 45%. If the universe of user households does not achieve a 45% recycling rate, the annual cost will increase as households will use and pay for more bags and disposal amounts will increase. Last, it is important to also consider whether Sandwich's assumption that a family of two would use one 30 gallon bag and one 13 gallon bag per week for its solid waste is reasonable. Additional bag use translates into additional costs. Note also, like Attleboro, the Town likely over-estimates bag weight to build in a revenue margin for price stability.

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<sup>8</sup> In an April, 2011 presentation, a discussion of the purpose of PAYT was proffered. The document given to the Selectmen noted that "(t)he goal of the PAYT program is to eventually cover all Transfer Station costs with PAYT revenue (sticker plus bag fees), Reaching this 100% PAYT budget coverage can be achieved by incremental increases in the PAYT/Tax split over a number of years." As there is no direct General Fund appropriation in the Town of Barnstable, there is no similar potential benefit to the General Fund in our case.

<b><u>Sandwich Model:</u></b>		
<b>Disposal Cost/Ton:</b>	\$80.00/ton	
<b>One lb. Cost:</b>	0.04 cents/lb	[\$80 / 2,000 lbs]
<b>Weight of SW Bag:</b>	31.5 lbs. family of 2	.83 lbs/gal – Sandwich assumption
<b>Trash Fee/lb:</b>	\$1.26/bag average	[31.5 lbs x 0.04 cents]
<b>Price Stabilizer</b>	none	add-on per bag
<b>Trash Fee/Per Bag:</b>	\$1.26/bag family of 2	[\$1.26]
<b>2 bags/household of 2 X 52 bags per year:</b>	\$131.04	[\$1.26 per bag x 2 x 52 weeks]
<b>Lower cost Sticker Fee:</b>	\$55.00	
	<b>STICKER FEE:</b>	<b>\$ 55.00</b>
	<b>BAG PURCHASE COST:</b>	<b><u>\$131.04</u></b>
	<b>TOTAL HOUSEHOLD COST:</b>	<b>\$186.04</b>
	For each bag exceeding 156, add \$1.26 to total cost	

Chart 14

One other difference between the Town of Sandwich and the City of Attleboro should be mentioned, which is that the Town hired the services of a third party contractor (“Waste Zero, Inc.”) to manage its PAYT program. The expected *direct* cost of PAYT program, for bags and for the fee paid to the third party vendor, is \$147,578 for the current year. Translating that amount for Barnstable’s 9,151 users, a similar PAYT program would result in *direct* PAYT costs of approximately \$245,450; for 25,000 participants the amount would be about \$670,800. It is unclear whether there would be additional *indirect* PAYT costs, though some minor amounts seem likely.

For 5,500 households, Sandwich expects to realize about \$718,500 in net revenue from bag sales and from a reduced sticker fee of \$55.00, down from \$110.00. The Town’s

General Fund contribution for the year was expected to be \$581,480 for a total program cost of \$1,300,000.<sup>9</sup>

### **3. Franklin Cost Model.**

The Town of Franklin recently made major changes to their solid waste program, primarily involving how they accomplish curbside pickup. That communities program is fee based, but they did not adopt a PAYT program. Rather, the Town contracted with one private trash hauler to handle collection and disposal by means of special trucks and 65 gallon containers, one large container for trash and the other to be used and separately handled for single stream recyclables.

The annual fee for the service is \$220.00, but customers may “opt-out” of the program and contract with a licensed trash hauler. There is no charge for the first two containers, but households may pay for an additional container for recyclables for \$75.00 and an additional \$150.00 for a second container for non-recyclables. Overflow bags with stickers can be purchased for \$3.00 per sticker. Of interest, there is an RFID chip in the containers which makes data tracking and contractor accountability easier.

The total cost of the solid waste program for the Town is approximately \$2 million covering 10,394 households.

### **4. Plymouth Cost Model.**

Plymouth currently contracts with SEMASS to directly manage three transfer stations for Town household use with users paying an annual sticker fee of \$186.00.

According to the Plymouth DPW, the Town intends to move to curbside pickup of September 1, 2012 for approximately 60 to 70 percent of Town households (the Town

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<sup>9</sup> Sandwich recently announced six month results for its PAYT program. In summary, recycling percentages have increased, but the amount of solid waste received at their transfer station have substantially decreased. Expected bag revenue was also less than was estimated. The reasons for these results are speculative, but the Public Works Director believes that there are a range of reasons. In an e-mail to CFAC he noted that:

“Although our reduction in trash is impressive, it certainly isn't all related to increased recycling of commingles and fiber. The result of the trash reduction is likely related to the following:

1. Residents opted for private hauling. We won't know these numbers until stickers are renewed in July
2. We gave out composters so more people are likely composting at home (reduces food scraps and leaves/grass disposal)
3. Residents are finding other ways to reduce trash (yard sales, hand-me downs, charities)
4. More people are recycling thru redemption centers
5. People changing their buying habits - less packaging
6. Summer residents are taking trash home instead of dumping in Sandwich”.

estimates 18,000 “stops” with “4” being the policy decision for the number of apartment units in one building that will be served), and a Request For Proposal to waste haulers has been issued. The Town will choose one hauler for a contract lasting eight years. As part of the initiative, the Town has decided to reduce the number of transfer stations.

Fees for the service have not yet been decided upon. The Town states that it currently recycles about 21% of its solid waste.

Plymouth does not have a PAYT program.

### **5. Westford Cost Model.**

The Town of Westford expends approximately \$1,192,600 for curbside and disposal, and similar to most communities with curbside collection the cost is paid for from the General Fund. However, there appears to be some issues with respect to the program. In 2008 there was 9,345 tons of solid waste collected; in 2010 it had dropped to 7,548. In 2008 Westford recycled 759 tons of glass, metal and plastic, a slight increase; however, recycled paper tonnage went from 1,655 tons to 1,402 tons over the same period. Efforts to clarify the reasons for the decrease were made although the reasons remain murky. The Town did respond that:

“(They) believe the decrease in paper was primarily driven by the impact of the Internet in delivering news media and information equivalent to printed newspaper. We know more residents are getting their news via computer and fewer residents subscribe to home delivery of newspaper. Newspaper is typically “heavy” and we saw slight changes in recycling tonnage compared to other recyclable items, yet overall residents are recycling more and continue to do so.” And, “(they) believe the changes are related to two primary factors (1). the deployment of many more 64 gallon (containers) versus...smaller recycling bins. This gave Westford residents more opportunity and additional volume for recyclable items (and) (2). the Westford Recycling Commission over that time had stepped up its promotion of recycling through various programs and events which helped educate residents to the benefits and methods of increasing recycling.”

Given the relatively small number of households served (6,941), road mileage and parcels, Westford is probably not a good comparison community.

### **6. Falmouth Cost Model.**

Falmouth’s demographics are roughly similar to the Town of Barnstable, though on a slightly smaller scale.

Falmouth does offer weekly curbside collection for an annual cost of \$1,446,000

for both rubbish collection and recycling collection, with one waste hauler for the entire community. They spend an additional \$450,000 with SEMASS for disposal and an additional \$200,000 for rail transport, for a total solid waste program cost of \$2,096,000.

All of the costs are paid from the Town's General Fund and there are no user fees for collection and disposal of residential solid waste unless a household desires to use for limited purposes its Transfer Station. Falmouth does have a Transfer Station which is shared with two other communities and is primarily used for the disposal of white goods, construction debris, municipal waste, etc. The annual 1/3 share of the cost of the facility for Falmouth is \$154,167 and the station brings in about \$142,000 annually in fee revenue. The fee revenue is relatively minor compared to Barnstable.

The DPW Director of Falmouth estimates that about 20,000 residential households are served. In terms of recycling, the private hauler picks up recyclables every other week in blue plastic containers provided by the Town. The form of recycling is "single stream".

Falmouth does not have a PAYT program.

**G. Recycling and Avoiding Future Solid Waste Costs.**

The analysis of any future cost avoidance amounts was calculated using the 2015 cost estimates of \$80.00/ton as well as the other cost drivers relating to disposal (Yarmouth Transfer Station at \$1.00/ton, trucking costs at \$7.00/ton), or an all-in disposal cost of \$88.00/ton. In simple terms, for every ton of solid waste diverted through recycling the users avoid having to pay \$88.00. It is also important to understand that there will be an inflation provision, currently unknown, in any new contract with Covanta, Inc.; thus, dollar amounts avoided after 2015 would marginally increase, though any calculation for dollars spent in the future should also be deflated (i.e., discounted).

Some additional and relevant questions, previously noted, are whether we can rely upon the Town of Yarmouth to hold to the current dollar per ton rate at its transfer station and whether the estimate for trucking costs for 2015 are realistic.

A simple way to measure the impact of any enhanced recycling option is to assume that Council’s option of choice is to leave the current program as is, but take aggressive steps to achieve greater use of the transfer station and achieve a greater percentage in recycling tonnage. As mentioned, 33% of all solid waste delivered to the Marstons Mills transfer station is currently recycled. In FY15 that same percentage of user recycling will avoid \$409,200 in costs which would have otherwise been needed for disposal expenses. If we assume that the percentage of tonnage recycled can increase to 50%, through public education and persuasion, the amount of solid waste recycled in 2015 will increase from 4,650 tons to 7,075 tons, representing an increase of 2,425 tons of solid waste recycled. At \$88.00 per ton and with 50% of tonnage recycled, disposal costs will be reduced by an additional \$213,400, assuming no other unforeseen costs. Increasing recycling rates, however, is a challenge. Creative ideas for marketing the transfer station will be needed. Achieving a recycling goal of 50% will be difficult, but it is a way to avoid some costs.

The following chart compares potentially avoidable costs for both 37% and 100% solid waste options, based upon a 33%, or an enhanced, 50% recycling rate, and further assuming no other program changes involving substantial program cost increases.

<b>FY15 SOLID WASTE TONNAGE – AVOIDED COSTS:</b>				
<b>Disposal \$/Ton</b>	<b>Non-Recycled Tonnage</b>	<b>% Recycled</b>	<b>Recycled Tonnage</b>	<b>Avoided Costs</b>
37%/88.00	9,500	33%	4,650	<b>(\$409,000)</b>
		50%	7,075	<b>(\$673,880)</b>
100%/88.00	26,400	33%	12,900	<b>(\$1,135,200)</b>
		50%	19,650	<b>(\$1,729,200)</b>

*Chart 15*

If the Town of Barnstable were to adopt a PAYT program similar to Sandwich, would the “Town” “save money” in terms of its solid waste program? By “Town”, it is important to continually remember that the costs of solid waste collection, disposal and recycling in Barnstable are actually paid by the universe of household users who would pay fees to support the program. By “save” it is intended to mean avoiding program costs. Unlike Sandwich, there can be no substantial benefit of PAYT to the Town’s General Fund. So, would the users save money?

First, it needs to be again mentioned that the recycling program does not pay for itself. For every \$1 dollar of revenue there are \$2 of costs. Increasing recycling through a PAYT initiative will not make this structural financial gap disappear. Indeed, at some point the fact of increasing recycled tonnage at the Transfer Station will cause additional direct operating expenses associated with the recycling program, though will also result in an increase in recycling revenue.

Second, there would be a decrease in the cost of *disposal* resulting from an increase in recycling. But, for the group of household users to actually “save money” the group will need to recycle enough additional tonnage to pay for the added cost of the PAYT program itself. With 9,151 households participating in a PAYT program the report projects that the PAYT program will increase program costs by about \$245,540 a year. At \$88.00 per ton, the users will thus need to recycle an additional 2,790 tons of solid waste (which otherwise would be sent to SEMASS) to have the program operate on a break even basis. That amount translates into increasing the rate of recycling from 33% to 53%, and increasing the amount of recycled solid waste tonnage by 60%, from 4,650 tons to 7,440 tons. For PAYT options for 25,000 household users the percentage increases are similar. For the larger group, PAYT program costs are estimated to be \$670,080. At \$88.00 per ton, the users would need to recycle an additional 7,615 tons of solid waste to reach a breakeven point. Calculations are based upon Barnstable adopting a PAYT model identical to the one used in Sandwich. Note also, amounts for individual households will vary depending upon the amount of solid waste recycled by each household.

NO. OF USERS	ADDITIONAL RECYCLING NEEDED TO COVER PAYT EXPENSES
If 9,151 (37%)	4,650 Tons → 7,440 Tons
If 25,000 (100%)	12,900 Tons → 20,519 Tons

*Chart 16*

## **H. Explanation of Solid Waste Division Revenue Shortfalls.**

A recent decision by the Town to increase “first” sticker fees by \$10.00 will likely make the issue of revenue shortfalls in the Enterprise Fund disappear, at least for the intermediate term. Absent that decision, calculating expected cost avoidance amounts is complicated by the fact that the Town’s solid waste programs operates within the Solid Waste Division Enterprise Fund, with the Fund annually operating with a revenue shortfall, primarily due to the imbalance of costs and revenue associated with the recycling operation. An Enterprise Fund presumes a close match between expenses and revenue, though it is not statutorily required. A self-supporting Fund has not been the case in the past but should be part of the analytical model in order to insure that the Fund’s costs are identified and revenue needs are met.

As noted, the budget for the Solid Waste Division has been running an *average* revenue shortfall of over \$500,000 per year for several years, with half of that amount principally due to the revenue shortfall in the Recycling Program. In FY11 it was expected that \$583,674 would be needed from the surplus in the Enterprise Fund to meet all of the Fund’s expense needs. Of that amount, \$268,016 was earmarked for what is termed “fee mitigation” which was a planned discount in sticker fee amounts. An amount of \$315,658 was used for paying the landfill capping debt obligations and, strictly speaking, is not a deficit as the debt service is paid for by transferring the need amount from the Fund balance. It is important to understand that even if it was decided to eliminate the Enterprise Fund *per se*, the operation of the various programs of the Solid Waste Division would still require either a sufficient amount of fee revenue or an appropriation from the Town’s General Fund in order to match the cost of the program. The recent decision to increase sticker fees by \$10.00 should alleviate this chronic concern.

Which raises the question of what, precisely, is the unobligated/unrestricted amount of money in the Solid Waste Enterprise Fund? Of help, in the FY11 CAFR it states that the Solid Waste Enterprise Fund had an unrestricted balance, on an accrual basis, of \$1.61 million as of June 30<sup>th</sup>, 2011. More useful, the July 1, 2011 certified surplus of the Fund, by the Commonwealth’s Division of Local Services, is \$3,460,970. Of this amount \$2,579,779 is designated for the landfill capping loan, leaving a Fund balance of \$881,191.



## **I. Cost Analysis of Recommended Options.**

**Appendix C** contains a detailed matrix of estimated costs for each option that the Renewable Energy Commission asked CFAC to review, as well as an explanation for the **assumptions behind the cost estimates.** In addition to an analysis of the current program and its costs, CFAC has insured that the matrix includes two other base line options. They are: (1). No fundamental change in the Town's solid waste program other than the Town renegotiating a new contract with Covanta, Inc.; and, (2). Privatizing solid waste services, though maintaining a scaled back transfer station as part of a continued effort to encourage community recycling efforts. These two options are useful as benchmark comparisons to any option which increases the scope, and thus the cost, of the Town's solid waste program.

The following list contains virtually every possible option or combination of program options available to the Town of Barnstable. **Marked in red are the options REC has evaluated and asked CFAC to analyze.**

- 1. Renegotiate with Covanta, Inc.** or another service provider with no substantial program changes with two negotiation options:
  - (a). Renegotiate as a single community**
  - (b). Participate in group negotiations (County initiative)
  
- 2. Privatize the solid waste program** with two options:
  - (a). Complete privatization with any recycling done privately
  - (b). Privatization of collection with and without the Town managing a recycling program for Barnstable residents**
  - (c). Privatization of collection with Town managing a regional recycling program for a portion of Cape communities
  
- 3. Institute a Pay-As-You-Throw program for the current users of the Marstons Mills transfer station,** with several sub-options:
  - (a). No curbside pickup, single stream**
  - (b). No curbside pickup, dual or multi-stream
  - (c). Curbside pickup, single stream
  - (d). Curbside pickup, dual or multi-stream
  
- 4. Institute a Pay-As-You-Throw program for all residential properties,** with several sub-options:
  - (a). No curbside pickup, single stream
  - (b). No curbside pickup, dual or multi-stream
  - (c). Curbside pickup, single stream [with and without districts]**
  - (d). Curbside pickup, dual or multi-stream

Chart 16 sets out, in summary form, CFAC’s estimate of costs for each of the REC choices. The split number in the second option (2b) represents ending (first number) or maintaining a Town recycling program (second number).

<u>OPTION</u>	<u>ESTIMATED ANNUAL HOUSEHOLD COST</u> <u>33% Recycling Rate</u>	<u>ESTIMATED ANNUAL HOUSEHOLD COST</u> <u>50% Recycling Rate</u>
<u>Renegotiate (1a)</u>	\$232.22	\$203.27
<u>Privatize (2b)</u>	\$0/\$27.32+	\$0/\$27.32+
<u>No Curb/PAYT for current (3a)</u>	\$259.05	\$230.11
<u>Curbside/PAYT for all (4c)</u>	\$259.85	\$236.09

*Chart 16*

REC asked CFAC, for Option 4c, to provide a cost estimate for curbside collection and to assume two variations: curbside collection by one waste hauler and curbside collection based on districts with a number of waste haulers. CFAC could find no community in Massachusetts taking this approach and thus comparative information is lacking. CFAC would suggest that creating a system involving a number of private waste haulers is administratively challenging. In addition, there is a risk of differing fees varying from district to district. Finally, the basic business rule of economy of scale suggest that dividing up the Town into smaller waste haulage districts leads to inefficiency which, in turn, would result in a marginally higher prices for curbside collection. The cost associated with districts cannot be calculated with any precision and will only be known after the Town issued two RFP’s (one for the entire Town and one allowing district bids), and then compared the results of the two sets of bids.

For a more detailed analysis of the REC recommendations please study the two spreadsheets in Appendix C. The two analyses presume that the users will continue to recycle at a rate of 33% or, motivated by a PAYT program, increase recycling efforts to 50%. Failure to meet recycling thresholds or goals will result in an increase in per capita user costs. Exceeding 50% recycling goals will allow users to avoid additional costs.

Finally, it is **very** important to carefully read the “Notes” section to Appendix C to understand the underlying financial and demographic assumptions behind the two analyses. And one more time, it is always important to remember that unless the Town begins to appropriate funds to support its solid waste programs (i.e., place all or part of the program on the tax rate), the cost analysis should be viewed from the financial perspective of every current or potential household user – the actual payers – of the program.

## **J. Conclusion.**

CFAC would like to thank Mark Ells and his staff for many hours of work with the subcommittee and in compiling much of the data contained in this report. Additional appreciation is extended to Mark Milne for his work in reviewing the information and in making helpful suggestions to the subcommittee in drafting the report and giving advice on several complex issues. And, last, the CFAC subcommittee wishes to acknowledge the diligent efforts of Richard Elrick and members of the Renewable Energy Commission for their cooperation and for their review of many solid waste alternatives.

02-01-12

## **APPENDIX A**

**SOLID WASTE PROGRAM: QUESTIONS**

1. For FY11, the Town of Barnstable pays \$00.00 per ton of solid waste disposal.
2. For FY11, the Town pays \$0.00 per ton for hauling solid waste to the Transfer Station.
3. For FY11, the Town pays \$0.00 per ton for rail transport to SEMASS.
4. The Operating Expenses for the Solid Waste Division are or were:
  - For FY11:
  - For FY10:
  - For FY09:
5. The Capital Expenses for the Solid Waste Division are or were:
  - For FY11:
  - For FY10:
  - For FY09:
6. The Division's expenses associated with the SEMASS contract are or were:
  - For FY11:
  - For FY10:
  - For FY09:
7. (a). Please provide a detailed analysis of the components of the Enterprise Fund, as of June 30<sup>th</sup>, 2010. The analysis should detail the nature and purpose of each component. What was the reason for the significant decrease in the Fund balance from FY08 to FY09?  
  
(b). If a decision was made to charge a full price for solid waste services beginning in FY12 (July 1<sup>st</sup>, 2011), what would be the price of an unsubsidized permit and what impact would there be on other fees and charges?
8. How are payments made to SEMASS? For Transfer Point? For transport? [In other words, please provide a chart showing the "flow of funds" to pay for solid waste obligations including hauling and transport costs].
9. For the prior two fiscal years, what is or was the total amount of solid waste tonnage transported to SEMASS for disposal and what was the total cost per ton for solid waste disposal. Please estimate amounts for the current fiscal year.
10. Estimated for FY 11 and actual for the prior two fiscal years, how much revenue was derived from the Solid Waste Division. Remove any Division revenue not associated with the solid waste program.

- a. Sticker Fees:
  - b. Recycling Revenue:
  - c. Other fee revenue:
11. How does one measure the public’s use of the Transfer Station? Tonnage delivered? Tonnage transferred? Number of stickers in use? What are use trends over time?
  12. In the last two operating budgets, the Department committed to completing “an evaluation of contracted services versus in-house labor to perform operations of transfer station”. Would you please send the committee a copy of the evaluation.
  13. (a). What controls does the Town have with respect to regulating private haulers? Do we know annual tonnage amounts for each hauler? Does the Department maintain a schedule of rates used by private haulers? Does the Town investigate complaints against private haulers? If so, what penalties may the Town impose with respect to private complaints? With respect to violations of Town ordinances?
  - (b). Has the Department evaluated the costs and benefits associated with closing the Marstons Mills facility for all solid waste other than recycling operations?
  14. Trends in recycling. What are the revenue trends for recyclables over the past five years?
  15. What are the avoided costs realized from recycling? [Convert recycled solid waste to tons of solid waste not requiring transfer – or payments – to SEMASS.]
  16. Has the Solid Waste Division received any grants in the past three years? How much funding was received and for what purpose? Is the Department pursuing other grant opportunities and if so, how much and for what purpose?
  17. Recognizing that there will be several evaluation standards, what will be the financial or economic benefit standard(s) used by the Department to evaluate contract options for solid waste pursuant to the County initiative? Is the Town currently and actively investigating any other contracting options other than the County initiative?
  18. Is the Department aware of any pending or probable changes in federal or state law that will increase the costs associated with the solid waste program?
  19. Is there any current relationship between the disposal of wastewater residuals from the Town’s WWTP and the contract with SEMASS?

## **APPENDIX B**

## **PROJECTED SOLID WASTE COST INCREASES IN FY15**

This memorandum is intended to address the first task, which is an analysis of the cost of the Town's current solid waste program and contract with SEMASS as well as a projected equivalent cost for the program in 2015, assuming the Town maintained the current solid waste program and accepted a new contract with SEMASS.

In preparation of the cost analysis, CFAC, along with a representative of REC, in early April, 2011 prepared and sent a series of questions to Mark Ells, the Town of Barnstable's Director of Public Works. He responded in a helpful manner to those questions in early June, 2011. The questions and the responses are contained in Appendix A, at the end of this memorandum. The members of both committees are appreciative of the significant effort expended by Mark Ells and his staff to respond to the posed questions.

### **A. Analysis of Cost of the Current (FY11) Solid Waste Program/SEMASS contract.**

What follows is an analysis of the current solid waste program for the Town of Barnstable for FY10, the most recent year with a full year of data.

Calculating the cost of the program is the product of several contracts and data produced by the Towns of Barnstable and Yarmouth. The relevant contracts are with SEMASS, in Rochester, MA, The Town of Yarmouth and with Robert Childs Trucking, Inc. of So. Dennis. The first two contracts result in payments on a per ton basis; the trucking contract operates on a per hour basis.

It is important to understand that the contracts only deal with solid waste processed through the Marstons Mills Transfer Station, estimated to be about one-third of the solid waste produced by residences and businesses in the Town of Barnstable. The other two-thirds is handled by means of individual contracts with private haulers and is not a part of the calculations which follow. It is the Marstons Mills transfer operation and the Town managed solid waste program that drives costs associated with SEMASS. The operation of the private contracts have no impact on Town costs. However, in order to properly evaluate a range of solid waste program options much better information on the private contracts will be needed though little information on the range of private contracts is available from Town departments. In addition, if the goal of the Town is to increase recycling on a Town-wide basis, then it will be necessary to involve the Town in these private arrangements in some manner.

A huge factor in determining the current cost of the Town's solid waste program is the impact of several grants to SEMASS from the Massachusetts Technology Park Corporation (MTC), which serve as a credit against tipping fees. The grants were for the purpose of defraying certain expenses of SEMASS in terms of meeting state imposed environmental standards. Absent the grant, provisions of the contract would have allowed SEMASS to pass on the cost of meeting those standards to its customer base.

Historic data on solid waste collection amounts at the Marstons Mills Transfer Station, from FY00 to FY10 are:



<u>YEAR</u>	<u>TONNAGE</u>
FY00	7,698.06
FY01	8,330.01
FY02	8,970.72
FY03	9,346.92
FY04	9,614.03
FY05	9,925.65
FY06	10,183.46
FY07	10,140.67
FY08	9,630.03
FY09	9,452.31
FY10	9,495.50
FY11	N/A [4 months of data only]

The current solid waste program contains the following cost elements:

- SEMASS tipping fee: currently @ \$37.51 per ton, less MTC credit
- Yarmouth host fee: currently @ \$1.00 per ton.
- Trucking cost: currently @ \$65.00 per hour or \$6.19 per ton.

Actual amounts paid to SEMASS for the last three years are:

FY09	\$67,250.58
FY10	\$75,396.15 [actual for FY10 was \$86,552.19, but includes \$11,156.04 for June 2009 that was encumbered and paid in FY10]
FY11 YTD	\$66,076.92 [through April, 2011]

Actual amounts paid to Child's Trucking for the last three years are:

FY09	\$45,459.00
FY10	\$51,203.00
FY11	\$49,989.00 [through May, 2011]

Plugging in numbers provided to us by DPW, the approximate cost of the SEMASS contract for approximately 9,500 tons of solid waste for FY10, the last period of time with a full year of data, will be as follows:

Tipping Fee:	=	\$75,396
Host Fee:	=	9,496
Trucking Cost:	=	51,203
<b>Estimated FY10 Total Cost</b>		<b>\$136,095 [plus indirect costs]</b>

[Tipping Fee calculation:  $9,495 \times 37.51 = \$356,195$ , less MTC credit of  $\$280,798 = \$75,396$ ]

It is important to remember that the amount represents an “all-in” direct cost and is not simply for the cost of the contract with SEMASS alone, as the total also includes the dollars paid to Yarmouth (host fee) and Childs Trucking (trucking cost). Yarmouth’s “host fee” is paid by the Town of Barnstable to compensate Yarmouth for hosting and managing a regional transfer station which collects and weighs solid waste tonnage from the two communities. The trucking contract covers the cost of transporting solid waste from the Marstons Mills transfer facility to the Town of Yarmouth. As noted previously, none of the information deals with private solid waste contracts with private haulers.

The estimate does not include any indirect costs (such as staffing, energy costs, etc.) of the Solid Waste Division associated with the operation of the Marstons Mills facility or the SEMASS contract. Indirect costs may or may not ultimately be an important factor depending upon the future solid waste alternatives to be first considered by REC and subsequently by the Town Administration and Council. Some solid waste options may substantially increase or decrease indirect expenses and will need to be analyzed. However, for the purpose of answering the first two questions, indirect costs are not relevant.

**B. Analysis of Cost of the Future (FY15) Solid Waste Program/SEMASS contract.**

The second part of the question relates to determining the estimated cost of continuing the current program assuming a new contractual relationship with SEMASS, on their terms, beginning in 2015. The answer to that question produces a significantly different and much higher cost.

A number of major cost component changes will occur in 2015. First, the tipping fee per ton will significantly increase given the current SEMASS contract offer. Second, the cost offset “credit” from the MTC grants end in 2014. Third, it is fair to assume the trucking cost element will also tend to modestly increase. What follows is a cost model for 2015 which, once again, presumes a continuation of the current solid waste program at the Marstons Mills Transfer Station and the SEMASS contractual relationship. All numbers are best estimates.

- SEMASS tipping fee: projected @ \$80.00 per ton, no MTC grant offset
- Yarmouth host fee: projected @ \$1.00 per ton.
- Trucking cost: projected @ \$7.00 per ton.

Plugging in the new numbers, the cost of the SEMASS contract for approximately 9,525 tons of solid waste, which is the three year average solid waste tonnage from FY08 to FY10, for **FY15** is as follows:

Tipping Fee:	$9,525 \times 80.00/\text{ton}$	=	\$762,000
Host Fee:	$9,525 \times 1.00/\text{ton}$	=	9,525
Trucking Cost:	$9,525 \times 7.00/\text{ton}$	=	66,675
<b>Estimated FY15 Total Cost</b>			<b>\$836,200 [plus indirect costs]</b>

Notes: no increase in the fee paid to Yarmouth is assumed. No change in solid waste tonnage is assumed. Recycling program at the Marstons Mills Transfer Station continues unchanged.

It is possible that the numbers might be reduced after negotiations with SEMASS or with whatever company is awarded the trucking contract, and as other tactical decisions are made, but a reasonable conclusion is that there will be a major increase in the cost of the Town's solid waste program beginning in 2015, perhaps as much as six-fold over the current contract.

v.3 UPDATED 10-22-11

## **APPENDIX C**

PROGRAM OPTION	TRANSFER STATION COSTS	COLLECTION COSTS	DISPOSAL COSTS (33% Recycling)	RECYCLING COSTS	RECYCLING REVENUE	PAYT COSTS	REVENUE (FEES) FROM USERS	COST PER HOUSEHOLD
<b>1. Current SW Program (FY11) - 37%</b>	\$875,374	\$0	\$136,100	\$505,000	(\$245,000)	\$0	\$1,271,474	<b>\$138.94</b>
<b>2. No SW Program</b>	See Note 1	\$0	\$0	\$505,000	(\$245,000)	\$0	\$250,000	<b>\$0/\$27.32+</b>
<b>3. New Covanta Contract - 37%</b>	\$1,004,000	\$0	\$836,200	\$560,591	(\$275,750)	\$0	\$2,125,041	<b>\$232.22</b>
<b>4. PAYT - 37% NO Curbside</b>	\$1,004,000	\$0	\$836,200	\$560,591	(\$275,750)	\$245,540	\$2,370,581	<b>\$259.05</b>
<b>5. PAYT - 100% Curbside</b>	\$432,000	\$3,070,870	\$2,323,200	\$0	\$0	\$670,080	\$6,496,150	<b>\$259.85</b>

Chart 17

PROGRAM OPTION	TRANSFER STATION COSTS	COLLECTION COSTS	DISPOSAL COSTS (50% Recycling)	RECYCLING COSTS	RECYCLING REVENUE	PAYT COSTS	REVENUE (FEES) FROM USERS	COST PER HOUSEHOLD
<b>1. Current SW Program (FY11) - 37%</b>	\$875,374	\$0	\$136,100	\$505,000	(\$245,000)	\$0	\$1,271,474	<b>\$138.94</b>
<b>2. No SW Program</b>	See Note 1	\$0	\$0	\$505,000	(\$245,000)	\$0	\$250,000	<b>\$0/\$27.32+</b>
<b>3. New Covanta Contract - 37%</b>	\$1,004,000	\$0	\$571,320	\$560,591	(\$275,750)	\$0	\$1,860,161	<b>\$203.27</b>
<b>4. PAYT - 37% NO Curbside</b>	\$1,004,000	\$0	\$571,320	\$560,591	(\$275,750)	\$245,540	\$2,105,701	<b>\$230.11</b>
<b>5. PAYT - 100% Curbside</b>	\$432,000	\$3,070,870	\$1,729,200	\$0	\$0	\$670,080	\$5,902,150	<b>\$236.09</b>

Chart 18

## NOTES:

1. Amounts for the current Town solid waste program and for the option eliminating the solid waste program are expressed in FY11 dollars; other options and estimated amounts are inflated to expected FY15 costs. The transfer station will need to remain open for other purposes, such as Construction & Demolition debris, household hazardous waste and possibly a continued recycling program. All of those programs would be expected to support the transfer station. The two numbers in the second option presume no recycling (first number) or continued recycling (second number).
2. **Chart 17** assumes continuation of the current **33%** recycling rate and a largely self-supporting system through fees. **Chart 18** assumes success in increasing participant recycling rate to **50%**. A 50% recycling rate would reduce disposal costs by \$264,880 for options assuming 9,151 households; for 25,000 households the additional cost avoidance would be \$594,000. It is possible that a major increase in recycling at the transfer station would also increase direct program costs (handling, sorting, containers, etc.), though it is not possible to calculate the additional amount at this point.
3. Should the Town chooses another option which requires all households to utilize the Town transfer station, the 25,000 households will drive significant increases in the cost of operating the transfer station. However, Option 5 in the spreadsheets result in transfer station costs reduced by more than half. The assumption is based on the need for a Town transfer station for limited purposes, but with a significant reduction in expenses.
4. There is a debate and it is thus unclear as to whether choosing single stream or dual stream recycling creates additional costs. This model does not add costs for either single stream or dual stream recycling. However, if policy makers decide that one or the other choice does, in fact, add costs, the model can be tweaked to reflect those new costs. For every \$50,000 of “new” costs for 9,151 households, the model would increase the annual cost by \$5.47; for 25,000 households, the annual increase would be \$2.00 for each \$50,000 increase in costs.
5. PAYT costs represent bag related and program management costs, \$245,540 for the 37% group and \$670,080 if the option is 100%. By way of comparison, Sandwich projected a bag expense and sales commission amount of \$147,576 which covers 5,500 households. For 9,151 households in Barnstable, the same amount would translate to \$245,540; for 25,000 households the amount would be \$670,080. All other new PAYT, onetime operating costs are presumed to be paid by means of applying for and receiving grant funding from the Commonwealth of Massachusetts.
6. The recycling costs and revenue columns are deleted for the options which assume curbside collection as it is assumed that the contract for collection will also include a requirement for the trash hauler to collect recyclables and the hauler will include that cost in the total contract price.
7. Using Attleboro collection costs as a reference point, that City collects from 13,855 households at a cost of \$1,457,910 in FY11. If Barnstable chooses curbside collection for the current 9,151 transfer station users, the equivalent collection cost would be \$962,220; for 25,000 households the equivalent cost would be \$2,630,070. However, Barnstable has 118% more road miles, more square mileage and greater population compared to Attleboro which would increase collection costs. How much that might increase collection costs is highly speculative, but for the purposes of this analysis collection costs are increased by 25% to compensate for the demographic differences. Thus, for 9,151 households the collection cost would be \$1,202,776; for 25,000 households the cost of collection would be \$3,287,857. The non-proportional increase allows for economies of scale. Falmouth’s curbside collection costs are \$1,446,000 representing about 20,000 households. Barnstable has 16% more parcels and 29% more road miles. If collection costs are increased by 25%, the cost for 9,151 households would be \$813,375; for 25,000 households it would be \$2,169,000. It is unclear why there is a significant difference between Attleboro and Falmouth, thus the model simply averages collection costs for both communities, or \$1,008,076 for 9,151 households and \$ 2,728,429 for 25,000. Those amounts are then inflated by 3% per year to 2015, for a final estimate of **\$1,134,598 and \$3,070,870**.