DUTCHESS COUNTY, NEW YORK

INDEPENDENT REVIEW OF SOLID WASTE MANAGEMENT SYSTEM AND LSWMP

FINAL REPORT

July 6, 2011

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EXECUTIVE SUMMARY

ES 1. INTRODUCTION

ES 1.1. INDEPENDENT SYSTEM EVALUATION

MidAtlantic Solid Waste Consultants (MSW Consultants) is an independent waste management and recycling consulting firm that specializes in helping municipalities optimize their waste management systems. We derive our independence from two business decisions:

1. We work exclusively for municipalities (cities, counties, state agencies, etc.) on solid waste management program optimization initiatives, and do not work for private waste management companies on such projects.[1]
2. We do not offer engineering services – so we have no incentive to advocate or recommend the development of any particular facility that might in the future generate professional engineering fees for another practice within our firm.

Rather, we specialize in municipal integrated waste management system planning, financial analysis, and program optimization. MSW Consultants was retained to conduct an independent evaluation of Dutchess County's waste management system, with particular emphasis on the Local Solid Waste Management Plan[2] (LSWMP) recently developed by the Dutchess County Resource Recovery Agency (RRA). This independent evaluation was funded by a grant from a non-profit foundation, and has not relied on any County tax dollars or other public funds.

ES 1.2. BACKGROUND

At the current time, Dutchess County is at a crossroads with its waste management system. For over 25 years, Dutchess County has relied primarily on the RRA, a state public benefit corporation, to oversee and manage the County's waste stream and to serve as the County's official Planning Unit in the eyes of the New York State Department of Environmental Conservation (DEC). Over this time, the RRA's primary function has been to develop and manage two waste management facilities:

- A Resource Recovery Facility (RRF) that incinerates wastes and generates electricity for sale into the grid, and
- A dual stream Material Recovery Facility (MRF) that sorts, bales and sells recovered recyclable materials.

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[1] In the interest of full disclosure, MSW Consultants has performed waste characterization studies and waste stream audits for private sector waste management companies, including Covanta Energy and Waste Management. Waste characterization is a specialized service and is one of our firm's core competencies. While we predominantly conduct these studies for public sector clients, we have in the past and may in the future perform waste characterization studies for private sector organizations. We have not conducted any projects for any private waste management companies in the Hudson Valley region or in New York State, Pennsylvania, or Connecticut.

[2] County of Dutchess and Dutchess County Resource Recovery Authority Local Solid Waste Management Plan, November 29, 2010.

In the performance of its duty, the RRA has relied on subsidies from Dutchess County that have totaled more than $32 million since 1995, and currently average roughly $5 million annually. While this analysis was not meant to be an indictment of the RRA, it is noteworthy that two third-party organizations – the New York Authority Budget Office[3] and the Dutchess County Office of the Comptroller[4] – have issued reports citing material examples of poor management and operational deficiencies. Notable findings from these reports include:

- The RRA has inflated its budget and overcharged the County for Net Service Fees on multiple occasions;
- The RRA has repeatedly failed to competitively and effectively procure operating contracts and professional services, costing millions of dollars;
- There is a lack of transparency and limited internal controls to the RRA's reporting;
- Although not the fault of the RRA itself, RRA Board members have served in violation of the RRA's enabling legislation and have not received appropriate training;
- The RRA may have erroneously paid a host community fee to the Town of Poughkeepsie for many years (although this practice has been suspended since the report was issued).

Despite these concerns documented by third parties, the RRA has been and is currently the authorized organization responsible for setting the long term strategy for solid waste management in Dutchess County. In December 2010, the RRA submitted a LSWMP that espoused expansion of the publicly-owned and managed system. Specifically, the LSWMP calls for:

- Implementation of regulatory flow control to give control of the entire municipal solid waste stream to the RRA. Under such a system, private haulers and municipalities would be directed where to deliver both wastes and recyclables (p. 139).
- Implementation of a direct revenue mechanism to fund "recycling, household hazardous waste management, operate the upgraded air pollution control system at the RRF, and to build reserves for future facilities and projects" (p. 139).
- Upgrading one of the existing turbines and expanding the RRF to add another 250-tpd processing line to accommodate 100 percent of the County's disposed waste stream (p. 127-131);
- Developing a new MRF to process 100 percent of the County's single stream recyclables (p. 114-118);
- Developing a new Southern Transfer Station to serve Fishkill, Wappinger, East Fishkill, Beekman, Pawling and Dover (p. 137-138).
- Considering the development of a new ash landfill (p. 132-134).

Table ES-1 below summarizes the capital cost of these recommendations. As shown, collectively these recommendations will cost upwards of $110 million and require annual debt

[3] Operational Review, Dutchess County Resource Recovery Agency, February 22, 2010, OR-2009-02, Authority Budget Office.

[4] Report of the Office of the Comptroller, Dutchess County, letter dated August 25, 2010 to Dutchess County Legislative Chairman Robert Rolison and Resource Recovery Working Group Chairman James Miccio.

service of more than $9 million. Even if the local ash landfill is not pursued because of the excessive cost and lead-time requirements (as stated in the LSWMP p. 134, the Oneida-Herkimer Solid Waste Authority reportedly spent 12 years and $13 million to permit a new 1,000 ton landfill, followed by $31 million to construct the landfill), the total capital cost exceeds $80 million with $6 million of annual debt service. Such a system would impose a cost of $46.50 per ton of waste disposed (according to RRA's plan). Given the general rule that residential households typically dispose of one ton per year, this equates to a cost of $46.50 per household just in debt service obligations for 20 years.

Table ES-1 Capital Costs of New Publicly-Owned Facilities Recommended in LSWMP

Recommendation	Capital Cost	Debt Service (20 yrs @ 5%)
Upgrade Existing RRF Turbine	$3 to $7 million	$241,000 to $562,000
Add New 250-tpd Boiler	$55 million	$4,413,000
Build New Single Stream MRF	$13 million	$1,043,000
Build New Southern Transfer Station	$8 million	$642,000
Build Local Ash Landfill	$30 million	$2,407,000
Total	**$109 to $113 million**	**$9,067,000**
Debt Service $/Ton	***195,000 tons***	***$46.50/ton***

MSW Consultants has performed a comprehensive review of the LSWMP and of Dutchess County's solid waste management system. This Executive Summary highlights the most critical aspects of this analysis.

It should be noted that MSW Consultants is not offering specific recommendations in this Executive Summary or in the full report. Rather, it has been the intent to identify and point out, as concisely and clearly as possible, the range of decisions and opportunities available to the County, so that the course of solid waste management in Dutchess County can receive appropriate debate and discussion among elected officials and constituents at large. A wide range of stakeholders were contacted in the assembly of this report, and it is the sincere hope of MSW Consultants that we have compiled the range of options expressed to us during the study.

ES 2. CURRENT WASTE GENERATION AND RECYCLING RATE

It is particularly difficult to find and understand defensible data about Dutchess County's current waste generation and recycling rate in the LSWMP. To better assess the current situation, MSW Consultants requested 2008 and 2009 recycling reports from the RRA and used this data to estimate the County's current recycling rate. This is shown in Table ES-2

Table ES-2 Waste Generation and MSW Recycling Rate Implied by DCRRA Recycling Report

Reported Recovered Material, DCRRA Report	Total Tons Reported	Tons from MSW Waste Stream [1]
Commingled & Fiber	30,522	30,522
Scrap Metal & Appliances	23,230	4,404
Concrete, Tires, C&D Debris	92,669	0
Composted Wood, Vegetative and Food Wastes	29,000	29,000
Composted Manure and Subsoil	27,204	0
HHW (includes sludge, electronics)	4,804	718
Other	2,494	1,997
Total Reported Recyclables	**209,923**	**66,640**
Reported Disposal (NY DEC 2008)	224,870	224,870
Implied Total Generation	434,793	291,510
Implied Dutchess County Recycling Rate	**48.3%**	**22.9%**

(1) Excluding agricultural, construction/demolition debris, industrial wastes, sludges, and animal renderings

As shown above, this exercise suggests the following.

- **Waste Generation**: Dutchess County's approximate waste generation is shown to be as high as 291,000 tons, although this is probably an overestimate that includes some out-of-County wastes;
- **Actual MSW Recycling Rate**: The County's recycling rate for municipal solid wastes (i.e., excluding industrial, C&D and agricultural wastes) is estimated to be closer to 23 percent, rather than the 5 percent recycled within the RRA's system, and less than the 45 percent that is mentioned on several occasions.

While improvements to reporting are clearly needed, in the opinion of MSW Consultants these figures are reasonable for the purposes of planning the County's system. It should also be noted that the 48.3 percent total recycling rate is an absolute maximum for two reasons. First, no attempt was made to estimate the total generation of non-MSW materials, so the denominator is artificially low. Second, it is likely that some of the reported tons were actually generated outside of Dutchess County and should not be credited to Dutchess County's recycling rate.

ES 3. GOVERNANCE AND OWNERSHIP OF THE SYSTEM

It is important to make a distinction between system governance and system infrastructure ownership.

There are essentially two major options for ownership of solid waste infrastructure in Dutchess County:

- **Public Ownership**: Under this option, infrastructure for collection, disposal, recycling, and composting would be owned by the County or by the DCRRA.

- **Private Ownership**: Under this option, collection, disposal, recycling and composting facilities would be owned by private industry.

Regardless of who owns the infrastructure, it is clear in the state laws that governance of the system – i.e., planning, regulation and management – resides in public hands. In Dutchess County, the two entities eligible to plan and manage the system are Dutchess County and the RRA. Table ES-3 is a matrix that summarizes these options, although in practice there may be hybrid solutions that span more than one quadrant of the matrix.

Table ES-3 Governance and Infrastructure Ownership Options

	Planning Unit	
	County	**RRA**
Ownership of Infrastructure	Public	Public
	Private	Private

At the current time, MSW Consultants understands[5]:

- The RRA is the designated Planning Unit in the eyes of the NYS DEC; and
- The RRA and Dutchess County share responsibilities for the management and governance of the system.

MSW Consultants strongly supports the notion that a single organization should manage and govern the integrated solid waste management system for a particular county or municipality. Clearly the existing division of responsibilities does not accomplish this. MSW Consultants also believes that the system manager should be agnostic in regards to the optimal system configuration. In our professional opinion, the RRA's LSWMP and related actions strongly suggest that its primary objective is the perpetuation of a high-cost, WTE-based disposal system with strong public management that impairs private market solutions.

If the County wishes to go in any direction other than the status quo, it will be necessary to pass one or more resolutions. Because the RRA is a state public benefit corporation, it is independent of the County. At the current time, the RRA is the official Planning Unit for Dutchess County. Dutchess County also has ultimate responsibility to subsidize the RRA to the extent the RRA is unable to fund its operations through tip fees, electricity revenues or direct funding sources such as user fees. If the County leaves the Planning Unit authority with the RRA, then the County will have ceded its ability to guide the direction of the solid waste management system.

It is our understanding that the County can, by passage of a resolution, re-assign the Planning Unit authority from the RRA back to the County. Because the Planning Unit sets the course for waste management in the County, the RRA would be obligated to support the direction set

[5] MSW Consultants does not employ attorneys and is not qualified to provide a legal opinion on this topic. We have been provided with citations from the County, stating that Resolution 427-1984 gave planning authority to the DCRRA, and that the 1992 LSWMP reiterated this authority, on which we have based our understanding. It is recommended that the County obtain a qualified legal opinion on the course of action mentioned.

by the Planning Unit. Dutchess County should immediately take steps to designate itself as the Planning Unit if it wants to fully control its destiny.[6]

ES 4. DISPOSAL OPTIONS

One of the overarching questions at the outset of this project was to identify the full range of disposal options other than the planned expansion of the role of the RRA. The following options can be readily identified:

- **Implementation of RRA's LSWMP (Status Quo)**: As stated above, this option will greatly expand the control borne by the RRA and also increase system costs. The County will be committed to waste-to-energy for a 20-year time period (or longer). Dutchess County will also have fully committed to a publicly-owned waste disposal infrastructure.
- **Waste Export**: Alternatively, Dutchess County could export wastes for landfill disposal elsewhere in New York State (or even out-of-state). This is the solution employed by almost 70 percent of NY counties, and by over 87 percent of municipalities nationwide. Waste export requires there to be local transfer stations where wastes can be consolidated for long-haul road or rail transportation to a landfill for final disposal. Note that a waste export system could be (a) entirely public (as described in the LSWMP), (b) partially public and partially private, or (c) entirely private.
- **Siting and Developing a Local Landfill**: Although not discussed in the LSWMP, a local landfill would provide a viable alternative for waste disposal in Dutchess County. Because of the siting and permitting challenges, MSW Consultants has not extensively addressed this issue other than to say, if a permit could be secured, it would take many years and this solution could not be timely implemented to meet near term system needs.
- **Emerging Conversion Technologies**: At the current time, there are a variety of emerging technologies for processing of wastes that are in the testing and development stages. The LSWMP mentions some of these. In the opinion of MSW Consultants, these technologies have not achieved proven commercial scale operating success at a cost-effective level. Similarly to the development of a local landfill, it is not believed any new, cost-effective technology will be available on a timely basis for adoption by Dutchess County in this planning cycle.

In the opinion of MSW Consultants, the decision of waste disposal is between retaining the waste-to-energy system that exists currently or converting to a waste export system. In order to better compare these systems, MSW Consultants has projected the annual full costs of the system recommended in the LSWMP, compared to a waste export system in which a central transfer station is developed to accept all waste generated in the County for export to out-of-county landfills. Figure ES-1 compares the annual cost of the two systems. As this figure shows, the annual cost of waste export is significantly lower than implementing flow control, securing local transfer station(s), and expanding the existing WTE facility.

[6] MSW Consultants does not employ attorneys and is not qualified to provide a legal opinion on this topic. We have been provided with citations from the County, stating that Resolution 427-1984 gave planning authority to the DCRRA, and that the 1992 LSWMP reiterated this authority, on which we have based our understanding. It is recommended that the County obtain a qualified legal opinion on the course of action mentioned.

Figure ES-1 Lifecycle Cost Comparison of Expanded WTE vs. Waste Export

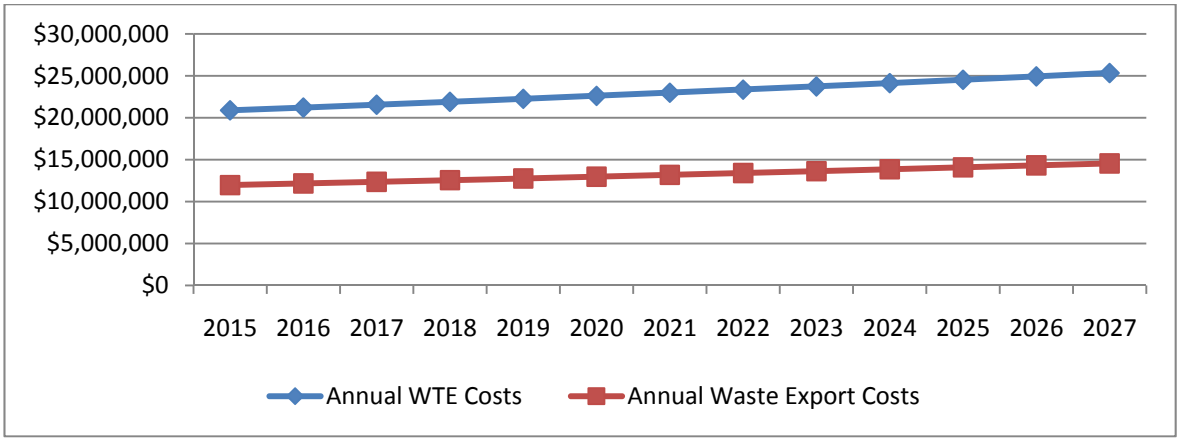
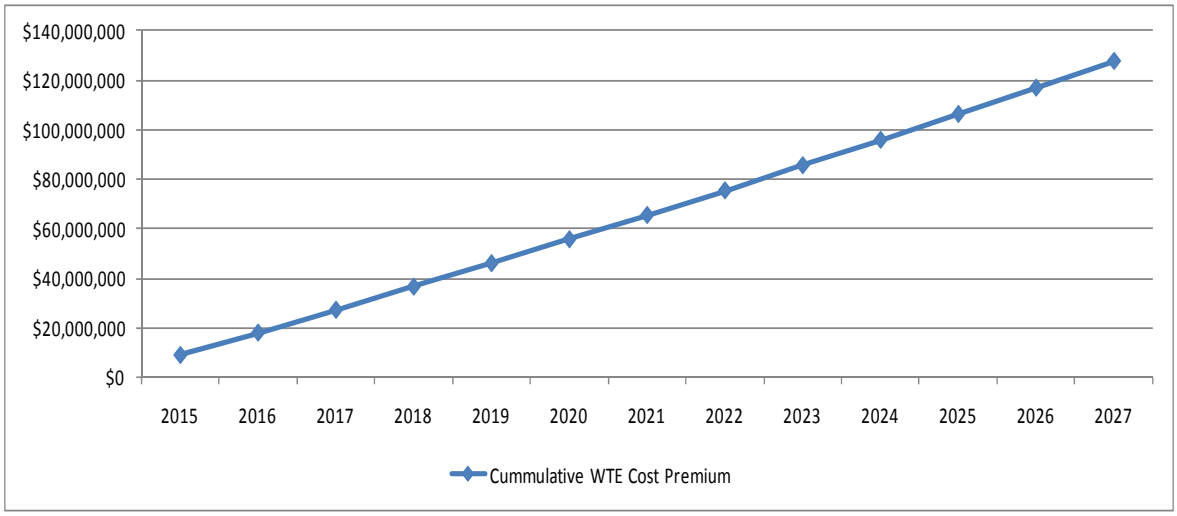


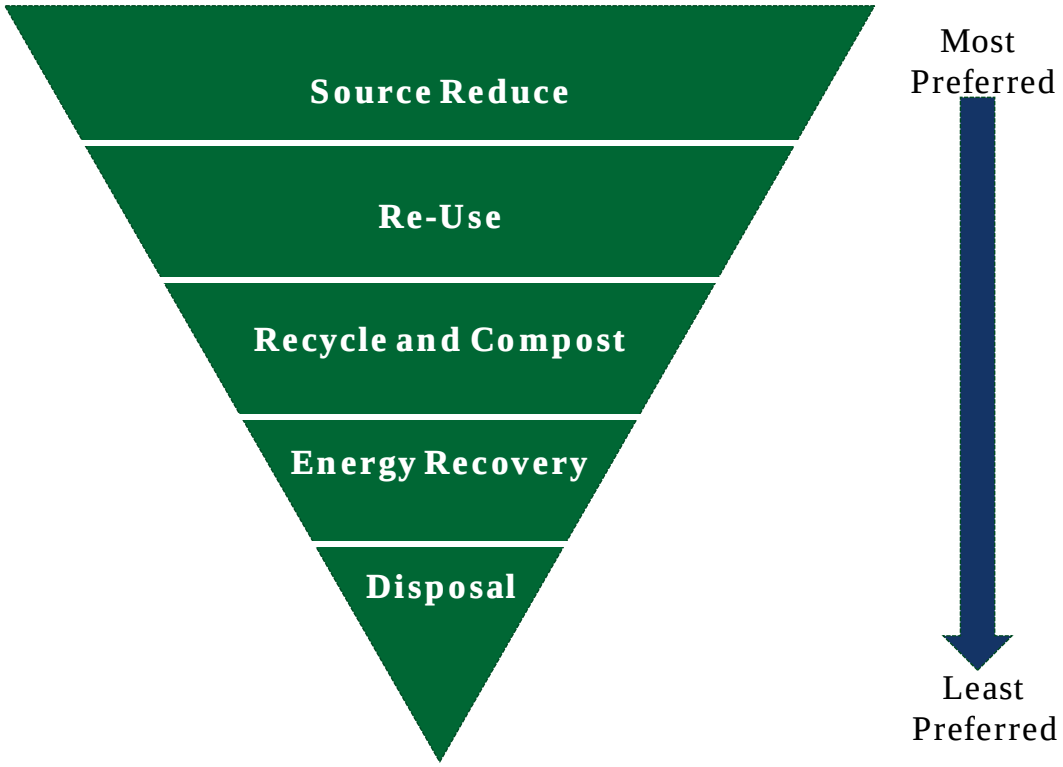
Figure ES-2 shows the cumulative cost of the WTE system compared to the waste export system from the time period of 2015 (when the RRA's current operating contract expires) to 2027 (when all debt service on the RRF is paid in full). As suggested in this figure, reasonable assumptions indicate that a system of waste export for disposal would save Dutchess County waste generators almost $127.6 million between 2015 and 2027.

Figure ES-2 Cumulative Cost Impact of Expanded WTE Over Waste Export



If nothing else, Dutchess County should consider how it wants to spend the $127.6 million cost differential. One option (the current LSWMP) is to recommit to waste-to-energy, which is higher than landfilling on the waste management hierarchy espoused by both the U.S. Environmental Protection Agency and the New York State DEC. The second option would be to save the $127.6 million disposal costs by implementing waste export, and instead redeploy these funds (or a fraction of the funds) to develop recycling and organics diversion and recovery programs. As shown in Figure ES-3 below, recycling is higher than waste-to-energy on the waste management hierarchy.

Figure ES-3 Waste Management Hierarchy



ES 5. OPPORTUNITIES IN COLLECTION

Efficient collection of waste and recyclables is a pre-requisite of successful integrated waste management systems in municipalities across the nation. Yet, the LSWMP contains virtually no useful guidance on the real opportunities available to Dutchess County.

Simply stated, the most significant opportunities to reduce overall waste management costs to waste generators (i.e., residential households and commercial businesses) and increase recycling can be achieved through new strategies and regulations associated with collection. While Dutchess County has a mandatory recycling law, the residential collection is left up to an open market system in much of the County. Exclusive collection, with either municipal crews or through competitively-bid contracts, is used in only the Cities of Poughkeepsie and Beacon, and the Villages of Millerton, Millbrook, Pawling, Rhinebeck, Red Hook, Tivoli and Wappinger Falls. Reportedly, this covers approximately 21% of the population. This means that nearly 80% of the residents contract individually with haulers or use drop-off facilities.

If residential curbside collection of solid waste and recyclables was made mandatory, recycling should increase, as it would be more convenient to dispose of solid waste properly and to recycle. This could be accomplished through one of several options.

Implement Mandatory Curbside Collection Law: Similar to the mandatory recycling law, this law would require all residents and businesses to have curbside (residential) or on-site (commercial) collection services. Such a system may enable the closure of municipal drop-off centers, as residents would no longer have a need to drop off household trash. Local haulers

would likely gain business under this arrangement and could be expected to support such a law, although residents may oppose because of the potential to increase the costs for those who currently use drop-off facilities.

Mandatory Curbside Recycling: Dutchess County could also consider making curbside recycling collection mandatory as well, which would further drive up recycling rates. However, if the County pursues this strategy, the resulting law would need to specify certain program requirements such as bundled pricing (i.e., one price for both refuse and recyclables) so that the system operated effectively and customers could compare service levels.

Exclusive Collection: As noted in the LSWMP, almost 80 percent of the households in Dutchess County must subscribe with a private company to receive curbside waste collection. While it was estimated that one hauler controls roughly 80 percent of the market in the County, this still means that there may be multiple haulers driving residential streets in certain neighborhoods, expending excess fuel and time to provide overlapping service. At a minimum, the collection costs incurred by residents in these areas could be reduced significantly for municipalities that opt to contract exclusively for collection.

While the cost and environmental benefits of exclusive collection are clear, it must be acknowledged that the political barriers to this solution may be daunting. Local haulers with long-time roots in a particular Town will fear being displaced by larger companies, and past experience suggests that there will be vocal opposition to any attempt to grant exclusive service.

Multi-municipality Solutions: Another general rule to reduce collection costs is to spread fixed costs (fleet yard, management and administration) over as many customers as possible. With the prevalence of relatively small incorporated municipalities in Dutchess County, there is almost certainly the potential to reduce unit collection costs to the extent two or more contiguous municipalities were to combine their collection systems by standardizing collection service levels and optimizing collection routing absent a consideration for interior municipal boundaries.

While there are many factors that would impact the level of cost savings that might be achievable, Table ES-4 shows the unit contract costs per household for a range of communities in Brevard County, FL. These communities receive substantially the same level of service. This table is intended to reflect the impact on unit cost of increasing the size of the service area.

Table ES-4 Example of Impact on Unit Collection Costs of Size of Service Area

Community	Population	Refuse Service	Recycling Service	Yard Waste	Bulk Waste	Monthly Collection Cost ($/Household)
Brevard Co. Unincorporated	476,230	2x/wk manual	1x/week curbsort	1x/week manual	Included	$9.12
Palm Bay	79,413	2x/wk manual	1x/week single stream	1x/week manual	Included	$11.01
Melbourne	71,382	2x/wk manual	1x/week single stream	1x/week manual	Extra	$8.10
Rockledge	20,170	2x/wk manual	1x/week curbsort	1x/week manual	Extra	$12.00
Cocoa Beach	12,482	2x/wk manual	1x/week curbsort	1x/week manual	Extra	$10.93
West Melbourne	9,824	2x/wk manual	1x/week single stream	1x/week manual	Extra	$13.05
Palm Shores	794	2x/wk manual	1x/week curbsort	1x/week manual	Included	$13.03

Although the data above do not show a perfect correlation between the population of the municipality and the unit price, it supports the general pattern of higher pricing (costs) for smaller geographic areas. All told, the larger municipalities receive similar collection for about a 30 percent lower cost per unit compared to the smaller municipalities. It is likely a similar dynamic would play out in Dutchess County.

Implement a County-wide Collection System: Extending on the prior option, Dutchess County could, with the support and cooperation of some or all of the municipalities, establish a County-wide collection system. This could be done as a public system, or more likely, as a collection contract procured through a competitive bid process. Such a system would be likely to secure the lowest unit cost for refuse collection, which in turn would allow the addition of recycling and yard waste/organics collection.

A Word about PAYT: The LSWMP correctly identifies Pay-As-You-Throw (PAYT) as a strategy to change the behavior of waste generators and increase recycling by providing a financial incentive to recycle. It should be noted that the County will have a significantly better ability to influence and structure a functional, effective PAYT system if the County is organizing and managing the collection system directly, rather than leaving this up to the private sector.

However, implementing PAYT requires there to be a direct billing mechanism so that waste generators understand the cost implications of their decision to recycle or not recycle. It is important to note that other counties have successfully implemented PAYT systems via a

"user fee" mechanism on the annual property tax bill; this mechanism is available for use by Dutchess County. It is equally important to note that such a "user fee," if implemented, would be charging residential households the direct cost of collection and disposal based on the level of collection service they choose. Such a user fee is significantly different from the generation-based user fee that has been previously analyzed and rejected by the County.

ES 6. OPPORTUNITIES IN RECYCLING

Similar to the options for waste disposal, setting the course of action for recycling requires the County to make a decision about public ownership versus private ownership of recyclables processing infrastructure.

The LSWMP advocates development of a publicly-owned single stream MRF with sufficient capacity to serve the entire County. However, it is also noted that private companies have already developed single stream processing capacity (and are in fact developing additional capacity) within and in close proximity to Dutchess County.

While MSW Consultants has not performed as detailed a cost analysis comparing the two, we note that, were the County to procure recyclables processing capacity from a private processor, recent experience with similar procurements in the Northeast region suggest that it is reasonable to expect that recyclables would be delivered with a zero floor price, and more likely there would be a net revenue returned to the County based on the value of the delivered recyclables. This is in contrast to the RRA's MRF, which not only does not return revenue, but also charges a tip fee for delivery of the materials. Private companies with a larger geographic reach also have better access to markets for recovered materials and can obtain better economics based on higher volumes compared to a local public MRF.

Other opportunities in recycling stem from a combination of the public outreach, education, and enforcement activities that Dutchess County is expected to perform by the DEC. Multiple counties in New York State maintain recycling education and enforcement staff. These staff perform numerous ongoing initiatives, and the LSWMP actually lists many such responsibilities that would be achievable in Dutchess County with a manageable number of staff. These initiatives include:

- Establishment (and enforcement of existing) reporting requirements for licensed haulers, solid waste and recycling facilities, and large businesses to track generation and diversion data needed by planners;
- Development of recycling curriculum for Dutchess County schools;
- Development of a comprehensive website to inform residents, businesses, and schools about recycling and diversion programs and facilities;
- Provision of waste and recycling technical assistance and monitoring for Dutchess County businesses;
- Continued outreach and support of ongoing HHW collection events and related public education;
- Coordination with municipalities to understand and publicize municipal recycling programs and to foster opportunities for regionalization of recycling services (as well as collection);

- Coordination with private sector organizations engaged in recycling to encourage market development;
- Establishment of and participation in recycling stakeholder meetings made up of citizens, businesses, and solid waste/recycling industry representatives;
- Identification of procurement terms and strategies for use by municipalities and businesses seeking recycling collection or recovery services.

Based on other counties inside and outside of New York State, it is reasonable to expect a successful and proactive recycling management organization staffed by four to five professional staff, including:

Recycling Coordinator – management of the County's overall recycling initiatives and outreach;

Business Recycling Specialist(s) – one or two specialists focusing on the reporting and waste/recycling audits that will be required from the business community, both haulers/facilities as well as larger waste generators;

Schools Recycling Specialist – if this position does not already exist in the County schools, the position would encompass both curriculum development as well as optimizing the school recycling and solid waste collection programs.

Solid Waste and Recycling Enforcement Officer – The County should realize the need for an all-purpose solid waste and recycling enforcement staff. This staff would support all County recycling and solid waste management programs.

In addition to the staff resources, a general rule for a county is to plan on spending roughly $2 per household for the development of public outreach materials. Table ES-5 summarizes the projected costs of establishing a fully functional Dutchess County recycling office. As shown, this system would be expected to cost less than $6 per household annually.

Table ES-5 Dutchess County Recycling Office Annual Operating Cost Estimate

Expense	
Salaries (5 staff)	$275,000
Benefits (30%)	$82,500
Office Expenses	$15,000
Travel/Transportation	$20,000
Professional Services	$50,000
Supplies/Materials	$224,000
Total	**$666,500**
Households	***112,000***
Annual Cost/household	***$5.95***

Based on other communities nationally, the following combination of program elements would be expected to dramatically increase recycling:

- Exclusive, mandatory collection of wastes, recyclables and yard wastes (eventually to include other organics, and optimally with a PAYT rate structure);
- Mandatory, enforced commercial recycling;
- Mandatory, enforced C&D recycling;
- Proactive public education and ongoing outreach;
- Sustainable funding mechanisms which may include per-household and disposal-based user fees, utility billing, and possibly even general fund taxes.

It is not unreasonable for the County to achieve a 50 to 60 percent recycling rate if all of these strategies are implemented.

ES 7. CONCLUSIONS

It was the objective of MSW Consultants at the outset of this project to provide key information and data to support the County's ability to make sound decisions in conformance with the County's values and in compliance with state regulations. The sections below summarize the three most critical decisions to be made, in the opinion of MSW Consultants.

ES 7.1. WTE FOCUS OR RECYCLING FOCUS?

The most pressing question that will dictate the County's course of action is to determine whether Dutchess County wants to commit to WTE as its preferred waste disposal method, despite its markedly higher cost, ***OR***…

Desist with WTE because of its especially high costs relative to other disposal options, save money, and put the savings into recycling and composting initiatives.

If Dutchess County wishes to continue down the path of WTE, then the LSWMP suggests a reasonable strategy. However, in the professional opinion of MSW Consultants, the County should still strongly consider taking steps to dissolve the RRA[7] and re-establish the County as the owner and manager of the facility infrastructure so that it can better manage the operation. Dutchess County could greatly improve the management and performance of the RRA's assets by a combination of hiring qualified County employees and retaining professional expertise to assist with procurements, organizational development, and independent performance monitoring.

If Dutchess County instead determines that it is a better course of action to minimize disposal costs so that additional resources can be devoted to recycling – which is higher on the waste management hierarchy than WTE – then the County should take the following steps:

- Pass a resolution to re-assign the Planning Unit status from the RRA to the appropriate organization within Dutchess County.

[7] MSW Consultants did not research the process by which this might occur. It is our understanding that the RRA is bound to follow the LSWMP established by Dutchess County and that dissolving the RRA would be possible if this were recommended in the LSWMP. However, the County should seek informed legal counsel to determine the mechanics for doing so.

- Jointly with the bullet above, establish the Dutchess County Solid Waste Management Office, staff this office with competent solid waste management and recycling personnel, and supplement the County office expertise with professional advisors as appropriate.
- Revise the LSWMP and resubmit it (or, if the DEC has accepted the LSWMP as written, prepare and submit an amendment) to indicate the new direction being pursued by the County.
- Assuming acceptance by DEC, take immediate steps to ramp down the RRA to focus solely on facility operations from now until 2014, and make plans for the dissolution of the RRA after 2014 with the County assuming all remaining debt service obligations.
- Determine if the Solid Waste Office should be funded based on general fund taxes, or if a user fee with definitive underpinnings should be developed to charge waste generators directly for the cost of system management and administration (such a funding mechanism could be phased in over time, transitioning from tax-funding to user-fee funding).

It should be noted here that, regardless of the direction taken by the County, it is also the professional opinion of MSW Consultants that the County can and should enforce existing flow control laws with the specific and limited intention to bring the RRF up to capacity from now until 2014 (but should not otherwise attempt to enact flow control). As long as the flow controlled wastes is charged the same tip fee as is currently being charged (whether gate rate or negotiated rate), MSW Consultants does not see a conflict in partial flow control for the purpose of optimizing RRF performance over the short term. It will be important to communicate effectively with the private sector to explain this short-term strategy and achieve a workable outcome. MSW Consultants makes this comment from a technical perspective only; it will further be necessary to obtain a qualified legal opinion on this prospect before moving forward.

ES 7.2. ORGANIZING COLLECTION

Ultimately, there are three options for managing collection systems in Dutchess County:

1) Stay out of collection at the County level and leave status quo. This will perpetuate a high-cost collection system for County residents and businesses, and also increase the difficulty of increasing recycling rates.
2) Require mandatory curbside collection and curbside recycling collection. This step alone is considered a precursor to an integrated waste management system because it provides basic recycling and organics diversion services to every generator at the place of generation. Recycling rates would be expected to increase significantly by making the provision of collection services mandatory (whether left to the private market or whether organized via exclusive collection districts)
3) Organize County-wide collection to secure economies of scale and provide specific recycling and yard trash collection services. Excepting the municipalities that already provide collection service (either public or contracted), a County-wide exclusive system has the advantage of obtaining the most competitive unit pricing for the collection services received. It also provides uniform services that can be tailored to the public outreach messages, and stands to provide the highest recycling rates. Finally, it also attaches a specific service level to each household, which in turn can be tied to an understandable, defensible user fee rate (i.e., one based on service received instead of on estimated waste generation).

While it may seem daunting to enter the collection business when in the past Dutchess County has not been involved in this aspect of the business, informed management of the collection component will give the County the greatest control over recycling and diversion behaviors.

In the opinion of MSW Consultants, the County should take steps, at a minimum, to require and enforce mandatory curbside refuse and recycling collection that includes, at a minimum, recycling and yard waste collection services. This may be accomplished over time and may incorporate a combination of strategies. The County should hire competent staff and/or retain professional assistance to structure the optimal collection systems.

ES 7.3. PUBLICLY OR PRIVATELY OWNED SYSTEM?

As a final matter, the County will have to select one of the following infrastructure ownership decisions:

Exit the ownership of infrastructure entirely, **OR…**

Stay strategically involved in ownership of selected infrastructure, with the primary candidate being waste transfer with the objective of providing lowest-cost disposal of any provider.

It is the opinion of MSW Consultants that Dutchess County must, at a minimum, review its hauler licensing system and assure that this system does not place an overly onerous burden on private sector haulers wishing to enter the Dutchess County market. Specific recommendations include:

- Determine information needed for accurate reporting and needed frequency of updates.
- Empower County enforcement personnel to enforce reporting requirements
- Review and revise the requirements in the current ordinance to facilitate competition and shorten the length of time of the licensing process, while assuring that appropriate background checks are completed.

With regards to disposal, it is generally the opinion of MSW Consultants that an efficient, administratively lean, competently managed public system serves a vital public function by keeping market prices in check. Assuming the County can employ appropriate staff or retain appropriate professional advisors, there is a distinct opportunity to convert the RRF into a transfer station, implement a waste export system, and use the new publicly-owned transfer station to set the market for disposal based on competitively procured contracts for facility operation, transportation, and disposal.

Alternatively, Dutchess County may opt to sell the RRF to a private company on the condition of converting the facility into a transfer station. A critical outcome of this exercise would be to have two independent in-County transfer station owners (one being Royal Carting, which would be excluded from bidding on the RRF transfer station conversion so as to prevent an inn-county monopoly on waste export).

Finally, it should be noted that the City of Poughkeepsie has a permitted, commercial scale transfer station. Although this facility has insufficient capacity for additional waste at the current time, it is possible that this facility could be expanded in the future to accept waste from a wider geographic area as part of a City/County initiative. Needless to say, details would need to be worked out, but this would benefit the City by providing host community

fees, and it would benefit the County as a whole by providing a second or third waste export option, helping to keep prices down through a more competitive market.

1. INTRODUCTION

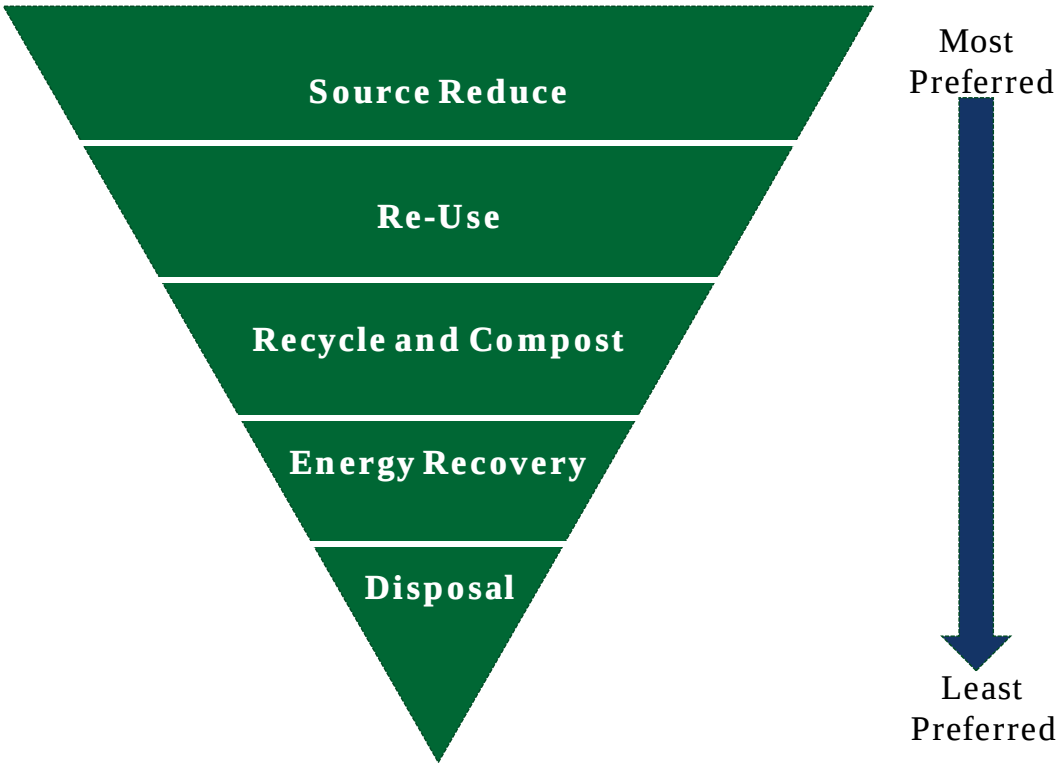
1.1. OVERVIEW OF SOLID WASTE MANAGEMENT PLANNING

The New York State Solid Waste Management Act of 1988 (ECL 27-0106, the Act) established the structure and expectations for solid waste management Planning Units to develop local solid waste management plans (LSWMPs) in accordance with the State's preferred hierarchy of solid waste management methods:

- First, to **reduce** the amount of solid waste generated;
- Second, to **reuse** material for the purpose for which it was originally intended or to **recycle** the material that cannot be reused;
- Third, to **recover energy**, in an environmentally acceptable manner, from solid waste that cannot be economically and technically reused or recycled; and
- Fourth, to **dispose** of solid waste that is not being reused or recycled, or from which energy is not being recovered, by land burial or other methods approved by the department.

The above hierarchy mirrors generally accepted waste management principles that are also espoused by the U.S. Environmental Protection Agency. The EPA's inverted triangle summarizing these principles is shown below in Figure 1-1.

Figure 1-1 U.S. EPA Waste Management Hierarchy



1. INTRODUCTION

1.2. RRA JURISDICTION OVER LSWMP

The Dutchess County Resource Recovery Agency (DCRRA, RRA, Agency) was created as a public benefit corporation by the New York State Legislature in 1982. The RRA was designated as the Dutchess County Planning Unit by Resolution 427-1984. As such, the RRA is, currently, solely responsible for the preparation of the LSWMP for Dutchess County.

In its role as the Planning Unit, the RRA has prepared and submitted a LSWMP to the New York Department of Environmental Conservation (DEC). The current draft of the LSWMP is dated November 29,2010. DEC notified the RRA in a letter dated February 11, 2011, that the current draft of the LSWMP is "not approvable at this time" and that "a formal letter will be forthcoming outlining specific deficiencies in the [LSWMP]." To date, a more complete response has not been delivered by DEC.

Despite the apparent challenges with the completion of an acceptable LSWMP by the RRA, at the current time the official LSWMP is the responsibility of the RRA. Responsibility for the LSWMP will remain with the RRA as long as the RRA is designated as the Planning Unit. While Dutchess County should confirm its options with qualified legal counsel, it appears that the County could, through an act of the County Legislature, shift the Planning Unit designation from the RRA to another entity within the County. At such time, the new Planning Unit would have direct control over the process of revising, finalizing, and amending the LSWMP.

1.3. RELATIONSHIP OF THIS DOCUMENT TO LSWMP

This report has been commissioned by Dutchess County, and is being funded through a grant from the Dyson Foundation. Pursuant to the scope of services between Dutchess County and MidAtlantic Solid Waste Consultants (MSW Consultants), this project involves "reviewing, validating, and developing an implementation strategy for the Local Solid Waste Management Plan (County SWMP) that has been developed by the Dutchess County Resource Recovery Authority." It is important to note that this exercise is not obligated to accept the current draft of the LSWMP as offering the preferred solutions and strategy. The observations and recommendations in this document in many cases may differ significantly from the recommendations in the current draft LSWMP.

1.4. INTEGRATED WASTE MANAGEMENT 101

The opinions and strategies presented throughout this independent review will follow the principles of integrated solid waste management (ISWM). Simply put, integrated solid waste management considers all aspects of waste prevention, collection, recycling, composting, energy recovery, disposal, and system governance as a single system that must be addressed as a whole to optimize performance.

ISWM requires a single entity to optimize waste management from the point of generation to final disposal. ISWM considers the behavior of waste generators; the revenue mechanisms used to fund necessary services and facilities; the role of collection systems and transportation logistics; the processes used to recycle, compost, process and dispose of wastes; and the programs and policies that are needed to govern the system and the market. ISWM follows the hierarchy shown in Figure 1-1. (As will be discussed later in this report, waste

management is increasingly shifting to resource management with a small amount of waste as the final byproduct after all other value has been extracted from the waste stream.)

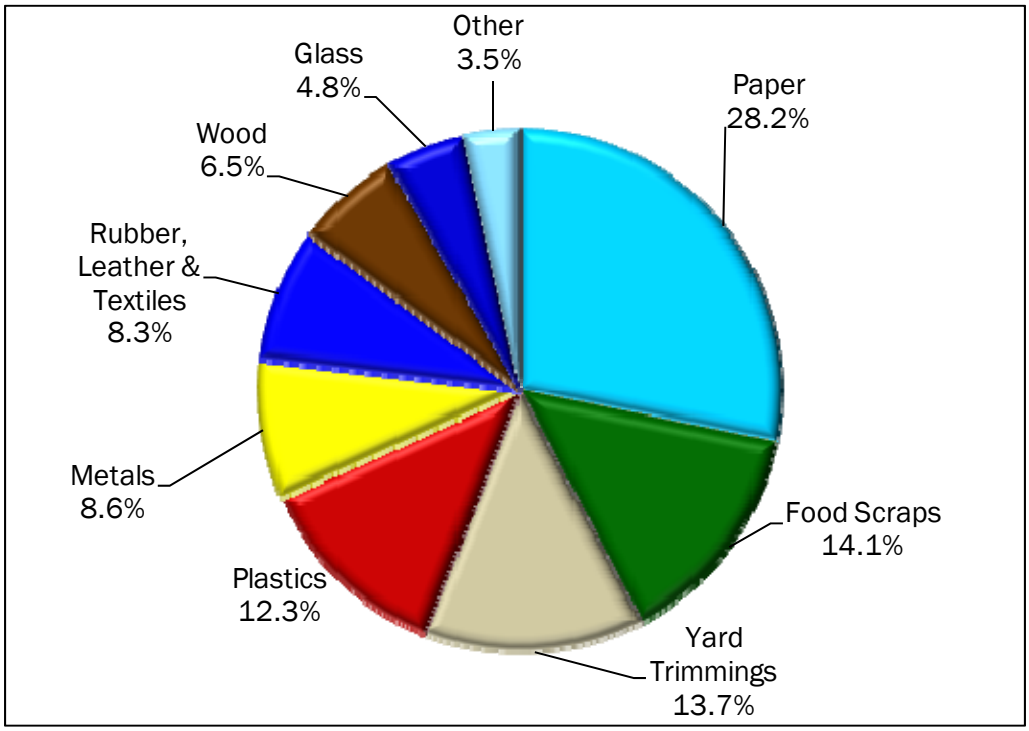
To help readers understand some basics about ISWM, this section provides a very brief summary of key concepts in waste management.

1.4.1 WASTE GENERATION AND CHARACTERIZATION

Figure 1-2 provides an overview of the waste that is generated by residents and businesses in the U.S. Waste generation data are compiled every two to three years by the U.S. EPA. This figure is important because it speaks to the potential value of wastes. To wit:

- Paper (33 percent) is almost entirely recyclable or compostable.
- Organics (23 percent) are almost entirely compostable.
- Virtually all Metal is recyclable, and a significant fraction of Glass and Plastics are recyclable in the market today.
- The majority of the waste stream has a positive heating value and can be incinerated for the purpose of energy generation and volume reduction.

Figure 1-2 2009 Municipal Solid Waste Characterization (Source: U.S. EPA)



Although not shown in this figure, recycling and composting can readily divert 50 percent of the waste stream from disposal, and some municipalities in the U.S. have achieved 65 or even 75 percent diversion of their wastes from incineration or disposal. Nationally, approximately 12 percent of municipal solid wastes are delivered to waste-to-energy plants, according to the U.S. EPA.

1.4.2 RECYCLING AND DIVERSION

Given the make-up of the waste stream, it is informative to review national, state and local guidance on recycling and diversion goals. Table 1-1 shows the U.S. and NY State recycling goals and current recycling rates, as well as the recycling rates of several municipalities that are nationally recognized for their aggressive diversion and recycling programs.

Table 1-1 Overview of Recycling and Diversion Goals

Entity	Recycling/Diversion Goal	Current Recycling Rate
U.S. EPA	National 35% recycling goal for municipal solid wastes	33.2% (2008)
New York State	"Beyond Waste" plan targets a reduction of waste from 4.1 to 0.6 lbs/person/day. This represents roughly 85% waste reduction by 2030.	Estimated at 20% of MSW and 36% of all solid waste
Alameda County, CA	2006 Establishes 75% waste diversion by 2010 and currently developing Zero Waste Plan	71% of all solid waste
San Jose, CA	Establishment of a Zero Waste Plan in 2008 with 75% diversion by 2015 and 100% diversion of wastes from landfills by 2022	62% of all solid waste
San Francisco, CA	Goal of 75%waste diversion by 2010, with a goal of Zero Waste by 2020.	77 % of all solid waste
Dutchess County	To be developed	Unknown (2011)

As shown in this table, based on the achievements of many counties and municipalities nationally, recycling rates in excess of 50 percent are possible and as high as 75 percent are achievable. In New York's Region 3, a random sample of other nearby counties shows estimated 2008 recycling rates ranging from 6 to 22 percent. As will be discussed later in this report, it is not clear what the current recycling rate is in Dutchess County.

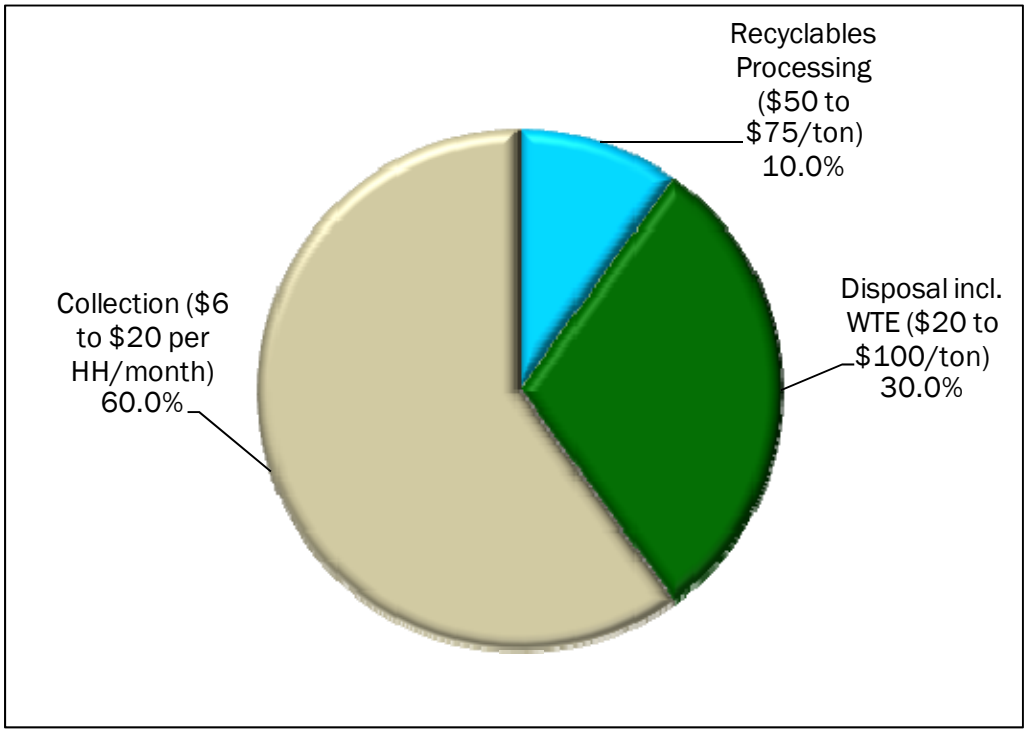
1.4.3 INTEGRATED WASTE MANAGEMENT COSTS

However, with incremental recycling comes the potential for incremental costs to be incurred. It is therefore important to have some awareness of the overall costs of integrated solid waste management. Figure 1-2 below shows a generic breakdown of the costs associated with integrated solid waste management. It is important to note that this figure is intended only to give an approximation of the relative costs. The actual breakdown of costs may vary significantly in any specific waste management system. For example, disposal costs alone range from lows in the $20/ton range in some parts of the country, to over $100/ton in other parts. However, local variance aside, this figure highlights:

- Collection costs are the single largest cost component of waste management and recycling. For the waste generator – whether residential household or commercial business – the collection system must be considered when optimizing the services and costs of waste management and recycling.

- On an absolute basis, recycling and composting are a relatively lower cost compared to collection and disposal. However, as a higher fraction of materials are diverted from the disposal stream to the recycled/composted stream, the absolute cost of recycling and composting will increase.

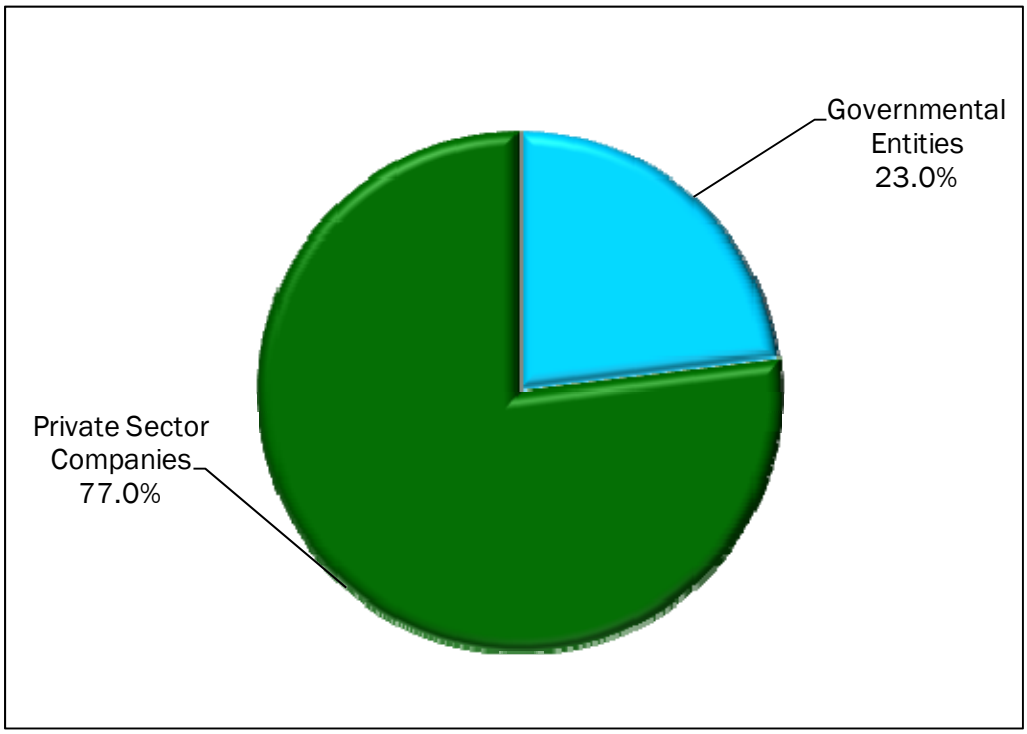
Figure 1-3 Relative Costs of Integrated Solid Waste Management (Source: MSW Consultants)



1.4.4 PUBLIC/PRIVATE SERVICE PROVIDERS

It should also be noted that waste management services are provided by both public sector and private sector organizations across the nation. Further, both public and private organizations provide virtually all services including collection, transfer, transport, recyclables processing, composting, waste-to-energy, and disposal. However, over the past several decades, the solid waste industry has trended towards higher privatization of services. Figure 1-4 shows the estimated current breakdown of solid waste industry revenues between the public and private sectors.

Figure 1-4 Public vs. Private Waste and Recycling Industry Revenues (Source: Waste Business Journal)



Note that one of the reasons for the trend towards privatization is that many municipalities can opt to exit the operational side of the business, and instead become contract administrators to manage private sector service providers. For example, this strategy is utilized by the RRA, which has an operating contract with Covanta for the RRF. But in many cases, public organizations have avoided even having to own a facility and have instead outsourced the entire disposal responsibility to the private sector.

If nothing else, the figure above, combined with the long-term trend towards privatization, suggests that private sector entities will continue to supply the majority of waste management services in the U.S.

1.5. OBJECTIVES OF THIS DOCUMENT

Given the background above, this document is intended to meet the following objectives:

- **Provide an independent review of current draft of the LSWMP**. MSW Consultants is a waste management and recycling consulting firm that specializes in assisting municipalities to optimize their waste management and recycling systems. MSW Consultants works exclusively for public sector clients (i.e., no private waste and recycling service providers), eliminating the potential for a conflict of interest. MSW Consultants provides only waste management and recycling planning services, but not engineering services that might influence recommendations pertaining to development of facilities or other engineering-related projects. The observations, analysis and commentary in this report are intended to reflect an unbiased set of viable options for debate by the County.

- **Re-statement of solid waste management planning from the County's perspective**. The RRA's primary role since its inception is to develop and manage the Resource Recovery Facility and Material Recovery Facility (MRF). It is a principle of waste management that solid waste facilities, like most industrial facilities, achieve economies of scale by processing a larger volume of material. There is therefore an inherent bias to increase facility scale and throughput for the RRA. Alternatively, Dutchess County can and should act as the agent for all County waste generators when considering the range of solid waste management system components. This report refocuses the discussion of options from the perspective of the County.
- **Expanded overview of options**. The LSWMP currently provides some options for changing the County's current waste management system. However, the options presented are limited by the objectives of the Planning Unit as described in the bullet above. This report intends to significantly expand on presenting options for consideration by all Dutchess County stakeholders, including the public, private and non-profit vendors, and elected officials. This report will seek to offer for public debate a range of expanded options for optimizing governance, collection, recycling, composting and disposal.
- **Prioritization of steps to adapt and implement the LSWMP**. The LSWMP is currently under review by the DEC, which has notified the RRA that it is "not approvable" at the current time. A final objective of this report is to supply the RRA and other County stakeholders with an alternative assessment of the edits that may be required to make the LSWMP approvable by DEC, and to guide the County on the priorities and strategies needed to best evolve the County's solid waste management system over a ten year period.

This document is intended to spur appropriate debate and discussion among the Dutchess County stakeholders who will ultimately benefit from an effective solid waste management plan. This document does not replace or update the actual LSWMP. However, it is hoped that the concepts and recommendations presented herein will inform the County's progress towards finalizing a successful solid waste management system in the County in conjunction with meeting state solid waste management planning requirements.

1.6. REPORT ORGANIZATION

It should be noted that this report has been prepared to minimize extensive narrative, and provide summary information that can be readily reviewed and digested by a wide range of readers. Subsequent sections will therefore be prepared in "Executive Summary" format, featuring primarily bullets supported by tables, figures and exhibits. The remainder of this report is divided into the following sections:

- **LSWMP Review:** This section contains an independent assessment of the strengths and weaknesses of the LSWMP that is currently under review by the DEC. It should be noted that this independent review is not intended to validate the prescriptive requirements of an LSWMP under NY State law. Rather, the review is intended to identify strengths, weaknesses, and apparent omissions of issues that should be considered in an integrated solid waste management plan.
- **System Governance Alternatives:** It is critical that the appropriate governance structure be in place to optimize an integrated solid waste management system. This section

comments on options for improving system governance in Dutchess County.

- **Public Education and Outreach Alternatives:** The level of resources devoted to educating the public – including residents, businesses and institutions – about how best to use the services provided will determine the success of the waste management and recycling programs. This section outlines a plan for public education and outreach.
- **Collection System Alternatives:** The most significant opportunities to reduce overall waste management costs to waste generators and increase recycling can be achieved through new strategies and regulations associated with collection. If residential curbside collection of solid waste and recyclables was made mandatory, recycling should increase, as it would be more convenient to dispose of solid waste properly and to recycle. This section discusses several options through which this could be accomplished.
- **Recycling System Alternatives:** Setting the course of action for recycling requires the County to make a decision about public ownership versus private ownership of recyclables processing infrastructure. This section explains the difficulty in determining the actual generation of waste and recyclables and the true recycling rate in Dutchess County, and discusses opportunities for increasing the recycling rate.
- **Organics Management Alternatives:** This section discusses the current private sector organics management in the County, and suggests incremental steps Dutchess County could take to increase organics diversion efforts.
- **C&D Debris Management Alternatives:** It is difficult to determine the total amount of Construction and Demolition debris generated and recycled within the County. The first step in increasing C&D recycling is to increase the accuracy of C&D reporting. This section discusses opportunities for management of C&D in the County once a baseline for C&D processing has been established.
- **Disposal Alternatives**: In the opinion of MSW Consultants, the decision of waste disposal is between retaining the waste-to-energy system that exists currently or converting to a waste export system. This section provides an analysis of these options, and discusses a range of disposal alternatives.
- **System Funding Alternatives:** This section provides an explanation of options available to Dutchess County for sustainable, full cost funding the solid waste management system while eliminating subsidies that create inequities among customer classes.
- **Legal Issues:** This section provides a list of legal issues to be considered in optimizing waste reduction and recycling and the responsible management of Dutchess County's solid waste system. Among the issues discussed are governance of the system, hauler licensing, mandatory recycling enforcement and product stewardship. Except for enforcing already existing local laws, these issues will require input from legal counsel.
- **Prioritizing LSWMP Implementation Steps**: Until Dutchess County makes the decisions needed to formulate a long-term solid waste management plan, there is a significant amount of uncertainty as to the timing and even some of the initiatives to be implemented. This section, however, attempts to summarize and identify the year in which certain initiatives should start. This will provide a basis for discussion and debate and lead towards a concise implementation plan based on the outcome of County discussions.

2. SOLID WASTE MANAGEMENT SYSTEM REVIEW AND COMMENTARY ON LSWMP

2.1. INTRODUCTION

An objective of this project was to provide an independent, comprehensive assessment of Dutchess County's waste management system with particular emphasis on the Dutchess County Local Solid Waste Management Plan (LSWMP) prepared by the Dutchess County Resource Recovery Authority (RRA) dated November 29, 2010. This exercise encompassed a number of tasks that were performed to gain a wide perspective on the history of the system, current dynamics, and input from stakeholders. In order to become fully informed on the current system dynamics, MSW Consultants undertook the following data gathering efforts:

- Reviewed the Dutchess County Charter related to solid waste management, as well as Local Laws 1 (1984) and 4 (1990), as amended, which govern aspects of waste management and recycling in Dutchess County;
- Reviewed the New York State Solid Waste Management Plan "Beyond Waste: A Sustainable Material Management Strategy";
- Reviewed the RRA's September 2009 report entitled "Flow Control and Solid Waste Management Alternatives,"
- Reviewed the August 25, 2010 report (Comptroller's Report) from the Office of the Comptroller of Dutchess County summarizing the results of a financial and management audit of the RRA;
- Reviewed a February 22, 2010 report by the New York Authority Budget Office, entitled "Operational Review, Dutchess County Resource Recovery Agency," OR-2009-02 (ABO Report);
- Contacted and obtained (or requested) input from a range of public and private stakeholders including:
  - DCRRA's Executive Director Bill Calogero;
  - The office of the County Executive;
  - The Chairman of the Legislature Rob Rolison;
  - County Comptroller James Coughlan;
  - Legislative Minority Leader Sandra Goldberg;
  - Legislator Joel Tyner;
  - County resident and solid waste businessman Shabazz Jackson;
  - County resident and activist Rob Dyson (who was instrumental in funding this independent review)
  - Representatives of Vassar College's student organization, Vassar RePower;
  - Royal Carting management;

- Recycle Depot's Vice President, Rita Trocino, ;
- Hudson Baylor's President, Scott Tenney, and other officers and
- Covanta Energy Corporation's Hudson Valley regional office.

- Conducted site visits to the following solid waste and recycling facilities in Dutchess County:
  - RRA's Resource Recovery Facility
  - RRA's Material Recovery Facility
  - Royal Carting Transfer Station in Hopewell Junction, NY;
  - The City of Poughkeepsie's transfer station;
  - Recycle Depot's construction and demolition (C&D) recycling facility in Poughkeepsie, NY; and
  - The McEnroe Farms composting facility in Millerton, New York.

Armed with the background from our review of the above items, MSW Consultants has performed a comprehensive, independent review of the LSWMP. This section offers an analysis and commentary on the LSWMP, and attempts to reference other relevant background documents in the process of rounding out the discussion. The comments below are organized in the same order as the sections of the LSWMP. Comments are offered in summary format rather than extended narrative.

It should be noted that this independent review was focused primarily on the content of the LSWMP in the context of prudent and proven practices in the waste management industry. It was not a focal point to evaluate whether the LSWMP appropriately met the New York Department of Environmental Conservation's (DEC's) requirements to LSWMP development. Appendix A of this report contains a more detailed matrix that compares the actual contents of each section of the LSWMP with the recommended contents prescribed by the DEC. If/when Dutchess County decides to amend the LSWMP in the future, or when it is required to update the LSWMP for the next planning cycle, it is recommended that the contents of the amended LSWMP be conformed to DEC's prescribed format.

2.2. COMPTROLLER'S REPORT

In August 2010, the Dutchess County Comptroller's Office issued a detailed audit report[1] of the financial performance of the RRA and its impact on Dutchess County. MSW Consultants reviewed the published findings and believes the findings of this report are valid and warrant reiteration in this independent review. Note that MSW Consultants did not attempt to verify the audit process or verify results; however, it is our professional opinion that the Comptroller's office made a thorough, thoughtful review of available data, identified material problems, and offered reasonable conclusions.

Material findings of the Comptroller Report that have factored into our overall assessment include:

[1] Review of the Dutchess County Resource Recovery Agency by James L Coughlan, Dutchess County Comptroller, Aug. 25, 2010

- The RRA has consistently overcharged Dutchess County under the terms of the Net Service Fee (NSF) agreement. Examples include inflating the budget for the NSF over multiple years and in effect receiving interest-free loans; accruing surplus accounts that have not been reconciled with Dutchess County on a timely basis; and inaccurate billing of the NSF.
- Board members have served, on more than one or two occasions, in violation of the RRA charter;
- The RRA has not conducted audits according to GASB (Government Auditing Standards Board) standards, instead opting for limited audits as a matter of course;
- The RRA has failed to effectively procure services from the private sector. Examples of poor procurement cited by the Comptroller, and affirmed by MSW Consultants, include:
  - No competitive procurements have been used for facility operations or professional services for many years, and some contracts are over 20 years old;
  - The RRA has not taken advantage of opportunities to re-bid or renegotiate more favorable agreements during this time span;
  - The RRA has not opted to obtain professional procurement expertise in any of its negotiations, resulting in unfavorable agreements;
  - A distinctly unfavorable (i.e., expensive) operating contract for the Resource Recovery Facility (RRF);
  - No revenue share for recovered metals from the RRF (although this was rectified in March 2010 with a new contract);
  - The RRA has been forced to offer price concessions to Royal Carting, its largest disposal customer, to entice waste flow to the RRF.
- Since 1995, the RRA has required over $32 million of subsidy from Dutchess County to fund their operations.

The Comptroller's Report also comments on shortfalls in the management of solid waste attributable to Dutchess County. These include:

- Joint failure of the County Executive and County Legislature to meet their obligations to nominate and approve Board members for the RRA;
- Joint failure of the County Executive and County Legislature to develop a professional, dedicated, knowledgeable office of Solid Waste Commissioner to perform hauler licensing, enforcement, and overall management of the County's solid waste system;

In the opinion of MSW Consultants, the Comptroller's Report compellingly identifies a range of problems with solid waste management in Dutchess County. All stakeholders have the opportunity to improve.

2.3. ABO REPORT

The ABO Report was written "to provide an objective determination of the extent of the Agency's statutory compliance, and make necessary recommendations to improve their business practices." This report noted a number of deficiencies to the information publicly

reported by the DCRRA, noting specifically "…the Agency's web site does not have other information pertinent to the operations of the Agency as required by the Act. Agency management indicated that a full update of the Agency's web site will be undertaken."

In the opinion of MSW Consultants, notable issues cited in the ABO report include:

- **Inability to Set Tip Fees at a Sufficient Level to Fund Operations**: The Agency is not setting tipping fees at the waste to energy facility at a level sufficient to meet its cost of operations. Nor is the Agency setting tipping fees at the recycling facility at an appropriate level to recover operating expenses.
- **Loss of Revenue from Being Below Capacity**: The Agency is losing revenue by not operating at full capacity. While the reasons for this are complex and not addressed in the ABO report, the observation is sound.
- **Poor Contract Monitoring**: The Agency has historically lost significant revenue (close to $1 million annually) by failing to monitor its contract terms regarding the recovery of ferrous scrap metal. Additionally, in 2008, the Agency did not reduce payments to the operator for failure to meet certain contract requirements, resulting in another $250,000 revenue loss. Finally, the Agency has not observed and enforced electricity sales to assure maximum revenues are received from the local utility.
- **Preferential Treatment of Certain Haulers**: The Agency has entered into a contract with an unlicensed hauler and accepted the delivery of waste from a second unlicensed hauler. Further, the Agency has not adjusted its tipping fees to account for the additional costs incurred for allowing private haulers to deliver waste outside normal business hours.
- **Violation of Board Terms**: The reappointment of two Agency Board members to three consecutive terms violated the Agency's enabling legislation, Section 2047-c(1) of Public Authorities Law.
- **Lack of Training**: One member of the Board has not attended State-approved training, as required by Section 2824(2) of Public Authorities Law.
- **Insufficient Policies of the Board**: The Agency Board has not adopted a code of ethics, salary and compensation policies, as required by Section 2824 of Public Authorities Law.
- **Improper Procurement**: The Authority did not receive competitive quotes for the selection of its metals contract, as required by the Agency's procurement guidelines.
- **Insufficient Internal Control Assessment**: The Agency has not assessed and reported on the effectiveness of its internal control structure and procedures, as required by Section 2800(2)(a)(8) of Public Authorities Law.
- **Lack of Transparency**: The Agency is not making appropriate information on its operations and governance practices available to the public on its web site, as required by Section 2800(2)(b) of Public Authorities Law.
- **Erroneous Host Community Fee**: According to the ABO, there is no agreement for a host community payment, and that historically it has been paid in error. (*Note: The payment of this fee is currently in dispute. This may require advice from legal counsel, as, according to the Dutchess County Comptroller, the authority for this payment is in Resolution 282-1987.*)

Twenty-one recommendations were made by the ABO to the DCRRA. These recommendations included:

- Monitor the terms of the contract for recovering material from the waste to energy facility to ensure that the appropriate amount of revenue generated is shared with the Agency, in accordance with the terms of the agreement. Take actions to recover revenues from prior periods that were not provided to the Agency.
- Enact penalties and cost recoveries on a monthly basis for the waste to energy facility operator, rather than reconciling all items at year end.
- Require the local public utility to make payments to the Agency on a monthly basis for all revenues due from excess electricity generated.
- Adopt a written salary and compensation policy applicable to all staff and management, and ensure that the Agency's current overtime policy is consistent with its operating practices.
- Ensure that valid written agreements are in place to support payments made, and monitor all written agreements to verify that the terms and conditions are being met.
- Adopt a credit card use policy and improve management practices to ensure that credit card bills are paid timely to avoid late charges.
- Revise the by-laws to detail the powers and duties of the Agency's various committees.
- Ensure that the Audit Committee is performing the duties outlined in its charter, specifically its review of management's assessment of the Agency's internal control structure.
- Adopt a code of ethics.
- Revise the current procurement policy to adequately address the procedures to be followed to review and approve procurements, and maintain an accurate and complete list of all active contracts.
- Adopt and submit its annual budget sixty days prior to the end of the fiscal year and make it publicly available on the web site.

In the opinion of MSW Consultants, this report suggests that the RRA has not achieved expected standards of management nor prudent stewardship of public funds in its operations. In fairness, the ABO made a number of governance recommendations, two of which were to Dutchess County Officials:

- Enforce the County's flow control legislation and waste management rules to require solid waste haulers to deliver a sufficient quantity of solid waste collected within the County to fill the RRF.
- The County Executive and County Legislature should follow an appointment process that conforms to the Agency's enabling statute.

In the opinion of MSW Consultants, these recommendations are warranted.

2. REVIEW AND COMMENTARY

2.4. OVERVIEW OF LSWMP REVIEW

On the surface, the LSWMP is an impressive and authoritative document. It contains 170 pages of narrative, supported by 30 pages of appendices. The document is well written and contains some useful research about other solid waste management programs.

However, the document is challenging to read for a number of reasons. Specifically:

- It does not conform particularly well to the content requirements for LSWMPs as outlined by the New York DEC;
- It does not readily offer the program metrics (waste generation rate, recycling rate, cost per household, cost per ton) that can and should be tracked and used to measure performance of a solid waste management system;
- It repetitively asserts its primary objectives from beginning to end, without any true detailed analysis of the costs of the proposed course of action;
- It overlooks (or oversimplifies) many alternative waste management system strategies that appear to have merit in Dutchess County.

While there are many details about Dutchess County's solid waste management program, and many ideas about potential future initiatives, the entire LSWMP is basically advocating the following concepts:

- Re-affirm waste-to-energy as the primary form of waste management, despite the fact that waste-to-energy is lower on the solid waste management hierarchy than recycling and composting;
- Retain the publicly-owned waste-to-energy and recyclables processing infrastructure despite the acknowledgement that the private sector can and does provide competing disposal and recycling services in Dutchess County and throughout NY State.
- Expand the current facility infrastructure regardless of the cost of this strategy compared to other strategies;
- Implement flow control and establish a dedicated funding mechanism to further empower the RRA to remain the management and operational entity responsible for the County's system; and
- Leave collection systems in the hands of the municipalities and private haulers (i.e., status quo).

Dutchess County and its stakeholders should consider these concepts in the decision to embrace the LSWMP as currently written, or else to reconsider a variety of alternatives. The remainder of this chapter provides a section-by-section commentary on the LSWMP. MSW Consultants has attempted to identify positive and negative aspects about the LSWMP, and also to verify reported data where pertinent to future solid waste management system optimization. Specific comments and observations are divided by LSWMP chapter.

2.5. OBSERVATIONS ON INTRODUCTION

The Introduction offers the three primary assertions of the steps to be taken in the LSWMP. A close reading of each suggests that the terms used to describe them were either poorly

selected, or else intended to distract the reader from understanding the primary meaning of the assertion. Each is discussed in turn.

2.5.1 LSWMP MISNOMER #1: "GREEN THE SYSTEM"

Positive Implication of this Phrase: This objective ostensibly encourages waste reduction and recycling, and a number of elements are mentioned in passing: enhancing the materials that can be accepted in existing recycling programs, initiation of recycling at some institutions, improving organics recovery, promoting construction and demolition (C&D) debris recovery, and expanding the household hazardous waste (HHW) program. On the surface, who can argue with greening the system?

What this Initiative Actually Means: Upon a closer reading, the major implication for Dutchess County is that this initiative is advocating the development, by the RRA, of a new publicly owned material recovery facility (MRF) that will be large enough to accept all recyclables generated in Dutchess County. This facility is projected to cost $12 to $13 million to build, and no operating costs or projected material recovery volumes or revenues are provided. It is not mentioned until the body of the report that flow control is recommended as the means by which recyclables would be directed to the facility. No mention is made of privatized alternatives to having a publicly-owned single stream MRF (which, incidentally, is how the majority of Dutchess County recyclables are currently being recovered).

Conclusion: Dutchess County absolutely has opportunities to improve recycling, including through many of the ideas referenced in the LSWMP Introduction. However, building a new publicly-owned MRF with the intent of implementing flow control for securing recyclables leaves many questions to be answered.

2.5.2 LSWMP MISNOMER #2: LEVEL THE PLAYING FIELD

Positive Implication of this Phrase: This phrase advances the worthy idea of equality for all in terms of access to the system and low costs for solid waste management and recycling services. If the playing field is not level now, then certainly any plan must take steps to make it level!

What this Initiative Actually Means: The underlying objective of "Level the Playing Field" is, upon closer reading, to support and advocate methods that will increase the scale of the waste management system under management by RRA by providing legal and/or financial instruments in place to further empower the RRA. Of particular importance is the implication that the way to this level the playing field involves households and businesses being charged "based on the amount of waste they generate" – an implicit argument for a waste-generation-based user fee.

Conclusion: In defense of this statement, it correctly notes that there are problems with the County's hauler licensing program that has limited competition in the County, and that this should be fixed. It also suggests that offering all County customers a uniformly low disposal cost is appropriate – hard to argue with that. However, there is no mention of a variety of other means to level the playing field so that the best system – whether publicly provided or privately provided – can be achieved.

2.5.3 LSWMP MISNOMER #3: "OPTIMIZE WASTE-TO-ENERGY"

Positive Implication of this Phrase: New York State's waste management hierarchy includes energy recovery as being a better option than landfilling of wastes destined for disposal. So the notion of optimizing waste-to-energy must certainly be positive!

What this Initiative Actually Means: What is not mentioned is that WTE is an extremely expensive form of waste disposal, and also falls lower on the waste management hierarchy than recycling and waste diversion. Specifically, the RRA would have the County fund an expansion to the existing, underperforming WTE, and implement flow control as a means to force all wastes generated to be delivered to the expanded facility. Once again, this initiative clearly seeks to expand and further empower the RRA. Nowhere in the introduction is it mentioned that there are a variety of potentially lower cost alternatives for waste disposal in Dutchess County, and that by saving money on disposal the County would in fact have more funds to devote to recycling and waste diversion, which are *higher* on the waste management hierarchy anyway.

Conclusion: This objective alone is enough to clearly illustrate that the LSWMP has been written with the primary objective of expanding and entrenching the RRA as the provider of solid waste management services within Dutchess County, to the exclusion of viable alternatives. Such alternatives will be discussed throughout this report.

2.6. CHAPTER 1 OBSERVATIONS: PLANNING UNIT

The LSWMP adequately compiles the demographic characteristics of Dutchess County and the 30 incorporated cities, towns and villages that make up the Planning Unit. Dutchess County contains a not-atypical mix of residential, institutional, commercial, and agricultural parcels of a suburban area in the upper Mid-Atlantic region, subject to not-atypical waste generation patterns. The County has grown over the past decade, and appears to be continuing a slow growth pattern.

In short, there do not appear to be any extraordinary demographic characteristics in Dutchess County that require elaborate or complex solutions for waste management and recycling. If anything, the existence of at least two colleges with apparently active recycling and organics management programs gives the County additional resources.

2.7. CHAPTER 2 OBSERVATIONS: WASTE QUANTITIES

A key tenet of effective waste management – and arguably of effective management of any system – is that appropriate metrics are critical so that performance can be measured. This chapter offers estimates of waste generation and the composition of wastes. The following observations can be made:

2.7.1 PRESENTATION IS SKEWED TOWARDS RRA FACILITIES

If the Planning Unit is defined as Dutchess County, it is not unreasonable to expect the presentation of waste quantities to be representative of Dutchess County. Yet, this chapter leads with the quantity of materials under management by the RRA's WTE and MRF facilities. This is soon explained: these data are the only waste generation data for which verifiable records exist.

2.7.2 REASONABLE WASTE GENERATION ESTIMATES BUT NO VERIFIABLE DATA

At the current time, neither Dutchess County, the RRA, nor DEC have in place sufficient reporting mechanisms to document the generation of solid waste actually generated within the Planning Unit borders. The LSWMP provides relevant waste generation benchmarks and estimates the likely waste generation from these benchmarks. Table 2-1 summarizes the various estimates for waste generation from Dutchess County. As shown, there appears to be somewhere between 225,000 and 245,000 tons of waste generated. The LSWMP indicates that there are "numerous factors" to suggest that the actual figure is higher, and suggests 250,000 tons as reasonable for planning purposes.

Table 2-1 Comparison of Waste Generation Estimates

Method	Parameter	Value
LSWMP Estimates Based on Average Per Capita Generation	Tons/person/year 2009 Population **Waste Generation**	0.771 293,562 **226,336 tons**
LSWMP Estimates Based on Average Household Generation	Tons/household/year 2009 Households **Waste Generation**	0.771 112,688 **235,067 tons**
U.S. EPA National Average	Lbs/person/day 2009 Population **Waste Generation**	4.50 293,562 **241,088 tons**
Disposal Reports from DEC NY State Solid Waste Management Plan (2008) [1]	Dutchess County RRF Watch Hill Holding/ Royal Carting A&M Carting **Waste Disposal**	142,844 51,170 30,856 **224,870 tons**

[1] This disposal data is not cited in the LSWMP but is included here to support the reasonableness of the other estimates.

2.7.3 INSUFFICIENT DOCUMENTATION OF WASTE COMPOSITION

Nationally and in New York State, many municipalities have performed waste characterization studies to better understand the incidence of recyclable materials remaining in the disposed waste stream. The LSWMP cites national waste characterization from the U.S. EPA and also mentions DEC's waste generation and disposal composition estimates. However, a waste characterization summary table is provided in the LSWMP, but no source is given for the data. Table 2-2 compares the EPA and DEC waste generation estimates with the data shown in the LSWMP. MSW Consultants is a nationally recognized expert in waste characterization analysis, and makes the following comments on the LSWMP estimates:

- *Paper is Overestimated*: Both the DEC and the LSWMP data sets are likely overestimating the fraction of paper in the waste stream. Paper production has decreased over the past decade, and it is unlikely that Dutchess County generates this much paper.

- *Plastics are Underestimated*: The LSWMP data set significantly underestimates the fraction of plastic in the waste stream. Plastic production has increased steadily for decades, and both the EPA and DEC numbers are likely more accurate for Dutchess County.
- *Insufficient Data on Recyclability of Materials*: Typically, waste characterization data is intended to guide solid waste and recycling planners in evaluating the effectiveness of existing recycling programs, and identifying materials that could be targeted in new recycling programs. The data shown in the LSWMP does not specify what is actually recyclable. For example, Glass is shown to be five percent. However, not all glass is recyclable – only glass bottles and jars can be recovered, but not other types of glass. If planners expect to recover all glass, they will not divert five percent of the waste stream, but a smaller fraction of only the recyclable glass.

Table 2-2 Waste Generation Comparison

Material	U.S. EPA	NY DEC	LSWMP
Paper	28.2%	33%	33.0%
Organics (Food & Yard)	27.8%	23%	25.0%
Plastics	12.3%	14%	9.0%
Metals	8.6%	7%	6.0%
Textiles	8.3%	5%	0.0%
Wood	6.5%	3%	3.0%
Glass	4.8%	4%	5.0%
Other	3.5%	11%	19.0%
Total	**100%**	**100%**	**100%**

Ultimately, Dutchess County may wish to consider improving its understanding of the waste stream through one of several methods. These include researching the availability of waste characterization data from other New York State counties or municipalities and applying this data to Dutchess County, or even conducting a Dutchess County waste characterization study. It should be noted that many of the municipalities that are considered national leaders in recycling and waste diversion conduct such studies on a regular basis to track their progress towards recycling goals.

2.7.4 INSUFFICIENT DOCUMENTATION ON RECYCLED AND COMPOSTED QUANTITIES

If Dutchess County is going to increase recycling and composting, it is critical to have reasonable estimates on the recycling that is taking place currently. This section of the LSWMP does not provide any details on current recycling and composting quantities and material types. In an attempt to clarify and validate data on Dutchess County's recycling activities and diverted material quantities, MSW Consultants requested and was provided the DCRRA's county recycling reports for 2008 and 2009. The analysis below was performed on the 2008 data, which is included in Appendix B for reference.

Table 2-3 summarizes the 2008 reported recyclables. The first column reports all materials, whether generated by residential, commercial, industrial, agricultural, or construction/ demolition generators. As shown, in 2008 it was reported that almost 210,000 tons of materials were recycled in Dutchess County.

However, it was reported to MSW Consultants by the RRA that the recycling report may contain inaccuracies, and that some of the reported quantities may have been generated in other counties and processed/recovered in Dutchess County. (As an example, during the outreach performed by MSW Consultants as part of this independent review, it was reported by Recycling Depot that the LSWMP erroneously recorded quantities of C&D processed, recycled, and disposed.[2]) MSW Consultants also believes that it is more informative to separate the recycling rates for traditional municipal solid waste, C&D and other industrial/agricultural wastes. Table 2-3 therefore attempts to back out the agricultural, C&D and industrial wastes from the 2008 recycling report to obtain a pure MSW recycling rate. This exercise suggests that roughly 67,000 tons of recyclables were recovered from the MSW waste stream in Dutchess County, although it cannot be confirmed that all 67,000 tons were in fact generated in Dutchess County.

2.7.5 CONCLUSIONS ABOUT WASTE GENERATION AND RECYCLING RATE

Of particular interest, this exercise suggests the following based on actual reported data for the MSW waste stream. The data are summarized in Table 2-3 and details are included in Appendix B.

- **Waste Generation**: Dutchess County's approximate waste generation is shown to be as high as 291,000 tons, although this is probably an overestimate that includes some out-of-County wastes;
- **Actual MSW Recycling Rate**: The County's recycling rate for municipal solid wastes (i.e., excluding industrial, C&D and agricultural wastes) is estimated to be closer to 23 percent. Again, this may be slightly overstated as some fraction of the reported recyclables may have been generated outside of Dutchess County.

While improvements to reporting are clearly needed, in the opinion of MSW Consultants these figures are reasonable for the purposes of planning the County's system.

[2] Electronic mail to MSW Consultants from Rita Trocino, Vice President of Recycle Depot received on March 8, 2011.

Table 2-3 Waste Generation and MSW Recycling Rate Implied by DCRRA Recycling Report

Reported Recovered Material, DCRRA Report	Total Tons Reported	Tons from MSW Waste Stream [1]
Commingled & Fiber	30,522	30,522
Scrap Metal & Appliances	23,230	4,404
Concrete, Tires, C&D Debris	92,669	0
Composted Wood, Vegetative and Food Wastes	29,000	29,000
Composted Manure and Subsoil	27,204	0
HHW (includes sludge, electronics)	4,804	718
Other	2,494	1,997
Total Reported Recyclables	**209,923**	**66,640**
Reported Disposal (NY DEC 2008)	224,870	224,870
Implied Total Generation	434,793	291,510
Implied Dutchess County Recycling Rate	**48.3%**	**22.9%**

(1) Excluding agricultural, construction/demolition debris, industrial wastes, sludges, and animal renderings

It should also be noted that the 48.3 percent total recycling rate is an absolute maximum for two reasons. First, no attempt was made to estimate the total generation of non-MSW materials, so the denominator is artificially low. Second, it is likely that some of the reported tons were actually generated outside of Dutchess County and should not be credited to Dutchess County's recycling rate.

2.8. CHAPTER 3 OBSERVATIONS, EXISTING SYSTEM

This section of the LSWMP intends to describe the components of the current system so that planners and the general public can understand the important aspects of this system. Generally, this chapter is successful in providing an overview of the current system. However, a number of important system attributes that would round out the reader's understanding of the system are not specified. Key observations are identified below.

2.8.1 NO INTEGRATED MANAGEMENT OF CURRENT SYSTEM

This section makes clear that there are many entities that participate in waste management in Dutchess County (Dutchess County, DCRRA, municipalities, haulers, recycling facilities, composting facilities, etc.) but that no single entity provides coherent, integrated planning and management of the County's waste management needs. The LSWMP generally asserts the RRA as the primary entity responsible for solid waste management planning as well as facility ownership and operation. Although stated otherwise in the LSWMP, it has recently been confirmed by Dutchess County that the RRA is the official Planning Unit and does not require approval of the County Legislature to develop the LSWMP.[3]

[3] Resolution 427 of 1984

The LSWMP further indicates that Dutchess County is responsible for hauler licensing and enforcement, which has been confirmed by the County. In a nutshell, this means that there are two entities splitting important roles that cannot function effectively. As an example of the confusion caused by the lack of a single manager, Table 2-4 summarizes a letter from the RRA to the NY DEC explaining the various roles and responsibilities of DCRRA and the County relative to the LSWMP.

Table 2-4 RRA's Understanding of LSWMP Responsibilities [1]

Task	Agency	County	Private
Fund Commissioner		Completed	
Detail Commissioner's Duties		X	
Hire Commissioner		X	
Timetable		X	
Staff Commissioners Office		TBD	
Interim Coverage		X	
LSWMP to reflect RRA/County parallel relationship	X		
MSW report re: NSF elimination		X	
Recycling/Education	X	x	Seek Partnership
Schools	X		
Adult/Business	X		
New Technology	X		
Food Waste	X	x	Seek Partnership
Committee Revival			
Solid Waste		TBD	
Recyclables Oversight		TBD	
Agency Municipal Liaison	X		

X = To be completed; x = Contribute to completion; TBD = To be determined.
[1] Letter from RRA to DEC dated March 9, 2011.

It is also of particular importance to note that the County's Charter specifies that there be a Commissioner of Solid Waste appointed to perform many important duties. While the County has funded and staffed the Commissioner position in the past, there have, in the opinion of MSW Consultants, been several shortcomings of this function.

2.8.2 HISTORICAL UNDER-COMMITMENT TO SOLID WASTE MANAGEMENT BY DUTCHESS COUNTY

It was reported to MSW Consultants via a number of interviews during the research to this project that the County has historically bestowed the title of Solid Waste Commissioner on multiple individuals, who have served with varying degrees of success. However, the Solid Waste Commissioner position has long been held by individuals who are also managing other entities, such that the title of Commissioner is more of a formality and does not denote full commitment to waste management. The shortfalls of this arrangement are arguably encapsulated in the fact that the acting Solid Waste Commissioner has earned a salary of $1 per year for handling this role. While a $1 salary is financially attractive to the County, it appears that that the Commissioner's influence and ability to function adequately may have been commensurately impaired.

It is important to note that the NY DEC has identified the County's lack of a Solid Waste Commissioner as a significant omission in the establishment of an approvable LSWMP. DEC has spelled out their concerns in several meetings and has submitted a series of letters to DCRRA and the County summarizing such concerns.

At the outset of this engagement, Dutchess County was in fact without even a part-time acting Solid Waste Commissioner. In recent months, the County has, to its credit, taken steps to fund a Commissioner of Solid Waste and accompanying support staff.

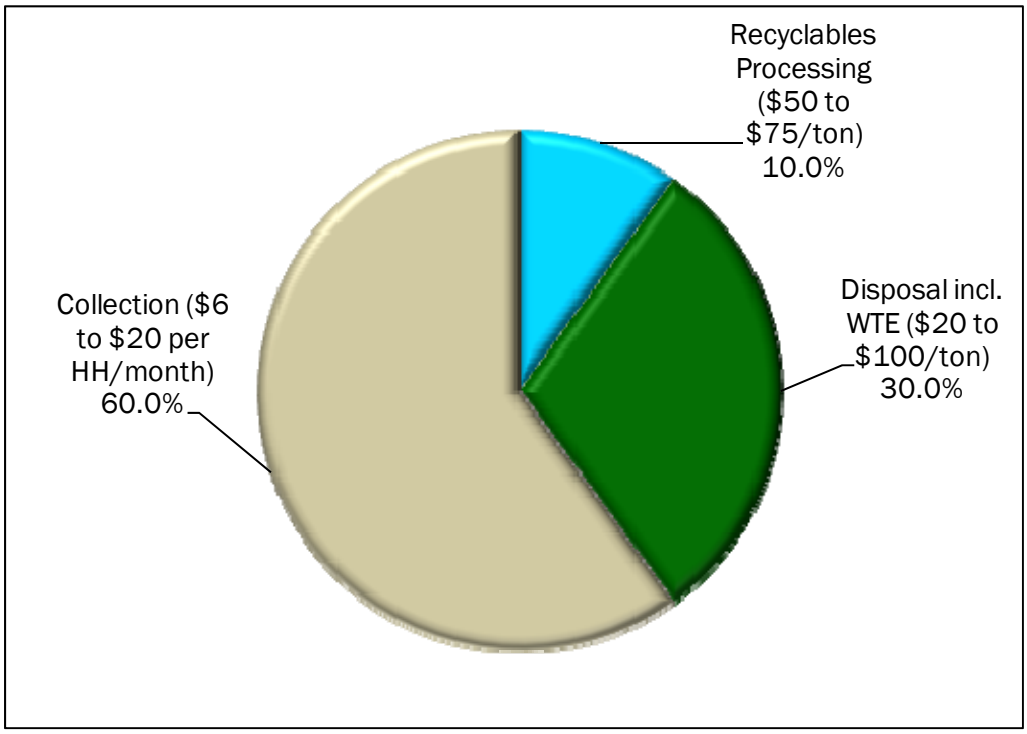
2.8.3 NO MEANINGFUL DISCUSSION ON FULL COSTS

Like all municipal services, waste management must balance the level of service with the overall cost for the services provided. MSW Consultants assumes that the appropriate mission for the municipal manager of an integrated solid waste system is to provide an affordable level of service to the residential, commercial, institutional, industrial, and C&D waste generators. Such all-inclusive costs include:

- Collection of wastes and recyclables;
- Transfer and transportation of wastes/recyclables to suitable facilities for disposal/processing;
- Processing of recyclables;
- Processing/composting of organics;
- Incineration/disposal of wastes.

Although the LSWMP does describe each of these components of the system, no cost data is provided to help elected officials and County constituents (the waste generators) understand where improvements would be most noticeable. Figure 2-1 below provides national average cost data for integrated waste management.

Figure 2-1 Relative Costs of Integrated Solid Waste Management (Source: MSW Consultants)



As shown, collection is a significant portion of the total cost in general. It is not clear where Dutchess County's waste generators are paying for the full range of services they are receiving, but this should be a primary consideration for planners and ratepayers. It was beyond the scope of this project to research and compile this data, but the dynamics that influence costs will be discussed later in this document.

2.8.4 Acknowledgement of Increasing Net Service Fee Obligations Borne by Dutchess County

The LSWMP acknowledges that Dutchess County has been responsible for an increasingly high Net Service Fee payable to the RRA. The Net Service Fee is the subsidy that is contractually required to be paid by the County to the RRA to the extent the RRA cannot recover its full costs through tip fees and energy revenues. Table 2-5 shows the historical Net Service Fees based on information provided by Dutchess County. As shown, these costs have increased steadily since 2000 and now total between $15 and $22 per ton of waste processed.

Table 2-5 Impact of Net Service Fee on County System Users

Year	Net Service Fee	Tons Managed	$/ton
2000	$433,698	170,000 (est)	$2.55
2001	758,384	170,000 (est)	$4.46
2002	$1,590,054	170,000 (est)	$9.35
2003	$1,437,765	170,000 (est)	$8.46
2004	$1,828,643	170,000 (est)	$10.76

Year	Net Service Fee	Tons Managed	$/ton
2005	$1,289,959	169,439	$7.61
2006	$1,877,995	170,714	$11.00
2007	$2,525,336	158,517	$15.93
2008	$3,778,477	153,474	$24.62
2009	$3,516,584	163,297	$21.53
2010	$2,517,610	165,000 (est)	$15.26

2.8.5 ACKNOWLEDGEMENT THAT PRIVATE MARKET SOLUTIONS OPERATE AT LOWER COST THAN DCRRA

Page 33 of the LSWMP makes the critical point that the private sector has built up disposal options other than the DCRRA that are less costly than the DCRRA. This should be a critical consideration for the integrated system manager, and is highlighted by MSW Consultants accordingly. Essentially, the LSWMP concedes that, compared to relying on the RRF, it is less costly to transfer wastes from refuse trucks to long-haul trailers, and incur transportation costs to deliver the wastes to permitted landfills elsewhere in and out of NY State. Further, the LSWMP concedes that there is ample capacity at these private landfills, and it goes without saying that landfills represent the most commonly selected form of waste disposal in New York State, and in the U.S. as a whole. As an example, in New York State, only 14% of MSW was combusted in 2008.

2.8.6 INSUFFICIENT DATA ON CURRENT CURBSIDE COLLECTION SERVICE LEVELS

The description of the current collection system provides sufficient details to understand what entities are performing collection within each of the municipalities in Dutchess County. However, it is not clear specifically what material streams are collected in each of the municipalities that provide public/contracted service. This is a critical data point, for the simple reason that exclusive, direct control of collection is, across the country, a prerequisite to cost-effective waste management programs that achieve high diversion rates. Universally, cities and counties in the U.S. that are achieving high recycling rates are providing exclusive, mandatory collection services to the single family residential sector, and in some cases to the multi-family sector. Dutchess County would benefit significantly from an understanding of the collection service levels and residential recycling rates achieved by each of the municipalities with curbside collection.

Table 2-6 provides a summary of the service level information that could be obtained from village websites. This data is incomplete. However, it highlights the fact that only one in five people have exclusively provided curbside collection. Stated another way, 4 in 5 Dutchess County residents are likely paying relatively higher rates for relatively lower service levels through subscription programs.

Table 2-6 Current Curbside Collection Service Levels

Task	Provider	Refuse	Recycling	Yard Waste	Other	Fees Charged to Households	Percent of Population
Poughkeepsie city	Public	2x/wk auto	1x/wk dual	Seasonal leaves & branches	1x/month bulky	N/A – funded by tax revenues	21%
Beacon city	Private [1]	1x/wk	EOW/dual	Seasonal leaves/ brush	None	N/A – funded by tax revenues	
Millerton village	Private [1]	1x/wk	1x/wk	Seasonal leaves/ brush	2x/yr bulky	Unknown	
Millbrook village	Private [1]	1x/wk	1x/wk	Seasonal brush	None	33/65-gallon = $18.95/$21.95 mo.	
Pawling village	Public	1x/wk	EOW	Unknown	1x/yr bulky	$166.21/unit annually	
Rhinebeck village	Public + Private	1x/wk	1x/wk commingled; 1x/mo fiber	Seasonal leaves/ brush	None	Tags - $5.00 large; $2.50 small	
Red Hook village	No info provided	1x/wk	1x/wk dual	Unknown	Unknown	Tags - $5.00 large; $2.50 small	
Tivoli village	Public	1x/wk	1x/wk dual	Unknown	Bulky – call in only	Tags - Cost unknown	
Wappinger Falls village	Private	1x/wk	1x/wk dual	Seasonal	Unknown	[2]	
All other municipalities	Subscription			Varies		Not researched	79%

[1] Except for yard waste which is handled by City crews
[2] $48.00 flat rate. $36 Senior rate. Billed quarterly.

2.8.7 SINGLE-HAULER DOMINANCE IMPAIRS COMPETITIVE PRICING

The LSWMP makes the important observation that a single hauler effectively controls 80+ percent of the market for subscription collection (residential and commercial). Although not quantified, this has the impact of driving up full costs for waste generators. Additionally, it places the dominant hauler in a position to extract price concessions for the wastes it delivers to the RRF. This dynamic – whereby the dominant hauler secures disposal price advantages, which gives it a competitive edge to provide cheaper service compared to other haulers, which in turn further cements its market dominance – is a perpetuating cycle. It is critical for Dutchess County to identify the factors and take steps to establish a truly competitive market for local hauling. Options for doing so will be discussed in this report.

2.8.8 HISTORICAL MISMANAGEMENT OF RRF

While the causes can be debated, it seems clear that the RRF has suffered from a series of bad luck. With the benefit of hindsight, the following are examples of questionable management, and it is the opinion of MSW Consultants that these actions represent a pattern of substandard performance for the RRA and the RRF:

- *Failure to Secure Steam Customer for Life of Facility*: The RRF was configured to sell steam to a single customer. The loss of this customer in 1998 caused the facility to shift entirely to electricity generation. The turbine technology that was installed does not generate electricity efficiently.
- *Poor Record of Competitive Procurement for Operating Contracts*: As documented in the Comptroller's Audit, the RRA has not benefited from competitive procurement. At the current time the operating contract for the RRF is unfavorable to the RRA. Further, it has been reported that the RRA has not routinely used competitive procurement for professional services.
- *Poor Track Record for Metal Sales*: Although rectified in 2010, the RRF historically had an extremely poor agreement to recoup revenues from recovered metals at the RRF.
- *Potential for Stranded Debt*: In 2005 the RRF installed new air pollution controls. The cost of these capital improvements are currently bonded through 2027, although the current operating contract expires in 2014. While the County is responsible for payment of any cost overrun by RRA through the NSF, freeing the RRA from risk, best practices dictate that debt be aligned with operating contracts.
- *Overpayment to Town of Poughkeepsie:* As expressed in the New York ABO Report, there is no written agreement authorizing the RRA to make Host Community Benefit payments to the Town of Poughkeepsie. According to the Comptroller's report, however, the authority for this payment is in Resolution 282-1987. This needs clarification by legal counsel.
- *Uncertainty About Plant Condition*: The LSWMP is not clear on the overall condition of the facility. On page 57, the LSWMP indicates that a 2007 engineer's report found that the plant was "in good operating condition with no major operating deficiencies identified," and that "the life of the facility can be expected to exceed the term of the 2007 bonds (2027) if operated and maintained in accordance with …accepted industry practice." Conversely, on page 59, the LSWMP recommends that the DCRRA "undertake a full engineering assessment of the condition of the facility, and prepare an estimate of the major components and equipment which will need refurbishment or replacement to assure continued reliable operation for the ensuing 20 years." These conflicting statements cloud one's ability to understand the true condition of the plant.

In fairness to the DCRRA, the RRF has achieved solid environmental performance over the life of the facility.

2.8.9 NO COST DATA PROVIDED IN LSWMP FOR RRF

It is particularly notable that the LSWMP provides no meaningful cost data about the RRF (or about any of its operations, for that matter). Tables 2-7 and 2-8 summarize historical system costs for the RRF, according to the Comptroller's Report.

Table 2-7 RRF Expense Summary (Source: Comptroller's Report)

Expense	2005 Expenditures	2009 Expenditures	Percent Change	$/ton (2009)
RRA Mgmt & Admin Expense	$5,103,571	$3,849,154	-24.6%	$25.55
Operating Contractor Fees and Pass-Through Costs	$7,547,950	$10,622,176	40.7%	$70.51
Debt Service	$4,150,495	$4,352,100	4.9%	$28.89
Total	**$16,802,016**	**$18,823,430**	**12.0%**	**$124.96**
Outstanding Debt Service Re-amortized[1]	N/A	$5,912,058	N/A	$39.25
Adjusted Total	**N/A**	**$24,735,488**	**N/A**	**$164.20**

[1] If the 16.1 million principal contained in the Series 2007 bonds was to be repaid during the time period of the RRA's current operating contract through 2014, it would result in the incremental debt service shown for 2011, 2012, and 2013.

Table 2-8 RRF Revenue Summary (Source: Comptroller's Report)

Revenue	2005 Revenues	2009 Revenues	Percent Change	$/ton (2009)
Tip Fees	$11,389,608	$10,973,168	-3.7%	$72.84
Energy Revenues	$3,867,028	$2,816,053	-27.2%	$18.69
Recovered Metal Revenues	$0	$46,114	N/A	$0.31
Other Revenues	$504,751	$280,944	-44.3%	$1.86
Total	**$15,761,387**	**$14,116,279**	**-10.4%**	**$93.71**

These tables contain some extremely important information that should be completely understood and factored into any plan by Dutchess County to plot the appropriate course of action for solid waste management:

- The cost of operating the RRF has continued to increase, despite extensive cost cutting of the management and administrative costs borne by the RRA.
- M&A costs alone total over $25/ton.
- Contractor operating fees and pass-through costs are the largest part of the facility expense – and have increased 41 percent over the past five years.
- The total cost to operate the plant under the annual expenditures as shown on the books of the RRA is $125/ton.
- If the 2007 Series bonds are re-amortized over the remaining term of the RRA's agreement with Dutchess County (it is considered a best practice to align the term of project liabilities with the term of the underlying disposal agreement), it pushes the cost to over $164/ton of waste processed. This makes the RRF one of the most costly disposal facilities in the entire United States.

- Regardless of whether the cost/ton is shown with or without the 2007 Series stranded debt service, there are not sufficient revenues to come close to covering these costs.

2.8.10 NO COST DATA PROVIDED IN LSWMP FOR MRF

The LSWMP also provides no clear cost information about the dual stream MRF. Table 2-9 summarizes historical system costs for the MRF, also according to the Comptroller's Report.

Table 2-9 MRF Cost/Revenue Summary (Source: Comptroller's Report)

5-year Average Costs		5-year Average Revenues	
Contractor Service Fee	$253,333	Recycled Material Revenue	$159,879
RRA Mgmt. & Admin	$121,376	Recycling Tip Fees	$130,309
Total	$374,709	Total	$290,187
			Net Revenue (Cost) = ($84,521)
			Net Cost/Ton = $5.98

Again, this information is highly informative about both the RRA's operations and also to inform about the relative cost of recycling versus waste-to-energy:

- Over a five year average, the MRF is roughly a break-even enterprise, although it has actually experienced a slight loss.
- Compared to a cost of over $125/ton for waste-to-energy, the $6 per ton cost of recycling is far less costly for managing materials.
- Although not shown in the table above, the MRF paid for itself in 2006 to 2007, prior to the economic downturn (which depressed prices for recovered materials). Over time, there is no reason a MRF should not pay for itself.

2.8.11 NEW RECYCLABLES PROCESSING CAPACITY NEEDED

As stated in the LSWMP, the RRA's dual stream MRF is 20 years old and at the end of its useful life. It was reported to MSW Consultants, and verified via a site visit, that this facility could not undergo a retrofit to expand and update its technology. Dutchess County will need to address the resulting lack of processing capacity.

2.8.12 MINIMAL DATA PROVIDED FOR ALTERNATIVE DISPOSAL AND RECYCLING FACILITIES

This chapter adequately inventories the solid waste and recycling facilities in and around Dutchess County. However, it does not provide any information on the distance or available capacity at non-RRA facilities. Of greater importance, no information is provided on the likely range of disposal tip fees that might be secured at any of these alternative disposal facilities under a mid to long term agreement and a meaningful volume of wastes, nor on the cost of transportation.

Table 2-10 shows the distance to the landfills that were reported in the LSWMP to have received Dutchess County wastes in the past. Sources available to MSW Consultants suggest that tip fees as low as $23/ton can be secured at least one of these facilities. Further, transfer

and transportation costs could be expected to add another $45/ton. Such information is important to understand the dynamics associated with using these other disposal options.

Table 2-10 Distance and Available Capacity Data for Alternative Disposal Facilities

Facility	Distance from Poughkeepsie	Available Capacity for Dutchess County Waste
City of Poughkeepsie Transfer Station	1 mile	Possibly [1]
Royal Carting Transfer Station (Hopewell Junction, NY)	14 miles	Possibly [1]
UCRRA - New Paltz Transfer Station (New Paltz, NY)	15 miles	Unknown
Welsh Sanitation Transfer Station (Wingdale)	22 miles	Unknown
Pharsalia Landfill (Norwich, NY)	143 miles	Not verified
DANC Landfill (Rodman, NY)	245 miles	Not verified
Seneca Meadows Landfill (Waterloo, NY)	260 miles	Yes
Ontario Landfill (Stanley, NY)	275 miles	Not verified
Mill Seat Landfill (Bergen, NY)	292 miles	Not verified
High Acres Landfill (Perinton, NY)	319 miles	Not Verified
RRA RRF	2 miles	No

[1] It was beyond the scope of this study to verify the potential for expanding the capacity of existing transfer stations. However, site visits and discussions with two in-county transfer station owners suggest that it would be possible to expand existing facilities.

Table 2-11 shows the same time/distance data for alternative recyclables processing facilities. It was beyond the scope of this project to research potential recyclables processing costs at the gate. However, it should be noted that both dual stream and single stream recyclables currently yield sufficient revenue to cover the cost of processing, and that recent procurements conducted by MSW Consultants suggest that some fraction of recyclable material revenues are likely to be returned to the generator of the recycled materials.

Table 2-11 Distance to Alternative MRFs

Facility	Distance from Poughkeepsie
Hudson Baylor Corp MRF (Beacon, NY)	15 miles
Hudson Baylor Corp MRF (Newburgh, NY)	19 miles

2.8.13 Established Private Infrastructure for Organics Management

It is noteworthy that Dutchess County is home to multiple private and institutional organics processors. Currently, the City of Beacon and West Hook Sand and Gravel compost yard waste, and McEnroe Farms composts food waste and yard waste. Bard College, Fishkill Correctional Facility and Green Haven Correctional Facility compost their own food waste on-site. The Cornell Cooperative Extension is involved with small scale and backyard

composting, and deer carcasses are composted by the Dutchess County Department of Public Works and the Town of Poughkeepsie. Greenway Compost @ Vassar College did compost on site, but now takes organic waste to McEnroe Organic Farm, and is in process of closing the on-campus facility. Greenway is currently working on setting up a small local composting operation in one of the municipalities. Clearly the expertise, both institutional and private, exists in Dutchess County for composting a variety of organic materials.

2.8.14 VIBRANT PRIVATE SECTOR RECYCLING

Similarly, it should be noted that private organizations have unilaterally developed a range of recycling operations in and around Dutchess County. As mentioned above, Hudson Baylor (which currently operates the RRA MRF under a contract with the RRA) also owns and operates a MRF in Newburgh, NY, which was recently converted to single stream, but can also take dual stream recyclables. Hudson Baylor is in the process of obtaining planning approval to build a single stream recycling facility in Beacon capable of processing both single stream and dual stream.

In addition, several companies in Dutchess County are currently recycling C&D material. Recycle Depot, Royal Carting, and RCT report over 70,000 tons of construction and demolition debris processed and a significant fraction recycled.

2.9. CHAPTER 4 OBSERVATIONS: FUTURE PROJECTIONS

2.9.1 DEMOGRAPHIC PROJECTIONS ARE ADEQUATE FOR PLANNING PURPOSES

This chapter expresses that Dutchess County expects to experience continued population growth and commensurate increases to residential and commercial development and waste generation. This seems reasonable.

2.9.2 PRESUMPTION OF A FLOW CONTROLLED SOLUTION FOR WASTE STREAM MANAGEMENT PROJECTIONS

However, the remainder of the chapter provides only a summary of the waste disposition strategy to be implemented within the RRA's managed system, which transitions to 100 percent of the County through flow control by 2020. Specifically, this chapter projects:

- An increase from 12,000 to 35,000 tons per year recycled and the RRF operating at full capacity by 2015; and
- A further increase of recycling to 45,000 tons, composting at 5,000 tons per year, and expansion of the RRF to accept 100 percent of flow-controlled County waste by 2020. Other than conveying the shift to management of 100 percent of the waste and recyclables stream, this chapter does not convey and substantiate the expected impacts to specific recycling and organics programs. In addition, composting of more than 5,000 tons per year is reportedly occurring now, meaning that this chapter doesn't actually assume any increase in composting.

2.10. CHAPTER 5 OBSERVATIONS: TECHNOLOGY EVALUATION

2.10.1 IDENTIFICATION OF RRF PERFORMANCE METRICS

The LSWMP does provide some useful data for measuring the performance of a waste to energy facility. These are summarized in Table 2-12.

Table 2-12 Useful Operating Metrics for RRFs

Metric	RRF Value	Industry Standard
Boiler Btu Generation Capability	315 KWh/ton	500-600 KWh/ton
Weight Reduction from Incineration	25%	25-30%
Volume reduction from incineration	90%	90%
Capital Cost to Develop New Capacity	N/A	$193,000/tpd to $233,000/tpd
Cost to Upgrade Turbine for Better Efficiency	$3,000,000 [1]	$6,000,000 to $7,000,000 [2]

[1] Estimate by RRF staff

[2] Based on two comparable projects cited in the LSWMP.

MSW Consultants generally concurs with the industry standard metrics reported in the LSWMP. However, it should be noted that the turbine upgrade cost estimate of $3 million has not been substantiated by qualified technical experts, and that two other comparable upgrades cited in the LSWMP suggest a cost that is twice as high as the RRF staff estimate. MSW Consultants staff are not technically qualified to evaluate this cost, and it would be necessary to retain a qualified professional to validate any estimate (at a cost of $50,000 to $70,000).

2.10.2 HHW PROGRAM IS CANDIDATE FOR RECOUPING VIA USER FEE

This chapter describes the HHW collection events sponsored by the RRA. This program, which is important for any waste-to-energy facility, is stated to be popular among County residents. MSW Consultants notes that this program, which provides equal access to all residential generators (i.e., a uniform service level to all) at a cost of roughly $125,000, is a candidate for a fee-based revenue mechanism such as a user fee. Mathematically, the total cost of this program could be reasonably divided by the number of dwelling units in Dutchess County, and a uniform fee charged to each dwelling unit. Because all residents are provided the same opportunity to use the program, there is a clear and rational basis for establishment of the fee. Assuming approximately 118,000 households in Dutchess County, the cost of this program is only 1.10/household annually.

2.10.3 PRIVATE SECTOR HAS CAPACITY TO MEET DUTCHESS COUNTY WASTE MANAGEMENT NEEDS

The LSWMP makes the point that the RRA's facilities were originally only designed to service the County's "core area" in the southwest quadrant, and not the entire County waste stream.

What is not stated in this section, but was demonstrated in previous sections, is that the private sector does have the capacity to manage Dutchess County wastes and recyclables. This is further supported by the fact that, as reported in the LSWMP, an estimated 100,000 tons of wastes and recyclables are managed by the private sector, either in-county or transferred and transported to an out-of-county location.

2.10.4 PARTIAL IDENTIFICATION OF RECYCLING FACILITY COSTS

The LSWMP suggests that a new single stream recycling facility, capable of processing roughly 45,000 tons per year of single stream residential recyclables, would cost roughly $12 to $13 million. This is a reasonable estimate. However, no facility operating costs are provided, nor is there any information given on the likely recovered material quantities and projected material revenues.

2.10.5 ADEQUATE DISCUSSION OF ALTERNATIVE PROCESSING/ CONVERSION TECHNOLOGIES FOR WASTE

The LSWMP adequately describes a range of emerging technologies for the management of some or all of the waste stream. Although minimal details are provided about these technologies, in the opinion of MSW Consultants it is premature for Dutchess County to seriously consider them in light of more pressing needs and also because there are extensive opportunities to optimize traditional recycling and composting programs.

2.10.6 ADEQUATE DISCUSSION OF OPTIONS FOR C&D DEBRIS RECYCLING

The LSWMP notes that private sector C&D recycling is diverting as much as half of the C&D debris generated in Dutchess County. The LSWMP also identifies a number of reasonable options to increase C&D recycling at an appropriate time in the future:

- *Job-site Separation*: Assumes the passage of a local law that would require construction contractors to separate unused construction materials at the job site so they could be separately collected and recycled.
- *Building Materials Reuse Center*: Many municipalities and a number of non-profit organizations ion NY State and nationally have established facilities to aid in the salvage of reusable building materials.
- *Alternative Daily Cover*: The LSWMP notes that it is widespread for landfills use C&D debris as alternative daily cover in crushed or ground form.
- *Mandatory C&D Processing*: As a more aggressive option, the LSWMP notes that it would be possible to require all C&D to be processed at a C&D Material Recovery Facility. (The LSWMP continues to report on this and other options in the context of such a facility being publicly funded, when in fact this is a function the private sector is already performing.)

2.10.7 INSUFFICIENT TREATMENT OF COLLECTION OPTIONS

The LSWMP cites the legal authority for counties (County Law §226-b), cities (General City Law §20), towns (Town Law §§81[1][f]. 221[1]) and villages (Village Law §4-412) to provide collection services. However, its treatment of collection opportunities is woefully inadequate

given the potential to increase recycling and save money offered by an efficient collection system.

It cannot be overstressed that the most significant opportunities for Dutchess County to reduce the costs to waste generators and increase recycling can be achieved through alternative collection systems. In fact, in all of the nation's most effective integrated waste management systems with high recycling rates and competitive costs, the collection system is highly integrated into the overall provision of service.

Yet, the LSWMP provides no real insight into how collection systems can and should be planned and managed for the benefit of the system. Perhaps this is because neither the RRA nor the County currently provide collection, so the service is "out of sight, out of mind." But this is no excuse to largely overlook the potential benefits of a coherent, integrated collection system.

The LSWMP contains some description of public collection versus subscription collection. But the LSWMP completely misses the prospect of improving collection systems through:

- *Mandatory Curbside Collection.* The LSWMP does not comment on the municipal laws governing the provision of collection rather than providing access to a local disposal site (i.e., convenience center). It was beyond the scope of this study to research this; however, many of the municipalities offer local residential transfer stations, which suggests that residents are not all required to receive curbside collection.
- *Exclusive Curbside Collection*: Currently, only 21 percent of the County's households receive exclusive curbside collection. This means that 79 percent of the County's households are receiving inefficient, more costly subscription service, or are using drop-off centers provided by the towns and villages.
- *Regionalization*: Waste and recycling collection systems function more efficiently and cost-effectively when they are serving a relatively larger area such that collection routes can be assembled logically and collection vehicles can achieve high collection productivity. With over 30 municipalities, Dutchess County stands to benefit significantly if it can successfully work with groups of municipalities to pilot test and implement exclusive collection services over multiple towns and villages.
- *Direct System Funding Via Collection Function:* Across NY State and the U.S., municipalities and private haulers customarily charge waste generators directly for the full slate of collection, disposal, and recycling services that are provided. Limited research performed by MSW Consultants shows that some municipalities in Dutchess County (Millbrook, Pawling, Red Hook) do have some form of direct revenue mechanism in place, and it can be assured that all subscription customers pay their private hauler a monthly or quarterly fee for services received. The direct financial connection between waste generator and service provider provides control of integrated waste management and also serves as a critical feedback loop for more progressive programs like Pay-as-you-Throw (already offered by several municipalities in Dutchess County).
- *PAYT*: While the LSWMP notes that there are benefits to PAYT systems, and suggests sources of good information on PAYT, the description of PAYT programs and their benefits is inadequate.

2.11. CHAPTER 6 OBSERVATIONS: INTEGRATED SYSTEM SELECTION

2.11.1 NO SYSTEM COSTS MENTIONED IN COUNTY GOALS

This is the first chapter of the LSWMP that discusses the goals of an integrated solid waste management system. MSW Consultants confirms that understanding and stating goals and objectives is the critical first step in the formation of a successful waste management system.

The LSWMP mentions the following goals:

- Having a stable long-term revenue base to fund solid waste management
- Maintaining waste-to-energy
- Increasing recycling, and
- Making sure all waste generators have equal access to the system.

In the opinion of MSW Consultants, the issue of system cost is glaringly absent from the stated program goals. In the experience of MSW Consultants, the performance and service level parameters of any system can and should be balanced against the cost of the system. This goal – or any goal relating to prudent and balanced consideration of system costs – is absent in the LSWMP.

2.11.2 PRESUMPTION OF PUBLICLY OWNED SYSTEM AS BEST OPTION

Throughout the LSWMP, but reiterated in this section, there is a presumption that a publicly-provided disposal and recyclables processing system is superior and should be perpetuated. It is the opinion of MSW Consultants that the LSWMP's primary purpose, as written, is to justify perpetuating the RRA and its role as owner/manager of disposal and recycling facilities in Dutchess County.

New York State law requires only that counties be responsible for the planning of integrated waste management systems. However, there is no requirement for public entities to own and operate any aspect of the local waste management system. This distinction is not mentioned in the LSWMP.

Tellingly, it is hinted at in the LSWMP that the private sector has actually been more successful, more responsive, and more cost-effectively able to provide the same services currently provided by the RRA. As will be discussed in subsequent sections of this report, the presumption of public rather than private system ownership and management limits the value of the conclusions drawn in the LSWMP.

2.11.3 LIKELIHOOD OF PERPETUAL COUNTY SUBSIDY OF RRA

Page 106 of the LSWMP contains a very important description that should be understood by all Dutchess County solid waste management stakeholders, but especially by taxpayers. The top paragraph on this page states that "from a financial perspective, County subsidies to the Agency's waste program will continue to be required pending changes in three economic areas:

> "1) an increase in the market rates for alternative disposal which would allow the Agency's tip fees to be raised proportionately;
>
> "2) increases in wholesale energy prices and recyclable commodities marketed by the Agency, providing more direct revenue to the program; and
>
> "3) increases in the total non-recyclable tonnage managed by the Agency, which would introduce economies of scale and maximize the use of the waste to energy facility."

For Condition 1 to happen, either (a) the private sector will have to get much less efficient in the performance of waste disposal, or (b) private competition decreases fast enough to enable market price increases, or (c) the RRA will have to improve efficiencies faster than the private sector. It is the opinion of MSW Consultants that none of these developments are likely.

Condition 2 is entirely beyond the control of the RRA. The County should strongly consider to what extent it wishes to rely on factors outside its control to contribute to a successful integrated waste management system;

For Condition 3 to happen, the RRA would need to secure wastes from more haulers. It has proven that this cannot be done through offering a competitive tip fee, and the LSWMP recommends flow control of 100 percent of County waste. The LSWMP is also silent on the prospective cost reductions that are achievable through economies of scale.

Cost impacts are estimated later in this report.

2.11.4 ESTABLISHMENT OF COUNTY-WIDE FLOW CONTROL AS SOLUTION FOR WASTE DISPOSAL

This chapter in the LSWMP introduces the two primary underlying strategies propounded by the RRA: flow control of wastes and expansion of the facilities under management by the RRA. It appears that the RRA considers both of these conditions to be necessary to move forward with its plan.

The LSWMP ably describes the legal basis for regulatory flow control, which is legitimately an option for Dutchess County to consider. However, flow control is presented in the LSWMP only as an "all or nothing" solution and also as a solution that requires extensive capital investment in new facilities.

It is beyond the scope of this study to debate the pros and cons of regulatory flow control (although some discussion is devoted to this subject in a later chapter). Rather, MSW Consultants believes that the County should consider the service levels, costs and recycling rates that can be achieved both with and without flow control when deciding on the prudent course of action.

Table 2-13 summarizes the stated costs for implementing the RRA's flow control/facility expansion strategy. As shown, this solution incurs $70 million in capital investment for plant upgrades and expansions, which alone will add $29 per ton to the tip fee. This does not include the $1.67 million of existing annual debt service obligations through 2027.

Table 2-13 Estimated Costs for RRA's Disposal Strategy

Metric	RRA Estimate	MSW Estimate
Turbine Upgrade	$3,000,000	$7,000,000
Installation of Additional 250 tpd Line ($220,000/tpd average capital cost)	Not provided	$55,000,000
Development of Southern Transfer Station	Not provided	$8,000,000
Total Debt Service	**Not provided**	**$70,000,000**
Estimated 20-year Debt Service	**Not provided**	**$5,616,000**
Cost/ton (190,000 tons)	**Not provided**	**$29/ton**

2.11.5 Potentially Overlooked Opportunity for Beneficial, Short-Term, Partial Flow Control

Despite the LSWMP's assertion that flow control is a critical element of the overall solution for the RRA, the LSWMP notably refutes the benefits of partial flow control. Page 111 of the LSWMP seems to assert that partial flow control could only be implemented in coordination with a tip fee increase to $127/ton. If implemented as described in the LSWMP, it would indeed introduce additional questions of equitability of any partial flow control system, as one fraction of the County would have the $127/ton tip fee imposed while the rest of the County would not.

MSW Consultants does not employ any attorneys and cannot provide legal advice. However, from a technical perspective, the legality of partial flow control should be investigated ***absent a coordinated increase in the tip fee***.

One of the primary operating problems faced by the facility currently is lack of waste. If the facility were to operate at capacity, it would improve electric generation, increase metal recovery revenue, and increase tip fee revenue. If the County were to enforce its flow control law in the name of getting the existing facility to operate at full capacity, this may improve facility economics and decrease the Net Service Fee in the short term. This recommendation requires additional analysis.

2.11.6 Acknowledgment of Multiple Options for Developing Recyclables Processing Capacity

It is clear that Dutchess County does not have sufficient recyclables processing capacity. The LSWMP correctly identifies the need for new single stream processing capacity. The LSWMP also identifies that a new single stream facility could be developed either as a public or a private operation.

However, the LSWMP incorrectly states that a privately developed facility "would require a firm commitment of a specific volume of recyclables" (p. 116). In fact, this is demonstrably false, as Hudson Baylor is currently developing a new single stream MRF in Dutchess County (Beacon) that could process recyclables from Dutchess County, and other nearby counties. In contrast to this statement, the LSWMP argues that a public single stream MRF could only be

developed with secured volume of recyclables. This is in turn used to justify flow control for recyclables.

In the opinion of MSW Consultants, Dutchess County should strongly consider the defensibility of developing a public recycling capability when the private sector is already undertaking such development within Dutchess County.

2.11.7 ESTABLISHMENT OF COUNTY-WIDE FLOW CONTROL AS SOLUTION FOR NEW SINGLE STREAM RECYCLABLES PROCESSING

The LSWMP extends its preferred strategy of flow control to include not only wastes for disposal, but also to include recyclables for processing. The LSWMP provides that the likely cost of this facility would be $12 to $13 million. MSW Consultants concurs that this is a reasonable estimate for building a new facility.

However, as stated in the section above, in the opinion of MSW Consultants, the case for a publicly owned MRF with flow control is weakened by the fact that private recyclables processing capacity exists or is being developed in and around Dutchess County. Rather, if Dutchess County needs to secure recyclables processing capacity, a competitive procurement should be considered as an alternative to committing to a larger publicly owned system.

Interesting, the LSWMP notes that there are other options for recycling – including both private development of processing capacity and intermunicipal agreement to use Ulster County's MRF, which is reported to be currently under-utilized.

2.11.8 OVERSIMPLIFICATION OF THE IMPACTS OF SINGLE STREAM RECYCLING

The LSWMP points out that single stream recycling – a system where residents place all recyclable fiber and containers in the same container, and it is collected in a single compartment on the collection truck – has been rapidly adopted by public and private haulers. Broadly, this is because single stream recycling programs:

- Reduce the complexity of recyclables for residents, which increases participation and therefore increases recycling;
- Are typically accompanied by distribution of a larger container for use by residents, as well as an expansion of the recyclable fibers that are targeted in the program;
- Can offer improved collection efficiency because individual collectors no longer have to handle two separate material streams.

However, this chapter significantly underestimates certain operational and economic aspects of single stream recycling. First, collection efficiencies cannot be optimized unless automated collection equipment is employed. Automated collection vehicles are more costly than traditional rearload and sideload manual collection vehicles. Neither public nor private haulers can immediately make the switch to automated collection trucks. Rather, this takes planning and must be accomplished within normal fleet replacement cycles.

Second, automated collection requires standardized carts to be distributed to residential households so that the automated collection vehicles can lift the recyclables using the automated arm. At a minimum, these carts will cost $40 to $55 per household, so there is another capital outlay required. Of potentially equal importance, many municipalities find that

there is some resistance when carts are required for refuse or recyclables collection. While cart-based collection programs are widely successful, there is typically a transition period to implement such systems, and this transition is best accomplished by taking the collection and recyclables processing system into consideration jointly.

2.11.9 GOOD SUGGESTIONS FOR PUBLIC EDUCATION AND OUTREACH

The LSWMP mentions a litany of new recycling initiatives:

- Development of a recycling education center with the proposed new single stream recycling facility;
- Development of a new recycling website;
- Establishment of a full scale schools recycling program;
- Provision of waste and recycling audits for business;
- Enhancement of public outreach for HHW and pharmaceutical disposal
- Investigation into partnerships with local businesses;
- Formation of a solid waste advisory committee made up of public and private stakeholders in the County;

A full list of initiatives is contained on pages 120 to 122. MSW Consultants agrees that many or even most of these initiatives would be valuable and improve recycling in Dutchess County. However, no cost information is provided for these programs.

2.11.10 ACKNOWLEDGEMENT OF PRIVATE SECTOR RESPONSIBILITY FOR YARD WASTE/ORGANICS

The LSWMP acknowledges that the private and institutional sectors have developed organics composting programs in the County, and that these programs can and should be leveraged to increase diversion of organic materials.

MSW Consultants notes that this direction – leaving organics recovery and composting in the private sector – diverges significantly from the publicly owned, flow controlled strategies espoused for refuse and traditional fiber and container recyclables.

2.11.11 MISLEADING PRESENTATION OF GREENHOUSE GAS EMISSIONS FROM VARIOUS WASTE MANAGEMENT OPTIONS

Clearly, climate change and greenhouse gas emissions are of increasing importance. Decisions about waste management strategies do in fact impact GHG emissions. As stated in the LSWMP, there have been many efforts to compare and contrast the GHG emissions potential of various waste management strategies.

The LSWMP opts to use the U.S. Environmental Protection Agency's Waste Reduction Model (WARM) to compare GHG emissions. Table 2-14 shows the comparison table from the LSWMP.

Table 2-14 LSWMP GHG Model Inputs – Waste Quantities

Waste Management Strategy	Landfill-based System	Current System	Corrected Current System [1]	Improved System	New System
Waste Reduction	X	X	X	X	2,000
Recycling	X	9,363	66,840	35,000	45,212
Composting	X	1,267	1,267	5,000	5,000
Waste-to-Energy	X	144,729	144,729	155,000	199,576
Landfill	260,630	105,271	78,674	65,630	8,842
Total	**260,630**	**260.630**	**291,510**	**260.630**	**260.630**
GHG Benefit (MTCE)	*N/A*	*(31,341)*	N/A	*(58,772)*	*(73,094)*

[1] As shown earlier in this section, a more accurate summation of current material disposition is shown in this column. The data in this column were estimated by MSW Consultants (all other data are from the LSWMP).

This table, and the accompanying text, are misleading for several reasons:

- **They use the "Landfill-Based System" as the baseline**. It is curious that the LSWMP opts to highlight an imaginary waste management system – one in which all wastes generated in Dutchess County are landfilled, and there are no recycling or composting programs nor is there a waste to energy facility. It would be more appropriate to compare the existing system to the options, instead of this imaginary system.
- **They use incorrect material quantities:** Even the LSWMP concedes that a great deal of recycling and some composting is taking place outside the RRA's managed facilities. In the current system, there are significantly more than 9,363 tons of materials recycled, as discussed earlier in this chapter.
- **No comparisons against "max recycle" system**: It is of particular interest that there is no attempt to model a "maximum recycling" system that achieves a 60 to 65 percent recycling rate. Recycling ranks higher on the waste management hierarchy than waste-to-energy, so a comparison of the WTE-centric system contained in the LSWMP to a max recycle system would be informative.

A revised WARM model is used later in this report to compare GHG emissions for the current system against the RRA's proposed system and also against a max-recycle system.

2.11.12 Proposal for Local Ash Landfill Development

Any WTE system will need an outlet for the ash generated from the incineration process. The RRA has been able to transport and dispose of ash as alternate daily cover at various landfills, at a current cost of $47/ton. The LSWMP indicates that it has not been problematic to obtain an adequate number of bids for ash disposal as beneficial use (i.e., landfill daily cover).

However, the LSWMP suggests that it was historically the intent to develop a local ash landfill in Fishkill, and that re-instituting the development of such a facility "could stabilize costs over

the long term" although they "might be equal to the current cost of export" (p. 134). The LSWMP cites the 12-year, $13 million dollar cost to permit a 1,000 ton-per-day landfill in Oneida-Herkimer County, and the estimated $31 million capital cost of this new landfill to support that new landfills are costly and time consuming to develop. The LSWMP suggests that developing a new landfill "represents an enormous undertaking that must be backed by an unwavering policy commitment and willingness to commit substantial funds for many years."

MSW Consultants concurs with this assessment for new landfill development, whether for ash or other municipal solid wastes.

2.11.13 PROPOSED NEW TRANSFER STATION NETWORK

In order to support the management of 100 percent of Dutchess County's waste stream after flow control is implemented, the LSWMP advocates the development of two transfer stations, one for the northern portion and one for the southern portion of the County. The LSWMP appears to suggest:

- Entering into an agreement with Ulster County RRA to use capacity at that County's transfer station in Kingston for the Northern transfer station; and
- Development of a new southern transfer station through a competitive RFP.

The LSWMP also mentions that a third transfer station may be needed in the large rural area in the eastern portion of the County.

No costs for the development of these transfer stations is provided, nor is there a breakdown of waste quantities that would be expected to move through each of the transfer stations. Transfer stations cost millions of dollars to build, and the transfer and transportation costs will add to the already in-place system costs. So, although no costs are provided, it can be reasonably concluded that the development of this new transfer capability will add to the costs, at a minimum offsetting some of the cost savings from the better economies of scale at the expanded RRF.

2.11.14 NO ACTION PLAN TO IMPROVE COLLECTION

As stated previously, the LSWMP reiterates in this chapter that collection programs will continue to be provided by the municipalities and that "this Plan does not contemplate any direct action by the County to interfere in the competitive marketplace for waste collection services" (p. 140). Yet, as will be discussed in a later section of this report, improved management of collection represents one of the most significant opportunities for the County to provide more cost effective services to its residents and businesses, while increasing access to recycling programs.

2.11.15 RESPONSIBLE ENTITY

The LSWMP cites the Dutchess County Department of Solid Waste Management as being responsible for "formulation and implementation of programs for the collection and disposal of solid waste generated within Dutchess County" (p. 144). This statement would seem to suggest that the County's Solid Waste Department should be responsible for the development of the Local Solid Waste Management Plan, which also suggests that the Department should

be the designated Planning Unit. Table 2-15 summarizes the allocation of responsibilities according to the LSWMP.

Table 2-15 Responsible Entities According to LSWMP

Dutchess County Department of Solid Waste	DCRRA
Policy	Facility Management (WTE and MRF)
Enforcement	Planning Unit/LSWMP Development
LSWMP Approval	Bond Repayment
Coordination	Management of Ash Disposal
Net Service Fee Payment	

According to this table, the RRA would appear to be a facility administrator. Yet, in practice MSW Consultants understands that the RRA in fact holds LSWMP Plan approval authority as the designated Planning Unit, in contrast to the table above. It is our opinion that a single entity with no commitment to any specific facility should be responsible for policy, planning, and LSWMP development.

2.12. CHAPTER 7 OBSERVATIONS: IMPLEMENTATION SCHEDULE

2.12.1 MINIMAL DETAILS ON IMPLEMENTATION SCHEDULE

This chapter of the LSWMP attempts to summarize and assign a timeline to the actions advocated throughout the document to this point. However, the implementation plan contains relatively little details.

As an example, there is a 4-page Implementation Summary table on page 154 of the LSWMP. This table lists 40 discrete initiatives. Table 2-16 below shows the start year for all 40 initiatives. As shown, fully 32 of the initiatives are scheduled to start in 2011. While many of these 32 initiatives are shown to be ongoing for multiple years of the 10-year plan, this would seem to be an aggressive schedule and also one that does not clearly prioritize the most important initiatives.

Table 2-16 Annual Count of LSWMP Initiatives

Start Year	Number of Initiatives Scheduled to Start
2011	32
2012	4
2013	2
2014	1
2015	1
Total	**40**

2.12.2 NO DETAILS ON PERFORMANCE METRICS

The implementation plan in this chapter does not contain any performance metrics to convey progress towards recycling or diversion goals or projections on expected system cost and how those costs evolve over time. While it is beyond the scope of a Plan to provide detailed cost estimates, MSW Consultants understands that recycling and diversion goals should be explicitly stated in the LSWMP.

2.13. CHAPTER 8 OBSERVATIONS: NEW LAWS & REULATIONS

2.13.1 REITERATION OF RRA-FRIENDLY LAWS AND REGULATIONS

This section once again reiterates two of the primary recommendations of the LSWMP: establishment of a direct funding mechanism for the RRA, and implementation of regulatory flow control

2.13.2 ENHANCED ENFORCEMENT AS A CONSEQUENCE

As a consequence of the planned implementation of flow control, this chapter advocates the addition of three field enforcement personnel to address three primary offenses:

- Failure to deliver MSW collected in the County to the proper designated facility;
- Failure to deliver recyclables collected in the County to the proper facility; and
- The commingling of recyclables with MSW at the point of collection.

Two of the enforcement personnel would be temporary, with the third officer permanent. No costs are provided.

2.13.3 FURTHER COMPLICATION OF HAULER LICENSING PROGRAM

The current hauler licensing program was identified by multiple stakeholders as being onerous for haulers. Although not discussed in the LSWMP, MSW Consultants understands that there are multiple bottlenecks in the current licensure program.

The LSWMP advocates further increasing licensure reporting requirements beyond those in the current system. It is the opinion of MSW Consultants that the licensure program should be simplified and competitiveness be increased as a primary change to the hauler licensing program. Once these issues are addressed, then it may be acceptable to revisit and improve reporting requirements.

2.14. CHAPTER 9 OBSERVATIONS: INTERIM WASTE MANAGEMENT MEASURES

MSW Consultants has no comments on Chapter 9. It could, however, be argued that interim measures will be required to increase recycling and diversion of organics until sufficient facilities are fully operational and appropriate capacity has been procured by the County.

2.15. CHAPTER 10 OBSERVATIONS: EXPORT CERTIFICATION

MSW Consultants has no comments on Chapter 10. No waste is exported by the County or the RRA under the current LSWMP. The LSWMP states, and MSW Consultants agrees, that should it be necessary to export waste in the future, this will be accomplished through a competitive procurement process.

2.16. CHAPTER 11 OBSERVATIONS: ADMINISTRATIVE STRUCTURE

The LSWMP submitted by DCRRA summarizes the current structure. As stated previously, this section lists Plan Approval as a responsibility of the County. In fact, as the DCRRA is the Designated Planning Agency, the County has no planning or plan approval authority.

It has been reported to MSW Consultants that Resolution No. 427-1984 designated the DCRRA as the Planning Unit for Dutchess County. As is discussed more fully elsewhere in this report, the County Legislature has the authority to adopt a resolution designating the County as the Planning Agency. The County, through the Legislature, could then amend the Plan that was submitted to DEC by the DCRRA. This will require advice from legal counsel.

2.17. CHAPTER 12 OBSERVATIONS: FUTURE ACTIONS TO FURTHER THE SWM HIERARCHY

This chapter briefly reiterates a number of recycling/waste reduction initiatives and HHW management programs, while confirming that expansion of the waste-to-energy will continue to be a focus.

2.18. CONCLUSIONS

The LSWMP contains 169 pages of content, most of which are narrative. While there are many details about Dutchess County's solid waste management program, and many ideas about potential future initiatives, the entire LSWMP is basically advocating the following concepts:

- Re-affirm waste-to-energy as the primary form of waste management, despite the fact that waste-to-energy is lower on the solid waste management hierarchy than recycling and composting;
- Retain the publicly-owned waste-to-energy and recyclables processing infrastructure despite the acknowledgement that the private sector can and does provide competing disposal and recycling services in Dutchess County and throughout NY State.
- Expand the current facility infrastructure regardless of the cost of this strategy compared to other strategies;
- Implement flow control and establish a dedicated funding mechanism to further empower the RRA to remain the management and operational entity responsible for the County's system; and
- Leave collection systems in the hands of the municipalities and private haulers (i.e., status quo).

Dutchess County and its stakeholders should consider these concepts in the decision to embrace the LSWMP as currently written, or else to reconsider a variety of alternatives. The remainder of this report attempts to itemize alternatives in a way that generates debate and discussion about the best direction to be followed by Dutchess County.

3. SYSTEM GOVERNANCE ALTERNATIVES

3.1. OPTIONS FOR SYSTEM GOVERNANCE

There are essentially three options for governance of solid waste management in Dutchess County:

- **Status Quo**: Under this option, no significant changes are made to the governance of the system. The DCRRA would retain Planning Unit status and, therefore, have authority for all solid waste management planning, compliance reporting and plan amendment or modification authority. The County has limited solid waste management authority under this option, but would be expected to perform the hauler licensing function and enforce recycling laws.
- **Centralizing System Management with DCRRA**: This option would give the DCRRA authority for disposal, recycling, licensing and enforcement of the County's recycling law. The Legislature would only adopt legislation and local laws, and leave the implementation to the DCRRA.
- **Centralizing System Management with Dutchess County**: Under this option, the County would take back its authority as the Planning Unit and take on the full management of the County's solid waste management system. In this role, the County should consider the RRA as but one of many possible providers of waste disposal and recyclables processing. It should be noted that the current agreement between the County and the RRA will delay a complete transition until 2014, the end of the current operating contract between the DCRRA and its RRF operator.

The tables below summarize the advantages and disadvantages of each of these options. A discussion of notable considerations is given after each table.

Table 3-1 Advantages and Disadvantages of Maintaining the Status Quo

Advantages	Disadvantages
Would not require major changes.	The current system does not provide truly integrated waste management, as policy, planning, and management of the system operations are divided among two entities. This dynamic also reduces accountability.
	By not being an integrated system, it will be difficult to implement a LSWMP that will meet the approval of the DEC.
	Costs can be expected to rise, causing an increase in the County's subsidy to the DCRRA through the Net Service Fee.
	Increasing the Net Service Fee payments from ad valorem taxes will mean that these payments will compete with other County programs, including recycling, enforcement and public education.
	Recycling education and enforcement will continue to be disjointed.
	It will be difficult to reach the State recycling and reduction goals.

The decision could be made to maintain the status quo, and make no changes to the current governance system for solid waste management. While this is the easiest option – basically a do-nothing option – it is not sustainable. The Net Service Fee will continue to rise, and, as this subsidy is paid from ad valorem taxes, will take an increasing amount of funding away from other County programs. There will be little to no funds available to enhance programs needed to reach the State recycling and reduction goals.

Of particular importance, under this scenario it will also be difficult to implement a LSWMP that will meet the approval of the DEC, which in turn could affect the RRF permit renewal status.

Table 3-2 Advantages and Disadvantages of DCRRA as System Manager

Advantages	Disadvantages
The solid waste system would be more integrated.	The DCRRA would have to staff up to provide additional services, including inspection, enforcement, hauler licensing, and increased recycling education. This in turn would raise the operational costs of the DCRRA.
A system focusing on waste-to-energy as the County's core disposal technology could be aggressively pursued.	Both the New York Authorities Budget Office and the Dutchess County Comptroller have written reports critical of aspects of the current operation of the DCRRA. With no oversight by the legislature, these deficiencies might not be corrected. As RRA Board members are appointed and not elected, there is only indirect accountability to taxpayers.
Some increase in accountability of the DCRRA if all solid waste system management requirements – including hauler licensing and enforcement – were centralized.	The County/Legislature would no longer have authority over any part of the solid waste system, thereby decreasing the ability of County taxpayers to obtain accountability for solid waste management.
	The County/Legislature would essentially have no control over the amount of the Net Service Fee to be paid to the DCRRA.
	Based on the LSWMP, opportunities for regionalization would not be adequately pursued.
	Based on LSWMP, opportunities for enhanced recycling would not be adequately pursued.
	Based on LSWMP, opportunities for optimizing collection systems would not be adequately pursued.

The Legislature could decide to turn the entire solid waste system over to the DCRRA. The solid waste system would be more integrated, as everything would be under one entity, rather than split between the DCRRA and the County.

As in the "do-nothing" option, however, there would be little to no funds available to enhance programs needed to reach the State recycling and reduction goals. In addition, the Net Service Fee would continue to rise, and this subsidy would also take an increasing amount of funding away from other County programs.

Most importantly, the County and Legislature will have ceded its ability to guide the direction of the solid waste management system. This would lessen accountability and, in addition, the County would have no influence over the amount of the Net Service Fee paid from the County budget.

Table 3-3 Advantages and Disadvantages of Dutchess County as System Manager

Advantages	Disadvantages
The solid waste system would be completely integrated and managed for the benefit of the entire County, absent any bias to any particular facility, service provider, or technology.	The County would need to staff up to provide all of the solid waste services.
The County would take back Planning Unit status and could amend the LSWMP to be more beneficial to all the citizens of the County.	Short term: The County would need to become more knowledgeable about solid waste management issues, service providers, markets, and procurements (although this should be a long term advantage).
The County could procure disposal services from the lowest cost provider – which may or may not be the RRA.	
The County could most effectively establish policies and priorities for recycling and energy recovery within the context of total system costs.	
The County would be in a better position to work with the municipalities in the County and with neighboring jurisdictions to develop a truly integrated and cost-effective solid waste management system.	
By reducing or eliminating the Net Service Fee, the County would have extra funds to apply toward the staffing necessary to provide the solid waste management system and to increase diversion	

If the Legislature decided to put all of the responsibility for solid waste management under the County, the solid waste system would be more integrated, as everything would be under one entity, rather than split between the County and the DCRRA. The County would then have a number of options. If the Legislature has taken the Planning Unit responsibility back from the DCRRA, the County could amend the LSWMP to be of benefit of all of the citizens of the County. Under the option of Dutchess County as system manager, the County potentially could procure disposal services that are less expensive than current costs. In effect, if the County is the integrated system manager, then the DCRRA becomes just another service provider whose services should be evaluated on service level, diversion potential, energy generation potential, and cost, on equal footing to any other service provider. Requiring the DCRRA to be competitive would also provide the most favorable terms should the County opt to retain any of the DCRRA facilities.

The primary obstacle under this option is that the County will need to undertake the planning, budgeting, and staffing of the Solid Waste Department through the normal function of

County government. Some political obstacles may exist for the rapid implementation of this option. However, centralizing integrated system management with the County would increase management flexibility, increase the likelihood of decreasing or eliminating Net Service Fee payments, and best balance waste reduction, recycling, and energy recovery.

3.2. OPTIONS FOR OWNERSHIP OF SOLID WASTE INFRASTRUCTURE

Closely related to the question of system governance is the question of ownership of system assets. Regardless of whether the County itself or the RRA govern the integrated waste management system, there are essentially two options for ownership of solid waste infrastructure in Dutchess County:

- **Public Ownership**: Under this option, infrastructure for disposal, recycling and composting would be owned by the County or by the DCRRA.
- **Private Ownership**: Under this option, disposal, recycling and composting facilities would be owned by private industry.

In practice, there could be a mixture of public and private ownership of the facilities for the various solid waste management activities. In this chapter, however, discussion will be limited to the pros and cons of public or private ownership. The tables below summarize the advantages and disadvantages of each of these options, with a brief discussion following each table.

Table 3-4 Advantages and Disadvantages of Public Ownership

Advantages	Disadvantages
Publicly owned facilities and operations can be directly and immediately controlled and managed.	Publicly owned facilities are not always influenced by market forces to operate efficiently. While market forces may exist to some degree, political and budgetary factors are significant influences, sometimes to the detriment of the publicly owned enterprise.
Publicly-owned facilities can operate at cost rather than at a market rate, which can lead to lower pricing for facility end users. Public facilities also do not have to earn a profit margin, which also keeps costs low.	Local government does not usually have the ability to raise capital through investors or other avenues open to the private sector.
Public entities do not pay taxes, which lowers overall costs.	Requires a political and organizational structure that allows for effective, accountable performance of the facilities.
	Publicly owned facilities usually do not seek to achieve economies of scale available to privately owned facilities or services that may cater to a wider geographic area.
	It is more costly to maintain technical expertise as a small, public facility owner compared to larger private sector facilities owners with broader resources and exposure to industry trends.

Local government is the entity responsible for the health and safety of its citizens, and is the steward of the taxpayers' money. As such, publically owned infrastructure and solid waste management systems should be the most efficient and cost-effective. Unfortunately, this is not always the case. Politics and bureaucracy can negate the advantage of a completely public system. On the other hand, with careful attention to legislation and policies needed and enforcement of those laws and policies, a very efficient, cost-effective and successful public program can be built.

Table 3-5 Advantages and Disadvantages of Private Ownership

Advantages	Disadvantages
The private sector can take advantage of new technologies to make their facilities more productive.	All else being equal, the profit motive will outweigh other interests of County and its citizens. The private entity will tend to maximize profits above other objectives such as higher recycling and diversion, or better environmental stewardship.
Private industry has the ability to raise capital through investors or other means for a facility or process that has the potential for high success and a good financial return.	A contract between local government and the private sector may not allow the contractor to adapt quickly to changes that will increase waste reduction and recycling.
Market forces drive private industry to make its facilities and programs efficient and cost-effective.	Public sector must hire staff or else retain qualified professional expertise to establish and monitor suitable contractual arrangements for needed services
Public sector does not have to invest in capital projects to access capital-intensive services.	Diminishes incentive for private owner to explore new technologies that may increase recycling or diversion, if costs will also increase.
Public sector can use a combination of hired staff and procurement consultants to secure intelligently structured contracts to secure needed services without employing a full slate of technical expertise or infrastructure.	May reduce accountability as private entities are not subject to open records laws and may keep certain business data confidential.
Places the burden of maintaining technological and operational superiority on the private facility owner rather than the public entity.	
Reduces or eliminates political influences on facility/service operations.	

While the profit motive can mean that private industry may not put the best interests of the citizens first, the need to be profitable can more easily assure that the facility and operation will be successful. The private sector cannot afford to build a facility that is not optimal for the planned operation, or to operate it in a way that leads to failure. Private industry may also have more of an ability to raise needed capital than local government.

As will be shown in the chapters on specific programs, often a "hybrid" system, with some facilities owned and/or operated by government and some owned and/or operated by the private sector, to be the most effective in reducing waste and increasing recycling.

3.3. RECOMMENDATIONS

3.3.1 GOVERNANCE

MSW Consultants strongly supports the notion that a single organization should manage and govern the integrated solid waste management system for a particular county or municipality. Clearly the existing division of responsibilities does not accomplish this. MSW Consultants also believes that the system manager should be agnostic in regards to the optimal system configuration. In our professional opinion, the RRA's LSWMP and related actions strongly suggest that its primary objective is the perpetuation of a high-cost, WTE-based disposal system with strong public management that impairs private market solutions.

If the County wishes to go in any direction other than the status quo, it will be necessary to pass one or more resolutions. Because the RRA is a state public benefit corporation, it is independent of the County. At the current time, the RRA is the official Planning Unit for Dutchess County. Dutchess County also has ultimate responsibility to subsidize the RRA to the extent the RRA is unable to fund its operations through tip fees, electricity revenues or direct funding sources such as user fees. If the County leaves the Planning Unit authority with the RRA, then the County will have ceded its ability to guide the direction of the solid waste management system.

It is our understanding that the County can, by passage of a resolution, re-assign the Planning Unit authority from the RRA back to the County. Because the Planning Unit sets the course for waste management in the County, the RRA would be obligated to support the direction set by the Planning Unit. Dutchess County should immediately take steps to designate itself as the Planning Unit if it wants to fully control its destiny.[1]

MSW Consultants recommends the following:

- The Legislature should adopt a resolution to bring back the County's designation as the Planning Unit and to give the County authority for LSWMP Approval. The County, through the Legislature, should then amend the Plan that was submitted to DEC by the DCRRA. Ideally, this action will relegate DCRRA to a manager of the RRF and MRF only (i.e., just another facility owner/operator). However, in practice the County should consult legal counsel to determine how best to manage its relationship and direct the actions of the RRA.
- Centralize management of solid waste by filling the position of Commissioner of Solid Waste as required by the Dutchess County Charter and the Dutchess County Code of Ordinances.
- The Legislature should appoint the advisory Solid Waste Management Board as required by the County Charter.[2]

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[1] MSW Consultants does not employ attorneys and is not qualified to provide a legal opinion on this topic. We have been provided with citations from the County, stating that Resolution 427-1984 gave planning authority to the DCRRA, and that the 1992 LSWMP reiterated this authority, on which we have based our understanding. It is recommended that the County obtain a qualified legal opinion on the course of action mentioned.

[2] "There shall be within the department an advisory Solid Waste Management Board whose members, except as otherwise provided herein, shall be appointed by the County Legislature. Its membership shall include the Commissioners of Health, Finance, Planning and Development and Public Works. The Board shall consider

- The Legislature and County Executive should appoint the advisory Recyclables Oversight Committee as required by Local Law No. 4 of 1990, as amended.[3]
- The County should not enter into any extension or renegotiated agreement with RRA. Further, Dutchess County should take steps to prevent the RRA from entering into contractual obligations that extend beyond the expiration of the current operating contract with Covanta, so that 2014 could remain a workable breakpoint for changing the direction of the County's disposal program. There is already a bond issue that requires debt service payments through 2027 – any additional contractual agreements or debt incurred by the RRA would further bind the County to payment of the Net Service Fee.
- Take steps to allow the County to have the authority to approve any debt issuance or other contractual arrangement that commits the County financially.

3.3.2 OWNERSHIP OF INFRASTRUCTURE

The question of infrastructure ownership has a more nuanced answer compared to the question of system governance. Specifically, optimized ownership decisions can and should be made for each of the various components of an integrated waste management system. A primary factor in considering whether or not the public sector should own an asset is whether or not the privately owned infrastructure is providing a competitive solution or not.

In Dutchess County, there are some services that have been entirely developed by the private sector. In the opinion of MSW Consultants, the County can utilize procurements to access this infrastructure if such capacity is needed now or in the future.

However, in the case of securing cost effective disposal, MSW Consultants believes the County should give strong consideration to public ownership of one or more transfer stations. This step will improve the County's ability to shop around for competitive disposal prices at various landfills (or other disposal facilities).

Table 3-6 summarizes the recommended ownership for solid waste system infrastructure in Dutchess County, based on MSW Consultants understanding of the current system. These recommendations are guided by the existence of competing private sector solutions for many of the system components.

matters relating to solid waste disposal within the County and shall advise the Commissioner thereon either at his request or upon its own initiative, and from time to time make recommendations to him thereupon." *Dutchess County Charter, Article XVII, Department of Solid Waste Management*

[3] The Recyclables Oversight Committee was "…created and established for the purpose of advising the Commissioner of Solid Waste Management regarding adding or removing materials from the definition of recyclable materials; establishing procedures and operating standards for municipal recyclable material collection points; monitoring the progress toward meeting the percent reduction goals established in the 1988 State Law; and such other matters as the commissioner or committee may suggest." *Local Law No. 4 of 1990, as amended by Local Law No. 9 of 1990 and Local Law No. 2 of 1991*

Table 3-6 Recommended Ownership of Solid Waste System Infrastructure

System Asset	Recommended Ownership in Dutchess County	Notes
Collection System	Private (but regulated and managed by the Public sector)	Private hauling companies can easily provide these services in response to a procurement. Steps can be taken to assure that there are sufficient competitors for good pricing. Otherwise, Dutchess County would have to enter the business of running a collection operation, which is not recommended.
Transfer Station(s)	Public	Transfer stations provide a critical resource: access to disposal capacity. Private industry prices disposal capacity at whatever the market will bear, regardless of the cost to provide the disposal capacity. A publicly owned transfer station will serve to keep the market price in check. Further, public ownership of the transfer station preserves the future opportunity to implement flow control, should this eventuality arise.
WTE	No Recommendation	If the County owns its own transfer station, then it can seek out the lowest disposal (or incineration) price. WTE facilities can be treated as equal to landfills.
Landfills	Private	The private sector owns and operates landfills with excess capacity. Landfills are extremely time consuming and expensive to develop. If the County has transfer capacity, then landfills can be subjected to a competitive procurement to secure the most favorable pricing.
MRF	Private	Private entities in and in close proximity to Dutchess County have already developed (or are currently developing) processing capacity.
Organics Composting	Private	Private and institutional entities in Dutchess County have already developed significant composting capacity.
C&D Processing	Private	Private entities in and in close proximity to Dutchess County have already developed significant C&D processing capacity.
Waste Conversion Technologies	Private	If the private sector can successfully develop cost competitive new waste processing technologies, the County can access such technologies at that time.

4. PUBLIC EDUCATION AND OUTREACH

4.1. INTRODUCTION

Like any program, success in waste management and recycling is influenced by the level of resources devoted to educating the public – including residents, businesses and institutions – about how best to use the services provided. Multiple counties in New York State and nationally maintain recycling staff whose primary focus is on education and outreach. These staff perform numerous ongoing initiatives, and the LSWMP lists many such responsibilities that would be achievable in Dutchess County with a manageable number of staff. These initiatives include:

- Establishment of reporting requirements for licensed haulers, solid waste and recycling facilities, and large businesses to track generation and diversion data needed by planners;
- Development of recycling curriculum for Dutchess County schools;
- Development of a comprehensive website to inform residents, businesses, and schools about recycling and diversion programs and facilities;
- Provision of waste and recycling technical assistance and monitoring for Dutchess County businesses;
- Continued outreach and support of ongoing HHW collection events and related public education;
- Coordination with municipalities to understand and publicize municipal recycling programs and to foster opportunities for regionalization of recycling services (as well as collection);
- Coordination with private sector organizations engaged in recycling to encourage market development;
- Establishment of and participation in recycling stakeholder meetings made up of citizens, businesses, and solid waste/recycling industry representatives;
- Understanding and communicating new state and national developments, such as product stewardship laws and extended producer responsibility initiatives that may benefit County stakeholders;
- Increasingly, social media is being used to publicize recycling and waste reduction initiatives;
- Identification of procurement terms and strategies for use by municipalities and businesses seeking recycling collection or recovery services.

Currently, public education is the responsibility of the DCRRA's Recycling Coordinator. Although it was beyond the scope of this effort to thoroughly evaluate this Recycling Coordinator's duties, County personnel indicated that the position is under-utilized for actual recycling public education efforts. Dutchess County itself currently has no oversight over the recycling and public education activities currently in place, as there is no County Solid Waste Department.

4. PUBLIC EDUCATION AND OUTREACH

The formation of a Solid Waste Commissioner's office was approved by the Dutchess County Legislature on March 14, 2011. Once the position of Commissioner of Solid Waste is filled, the Legislature and the County Executive are required by Local Law No. 4 of 1990, as amended, to appoint the seven members of the Recyclables Oversight Committee. Among the responsibilities of this committee is "monitoring the progress toward meeting the percent reduction goals established in the 1988 State Law". This would include public education to increase the amount of recycling and waste reduction in the County. This section attempts to itemize a Recycling Coordinator's office that would be expected to provide a full slate of public education and outreach, as well as support the overall operation and management of recycling in Dutchess County.

4.2. ESTABLISHING RECYCLING PROGRAM GOALS

As a first step, Dutchess County will need to undertake a process of developing its fundamental recycling policies and program goals. This is a process that should draw from available state and national objectives and goals, combined with input from local stakeholders. There are several fundamental concepts that should be considered when developing specific goals for Dutchess County's recycling performance. Dutchess County should expect to develop recycling goals and waste management policies with these concepts firmly in mind.

4.2.1 WASTE MANAGEMENT HIERARCHY

Recycling goals should be driven by New York State solid waste management policies and goals. The State's statutory solid waste management policy is stated in the Environmental Conservation Law (ECL 27-0106). An ordered listing of preferred solid waste management methodologies for managing solid waste in a way that reduces dependency on landfilling of raw wastes is provided. "This hierarchy, in descending order of preference, is:

a. "first, to reduce the amount of waste generated;
b. "second, to reuse material for the purpose for which it was originally intended or to recycle material that cannot be reused (For this purpose, composting is considered a form of recycling.);
c. "third, to recover, in an environmentally acceptable manner, energy from solid waste that cannot be economically and technically reused or recycled; and
d. "fourth, to dispose of solid waste that is not being reused, recycled or from which energy is not being recovered, by land burial or other methods approved by the Department (ECL 27-0106.1). (All solid waste management methodologies not specifically identified in the hierarchy under (a), (b) and (c) (for example, non-energy recovery incineration) have equal preference to land burial. Note: All forms of composting come under (b) in the hierarchy.)"

In addition, "this policy, after consideration of economic and technical feasibility, shall guide the solid waste management programs and decisions of the Department and other state agencies and authorities (ECL 27-0106.3)."[1]

Reducing waste requires public education to explain why waste should be reduced and how to reduce waste generation. While a product stewardship law is now in place for discarded

[1] http://www.dec.ny.gov/regulations/8749.html

electronics (E-Waste), citizens will continue to throw these items away if they don't know about the law and how to take advantage of the E-Waste programs.

Reusing materials and recycling those materials that cannot be reused are the next best method. This requires aggressive public education and outreach, well beyond what is currently taking place in Dutchess County, targeting individuals, businesses, government and private institutions and schools (K-12 and colleges).

While waste-to-energy is preferred to landfilling in New York State's waste management hierarchy, note that it is for "waste that cannot be economically and technically reused or recycled". Clearly much of the Dutchess County waste currently being incinerated or landfilled could be reused or recycled. Again, this requires constant public education and outreach.

4.2.2 ZERO WASTE

The term "Zero Waste" has reached mainstream usage and is oft cited as the preferred waste management strategy for municipalities and businesses. The following definition of Zero Waste was adopted by the Planning Group of the Zero Waste International Alliance on November 29, 2004, to assist businesses and communities in developing their own Zero Waste goals:

> "Zero Waste is a goal that is ethical, economical, efficient and visionary, to guide people in changing their lifestyles and practices to emulate sustainable natural cycles, where all discarded materials are designed to become resources for others to use.
>
> "Zero Waste means designing and managing products and processes to systematically avoid and eliminate the volume and toxicity of waste and materials, conserve and recover all resources, and not burn or bury them.
>
> "Implementing Zero Waste will eliminate all discharges to land, water or air that are a threat to planetary, human, animal or plant health."

It is generally considered that over 90 percent division from landfill or incineration is successful achievement of Zero Waste. New York State has declared a reduction goal of from 4.1 pounds per person per day in 2010 to 0.6 pounds per person per day by 2030. This equates to approximately 85 percent reduction. Therefore, the State of New York has a reduction goal approaching Zero Waste. To reach this goal, aggressive public education is needed.

4.3. ESTABLISHING A RECYCLING OFFICE

Ultimately, a public education program will rely on the consistent efforts of dedicated, experienced professionals. While the establishment of any such capability in Dutchess County will take time and money, this section attempts to outline what such a capability might look like, and how much it might be expected to cost for a county the size of Dutchess.

There is no "right answer" to this question. That said, MSW Consultants has worked with numerous municipal and county recycling offices across the nation. Based on this experience, and on other counties inside and outside of New York State, it is reasonable to start with the expectation of a successful and proactive recycling management organization staffed by four to five professional staff, including:

- ***Recycling Coordinator*** – management of the County's overall recycling initiatives and outreach;
- ***Business Recycling Specialist(s)*** – one or two specialists focusing on the reporting and waste/recycling audits that will be required from the business community, both haulers/facilities as well as larger waste generators;
- ***Schools Recycling Specialist*** – if this position does not already exist in the County schools, the position would encompass both curriculum development as well as optimizing the school recycling and solid waste collection programs.
- ***Solid Waste and Recycling Enforcement Officer*** – The County should realize the need for an all-purpose solid waste and recycling enforcement staff. This staff would support all County recycling and solid waste management programs.

In addition to the staff resources, a general rule for a county is to plan on spending roughly $2 per household for the development of public outreach materials. Table 6-3 summarizes the projected costs of establishing a fully functional Dutchess County recycling office. As shown, this system would be expected to cost less than $6 per household annually.

Table 4-1 Dutchess County Recycling Office Annual Operating Cost Estimate

Expense	
Salaries (5 staff)	$275,000
Benefits (30%)	$82,500
Office Expenses	$15,000
Travel/Transportation	$20,000
Professional Services	$50,000
Supplies/Materials	$224,000
Total	**$666,500**
Households	***112,000***
Annual Cost/household	***$5.95***

Options for funding a recycling office will be discussed in a later section of this report. However, other counties and municipalities typically fund this capability through a combination of residential user fees (a flat charge per household to cover the cost of recycling office staff and resources assigned to residential and school-related recycling initiatives), and potentially generation-based user fees and/or recycling administrative fees charges to businesses.

4.4. RECOMMENDATIONS

For any education program to be successful, the public must first be aware of waste management issues, the reasons for managing waste in a different way and how to accomplish the goals of the program. This can be done through a number of methods from low-cost news releases and public service announcements to spending funds to hire a public relations

firm. Once public awareness has increased, more detailed information must be available. As Dutchess County has a mandatory recycling law, the information must include the requirements of the law.

Once individuals have decided that they want to – or must – participate, it is essential to provide well publicized sources of information to overcome difficulties in complying with the requirements. Ongoing public education is needed to maintain the program and encourage more people to participate, as well as to assist those who already participate to embrace higher levels of waste reduction.

One way to maintain high participation is to recognize those individuals and groups who excel. For businesses, educational institutions, not-for-profit organizations, local and state governments (except DEC) and individuals, New York State provides Environmental Excellence Awards.[2] In addition, local recognition for those excelling in waste reduction and recycling will encourage participation.

It is the opinion of MSW Consultants that Dutchess County should, as time and resources permit, fully fund and staff a County Recycling Office under the Solid Waste Commissioner's office. This office would be responsible for public education in support of the County's integrated waste management and recycling goals (as well as other management, administration and enforcement of recycling and waste management programs).

Assuming this office is staffed incrementally, with the Recycling Coordinator as the first employee, the County should initially focus on reaching out to stakeholders (both citizens and businesses) and undertaking a process to develop its recycling goals. Early responsibilities should also include improving the availability of recycling reports from municipalities and businesses in the County. The coordinated public education program that follows should target each sector individually: residents, businesses, institutions, not-for-profit organizations and local government.

[2] http://www.dec.ny.gov/public/945.html

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5. COLLECTION SYSTEM ALTERNATIVES

5.1. INTRODUCTION

Efficient collection of waste and recyclables is a pre-requisite of successful integrated waste management systems in municipalities across the nation. Yet, the LSWMP contains virtually no useful guidance on the real opportunities available to Dutchess County by more actively managing the collection function.

Simply stated, the most significant opportunities to reduce overall waste management costs to waste generators (i.e., residential households and commercial businesses) and increase recycling can be achieved through new strategies and regulations associated with collection. While Dutchess County has a mandatory recycling law, the residential collection is left up to an open market system in much of the County. Exclusive collection, with either municipal crews or through competitively-bid contracts, is used in only the Cities of Poughkeepsie and Beacon, and the Villages of Millerton, Millbrook, Pawling, Rhinebeck, Red Hook, Tivoli and Wappinger Falls. Reportedly, this covers approximately 21% of the population. This means that nearly 80% of the residents contract individually with haulers or use drop-off facilities.

If residential curbside collection of solid waste and recyclables was made mandatory, recycling should increase, as it would be more convenient to dispose of solid waste properly and to recycle. This could be accomplished through one of several options:

- Continue the Status Quo
- Implement Mandatory Curbside Collection Law
- Mandatory Curbside Recycling
- Exclusive Collection
- Multi-municipality Solutions

5.2. CONTINUE THE STATUS QUO

There are currently a number of different methods of collection in Dutchess County, rather than any type of uniform collection. As stated, some municipalities provide public or contracted collection. However, the majority of the County must subscribe for collection with a private hauler. Further complicating matters, problems with the County's hauler licensing system and also because of the disposal market dynamics, one hauler controls a significant share of the market for residential collection.

Table 5-1 addresses some of the advantages and disadvantages of the status quo for collection. It should be noted that, even if the status quo is retained, it is assumed and recommended that the hauler licensing system be overhauled to streamline and improve the licensing process.

Table 5-1 Advantages and Disadvantages of Status Quo Collection

Advantages	Disadvantages
Ease of implementation – no changes to the current system.	Would be difficult to institute any quantity based user fees, such as Pay-As-You-Throw (PAYT)
Dutchess County would not need to expend resources on collection.	Subscription collection systems are the most costly, create the most truck traffic and resultant air emissions and pavement wear and tear.
Waste generators would retain the freedom to select the hauler they prefer, or else to use drop-off centers.	Opportunities to increase recycling are more limited under the status quo system where third parties manage and provide collection.
Existing haulers could continue providing services to their existing customer base – i.e., the only hauler displacement would be through competitive forces.	Prevents the County from capitalizing on one of the most powerful tools in waste management – managing the customer expectations through direct service provision and direct billing.

Table 5-1 addresses some of the advantages and disadvantages of the status quo for collection. It should be noted that, even if the status quo is retained, it is assumed and recommended that the hauler licensing system be overhauled to streamline and improve the licensing process.

5.3. MANDATORY RESIDENTIAL CURBSIDE COLLECTION

While Dutchess County has a mandatory recycling law, the residential collection is left up to an open market system in much of the County. Public collection, with either municipal crews or through competitively-bid contracts, is used in only the Cities of Poughkeepsie and Beacon, and the Villages of Millerton, Millbrook, Pawling, Rhinebeck, Red Hook, Tivoli and Wappingers Falls.

Mandatory curbside collection is the first step to increasing waste management service levels and proactively managing the waste stream. First and foremost, provision of mandatory curbside collection makes it more convenient for generators to dispose of solid waste properly. If curbside recycling is also mandatory, then recycling rates necessarily will increase.

Dutchess County has several options for making curbside collection mandatory. The easiest would be to pass a law requiring mandatory collection, but leaving it to the private sector and the municipalities to offer the services. Even under an open market system, mandatory collection along with vigorous enforcement of hauler reporting requirements would provide much improved accountability and measurement of disposal and recycling. Other options which further increase service levels and improve recycling include municipalizing collection or contracting for collection through a competitive bid process.

Table 5-2 summarizes the advantages and disadvantages of mandatory collection.

Table 5-2 Advantages and Disadvantages of Mandatory Curbside Collection

Advantages	Disadvantages
Higher service levels provided to all waste generators.	Would increase waste management costs for waste generators that do not currently opt to subscribe to curbside collection of wastes.
County could improve and standardize collection practices for the benefit of recycling programs and to improve competition.	Could require cooperation from many stakeholders in the County, and would likely take some time to implement.
Could be tied to more accurate tracking of waste and recycling quantities.	Residents may protest another mandatory law. With appropriate public education, this can be mitigated.
Should result in more accountability of hauler practices.	Would increase truck traffic, air emissions, and pavement wear if the subscription system is retained.
Haulers would likely support as it would increase the customer base requiring collection services.	
Recycling advocates would likely support as this is a step towards more aggressive recycling programs.	

Ultimately, if Dutchess County makes curbside collection mandatory, it should decrease the level of operations at town convenience centers within the County. In conjunction with the issue of mandatory collection, the County should also consider whether exclusive collection can be implemented.

5.4. EXCLUSIVE RESIDENTIAL COLLECTION

Looking at high-functioning waste management and recycling programs in New York and nationally, establishment of exclusive collection systems – that is, systems where a single hauler services 100 percent of the waste generators – is a common denominator.

Exclusive collection can be provided either by the public sector, or under contract with a private hauler, and this is one decision point. However, whether the provider is public or private, exclusive collection programs bestow many benefits to waste generators and rate payers, as show in Table 5-3.

Table 5-3 Advantages and Disadvantages of Exclusive Residential Waste Collection

Advantages	Disadvantages
Most efficient routing, which in turn leads to lowest costs, lowest air emissions, and lowest pavement wear.	Residents will protest having their choice of hauler taken away (although this can be mitigated somewhat with appropriate public education).
Highest hauler accountability	Would increase waste management costs for waste generators that do not currently opt to subscribe to curbside collection of wastes.
Highest degree of service standardization, which in turn leads to more effective public education and recycling program compliance	County will need to retain staff and/or professional expertise to establish and manage an exclusive collection system.
Enables the County (or other public sector manager) to set full cost service rates that are directly tied to the collection, recycling and disposal services being offered.	Only the most competitive hauler will retain collection business in the exclusively served area. Other haulers will be displaced.
Inserts the County as collection system manager/regulator, and allows County to control the disposal and recyclables processing location (either because they are collecting with public crews, or because they contractually obligate the hauler where to deliver).	If the exclusive collection system and resulting contracts are not implemented effectively, it could give an advantage to large haulers over small haulers and/or haulers with transfer stations over haulers with no disposal facility access.
Most accurate tracking of waste and recycling quantities	

It should be mentioned that New York State has previously researched the benefits of exclusive collection. In a 2004 audit and report issued by the State Comptroller's office,[1] it was found that all six municipalities in the Glen Falls area saved an average of $140 per household per year simply by contracting for exclusive collection.

5.5. PAY-AS-YOU-THROW COLLECTION SYSTEMS

The LSWMP correctly identifies Pay-As-You-Throw (PAYT) as a strategy to change the behavior of waste generators and increase recycling by providing a financial incentive to recycle. Figure 5-1 shows how residents might be offered different rates depending on the size of the refuse cart they required, with larger carts costing more compared to smaller carts. Residents therefore have an incentive to recycle, compost, and otherwise reduce wastes in order to secure a lower monthly refuse fee.

[1] "Residential Refuse Collection in Selected Glen Falls Area Local Governments," 205-MR-6, Office of the New York State Comptroller, January 2003 to December 2004.

Figure 5-1 Volume-Based Collection Carts (Pay-As-You-Throw)

It should be noted that the County will have a significantly better ability to influence and structure a functional, effective PAYT system if the County is organizing and managing the collection system directly, rather than leaving this up to the private sector.

However, implementing PAYT requires there to be a direct billing mechanism so that waste generators understand the cost implications of their decision to recycle or not recycle. Nationally, some counties have successfully implemented PAYT systems via a "user fee" mechanism on the annual property tax bill; this mechanism is available for use by Dutchess County. It is equally important to note that such a "user fee," if implemented, would be charging residential households the direct cost of collection and disposal based on the level of collection service they choose. Such a user fee is significantly different from the generation-based user fee that has been previously analyzed and rejected by the County.

The County could encourage municipalities to institute PAYT collection systems, and assist in a county-wide procurement for those areas without municipal collection. This could be through one County-wide collection agreement or through separate agreements for a number of districts. It will also be important to coordinate with municipalities that currently provide curbside collection, and these may be the first locations for implementation of PAYT.

Table 5-4 summarizes the advantages and disadvantages of PAYT.

Table 5-4 Advantages and Disadvantages of PAYT

Advantages	Disadvantages
Proven best practice for maximizing recycling because residents have a direct mechanism influencing their waste generation and recycling behavior.	Requires a direct billing mechanism – either a utility bill or a special assessment on the property tax bill – to create closed loop between service and cost (PAYT pricing could be required as a condition of licensure, placing this burden on private haulers).
Highly appealing to pro-recycling movement.	There will be transition costs associated with cart acquisition and shifting towards appropriate collection vehicles to service the PAYT system.
Establishes platform and expectations for future new collection services that will further reduce waste disposal – such as green waste or organics, scrap metal, etc.	

It should be noted that there are a range of similar systems to PAYT, the most well known of which is the RecycleBank recycling incentive program. It was beyond the scope of this project to itemize the nuances of different programs.

5.6. REGIONALIZATION

Another rule of thumb to reduce collection costs is to spread fixed costs (fleet yard, management and administration) over as many customers as possible. With the prevalence of relatively small municipalities in Dutchess County, there is almost certainly the potential to reduce unit collection costs to the extent two or more contiguous municipalities were to combine their collection systems by standardizing collection service levels and optimizing collection routing absent a consideration for interior municipal boundaries.

While there are many factors that would impact the level of cost savings that might be achievable, Table 5-5 shows the unit contract costs per household for a range of communities in Brevard County, FL. These communities receive substantially the same level of service. This table is intended to reflect the impact on unit cost of increasing the size of the service area.

Table 5-5 Example of Impact on Unit Collection Costs of Size of Service Area

Community	Population	Refuse Service	Recycling Service	Yard Waste	Bulk Waste	Monthly Collection Cost ($/Household)
Brevard Co. Unincorporated	476,230	2x/wk manual	1x/week curbsort	1x/week manual	Included	$9.12
Palm Bay	79,413	2x/wk manual	1x/week single stream	1x/week manual	Included	$11.01
Melbourne	71,382	2x/wk manual	1x/week single stream	1x/week manual	Extra	$8.10
Rockledge	20,170	2x/wk manual	1x/week curbsort	1x/week manual	Extra	$12.00
Cocoa Beach	12,482	2x/wk manual	1x/week curbsort	1x/week manual	Extra	$10.93
West Melbourne	9,824	2x/wk manual	1x/week single stream	1x/week manual	Extra	$13.05
Palm Shores	794	2x/wk manual	1x/week curbsort	1x/week manual	Included	$13.03

Although the data above do not show a perfect correlation between the population of the municipality and the unit price, it supports the general pattern of higher pricing (costs) for smaller geographic areas. All told, the larger municipalities receive similar collection for about a 30 percent lower cost per unit compared to the smaller municipalities. It is likely a similar dynamic would play out in Dutchess County (although the mix of rural and suburban regions will also factor into the impact of regionalization, as rural areas are more costly to service).

5.7. OPPORTUNITIES AND RECOMMENDATIONS

Dutchess County will need to undertake significant preparation before selecting the best collection system strategy. However, the following bullets prioritize the recommended steps to be followed.

- **Step 1: Mandatory Curbside Refuse Collection**: Similar to the mandatory recycling law, this law would require all residents and businesses to have curbside (residential) or on-site (commercial) collection services. Such a system may enable the closure of municipal drop-off centers, as residents would no longer have a need to drop off household trash. Local haulers would likely gain business under this arrangement and could be expected to support such a law, although residents may oppose because of the potential to increase the costs for those who currently use drop-off facilities.

- **Step 2: Mandatory Curbside Recycling**: Dutchess County should also consider making curbside recycling collection mandatory as well, which would further drive up recycling rates. However, if the County pursues this strategy, the resulting law would need to specify certain program requirements such as bundled pricing (i.e., one price for both refuse and recyclables) so that the system operated effectively and customers could compare service levels. Such a law would increase prices that are being paid for residents that currently opt to use drop-off recycling centers and who might argue that they do not need curbside recycling.
- **Step 3: Exclusive Collection**: Exclusive collection is the gold standard for operating efficiency and recycling optimization across the U.S. While it will take time and input from many stakeholders to determine the best way to organize, implement and establish appropriate funding and contracting, over the long term it is recommended that Dutchess County evaluate how exclusive collection might be implemented. In making this recommendation, it must be acknowledged that the political barriers to this solution may be daunting. Local haulers with long-time roots in the County will fear being displaced by larger companies, and past experience suggests that there will be vocal opposition to any attempt to grant exclusive service.
- **Step 3A: Multi-municipality Solutions**: With the prevalence of relatively small incorporated municipalities in Dutchess County, there is almost certainly the potential to reduce unit collection costs to the extent two or more contiguous municipalities were to combine their collection systems by standardizing collection service levels and optimizing collection routing absent a consideration for interior municipal boundaries. If Dutchess County pursues exclusive collection, it is recommended that multi-municipality service territories be considered.

As a final consideration, it should be noted that direct management of collection by a municipality (or County) provides a direct service level to which a full cost fee can be attached. The waste-generation-based "user fees" that were evaluated as a funding mechanism for the RRA would not have been based on a level of directly-provided service, and not surprisingly these user fees were rejected by the County. However, if user fees were established to cover the cost of "once per week PAYT refuse collection, along with weekly recycling and seasonal weekly green waste collection," then the residents being assessed the user fee would know exactly what service they were paying for.

6. RECYCLING SYSTEM ALTERNATIVES

6.1. CURRENT SYSTEM SUMMARY

It is particularly difficult to find and understand defensible data about Dutchess County's current waste generation and recycling rate in the LSWMP. To better assess the current situation, MSW Consultants requested 2008 and 2009 recycling reports from the RRA and used this data to estimate the County's current recycling rate. This is shown in Table 6-1

Table 6-1 Waste Generation and MSW Recycling Rate Implied by DCRRA Recycling Report

Reported Recovered Material, DCRRA Report	Total Tons Reported	Tons from MSW Waste Stream [1]
Commingled & Fiber	30,522	30,522
Scrap Metal & Appliances	23,230	4,404
Concrete, Tires, C&D Debris	92,669	0
Composted Wood, Vegetative and Food Wastes	29,000	29,000
Composted Manure and Subsoil	27,204	0
HHW (includes sludge, electronics)	4,804	718
Other	2,494	1,997
Total Reported Recyclables	**209,923**	**66,640**
Reported Disposal (NY DEC 2008)	224,870	224,870
Implied Total Generation	434,793	291,510
Implied Dutchess County Recycling Rate	**48.3%**	**22.9%**

(1) Excluding agricultural, construction/demolition debris, industrial wastes, sludges, and animal renderings

As shown above, this exercise suggests the following.

- **Waste Generation**: Dutchess County's approximate waste generation is shown to be as high as 291,000 tons, although this is probably an overestimate that includes some out-of-County wastes;
- **Actual MSW Recycling Rate**: The County's recycling rate for municipal solid wastes (i.e., excluding industrial, C&D and agricultural wastes) is estimated to be closer to 23 percent, rather than the 5 percent recycled within the RRA's system alone, and less than the 45 percent that is mentioned on several occasions.

While improvements to reporting are clearly needed, in the opinion of MSW Consultants these figures are reasonable for the purposes of planning the County's system. It should also be noted that the 48.3 percent total recycling rate is an absolute maximum for two reasons. First, no attempt was made to estimate the total generation of non-MSW materials, so the denominator is artificially low. Second, it is likely that some of the reported tons were actually generated outside of Dutchess County and should not be credited to Dutchess County's recycling rate.

6. RECYCLING SYSTEM ALTERNATIVES

Nationally and in New York State, many municipalities have performed waste characterization studies to better understand the incidence of recyclable materials remaining in the disposed waste stream. Table 6-2 shows the EPA and DEC waste generation estimates. While there is some variation in the two estimates, and it is based on more general data, it is reasonable to assume that the percentages in Dutchess County will be within these ranges.

Table 6-2 Waste Generation Comparison

Material	U.S. EPA	NY DEC
Paper	28.2%	33%
Organics (Food & Yard)	27.8%	23%
Plastics	12.3%	14%
Metals	8.6%	7%
Textiles	8.3%	5%
Wood	6.5%	3%
Glass	4.8%	4%
Other	3.5%	11%
Total	**100%**	**100%**

While it is not practical to recycle everything that is potentially recyclable, successes in other counties and municipalities nationally make it clear that there is an opportunity to recycle at least 50% to 60% of the municipal solid waste generated in Dutchess County.

6.2. IMPLEMENTATION OF RRA'S LSWMP

Similar to the options for waste disposal, setting the course of action for recycling requires the County to make a decision about public ownership versus private ownership of recyclables processing infrastructure. The LSWMP advocates (a) development of a new, publicly-owned single stream recycling facility sized to handle all commingled containers and paper collected in Dutchess County, and (b) enactment of flow control to require all recyclables to be delivered to this facility.

This facility is projected to cost $13 million, which equates to annual debt service of approximately $1 million annually. Assuming processing costs of roughly $65 per ton, this facility will cost roughly $3.3 million annually to handle 35,000 tons of waste, as called for in the LSWMP.

This cost will be offset by the value of the recovered recyclables. Table 6-3 estimates the low, medium and high values for materials recovered from single stream recycling facilities.

Table 6-3 Market Value of Single Stream Recyclables

Recovered Material Value	Unit Value	Total Value
Low	$30/ton	1.1 million
Medium	$90/ton	3.2 million
High	$150/ton	5.3 million

While these values are estimates only, they reflect the volatility in recovered material prices. In good markets, MRFs stand to cover their debt service and processing costs with significant surplus. However, in down markets, MRFs may not cover their costs. Further, the size and sophistication of an organization's marketing capability influences the availability of steady, optimized pricing.

Because of these factors, MSW Consultants recommends that Dutchess County engage private processors to process County recyclables. Recyclables processing agreements typically require a vendor to accept all recyclables controlled by the municipality for a multiple-year time period. Recent experience with similar procurements in the Northeast region suggest that it is reasonable to expect that recyclables would be delivered with a zero floor price, and more likely there would be a net revenue returned to the County based on the value of the delivered recyclables. Further, a well-structured processing agreement will include a revenue share that increases the rebate paid to the municipality delivering the recyclables.

In the LSWMP plan, Dutchess County would benefit if markets stay high, but would stand to incur additional costs if markets dive (as they did during 2008-09). This assumes that a public MRF with relatively low recovery volumes would be able to secure the best pricing for its recovered material. In short, the publicly owned MRF incurs far greater volatility risk compared to procuring processing capacity from private processors.

6.3. GENERAL RECYCLING OPPORTUNITIES

There is no "magic bullet" to reduce the waste generated and to recycle the majority of the rest. It takes a many-pronged approach with a great deal of cooperation among the public sector, the private sector, individuals and various institutions.

Other governments have seen a significant increase in recycling rates through the aggressive promotion and enforcement of residential, commercial, industrial and institutional recycling, including food waste. The County, along with the municipalities in the Planning Unit, must be willing to make some choices that may be difficult.

An example of very aggressive recycling is the City and County of San Francisco program which, as of August 27, 2010, has reached 77% landfill diversion, beating their goal of 75% by 2010, and claiming the highest recycling rate of any city in the US. At Mayor Gavin Newsom's news conference, it was stated that San Francisco has now set a goal of zero waste by 2020, which would mean a 90% recycling and composting rate; although it will require "work on the state and federal level to require that packaging and products are manufactured with minimal waste and maximum recyclability".[1]

[1] Press release: http://www.sfenvironment.org/our_sfenvironment/news.html?topic=details&ni=644

While San Francisco's recycling rate is a good one to emulate, it is important to know what steps they have taken to reach this level.[2] In 1996, when the recycling rate was estimated to be 29%, the "Sustainability Plan for San Francisco" was adopted.

For the residential sector, San Francisco provides weekly, Pay-As-You-Throw (PAYT) curbside collection of refuse, single stream recyclables, and organics (yard wastes, food wastes, and compostable papers). This collection service makes separation of recycling and organics simple for residents. San Francisco has also passed a number of Environmental Ordinances, including:

- Mandatory Recycling and Composting Ordinance, requiring separation of all recyclables and compostables and providing enforcement.
- Construction and Demolition (C&D) ordinances requiring recovery of C&D material and requiring a minimum of 65% division from landfill of C&D Debris from full demolition of a building.
- 2008 Green Building Ordinance, establishing LEED™ Silver level as the standard for all City building projects.
- Plastic Bag Reduction Ordinance, requiring mandatory use of recyclable and compostable bags at all retail stores.
- Food Service Waste Reduction Ordinance, banning the use of polystyrene from food service packaging.
- Environmental Purchasing Policies.
- Green Business program.

On December 2, 2010, San Francisco approved a bio-diesel production plant planned to produce 10 million gallons of biofuel annually from leftover cooking oil.

As can be seen from this brief description, there must be political will to establish programs and regulations in order to approach San Francisco's level of recycling. In addition, San Francisco has a strong education and community involvement program, as without community understanding and support these programs would not be successful.

Below are some of the options that can work together to bring Dutchess County toward reaching State and local goals.

6.3.1 INCREASE EDUCATION ON RECYCLING AND WASTE REDUCTION

Currently a Recycling Coordinator is employed by the DCRRA. This individual apparently does not have the time or the funds to provide a full-scale public education program for residents, businesses, schools and other institutions in the County.

It is well known that without adequate public education, waste reduction and recycling programs will achieve only minimal success. Important public education initiatives, as well as a suggested Recycling Office staffing plan, are provided in the Public Education section of this report. Details on public outreach are not repeated here, but Table 6-4 summarizes the advantages and disadvantages of public outreach for improving recycling.

[2] http://sfgov.org/site/frame.asp?u=http://www.sfenvironment.org

Table 6-4 Advantages and Disadvantages of Increasing Public Education

Advantages	Disadvantages
Many residents, business owners and business managers will do the right thing if they know what to do and how to do it.	There will be a cost to increase public education through appropriate staffing.
Reduction and recycling will increase significantly	It is not always possible to directly measure the effectiveness of public outreach initiatives.
Programs in the schools will educate future generations to manage their waste responsibly, which will save money in the long term.	
Investing in education will assist in meeting the solid waste planning requirements of the DEC.	

6.3.2 Coordination with Municipalities on Public Education

Coordination with municipalities to understand and publicize municipal recycling programs would be beneficial to the citizens and would help to increase waste reduction and recycling across the entire county. By providing one message, it would lessen confusion that is often caused by different messages coming from different public entities. This could also foster opportunities for regionalization of recycling services (as well as collection).

Table 6-5 Advantages and Disadvantages of Coordinated Public Education

Advantages	Disadvantages
By providing a clear, unified message, waste reduction and recycling can be optimized.	There will be a need for a liaison to coordinate among all of the public officials and staff in order for this to succeed.
This will lessen confusion that is caused by different messages being broadcast by different public entities.	
This cooperative effort could lead to regionalization of recycling and collection services.	
Economies of scale could reduce cost.	

6.3.3 Aggressive Enforcement of Mandatory Recycling and Reporting Laws

Local Law No. 4 of 1990 requires every person in the county to separate recyclables, designated by the Solid Waste Commissioner, to be collected and recycled. The law further says in Section 7 (f), "All solid waste management/resource recovery facilities, whether municipal or private, shall provide adequate facilities for the acceptance of recyclable materials and further, no such facility or collector shall accept solid waste unless the materials designated by the Commissioner as recyclable materials are separated therefrom."

Once the position of Solid Waste Commissioner is filled, the materials to be separated for recycled should be designated, and the County should aggressively enforce the recycling laws. The reporting laws that are already in place should also be enforced, and, if necessary, additional reporting requirements should be added for licensed haulers, solid waste and recycling facilities, and large businesses to track generation and diversion data needed by planners. Without knowing the County's actual generation and recycling rates, it will be impossible to set realistic goals or to measure actual progress.

The County could also investigate potential partnerships with other established inspection programs, such as the County Health Department, who already inspect major waste generators. Rather than duplicating efforts, inspectors could work together and cooperate by sharing their findings.

Table 6-6 Advantages and Disadvantages of Increased Enforcement

Advantages	Disadvantages
Local Law No. 4 of 1990 will be followed. If it were followed as written, all designated items would be recycled, giving Dutchess County a much higher recycling rate.	There may be pressure on legislators and administrators to not enforce these laws.
The County will determine actual generation and recycling rates, and will be able to set realistic goals and to measure actual progress.	This will require a commitment to dedicate staff to education and enforcement, which requires allocation of funding.
Some residents and business owners/managers will do the right thing only if faced with penalties for not following the law.	
If education is provided first, many citizens who are following the laws will support enforcement of those who do not follow the laws.	

6.3.4 DEVELOPMENT OF A COMPREHENSIVE WEBSITE

An important element of increased public education is the development of a comprehensive website to inform residents, businesses, and schools about recycling and diversion programs and facilities available for their use. The website needs to be easy to navigate and it must be easy for the user to find needed information (user-friendly). Once the website is developed, it must be maintained and the information kept up to date. This website should include a location map of all recycling facilities, as well as the hours of operation and listings of what can be recycled at each facility.

Table 6-7 Advantages and Disadvantages of Improved Website

Advantages	Disadvantages
Citizens will be able to access relevant information 24/7. If they can easily find information on the right thing to do, they are much more likely to manage their waste responsibly.	There is a cost to developing and maintaining a comprehensive, useful website.
Up to date information on collection events and new recycling opportunities can be added to the website relatively quickly	Not everyone has access to the Internet, and it will be necessary to keep that in mind when developing the overall public education program.
Information for schools can be on a separate web page and can be updated as needed, providing a valuable resource to teachers and students.	

6.3.5 REGIONALIZATION OF RECYCLING SERVICES

While it is important to insure that everyone is fully engaged in recycling programs, without a strong recycling market the program cannot succeed. Dutchess County is fortunate to have a number of markets nearby that are used by the private recyclers. By regionalizing recycling services, full advantage can be taken of these markets, which translates to more revenue to run the recycling programs. Economies of scale will also help to develop new markets for items not yet being collected for recycling. This means communicating regularly with neighboring planning units as well as with jurisdictions within Dutchess County.

Table 6-8 Advantages and Disadvantages of Regionalized Recycling Services

Advantages	Disadvantages
Economies of scale could reduce cost.	Regionalization can be difficult politically
Higher volume of recyclables would mean better markets and could mean more revenue.	
Would reduce need for expansion or construction of duplicate facilities in the region.	

6.3.6 COORDINATION ON PROCUREMENT TERMS AND STRATEGIES FOR RECYCLING SERVICES

Identification of procurement terms and strategies for use by municipalities, businesses and schools seeking recycling collection or recovery services can be beneficial when going out to bid for these services. There is a benefit to standardizing procurement terms and strategies, even if the services are not fully regionalized. This can also lay the groundwork for possible regionalization in the future. Neighboring planning units should also be brought into this discussion.

Table 6-9 Advantages and Disadvantages of Coordinated Recycling Services Procurement

Advantages	Disadvantages
If procurement is done cooperatively, economies of scale will mean better prices, and more choices.	While regional procurement has many benefits, it can be difficult politically
Even if the different entities do their own, individual procurement, identical terms and strategies can still give some of the benefits of economies of scale.	
This should level the playing field for recycling collection and processing.	

6.3.7 COORDINATED MARKET DEVELOPMENT

Targeted market development, in coordination with municipalities and with private sector organizations engaged in recycling, can lead to new markets for recyclables that currently are difficult or impossible to market. In addition, this can lead to improved markets for recyclables beyond what is accomplished by economies of scale alone. Again, neighboring planning units should also be brought into this discussion.

Table 6-10 Advantages and Disadvantages of Coordinated Market Development

Advantages	Disadvantages
By coordinating market development, more items will become recyclable due to the larger quantities available.	There needs to be political cooperation, as well as public/private partnerships for this to be successful.
Cooperation and economies of scale should mean more recycling revenue for the public sector.	
Through public/private partnerships, the private sector can be assured of an appropriate sized recycling stream.	

6.3.8 STAKEHOLDER MEETINGS

It is important to establish and encourage participation in recycling stakeholder meetings made up of citizens, businesses, and solid waste/recycling industry representatives. Local Law 4-1990, as amended, established a Recyclables Oversight Committee to be appointed by the Legislature and the County Executive "for the purpose of advising the Commissioner of Solid Waste Management regarding adding or removing materials from the definition of recyclable materials; establishing procedures and operating standards for municipal recyclable material collection points; monitoring the progress toward meeting the percent reduction goals established in the 1988 State Law; and such other matters as the commissioner or committee may suggest."[3]

[3] Local Law No. 4 of 1990 as amended by Local Law No. 9 of 1990 and Local Law No. 2 of 1991

The first step is to establish an active Recyclables Oversight Committee, as currently required by law. Then, it would be beneficial to establish stakeholder meetings for specific areas of the recycling program, such as Public Education, with the relevant stakeholders who are interested in that aspect.

In addition, regular public forums and workshops can be held to educate the public on new and planned initiatives. Local media should be enlisted to assist with this by reporting on these new initiatives and the forums and workshops, and by providing Public Service Announcements.

Table 6-11 Advantages and Disadvantages of Stakeholder Meetings

Advantages	Disadvantages
Establishing an active Recyclables Oversight Committee would mean the County was following the requirements of local laws.	It usually takes longer for a committee to come to agreement and make a decision. This usually leads to better decisions, but can occasionally slow down a process.
The advice of stakeholders is very valuable in making decisions that benefit the entire community.	
Stakeholder meetings will be one way to gauge, from their feedback, whether or not the Public Education program is on target and accomplishing the desired goals.	

6.3.9 RECOMMENDATIONS – GENERAL RECYCLING

- Establish a proactive recycling management organization staffed by four to five professional staff;
- Begin with aggressive education on recycling and reducing waste, while also educating citizens on Local Law No. 4 of 1990, as amended, and give notice that enforcement and penalties will follow;
- Coordinate with municipalities to understand and publicize municipal recycling programs;
- After one to two years, begin aggressively enforcing Local Law No. 4 of 1990, as amended. Begin with one warning to a violator. Penalties should begin with the second violation;
- Develop an informative and user-friendly website on recycling and reduction of waste, as well as other aspects of integrated solid waste management;
- Consider regionalization of recycling services;
- Identify and coordinate procurement terms and strategies for use by municipalities, businesses and schools seeking recycling collection or recovery services;
- Target market development, in coordination with municipalities and with private sector organizations engaged in recycling; and

- Establish and encourage participation in recycling stakeholder meetings made up of citizens, businesses, and solid waste/recycling industry representatives, beginning with appointment of members to the Recyclables Oversight Committee, as mandated in Local Law 4-1990, as amended.

The LSWMP listed some additional recycling initiatives that are worth considering in the future, as part of the Office of Recycling responsibilities.

- Developing a new service for shredding of confidential records
- Adding new recyclables through special programs such as the recovery of hard cover books
- Exploring partnerships with private sector groups such as the chambers of commerce for both regular recycling and special programs such as E-Waste collections

6.4. RESIDENTIAL RECYCLING OPTIONS

6.4.1 ESTABLISH EXCLUSIVE, MANDATORY RESIDENTIAL CURBSIDE RECYCLING COLLECTION

In Dutchess County, there are significant opportunities to improve residential recycling programs. These strategies are tied to the County's future direction on managing collection systems. However, assuming the County supports regulated collection – which will reduce environmental impacts, reduce collection costs, and increase collection efficiency – then the following are options for residential recycling. While some of these options could be pursued without the County (or the municipalities) taking a more active role in collection, prospects for success increase if the County is managing collection through exclusive contracts.

Table 6-12 Advantages and Disadvantages of Exclusive, Mandatory Residential Recycling Collection

Advantages	Disadvantages
Most efficient routing, which in turn leads to lowest costs, lowest air emissions, and lowest pavement wear.	Residents will protest having their choice of hauler taken away (although this can be mitigated somewhat with appropriate public education).
Highest hauler accountability	Would increase recycling costs for households that do not currently opt to subscribe to curbside collection of recyclables.
Highest degree of service standardization, which in turn leads to more effective public education and recycling program compliance	County will need to retain staff and/or professional expertise to establish and manage an exclusive collection system.
Enables the County (or other public sector manager) to set full cost service rates that are directly tied to the collection, recycling and disposal services being offered.	Assuming curbside recycling collection is implemented in conjunction with refuse collection, only the most competitive hauler will retain collection business in the exclusively served area. Other haulers will be displaced.
Inserts the County as collection system manager/regulator, and allows County to control the recyclables processing location (either because they are collecting with public crews, or because they contractually obligate the hauler where to deliver).	
Most accurate tracking of recycling quantities	

6.4.2 MOVE TO SINGLE STREAM RECYCLING

While it is important to use best practices and provide serious public education, single stream recycling can increase recycling rates significantly. There are several reasons single stream recycling increases recycling rates:

- It simplifies recycling for residential households because separation of paper and containers is no longer required. This will increase participation rates and therefore material quantities.
- Single stream programs are typically accompanied by the distribution of larger carts – from 64 to even 96 gallons, compared to 18 or 20 gallon bins that are used in dual stream systems – so households seldom exceed recycling capacity. This means all recyclables are captured in the recycling program.
- With additional capacity to recycle, it is possible to expand the list of targeted recyclables beyond traditional limits in dual stream systems.

It is, however, important to ensure that the recyclables are free of contamination so that material is not being landfilled or incinerated by the end markets due to unusable items being mixed with the specific commodity. An example is broken glass being mixed in with old newspapers.

Table 6-13 summarizes the advantages and disadvantages.

Table 6-13 Advantages and Disadvantages of Single Stream Recycling

Advantages	Disadvantages
Single stream recycling has been shown to increase recycling rates.	Requires serious public education to prevent non-recyclables from being put in the recycling cart or bin.
This method is easier for residents than separating recyclable items by commodity, and therefore more residents will recycle.	Unless best practices are used in the collection and processing, contaminated material will be sent to the end user, resulting in lower revenue and a higher percentage of collected recyclables being landfilled or incinerated.
Single stream systems can be transitioned to be collected by automated collection trucks and standardized carts, which increases collection efficiency.	Requires higher cost processing because additional separation is needed compared to dual stream programs.
Single stream program are well suited to be implemented with pay-as-you-throw (PAYT) pricing, which further increases recycling rates.	

6.4.3 RECYCLING INCENTIVES, SUCH AS RECYCLE BANK

Recycling incentive programs provide rewards to individual waste generators for recycling. The most well known incentive program provider is Recycle Bank. The Recycle Bank program distributes carts or bins with embedded radio frequency identification (RFID) tags to residential households. Collection trucks have an onboard mounted load cell (scale) that can weigh individual carts. The RFID tag is recorded, so each household that recycles is credited with the weight of their recycled material. Recycle Bank offers reward coupons from its business partners – which span from national retailers to local shop owners – to recyclers through the Recycle Bank website. In short, the more a household recycles, the more rewards it can earn.

However, the RFID-embedded containers, the onboard weighing and recording equipment, and the back-office data management functions make this a costly system to implement.

Another incentive program that has been used by some local governments is to randomly inspect recycling containers and give a prize of some type to the "recycler of the week".

Table 6-14 Advantages and Disadvantages of Recycling Incentive Programs

Advantages	Disadvantages
In communities where recycling participation is low or non-existent, incentive programs have been shown to increase recycling rates.	There is usually a higher cost to local government for providing the Recycle Bank program compared to PAYT programs.
The high cost of the program may be offset in regions with very high disposal costs.	Residents may put trash in the recycling cart or bin to appear to be recycling more, requiring inspection and enforcement.
	It is unclear how much of the increase is due to the incentive program, and how much is due to switching to a single stream system.
	Giving prizes to the "recycler of the week", through random inspections, has not been shown to significantly increase recycling.

Although not as formal, other forms of recognition and awards can also be employed to encourage recycling. In coordination with municipalities, home owner associations and local newspapers and other media, "super recyclers" can be recognized. Public Service Announcements (PSAs) in local media and articles in homeowner association newsletters can be used to announce upcoming searches for the best recycler in each area; signs can be made to place in yards of those who win the title, certificates can be made in-house, and PSAs and articles can be used to announce the winners.

6.4.4 PAY-AS-YOU-THROW (PAYT)

The LSWMP correctly identifies Pay-As-You-Throw (PAYT) as a strategy to change the behavior of waste generators and increase recycling by providing a financial incentive to recycle. In a PAYT system, waste generators are charged more for disposing of higher quantities of waste, but are allowed to recycle (and/or set out green waste) for free. As described in the Collection chapter, the most successful PAYT program offers three or four different refuse container sizes – 96 gallon, 65 gallon, 48 gallon, and 32 gallon, for example – with varying rates. Figure 6-1 shows three cart sizes.

Figure 6-1 3-Cart PAYT System

It should be noted that the County will have a significantly better ability to influence and structure a functional, effective PAYT system if the County is organizing and managing the collection system directly, rather than leaving this up to the private sector.

However, implementing PAYT requires there to be a direct billing mechanism so that waste generators understand the cost implications of their decision to recycle or not recycle. Nationally, some counties have successfully implemented PAYT systems via a "user fee" mechanism on the annual property tax bill; this mechanism is available for use by Dutchess County. It is equally important to note that such a "user fee," if implemented, would be charging residential households the direct cost of collection and disposal based on the level of collection service they choose. Such a user fee is significantly different from the generation-based user fee that has been previously analyzed and rejected by the County.

The County could encourage municipalities to institute PAYT collection systems, and assist in a county-wide procurement for those areas without municipal collection. This could be through one County-wide collection agreement or through separate agreements for a number of districts. It will also be important to coordinate with municipalities that currently provide curbside collection, and these may be the first locations for implementation of PAYT.

Table 6-15 summarizes the advantages and disadvantages of PAYT.

Table 6-15 Advantages and Disadvantages of PAYT

Advantages	Disadvantages
Proven best practice for maximizing recycling because residents have a direct mechanism influencing their waste generation and recycling behavior.	Requires a direct billing mechanism – either a utility bill or a special assessment on the property tax bill – to create closed loop between service and cost (PAYT pricing could be required as a condition of licensure, placing this burden on private haulers).
Highly appealing to pro-recycling movement.	There will be transition costs associated with cart acquisition and shifting towards appropriate collection vehicles to service the PAYT system.
Establishes platform and expectations for future new collection services that will further reduce waste disposal – such as green waste or organics, scrap metal, etc.	

6.4.5 RECOMMENDATIONS – RESIDENTIAL RECYCLING

- Take steps to implement mandatory, exclusive curbside recycling collection services wherever subscription services currently exist;
- Move to single stream recycling, once infrastructure is in place, provided best practices are followed;
- Provide significant public education on single stream recycling to reduce contamination issues;
- Recognition of "super recyclers" through PSAs in local media and articles in homeowner association newsletters to announce upcoming searches for the best recycler in each area and to announce the winners (yard signs and certificates can be given to those who win); and
- Implement PAYT collection systems, whether by requiring such a rate structure as a condition of licensure, or else through a direct billing capability to be developed by the County in conjunction with managing contracts for collection.

6.5. COMMERCIAL/INSTITUTIONAL RECYCLING OPTIONS

According to the US EPA, the Commercial/Institutional sector in the United States, not including apartment houses, generates approximately 35 to 45 percent of total municipal solid waste.[4] It is, therefore, very important that investment be made in programs to increase commercial and institutional recycling. Below are some options to increase recycling in this sector.

[4] Municipal Solid Waste Generation, Recycling, and Disposal in the United States: Facts and Figures for 2009, http://www.epa.gov/epawaste/nonhaz/municipal/pubs/msw2009-fs.pdf

6.5.1 PROVIDE WASTE AUDITS TO BUSINESSES AND INSTITUTIONS

Many governments around the country provide waste audits to businesses and institutions, including schools. This entails a trained individual arranging visits with businesses and institutions to audit the waste generated. The next step is to help the business or institution to develop a plan to first reduce the waste they produce and then to recycle a maximum amount of the materials that cannot be reduced. The trained individuals can be County staff, but engineering or environmental students can be used in an un-paid (or paid) internship program to supplement staff.

Table 6-16 Advantages and Disadvantages of Providing Waste Audits

Advantages	Disadvantages
By assisting the commercial sector to learn what is in their waste stream and how to reduce and recycle the discards, recycling rates will increase significantly.	Requires dedicated funding and staff, although interns can be trained and used to supplement staff.
When presented as a service to businesses and institutions, this is usually seen as a benefit provided by the local government.	
If fully utilized, this program can significantly reduce the need for enforcement.	

6.5.2 TECHNICAL ASSISTANCE AND MONITORING

Provision of waste and recycling technical assistance and monitoring for Dutchess County businesses and institutions would be the next step after providing waste audits and initial planning assistance. Workshops geared to various sectors, such as small businesses, large businesses, public agencies, apartment managers, and schools, would provide assistance in a cost effective way. Then, those entities who need additional technical assistance could receive it on an individual basis. Monitoring is necessary as the waste reduction and recycling are gearing up, to keep them moving in the right direction and to measure the success of these efforts.

This technical assistance, including workshops, can facilitate the exchange of information and the use of waste from one business as a resource for another business in the County. As an example, the Waste to Profit Network was begun in Chicago and is now being replicated in other parts of Illinois. The purpose is to "turn costly waste streams into productive revenue streams while reducing the impact on the environment."[5] A number of success stories are on the web site. One is "cullet to countertops",[6] where broken glass (cullet) from tempered glass appliance doors was unable to be recycled in the regular glass recycling process, but it became a useful feedstock for a nearby company making high end recycled glass countertops.

[5] http://www.imec.org/imec.nsf/All/Waste_to_Profit?OpenDocument

[6] http://www.imec.org/imec.nsf/All/Waste_to_Profit_Success_Cullet_to_Countertops?OpenDocument

Table 6-17 Advantages and Disadvantages of Technical Assistance and Monitoring

Advantages	Disadvantages
This will build on the waste audit program and assure that the reduction and recycling rates continue to increase.	This requires a commitment of staff and funding.
When presented as a service to businesses and institutions, this is usually seen as a benefit provided by the government.	
By providing workshops geared to various sectors, those participating will be encouraged to share their successful ideas with each other.	
Through this exchange of ideas, it is possible that one business may discover that a resource they could use is currently waste to another business. By exchanging resources, both businesses could save both money and new resources.	
If fully utilized, this program can significantly reduce the need for enforcement.	

6.5.3 RECYCLING RECOGNITION AND AWARDS

If waste audits and waste and recycling technical assistance and monitoring are implemented, a natural progression would be to provide recognition to those businesses and institutions that are excelling in waste reduction and recycling. This can be done in a variety of ways, including stickers to go in windows of businesses that reach a certain recycling and reduction goal, awards presented in front of the Legislature, and recognition in local newspapers.

Table 6-18 Advantages and Disadvantages of Recycling Recognition and Awards

Advantages	Disadvantages
Providing recognition for waste reduction and recycling encourages competition among businesses and institutions to be the best, and therefore increases the recycling rate.	This requires a commitment of staff and funding, including cost of the recognition (stickers, plaques, newspaper ads, etc.).
While there will always be a need for enforcement, recognition for superior achievement generally increases compliance more than enforcement alone.	

6.5.4 RECOMMENDATIONS – COMMERCIAL RECYCLING

- Provide waste audits to businesses and institutions, including schools to assist them to know what is in their waste stream and how to reduce and recycle the discarded materials;
- Provide waste and recycling technical assistance and monitoring for Dutchess County businesses and institutions, after providing waste audits and initial planning assistance, including workshops geared to various sectors; and
- Provide recognition to those businesses and institutions that are excelling in waste reduction and recycling, through such methods as stickers to go in windows of businesses that reach a certain recycling and reduction goal, awards presented in front of the Legislature, and recognition in local newspapers.

6.6. SCHOOL RECYCLING OPTIONS

6.6.1 RECYCLING COORDINATOR PRESENTATIONS

The Recycling Coordinator should make regular presentations on reducing, recycling and proper disposal of solid waste to classes and other school groups. By recruiting and training a group of volunteers, the Recycling Coordinator will be able to provide more school programs. College environmental groups would be an excellent source of volunteers.

Table 6-19 Advantages and Disadvantages of Providing Waste Audits

Advantages	Disadvantages
By providing information on reducing and recycling material currently discarded, this will assist schools in increasing their recycling rates and help the students learn to responsibly manage solid waste.	Requires dedicated funding and staff, although volunteers can be trained and used to supplement staff.
When presented as a service to schools, this is seen as a benefit provided by the government.	
The need for enforcement of school recycling should be greatly reduced.	

6.6.2 RECYCLING CURRICULUM

Dutchess County could develop a recycling curriculum for the County's K-12 school system, in cooperation with the schools. The material should be written in such a way that the units could be integrated into the regular curriculum, rather than as stand-alone units. New York State has available resources, such as: the K-12 curriculum, "Trash Goes to School"[7], produced in 1991 by the Cornell Waste Management Institute. While some of this information needs to be updated, it would be a good resource for developing a solid waste curriculum. More recent information can be found at "NYC: recycle more, waste less! Info

[7] http://cwmi.css.cornell.edu/TrashGoesToSchool/TrashIntro.html

for K-12 Schools" [8]. While specifically for New York City, this has general K-12 resources as well. In addition, the DEC provides education resources on the DEC website.[9]

The US EPA also has resources for teachers, including the following web sites: "The Quest for Less: Activities and Resources for Teaching K-8"[10], "Wastes - Educational Materials" (for teachers)[11], and "Wastes - Educational Materials" (home page/index)[12].

Table 6-20 Advantages and Disadvantages of Development of K-12 Curriculum

Advantages	Disadvantages
Teaching reduction and recycling of solid waste to K-12 students means that the parents are also educated in these areas.	This requires a commitment of staff and funding.
More importantly, these programs educate the next generation to handle their solid waste in a responsible and environmentally sustainable way.	It is important to provide resources that can be integrated into and will enhance the regular curriculum. If this is not done, some teachers will not have time to teach the added material.
Through this cooperation with the schools, it will be easier to assist the schools in developing their recycling programs.	

6.6.3 RECYCLING CONTESTS AND AWARDS

In addition to schools being recognized through the recognition program for businesses and institutions, there are a number of contests that can be held to engage the students. These include an annual art contest for middle school, high school and college students for art made primarily from recycled materials. Poster contests can be held for K-12 students in the County. In addition, an annual New York Recycles! Poster Contest is held for K-12 public and private school students and youth groups, which is sponsored by DEC and the New York Recycles! Steering Committee.[13] Contests can also be held for school activities, such as recycling the most newspapers and office paper, as well as for replacing lunch ware with reusable or compostable ware, and composting and gardening.

[8] http://www.nyc.gov/html/nycwasteless/html/stuff/infofor_schools.shtml

[9] http://www.dec.ny.gov/26.html

[10] http://www.epa.gov/wastes/education/quest/pdfs/qfl_complete.pdf

[11] http://www.epa.gov/wastes/education/teachers.htm

[12] http://www.epa.gov/wastes/education/index.htm

[13] http://www.dec.ny.gov/education/1896.html

Table 6-21 Advantages and Disadvantages of Recycling Contests and Awards

Advantages	Disadvantages
These activities engage students and help them to learn the importance of environmental activities, including recycling.	This requires a commitment of staff and funding, including cost of the recognition and awards.
When students are engaged, it helps in engaging their parents in responsible handling of solid waste.	

6.6.4 "GREEN DIRECTIONS ECO TRAINING"

Dutchess County could opt to sponsor "Green Directions Eco Training" through the Hudson Valley Technology Development Center (HVTDC)[14] to bring a certified green business consultant into the schools. According to an article in the Poughkeepsie Journal on November 21, 2010, HVTDC has begun a program to go into schools and teach students environmental awareness. There is a cost for this program, but it apparently is negotiable.

6.6.5 PROVIDE WASTE REDUCTION AND RECYCLING LINKS ON THE NEWLY DESIGNED WEB SITE

Provide links on the newly designed web site to information on waste reduction and recycling for schools, including:

- Green Schools-Recycling and More, http://www.dec.ny.gov/chemical/8803.html
- *Conservationist for Kids*, magazine distributed to all fourth grade classes in New York State free-of-charge three times a year, http://www.dec.ny.gov/education/40248.html
- The "Green Schools" Challenge, sponsored by DEC. The program recognizes schools "working towards responsible solid waste management by developing waste reduction, reuse, recycling, composting and/or buy recycled products and packaging programs", http://www.dec.ny.gov/chemical/43349.html

6.6.6 RECOMMENDATIONS – SCHOOL RECYCLING

- Provide regular presentations by the Recycling Coordinator on reducing, recycling and proper disposal of solid waste to classes and other school groups;
- Train and use volunteers to assist the Recycling Coordinator with school presentations;
- Develop a recycling curriculum for the County's K-12 school system, in cooperation with the school system; and
- Hold recycling contests, with awards, for such events as poster contests, recycled art competitions, and contests for, as examples, the class or school that collects the most recycling or has the best organics composting and gardening program.

[14] http://hvtdc.org/index.php

6.7. OTHER WASTES

6.7.1 CONTINUED OUTREACH AND SUPPORT OF HHW COLLECTION EVENTS

Public outreach and education and County support of ongoing HHW collection events should continue. Currently, according to the DCRRA, eight (8) collection events are held annually at locations throughout the County for household hazardous waste (HHW). Items collected include paints, solvents, pesticides, herbicides, pool chemicals, photographic chemicals, batteries, mercury switches, florescent bulbs, and electronic items. This reduces the input, and therefore emissions, of heavy metals such as mercury and lead from the RRF. The reported cost of this program is $128,750 per year.

The County could also consider developing a program for Conditionally Exempt Small Quantity Generators of hazardous waste. Residential HHW collection events are provided free of charge by most jurisdictions in order to keep a maximum amount of HHW out of the disposal stream. Conditionally Exempt Small Quantity Generators, on the other hand, are usually charged a fee to cover the cost of that program.

Table 6-22 Advantages and Disadvantages of HHW Collection

Advantages	Disadvantages
Keeping these items out of the waste stream reduces the amount of heavy metals going to the RRF or to a landfill.	The reported cost of this program is $128,750 per year.
If some type of user fee were enacted in Dutchess County, the small cost of this program when shared by all residents would likely be considered a good investment by the citizens.	
If a Conditionally Exempt Small Quantity Generator program were developed, it could pay for itself and would reduce the amount of heavy metals going into the disposal stream even more.	

It should be noted that the current HHW program, which benefits residential households, is a candidate to be funded by a flat charge per household on a user fee.

6.7.2 CONTINUED OUTREACH AND SUPPORT OF PHARMACEUTICAL COLLECTION

The RRA currently provides a program to accept outdated and discarded pharmaceuticals. This service is for residents of Dutchess, Columbia, Delaware, Rockland, and Ulster Counties. This is an important program, which is being implemented in many areas across the country. These programs keep outdated and discarded medicine out of the waste stream and the wastewater stream. In addition, it keeps these medicines out of the hands of children and other individuals for whom it was not prescribed. This program should be continued.

Table 6-23 Advantages and Disadvantages of Pharmaceutical Collection

Advantages	Disadvantages
These outdated and discarded pharmaceuticals are kept out of the waste stream and the wastewater stream.	This requires a commitment of staff and funding.
These medicines are kept out of the hands of children and other individuals for whom it was not prescribed	

It should be noted that used pharmaceutical collection, which benefits residential households, is a candidate to be funded by a flat charge per household on a user fee.

6.7.3 CONTINUED OUTREACH AND SUPPORT OF E-WASTE RECYCLING LAW

Product stewardship responsibility for electronic waste was signed into law, which took effect January 1, 2011, with manufacturers required to provide programs for collection and recycling of covered electronics.[15] It is important that Dutchess County be sure that the law is followed by the manufacturers and that the citizens are aware of the law and how to properly dispose of their electronic waste.

6.7.4 OTHER PRODUCT STEWARDSHIP INITIATIVES

The New York Product Stewardship Council is working to standardize the approach to product waste in New York State, with the ultimate objective of adoption of the product stewardship approach in management of the state's solid waste. The council is addressing disposal of rechargeable batteries and mercury-containing thermostats, and will be addressing other product and packaging wastes in the future. As the work of the NY Product Stewardship Council will be important in the future direction of waste reduction and recycling, it is important that Dutchess County stay abreast of and involved in this effort.

6.7.5 RECOMMENDATIONS – OTHER WASTES

- Continue outreach and education and County support of ongoing HHW collection events;
- Continue program to accept outdated and discarded pharmaceuticals, and continue to serve residents of Dutchess, Columbia, Delaware, Rockland, and Ulster Counties;
- Continue outreach and support of New York State E-Waste Recycling Law; and
- Stay abreast of and involved in this effort of the New York Product Stewardship Council to standardize the approach to product waste in New York State.

[15] 2010 Electronic Equipment Recycling and Reuse Act, http://www.dec.ny.gov/chemical/8788.html

6.8. COUNTY/LOCAL GOVERNMENT RECYCLING

It is important that County government lead the way in reducing and recycling waste. According to the LSWMP, Duchess County Government has taken an impressive number of steps to increase its reduction, recycling and recovery efforts for all County buildings and parks and for County employees. These efforts include:

Saving Paper

- Print Conversion - from printing on large green bar paper to standard copier paper and duplexing reports.
- Electronic Documents – purchasing copy machines with the ability to scan documents and convert them to electronic files. Some departments can now send faxes directly from office computers.
- Electronic Patient Records - Mental Hygiene has implemented electronic patient records.
- Electronic Newsletters and Reports – instead of mailed newsletters. Departments also distribute meeting minutes electronically.
- Tax Map and Deed Printing Reduction - in 2007, the Real Property Tax Service Agency (RPT) instituted a practice of printing one set of tax maps for public use rather than two sets. In 2009, RPT began supplying assessors with printed copies of only tax maps that have been modified, and encourages report orders to be emailed or burned to a CD rather than printed on paper.
- Online Documents and Information – where possible.
- Paper Reuse - using paper twice whenever possible. Interoffice mail envelopes are also reused, as are handouts from presentations, if possible.
- E-mail - for communication, reducing the need for copying, faxing and mailing.
- Junk Mail - review of junk mail received to stop its receipt
- Hand Dryers – in the Health Department bathrooms as a green alternative to paper towels.

Reducing Waste/Recycling

- Recycling Equipment Webpage - Equipment and furniture that would otherwise be discarded, as well as extra un-used toner and printer cartridges, are reused throughout the County.
- Used toner & printer cartridges - collected and sold to companies for recycling.
- Tape library - thousands of backup tape drives have been consolidated into a single tape library device.
- E-Waste – printers, computers and monitors are recycled through a company claiming that 99.97% (by weight) of every machine is reused.
- Motor Oil - synthetic Motor Oil used for the County's police cars.
- Metal - all auto parts and components made of metal are recycled, as well as all used aerosol cans. Used oil filters are drained and recycled as well.

- Batteries - the Auto Center recycles all vehicle batteries.
- Tires - old tires from County vehicles are taken by a licensed tire recycler.
- Waste Oil - either burned in the Auto Center's waste oil heaters-thereby reducing the center's need for heating oil-or hauled away by a waste oil recycler at no charge
- Asphalt Recycling - the Public Works Engineering Division recycles asphalt for use in roadway pavement maintenance.
- Paper, Glass, Aluminum & Plastic Recycling - Bins provided by Public Works are used to recycle office paper as well as bottles, cans, and other materials. The Emergency Response Department recently installed recycling containers in public assembly areas, and the Public Works Parks Division provides recycling containers in County Parks.

Dutchess County should continue these efforts, and a staff member in each department should be asked to monitor and report on these efforts. A recognition program for County employees and departments should be considered.

The Recycling Coordinator could take information on these County initiatives to the municipalities within Dutchess County, and encourage their efforts to emulate the County program.

6.8.1 RECOMMENDATIONS – COUNTY/LOCAL GOVERNMENT RECYCLING

- Continue, measure and report on the initiatives currently in place;
- The following state initiatives could be added by ordinance to current local government initiatives to increase reduction and recycling:
  - Establish additional recycled-content commodity contracts with other states and jurisdictions through active involvement with the National Association of State Purchasing Officials Eastern Regional Purchasing Cooperative and other established regional purchasing cooperatives throughout the nation;
  - Increase the purchase and use of alternative fueled vehicles by local governments;
  - Promote the purchase of recycled commodities such as carpets, picnic tables, and waste containers; and
  - Recycle all fluorescent lamps and ballasts in government buildings.

6.9. CONCLUSIONS

Based on other communities nationally, the following combination of program elements would be expected to dramatically increase recycling in Dutchess County.

- Exclusive, mandatory curbside collection of wastes, recyclables and yard wastes from residential households in Dutchess County (eventually to include other organics, and optimally with a PAYT rate structure);
- Mandatory, enforced commercial recycling;
- Proactive public education and ongoing outreach;

- Sustainable funding mechanisms which may include per-household and disposal-based user fees, utility billing, and possibly even general fund taxes.

In all fairness, Dutchess County cannot be expected to implement such a large number of initiatives in a rapid manner. Many of these opportunities will require public debate, and will need to be analyzed in more detail to provide the cost and operating data that will be necessary to make informed decisions. Some of the most aggressive options would require support of the municipalities to be successful.

Dutchess County should, in the opinion of MSW Consultants, establish a legitimate recycling office and commit to a level of recycling management, reporting, monitoring, and enforcement as outlined in County law. Over time, the recycling office, with support from the Solid Waste Commissioner, should explore the prospects of implementing more aggressive recycling programs through coordinated collection systems and with appropriate revenue mechanisms to support the services provided. Long term, it is not unreasonable for the County to achieve a 50 to 60 percent recycling rate if the strategies discussed in this section are implemented.

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7. ORGANICS MANAGEMENT ALTERNATIVES

7.1. CURRENT SYSTEM SUMMARY

According to DEC, the percentage of organics (food scraps, non-recyclable paper and yard trimmings) in New York State's waste stream was 23 percent in 2008.[1] Table 7-1 estimates the quantity of organics that would be generated and available for composting or other recovery in Dutchess County in light of available data. This table suggests that there is a minimum of 38,000 tons of organics that are being disposed but could be recovered. In reality, the number might be higher as the geographic origin of composted materials could not be confirmed and some may have been generated out-of-county.

Table 7-1 Organic Waste Generation in Dutchess County

Reported Recovered Material, DCRRA Report	Total Tons Reported	Source
Estimated Waste Generation (tons)	291,510	DEC and DCRRA Disposal and Recycling Reports
Compostable Fraction (food, green waste, compostable paper)	23%	DEC
Estimated Generation of Organics (tons)	67,047	
Composted Wood, Vegetative and Food Wastes	29,000	2008 DCRRA Recycling Report
Implied Organics Recovery Rate	43%	
Remainder (tons)	38,047	

Dutchess County is already home to several entities that engage in composting of organic materials. These are shown in Table 7-2.

Table 7-2 Current Composting Facilities in Dutchess County

Facility	Type
Bard College	Food Waste
City of Beacon Transfer Station	Yard Waste
Cornell Cooperative Extension	Small Scale/Backyard Composting
Duffy Layton Contracting, Inc.	Manure
Dutchess County Dept. of Public Works	Deer Carcasses
Fishkill Correctional Facility	Food Waste
Green Haven Correctional Facility	Food Waste

[1] http://www.dec.ny.gov/chemical/65541.html

Facility	Type
McEnroe Organic Farm	Food Waste & Yard Waste
Town of Poughkeeepsie	Deer Carcasses
Tri-Municipal Sewer Commission	Biosolids
West Hook Sand and Gravel	Yard Waste

Note: Greenway Compost @ Vassar College did compost on site, but now takes organic waste to McEnroe Organic Farm, and is in the process of closing the on-campus facility.

In addition, the LSWMP listed small composting operations at Sweet Pea Farm, Adams Fairacre Farms and Migliorelli's. MSW Consultants has not confirmed the extent of composting occurring at these locations.

7.2. IMPLEMENTATION OF RRA'S LSWMP

The LSWMP indicates that composting is currently, and will continue to be, the responsibility of the private sector to own and operate organics processing and composting facilities. No public investment is contemplated.

Table 7-3 Advantages and Disadvantages of Maintaining the Status Quo

Advantages	Disadvantages
Would not require any effort to increase organics diversion	While successful private industry composting and marketing are occurring, if 2008 reports are accurate, less than half of the food and vegetative wastes are being composted.
	It will be difficult to reach the State recycling and reduction goals

7.3. INCREMENTAL ORGANICS DIVERSION OPPORTUNITIES

In contrast to the LSWMP, which advocates a laissez faire approach, Dutchess County could opt to increase organics diversion efforts.

7.3.1 REQUIRE CURBSIDE ORGANICS COLLECTION FOR RESIDENTIAL HOUSEHOLDS

At the current time, some municipalities provide yard waste collection on a seasonal basis, including leaf collection in the fall. However, curbside green waste collection is sporadic or nonexistent in many parts of the County.

Assuming Dutchess County becomes a more aggressive manager of collection services, the inclusion of yard waste (at a minimum) or full organics collection (yard waste plus food and compostable papers) would significantly increase diversion of these materials.

Table 7-4 Advantages and Disadvantages of Mandatory Curbside Organics Collection

Advantages	Disadvantages
Significantly increases diversion of these materials, as well as increase the County's overall recycling rate.	Increases costs borne by residential households that do not currently pay a direct fee for any form of green waste collection.
Increases jobs for the collection and incremental processing of organic materials.	
Places Dutchess County at the forefront of recycling and diversion in New York State	

7.3.2 SECURING COMPOSTING CAPACITY

Once again, Dutchess County has a decision to make about whether the public or private sector should own composting infrastructure. One option is for Dutchess County to develop a large central composting facility to handle the organics in the entire county. Alternatively, the County could procure composting capacity from the private sector.

There are significant capital costs to building a large composting facility. In addition to operating and maintenance costs, there would be a cost for collection and transportation to a centrally located facility. In addition, when organic materials are coming from a multitude of generators, it may be difficult to maintain the quality control necessary to produce high grade compost.

Table 7-5 Advantages and Disadvantages of County Building Central Composting Facility

Advantages	Disadvantages
Economies of scale for processing and marketing	Capital cost of facility
	Transportation costs to bring all organics to one central point
	Would be in competition with private industry, which is already composting in Dutchess County
	May be more difficult to obtain clean organics when it is coming from a multitude of places

Dutchess County is fortunate to have a number of private composting facilities available to residents. These facilities would lose business if the County went into competition with them. Currently, McEnroe Organic Farm is accepting less organic material than they are permitted to accept. The County could encourage and support the building of small local composting facilities, similar to the one in Beacon. By having small facilities that receive organics from a local area, the waste stream could be more easily managed so that only clean organics were composted. Transportation costs are also lower to a local facility.

Through public education, increased use of existing facilities can be encouraged, or else procured. If organic material is coming from all parts of the county, there are issues with transportation costs and a possible difficulty with maintaining quality control of the organics.

Table 7-6 Advantages and Disadvantages of Procuring Private Composting

Advantages	Disadvantages
Multiple facilities are already operating in Dutchess County	Private businesses will maintain strict quality standards to assure salable finished product and may not be able to accept all organic materials
Compost is currently being marketed successfully	May take time for private industry to raise finances and build or expand local facilities
Private sector bears capital costs	
Multiple private solutions may minimize transportation costs	

7.3.3 DEVELOP SCHOOL COMPOSTING PROGRAM

The Recycling Coordinator, when visiting schools, could provide information on small school composting projects in conjunction with school gardens. These projects can be incorporated into the solid waste management curriculum. Cornell's Waste Management Institute has extensive information on school composting on its website.[2] In addition, Duchess County has a large number of Master Gardener volunteers, who would be a good source of volunteer assistance in establishing school compost projects and gardens.

[2] http://compost.css.cornell.edu/schools.html

Table 7-7 Advantages and Disadvantages of Developing School Composting Program

Advantages	Disadvantages
Composting projects could be incorporated into the solid waste management curriculum.	Requires dedicated staff, but if Master Gardener volunteers, who are already trained, could be recruited to assist in this program, staff time would be minimal.
A number of resources are already available to schools, such as the Cornell Waste Management Institute website.	
Composting and gardening projects are hands-on projects that encourage all students to learn more about caring for the environment.	
If all of the schools in Dutchess County composted their food waste on-site, there would be an increase in school recycling, and a savings in school disposal costs.	

7.3.4 ENCOURAGE AND SUPPORT BACKYARD COMPOSTING

Backyard composting is a way for residents to manage their own organic waste, and then use the compost on-site. A number of communities support backyard composting by subsidizing compost bins, from simple wire bins for yard waste to enclosed compost bins for composting food waste. By recycling and composting, residents will reduce their solid waste significantly, and will be encouraged to find ways to reduce their waste generation. There are a number of backyard composting resources available on the Cornell Waste Management Institute website.[3]

Table 7-8 Advantages and Disadvantages of Encouraging Back Yard Composting

Advantages	Disadvantages
No transportation costs	Requires substantial public education
More environmentally sound, as waste is processed and compost used on-site	To be most effective, requires local government subsidy of compost bins – from simple wire bins for yard wastes to enclosed composting bins if food waste is included.
Individuals are taking responsibility for the management of their own organic waste.	
Less waste will need to be collected, transported and disposed.	

[3] http://cwmi.css.cornell.edu/smallscale.htm

7.4. RECOMMENDATIONS

The recommendation for optimizing organics management in Dutchess County is twofold. Initially, the County should task its new recycling office with the establishment of appropriate education and outreach programs to implement school composting and backyard composting projects. These represent relatively low cost efforts and can be started right away, within the framework of the recycling office described elsewhere in this report. Grants may be available for backyard composting bins.

More aggressive organics management will be driven by the County's decisions on how aggressively to pursue mandatory collection of green waste (at a minimum) or full organics (including food wastes and compostable papers) from the residential and commercial waste streams. If the County opts to mandate separate organics collection, then it may be necessary to procure or develop composting or processing capacity. In the opinion of MSW Consultants, current private infrastructure in Dutchess County provides a platform for future organics diversion initiatives, and it is recommended that these organizations be included in discussions and plans for increasing organics diversion. Development of a publicly owned compost facility is not recommended.

8. CONSTRUCTION AND DEMOLITION DEBRIS MANAGEMENT ALTERNATIVES

8.1. CURRENT SYSTEM SUMMARY

According to the 2008 County recycling report, 46,367 tons of C&D debris and 43,903 tons of concrete were recycled in Dutchess County, for a total of 90,270 tons. It is assumed that not all of this tonnage was generated within the County, as this total is more than the reported C&D generation. The total C&D Debris reported to DEC as processed in 2008 by the two major C&D processors in the County, Recycle Depot and Blacktop Maintenance, was 77,034. Recycle Depot was reported to DEC as processing 39,330 tons of C&D from Dutchess County, and reported to the County that they recycled 19,629 tons of the total, or approximately 50%. (Blacktop Maintenance services Dutchess, Orange and Ulster Counties, and is not included on the 2008 Dutchess County recycling report.)

Currently, it is difficult to determine the total amount of C&D generated and recycled within the County. According to reports provided to and recorded by the County, about 40 to 45 percent of C&D in Dutchess County is being recycled. Table 8-1 lists the C&D facilities operating in Dutchess County.

Table 8-1 C&D Facilities in Dutchess County

Name	Location
Blacktop Maintenance Corp.	Poughkeepsie, NY
Duffy Layton Contracting	Stanfordville, NY
Sivulich Contracting, Inc	Rhinebeck, NY
Sun Up Properties LLC	Wappingers Falls, NY
Recycle Depot	Poughkeepsie, NY
Royal Carting	Hopewell Junction, NY
West Hook Sand & Gravel	Hopewell Junction, NY

In addition, in Ulster County, Waste Management of NY has a transfer station in Kingston, NY that takes C&D debris.

As with other recycling, reporting needs to be enforced, and accuracy assured. It is very important that the County enforce reporting requirements and determine how much of the C&D debris processed in Dutchess County is generated within the County, how much is from out of County and how much is recycled and landfilled in both categories. It is also important that C&D debris generated within the County but processed outside the County be quantified and reported, along with the recycling and landfilling of that material.

8. C&D MANAGEMENT ALTERNATIVES

8.2. IMPLEMENTATION OF RRA'S LSWMP

The LSWMP indicates that C&D recycling and disposal is currently, and will continue to be, the responsibility of the private sector. Under this option, it is assumed that reporting will be improved so the County can track these activities.

Table 8-2 Advantages and Disadvantages of Maintaining the Status Quo

Advantages	Disadvantages
Would not require significant changes by any stakeholders	It will be difficult to reach the State recycling and reduction goals
Would not require funding from the County	

8.3. C&D DIVERSION OPPORTUNITIES

Once the County has a baseline for C&D processing, there are a number of options for the management of C&D waste in Dutchess County to increase recycling and reuse. The LSWMP mentions many of these, and they are summarized below.

8.3.1 JOB-SITE SEPARATION

The County could consider adoption of a local law requiring contractors, haulers, and do-it-yourselfers to separate C&D materials at the job site. Generally, this requires multiple containers (usually roll-off boxes) at the job site and making sure that all workers place materials in the appropriate containers. Similar laws in other municipalities have exempted sites based on size limitations, or else have required fewer materials to be separated. Development of an appropriate program will require input from the building community.

Table 8-3 Advantages and Disadvantages of Job-Site Separation

Advantages	Disadvantages
Source separation is the best way to assure that everything that can be recycled or re-used is removed from the waste stream.	Builders will generally oppose the idea. Space constraints on job sites impair source separation activities, and collection costs could increase. Further, small construction jobs may not generate sufficient materials to warrant separation.
This method also assures clean materials and decreases the chances of materials being disposed because of contamination.	Training and supervision of workers is necessary to assure that all materials are separated and placed in the correct container.
For the owner or contractor, this results in the maximum avoided disposal costs.	Containers need to watched to be sure household garbage is not placed there, and any contamination must be removed prior to transport to the recycling/processing facility
	This would probably require a dedicated inspector to educate property owners and contractors and to enforce the law.

8.3.2 BUILDING PERMIT MECHANISMS

Many municipalities have established building permit programs that require C&D recycling as a condition of the permit in order to minimize permit costs. The building permit process could include requirements for mandatory C&D recycling, including job-site separation. Another method would be to require a disposal deposit which would be refunded on a pro-rated basis when recycling receipts were submitted.

Table 8-4 Advantages and Disadvantages of Building Permit Mechanisms

Advantages	Disadvantages
Depending on the requirements, there should be less of a need for additional inspection and enforcement than adoption of a local law.	There may be initial resistance from the building community. It will be critical that any strategy treat all builders on a level playing field.
Requiring a disposal deposit upfront, would be an incentive to the owner and/or contractor to recycle and keep accurate records in order to receive the appropriate refund. This would improve reporting for the County.	If job-site separation is a requirement, inspection and enforcement will be needed.

8.3.3 ENFORCED, MANDATORY C&D RECYCLING

The County could adopt a local law requiring mandatory C&D recycling and reporting. This would then need to be enforced, with penalties assessed for violations.

Table 8-5 Advantages and Disadvantages of Enforced, Mandatory C&D Recycling

Advantages	Disadvantages
C&D recycling would increase, and, with enforcement, reporting would be more accurate.	Property owners and contractors prefer more incentives and fewer penalties.
	This would likely require a full time enforcement person.

C&D recycling efforts are generally driven by business incentives. Increasing incentives, with some regulation and enforcement, would likely be more productive than using the "hammer" of a local law with enforcement.

8.3.4 PRODUCTION OF ALTERNATIVE DAILY LANDFILL COVER (ADC)

C&D is being used as an alternative daily landfill cover in many areas in New York State. When used as ADC, there is a lower disposal cost for waste generators, especially if the C&D is not pre-processed. This use also insures that a waste stream that may be contaminated is going into a landfill for safe disposal.

Table 8-6 Advantages and Disadvantages of Production of ADC

Advantages	Disadvantages
Material does not have to be pre-processed. (It is run over by landfill equipment to crush it to the proper size.)	DEC does not count ADC in recycling rates.
Disposal costs are lower.	There are higher value uses for C&D debris than ADC

While there are some advantages to this method, it apparently does not count as recycling, and there are other methods of recycling C&D which result in a higher value product.

8.3.5 FULL-SCALE, STATE-OF-THE-ART C&D PROCESSING AND RECYCLING

Dutchess County could develop or procure capacity at a large-scale, state-of-the-art C&D processing and recycling facility. Such a facility would segregate, screen, clean, crush or shred materials to transform them into materials that can be marketed for recycling and reuse.

Currently, Taylor Recycling in Montgomery, New York is achieving full-scale C&D processing and recovery, and claims a 95% recycling rate.[1] Taylor Recycling has a proven track record and is achieving the planned results. It would cost in the range of $8-$10 million to build a similar facility. It should be noted that such a facility would require a significant tipping fee, which may or may not be less expensive than the disposal tipping fee for C&D wastes. As

[1] http://www.taylorrecycling.com/company/newyork.php?id=2&sid=3

there are existing C&D processors within the County, with appropriate incentives, the private sector could be encouraged to implement such a system.

Table 8-7 Advantages and Disadvantages of Full-Scale C&D Processing and Recovery

Advantages	Disadvantages
This is the most comprehensive approach to recycling C&D debris	The cost would likely be in the range of $8 to $10 million
The recycling rate for C&D debris would increase significantly.	There would likely be significant push back from private C&D recyclers if the County were to go into direct competition with them.
If the private sector were to provide a facility of this type, there would be no cost to the County	Mandated C&D recycling would likely increase the cost of building and demolition projects.

8.3.6 DECONSTRUCTION AND REUSE

Deconstruction employs crews to disassemble structures scheduled for demolition. In this way, a great deal of reusable salvage building materials can be collected for reuse. It is likely that selected deconstruction is already occurring in Dutchess County.

Table 8-8 Advantages and Disadvantages of Deconstruction and Reuse

Advantages	Disadvantages
Material is relatively clean and uncontaminated.	There is a cost, which may not be offset by revenue.
With older buildings, some of the material can be valuable to building restorers.	Workers must be trained to disassemble correctly and safely.
This is an opportunity for the creation of green jobs.	Deconstruction costs may be higher than demolition costs for many structures.

8.3.7 BUILDING MATERIALS REUSE CENTER

Centers to receive and re-sell used building materials have been implemented in 16 locations in New York State, according to DEC. One facility, the New Paltz Reuse Center (formerly Hudson Valley Materials Exchange) is near Dutchess County. At these centers, contractors and individuals may donate salvageable materials (with certain limitations) which are then re-sold for reuse in renovation or new construction projects, as well as for artistic and educational uses.

Table 8-9 Advantages and Disadvantages of a Building Materials Reuse Center

Advantages	Disadvantages
Materials can be re-used with minimal processing.	This would require capital and operating funds.
Much of the salvaged material is valuable to educators and artists.	Some processing would be required, especially for lumber, to meet building requirements.
	Revenues, especially at the beginning, would likely not be sufficient to offset costs.

It should be noted that the New Paltz Reuse Center is near enough that Dutchess County could discuss a regional approach so that salvaged material could go the this center instead of Dutchess County building a center.

8.4. RECOMMENDATIONS

It is assumed that Dutchess County will form a recycling office and that at least one of the recycling staff will be tasked with outreach to the building community. First and foremost, the County must reach out to builders and establish baseline reporting of current C&D waste generation and recycling data.

Once the baseline is established, Dutchess County should at a minimum investigate, with the full participation of the building community as well as other County stakeholders, how best to implement initial C&D recycling initiatives that capitalize on the existing infrastructure that exists in the County. Existing C&D processors should be encouraged to continue their operations, but with accurate reporting of origin, recycling and disposal of materials. Once a dialog has been initiated, the County should consider most if not all of the options in this chapter. An appropriate priority might be:

- Encourage building deconstruction and reuse, which is an opportunity for the creation of green jobs.
- Consider discussions with New Paltz to regionalize the use of the New Paltz Reuse Center to include material from Dutchess County.
- Consider local regulation of building permits to integrate a C&D recycling deposit and/or require job site separation. An appropriate program for Dutchess County would need to be implemented with input from the building community, the municipalities, and business organizations such as the Chamber of Commerce.
- If the County opts to get aggressive with C&D recovery, it should consider requiring that all C&D be processed prior to disposal. If this objective were communicated over time, it is likely the private sector would be able to develop processing capacity to the extent it is not already available.

9. DISPOSAL ALTERNATIVES

9.1. INTRODUCTION

One of the overarching questions at the outset of this project was to identify the full range of disposal options. The LSWMP is clear in recommending an expansion of the RRF in conjunction with flow control and a direct revenue mechanism. However, while other alternatives are suggested, none are adequately analyzed.

This section will compare and contrast four basic options for disposal:

- Implementation of RRA's LSWMP (Status Quo);
- Waste Export;
- Siting and Developing a Local Landfill;
- Emerging Conversion Technologies.

9.2. WASTE TO ENERGY BENCHMARKING

A critical aspect of the LSWMP recommended plan is that the RRF can be upgraded to perform more efficiently, and in so doing will become more cost competitive. To test this hypothesis, MSW Consultants performed a benchmarking analysis on other WTE facilities in the US that are roughly the same size. Table 9-1 summarizes pertinent operating data for the Dutchess County RRF as well as four other facilities of roughly the same size and age. As shown, the most efficiently run plants cost between $76/ton and $100/ton to operate. The sum of operating costs plus debt service must be covered by a combination of tip fee revenues, energy revenues, and municipal subsidies.

Table 9-1 Waste-To-Energy Benchmarking Summary

Name of Facility	MacArthur - Islip, NY	Dutchess County RRF	Bristol RRF-Bristol, CT	Ecomaine - Portland, ME	WTE Facility, Marion, OR
Owner/Operator	Public/Private	Public/Private	Public/Private	Public/Public	Private/Private
Year Started Operations	1990	1989	1988	1988	1986
Tons per Day	435	456	543	507	501
Tons Per Year	158,892	150,641	198,086	185,655	182,716
Total 2009 Revenues	$22,233,339	$19,265,276	$21,133,799	$22,325,679	$16,975,136
Annual Debt Service	$5,872,278	$4,532,096	$5,952,650	$8,135,000	None - paid off 2008
Operating Cost/Ton (Ex-Debt Service)	$102.97	$97.80	$76.64	$76.44	$92.90

Appendix C contains detailed WTE benchmarking information from the research performed for this project.

9.3. IMPLEMENTATION OF RRA'S LSWMP (STATUS QUO)

This option would mean that the Resource Recovery Facility (RRF) would continue to be the primary disposal facility for Dutchess County. The RRF would be expanded at a cost of $70 million, and its capacity would be increased to roughly 750 tons per day from the current 500 tons per day. Annual capacity would expand to roughly 195,000 tons per year.

Table 9-2 summarizes the cost parameters for this alternative, based on information provided in the LSWMP and supplemented with additional information provided by MSW Consultants.

Table 9-2 Status Quo Operating and Cost Parameters

Parameter	Value
Projected RRF Annual Throughput	195,000 tons
Waste Requiring Local Transfer and Transportation (30%)	58,500 tons
RRF Upgrade/Expansion Capital Cost	$62 million
New Southern Transfer Station Capital Cost	$8 million
Local Transfer and Transportation Cost per Ton (assumes 20 mile one-way haul)	$11
Weight Reduction obtained from Incineration	70%
Industry Average KWh/Ton of Waste	500 Kwh/Ton
Market Rate for Energy Sales	6.4 cents/KWh
Average Operating Cost for WTE (see benchmarking section)	$75/ton
Ash Disposal	$50/ton
Metal Recovery	5%

Exhibit 1, at the end of this section, projects the annual debt service, costs and revenues associated with the LSWMP recommendation. Summary results are shown in Table 9-3. As shown, the tip fee at this upgraded, expanded WTE facility is projected to be over $107 per ton, which is still not competitive with the local market rate for disposal. While this is an improvement over the current full cost per ton, it is still an expensive system.

Table 9-3 Status Quo Total Cost and Tip Fee Projection

Annual Operating Cost + Debt Service	$27.5 million
Annual Energy + Metal Revenues	$6.6 million
Net Annual Cost	$20.9 million
Tons Processed	195,000
Facility Tip Fee	**$107/ton**

It is also worth noting that this system requires 195,000 tons of waste to be disposed in order to optimize RRF performance. Should incremental recycling programs be implemented, or should there be reductions in the pattern of waste generation, the plant economics would be worse than shown in this table.

Table 9-4 lists the advantages and disadvantages of the status quo system

Table 9-4 Advantages and Disadvantages of Maintaining the Status Quo

Advantages	Disadvantages
Would not require major changes to system governance or infrastructure ownership.	Would greatly expand the control borne by the RRA.
The total cost per ton will be lower than if the RRF is not upgraded and expanded.	Capital expenditures and associated debt service will increase significantly. This cost will remain on the County's books until retirement, regardless of plant performance.
Significant unforeseen increases in the price of energy – resulting in higher energy revenue – could improve facility economics and either reduce the NSF or bring full costs more in line with the tip fee.	Some subsidy of the tip fee is likely to achieve market competitive rates. The Net Service Fee will persist and NSF payments will continue to compete with other County programs, including recycling, enforcement and public education.
	Aggressive reduction and recycling of waste which results in the RRF falling below capacity will impair plant economics. So, the County will have to decide between maintaining WTE throughput and optimizing recycling, but cannot do both.

The option of maintaining the status quo will greatly expand the control over the solid waste management system borne by the RRA. As the RRA would need to contract to extend the operation of the RRF, this would commit the County to waste-to-energy for at least 20 years. Dutchess County would also be fully committed to a publicly-owned waste disposal infrastructure. Clearly, this option would increase system costs, which would in turn cause the Net Service Fee payments to continue to compete with other County programs.

9.4. WASTE EXPORT

Instead of continuing to incinerate waste in the RRF, Dutchess County could export wastes for landfill disposal elsewhere in New York State (or even out-of-state). This is the solution employed by almost 70 percent of NY counties, and by over 87 percent of municipalities nationwide.

Table 9-5 summarizes the cost parameters for waste export, based on an analysis of transfer station construction, operating, transportation, and landfill disposal costs.

Table 9-5 Waste Export Operating and Cost Parameters

Parameter	Value
Projected Annual Disposal	140,000 tons
Transfer Station Capital Cost	$8 million
Transfer and Transportation Cost (assumes 260 mile one-way haul) [1]	$45/ton
Landfill Disposal Cost (assumes multi-year agreement) [1]	$24/ton

[1] This expense is only incurred on the tons of waste that are processed. If waste quantities fall below the 140,000 tons currently received, transportation and disposal costs are reduced commensurately.

Table 9-6 summarizes the cost parameters for waste export, based on an analysis of transfer station construction, operating, transportation, and landfill disposal costs. As shown, the tip fee for this system is projected to be $74 per ton, which is lower than the current tip fee and in line with the negotiated rate secured with the County's largest hauler. Complete details of this scenario are included in Exhibit 2.

Table 9-6 Waste Export Total Cost and Tip Fee Projection

Annual Operating Cost + Debt Service	$12.0 million
Tons Processed	140,000
Facility Tip Fee	**$74/ton [1]**
Annual Stranded WTE Debt Service	*$1.67 million ($12/ton)*

[1] Excluding stranded debt service

It should be noted, however, that the County will still be obligated to pay for stranded WTE debt service until 2027 under this waste export option. The stranded debt has not been included in the facility tip fee because it is not related to the waste export system. Options for funding the stranded dent service are addressed in another section.

Table 9-7 summarizes the advantages and disadvantages of the waste export system.

Table 9-7 Advantages and Disadvantages of Waste Export

Advantages	Disadvantages
RRF would not need to be upgraded or expanded.	New transfer capacity would need to be built to consolidate wastes for transportation to a landfill for final disposal.
The resulting facility tip fee would be market competitive and sufficient to cover the full cost of the export operation.	Unforeseen rapid increases in the price of fuel could drive pricing higher than forecasted.
Most of the total cost of waste disposal is completely variable – meaning that if waste volumes decline, the total cost of waste disposal declines linearly.	Over the long term, the waste export system is reliant on the perpetuation of regional landfills with sufficient capacity to accept transferred wastes. While there is sufficient capacity now and in the next 10 years, it cannot be predicted how long this will last.
Both the RRF and one or more of the Town-owned transfer stations could be expanded/converted to serve as the transfer station	While the original RRF bonds will be retired as of January, 2014, the repayment of the 2005 bond issue for improvements required by the Clean Air Act will still be approximately $1.67 million per year.
The waste disposal system would provide an incentive to recycling and diversion, because of the avoided disposal cost.	
If the transfer station were publicly owned, then flow control would still be an option if it became necessary in the future.	

Waste export requires there to be local transfer stations where wastes can be consolidated for long-haul road or rail transportation to a landfill for final disposal. Note that a waste export system could be (a) entirely public (as described in the LSWMP), (b) partially public and partially private, or (c) entirely private.

It is also noted that the City of Poughkeepsie has a publically owned, permitted transfer station, with a scalehouse, that is capable of taking commercial trucks. There is reported to be room for expansion, and the City has indicated their willingness to discuss options for County use of this facility.

9.5. SITING AND DEVELOPING A LOCAL LANDFILL

Dutchess County could choose to site and develop an in-county landfill. This option would provide a viable alternative for waste disposal. Because of the siting and permitting challenges, which are aptly described in the LSWMP (to the concurrence of MSW Consultants), landfill development is not extensively addressed. If a permit could even be secured for a new facility in Dutchess County, it would take many years and this solution could not be timely implemented to meet near term system needs. Table 9-8 lists some of the advantages and disadvantages to building an in-county landfill.

Table 9-8 Advantages and Disadvantages of Siting and Developing a Local Landfill

Advantages	Disadvantages
Dutchess County would be taking care of their waste in their own backyard.	In most places, citizens strongly object to new landfills, which can lead to a very lengthy permit approval process.
Transportation costs would be eliminated.	Small landfills, like small WTE facilities, must charge higher tip fees to cover a relatively higher fraction of fixed costs per ton. Disposal cost per ton would be higher compared to the large regional landfills.
	It is difficult and costly to site a landfill, and once sited it is difficult and costly to obtain a permit.
	If a permit could be secured, the length of time involved would mean that this option could not be timely implemented to meet near term system needs.
	Dutchess County would be committing to a facility at the bottom of the waste management hierarchy.

9.6. EMERGING CONVERSION TECHNOLOGIES

At the current time, there are a variety of emerging technologies for processing of wastes that are in the testing and development stages, some of which are mentioned in the LSWMP. In the opinion of MSW Consultants, these technologies have not achieved proven commercial scale operating success at a cost-effective level. Similarly to the development of a local landfill, it is not believed any new, cost-effective technology will be available on a timely basis for adoption by Dutchess County in this planning cycle. Table 9-9 summarizes some advantages and disadvantages of emerging conversion technologies.

Table 9-9 Advantages and Disadvantages of Emerging Conversion Technologies

Advantages	Disadvantages
If successful, these technologies promise to recover a higher fraction of energy and/or resources from the disposed waste stream, compared to landfill disposal and traditional incineration.	None of these technologies have been proven to be successful on a commercial scale in the United States.
	Actual energy recovery and production of fuels or other recovered materials is unknown at this time.
	Actual capital and operating costs are unknown at this time.
	It is unlikely that any new, cost-effective conversion technology will be available on a timely basis.

9.7. SUMMARY

In the opinion of MSW Consultants, the decision of waste disposal is between retaining the waste-to-energy system that exists currently or converting to a waste export system. As shown above, an upgraded, expanded waste-to-energy facility is projected to require a tip fee of roughly $107 per ton in order to break even and avoid payment of an NSF by the County. This WTE must process its full capacity of 195,000 tons annually to achieve this cost performance.

Conversely, a transfer station system relying on waste export would require a break even tip fee of roughly $74 per ton. This cost would only be incurred on the actual tons generated – meaning that annual fluctuations or even steady decreases in waste disposal volumes because of enhanced recycling would result in lower overall costs because the pure variable costs (transportation and landfill disposal) would be avoided.

As a final comparison, MSW Consultants has projected the annual full costs of the LSWMP system compared to the waste export system. Figure 9-1 compares the annual cost of the two systems. As this figure shows, the annual cost of waste export is significantly lower than implementing flow control, securing local transfer station(s), and expanding the existing WTE facility.

Figure 9-1 Lifecycle Cost Comparison of Expanded WTE vs. Waste Export

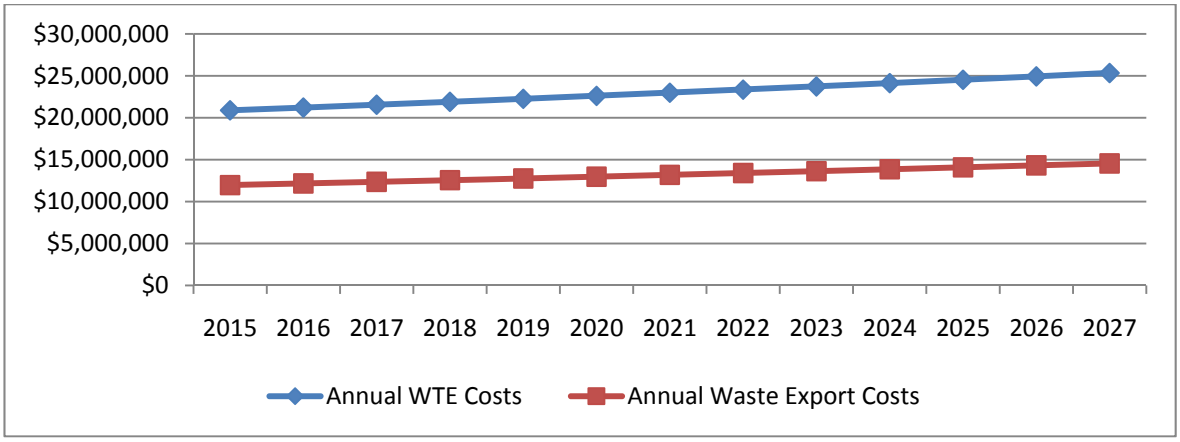
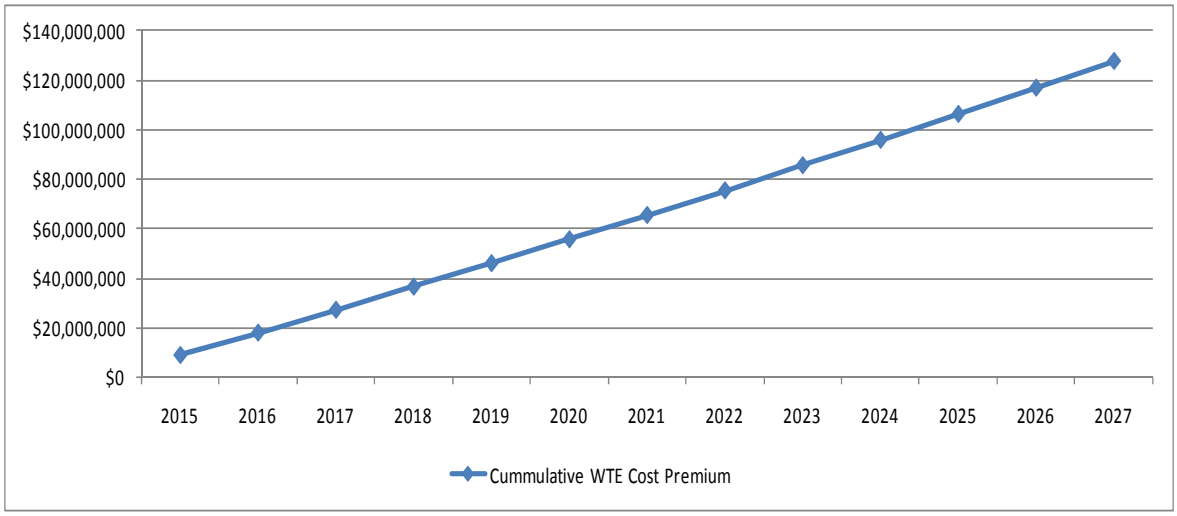


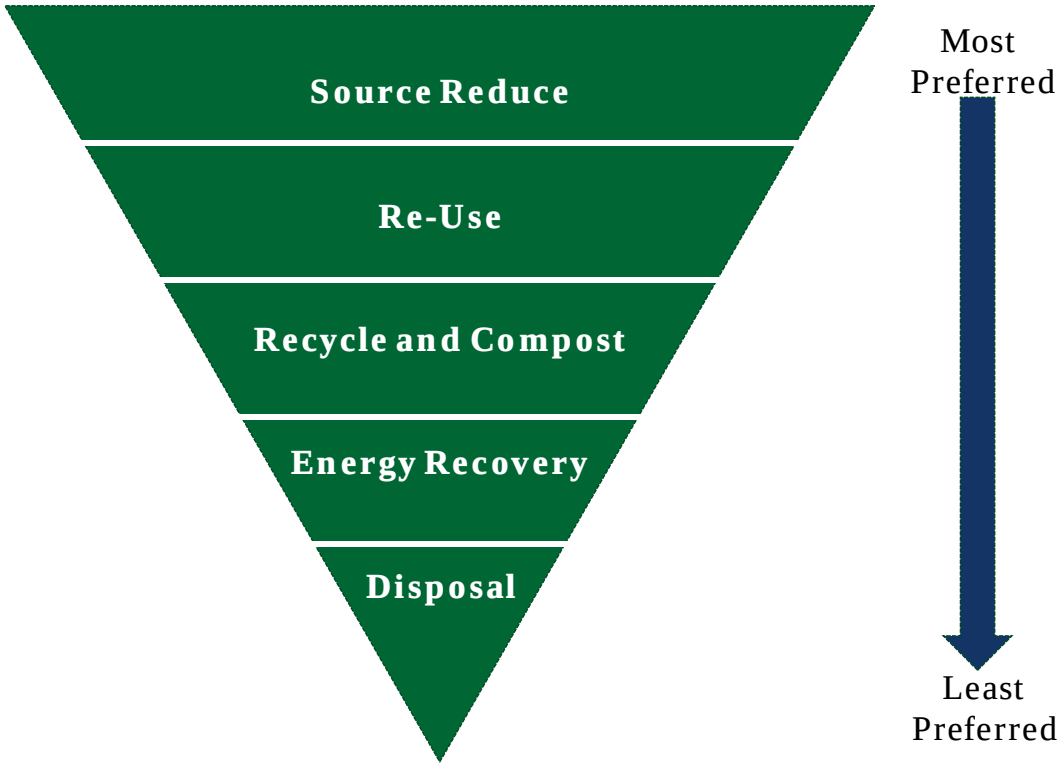
Figure 9-2 shows the cumulative cost of the WTE system compared to the waste export system from the time period of 2015 (when the RRA's current operating contract expires) to 2027 (when all debt service on the RRF is paid in full). As suggested in this figure, reasonable assumptions indicate that a system of waste export for disposal would save Dutchess County waste generators roughly $127.6 million between 2015 and 2027.

Figure 9-2 Cumulative Cost Impact of Expanded WTE over Waste Export



If nothing else, Dutchess County should consider how it wants to spend the $127.6 million cost differential. One option (the current LSWMP) is to recommit to waste-to-energy, which is higher than landfilling on the waste management hierarchy espoused by both the U.S. Environmental Protection Agency and the New York State DEC. The second option would be to save the $127.6 million disposal costs by implementing waste export, and instead redeploy these funds (or a fraction of the funds) to develop recycling and organics diversion and recovery programs. As shown in Figure 11-3 below, recycling is higher than waste-to-energy on the waste management hierarchy.

Figure 9-3 Waste Management Hierarchy



9.8. RECOMMENDATIONS

In the opinion of MSW Consultants, the only two viable disposal options for Dutchess County at this time are to retain the waste-to-energy system that exists currently or to convert to a waste export system. If cost control and recycling are deemed to be the highest priorities, then the waste export system would appear to better meet the County's needs. If committing to waste-to-energy, or if the County thinks that the value of energy will dramatically increase in the near term, then the LSWMP plan might be preferred.

It should be noted that making the switch to a waste export system in the near future does not forever prohibit the County from re-entering waste-to-energy. The waste industry may adopt improved and cost-competitive conversion technologies more rapidly than anticipated. However, even if this is the case, it seems plausible to expect such technologies to require: (a) a large volume of waste to achieve economies of scale, and (b) a commitment of waste quantities for a multiple year period over which to amortize capital costs. Such a solution may be best achieved with regional cooperation, which would expand the disposal quantity needs and also spread the capital costs.

The County should debate these options and decide between maintaining the status quo or changing to a less costly system of exporting waste and aggressively pursuing waste reduction and recycling.

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EXHIBIT 1
DUTCHESS COUNTY, NY
PROJECTED COSTS of OPTIMIZED WTE (LSWMP RECOMMENDATION), 2014-2024

	Assumptions	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
CPI	2%													
Existing Debt Service		$1,667,638	$1,671,388	$1,667,638	$1,666,638	$1,668,138	$1,666,888	$1,666,738	$1,669,463	$1,669,850	$1,669,550	$1,671,550	$1,670,625	$1,666,775
Estimated Capital Cost to Enhance Electric production	$7,000,000													
Industry Average Cap Cost per TDP Capacity	$220,000													
Estimated Capital Cost to Add 3rd, 250 TPD line	$55,000,000													
Estimated Capital Cost to Build Southern Transfer Station	$8,000,000													
Total New County Debt Required	$70,000,000													
Principal and Interest on New County debt @ 5%, 20 yrs		$5,616,981	$5,616,981	$5,616,981	$5,616,981	$5,616,981	$5,616,981	$5,616,981	$5,616,981	$5,616,981	$5,616,981	$5,616,981	$5,616,981	$5,616,981
Tons of Waste Combusted @ 90% Availability		195,000	195,000	195,000	195,000	195,000	195,000	195,000	195,000	195,000	195,000	195,000	195,000	195,000
Waste Requiring Transfer/Transportation	30%	58,500	58,500	58,500	58,500	58,500	58,500	58,500	58,500	58,500	58,500	58,500	58,500	58,500
Estimated Transfer & Transport/Ton of Waste	$11													
Annual T & T Cost		$643,500	$643,500	$643,500	$643,500	$643,500	$643,500	$643,500	$643,500	$643,500	$643,500	$643,500	$643,500	$643,500
Industry Average WTE Operating Cost per Ton	$75													
Annual Operating Cost		$14,625,000	$14,917,500	$15,215,850	$15,520,167	$15,830,570	$16,147,182	$16,470,125	$16,799,528	$17,135,518	$17,478,229	$17,827,793	$18,184,349	$18,548,036
Industry Average Residue Generation (% of combusted)	30%													
Tons of Residue to be Disposed		58,500	58,500	58,500	58,500	58,500	58,500	58,500	58,500	58,500	58,500	58,500	58,500	58,500
Residue T&D cost/ton	$50													
Total Residue T&D		$2,925,000	$2,925,000	$2,925,000	$2,925,000	$2,925,000	$2,925,000	$2,925,000	$2,925,000	$2,925,000	$2,925,000	$2,925,000	$2,925,000	$2,925,000
Administrative Cost for RRA		$2,000,000	$2,040,000	$2,080,800	$2,122,416	$2,164,864	$2,208,162	$2,252,325	$2,297,371	$2,343,319	$2,390,185	$2,437,989	$2,486,749	$2,536,484
Industry Average KWH/Ton of Waste Combusted	500													
Net MWH to Sell		87,750	87,750	87,750	87,750	87,750	87,750	87,750	87,750	87,750	87,750	87,750	87,750	87,750
Current Market Rate for NY WTE Power ($/MWH)	$64													
Electric Sales Revenue		$5,616,000	$5,616,000	$5,616,000	$5,616,000	$5,616,000	$5,616,000	$5,616,000	$5,616,000	$5,616,000	$5,616,000	$5,616,000	$5,616,000	$5,616,000
Industry Average Metal Generation (% of combusted)	5%													
Tons of Metal to be Sold		9,750	9,750	9,750	9,750	9,750	9,750	9,750	9,750	9,750	9,750	9,750	9,750	9,750
Metal Price/ton	$100													
Total Metal Revenue		$975,000	$975,000	$975,000	$975,000	$975,000	$975,000	$975,000	$975,000	$975,000	$975,000	$975,000	$975,000	$975,000
Total Debt Service		$7,284,619	$7,288,369	$7,284,619	$7,283,619	$7,285,119	$7,283,869	$7,283,719	$7,286,444	$7,286,831	$7,286,531	$7,288,531	$7,287,606	$7,283,756
Total Operating and Admin Costs		$20,193,500	$20,526,000	$20,865,150	$21,211,083	$21,563,935	$21,923,843	$22,290,950	$22,665,399	$23,047,337	$23,436,914	$23,834,282	$24,239,598	$24,653,020
Total Electric and Metal Revenues		$6,591,000	$6,591,000	$6,591,000	$6,591,000	$6,591,000	$6,591,000	$6,591,000	$6,591,000	$6,591,000	$6,591,000	$6,591,000	$6,591,000	$6,591,000
Net Cost		$20,887,119	$21,223,369	$21,558,769	$21,903,702	$22,258,054	$22,616,712	$22,983,669	$23,360,843	$23,743,168	$24,132,445	$24,531,813	$24,936,204	$25,345,776
Total Cost 2015-2027		$299,481,645												
Net Cost per Ton		$107	$109	$111	$112	$114	$116	$118	$120	$122	$124	$126	$128	$130

Debt Service $/ton	$37
Ash Residue Disposal	$15
Local Transfer and Transportation	$3
RRF Operation Net of Revenues $/ton	$51
Total $/ton	$107
Stranded Debt $/ton	

EXHIBIT 2
DUTCHESS COUNTY, NY
PROJECTED WASTE EXPORT COSTS, 2014-2027

	Assumptions	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
CPI	2%													
Existing Debt Service		$1,667,638	$1,671,388	$1,667,638	$1,666,638	$1,668,138	$1,666,888	$1,666,738	$1,669,463	$1,669,850	$1,669,550	$1,671,550	$1,670,625	$1,666,775
Estimated Capital Cost for Central Transfer Station	$8,000,000	Assumes no Revenue from Sale of WTE Facility												
Total New County Debt Required	$8,000,000													
Principal and Interest on New County debt @ 5%, 20 yrs		$641,941	$641,941	$641,941	$641,941	$641,941	$641,941	$641,941	$641,941	$641,941	$641,941	$641,941	$641,941	$641,941
Tons of Waste Combusted @ 90% Availability		140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000
Estimated Transfer & Transport/Ton of Waste	$45													
Annual T & T Cost		$6,300,000	$6,426,000	$6,554,520	$6,685,610	$6,819,323	$6,955,709	$7,094,823	$7,236,720	$7,381,454	$7,529,083	$7,679,665	$7,833,258	$7,989,923
Assumed 15 yr landfill contract Cost per Ton	$24													
Annual OOC Landfill Cost		$3,360,000	$3,427,200	$3,495,744	$3,565,659	$3,636,972	$3,709,711	$3,783,906	$3,859,584	$3,936,776	$4,015,511	$4,095,821	$4,177,738	$4,261,292
Assumed Administrative Cost (included in Transfer Cost)		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total Debt Service, Operating and Admin Costs		$11,969,579	$12,166,529	$12,359,843	$12,559,848	$12,766,373	$12,974,249	$13,187,408	$13,407,707	$13,630,020	$13,856,085	$14,088,977	$14,323,562	$14,559,931
Total Electric and Metal Revenues		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Net Cost		$11,969,579	$12,166,529	$12,359,843	$12,559,848	$12,766,373	$12,974,249	$13,187,408	$13,407,707	$13,630,020	$13,856,085	$14,088,977	$14,323,562	$14,559,931
Total Cost 2015-2027		$171,850,111												
Net Cost per Ton		$85	$87	$88	$90	$91	$93	$94	$96	$97	$99	$101	$102	$104

Debt Service $/ton	$5
Transfer & Transport $/ton	$45
Disposal $/ton	$24
Total $/ton	$74
Stranded Debt $/ton	$12

10. SYSTEM FUNDING ALTERNATIVES

10.1. INTRODUCTION

Historically, Dutchess County has provided solely waste disposal and recyclables processing infrastructure (through the DCRRA), and has funded this infrastructure through two mechanisms:

- Tip fees at the RRF and the MRF, which have been insufficient to cover the full cost of the operation, and
- General millage, which is drawn down to pay the Net Service Fee subsidy to the RRA.

There are other funding options available to the County that have been used successfully in other counties and municipalities to fund municipally-provided waste management and recycling services. This chapter describes the basic revenue mechanisms that are in use, and concludes with a delineation of the combination of revenue mechanisms that would best serve Dutchess County

10.2. DIRECT VERSUS INDIRECT REVENUE STRUCTURES

An important consideration in establishing appropriate revenue mechanisms for waste management and recycling is to align revenue mechanisms wherever possible to the services being received. This is a direct revenue structure (sometimes called an "unbundled" rate). An example of this is an unbundled tip fee at a disposal facility, i.e., where the tip fee is only covering the cost of the disposal facility and is not attempting to recoup additional revenues for other services (like the HHW program, for example). When haulers deliver their waste to the disposal facility, they know that they are paying for the disposal of their wastes. Another example of a direct fee is the fee charged by private haulers to provide subscription waste collection and recycling service. Residents know that they are paying for some standard level of collection service (e.g., weekly refuse collection plus the disposal of the wastes). It is the responsibility of the hauler to determine the full cost of collection plus disposal, and to charge residents a sufficient amount to cover this cost. The hauler is not charging for the costs of other services through this fee, as it would make their service less competitive.

Conversely, some revenue structures are indirect. In Dutchess County, the waste-generation-based user fee that was evaluated two years ago is an example of an indirect revenue mechanism. Under that proposed user fee structure, residents would have been charged an "infrastructure access fee" for disposal capacity, with the actual fee based on an *average* waste generation rate. Residents with especially low or high recycling rates – and conversely high or low disposal rates – would have been charged the same amount. Because the fee is based on waste generation potential, and not on actual services being provided, it is an indirect mechanism.

In Dutchess County, the Net Service Fee is also an indirect fee structure that essentially subsidizes all system costs above what can be recouped from facility tip fees.

In the opinion of MSW Consultants, residential and commercial customers in municipalities nationally have almost uniformly accepted direct revenue mechanisms that are tied to a level of service that is clearly understood. This is another important argument for a municipality to have an active hand at providing or managing collection, because collection service levels can be clearly understood and tied to an overall service fee for waste management and recycling. Residential

households usually will not complain if they are asked to pay a single fee for monthly trash and recycling service. However, they will complain if they are asked to pay a monthly fee to their hauler for trash service, and another "user fee" to the County or the DCRRA for "disposal infrastructure access." For this reason, Dutchess County should at least consider how to implement organized collection in regions of the County that currently rely on subscription service.

10.3. SOLID WASTE REVENUE MECHANISMS

While there are many variations and combinations of revenue mechanisms that may be employed by any one municipality, Table 10-1 summarizes the most common revenue mechanisms that are used for waste management, special waste, and recycling program funding.

Table 10-1 Waste Management Revenue Mechanisms

Revenue Mechanism	Description
Facility Tip Fees	Fees charged by disposal and processing facilities to accept materials for disposal or processing are the most widespread revenue mechanism in the industry. Customers that deliver materials understand that they are paying for the cost of disposal or processing at the particular facility. The RRA charges tip fees at both the RRF and the MRF.
General Funding	This mechanism relies on general property tax revenues to pay for waste management and recycling services, with no specific millage rate for solid waste. Dutchess County's Net Service Fee obligation is in fact a general funded obligation
Solid Waste Millage (Ad Valorem Taxes)	Some municipalities have established a specific solid waste and recycling millage rate. While perhaps an improvement on general funding because the revenues are dedicated in advance to the waste management program, taxes are an inequitable method to charge for solid waste services because service levels do not track with property values.
Utility Billing	Municipalities that have a local water/sewer or other utility use the utility bill as a means to charge for directly-provided solid waste services. Provision of collection is usually a prerequisite to utility billing, although it would be possible to include other services (such as a residential HHW program) on a utility bill.
Special Assessment on Tax Bill	Many municipalities in New York State and nationally have opted to establish solid waste and recycling costs to residential and commercial businesses that are charged through the local property tax bill. This is especially prevalent for jurisdictions (especially counties) that do not have a single utility with full geographic coverage of the county.

Revenue Mechanism	Description
Program Administration Fees	Some waste management and recycling programs are specific to certain generators and in such cases it is reasonable and appropriate to charge the specific group of generators for the cost of the program. For example, if the County establishes waste audits and mandatory recycling reporting for businesses that exceed a certain size threshold (e.g., more than 50 employees), then it may be appropriate to charge an administration fee to fund the County's monitoring and management of this program. Other examples of specific program fees include C&D recycling and conditionally exempt small quantity generator (CESQG) programs.

In Dutchess County, only tip fees and general funding (Net Service Fee) are used at the current time. One of the reasons for this is that Dutchess County does not manage any collection systems, so does not have any directly-provided services.

10.4. IMPLEMENTATION OF RRA'S LSWMP

Under the LSWMP plan, the County (through the DCRRA) will continue to own and manage the disposal and recyclables processing infrastructure, and will not be directly involved in collection. As described elsewhere in this report, the LSWMP plan will almost certainly require continuation of the Net Service Fee in order to cover system costs. The LSWMP advocates establishment of a broad-based user fee that would be used in place of the NSF in support of the entire RRA operation.

Table 10-2 summarizes the proposed funding mechanisms of the status quo system. As shown in the table, the proposed funding system keeps services bundled and difficult for waste generators to understand. Further, it limits accountability as costs for individual services cannot be readily evaluated. Although the tip fees are understandable, they are not sufficient to cover the full cost of the system, and the LSWMP advocates a catch-all revenue mechanism to cover any shortfall.

Table 10-2 Apparent Funding Mechanisms in RRA's LSWMP

Program	Not Provided by County	Tip Fee	Direct Service User Fee	Generation-Based User Fee to Cover NSF
Waste and Recycling Collection	✓			
Composting	✓			
C&D Recycling	✓			
Disposal		✓ [1]		✓
Recyclables Processing		✓ [1]		✓
HHW/Pharmaceutical Drop-offs				✓
Recycling Coordinator and Public Education				✓

[1] Assumes that the RRA will continue to set the RRF tip fee at whatever the market will bear, and that this will not generate sufficient revenue to eliminate the Net Service Fee.

10.5. FUNDING RECOMMENDATIONS

There are numerous ways to ultimately establish sustainable funding for waste management and recycling services. Whenever possible, fees should be tied to specific service levels that can be easily understood by the ratepayer. For example, it is better to charge a household a service fee that includes collection and disposal, because the household will know exactly what the fee is covering. Conversely, a user fee that is assessed to households or commercial businesses based on an average waste generation rate is less desirable because (a) ratepayers may not understand the basis for the user fee, and (b) this indirect rate mechanism does not provide the needed level of feedback to evolve the system over time with the help of incentive-based rates.

In Dutchess County, it is expected that a range of revenue mechanisms will ultimately be implemented to move the County towards sustainable waste management. In the near term, the County is tasked with the reality of covering the Net Service Fee as equitably as possible. Over the medium term and longer, the County will presumably take steps either to eliminate the need for the Net Service Fee, or else to replace this inequitable fee with a revenue mechanism that more closely aligns the cost of solid waste and recycling infrastructure to the generation of wastes.

If the County opts to convert to a system of waste export and more aggressive recycling, then Table 10-3 illustrates the range of funding mechanisms that might be implemented to support a more integrated and comprehensive waste management program.

Table 10-3 Recommended Funding Mechanisms for Long Term Plan

Program	Not Provided Directly by County	Tip Fee	Direct Service User Fee	Generation-Based User Fee [2]	Program Admin Fee
Residential Waste and Recycling Collection Managed by County [1]			✓		
Waste Export Disposal Program		✓			
Recyclables Processing	[2]				
Organics Composting	[2]				
Net Service Fee				✓	
Stranded WTE-Related Debt through 2027				✓	
HHW/Pharmaceutical Drop-offs			✓		
Waste Management and Recycling Public Education and Outreach				✓	
CESQG Program Administration					✓
Organics Diversion Program Administration					✓
C&D Permit/Recycling Program Administration					✓
Commercial Waste Audits and Recycling Program Administration					✓

[1] Assumes the County will take steps to impose mandatory, exclusive collection for areas of the County that currently have only subscription collection service

[2] To the extent the County is providing this service, it would procure such service from the private sector and either (a) mandate that the waste generator pay the cost, or (b) recoup the cost through direct service fees charged to generators.

Note that even the recommended revenue structures in the table above include the use of a waste-generation-based user fee as the preferred mechanism for recouping some costs. Specifically, MSW Consultants believes that establishment of a waste-generation-based user fee would be more equitable than the current Net Service Fee, simply because it would convert the revenue mechanism from one based on property value to one based on waste generation rates. We recognize that this recommendation may be controversial in light of the County's rejection of just such a recommendation last year. However, to make the recommendation more palatable, it would be imperative to include the following conditions:

- The County should reject the LSWMP plan and instead shift to a system of waste export and privatized program elements wherever possible, seeking low cost as a primary driver. This step will decrease the prospect for owing large NSFs (and ultimately shift to a self-supporting system).
- The County should determine how best to participate in collection of wastes and recyclables so that it has the opportunity to link service charges directly to services being

provided. With involvement in collection comes the ability to charge full cost rates for collection, disposal and recyclables processing services.

- Wherever possible, the County should unbundle services and costs so that residential and commercial stakeholders understand what they are paying for.
- Facility operations should strive to be funded by tip fees with no subsidy (which is another intended consequence of unbundling). Of particular importance, in the waste export system, the County would not be able to fund stranded WTE debt with tip fees.
- The remaining cost of the NSF and/or stranded waste-to-energy system debt should be legislated to sunset with the elimination of the need for the NSF and/or retirement of the stranded debt. The County should confirm with legal counsel that is it acceptable under NY State law to recoup stranded debt and/or the NSF via a user fee.

It is also critical to note that any waste-generation-based user fee established by the County be converted over time to rely on actual reported waste disposal for both residential and commercial generators, rather than on a statistical estimate of waste generation. This implies that the County will implement and enforce hauler reporting requirements that provide sufficient customer-specific disposal service level data to calculate a defensible, actual allocation of costs based on real disposal rates, rather than on an estimate of waste generation. This process will require cooperation from the County tax assessor and potentially from individual municipal tax assessors in order to provide sufficient data to align actual disposal service levels to individual tax parcels.

11. LEGAL ISSUES

11.1. BACKGROUND

Local Law 1 of 1984 provides for the management of solid waste generated in Dutchess County. Local Law 4 of 1990, as amended by Local Laws 8 and 9 of 1990 and Local Law 2 of 1991, provides for the mandatory collection and disposition of recyclables in Dutchess County. Both Laws are attached as Appendix D.

In addition, Article XVII of the Dutchess County Charter and Article XVII of the Administrative Code of the Dutchess County Government, attached as Appendix E, outline the duties and responsibilities of the Commissioner of Solid Waste and the Solid Waste Management Board. As there is currently no Solid Waste Commissioner in Dutchess County, there is no enforcement of the Local Laws regarding solid waste and recycling.

11.2. PLANNING UNIT AUTHORITY RECOMMENDATIONS

MSW Consultants was provided with citations from the County, stating that Resolution 427-1984 gave planning authority to the DCRRA, and that the 1992 LSWMP reiterated this authority. While it will be necessary for the County to obtain a qualified legal opinion on this issue, it appears that adoption of a resolution by the Legislature would be sufficient to bring the Planning Unit authority back to the County. MSW Consultants recommends:

- The Legislature should, after appropriate legal counsel, adopt a resolution to bring back the County's designation as the Planning Unit and to give the County authority for LSWMP Approval;
- As soon as practicable, the County should proceed with the formation of the Solid Waste Commissioner's Office and staff this office with sufficient personnel to re-assert County management of the solid waste and recycling system.
- Concurrent with (or even prior to) the establishment of a functional Solid Waste Commissioner's Office, the County should amend the LSWMP that was submitted to DEC by the DCRRA to reflect County-drive, rather than RRA-driven, objectives.

11.3. MANDATORY RECYCLING ENFORCEMENT

Local Law 4 of 1990, as amended, is clear on the requirements and penalties for mandatory recycling in Dutchess County. At this time, there doesn't appear to be a need for additional legislation in this regard. There is, however, a need to enforce this law, including reporting requirements.

- As soon as practical, the County should hire appropriate staff and develop appropriate education and outreach programs publicizing recycling requirements;
- Outreach and education should proceed for one to two years as a precursor to penalties being issued for violations.

- The County should retain enforcement personnel empowered to enforce the mandatory recycling law and should begin enforcing this law after public outreach has occurred for some period of time to prepare residential and commercial generators and haulers.

11.4. HAULER LICENSING

There are several problems with the current hauler licensing process:

- No-one is currently authorized to approve licenses or renewals. (Only the Commissioner of Solid Waste is authorized to do this, and no-one is currently filling that position.)
- Onerously long application process, reportedly up to 18 months in length.
- No-one currently in place to verify waste and recycling reports of haulers.
- Due to deficiencies in the licensing process, competition is virtually non-existent.
- Reporting of waste tonnages is not complete or accurate, so the County does not know how much waste is actually being collected and disposed or recycled.

In order to have more competition in private hauling in Dutchess County, it would be beneficial to shorten the length of time it takes to be licensed. While background checks are important, it is useful to look at the licensing requirement in Westchester County, which has specific concerns about the background of applicants and the importance of competition in the hauling of waste and recyclables. The Westchester County law in its entirety is attached to this document as Appendix F. Among the features that could be used to improve the Dutchess County licensing process, increase competition, and improve the timeliness, accuracy, and completeness of reports needed to measure the County's progress are:

- The Westchester County Solid Waste Commission, not one individual, is responsible for approving licenses and renewals.
- Westchester County requires extensive background information and fingerprinting of applicants, but the Commission is required to "issue its final written determination as to each application no later than six (6) months after the date on which the Commission deems the application to be complete." There should be no reason this could not be shortened to four months in Dutchess County. If haulers know that they will have an approval or denial no later than four months after they complete the application package, it should encourage them to feel that there is a level playing field.
- For renewals, applicants must submit their application at least 120 days prior to the expiration of their license or registration. If it is submitted on time and is complete, and if the Commission has not acted on it by the expiration date or a hearing is pending, it is considered to have been extended. If a hearing is pending, the license or registration is considered to be extended until the final determination is made

Dutchess County should retain appropriate personnel staff in the Solid Waste Commissioner's Office to enforce reporting requirements.

11.5. FLOW CONTROL

The LSWMP suggested *regulatory* flow control of wastes and recyclables to assure optimal utilization of the RRA's facilities and to maximize recycling. Under regulatory flow control,

the local municipality directs wastes to be delivered to local publicly owned facilities, and private haulers must comply with this directive. There is a good discussion of regulatory flow control in New York State in Appendix D to the NYSDEC Solid Waste Management Plan, "Beyond Waste: A Sustainable Material Management Strategy". This is attached as Appendix G to this report.

However, what has not been discussed extensively is that there are two other forms of flow control that have been used successfully in municipal solid waste programs in NY State and nationally:

- **Economic Flow Control**: Economic flow control is, very simply, when the municipal facility can offer the lowest cost tip fee and is therefore the most economically attractive facility for local haulers. In other words, no regulation is required because rational haulers will choose to use the facility. Note that economic flow control can be engineered if other revenue mechanisms are used to artificially reduce the tip fee. For example, if a waste generation-based user fee is used to recoup some percentage of the cost of disposal, then the tip fee could be reduced below the full cost of disposal, which could make that tip fee economically attractive. A number of municipalities have instituted waste generation based user fees in order to engineer market competitive tip fees.
- **Contractual Flow Control**: For municipalities that directly manage the collection of wastes and recyclables through contracts with haulers, such wastes and recyclables can be directed to be delivered to specific facilities. This is especially powerful because it allows a municipality to competitively procure the lowest cost disposal (or recyclables processing) provider, and then separately, to competitively procure the lowest cost collection provider. By splitting the collection and disposal procurement apart, it eliminates the advantage that may be held by vertically integrated companies (such as Royal Carting) that own both disposal and collection capabilities.

While no studies have been done to tabulate the data, it is the opinion of MSW Consultants that contractual and economic flow control strategies are used by the majority of municipalities with high-diversion, low-cost integrated waste management systems nationally. Further, economic and contractual flow control are typically less onerous to private hauling and disposal vendors compared to regulatory flow control because these vendors can still compete to provide collection and disposal services in the manner they believe are most cost effective.

It appears to MSW Consultants that Dutchess County could reasonably pursue an integrated waste management system that employs economic and contractual flow control over regulatory flow control. This will require steps to make the local hauling market more competitive, and to assure that there is a cost-competitive disposal option available. Regulatory flow control can and should be used as a tool of last resort, if it is not possible to increase competition in the local market, or if the initiatives put in place do not provide the County with the waste reduction and recycling needed to meet the local and state goals.

11.6. PACKAGING AND DISPOSAL BANS

While packaging bans or other material disposal restrictions would potentially increase recycling, such laws are best enacted on the state and federal level. As there are several landfills in reasonably close proximity to Dutchess County, disposal bans on materials,

including packaging, would be likely to drive waste out-of-county. As the New York Product Stewardship Council (web site: http://www.nypsc.org/) is looking into statewide product stewardship legislation, it would be advisable for Dutchess County to be involved in the council and its efforts.

Disposal bans have been proven to increase recycling. A part of the successful recycling rate in San Francisco, now at 77% landfill diversion, is due to disposal bans they were able to implement. Without state and federal legislation on packaging and product waste, however, it will be difficult for any local governments to successfully reduce packaging and product waste. For this reason, it is important to work with the New York Product Stewardship Council on these issues. Disposal bans should be considered only if recyclable commodities continue to be disposed at a high rate, and if political will exists to implement disposal bans.

11.7. ELECTRONIC WASTE (E-WASTE)

The New York State Electronic Equipment Recycling and Reuse Act (Environmental Conservation Law, Article 27, Title 26) took effect January 1, 2011. Under this act, manufacturers of covered electronic equipment have several responsibilities, including the requirement that no later than April 1, 2011 they must provide an electronic waste acceptance program to consumers at no cost to the consumers. "Manufacturers must provide at least one reasonably convenient method of collection within each county, and within each municipality with a population greater than 10,000."[1] Manufacturers must also provide a public education program beginning April 1, 2011. Dutchess County should coordinate with the manufacturers' program to be sure that these and other provisions of this Act are being followed. As NYSDEC will no longer reimburse counties for e-waste programs after April 1, 2011, the responsibility for collection and recycling of electronic wastes should be turned over to private industry.

11.8. PRODUCT STEWARDSHIP

In order to maximize reduction and recycling, products must not continue to be made in a way that produces waste. While product stewardship laws are difficult for local government to pass, as most products are manufactured outside of their jurisdiction, the New York Product Stewardship Council (web site: http://www.nypsc.org/) is looking into statewide product stewardship legislation. E-waste is now regulated under the Electronic Equipment Recycling and Reuse Act. Other products are being studied.

Dutchess County should be involved in the New York Product Stewardship Council and its efforts to standardize the approach to reducing product waste in New York State. If the County chooses to be aggressive on this type of initiative, local retail buy back legislation may be possible, as has been done in San Louis Obispo, California (web site: http://www.iwma.com/directory-kz/ordinances.html).

[1] http://www.dec.ny.gov/chemical/66845.html

11.9. LOCAL GOVERNMENT INITIATIVES

In April 2008, Governor Paterson signed Executive Order 4, outlining the responsibilities of all state agencies regarding reduction and recycling of waste. Dutchess County has implemented a number of government initiatives, which are listed in Section 6 of this report. These initiatives should be continued, measured and reported. They can be an example to other local governments within the county, and the Recycling Coordinator could make presentations to the other governments on these initiatives. Specifically, the County should:

- Continue, measure and report on the initiatives currently in place.
- Of the state initiatives listed in Governor Patterson's Executive Order 4, the following could be added by ordinance to current local government initiatives to increase reduction and recycling:
  - Establish additional recycled-content commodity contracts with other states and jurisdictions through active involvement with the National Association of State Purchasing Officials Eastern Regional Purchasing Cooperative and other established regional purchasing cooperatives throughout the nation;
  - Increase the purchase and use of alternative fueled vehicles by local governments;
  - Promote the purchase of recycled commodities such as carpets, picnic tables, and waste containers; and
  - Recycle all fluorescent lamps and ballasts in government buildings.

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12. PRIORITIZING LSWMP IMPLEMENTATION STEPS

Because of the number of decisions to be made by Dutchess County in the formulation of a long-term solid waste management plan, there is a significant amount of uncertainty as to the timing and even some of the initiatives to be implemented. Broadly, implementation of a viable solid waste management plan should proceed roughly as follows:

- **2011**: Re-establish the County as the Planning Unit and take steps to staff the Solid Waste Commissioner's office and recycling office;
- **2012**: Initiate all recycling and diversion related outreach and public education initiatives and establish accurate reporting mechanisms; begin preparing for the conversion to a waste export system; initiate exclusive collection.
- **2013**: Perform appropriate procurements for waste export system and initiate County-managed exclusive collection systems leading to PAYT.
- **2014 and beyond**: Incremental expansion of organics and C&D recycling and diversion.

The exhibits in this section attempt to summarize and identify the year in which certain initiatives should start. Exhibit 1 groups solid waste and recycling initiatives by topic. Exhibit 2 groups the initiatives by year of initiation. These exhibits are intended to serve as a starting point for discussion and debate in Dutchess County. They are subject to significant refinement as the County solidifies its mid and long-term strategies.

As a final note, these implementation guidelines are applicable in their entirety only if the County opts to switch to a waste export system. If the County prefers to remain committed to WTE, then the LSWMP schedule can be followed.

Exhibit 1 Implementation Plan
Sorted by Topic

	Topic	Task	Year Initiated
1	Planning	Restore the Planning Unit status to the County	2011
1	Planning	Submit revised LSWMP based on County-directed rather than RRA-directed judgements.	2011
1	Planning	Investigate potential for County-managed, exclusive collection program for areas of the County that currently have only subscription service	2013
2	Management	Fill the position of Commissioner of Solid Waste	2011
2	Management	Take steps to give County authority to approve any contractual arrangement that commits the County financially	2011
2	Management	Appoint the advisory Solid Waste Management Board	2011
2	Management	Establish a Solid Waste Commissioner's Office with initial support staff and resources	2011
2	Management	Revise hauler licensing process	2011
2	Management	Appoint the advisory Recyclables Oversight Committee	2012
2	Management	Establish a Recycling Office with sufficient staff and resources to develop meaningful public educatino and outreach programs.	2012
3	Disposal	Make determination on whether to expand current WTE system or else convert to a system of waste export with increased focus on recycling and composting	2013
3	Disposal	If exporting waste - plan for the development of transfer station capacity	2012
3	Disposal	If exporting waste - procure landfill disposal capacity	2013
4	Funding	Evaluate User Fee as an alternative to fund the Net Service Fee, which will better align the costs based on waste generation rather than property values for this subsidy.	2011
4	Funding	Establish waste management as an enterprise fund	2012
4	Funding	Unbundle HHW and recycling program administration costs and implement a flat per-household user fee to cover these costs	2012
4	Funding	In conjunction with county-managed collection, investigate utility billing and non-ad valorem billing alternatives for future solid waste and recycling system funding	2012
5	Collection	Implement mandatory curbside refuse collection	2012
5	Collection	Implement mandatory curbside recycling collection	2012
5	Collection	Implement mandatory curbside yard/organics collection	2013
5	Collection	In conjunction with analysis of exclusive collection, evaluate multi-municipality collection programs to standardize service and streamline collection efficiency	2013
5	Collection	Implement mandatory PAYT collection	2014
6	Recycling Office	Continue outreach and education and County support of ongoing HHW collection events	2011
6	Recycling Office	Continue program to accept outdated/discarded pharmaceuticals from residents of Dutchess, Columbia, Delaware, Rockland, and Ulster Counties.	2011
6	Recycling Office	Establish a proactive recycling management organization staffed by four to five professional staff	2011
6	Recycling Office	Coordinate with municipalities to understand and publicize municipal recycling programs	2011
6	Recycling Office	Continue outreach and support of New York State E-Waste Recycling Law	2012
6	Recycling Office	Stay abreast of and involved in effort of NY Product Stewardship Council to standardize the approach to product waste in NYS	2012
6	Recycling Office	Establish stakeholder meetings beginning with appointment of members to the Recyclables Oversight Committee	2012

Exhibit 1 Implementation Plan
Sorted by Topic

	Topic	Task	Year Initiated
6	Recycling Office	Develop an informative and user-friendly website on recycling and reduction of waste, and other aspects of integrated solid waste management	2012
6	Recycling Office	Continue, measure and report on the County government initiatives currently in place	2012
6	Recycling Office	Provide waste audits to businesses and institutions, including schools	2012
6	Recycling Office	Provide significant public education on single stream recycling	2012
6	Recycling Office	Presentations by Recycling Coordinator on reducing, recycling and proper disposal of solid waste to classes and other school groups	2012
6	Recycling Office	Develop recycling curriculum for the County's K-12 school system, in cooperation with school system	2012
6	Recycling Office	Begin education on recycling and reducing waste, and on requirements of Local Law No. 4	2012
6	Recycling Office	Provide waste and recycling technical assistance and monitoring for businesses and institutions	2012
6	Recycling Office	Recycling contests, with awards, for poster contests, recycled art competitions and other contests	2012
6	Recycling Office	Coordinate recycling collection/recovery services procurement terms and strategies for use by municipalities, businesses and schools	2012
6	Recycling Office	Train and use volunteers to assist the Recycling Coordinator with school presentations	2013
6	Recycling Office	Establish recognition programs for "super recyclers"	2013
6	Recycling Office	Recycling Coordinator contact other local governments and offer information on successful County initiatives and assistance in implementing them	2013
6	Recycling Office	Provide recognition to businesses and institutions excelling in waste reduction and recycling	2013
6	Recycling Office	Consider regionalization of recycling services	2015
7	Composting	Encourage increased use of McEnroe Organic Farm	2012
7	Composting	Encourage and support backyard composting	2012
7	Composting	Develop effective school composting projects	2015
8	C&D	Enforce accurate reporting of origin, recycling and disposal of materials by current C&D processors	2012
8	C&D	Encourage deconstruction and reuse	2012
8	C&D	Consider discussions with New Paltz to regionalize the use of the New Paltz Reuse Center	2012
8	C&D	Building permit mechanisms - require disposal deposit to be refunded on a pro-rated basis on submission of recycling receipts	2013
8	C&D	Building permit mechanisms - consider requiring job-site separation of recyclable materials	2015
8	C&D	Provide incentives to private sector to build full scale C&D processing and recycling center	2017
9	Legal Issues	Consider adding additional local government initiatives by ordinance	2012
9	Legal Issues	Enforce provisions of NYS Electronic Equipment Recycling and Reuse Act	2013
9	Legal Issues	Consider local retail buy back legislation	2014

Exhibit 1 Implementation Plan
Sorted by Topic

	Topic	Task	Year Initiated
9	Legal Issues	Empower County enforcement personnel to enforce mandatory recycling law, after 1-2 years of aggressive education	2014
9	Legal Issues	Consider disposal bans only if recyclable commodities continue to be disposed at a high rate	2015

Exhibit 2 Implementation Plan
Sorted by Year of Task Initiation

	Topic	Task	Year Initiated
1	Planning	Restore the Planning Unit status to the County	2011
1	Planning	Submit revised LSWMP based on County-directed rather than RRA-directed judgements.	2011
2	Management	Fill the position of Commissioner of Solid Waste	2011
2	Management	Take steps to give County authority to approve any contractual arrangement that commits the County financially	2011
2	Management	Appoint the advisory Solid Waste Management Board	2011
2	Management	Establish a Solid Waste Commissioner's Office with initial support staff and resources	2011
2	Management	Revise hauler licensing process	2011
4	Funding	Evaluate User Fee as an alternative to fund the Net Service Fee, which will better align the costs based on waste generation rather than property values for this subsidy.	2011
6	Recycling Office	Continue outreach and education and County support of ongoing HHW collection events	2011
6	Recycling Office	Continue program to accept outdated/discarded pharmaceuticals from residents of Dutchess, Columbia, Delaware, Rockland, and Ulster Counties.	2011
6	Recycling Office	Establish a proactive recycling management organization staffed by four to five professional staff	2011
6	Recycling Office	Coordinate with municipalities to understand and publicize municipal recycling programs	2011
2	Management	Appoint the advisory Recyclables Oversight Committee	2012
2	Management	Establish a Recycling Office with sufficient staff and resources to develop meaningful public educatino and outreach programs.	2012
3	Disposal	If exporting waste - plan for the development of transfer station capacity	2012
4	Funding	Establish waste management as an enterprise fund	2012
4	Funding	Unbundle HHW and recycling program administration costs and implement a flat per-household user fee to cover these costs	2012
4	Funding	In conjunction with county-managed collection, investigate utility billing and non-ad valorem billing alternatives for future solid waste and recycling system funding	2012
5	Collection	Implement mandatory curbside refuse collection	2012
5	Collection	Implement mandatory curbside recycling collection	2012
6	Recycling Office	Continue outreach and support of New York State E-Waste Recycling Law	2012
6	Recycling Office	Stay abreast of and involved in effort of NY Product Stewardship Council to standardize the approach to product waste in NYS	2012
6	Recycling Office	Establish stakeholder meetings beginning with appointment of members to the Recyclables Oversight Committee	2012
6	Recycling Office	Develop an informative and user-friendly website on recycling and reduction of waste, and other aspects of integrated solid waste management	2012
6	Recycling Office	Continue, measure and report on the County government initiatives currently in place	2012
6	Recycling Office	Provide waste audits to businesses and institutions, including schools	2012

Exhibit 2 Implementation Plan
Sorted by Year of Task Initiation

	Topic	Task	Year Initiated
6	Recycling Office	Provide significant public education on single stream recycling	2012
6	Recycling Office	Presentations by Recycling Coordinator on reducing, recycling and proper disposal of solid waste to classes and other school groups	2012
6	Recycling Office	Develop recycling curriculum for the County's K-12 school system, in cooperation with school system	2012
6	Recycling Office	Begin education on recycling and reducing waste, and on requirements of Local Law No. 4	2012
6	Recycling Office	Provide waste and recycling technical assistance and monitoring for businesses and institutions	2012
6	Recycling Office	Recycling contests, with awards, for poster contests, recycled art competitions and other contests	2012
6	Recycling Office	Coordinate recycling collection/recovery services procurement terms and strategies for use by municipalities, businesses and schools	2012
7	Composting	Encourage increased use of McEnroe Organic Farm	2012
7	Composting	Encourage and support backyard composting	2012
8	C&D	Enforce accurate reporting of origin, recycling and disposal of materials by current C&D processors	2012
8	C&D	Encourage deconstruction and reuse	2012
8	C&D	Consider discussions with New Paltz to regionalize the use of the New Paltz Reuse Center	2012
9	Legal Issues	Consider adding additional local government initiatives by ordinance	2012
1	Planning	Investigate potential for County-managed, exclusive collection program for areas of the County that currently have only subscription service	2013
3	Disposal	Make determination on whether to expand current WTE system or else convert to a system of waste export with increased focus on recycling and composting	2013
3	Disposal	If exporting waste - procure landfill disposal capacity	2013
5	Collection	Implement mandatory curbside yard/organics collection	2013
5	Collection	In conjunction with analysis of exclusive collection, evaluate multi-municipality collection programs to standardize service and streamline collection efficiency	2013
6	Recycling Office	Train and use volunteers to assist the Recycling Coordinator with school presentations	2013
6	Recycling Office	Establish recognition programs for "super recyclers"	2013
6	Recycling Office	Recycling Coordinator contact other local governments and offer information on successful County initiatives and assistance in implementing them	2013
6	Recycling Office	Provide recognition to businesses and institutions excelling in waste reduction and recycling	2013
8	C&D	Building permit mechanisms - require disposal deposit to be refunded on a pro-rated basis on submission of recycling receipts	2013
9	Legal Issues	Enforce provisions of NYS Electronic Equipment Recycling and Reuse Act	2013
5	Collection	Implement mandatory PAYT collection	2014
9	Legal Issues	Consider local retail buy back legislation	2014

Exhibit 2 Implementation Plan
Sorted by Year of Task Initiation

	Topic	Task	Year Initiated
9	Legal Issues	Empower County enforcement personnel to enforce mandatory recycling law, after 1-2 years of aggressive education	2014
6	Recycling Office	Consider regionalization of recycling services	2015
7	Composting	Develop effective school composting projects	2015
8	C&D	Building permit mechanisms - consider requiring job-site separation of recyclable materials	2015
9	Legal Issues	Consider disposal bans only if recyclable commodities continue to be disposed at a high rate	2015
8	C&D	Provide incentives to private sector to build full scale C&D processing and recycling center	2017