

**County of Dutchess  
and  
Dutchess County Resource Recovery Agency**

**LOCAL SOLID WASTE  
MANAGEMENT PLAN**

November 29, 2010

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Germano & Cahill, P.C.  
Michael J. Cahill, Esq.

Gerhardt, LLC  
Hans G. Arnold

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**APPENDIX A – WARM MODEL DATA**

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# **DUTCHESS COUNTY LOCAL SOLID WASTE MANAGEMENT PLAN**

**November 29, 2010**

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## **INTRODUCTION**

The history of the county-wide approach to solid waste management planning dates back to the early 1970s when the concept of regional sanitary landfills was developed. In 1972, Dutchess County (County) initiated a comprehensive solid waste study, done under a New York State Department of Environmental Conservation [NYSDEC] grant and overseen by a Dutchess County Solid Waste Steering Committee. The study provided an inventory of solid waste facilities then operating in the County and a recommendation that the County provide a comprehensive regional public system. Dutchess County's early efforts to institute comprehensive solid waste management for the region preceded similar planning efforts by New York State, which were not instituted until 1988.

In 1980, the County adopted a policy statement calling for the creation of a regional public authority charged with the development of a County-wide waste management system, utilizing resource recovery technology, and managing all waste generated in the County through public facilities. At the same time, planning for the construction of a mass-burn waste-to-energy facility (Resource Recovery Facility - RRF) was started. The Dutchess County Resource Recovery Agency (DCRRA - Agency) was created on July 22, 1982 to develop the facilities needed to implement this policy. Construction of the RRF started in 1985 and full operation began in 1989.

With the Solid Waste Management Act of 1988, New York adopted amendments to the Environmental Conservation Law that established local solid waste planning units at the county, multi-county and town levels. Planning units were charged with the preparation of a Local Solid Waste Management Plan (LSWMP) and the development of infrastructure to manage waste according to the hierarchy (ECL §27-0106 and §27-

0107) to i) reduce; ii) recycle; iii) recover energy; and iv) utilize land disposal. The management hierarchy established in 1988 has become the foundation of integrated waste management methods adopted by communities throughout New York, and is still the accepted hierarchy of both the State and the County today. The Dutchess County Resource Recovery Agency is the local planning unit responsible for developing the comprehensive solid waste management plan for the County.

A 1990 inventory of inactive disposal sites compiled for the County Solid Waste Management Plan listed 22 public and 93 private inactive landfill sites in Dutchess County. Of these, over 60 were listed as inactive hazardous waste disposal sites by the NYSDEC, with only 6 remaining landfills in operation. It was clear to the County that a comprehensive solid waste plan was needed to address the impending closure of the remaining landfills and how best to address the hierarchy of solid waste management. As the local planning unit, the Agency prepared, and in 1992, published the Final Local Solid Waste Management Plan for Dutchess County and obtained the requisite NYSDEC approval (dated February, 1992 and covering the planning period 1990-2010).

The County Solid Waste Management Plan recognized the foundations laid for integrated management in the County, and called for a number of improvements to the system being developed at that time. The Plan was developed with a Generic Environmental Impact Statement and called for the achievement of the following objectives between 1992 and 2010:

- Support state and federal legislative initiatives to reduce the amount of waste generated and encourage recycling.
- Adopt a local law requiring the source separation of recyclables in the County.
- Construct and operate a Materials Recovery Facility for the processing and sale of recyclables generated in the County.
- Encourage the development of composting technology for yard wastes and green wastes generated in the County.

- Encourage the development of local municipal transfer stations at the Town level to provide recycling and drop-off services.
- Site and construct a landfill for the receipt of ash residue generated by the Resource Recovery Facility, and for the land disposal of waste that cannot be processed by the RRF.
- Expand the capacity of the Resource Recovery Facility to accept the wastes generated in the County that cannot be recycled after achievement of the County's stated recycling goals.

In the following years, some of these objectives were achieved. Legislation such as the NYS Bottle Bill was adopted on the state level, and a local law mandating the source separation of recyclables was adopted on the County level. The Materials Recovery Facility (MRF) in the Town of Poughkeepsie was constructed and remains in operation. Local transfer and drop-off facilities were constructed in most Towns to serve local residents. Some progress has been made in the separation of organics, particularly at large institutions in the County such as Marist College, Vassar College, Bard College and the Culinary Institute of America.

Other objectives were not achieved. No suitable landfill site was found, so no landfill for ash or bypass waste was developed. As a result, ash from the RRF is exported to disposal sites outside of the County, and a significant fraction of non-recyclable waste is also transported privately for disposal at out-of-county locations.

The MRF, built in 1992-93, is undersized and only handles a portion of the recyclables generated in the County. The private sector provides some recycling services in addition to the public services offered at the MRF. The RRF has not been expanded and continues to process only about two-thirds of the non-recyclable fraction of the municipal waste stream.

Overall, the solid waste management system has not developed into a complete public system capable of measuring and managing all of the waste generated in Dutchess

County. As a result, the County now faces issues in recycling and waste-to-energy that are nearly identical to the issues presented 17 years ago.

This Local Solid Waste Management Plan (LSWMP) addresses the issues the County faces today and proposes a plan for the next ten-year period based upon three overall goals first identified for the consideration of the County and the Agency in the September 2009 Flow Control and Solid Waste Management Alternatives [FCSWMA] report:

**Green The System** – Improvements in recycling, specifically the development of a new single stream materials recovery facility, can increase the amount of recovered materials, increase participation by residents and businesses, and allow greater efficiency for waste haulers. The recycling programs currently offered can be enhanced and expanded to include new initiatives such as the institution of recycling in public spaces, collection of hard cover books, provision of shredding for confidential document destruction, coordination among schools of recycling instruction and food waste composting, provision of information to promote the recovery of construction and demolition debris, coordination among the local municipalities of organics recovery, and the development of additional organics recovery capacity to build on the region's currently successful programs. New initiatives with the County's major institutions can capture additional organics for recovery and reuse. These initiatives will help reduce the environmental impacts associated with the solid waste generated by the residents, businesses, industries and institutions of Dutchess County. The Agency has an exemplary record of environmental compliance at the Resource Recovery Facility. The existing household hazardous waste program can be expanded to include small scale institutional/industrial/commercial generators [through a conditionally exempt small quantity generator program] and continue to help maintain the performance and emissions record of the RRF. These waste reduction and recycling efforts should be made a priority and should be fully implemented and their effectiveness evaluated to then assess the quantity and character of the remaining non-recyclable waste stream. At that stage, the Agency and the County can better assess disposal options and can

determine if there is a need for additional waste-to-energy capacity for waste that cannot be recycled.

**Level the Playing Field** – The Agency and the County should expand the solid waste system to serve all residents and businesses in the County. Although the facilities and programs owned and operated by the Agency are available to all the residents, businesses, industries and institutions in the County, currently there is only capacity to process a portion of the waste generated in the County and all County taxpayers subsidize the cost of operating the under-sized system. A county-wide public system can be established so that all residents are receiving the full-range of services provided by the DCRRA and all are paying equitably -- based upon the amount of waste they generate. An additional objective should be to guarantee a uniform disposal cost and level playing field for all waste haulers whether they are large or small, public or private.

**Optimize Waste-to-Energy** – A county-wide, full-service integrated waste management system would maximize recycling, reduce the amount of non-recyclable waste requiring disposal, and allow the Agency to provide new waste-to-energy capacity for the remaining balance. Operation of the RRF can be improved through a reliable supply of waste, greater on-line availability and greater power production and revenue. The County and the Agency should consider flow control to accomplish these goals. In the near term, the Agency should commission a thorough study of the condition and life expectancy of the RRF in anticipation of a competitive procurement for a new contract for operation of the RRF and possible capital improvements after the expiration of the current operating agreement in June 2014.

## **CHAPTER 1: DUTCHESS COUNTY PLANNING UNIT DESCRIPTION**

### **1.1 Planning Unit Size and Location.**

**1.1.1** Dutchess County has a land area of approximately 801.6 square miles.

**1.1.2** Dutchess County is located in the center of the Mid-Hudson Valley of New York State, approximately 75 miles north of New York City. The County spans over 45 miles of the Hudson River on its western boundary and borders the state of Connecticut to the east.

Its northern border is Columbia County, and Putnam County borders the south. Across the Hudson River lies Ulster County and Orange County. Each of these Counties comprises a solid waste Planning Unit.

**1.1.3** According to the 2000 Census, Dutchess County had a population of 280,150 with 106,103 housing units. The July 2009 Census estimates show that Dutchess County now has a population of approximately 293,562 with approximately 112,688 housing units.

Table 1 lists each of the County's municipalities and the associated population figures, according to the U.S. Census Bureau. Table 2 shows the housing unit counts for each municipality based on the 1990 and 2000 Census.

**TABLE 1: RESIDENT POPULATION  
DUTCHESS COUNTY PLANNING UNIT**

	April 1,	April 1,	July 1,	July 1,	July 1,	July 1,	July 1,	July 1,	July 1,	July 1,	Change 2007 - 2008		2000-2008	Change 1990-2008	
	1990	2000	2001	2002	2003	2004	2005	2006	2007	2008	#	%	%	#	%
	Dutchess County	259,462	280,150	284,332	286,828	289,200	290,812	291,835	291,897	292,224	292,878	654	0.2%	4.35%	33,416
C/Beacon	13,243	14,810	14,896	14,633	14,729	14,659	14,696	14,655	14,608	14,566	(42)	-0.3%	-1.68%	1,323	9.99%
C/Poughkeepsie	28,844	29,871	30,331	30,400	30,462	30,437	30,197	29,999	29,781	29,654	(127)	-0.4%	-0.73%	810	2.81%
T/Amenia	5,195	4,048	4,103	4,106	4,131	4,137	4,128	4,126	4,117	4,113	(4)	-0.1%	1.58%	(1,082)	-20.83%
T/Beekman	10,447	13,655	14,239	14,473	14,754	14,820	14,865	14,848	14,925	14,935	10	0.1%	8.57%	4,488	42.96%
T/Clinton	3,760	4,010	4,074	4,110	4,147	4,167	4,164	4,182	4,194	4,193	(1)	0.0%	4.36%	433	11.52%
T/Dover	7,778	8,565	8,678	8,733	8,719	8,714	8,778	8,799	8,778	8,758	(20)	-0.2%	2.20%	980	12.60%
T/East Fishkill	22,101	25,589	26,322	26,910	27,476	27,965	28,383	28,676	28,800	28,825	25	0.1%	11.23%	6,724	30.42%
T/Fishkill	15,698	17,521	17,607	17,601	17,706	18,179	18,460	18,677	18,917	19,298	381	2.0%	9.21%	3,600	22.93%
T/Hyde Park	21,230	20,851	20,879	20,874	20,819	20,740	20,607	20,457	20,354	20,270	(84)	-0.4%	-2.87%	(960)	-4.52%
T/La Grange	13,274	14,928	15,298	15,562	15,707	15,802	15,889	15,859	15,847	15,834	(13)	-0.1%	5.72%	2,560	19.29%
T/Milan	1,895	2,356	2,420	2,465	2,509	2,544	2,585	2,620	2,627	2,615	(12)	-0.5%	9.90%	720	37.99%
T/North East	2,034	2,077	2,102	2,116	2,131	2,164	2,196	2,224	2,220	2,229	9	0.4%	6.82%	195	9.59%
T/Pawling	3,973	5,288	5,544	5,751	5,875	5,975	5,983	5,986	5,971	5,973	2	0.0%	11.47%	2,000	50.34%
T/Pine Plains	2,287	2,569	2,577	2,600	2,636	2,660	2,666	2,685	2,686	2,689	3	0.1%	4.46%	402	17.58%
T/Pleasant Valley	8,063	9,066	9,242	9,297	9,320	9,358	9,575	9,701	9,677	9,763	86	0.9%	7.14%	1,700	21.08%
T/Poughkeepsie	39,254	41,800	42,199	42,869	43,135	43,261	43,289	43,119	43,002	42,894	(108)	-0.3%	2.55%	3,640	9.27%
T/Red Hook	6,736	7,440	7,745	7,871	8,035	8,188	8,341	8,383	8,459	8,455	(4)	0.0%	12.00%	1,719	25.52%
T/Rhinebeck	4,833	4,685	4,751	4,851	4,969	4,969	5,004	5,002	5,184	5,299	115	2.2%	11.59%	466	9.64%
T/Stanford	3,495	3,544	3,585	3,639	3,687	3,693	3,700	3,699	3,706	3,705	(1)	0.0%	4.35%	210	6.01%
T/Union Vale	3,577	4,546	4,557	4,717	4,867	4,944	4,977	4,986	4,993	4,996	3	0.1%	9.01%	1,419	39.67%
T/Wappinger	22,292	22,322	22,452	22,491	22,548	22,537	22,502	22,397	22,384	22,421	37	0.2%	0.44%	129	0.58%
T/Washington	3,140	3,313	3,328	3,325	3,354	3,341	3,319	3,318	3,326	3,321	(5)	-0.2%	0.24%	181	5.76%
V/Fishkill	1,957	1,735	1,747	1,746	1,744	1,737	1,726	1,711	1,699	1,692	(7)	-0.4%	-2.54%	(265)	-13.54%
V/Millbrook	1,339	1,429	1,471	1,493	1,538	1,534	1,539	1,524	1,517	1,509	(8)	-0.5%	5.30%	170	12.70%
V/Millerton	884	925	934	932	930	925	919	911	905	902	(3)	-0.3%	-2.55%	18	2.04%
V/Pawling	1,974	2,233	2,239	2,245	2,248	2,299	2,285	2,266	2,254	2,245	(9)	-0.4%	0.53%	271	13.73%
V/Red Hook	1,794	1,805	1,815	1,815	1,822	1,816	1,801	1,784	1,773	1,881	108	6.1%	4.04%	87	4.85%
V/Rhinebeck	2,725	3,077	3,090	3,095	3,101	3,096	3,090	3,073	3,058	3,049	(9)	-0.3%	-0.92%	324	11.89%
V/Tivoli	1,035	1,163	1,170	1,171	1,169	1,164	1,155	1,149	1,141	1,135	(6)	-0.5%	-2.47%	100	9.66%
V/Wapp. Falls	4,605	4,929	4,937	4,937	4,932	4,987	5,016	5,081	5,321	5,659	338	6.4%	12.90%	1,054	22.89%
Source: U.S. Bureau of the Census, (2001-2008 are Census estimates)															
*Figures have been adjusted by the Census Bureau to reflect 2000 Census figures															
Town data DOES NOT include Villages															

Resident Population*	New York State Governmental Units, 2007										Change 2006 - 2007		2000-2007		Change 1990-2007	
	April 1, 1990	April 1, 2000	July 1, 2001	July 1, 2002	July 1, 2003	July 1, 2004	July 1, 2005	July 1, 2006	July 1, 2007	#	%	#	%	#	%	
Dutchess County	259,462	280,150	284,243	286,875	289,334	291,051	292,018	292,202	292,746	544	0.2%	33,284	12.83%			
C/Beacon	13,243	14,810	14,902	14,645	14,746	14,682	14,582	14,558	14,548	(10)	-0.1%	1,305	9.85%			
C/Poughkeepsie	28,844	29,871	30,034	30,119	30,190	30,177	29,948	29,779	29,633	(146)	-0.5%	789	2.74%			
T/Amenia	5,195	4,048	4,091	4,096	4,122	4,129	4,122	4,123	4,118	(5)	-0.1%	(1,077)	-20.73%			
T/Beekman	10,447	13,655	14,130	14,370	14,654	14,725	14,775	14,767	14,853	86	0.6%	4,406	42.17%			
T/Cinton	3,760	4,010	4,069	4,107	4,145	4,167	4,165	4,185	4,203	18	0.4%	443	11.78%			
T/Dover	7,778	8,565	8,676	8,735	8,723	8,722	8,788	8,815	8,804	(11)	-0.1%	1,026	13.19%			
T/East Fishkill	22,101	25,589	26,316	26,919	27,494	27,993	28,420	28,732	28,899	167	0.5%	6,788	30.71%			
T/Fishkill	15,698	17,521	17,592	17,593	17,703	18,183	18,468	18,692	18,929	237	1.3%	3,231	20.58%			
T/Hyde Park	21,230	20,851	20,878	20,883	20,836	20,764	20,637	20,491	20,408	(83)	-0.4%	(822)	-3.87%			
T/La Grange	13,274	14,928	15,285	15,557	15,708	15,808	15,900	15,881	15,886	5	0.0%	2,612	19.68%			
T/Milan	1,895	2,356	2,417	2,463	2,508	2,543	2,585	2,622	2,632	10	0.4%	737	38.89%			
T/North East	2,034	2,077	2,101	2,117	2,132	2,166	2,199	2,228	2,227	(1)	0.0%	193	9.49%			
T/Pawling	3,973	5,288	5,542	5,752	5,878	5,980	5,990	5,997	5,988	(9)	-0.2%	2,015	50.72%			
T/Pine Plains	2,287	2,569	2,586	2,610	2,648	2,673	2,679	2,699	2,704	5	0.2%	417	18.23%			
T/Pleasant Valley	8,063	9,066	9,254	9,314	9,341	9,381	9,602	9,734	9,721	(13)	-0.1%	1,658	20.56%			
T/Poughkeepsie	39,254	41,800	42,471	43,159	43,435	43,576	43,611	43,415	43,265	(130)	-0.3%	4,031	10.27%			
T/Red Hook	6,736	7,440	7,757	7,886	8,052	8,208	8,363	8,410	8,424	14	0.2%	1,688	25.06%			
T/Rhinebeck	4,833	4,665	4,733	4,835	4,955	4,957	4,994	4,986	4,972	186	3.7%	339	7.01%			
T/Stanford	3,495	3,544	3,579	3,634	3,684	3,691	3,699	3,701	3,712	11	0.3%	217	6.21%			
T/Union Vale	3,577	4,546	4,639	4,802	4,954	5,033	5,067	5,079	5,091	12	0.2%	1,514	42.33%			
T/Wappinger	22,292	22,322	22,446	22,497	22,561	22,559	22,531	22,441	22,452	11	0.0%	160	0.72%			
T/Washington	3,140	3,313	3,345	3,344	3,373	3,362	3,341	3,342	3,353	11	0.3%	213	6.78%			
V/Fishkill	1,957	1,735	1,747	1,746	1,745	1,738	1,728	1,714	1,704	(10)	-0.6%	(253)	-12.93%			
V/Millbrook	1,339	1,429	1,470	1,494	1,538	1,535	1,541	1,527	1,521	(6)	-0.4%	182	13.59%			
V/Millerton	884	925	934	932	931	926	920	912	908	(4)	-0.4%	24	2.71%			
V/Pawling	1,974	2,233	2,238	2,245	2,249	2,301	2,287	2,270	2,261	(9)	-0.4%	287	14.54%			
V/Red Hook	1,794	1,805	1,815	1,815	1,823	1,817	1,804	1,787	1,779	(8)	-0.4%	(15)	-0.84%			
V/Rhinebeck	2,725	3,077	3,090	3,096	3,102	3,099	3,093	3,078	3,065	(13)	-0.4%	340	12.48%			
V/Tivoli	1,035	1,163	1,170	1,172	1,170	1,165	1,157	1,151	1,144	(7)	-0.6%	109	10.53%			
V/Wapp. Falls	4,605	4,929	4,936	4,938	4,934	4,991	5,022	5,086	5,332	246	4.8%	727	15.79%			

Source: U.S. Bureau of the Census (2001-2007 are Census estimates)

\*Figures have been adjusted by the Census Bureau to reflect 2000 Census figures

Town data DOES NOT include Villages

Resident Population	New York State Governmental Units, 1990 through 2001													Change 1990-2001	2000-2001
	April 1, 1990	July 1, 1991	July 1, 1992	July 1, 1993	July 1, 1994	July 1, 1995	July 1, 1996	July 1, 1997	July 1, 1998	July 1, 1999	April 1, 2000	July 1, 2001	#	%	%
Dutchess County	259,462	261,952	264,450	265,585	264,860	266,538	268,986	270,935	273,784	277,586	280,150	284,447	24,985	9.63%	1.53%
T/Amenia	5,195	5,195	5,106	5,234	5,096	4,976	4,996	4,745	4,717	4,745	4,048	4,048	-1,147	-22.08%	
C/Beacon	13,247	13,069	13,275	13,265	13,200	13,269	13,395	13,341	13,470	13,519	13,808	13,808	561	4.23%	
T/Beekman	10,360	10,494	10,668	10,771	10,819	11,042	11,170	11,291	11,569	11,925	13,655	13,655	3,295	31.81%	
T/Clinton	3,760	3,760	3,768	3,807	3,773	3,877	3,810	3,820	3,837	3,876	4,010	4,010	250	6.65%	
T/Dover	7,778	7,736	7,634	7,432	7,117	7,180	7,261	7,333	7,412	7,504	8,565	8,565	787	10.12%	
T/East Fishkill	22,167	22,780	22,997	23,075	23,003	23,253	23,632	24,022	24,525	25,195	25,589	25,589	3,422	15.44%	
T/Fishkill	17,571	17,571	17,666	17,608	17,651	17,686	17,826	17,897	18,000	18,132	20,258	20,258	2,687	15.29%	
V/Fishkill	1,957	1,957	1,956	1,952	1,950	1,949	1,958	1,966	1,978	1,999	2,022	2,022	222	11.34%	
T/Hyde Park	21,095	21,180	21,339	21,352	21,163	21,108	21,125	21,120	21,100	21,145	20,851	20,851	-244	-1.16%	
T/La Grange	13,284	13,298	13,388	13,402	13,325	13,403	13,525	13,627	13,787	14,066	14,928	14,928	1,644	12.38%	
T/Milhan	1,766	1,778	1,792	1,799	1,796	1,812	1,830	1,847	1,864	1,891	2,356	2,356	590	33.41%	
T/North East	2,918	2,942	2,969	2,969	2,950	2,949	2,958	2,966	2,978	2,999	3,002	3,002	84	2.88%	
V/Milerton	884	884	884	884	884	884	884	884	884	884	884	884	0	0.00%	
T/Pawling	5,947	5,964	5,996	6,003	5,967	5,965	5,982	5,997	6,017	6,058	7,521	7,521	1,574	26.47%	
V/Pawling	1,974	1,974	1,974	1,974	1,974	1,974	1,974	1,974	1,974	1,974	1,974	1,974	0	0.00%	
T/Pine Plains	2,285	2,304	2,327	2,331	2,316	2,321	2,334	2,342	2,345	2,359	2,569	2,569	284	12.43%	
T/Pleasant Valley	8,135	8,457	8,534	8,570	8,513	8,532	8,568	8,587	8,629	8,717	9,066	9,066	931	11.44%	
C/Poughkeepsie	28,860	28,641	28,658	28,401	27,949	27,798	27,757	27,715	27,675	27,748	29,871	29,871	1,011	3.50%	
T/Poughkeepsie	40,277	40,395	40,572	40,671	40,653	40,764	40,858	40,975	41,161	41,516	42,777	42,777	2,500	6.21%	
V/Wapp. Falls	880	880	880	880	880	880	880	880	880	880	880	880	0	0.00%	
T/Red Hook	9,691	9,719	9,783	9,816	9,760	9,765	9,801	9,828	9,862	9,928	10,408	10,408	717	7.40%	
V/Red Hook	1,794	1,794	1,794	1,794	1,794	1,794	1,794	1,794	1,794	1,794	1,794	1,794	0	0.00%	
V/Tivoli	1,035	1,035	1,035	1,035	1,035	1,035	1,035	1,035	1,035	1,035	1,035	1,035	0	0.00%	
T/Rhinebeck	7,602	7,570	7,603	7,602	7,555	7,553	7,572	7,588	7,610	7,653	7,762	7,762	128	12.37%	
V/Rhinebeck	2,725	2,725	2,725	2,725	2,725	2,725	2,725	2,725	2,725	2,725	2,725	2,725	0	0.00%	
T/Rhinebeck	3,495	3,540	3,567	3,586	3,576	3,584	3,601	3,617	3,639	3,664	3,544	3,544	362	12.92%	
T/Stanford	3,587	3,640	3,700	3,726	3,714	3,726	3,755	3,794	3,842	3,912	4,546	4,546	959	26.74%	
T/Wappinger	26,002	26,068	26,234	26,309	26,208	26,257	26,408	26,548	26,708	26,952	26,274	26,274	272	1.05%	
V/Wapp. Falls	3,716	3,716	3,716	3,716	3,716	3,716	3,716	3,716	3,716	3,716	3,716	3,716	0	0.00%	
T/Washington	4,479	4,525	4,545	4,552	4,541	4,564	4,592	4,624	4,666	4,733	4,742	4,742	263	5.87%	
V/Millbrook	1,339	1,339	1,339	1,339	1,339	1,339	1,339	1,339	1,339	1,339	1,339	1,339	90	6.72%	

Source: U.S. Bureau of the Census, (1991-1999 & 2001 are Census estimates)  
\*Figures have been adjusted by the Census Bureau to reflect 2000 Census figures  
Town data includes villages

Resident Population*	New York State Governmental Units, 2006												Change 2005 - 2006			2000-2006			Change 1990-2006		
	April 1, 1990	April 1, 2000	July 1, 2001	July 1, 2002	July 1, 2003	July 1, 2004	July 1, 2005	July 1, 2006	#	%	%	%	#	%	#	%					
Dutchess County	259,462	280,150	284,865	287,910	290,954	293,024	294,509	295,146	637	0.2%	5.35%	35,684	13.75%								
C/Beacon	13,243	14,810	14,933	14,697	14,827	14,780	14,831	14,908	77	0.5%	0.66%	1,665	12.57%								
C/Poughkeepsie	28,844	29,871	30,124	30,252	30,386	30,409	30,229	30,050	(179)	-0.6%	0.60%	1,206	4.18%								
T/Armenia	5,195	4,048	4,100	4,111	4,146	4,159	4,157	4,165	8	0.2%	2.89%	(1,030)	-19.83%								
T/Beekman	10,447	13,655	14,158	14,417	14,729	14,816	14,882	14,907	26	0.2%	9.17%	4,460	42.69%								
T/Clinton	3,760	4,010	4,078	4,123	4,169	4,196	4,200	4,228	28	0.7%	5.44%	488	12.45%								
T/Dover	7,778	8,565	8,695	8,768	8,775	8,784	8,863	8,905	42	0.5%	3.97%	1,127	14.49%								
T/East Fishkill	22,101	25,589	26,378	27,022	27,658	28,195	28,662	29,028	366	1.3%	13.44%	6,927	31.34%								
T/Fishkill	15,698	17,521	17,626	17,650	17,791	18,292	18,604	18,885	281	1.5%	7.78%	3,187	20.30%								
T/Hyde Park	21,230	20,851	20,924	20,959	20,952	20,903	20,810	20,697	(113)	-0.5%	-0.74%	(533)	-2.51%								
T/La Grange	13,274	14,928	15,320	15,617	15,801	15,922	16,036	16,044	9	0.1%	7.48%	2,770	20.87%								
T/Milan	1,895	2,356	2,422	2,472	2,522	2,561	2,607	2,649	42	1.6%	12.44%	754	39.79%								
T/North East	2,034	2,077	2,106	2,124	2,144	2,180	2,216	2,249	33	1.5%	8.28%	215	10.57%								
T/Pawling	3,973	5,288	5,555	5,774	5,913	6,023	6,045	6,063	18	0.3%	14.66%	2,090	52.61%								
T/Pine Plains	2,287	2,569	2,592	2,621	2,663	2,692	2,701	2,727	26	1.0%	6.15%	440	19.24%								
T/Pleasant Valley	8,063	9,066	9,276	9,350	9,396	9,449	9,684	9,835	151	1.6%	8.48%	1,772	21.98%								
T/Poughkeepsie	39,254	41,800	42,538	43,282	43,642	43,832	43,913	43,752	(161)	-0.4%	4.67%	4,498	11.46%								
T/Red Hook	6,736	7,440	7,772	7,911	8,093	8,258	8,422	8,420	(2)	0.0%	13.17%	1,684	25.00%								
T/Rhinebeck	4,833	4,685	4,742	4,851	4,980	4,987	5,014	5,013	(1)	0.0%	7.00%	180	3.72%								
T/Starford	3,495	3,544	3,587	3,648	3,705	3,717	3,730	3,739	9	0.2%	5.50%	244	6.98%								
T/Union Vale	3,577	4,546	4,649	4,819	4,982	5,067	5,108	5,128	20	0.4%	12.80%	1,551	43.36%								
T/Wappinger	22,292	22,322	22,499	22,584	22,696	22,721	22,723	22,671	(52)	-0.2%	1.56%	379	1.70%								
T/Washington	3,140	3,313	3,352	3,356	3,392	3,384	3,367	3,374	7	0.2%	1.84%	234	7.45%								
V/Fishkill	1,957	1,735	1,751	1,753	1,755	1,751	1,743	1,732	(11)	-0.6%	-0.17%	(225)	-11.50%								
V/Millbrook	1,339	1,429	1,474	1,499	1,547	1,546	1,554	1,543	(11)	-0.7%	7.98%	204	15.24%								
V/Millerton	884	925	936	936	936	933	928	922	(6)	-0.6%	-0.32%	38	4.30%								
V/Pawling	1,974	2,233	2,243	2,253	2,261	2,317	2,306	2,292	(14)	-0.6%	2.64%	318	16.11%								
V/Red Hook	1,794	1,805	1,819	1,822	1,834	1,830	1,819	1,805	(14)	-0.8%	0.00%	11	0.61%								
V/Rhinebeck	2,725	3,077	3,096	3,106	3,119	3,119	3,114	3,103	(11)	-0.4%	0.84%	378	13.87%								
V/Tivoli	1,035	1,163	1,173	1,176	1,177	1,174	1,167	1,163	(4)	-0.3%	0.00%	128	12.37%								
V/Wapp. Falls	4,605	4,929	4,947	4,957	4,963	5,027	5,075	5,149	74	1.5%	4.46%	544	11.81%								

Source: U.S. Bureau of the Census, (2001-2006 are Census estimates)

\*Figures have been adjusted by the Census Bureau to reflect 2000 Census figures

Town data DOES NOT include Villages

Resident Population*	New York State Governmental Units, 2003									
	April 1,	July 1,	2000-2001	July 1,	2001-2002	July 1,	2002-2003			
	2000	2001	%	2002	%	2003	%			
Dutchess County	280,150	284,270	1.5%	287,752	1.2%	290,885	1.1%			
C/Beacon	14,810	14,881	0.5%	14,592	-1.9%	14,803	1.4%			
C/Poughkeepsie	29,871	29,980	0.4%	30,069	0.3%	30,174	0.3%			
T/Amenia	4,048	4,113	1.6%	4,136	0.6%	4,182	1.1%			
T/Beekman	13,655	14,119	3.4%	14,375	1.8%	14,681	2.1%			
T/Clinton	4,010	4,077	1.7%	4,122	1.1%	4,168	1.1%			
T/Dover	8,565	8,723	1.8%	8,821	1.1%	8,933	1.3%			
T/East Fishkill	25,589	26,363	3.0%	26,997	2.4%	27,625	2.3%			
T/Fishkill	19,256	19,413	0.8%	19,492	0.4%	19,603	0.6%			
T/Hyde Park	20,851	20,965	0.5%	21,012	0.2%	21,055	0.2%			
T/La Grange	14,928	15,314	2.6%	15,606	1.9%	15,788	1.2%			
T/Milan	2,356	2,424	2.9%	2,475	2.1%	2,527	2.1%			
T/North East	3,002	3,045	1.4%	3,067	0.7%	3,090	0.7%			
T/Pawling	7,521	7,795	3.6%	8,022	2.9%	8,160	1.7%			
T/Pine Plains	2,569	2,596	1.1%	2,628	1.2%	2,674	1.8%			
T/Pleasant Valley	9,066	9,290	2.5%	9,377	0.9%	9,437	0.6%			
T/Poughkeepsie	42,777	43,411	1.5%	44,196	1.8%	44,543	0.8%			
T/Red Hook	10,408	10,658	2.4%	10,808	1.4%	10,990	1.7%			
T/Rhinebeck	7,762	7,859	1.2%	7,969	1.4%	8,118	1.9%			
T/Stanford	3,544	3,587	1.2%	3,649	1.7%	3,708	1.6%			
T/Union Vale	4,546	4,679	2.9%	4,847	3.6%	5,008	3.3%			
T/Wappinger	26,274	26,465	0.7%	26,567	0.4%	26,686	0.4%			
T/Washington	4,742	4,825	1.8%	4,855	0.6%	4,939	1.7%			
V/Fishkill	1,735	1,750	0.9%	1,752	0.1%	1,754	0.1%			
V/Millbrook	1,429	1,472	3.0%	1,497	1.7%	1,544	3.1%			
V/Millerton	925	935	1.1%	935	0.0%	935	0.0%			
V/Pawling	2,233	2,242	0.4%	2,252	0.4%	2,259	0.3%			
V/Red Hook	1,805	1,819	0.8%	1,822	0.2%	1,833	0.6%			
V/Rhinebeck	3,077	3,093	0.5%	3,101	0.3%	3,114	0.4%			
V/Tivoli	1,163	1,172	0.8%	1,174	0.2%	1,175	0.1%			
V/Wapp. Falls	4,693	4,955	5.6%	4,981	0.5%	4,991	0.2%			

Source: U.S. Bureau of the Census, (1995 & 2001-2003 are Census estimates)

\*Figures have been adjusted by the Census Bureau to reflect 2000 Census figures

Town data includes villages

**Table 2**

<b>TABLE 2: HOUSING UNITS</b>			
<b>DUTCHESS COUNTY PLANNING UNIT</b>			
	April 1, 1990	April 1, 2000	Percent Change
Dutchess County	97,632	106,103	8.7%
C/Beacon	5,039	5,410	7.4%
C/Poughkeepsie	13,112	13,153	0.3%
T/Amenia	1,821	1,814	-0.4%
T/Beekman	3,176	4,180	31.6%
T/Clinton	1,544	1,734	12.3%
T/Dover	3,018	3,266	8.2%
T/East Fishkill	7,265	8,495	16.9%
T/Fishkill	4,934	6,025	22.1%
T/Hyde Park	7,473	7,704	3.1%
T/La Grange	4,553	5,240	15.1%
T/Milan	974	1,090	11.9%
T/North East	960	954	-0.6%
T/Pawling	1,770	2,156	21.8%
T/Pine Plains	1,050	1,161	10.6%
T/Pleasant Valley	3,186	3,614	13.4%
T/Poughkeepsie	13,882	14,691	5.8%
T/Red Hook	2,171	2,511	15.7%
T/Rhinebeck	1,702	1,792	5.3%
T/Stanford	1,564	1,712	9.5%
T/Union Vale	1,340	1,464	9.3%
T/ Wappinger	8,117	8,466	4.3%
T/Washington	1,361	1,448	6.4%
V/Fishkill	1,057	1,011	-4.4%
V/Millbrook	709	744	4.9%
V/Millerton	407	412	1.2%
V/Pawling	810	945	16.7%
VRed Hook	760	798	5.0%
V/Rhinebeck	1,345	1,463	8.8%
V/Tivoli	474	531	12.0%
V/Wappingers Falls	2,058	2,119	3.0%
Source: U.S. Bureau of the Census			
Town data DOES NOT include Villages			

## **1.2 Planning Unit Constituent Municipalities.**

The Dutchess County Planning Unit (DCPU) consists of 30 incorporated municipalities; two cities (Poughkeepsie, Beacon), 20 towns (Amenia, Beekman, Clinton, Dover, East Fishkill, Fishkill, Hyde Park, LaGrange, Milan, North East, Pawling, Pine Plains, Pleasant Valley, Poughkeepsie, Red Hook, Rhinebeck, Stanford, Union Vale, Wappinger, Washington), and eight villages (Fishkill, Millbrook, Millerton, Pawling, Red Hook, Rhinebeck, Tivoli, Wappingers Falls).

The Dutchess County Resource Recovery Agency is a county-wide local public benefit corporation responsible for providing solid waste management services for Dutchess County. DCRRA has been engaged, since its creation in 1983, in the planning, financing, construction and operation of a waste-to-energy facility (RRF) to process solid waste in the DCPU. Since 1990, the DCRRA has also overseen the Materials Recovery Facility for recyclables.

The Dutchess County Department of Solid Waste Management is responsible for the formulation and implementation of programs for the collection and disposal of solid waste generated within the County. The Department is also charged with regularly reporting to the County Executive with any appropriate recommendations regarding integration of both public and private facilities for accepting, hauling, processing and disposing of solid waste.

Although the DCRRA and the DCPU were established to develop a system and provide services on a county-wide basis, decisions were made to limit the capacity of the Agency's processing facilities which effectively reduces the current service area to something less than the entire County.

In the 2009 FCSWMA report, an estimate of the total waste generated of approximately 250,000 tons per year was made by examining data from the United States Environmental Protection Agency (USEPA), the State Department of Environmental

Conservation (NYSDEC) and other comparable communities in New York State. Based on the facility's throughput in 2009, the RRF handles approximately 62% of the total waste generated in the County. Although the Agency regularly surveys major commercial/industrial/institutional waste generators and haulers, the region's current collection practices make it impossible to document the actual volume of waste generated in the County. However, the operating experience at the RRF and the MRF combined with the surveys and analysis of other communities in the State allows for a reasonable estimation of total volumes. The actual communities served by the RRF are generally determined by proximity and by annual negotiations with private haulers.

The existing Materials Recovery Facility is centrally located and is used by local municipalities and private haulers who collect for the municipalities and their own subscription customers. However, if the recommendations of this plan are implemented, the existing MRF is not sized or equipped to accommodate all the recyclables generated in the County.

Both the RRF and the MRF are available to provide service to any local municipality, however both are limited in their total processing capacity to something less than all the waste and recyclables generated in the County.

### **1.3 Planning Unit Unique Conditions.**

#### **Recreation and Tourism**

There are numerous recreational facilities located throughout the County which significantly affect seasonal waste generation rates. Tourism is an important component of the Dutchess County economy, bringing more than 4 million visitors annually. The central location within the tri-state area and the numerous travel options all help to increase visitation from out-of-county and state. The greatest numbers of tourists visit Dutchess during the summer and fall, affecting waste generation in those seasons the most.

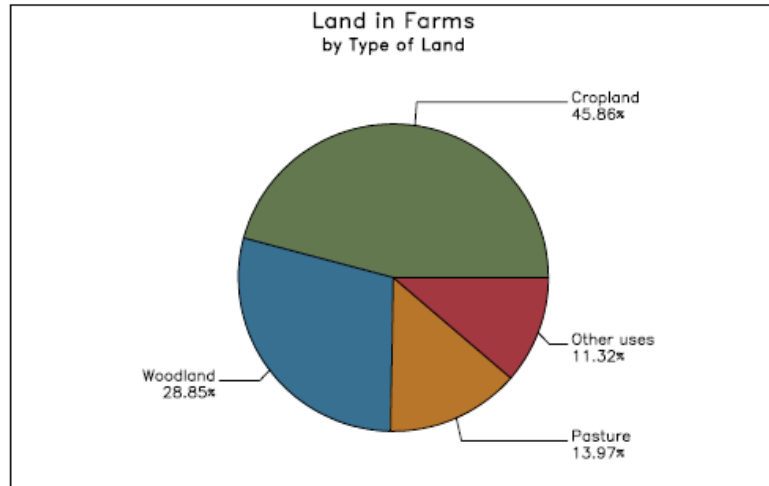
There are several major attractions in Dutchess County including a large water park, 16 public golf courses, yacht clubs and boating facilities, national historic landmark estates and sites such as the home of President Franklin Delano Roosevelt, and over 3,000 acres of public parkland. The Dutchess County Fair, held annually in late August, is the second highest attended county fair in New York State and is one of the biggest events in the County. Fair officials estimate that over 500,000 people attend the fair annually, both residents and non-residents. Dutchess County is also home to Dutchess Stadium, a 4,494 capacity Class A minor league stadium. In addition to the above, there are a large number of camps, both day and overnight facilities, for youth and adults throughout the County.

The recent completion of the Walkway Over The Hudson, the world's longest pedestrian bridge, spanning the Hudson River connecting Ulster and Dutchess County, has created a major new recreational attraction. In less than a year, it is estimated that over 400,000 bridge walkers have visited Dutchess County. The Walkway is attracting visitors from both in-county and out-of-county.

The population increase during the Summer months significantly increases the amount of waste generated. Also, the Fall foliage season brings in many tourists, contributing to the need for the many lodging establishments across the County.

### **Agriculture**

Dutchess County has a large agricultural community, with over 102,000 acres devoted to farming. The U.S. Census of Agriculture figures show that 46,938 of the acreage is cropland, with the rest used for livestock facilities, woodlands and pastureland.



According to the New York State Agricultural Statistics Service, in 2008 there were 102,360 acres in farms, or about 20% of the County's total land area. There were 656 farms in the County averaging 156 acres per farm. Dutchess County ranks 23<sup>rd</sup> in the State for the number of farms and 35<sup>th</sup> for land in farms. Like most of New York, this represents a significant decline over the past several decades. In 1960, there were 200,000 acres in farming in the County.

In 2007, according to the Census of Agriculture, the market value of all agricultural products sold from farms in the County was \$44.8 million. Total sales averaged \$68,393 per farm. The leading products sold were milk and dairy, horses and mules, nursery and floriculture, vegetables and potatoes, and fruits and nuts.

## **Schools**

There are five (5) colleges in the County (Vassar, Marist, Bard, the Culinary Institute of America (CIA) and Dutchess Community College), and a technical institute (Ridley-Lowell Business & Technical Institute). The estimated full-time equivalent student enrollment at these six (6) institutions is approximately 22,000. Even though the colleges typically have decreased population during the summer months, with the exception of the CIA which holds classes year-round, they also run summer sessions,

campus and youth programs. As noted in Chapter 3, several of the colleges have some type of organics separation program.

The County has 13 school districts, comprised of 70 public schools and over 46,000 students. In addition, there are 34 private schools, eight (8) with boarding facilities.

### **Correctional Institutions**

There are five (5) correctional facilities in Dutchess County (Greenhaven, Fishkill, Downstate, Camp Beacon and Dutchess County Jail), with a total approximate inmate population of over 6,400. Organics composting is done at Greenhaven and Fishkill. Downstate and Beacon share a compost operation located at Fishkill.

### **Commerce and Industry**

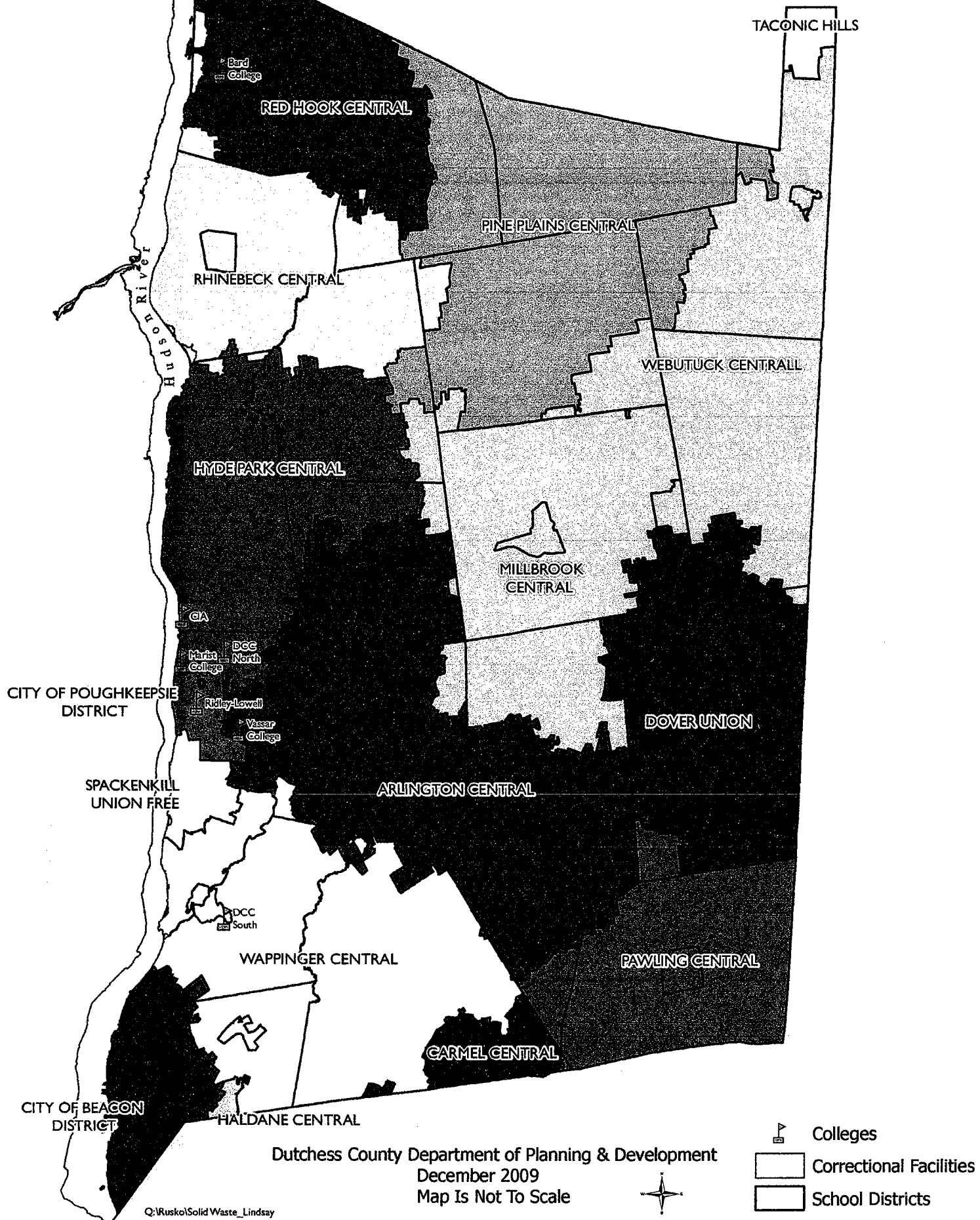
There are over 8,000 businesses in the County, employing over 115,000 workers. One of the largest private employers in the County is International Business Machines Corporation (IBM). There are two large IBM facilities in two major population centers, employing over 11,000 workers combined. Government employs over 22,000 workers, Federal (1,225), State (6,952) and Local Government (14,166).

The County has approximately 65,419,186 square feet of commercial space on 6,975 individual properties. The current County Real Property Tax structure data provides the following statistics for commercial enterprises:




**Table 3**

Apartments: 1,312 buildings	Fast Food: 48
Banks: 90	Supermarkets: 18
Churches: 150	Dorms: 81
Stores: 921	Fire Stations: 60
Department: 9	Hotels: 8
Discount: 11	Motels: 91
Mall: 6	Manufacturing: 117
Store: 800	Offices: 1,360
Strip: 95	Mixed Use: 462
Dining Establishments: 237	Warehouses: 431
Dining: 147	Mini-warehouses: 100
Dine/Lounge: 42	Auto/Drive-in: 178
Service Stations: 236	

# Institutions, Dutchess County Planning Unit



Dutchess County Department of Planning & Development  
 December 2009  
 Map Is Not To Scale

-  Colleges
-  Correctional Facilities
-  School Districts

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# Dutchess County Census 2000 Population

- NAME
- ADAMS FARMACHE FARMS INC
  - ALAMO AMBULANCE SVC
  - ALL SPORTS HEALTH & FITNESS
  - ANYTIME HOME CARE INC
  - ARLINGTON MIDDLE SCHOOL
  - ARNOFF MOVING & STORAGE INC
  - ASTOR HOME FOR CHILDREN
  - AUTOMATIC SYSTEMS DEVELOPERS
  - B & B WHOLESALE CLUB
  - BANK OF THE HUDSON
  - BARNEYS & NOBLE BOOKSELLERS
  - BEACON BOARD OF EDUCATION
  - BEACON HEALTH FACULTY
  - BEACON HIGH SCHOOL
  - BEACON BOARD OF CHURCH ED
  - BOTTINI FUEL OIL
  - BRINCKERHOFF ELEMENTARY SCHOOL
  - CAMPENKILL COUNTRY CLUB
  - CENTRAL HUDSON GAS & ELECT CORP
  - CHAMPRENE INC
  - CHILDREN'S HOME
  - CHILDREN'S HOME
  - COUNTY SHERIFF'S DEPT
  - CRUM KENNY'S SPORTSWEAR CLUB ASSN
  - CULINARY INSTITUTE OF AMERICA
  - DOMESTIC CARE CO
  - DOWNSSTATE CORRECTIONAL
  - DUTCHESS COMMUNITY COLLEGE
  - DUTCHESS COUNTY JAIL
  - DUTCHESS COUNTY PROBATION OFC
  - DUTCHESS COUNTY PUBLIC HEALTH
  - DUTCHESS COUNTY PUBLIC WORKS
  - DUTCHESS COUNTY SHERIFF
  - DUTCHESS COUNTY SOCIAL SVC
  - EAST FISHKILL RECREATION OFC
  - EDEN PARK NURSING HOME
  - EFOO PRODUCTS INC
  - FARROW MANUFACTURING CO INC
  - FENICLIFF NURSING HOME CO
  - FISHKILL CORRECTIONAL
  - FISHKILL LONG TERM HOME HEALTH
  - FISHKILL TOWN HALL
  - FOUR OLD NAVY RET CRTS CENTER
  - GREAT EASTERN COLOR CORP
  - GRIEKEN HAVEN CORRECTIONAL
  - H O PENN MACHINERY CO
  - HADLEY DRINE ELEMENTARY SCHOOL
  - HEALEY HYUNDAI
  - HEALTH DEPARTMENT
  - HIGDON INC
  - HOMECARE HEALTH CARE & COMPANION
  - HUDSON VALLEY CARE CRTS
  - HUDSON PEACE DYE
  - HUDSON RIVER PAVON CENTER
  - HUDSON VALLEY FEDERAL CU
  - IBM CORP
  - JIM CORP
  - J C PENNEY CO
  - JAMES BURN AMERICAN INC
  - K MART
  - K MART
  - KIRBY ROAD ELEMENTARY SCHOOL
  - LAFORCE MEDICAL GROUP
  - LECHMERE
  - MET BANK
  - MARIST COLLEGE
  - MARBULL & ETERLING INC
  - MOR HUDSON VALLEY LAZER INC
  - MEDIAONE ADVERTISING SVC
  - METEXER REPORTING SVC
  - MERCHANT PRESS INC
  - MORISE YOUNG GOLD MARKET BOVL
  - MULTI-COUNTY COMMUNITY DEV
  - MFLER CONNORS SCHOOL
  - NEW HUDSON RESOURCES INC
  - NORTHERN DUTCHESS HOSPITAL
  - NYE DEPT. OF TRANSPORTATION
  - OAK GROVE ELEMENTARY SCHOOL
  - OLIVE GARDEN
  - PAWLING CORP
  - PHILIPS BEN CONDUCTOR
  - PLANNED PARENTHOOD
  - POUGHKEEPSIE FIRE DEPT
  - POUGHKEEPSIE GALLERIA
  - POUGHKEEPSIE HIGH SCHOOL
  - POUGHKEEPSIE JOURNAL
  - POUGHKEEPSIE MIDDLE SCHOOL
  - POUGHKEEPSIE TOWN COMPTROLLER
  - PREFRAY CORP
  - RED LOBSTER RESTAURANT
  - REHAB PROGRAMS INC
  - REHABILITATION PROGRAMS INC
  - REHABILITATION SCHOOL & CLINIC
  - RISE INVENTORY SPECIALIST
  - RISE MOVERS INC
  - ROHODUIT ELECTRIC INC
  - RON C KET DRUM BENDOR HIGH BOHE
  - ROPER CLUB
  - ROHATZ BEARING CORP
  - SEARS ROEBUCK & CO
  - SEYMOUR BIRTH ELEMENTARY SCHL
  - SLEPERMILLIN COMMUNITY SVC
  - SOUTH HILLS MALL
  - ST FRANCIS HOSPITAL
  - STOP & SHOP SUPERMARKET
  - TACONIC DEVELOPMENTAL SVC
  - TALKIE INC
  - THOMPSON HOUSE
  - TOWN OF POUGHKEEPSIE POLICE DEPT
  - TURNING POINT
  - US POST OFFICE
  - VARBAR BROTHERS HOSPITAL
  - VALMART
  - WAPPINGERS FALLS JR HIGH SCHL
  - WINDGATE AT DUTCHESS
  - WVCA

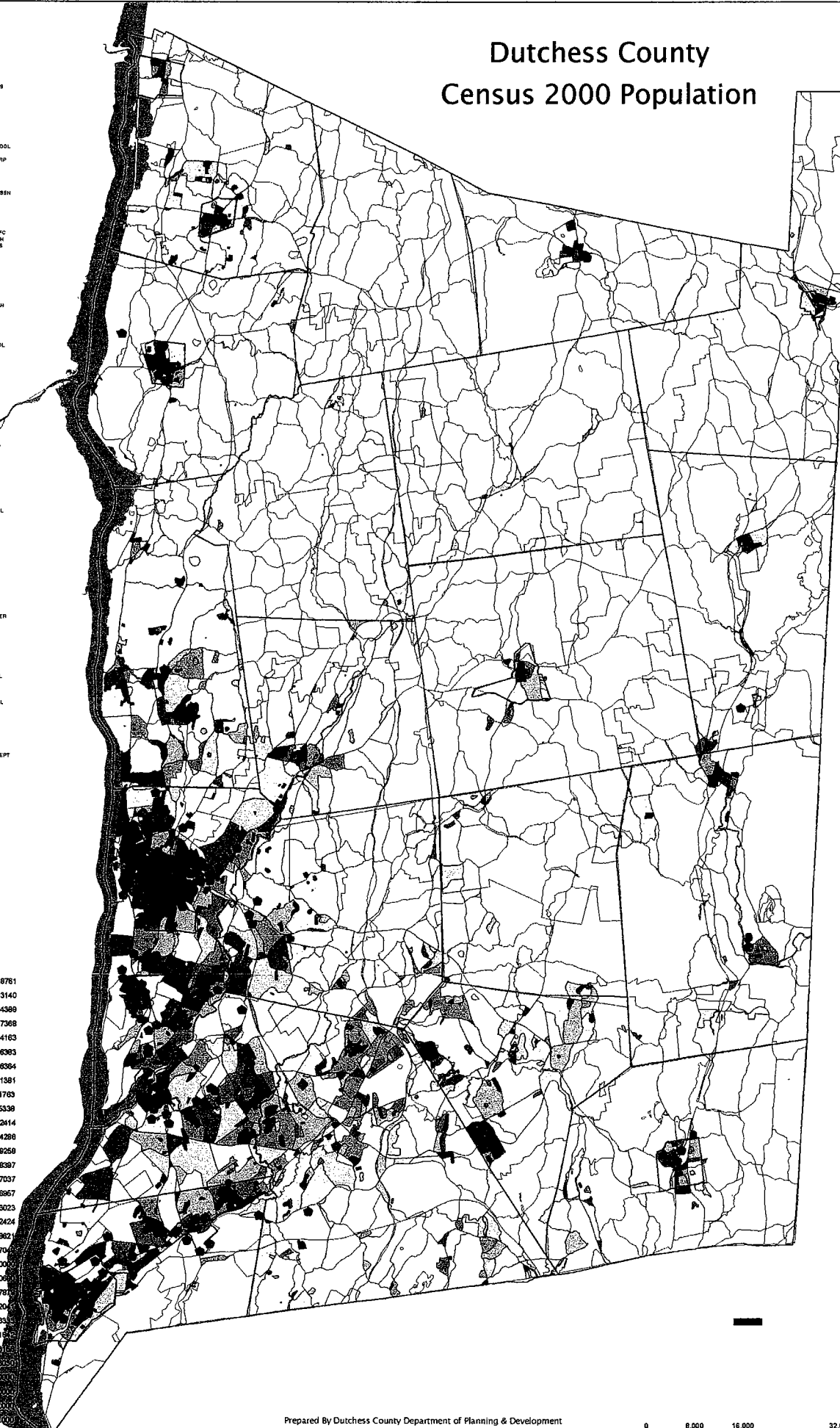
## Legend

Major Employers

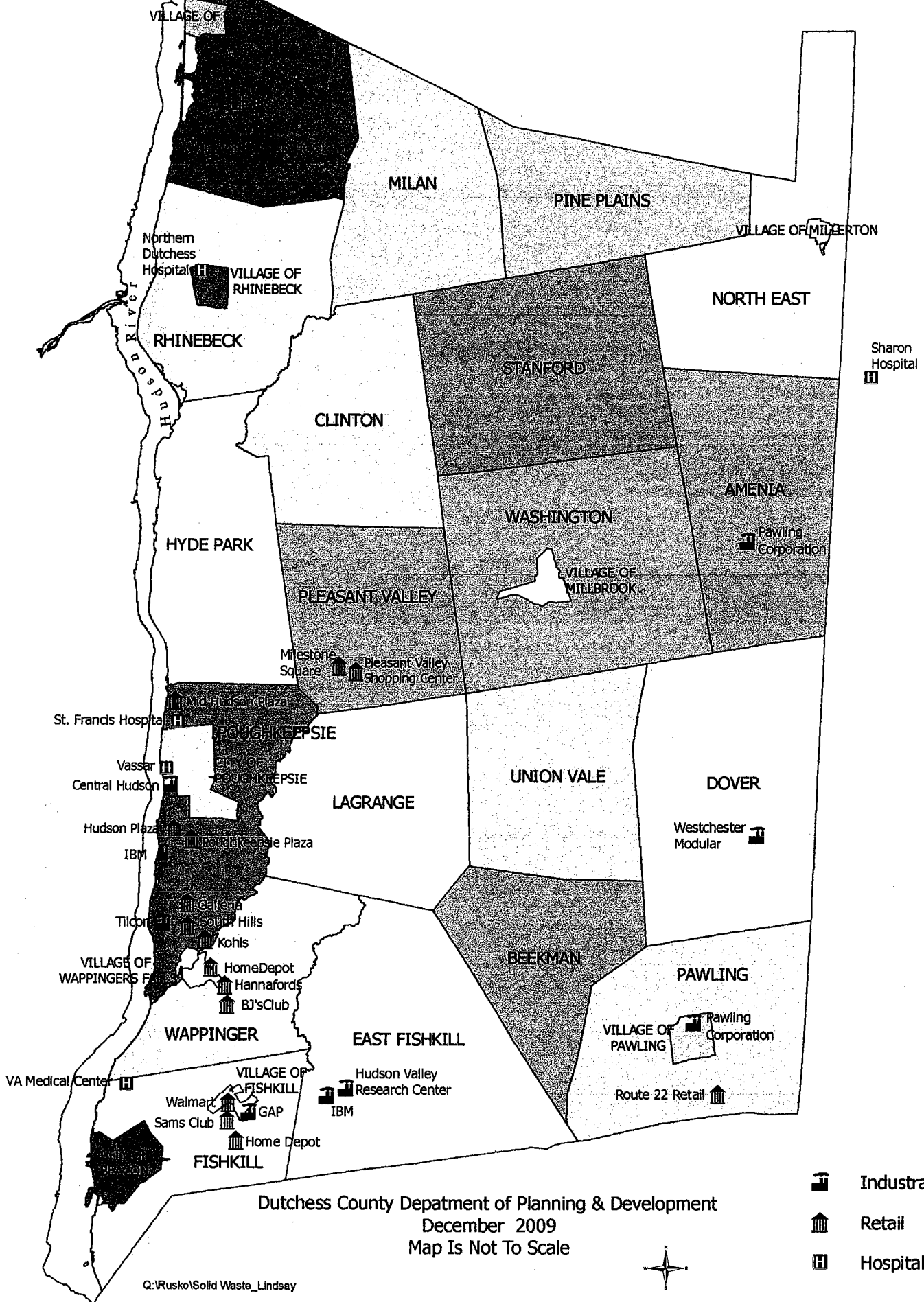
Blocks-Census 2000

TOTALPOP / SqMi

1,340,21308 - 70,4738781
70,4738782 - 147,203140
147,203141 - 234,284388
234,284389 - 328,947368
328,947369 - 448,804183
448,804184 - 585,106383
585,106384 - 738,838304
738,838305 - 925,201381
925,201382 - 1115,81783
1115,81784 - 1315,45338
1315,45339 - 1561,72414
1561,72415 - 1867,14288
1867,14289 - 2195,89258
2195,89259 - 2518,08387
2518,08388 - 2870,37037
2870,37038 - 3260,88687
3260,88688 - 3720,83023
3720,83024 - 4242,42424
4242,42425 - 4827,58821
4827,58822 - 5573,770
5573,77050 - 8500,000
8500,00001 - 7588,208
7588,20891 - 8787,878
8787,87890 - 10510,20
10510,2042 - 13333,33
13333,3334 - 16587,18
16587,1843 - 20528,1
20528,3158 - 28030
28030,3031 - 43000
43000,0001 - 80000
80000,0001 - 150000
150000,001 - 500000



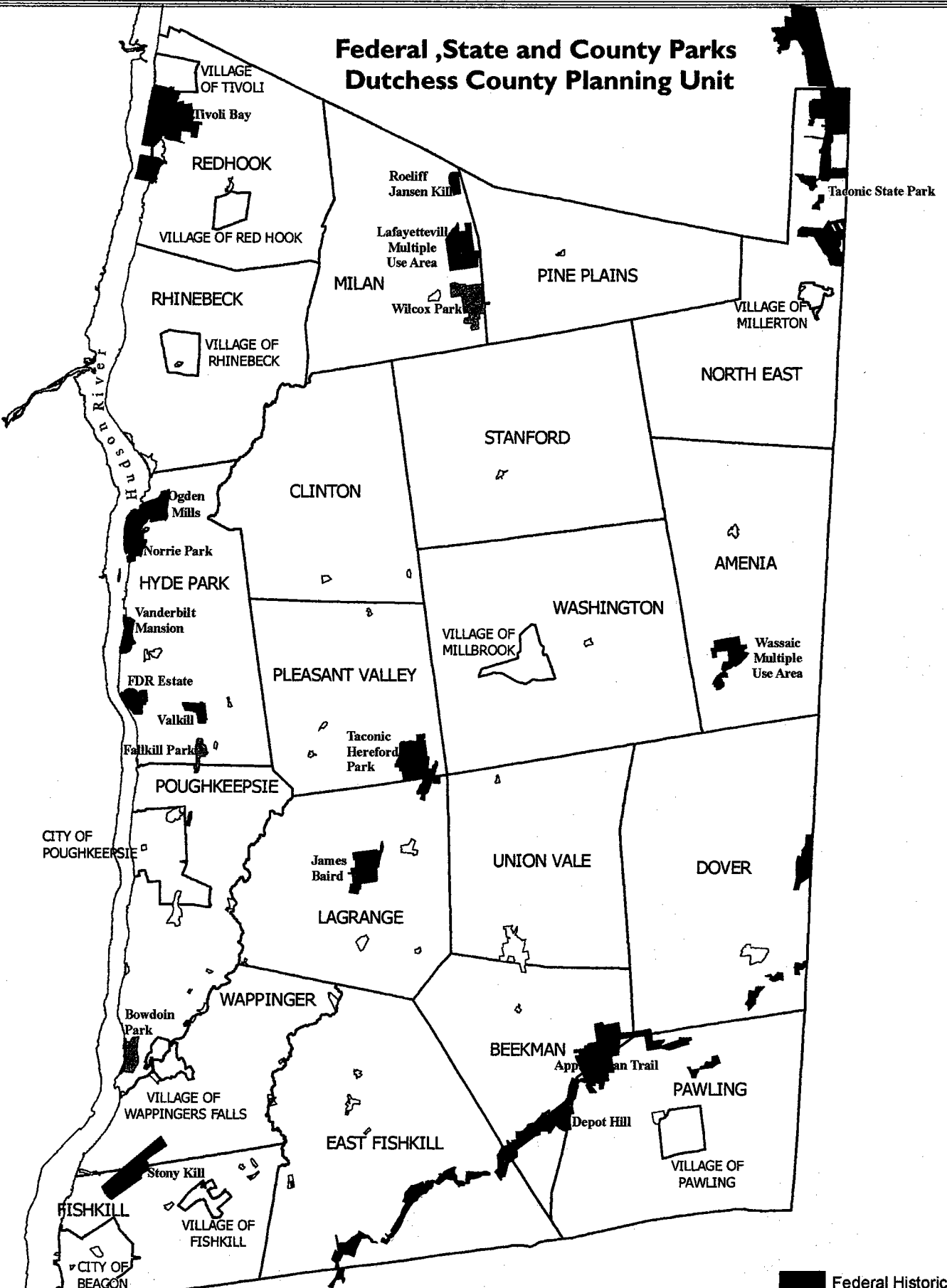
# Significant Industries and Retail Centers In Dutchess



Dutchess County Department of Planning & Development  
 December 2009  
 Map Is Not To Scale

-  Industrial
-  Retail
-  Hospitals

# Federal, State and County Parks Dutchess County Planning Unit



Dutchess County Department of Planning & Development  
 December 2009  
 Map Is Not To Scale



- Federal Historic Sites
- Federal Trails
- State Parks
- County Parks
- Municipal Parks

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## **1.5 Changes to Planning Unit.**

Since the adoption of the 1992 Local Solid Waste Management Plan (1992 LSWMP) for Dutchess County, there have been no changes to the geographic boundaries of the Planning Unit. During the same period, there has been a significant increase in population. Between the 1990 Census and the 2009 Census estimates, population has increased by over 13% and housing units by almost 9%.

When the 1992 LSWMP was adopted, there were still six local municipal landfills being operated. At the time, all were under Consent Order to bring their facilities into compliance by upgrading or submitting closure plans. All local landfills have since closed.

In addition, as of 1991, there were seven municipal transfer stations in the County and one private transfer station operated by Royal Carting. Currently, there are 17 municipal transfer stations, with only one not accepting household trash. Royal Carting operates two private transfer stations in Hopewell Junction and Wingdale, New York. Also, the DCRRA accepts commingled recyclables and fiber at no charge, and the service is available to all residents of the County.

## CHAPTER 2: SOLID WASTE QUANTITY AND TYPE

The facilities and programs owned and operated by the Agency for the County are available to all residents, businesses, industries and institutions in the County but actual service is limited by processing capacity at the RRF and the size and equipment at the MRF. The Agency has compiled complete records of waste delivered to the RRF and of recyclables delivered to the MRF, as shown below.

**Table 4**  
Tonnage Received

	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>
Waste to RRF	152,802	154,020	144,473	142,844	150,641
Recyclables to MRF	16,637	16,694	14,044	10,630	12,656

Due to the limitation on processing capacity of the RRF, it was necessary to develop an estimate of all waste generated in Dutchess County to serve as a basis for making projections and plans. This was done as part of the 2009 FCSWMA report and was checked and updated as part of this plan.

Three methods of evaluating total waste volumes were used: per-capita waste generation, per-household waste generation and the ratio of residential MSW to commercial/industrial MSW. Information developed by the USEPA, the NYSDEC and other comparable communities in New York State was evaluated. The information from the EPA was helpful, but it reflects a nationwide average and, therefore, any distinct regional differences are not evident. Also, the EPA information is only as good as that data reported by the individual states and there is variability in the metrics among the states. The information from the DEC reflects significant variation in the metrics used by planning units and, therefore, should not be used without qualification.

In looking at this wide range of information, the approach selected used these sources plus data from communities where there is a high level of confidence in their accuracy,<sup>1</sup> as shown below:

**Table 5**

Waste Generation Rates-Other Communities

<u>Community</u>	<u>T/P/Y</u>	<u>T/H/Y</u>
Babylon	0.798	2.448
Fulton	0.946	2.383
Madison	0.561	1.544
Oneida-Herkimer	0.604	1.531
Onondaga	0.660	1.654
Smithtown	0.984	2.958
USA(EPA)	0.843	-
Average	0.771	2.086
T/P/Y = Tons Per Person Per Year T/H/Y = Tons Per Household Per Year		

Using the average indicated above, the total waste generated in Dutchess County is estimated to be in the range of 226,336 tons per year (using tons per person per year) to 235,067 tons per year (using tons per household per year). To further evaluate this calculation, the ratio of residential MSW to commercial/industrial/institutional MSW was considered. Based on examination of similar communities, it is estimated that approximately 60% of the MSW generated in Dutchess County is residential with the remaining 40% coming from commercial/industrial/institutional sources.

Even though only reliable data was used, this estimate is not intended to be exact. Based on numerous factors, it is believed that the total volume of MSW generated in

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<sup>1</sup> The communities selected each have the capacity to receive all waste generated within their boundaries and have successfully employed flow control regulations to assure delivery over several years.

Dutchess County is likely at the upper end of the totals shown above. In the future, there will be continuing efforts to reduce the volume of non-recyclable waste. However, the full effectiveness of these efforts remains to be seen, and Dutchess County is expected to see population growth in the future. Therefore, if measures are taken to manage all MSW, the Agency should plan based on a volume of approximately 250,000 tpy. These figures do not include wastewater treatment sludges, regulated medical waste, asbestos waste, contaminated soil or construction and demolition debris.

By implementing the recommendations herein, the Agency will take responsibility for all waste generated in the County and, in doing so, it can build a database, documenting for the first time, the volume of waste actually generated in the County. By the time decisions are required for commitments to new programs, new facilities and facility upgrades, the Agency will have reliable data that can be used to update the analyses performed in this LSWMP and that can serve as a basis for determining design, capacity and other factors.

To evaluate the character of waste generated in Dutchess County, information from EPA, DEC and other New York State planning units was examined. Although no breakdown of the waste stream can be precise, these sources of data, combined with the Agency's extensive operating experience, provide a sound basis to make a reasonable estimation of waste characteristics. The estimates provided in Table 6 rely on the EPA analysis of the waste stream and track closely with the DEC waste composition estimates. It should be noted that EPA's method shows many elements usually included in the broad category of municipal solid waste (MSW) as separate material types, resulting in what appears to be a low percentage of MSW.

**Table 6****Current Solid Waste Quantities and Types**

<u>Material Type</u>	<u>Generation</u>		<u>Recycling</u>	<u>Energy</u>	
	<u>Percent</u>	<u>Tons</u>		<u>Recovery</u>	<u>Landfill</u>
Aluminum Cans	1%	2,606	104	1,460	1,042
Steel Cans	1%	2,606	104	1,460	1,042
Glass	5%	13,031	521	7,298	5,212
HDPE	1%	2,606	104	1,460	1,042
PET	1%	2,606	104	1,460	1,042
Corrugated Cardboard	7%	18,244	2,468	10,216	5,560
Magazines	2%	5,212	208	2,919	2,085
Newspapers	5%	13,031	2,102	5,717	5,212
Office Paper	4%	10,425	417	5,838	4,170
Phone Books	1%	2,606	104	1,460	1,042
Text Books	1%	2,606	104	1,460	1,042
Food Scraps	21%	54,732	851 (C)	32,329	21,552
Yard Trimmings	1%	2,606	104 (C)	1,460	1,042
Grass	1%	2,606	104 (C)	1,460	1,042
Leaves	1%	2,606	104 (C)	1,460	1,042
Branches	1%	2,606	104 (C)	1,460	1,042
Mixed Paper (Gen)	5%	13,031	521	7,298	5,212
Mixed Paper (Res)	4%	10,425	417	5,838	4,170
Mixed Paper (Of)	4%	10,425	417	5,838	4,170
Mixed Metals	4%	10,425	417	5,838	4,170
Mixed Plastics	7%	18,244	730	10,216	7,298
Clay Bricks	2%	5,212	0	0	5,212
Concrete	2%	5,212	208	0	5,004
Dim Lumber	3%	7,819	313	4,378	3,128
MSW	15%	39,102	0	26,406	12,696
<b>TOTAL</b>	<b>100%</b>	<b>260,630</b>	<b>10,630</b>	<b>144,729</b>	<b>105,271</b>
(C) = Compost					

## **CHAPTER 3: EXISTING PROGRAM DESCRIPTION**

The existing integrated solid waste management system in Dutchess County relies upon a variety of services performed by County government, the Dutchess County Resource Recovery Agency, local governments in the County's cities, towns and villages, and private sector entities located both within and outside of the jurisdictional boundaries of the County. These services include collection of solid waste and recyclables, processing and sale of recyclables, combustion of MSW to generate electric power, composting of organics and landfilling of MSW, construction and demolition debris, and ash residue from resource recovery.

This chapter will identify and describe the administrative and financial structure governing the existing program, the existing solid waste facilities in the County, and the network of public and private collection, recycling, composting and landfilling activities that play a role in the management of Dutchess County solid waste. Chapter 6 will evaluate the performance and utility of these various elements of the integrated system, and recommend changes to the program.

### **3.1 Management and Financial Structure of the System.**

The Dutchess County Resource Recovery Agency and the County of Dutchess, through the County Department of Solid Waste, each perform significant functions in the management of the solid waste system. In general, the DCRRA is responsible for the financing, construction and operation of the major public waste management facilities in the County, and the coordination of City, Town and Village waste services within the overall integrated system. The County Department of Solid Waste is responsible for the licensing and regulation of private solid waste services, and enforcement of local laws relating to solid waste and recycling. The Agency establishes and collects fees for use of Agency facilities, and these fees provide the primary revenue source for operation of the public solid waste system. The County, by agreement with the Agency, is

responsible for appropriation of supplemental funding, as needed, to support the solid waste system.

There are two major solid waste facilities open and available to all residents, businesses, industries and institutions in the County. Both are owned by the Agency and operated through contracts between the Agency and private operators. Waste and recyclables are delivered to the Agency facilities via licensed haulers. The facilities are the Dutchess County Resource Recovery Facility (RRF), located on Sand Dock Road in the Town of Poughkeepsie, and the Dutchess County Materials Recovery Facility (MRF), located on Fulton Street in the City of Poughkeepsie. The RRF combusts MSW and generates electricity for sale to Central Hudson Gas & Electric Co., and the MRF processes recyclables for sale to various markets. These two facilities represent the largest public investment in the Dutchess County solid waste system. In addition, there are 17 local waste and recyclables transfer stations owned and operated by the cities and towns of Dutchess County. The core of the public infrastructure and the overall direction of the solid waste program are collaboratively managed by the DCRRA and the County. The following sections will describe the relationship between the Agency and the County and their respective roles in the management of the solid waste program.

### **3.1.1 Role of the Agency.**

Dutchess County's attention to the challenges of providing a regional solution to the problems of solid waste management dates to 1972, with the delivery of an inventory of solid waste facilities then operating in the County, and a recommendation that the County provide a comprehensive regional public system.<sup>2</sup> In 1980, the County adopted a policy statement calling for the creation of a regional public authority charged with the development of a county-wide waste management system, utilizing resource recovery technology, and managing all waste generated in the County through public facilities.

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<sup>2</sup> Comprehensive Solid Waste Study, Dutchess County, NY. Detailed Report, William R. Trautman Associates, September 1972.

The Dutchess County Resource Recovery Agency was created on July 22, 1982 by the New York State Legislature to implement this policy.<sup>3</sup>

The Dutchess County Resource Recovery Agency (DCRRA) is a public benefit corporation created by act of the New York State Legislature in Chapter 675 of the Laws of 1982. Its authorizing legislation is set forth in Title 13-D, §§2047a, et seq. of the Public Authorities Law of the State of New York. The DCRRA is governed by a Board of seven Members, three of whom are appointed by the Dutchess County Executive without confirmation by the County Legislature, three of whom are appointed by the Chair of the Dutchess County Legislature subject to confirmation of the Legislature but without executive right to veto, and one of whom is appointed jointly by the County Executive and the Chair of the County Legislature, subject to confirmation by the Legislature. The officers of the DCRRA include a chairman, vice chairman and treasurer who are members of the DCRRA, together with a secretary and an Executive Director appointed by the Members.

Planning for the construction of a mass-burn waste-to-energy facility to replace the many existing unlined landfills then serving the County was done by the County government prior to the formation of the Agency. A Request for Proposals for such a facility was issued by the County in June 1982. On its creation, the Agency assumed responsibility for the resource recovery project. A site was acquired in November 1984 and a contract to design, build and operate was awarded to Pennsylvania Resource Systems, Inc., a wholly-owned subsidiary of Pennsylvania Engineering Corporation (PEC), in December 1984. Construction began shortly thereafter, and the facility began

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<sup>3</sup> The Agency is a New York public benefit corporation created by the enactment of Title 13-D of Article 8 of the New York Public Authorities Law and Chapter 43-A of the Consolidated Laws of the State of New York. The Act authorizes the Agency to collect, receive, transport, process and dispose of solid waste; to design, construct and operate, or to have designed, constructed and operated, solid waste management – resource recovery facilities; to sell, directly or indirectly, energy produced by a Facility and materials recovered from the system; to contract with the United States of America and the State with regard to grants and loans and with other municipalities, public corporations, or persons with regard to the collection, processing, or disposal of solid waste and the sale of energy products; to acquire property with the consent of the County Legislature and County Executive by eminent domain; to employ persons and contract with consultants; and to borrow funds to finance the design, construction and operation of solid waste management – resource recovery facilities.

start-up and performance testing in 1987. It was accepted by the Agency for full operations in June 1989.

The Facility was financed by the sale, in 1984, of \$40 million in revenue bonds of the Agency, plus a grant contribution by the State of New York of \$13,449,000.00 in Environmental Quality Bond Act funds. The Agency's bonds are secured by system revenues, which include not only fees generated from the operation of the RRF, but all other fees and revenues from operation of other facilities, including recycling facilities and other programs. Pursuant to its authorizing statute, bond indenture agreements, a Service Agreement with the operator of the Facility, and a Solid Waste Disposal Service Agreement (the "Disposal Agreement") with the County of Dutchess, the DCCRA is obligated to pay its debt service obligations to bond holders, operating expenses for the facility, and all other Agency costs through the collection of tipping fees for use of the facility, together with revenues gained from the sale of energy, steam and recyclable materials, or other sources.

Pursuant to the Disposal Agreement with the County, the DCRRA is obligated to provide (or cause the contractor to provide) disposal service for a minimum of 140,000 tons of waste per year. The Disposal Agreement obligates the County to cause the delivery of 140,000 tons of waste per year (the "Guaranteed Annual Tonnage") and to pay, if necessary, a Net Service Fee to the DCRRA. The Net Service Fee is calculated as the amount necessary to pay the balance of all outstanding DCRRA costs, after application of all available DCRRA revenues, from tipping fees, energy sales, sale of recyclable materials and other sources, in any given year.

As the Resource Recovery Facility neared completion, and in conjunction with the adoption of new recycling laws adopted by the County, the Agency began a process for the development of a Materials Recovery Facility (MRF) for the processing and marketing of recyclable material. In November 1990, the Agency entered into a Service Agreement with New England CR Inc. for the renovation of a County-owned building as a MRF. In 2001, the Agency re-bid the MRF agreement, which resulted in a MRF

Service Agreement with Hudson Baylor Corporation which terminated December 31, 2008, and has since been extended on a month-to-month basis. The MRF is an integral part of the solid waste management system and its revenues, like those of the RRF and other Agency programs, are pledged as security for repayment of Agency bonds.

The Agency continues to oversee the operation of both the RRF by Covanta Energy and the MRF by Hudson Baylor, financing these operations through tipping fees and payment of the Net Service Fee by the County when needed.

### **3.1.2 Role of the County.**

The history of the County-wide approach to solid waste management planning extends back over 35 years. In 1972, the County initiated a comprehensive solid waste study, done under an NYSDEC grant and overseen by a Dutchess County Solid Waste Steering Committee. The study provided an inventory of solid waste facilities then operating in the County and a recommendation that the County provide a comprehensive regional public system.

The Dutchess County Department of Solid Waste Management was created within the Dutchess County Charter and Code. The Department of Solid Waste Management is responsible for the formulation and implementation of programs for the collection and disposal of solid waste generated within the County. The Department is also charged with regularly reporting to the County Executive with any appropriate recommendations regarding integration of both public and private facilities for accepting, hauling, processing and disposing of solid waste.

The County Legislature has adopted a series of local laws making provisions to manage solid waste and recycled materials. Local Law #1 of 1984 authorizes the Commissioner of the Department of Solid Waste to promulgate rules and regulations to carry out the adopted laws, including the licensing of waste haulers and collectors, and to designate recyclable materials to be separated from other solid waste. Local Law #4 of 1990

requires provision of recyclables collection by haulers within the County, pursuant to General Municipal Law §120-aa. The Department of Solid Waste and the Office of the County Attorney are responsible for the administration of the County's hauler licensing provisions and the enforcement of its local laws. The regulations of the Department of Solid Waste currently provide for the licensing of all solid waste haulers working within Dutchess County. In 1984, the County adopted a local law providing for flow control of MSW and recyclables to County-designated facilities, but enforcement of this law was suspended following the decision of the U.S. Supreme Court in *C&A Carbone v. Town of Clarkstown*. Renewed enforcement of this law would require amendments to conform to current constitutional standards.

### **3.1.3 Financial Structure of the System: Net Service Fee and Private Waste Markets.**

Pursuant to the Solid Waste Disposal Agreement of 1984, the County is responsible for the payment of a Net Service Fee to the Agency if DCRRA revenues from all other sources do not meet expenditures in any year. Approximately 90% of the Agency's annual expenses are fixed costs to retire debt and to pay contractual obligations for the operation of the Resource Recovery Facility and the Materials Recovery Facility. The Agency derives revenues primarily from tipping fees charged to users of the RRF, from the sale of electric power generated at the RRF to Central Hudson Gas & Electric, and to a lesser extent, from the sale of metals recovered from the RRF and the sale of recyclables processed at the MRF. The balance of revenue, if any, which is needed in any year to meet the obligations of the Agency, is provided by the County as the Net Service Fee.

In recent years, the Agency's ability to raise revenue from users of the RRF has been curtailed by market forces. Haulers collecting waste within the County are under no obligation to use the RRF, and have readily available private disposal options through transfer to other facilities located outside of Dutchess County. Consequently, in order to attract locally-generated waste, the Agency must set its disposal fees at a competitive

level within the larger solid waste marketplace. In practice, the Agency has been unable to raise its rates for several years, because the cost of out-of-County disposal has not increased. Meanwhile, the costs of Agency facility operations have escalated pursuant to contractual provisions. The result has been an increase in the annual Net Service Fee payments by the County, with attendant stress on both DCRRA and County finances.<sup>4</sup>

The current market for transport and disposal at landfills for waste generated in the southern part of New York State, including Dutchess County, is highly competitive. Pricing in the landfill disposal market is driven by two factors: cost of disposal (tip fees) and cost of transportation, which in turn is a function of distance and is influenced by the cost of fuel. There is currently no shortage of available capacity at private landfills within driving distance of Dutchess County, and many such facilities are available to Dutchess County haulers. As a result, the Agency, in setting its tipping fees for a budget year, must take market conditions into account and, at times, negotiate a price and tonnage commitment with local haulers. Despite such agreements, while the DCRRA and the County have met their contractual waste delivery warranties each year, the RRF has not operated at full capacity for lack of local tonnage.

The Disposal Agreement between the DCRRA and the County was intended to link the legislative and regulatory authority of the County in support of the physical infrastructure provided by the Agency. The Net Service Fee obligation of the County in that Agreement was intended to provide a measure of security for Agency bond holders, but

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<sup>4</sup> For example, Agency revenues for 2009 were derived from three sources: tip fees of \$11,108,005.00 (57.6%), the County Net Service Fee of \$4,946,199.00 (25.6%) and revenue from energy and material sales, interest on reserve deposits and all other sources of \$3,211,072.00 (16.6%). The Agency's total budgeted expenditures for 2009 were disbursed as follows: \$14,726,215.00, or 67%, directly related to the operations of the RRF and residue disposal; \$4,532,096.00 or 21% for debt service; and the remaining \$2,765,897.00, or 12% for operation of the MRF, the HHW program, and all other system management. Annual debt service expense comes from two Agency bond issues. Repayment of the original RRF bonds constitutes \$3.8 million of the annual debt service payment. These bonds will be retired on January 1, 2014. Thereafter, the Agency's outstanding debt will repay a 2005 bond issue for the implementation of air pollution control improvements mandated by the Clean Air Act. As of January 2014, annual debt service payments will be reduced to approximately \$1.66 million per year. Agency revenue from tipping fees has fallen in recent years consistent with declines in delivered tonnage: 144,473 tons and \$11.4 million in 2007, 142,844 tons and \$10.5 million in 2008. The County Net Service Fee payments have correspondingly increased over the same period: \$1.24 million in 2005, \$2.12 million in 2006, \$2.92 million in 2007, \$3.49 million in 2008 and \$4.9 million in 2009.

was not intended to require the County's general fund to serve as a significant annual revenue source for Agency operations. Rather, the Agency's authorizing legislation envisioned that the Agency would be self-supported through assessment of user fees and program-related revenue sources. As private market forces have increased the necessity of the Net Service Fee it has correspondingly forced the solid waste program to compete with other necessary government functions for scarce resources in the annual County general fund appropriations. This tension between valid governmental objectives undermines the fiscal health of the solid waste program and inhibits the efficient operation and growth of all solid waste facilities and programs.

An important goal established by this Plan is the adoption of legislative and fiscal policies to i) reduce the necessity of the Net Service Fee payments from the County general fund to the DCRRA; ii) implement measures to ensure that solid waste generated within the County is directed to appropriate DCRRA facilities; and iii) allow the DCRRA to fix fees that are structured to encourage waste reduction and recycling, while providing sufficient revenue for all facility operations and programs.

#### **3.1.4 Waste Collection Practices.**

The collection of waste and recyclables in Dutchess County is not performed by either the DCRRA or the County. Rather it is accomplished in a variety of ways, rooted in the custom and practice of the County's constituent municipalities, residents, businesses and institutions. As discussed below, approximately 12% of the County's waste stream is collected by local municipalities, and 88% is collected by private haulers, with 80% of the private collections performed by one hauler.

##### **3.1.4.1 Public Collection and Transfer/Drop Off Stations.**

Nine municipalities in Dutchess County (the Cities of Poughkeepsie and Beacon, and the Villages of Millerton, Millbrook, Pawling, Rhinebeck, Red Hook, Tivoli and Wappingers Falls) provide public collection using either municipal crews or

competitively-bid contracts. This method of collection covers approximately 21% of the County population. In the other municipalities, service is provided by direct arrangements between haulers and homeowners or commercial/industrial/institutional establishments.

Based on an estimated annual MSW tonnage of 250,000 generated in the County, then approximately 60% or 150,000 tons per year can be classified as residential and the remaining 40% or 100,000 tons per year classified as commercial/industrial/institutional.

Some residents rely on the extensive network of transfer stations listed below, although no data exists to reliably quantify the number of users of these local transfer facilities. Many of the smaller municipal transfer facilities are served by private haulers who collect MSW, C&D and recyclables from these locations. Once collected in private vehicles, the waste would be logged into an Agency facility (if delivered there) under the hauler’s account without attribution to the local municipality.

**Table 7**

Local City(c), Village(v) and Town(t) Transfer Stations/Drop-Off Locations

Amenia(t)	Poughkeepsie(c)
Beacon(c)	Poughkeepsie(t)
Clinton(t)	Poughkeepsie (DCRRA)
Dover(t)	Red Hook(v)
Hyde Park(t)	Rhinebeck(t)
LaGrange(t)	Stanford(t)
Milan(t)	Union Vale(t) & Beekman(t)
Pawling(t)	Wappingers Falls(v)
Pleasant Valley(t)	Washington(t)

### 3.1.5 Private Collection.

Based upon the preceding estimate that approximately 31,500 tpy is publicly collected, it may be concluded that approximately 220,000 tons per year (88% of the total generated) is collected by private haulers. The Dutchess County Department of Solid Waste Management licensed 22 companies as authorized haulers in 2008. Of these, only nine delivered waste of any amount to the Agency. Six companies delivered less than 1,000 tons and the remainder delivered nothing at all.

Although there is no data to document the individual market share of the private haulers servicing the County, observation of containers distributed throughout the County reflects that Royal Carting is the biggest single private hauler. Agency staff concurs with this assessment based on its annual negotiation for the commitment of waste to the RRF. In 2008, Royal delivered 117,300 of the 142,844 total tons delivered to the RRF and committed to the delivery of 115,000 tons for 2009. Royal's deliveries over the period 2004-2008 are shown below.

**Table 8**

Royal Carting Deliveries

	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>
Tons	115,608	112,247	113,571	114,450	117,300
Percent of Total to RRF	76%	74%	74%	79%	82%

Although private waste haulers must obtain a license to operate within the County, no effective form of waste flow control exists under the County code. Because 88% of the waste generated in the County is collected privately, and 80% of that amount is collected by one company, the DCRRA and the County are compelled to offer disposal rates that are slightly lower than the rates for other local haulers. Should the hauler in

the most dominant position elect to dispose of its waste elsewhere, 75% of the Agency's tipping fee revenue would be lost, and the RRF could not be supplied with sufficient local waste to continue operations. As explained herein, the rates necessary for the RRF are higher than the current market rates for transfer and disposal of waste at landfills outside the County.

Consequently, a goal of this Plan is the adoption of a legally sustainable measure, such as a flow control law, that would authorize the County to direct the disposal of waste generated within Dutchess County to DCRRA facilities.

#### **3.1.5.1 Single Stream Pilot Program**

The City of Beacon and Royal Carting are currently operating a voluntary pilot program to evaluate the collection of recyclables for single stream processing. This program was initiated because of questions from customers who have heard of single stream collection in neighboring communities outside Dutchess County. Both the City and the private hauler want to be responsive to residents and customer preferences and they had heard of the potential interest by the County and Hudson Baylor for transitioning to single stream recycling.

The pilot initially covers 177 households with weekly collection over a six week period. Royal provided 65 gallon carts for each household. Royal also used a new split-body side load packer trucks for collection. The single stream materials are currently taken to a material recovery facility in Newburgh, New York.

Although the pilot is not complete at this time, Royal reports that the single stream collection is very well received by residents. Residents view it as an improvement in service. Royal expects that there may be as much as a 30% increase in the recovery of recyclables by going to single stream based on the improved convenience for residents and the instructional information which puts a renewed focus on recycling. Royal also points out that there are new costs for the recycling container and new or modified

trucks. Interestingly, they said that they may also increase the size of the recycling container and reduce the size of the 95 gallon waste container currently provided. They plan to expand the pilot into another neighborhood after completing the current pilot and analyzing the results.

### 3.2 SWM Facility Inventory.

A large number and variety of solid waste facilities receive waste and recyclables generated within Dutchess County. The types of facilities range from the Agency’s RRF and MRF, to local transfer/drop-off stations for MSW and Recyclables, in-County private transfer stations, out-of-County transfer stations, recyclables processing facilities and MSW/C&D landfills and other disposal facilities. The amount of materials delivered to each of these facilities annually is variable, depending upon market conditions. The table below identifies the operating solid waste facilities located within, or outside of Dutchess County that are known or believed to receive waste collected within Dutchess County.

**Table 9**

Facility Inventory

<u>Facility Name</u>	<u>Facility Type</u>	<u>Operating Status</u>
DCRRA RRF (public)	MSW to Energy	Full-time Operation
DCRRA Materials Recovery Facility (public)	Recyclables, HHW Collection, Electronics	Full-time Operation
Amenia (public)	MSW/Recyclables Transfer Station	Part-time (p/t) Operation
Beacon (public)	MSW/Recyclables Transfer Station	p/t operation
Beekman/Union Vale (public)	MSW/Recyclables Transfer Station	p/t operation
Clinton (public)	MSW/Recyclables Transfer Station	p/t operation
Dover (public)	MSW/Recyclables Transfer Station	p/t operation

Hyde Park (public)	MSW/Recyclables Transfer Station	p/t operation
LaGrange (public)	MSW/Recyclables Transfer Station	p/t operation
Milan (public)	MSW/Recyclables Transfer Station	p/t operation
Pawling (public)	MSW/Recyclables Transfer Station	p/t operation
Pleasant Valley (public)	MSW/Recyclables Transfer Station	p/t operation
City of Poughkeepsie (public)	MSW/Recyclables Transfer Station	p/t operation
Town of Poughkeepsie (public)	MSW/Recyclables Transfer Station	p/t operation
Red Hook (public)	MSW/Recyclables Transfer Station	p/t operation
Rhinebeck (public)	MSW/Recyclables Transfer Station	p/t operation
Stanford (public)	MSW/Recyclables Transfer Station	p/t operation
Wappingers Falls (public)	MSW/Recyclables Transfer Station	p/t operation
Washington (public)	MSW/Recyclables Transfer Station	p/t operation
Royal Carting, Hopewell Junction, NY (private)	MSW, C&D, Recyclables Transfer Station	Full-time Operation
Welsh Sanitation (Royal carting subsidiary) Wingdale, NY (private)	MSW, C&D, Recyclables Transfer Station	Full-time Operation
Waste Management of NY Kingston, NY (private)	MSW, C&D, Recyclables Transfer Station [closed]	Full-time Operation
Ulster County Resource Recovery Agency Kingston, NY (public)	MSW Transfer Station	Full-time Operation
Recycle Depot (private)	C&D Processor	Full-time Operation
Blacktop Maintenance (private)	C&D Processor	Full-time Operation
Duffy Layton (private)	C&D Processor	p/t operation

West Hook Sand & Gravel (private)	C&D Processor	p/t operation
Sun-up Properties (private)	C&D Processor	p/t operation
Advanced Recovery, Inc. (private)	E-Waste	Full-time Operation
Best Buy, Inc. (private)	E-Waste	p/t operation
Staples, Inc. (private)	E-Waste	p/t operation
McEnroe Farm (private)	Composting Facility	Full-time operation
Vassar Farm (private)	Composting Facility	Full-time operation [may be scaled back or discontinued]
Culinary Institute of America	Composting Facility	Full-time Operation
Recycle Depot	C&D Transfer Station and Recycler	Full-Time Operation

Transfer station annual reports filed by the County's largest private hauler, Royal Carting, indicate that a variety of disposal facilities are recipients of MSW generated in Dutchess County. These include the following:

High Acres Landfill, Perinton, NY

Seneca Meadows Landfill, Waterloo, NY

Ontario Landfill, Ontario County, NY

Wheelabrator Resource Recovery Facility, Westchester, NY

DANC Landfill, Jefferson County, NY

Pharsalia Landfill, Chenango County, NY

Mill Seat Landfill, Bergen, NY

### 3.3 **Recycling Facilities and Programs.**

The Dutchess County Mandatory Source Separation Law was passed by the County Legislature in June of 1990 (Local Law No. 4 of 1990) and requires all County residents

and businesses to separate certain items for recycling. It was recognized early on that the conservation, recovery and reuse of recyclable materials was a necessity in order to conserve natural resources, reduce the impact of the ever increasing cost of solid waste disposal, ensure safe processing of solid waste, help maximally reduce the quantity of solid waste that must be disposed of and preserve capacity at the solid waste management/resource recovery facilities.

The source separation law went into effect January 1, 1991, except for commercial establishments which were required to begin to recycle as of July 1, 1991. Apartment and condominium complexes were also mandated to begin recycling as of July 1, 1991.

### **3.3.1 DCRRA Materials Recovery Facility**

The Dutchess County Materials Recovery Facility (MRF) opened in 1990. The MRF is owned by Dutchess County, leased to DCRRA and operated by Hudson Baylor Corporation. Currently, the agreement with Hudson Baylor is expired and has been extended on a month-to-month basis.

Mixed recyclables are collected separately from non-recyclable waste and delivered to the MRF or out-of-County facilities for processing. Currently, the County recycles plastics #'s 1, 2, 3, 5, 7 and 9. In addition, glass bottles and jars, tin and aluminum food and drink cans, aluminum foil products and mixed paper are also recycled. Recyclables collection is provided by all private and public haulers in the County.

Hudson Baylor, the Facility operator reports that there are many available markets for materials recovered at the MRF. Markets in use by Hudson Baylor are listed in Table 10.

## News (ONP)

TABLE 10

American Chung Nam	City of Industry, CA	Peter Wang	909-839-8383
US Green Fiber	Phoenix, AZ	Fay Fisk	928-526-5440
Canusa Hershman Recycling	Cheektowaga, NY	Maryan Wipple	716-626-7045
Cellmark, Inc.	Norwalk, CT	Gene Santoro	203-299-5000
Fox Run Recycling	Calicoon, NY	Craig Reimer	845-887-6022
Kruger	Montreal	Danielle Leblance	514-595-7447
Pratt Industries	Staten Island NY	Anthony Mazzone	718-370-1114
Putney Paper Company	Putney VT	Bruce Raymond	802-387-4047
AbitibiBowater Ince	Ontario	Alan Panner	514-875-2160
WM-Recycle America	Williamsville, NY	Andrew Dunbar	716-626-1700
Recycled Fiber of New Jersey	Newark, NJ	Martin Hobbs	973-265-3900
Ralison International Inc	Diamond Bar, CA	Kim Lee	909-861-9823
Solvay Paperboard	Syracuse, NY	Michelle Rouke	315-703-9328
KC International	Brick, NJ	Frank Crowley	732-202-9500

## Corrugated (OCC)

American Chung Nam	City of Industry, CA	Peter Wang	909-839-8383
WM - Recycle America	Williamsville, NY	Andrew Dunbar	716-626-1700
Rand Whitney	Worcester MA	Allan Smith	508-749-2933
Greif Brothers	Delaware Ohio	Mike Gasser	740-549-6000
KC International	Brick, NJ	Frank Crowley	732-202-9500
Solvay Paperboard	Syracuse, NY	Michelle Rouke	315-703-9328
Harmon Associates (Georgia Pacific)	Westbury, NY	Gene Breaznell	516-997-3400

## Office Paper (OP)

American Chung Nam	City of Industry, CA	Peter Wang	909-839-8383
Canusa Hershman Recycling	Cheektowaga, NY	Maryan Wipple	716-626-7045
Harmon Associates (GP)	Westbury, NY	Gene Breaznell	516-997-3400
Allian Company	Phoenix, AZ	Dave Romberg	602-995-8199
Metro Waste Paper Recovery	Toronto, ON	Tom Bowers	781-925-9800
KC International	Brick, NJ	Frank Crowley	732-202-9500
Perry H. Koplik & Sons, Inc.	New York, NY	Scott Griffin	914-261-0702

<b>Mixed Paper</b>			
American Chung Nam	City of Industry, CA	Peter Wang	909-839-8383
KC International	Brick, NJ	Frank Crowley	732-202-9500
WM - Recycle America	Williamsville, NY	Andrew Dunbar	716-626-1700
Canusa Herschman Recycling	Cheektowaga, NY	Maryan Wipple	716-626-7045
<b>Aseptic Packaging</b>			
American Chung Nam	City of Industry, CA	Peter Wang	909-839-8383
KC International	Brick, NJ	Frank Crowley	732-202-9500
<b>HDPE Colored</b>			
Graham Recycling	York, PA	Jennifer Edelin	717-849-8653
KW Plastics	Troy, AL	Scott Saunders	334-566-1563
KC International	Brick, NJ	Cliff Brand	732-202-9500
American Chung Nam	City of Industry, CA	Peter Wang	909-839-8308
Conti Group	Brooklyn, NY	Lee Alter	718-435-8600
Clean Tech, Inc.	Dundee, MI	Karl Hatopp	734-529-2475
Pacific West Recycling	Manhattan Beach, CA	Ronald Kemalyan	310-545-4972
<b>HDPE Natural</b>			
Graham Recycling	York, PA	Jennifer Edelin	717-849-8653
KW Plastics	Troy, AL	Scott Saunders	334-566-1563
KC International	Brick, NJ	Cliff Brand	732-202-9500
American Chung Nam	City of Industry, CA	Peter Wang	909-839-8308
Conti Group	Brooklyn, NY	Lee Alter	718-435-8600
Clean Tech, Inc.	Dundee, MI	Karl Hatopp	734-529-2475
Pacific West Recycling	Manhattan Beach, CA	Ronald Kemalyan	310-545-4972
<b>PET</b>			
KC International	Brick, NJ	Cliff Brand	732-202-9500
American Chung Nam	City of Industry, CA	Peter Wang	909-839-8308
Conti Group	Brooklyn, NY	Lee Alter	718-435-8600
Clean Tech, Inc.	Dundee, MI	Karl Hatopp	734-529-2475
Pacific West Recycling	Manhattan Beach, CA	Ronald Kemalyan	310-545-4972
UtrePET	Albany, NY	Paul Zordan	518-459-1080
Mohawk Industries	Summerville, GA	Roone Gable	706-857-6481

Evergreen Plastics	Clyde, OH	Byron Geiger	419-547-1400
WM - Recycle America	Williamsville, NY	Lynn Meredith	716-626-1700
Marglen Industries	Rome, GA	John Burnes	706-295-5621
<b>Glass</b>			
Strategic Materials, Inc.	Mexicali, MX	Paul Garrity	323-864-0084
Anchor Glass	Tampa, FL 33602	Ana Mayer	813-880-2188
Owens-Illinois	Toledo, OH 43666	Paul Smith	419 247-2236
St. Gobain Containers	Muncie, IN 47307	Katie Flight	765 741-7115
<b>Aluminum</b>			
Anheuser-Busch InBev	St. Louis, MO	Michele Marshall	800-258-1080
Service Aluminum Corp.	Ellicott City, MD	Dale Littman	410-465-3300
Wise Metals	Linthicum, MD	Bill Tynion	603-315-4495
<b>Tin</b>			
AMG Resources	Pittsburgh, PA	Jack Force	480-460-4862
Pacific West Recycling	Manhattan Beach, CA	Ronald Kemalyan	310-545-4972
KC International	Brick, NJ	Cliff Brand	732-202-9500

The dual stream MRF can process up to 18,000 tons per year of commingled plastics, bottles and cans, and source separated fiber. Based upon reported recyclables transfer by local haulers, it is estimated that almost 25,000 tons a year is collected, but the MRF receives less than half of that. The total tonnage processed at the MRF in 2008 was 10,630, with an estimated 14,000 tons or more going out of the County. Without the ability to control where the recyclables are being taken, it is difficult to operate the MRF at full capacity or to ensure that all recyclable materials are actually being recycled.

The primary users of the MRF are local municipalities within Dutchess County that provide public recyclables collection for their residents, primarily the City of Poughkeepsie. It is not used to a significant degree (less than 3,000 tpy) by private haulers who serve the great majority of Dutchess residents. Hudson-Baylor supplements the volume of material processed through the MRF each year with quantities of commingled containers from its facility in Newburgh. These supplemental materials are not generated in Dutchess County.

The original life expectancy of the MRF was 20 years and it has reached that milestone. The MRF is in need of substantial structural repairs, including an immediate need of a new roof. Another drawback to the current facility is the floor space limitation. Overall, the MRF is in poor condition and is equipped with obsolete equipment and technology. It is not capable of handling all of the recyclables generated from residences in the County, nor any of the recyclables generated at institutions and businesses. It is not a candidate for expansion.

A goal of this Plan is to expand recycling capabilities by procuring a new single stream capable facility, either through public investment or a public/private partnership. As discussed below, the objective would be to have a single facility sized to receive and process a significantly increased volume, drawn not only from Dutchess, but surrounding Counties. The single stream facility would not only provide the ability to increase recycling, but would also contain a dedicated educational resource within the

facility which is essential for increasing recovery of recyclables in the County and for meeting the State's recycling goals.

### **3.3.2 Private and Out-of-County MRF's**

Review of annual reports filed for the Watch Hill Holding Transfer Station (Royal Carting) with NYSDEC and other sources establishes that several private and publicly operated out-of-County recyclers are utilized for Dutchess County recyclables. These include the following, grouped by material accepted:

#### Old Corrugated Cardboard (OCC)

Interstate Waste, Armonk, NY

Hudson Baylor, Newburgh, NY

Recycle Kingdom, Perth Amboy, NJ

#### Newspaper

Interstate Waste, Armonk, NY

Hudson Baylor, Newburgh, NY

Recycle Kingdom, Perth Amboy, NJ

#### Metal

B. Millen & Sons, Kingston, NY

Upstate Shredding, Owego, NY

#### Wood

Greenway Topsoil, Newburgh, NY

#### Tires

Don Stevens, Southington, CT

#### Commingled Beverage Containers

Ulster County MRF, Kingston, NY

Hudson Baylor, Newburgh, NY

Recycle Kingdom, Perth Amboy, NJ

None of the public or private recycling facilities available for processing Dutchess recyclables are single stream facilities. The largest of these are the dual stream facilities operated by Hudson Baylor in Newburgh and by the Ulster County Resource Recovery Agency in Kingston. The Hudson Baylor Newburgh facility is not currently operated at capacity but it cannot be readily expanded. The Ulster County Facility is operating with a local recyclables stream of not more than 18,000 tpy, and has a capacity to process over 30,000 if fully staffed. However, the Ulster facility is also nearly 20 years old and is not of optimum design. It could be expanded and refurbished if a sufficient volume of material could be assured to justify the investment. The DCRRA has had discussions with Ulster regarding shared use of this facility, but its location in Kingston is not optimal for the majority of the Dutchess population which resides in the southern portion of the County.

### **3.3.3 Yard Wastes and Organics Composting**

Green waste consists of leaves, brush, grass clippings and other garden waste that wholly consists of organic matter. Green waste is a traditional element of municipal solid waste and its volume has increased with suburban development through the last half of the 20<sup>th</sup> century. It has, for nearly 30 years, been targeted as a component that should be reduced and removed from the waste stream before the residual waste is processed for energy or landfilled. It can be readily managed through one of several composting options.

Related to green waste composting are efforts to recover other organics from the waste stream, principally food waste. In some cases, food waste can be combined with green waste in a single compost operation.

In Dutchess County, there are several green waste and/or food waste collection and recovery programs now underway.

**Compost**

City of Poughkeepsie	Royal Carting
Bard College	Tri-County Municipal Waste
Culinary Institute of America	McEnroe Organics
Vassar College [closed]	

**Green Waste Collection**

Town of Poughkeepsie	Village of Rhinebeck
Town of Wappingers	Town of Washington
Lamela Sanitation	Royal Carting
Duffy Layton	IBM East Fishkill
IBM Poughkeepsie	Greenway Topsoil
Recycle Depot	

It should be noted that food waste from Vassar College is now being taken to McEnroe Organic Farm.

Reporting of green waste and food waste volumes is incomplete and inconsistent. However, there is valuable information, in particular, from the food waste separation , collection and composting programs at Vassar College, Marist College, and SUNY New Paltz. Royal Carting provides the collection service to all three and they have set up what they describe as a tightly controlled operation. Royal provides biodegradable liners for all the containers used at the colleges. Food waste is only collected from the food preparation and service areas, not from any dorms. Well defined, printed instructions are posted in the food preparation areas. Royal collects the food waste 6 days per week. The waste is inspected, contaminants removed, and the liners replaced. All the food waste is then taken by Royal to McEnroe Organic Farm. Food waste is also collected at the Culinary Institute by a private hauler and taken to McEnroe. This is estimated at 600 tons per year.

It is a goal of this Plan to increase organics processing capacity through a broadening of public-private partnerships and by prioritizing major organics generators. At this time, based on a review of the information provided and available, it is estimated that over 1,200 tons per year of in-County organic waste are being composted now.

It should be noted that the organics program at Vassar Farms may be considered for reopening in the future. Also, in addition to the operation at McEnroe described below, there are other organics programs at Bard College, Adams Fairacre Farms, Sweet Pea Farm, and Migliorelli's Farm. Although currently limited in their scope, these are the kinds of facilities that will be targeted for expanding the organics recovery capacity in the County through new public-private partnerships.

### **3.3.3.1 Organics Collection Pilot Program**

The City of Beacon and Royal Carting are currently operating a voluntary pilot program for the collection of food waste from 177 individual households—the same households covered by the single stream recyclables collection pilot described in Section 3.1.5.1. The food waste program also covers a six week period.

For the pilot, each household was provided a 1.5 gallon locking bin designed for countertop use or for storage in a kitchen cupboard. This container is set out for collection at the same time as the regular waste and recyclables collection, although it is actually picked up several hours later with a different, open bin truck. Royal also provides a separate second collection of food waste during the week. They are evaluating other types of collection trucks such as a tanker. The collected food waste is taken to McEnroe Organic Farm. Royal emphasizes the need for having an organics processing facility in close proximity to where the waste is generated.

Royal has found that the resident's interest and participation in the food waste collection program is less than 20% which they attribute to odor and convenience issues.

### **3.3.3.2 McEnroe Organic Farm**

The McEnroe Organic Farm is a private facility located on Coleman Station Road in the Town of North East. The facility operates under a DEC permit which allows for the receipt and processing of up to 40,000 cubic yards per year. Currently, McEnroe estimates that they receive approximately 20,000 to 25,000 cubic yards per year. They accept manure from horse and dairy farms, leaves, brush, grass clippings and other miscellaneous organics. They estimate that about 10,000 cubic yards per year is food waste.

After receipt, food waste is combined with manure and green waste, ground, placed in wind rows, and then placed in linear “ag-bags.” Also, pipes are placed in the waste mass to introduce air throughout the pile. After 3-5 months of processing, the material is removed and placed in cure piles for an additional 3-5 months. It is then screened twice to prepare it for sale in bulk and bags. Removal of contaminant plastics is what requires the double screening. All processing occurs on an engineered pad which collects all runoff for storage in a retention basin before discharge. The discharge is regulated by a SPDES permit.

McEnroe produces several different final products including “growing mix, organic potting soil, perennial blend, nursery planting mix, organic compost, bark mulch, leaf mulch, and enriched topsoil.”

This well established operation holds a potential for an expanded public- private partnership that could accommodate additional volumes of organics, including food waste, within the operating and permit restrictions. At the same time, the distance from food waste generators presents a challenge and a transportation cost that must be overcome in order to make an expanded organics program with McEnroe successful.

### **3.3.4 Household Hazardous Waste [HHW].**

The DCRRA provides an annual program of eight (8) collection events at locations throughout the County for household hazardous waste (HHW) which consists of paints, solvents, pesticides, herbicides, pool chemicals, photographic chemicals, batteries, mercury switches, florescent bulbs, and a wide-range of electronic items. The removal of these materials is of a particular benefit to Dutchess County because it reduces the input, and therefore emissions, of heavy metals such as mercury and lead from the RRF. The sponsorship of eight (8) collection events is a major commitment by the DCRRA and it also reflects how highly-valued the service is by the residents of Dutchess County.

The DCRRA's management of HHW is consistent with current State policy and in the future product stewardship legislation, recently enacted by the State of New York, may provide a source of funding for the DCRRA. Currently, the DCRRA allocates \$128,750.00 per year for household hazardous waste management.

### **3.3.5 Pharmaceuticals and Other "Product Stewardship" Wastes.**

In recent years the Agency has started a program to accept outdated and discarded pharmaceuticals. This service has been extended to generators from Columbia, Delaware, Rockland, and Ulster Counties. The Agency is well positioned to continue to provide that service to other planning units and special waste generators in the future.

The experience gained by the County and Agency also puts the Agency in a good position to provide services that may come from the State's initiatives for product stewardship---policies that will require manufacturers to be responsible for the end of life management of specified items. In 2010, the State legislature passed such a law for electronic waste. In the future, the Agency may be able to contract with manufacturers to provide the collection service required by State law, thereby offsetting part or all of the costs associated with programs.

### **3.3.6 County Activities.**

Dutchess County Government has also taken steps to increase its recycle, reduce and recovery efforts for all County buildings and parks and for County employees. These efforts include:

#### **Saving Paper**

- Print Conversion – The Office of Computer Information Systems (OCIS) has undergone a conversion from printing on large green-bar paper to standard copier paper as well as duplexing reports whenever possible. Included in this conversion are many large report runs such as County Tax Roll reports, financial and payroll reports. Multiple copies of large reports are no longer printed. These efforts have dramatically reduced OCIS's annual paper consumption from 5 million sheets to approximately 1 million sheets.
- Electronic Documents - Purchasing has consolidated copy machine contracts and selected machines that have the ability to scan documents and convert them to electronic files that can be copied, transmitted and stored in a paperless format saving paper, energy, storage space. This also reduces the fuel, emissions, and cost related to mailing or using courier services. The Social Services Department scans all of the case files for the Medicaid, Temporary Assistance, and Food Stamps programs. Some departments can also send faxes directly from office computers.
- Electronic Patient Records - Mental Hygiene continues to streamline the management of behavioral healthcare with the implementation of the electronic patient record. The electronic record provides many benefits: quicker access to legible and structured patient information; the integration of every facet of the management process in compliance with Health Insurance Portability and Accountability Act (HIPAA) allowing staff to concentrate on patient care rather than paperwork; automated billing which ultimately results in a savings of time, money, and paper.

- Electronic Newsletters and Reports – Several County departments have transitioned from mailed newsletters to electronic newsletters. Consumer Affairs estimates that this saves them 400 pages of paper each month. Electronic distribution of the Planning Department’s “Plan On It” newsletter saves at least 20,000 pages of paper each year. The Planning Department now publishes its annual Major Projects Report online, instead of printing and mailing several hundred copies. 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 the two sets that have been printed in the past. This alone saves 1,200 pages of large-format paper. In 2009, RPT began supplying assessors with printed copies of tax maps only for maps that had been modified since the last taxable status date, instead of printing complete sets for each municipality every year. In 2009, this change prevented 746 large maps (36”x36”) and 178 small maps (18”x18”) from being printed. RPT also encourages report orders to be e-mailed or burned to a CD rather than printed on paper.
- Online Documents and Information – Departments have put much more material on the County website, allowing staff to refer consumers (and other County staff) to the website for information, instead of printing and mailing out materials. Staff also review documents online instead of printing them, unless necessary. Central Services (Purchasing) has put the forms for asset management and equipment transfer online, allowing departments to send the forms electronically, eliminating the need for three-part paper forms.
- Duplex Printing - Central Services and OCIS have worked together to implement the capability of duplex printing, saving on paper as well as reducing County purchases of toner for printers.
- Paper Reuse – Staff try to use paper twice whenever possible. If something is printed on one side or a fax is received that doesn’t need to be kept, the paper is flipped over and the reverse side is used. Rough drafts of documents are also

prepared on “clean-one-side” paper. Inter-office mail envelopes are also reused. Handouts from presentations are reused if possible.

- Email - Staff make great use of e-mail for communication, reducing the need for copying, faxing, and mailing.
- Junk Mail – Administrative staff review junk mail received to stop irrelevant items from being mailed to County departments.
- Hand Dryers – The Health Department installed hand dryers in their bathrooms as a green alternative to paper towels. In addition to reducing paper waste, this saves energy.

### **Reducing Waste/Recycling**

Recycled Equipment Webpage - Equipment and furniture that would otherwise be discarded is reused throughout the County. Items are available for free to County departments and then to local municipalities. In addition, extra un-used toner and printer cartridges are listed on the Recycled Equipment webpage allowing departments to request them at no cost.

- Toner & Printer Cartridges - Used toner and printer cartridges are collected from departments and sold to companies for recycling. Since 2006, approximately 1,900 cartridges have been recycled, resulting in \$2,400 in revenue.
- Tape Library – OCIS has consolidated dozens of backup tape drives into a single tape library device. This reduces the amount of equipment that ends up in landfills, and also saves money.
- E-Waste Disposal – OCIS recycles computers, monitors and printers with a company known as Advanced Recovery Inc. Based on the company’s website, 99.97% (by weight) of every machine is reused.
- Motor Oil - The Auto Center now uses synthetic motor oil for the County's police cars. This extended the oil change interval from 4,000 miles to 10,000 miles. This translates into approximately 175 fewer oil changes in two years. The

savings add up to roughly 260 gallons of oil, plus 88 hours of mechanics' time. In addition, synthetic oil negates the need for oil additives. In 2008 this saved over 300 cans of oil additive. This provides a cost savings plus the benefit to the environment of not having to dispose of 300 empty containers.

- Metal - All auto parts and components made of metal are recycled. In addition, the Auto Center collects all used aerosol cans and recycles them as scrap metal. This prevents approximately 200 cans from being sent to landfills each year. Used oil filters are drained and recycled as scrap metal as well. Scrap metal is taken away regularly and marketed. This prevents three to four tons of metal from ending up in landfills.
- Batteries - The Auto Center recycles all vehicle batteries. These are returned to the distributor for disposal. In 2008, more than 75 batteries were returned.
- Tires - Old tires from County vehicles are taken away by a licensed tire recycler. More than 700 tires were hauled away in 2008.
- Waste Oil - Waste oil produced by oil changes of County vehicles is either burned in the 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, thereby reducing the potential for groundwater contamination.
- Asphalt Recycling – The Public Works Engineering Division recycles asphalt for use in roadway pavement maintenance. Asphalt recycling techniques including hot-in-place or “heat reclaim”, cold-in-place, and full-depth or “reclaim and foam” have been applied to County Routes where appropriate. Since 2002, almost 35 miles of pavement have been recycled on County roads. Recycling asphalt reduces the amount of materials, fuel, transport, and emissions used and generated by road construction.
- 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.

### **3.4 Resource Recovery Facility**

#### **3.4.1 Background**

In 1984, the DCRRA and the County of Dutchess elected to pursue the conversion of solid waste into energy as their primary means of managing the County's solid waste stream. The Resource Recovery Facility, constructed between 1985-1987, was intended to serve those portions of the County that had closed, or intended to close, existing local landfills. Consequently, it was not sized large enough to accept all of the waste generated in the County. Growth in the population and volume of waste in Dutchess in the years since, together with the ultimate closure of all landfills within the County, have reduced the fraction of County waste that the Facility can accept and process. The balance of the MSW generated in the County has been handled by private sector haulers, recyclers and transfer station operators throughout this period.

The DCRRA Resource Recovery Facility, located at 96 Sand Dock Road, Poughkeepsie, New York, was constructed by Pennsylvania Resource Systems, Inc., a wholly-owned subsidiary of Pennsylvania Engineering Corporation (PEC) under a contract with the Agency dated December 1, 1984. The Facility began start-up and performance testing in 1987 and was accepted by the Agency for full operations in June 1989. In 1988, with the approval of the Agency, the rights to operate the Facility were transferred by PEC to Westinghouse Electric Corporation, the owner of the O'Connor Combustion System, which had been licensed to PEC and installed in the DCRRA Facility. Westinghouse operated the Facility for ten (10) years and in 1998, the rights to operate the Facility were again transferred with the approval of the Agency, to Montenay Dutchess LLC ("Montenay"), a wholly-owned subsidiary of Veolia ES Resource Recovery Inc. In 2009, Covanta Energy of Fairfield, N.J. completed a stock purchase of Veolia ES Resource Recovery Inc., and the Dutchess Resource Recovery

Facility is now operated by Covanta under the same terms of the existing Veolia contracts.

The Resource Recovery Facility is a “mass burn” design, equipped with two (2) O’Connor rotary waterwall combustors, each rated at a maximum capacity of 256 tons per day (tpd), and collectively permitted to operate at an annual average of 450 tpd. The Facility was designed to accommodate the future construction of a third combustor and boiler train, which remains an option for the Agency, and is discussed further below. The Facility produces steam which is used to generate electric power through a 9.2 MW turbine generator, and can be made available for direct sale for use as a heating source. During the period 1989 through 1998, steam was generated and sold for use at the IBM South Road complex, but in 1998, the sale of steam was discontinued and is not expected to be resumed.

The loss of the Facility’s steam sales customer represented a net loss in the efficiency of the Facility, as the installed 9.2 MW turbine generator was not designed to convert the full steam production from the Facility into electricity. In 1985, following its agreement with the DCRRA, PEC designed an identical Facility with a 12 MW turbine generator for the Islip Resource Recovery Agency, in an agreement that did not contemplate the sale of steam. The current turbine at the RRF must be considered undersized, and the energy in steam generation at the Facility underutilized, if steam sales to third parties cannot be resumed.

In 2005, significant capital improvements were made to the Facility to comply with final Emission Guidelines issued by the US EPA for existing small waste combustion units. In order to comply with the new guidelines, the DCRRA installed several new components to the Facility’s air pollution control system, including a new spray dryer absorber for control of sulfur dioxide and hydrogen chloride, a new carbon injection system for the control of mercury, and upgrade of the air handling system to improve baghouse performance, and an upgrade of the continuous emission monitoring system.

These improvements were financed through a series of bond anticipation notes which were subsequently replaced in 2007 by \$14,800,000 in long term bonds.

### **3.4.2 Operations Including Tonnage Shortfalls.**

In its 20 years of operation, the RRF has processed over 3 million tons of waste, and generated over 860,000 MWh of electric power. The choice of waste-to-energy over landfilling as the disposal method for the region was consistent with the established disposal hierarchy (reduce, recycle, recover energy, landfill) of both the US EPA and the State of New York. From an environmental perspective, the RRF has yielded significant benefits, particularly when compared to the environmental impacts that would have occurred if the 3 million tons processed had been consigned to landfill disposal.

In a Consulting Engineer's Report dated October 19, 2007, prepared in connection with the issuance of the 2007 bonds, the Agency's engineer, Henningson Durham & Richardson Architects and Engineers (HDR) found that the RRF was in good operating condition with no major operating deficiencies identified. HDR concluded that the useful life of the Facility can be expected to exceed the term of the 2007 bonds (2027) if operated and maintained in accordance with the Service Agreement and accepted industry practice. Specifically, HDR found that it is reasonable to conclude that the Facility could continue to meet its Performance Guarantees, including annual throughput (140,000 tpy), operational availability (85%), steam generation (4.8 klb/ton), and electric power generation (46,000,000 KWh/yr), if properly operated and maintained.

The environmental performance of the Facility has been well within its permitted limits. The Facility's Title V Air Permit was amended by the NYSDEC to incorporate stricter standards promulgated by the EPA in 40 CFR 60 subpart BBBB. In stack tests following installation of the capital improvements funded by the 2007 Bonds, the Facility emitted no more than 18% of allowable particulate matter, 41% of allowable SO<sub>2</sub>, 78% of allowable NO<sub>X</sub>, 7% of allowable dioxins and 5% of allowable metals. The installed

air pollution controls yielded reductions of over 88% in emissions of sulfur dioxide, 92% of hydrogen chloride and 94% of mercury.

Costs for the operation of the RRF consist of four (4) major components: base service fee and expenses of the operator, pass-through costs, debt service and residue disposal. Actual operating expenses for 2008 totaled \$17,358,570.00 on throughput of 142,844 tons, or \$121.52 per ton. The payments by the Agency to the operator, the base service fee and pass-throughs, are set forth in the operating agreement. Residue disposal costs are established by competitive bid and are paid directly by the Agency as are debt service expenses.

The base fee paid to the operator of the Facility was initially set at \$34.50/ton with the assignment to Westinghouse in 1988. It has since been escalated to \$64.50 with inflation and specific cost indices as established in the operating agreement. In addition, the DCRRA compensates the operator for additional expenses related to operation of new air pollution control systems, shares the net electric revenue generated at the Facility (at a rate of 15% up to 120,000 tons of MSW processed and 50% beyond the throughput guarantee), and pays additional steam bonuses of 15%, and revenue based upon operating performance. Total fees and revenue sharing with the operator in 2008 were \$8,186,275.00 or \$57.30 per ton.

The DCRRA is responsible for the payment of a variety of direct costs for the Facility, including a contribution to an equipment repair and replacement fund, insurance premiums, air pollution control materials and monitoring, fuel and other expenses. Pass-through costs for 2008 totaled \$2,293,981.00 or \$16.05 per ton.

Debt service payments in 2008 totaled \$4,481,588.00 or \$31.37 per ton. As a result of the issuance of the 2007 Bonds, the total debt owed by the DCRRA for repayment of the initial 1984 bonds and the 2007 Bonds is \$32,380,000.00, after payment of the 2009 obligation. The Agency's debt service obligations will be approximately \$4,500,000.00

per year from 2010 through 2014. In 2015, these payments will decrease to \$1,667,000.00 per year as the initial bond obligation is satisfied.

Currently, the Facility has recently reached its 20<sup>th</sup> anniversary of performance acceptance. Over this period, equipment and components have been repaired and replaced in a manner sufficient to achieve the relevant Performance Guarantees contained in the Service Agreement. However, the current Service Agreement with Covanta Energy (which concluded a stock purchase of the assets of Monteny Dutchess in August 2009) will expire in June 2014, and prior to that date, the DCRRA will have to procure a new operating contract for the Facility, through competitive bidding under General Municipal Law §120-w. In preparation for that procurement, the DCRRA should 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 to 25 years. Such an assessment will allow the DCRRA to provide for capital improvements when needed, and will provide prospective bidders for the post-2014 Service Agreement with technical information necessary to submit an informed proposal.

### **3.4.3 Energy Markets.**

After tipping fees, the second major source of revenue for the RRF comes from the sale of electricity to Central Hudson Gas & Electric. The DCRRA sells electric power to Central Hudson under a long-term contract that guarantees a floor price of \$0.06 per KWh, plus additional payments reflecting the avoided cost to Central Hudson if it had to purchase an equal amount of power from another independent power producer. Assuming an average energy production of 48.3 million KWh for export to Central Hudson in a given year, the DCRRA could expect to receive \$2.9 million in electric revenue annually, based on the \$0.06/KWh floor price. Actual revenue from the sale of electric energy, including avoided cost revenue, was \$2.93 million in 2004, \$3.84 million in 2005, \$3.17 million in 2006, \$3.53 million in 2007 and \$4.21 million in 2008, an

increase of 43.6% over five (5) years. However, with the contraction of the economy in 2009, electric demand, and electric revenues to the RRF, fell to \$2,816,051.16 on 46.9 million KWh (\$0.06/KWh).

As noted, the energy recovery technology employed in the RRF was designed to provide for steam sales to IBM. The loss of that steam customer left the Agency with only one option – the production of electricity. If designed solely for production of electricity in the first instance, a more efficient turbine design would have been employed and production and revenues would have been higher.

Future revenues for the DCRRA from the sale of electric power will be dependent on many factors, including demand, transmission costs and the cost of fuel consumed for power generating purposes. Deregulation of electric markets has produced an active market in the purchase and sale of electric power through the New York Independent Systems Operator (NYISO), the market used to determine the avoided costs paid to the Agency by Central Hudson. In New York, prices paid to independent power generators differ by region, with lower Hudson Valley generators generally procuring the third highest rates in New York, after Long Island and New York City. In general, market prices for power have historically trended with natural gas prices, and are influenced by sharp increases and declines in petroleum prices as well. The significant increase in electric revenues received by the Agency in 2005 and 2008 coincided with spikes in oil prices occurring in the peak demand season of spring and summer of those years. The decline in electric revenue in 2009 coincided with a steep decline in the price of oil and natural gas.

Despite the economic downturn in New York State since the fall of 2008, it is anticipated that power demand in New York State will increase over time. Regulatory initiatives, such as the Northeastern Regional Greenhouse Gas Initiative (REGGI) and proposed cap-and-trade or carbon-tax legislation at the federal level, will, if implemented, gradually increase the cost of fossil fuels used in power generation, and thereby increase demand, and the prices paid, for non-fossil fuel sources, including energy from

waste. Revenues from energy sales would also benefit from the inclusion of waste-to-energy in the New York's renewable energy portfolio, as has been done in 23 other states.

It is presumed that the cost of fossil fuels in both the power and transportation sectors will increase from present levels over time. Because electric prices have historically been linked to the price of fossil fuel, as the cost of fossil fuel increases, the price paid for electric energy, including energy generated from solid waste, should also rise. Consequently, if power production is maintained, it can be presumed that revenues from the sale of electric energy will increase over time and should provide a growing portion of the Agency's revenue in the future. At the same time, increases in the cost of petroleum will impact the cost of transportation for long distance disposal of solid waste, and may have a dual effect on the Agency's future budgets, not only increasing revenue from the generation of power, but allowing increases in the tipping fee as the cost of long distance disposal approaches the cost of local disposal at the RRF.

#### **3.4.4 Ash Disposal.**

The combustion process at the Facility produces approximately 50,000 tons of ash residue from the combustion of approximately 150,000 tons of MSW. This amount of residue is higher than the anticipated reduction of MSW to 25% by weight projected in the original design and contract with PEC. The performance of the Facility in this respect is identical to that of its sister Facility in Islip, New York, and is generally attributable to the O'Connor design, although ash weights have also increased due to the addition of reagents and moisture absorption from the improved air pollution control system. Under the Service Agreement, as amended in 1998 at the time of the assignment of operating rights to Montenay, the DCRRA is responsible for the cost of ash disposal up to 33.3% of the amount of MSW processed, with the contractor being responsible for any additional costs. The ash handling system at the Facility recovers from 5,000 to 8,500 tons of ferrous metal from the ash annually, representing 30-33% of the ash stream by weight.

Ash residue is positively used as an alternative daily cover under Beneficial Use Determinations (BUDs, granted by the New York State Department of Environmental Conservation) at four (4) landfills: Madison County, Steuben County, Ontario County and Delaware County.

The cost of disposal of ash residue from the Facility includes disposal fees and transportation costs. Each of the participating landfills (Madison, Steuben, Ontario and Delaware counties) accepts the ash from the RRF under Beneficial Use Determinations made by the NYSDEC, which allow the ash to be used as cover material, and not characterized as waste. The DCRRA also accounts for costs associated with its Household Hazardous Waste program and other disposal expenses under its residue disposal budget line. In 2008, the total cost for residue transport and disposal was \$2,396,626.00 or \$47.93 per ton of residue. Residue disposal as a function of tons of MSW processed was \$15.97 per ton for 2008.

### **3.5 Landfills.**

There are no operating landfills in Dutchess County. However, as noted above, out-of-county landfills provide the disposal capacity necessary for all non-recyclable waste that cannot be processed by the Agency's Resource Recovery Facility. This waste includes approximately 96,000 tpy of Municipal Solid Waste (MSW) estimated to be generated in the County beyond the 164,000 tpy of capacity at the RRF. It also includes an additional amount of Construction and Demolition Debris (C&D) that is collected, processed and disposed of by private haulers in the County. This section will describe the landfills utilized by the private sector for MSW and C&D, and summarize the Agency's use of landfills for the disposal of ash residue from the RRF.

### 3.5.1 Municipal Solid Waste Landfills

Review of the annual reports filed by local haulers and transfer station operators collecting or receiving MSW generated in Dutchess County identify the following landfills that are used by the private sector for the disposal of Dutchess MSW. Capacity figures listed with each landfill are the estimates of remaining capacity made by the NYSDEC Division of Solid and Hazardous Materials as of December 31, 2008.

Landfills	Existing and Entitled Capacity Under Permit (tons)
High Acres Landfill, Perinton, NY	44,400,000
Seneca Meadows Landfill, Waterloo, NY	37,611,560
Ontario Landfill, Ontario County, NY	7,349,795
DANC Landfill, Jefferson County, NY	3,505,060
Pharsalia Landfill, Chenango County, NY	1,104,009
Mill Seat Landfill, Bergen, NY	6,893,846

Available reports do not indicate the precise volumes of material delivered to each facility from Dutchess County on an annual basis. However, it is believed that the Seneca Meadows and High Acres landfills currently receive the majority of waste generated in the County that is disposed of at landfills outside the County. The choice of a landfill is determined by the private hauler or transfer station operator based on his/her review of the market. As discussed above, the primary factor influencing this choice is cost, which in turn is a function of the tipping fee charged for the waste at the facility plus the transportation cost of delivering it to the gate. It is anticipated that adequate capacity for current quantities of Dutchess waste at such facilities will remain available for several years, although the Agency should track available capacity on a regular basis.

### 3.5.2 Construction & Demolition Debris Landfills.

Construction and Demolition Debris generated within Dutchess County is primarily managed by the private sector. Some municipal transfer stations accept small amounts of C&D from residents and local businesses or institutions, but even these materials are directed to private entities that recover useful materials or dispose of them.

C&D materials may be generated by building contractors and delivered to C&D processors, or C&D materials may be collected by private haulers and delivered to local transfer stations for disposal at out-of-County landfills. Based upon the annual reports prepared and filed by permitted C&D processors and transfer station operators in Dutchess County, approximately 70-75,000 tons per year of C&D is generated in Dutchess County. Of this amount, approximately 30-35,000 tons (42-46%), predominantly concrete, asphalt, brick, and rock is recycled, and 40,000 tons is disposed of in landfills outside of the County. Of this latter amount, some can be classified as Alternate Daily Cover Material, and also considered recycled material.

There are five licensed C&D Processors operating in Dutchess County. Materials received, materials recovered and re-used/recycled, and materials landfilled in 2009 are as follows:

**Table 11**

Construction Demolition Debris Processors							
Name	Total	C&D	Wood	Asphalt	Concrete	Landfilled	Total Recycled
Recycle Depot Poughkeepsie, NY	28,515	24,292	2147	19	601	24,292	2,767
Blacktop Maintenance Poughkeepsie (from Dutchess)	34,609	34,609				0	34,609
Duffy Layton Staffordshire, NY	1100	0	1100	0	0	0	1,100

West Hook Sand & Gravel Hopewell Junction, NY	1197	0	1197	0	0	0	1,197
Sun-up Properties Wappingers Falls, NY	680	0	0	587	93	0	680
Total	66,101	58,901	4,444	606	694	24,292	40,353
% Recycled							61%

It should be noted that in the above Table 11, the tonnage reported by Blacktop Maintenance is a combined tonnage, including concrete, asphalt, brick, block and rock. No individual figures were reported for each of these materials, and they are reproduced above under the generic heading of C&D. However, Blacktop Maintenance reports that they do not accept conventional building debris (i.e., no wallboard or mixed material), but only clean, identifiable loads of re-usable material. Because all other loads are rejected, Blacktop Maintenance reports a recycling rate of over 99% after crushing, sorting and resale to local building contractors.<sup>5</sup> Based on reported figures, Recycle Depot effectively operates as a C&D transfer station, performing only a modest amount of recycling. All of the tons reported as landfilled by Recycle Depot were reported to have been sent to Seneca Meadows landfill in Waterloo, New York.

In addition to C&D Processors, several transfer stations accept C&D wastes collected by waste haulers operating in Dutchess County. The private transfer stations located within reasonable driving distance of customer locations in Dutchess County are as follows:

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<sup>5</sup> Conversation with Mr. Stewart D. Petrovits, June 29, 2010.

**Table 12**

Private Transfer Stations

Name	Total	MSW	C&D	Yd Waste	Paper/OCC	Container/Metal
	Received			Brush		
Watch Hill Hopewell Junction (Royal)	42,978	27,703	15,273	0	0	0
Harlem Valley Wingdale, NY (Royal)	29,054	29,053	0	0	1500	0
Waste Mgmt Kingston (through 7/09)	18,347	17,116	4,605	0	0	0
Total	90,379	73,872	19,878	0	1,500	0

According to the above reported figures, at least 15,273 tons of C&D were collected by Royal Carting and delivered to the Royal transfer station at Watch Hill in Hopewell Junction. These tons can be considered as having been generated in Dutchess County, and are in addition to the tons delivered to C&D Processors in Dutchess. All are reported to have been delivered to one or more of the MSW landfills set forth in section 3.5.1 above.

Some of the 4,605 tons of C&D delivered to the Waste Management transfer facility in Kingston, Ulster County may have been generated in Dutchess, but it is not known how many. Similarly, a significant number of tons of C&D were delivered to the Ulster County Resource Recovery Agency (UCCRA) facility in Kingston. Some of these may have originated in northern Dutchess due to the close proximity of the Kingston facility in comparison to the Royal facilities in the southern and eastern parts of Dutchess. The UCRRA facility does not report any tonnage of Dutchess origin.

Combining the reported figures from C&D Processors and private transfer stations, and allowing for an approximation of tonnage delivered from northern Dutchess construction sites to facilities in Ulster County, it is estimated that the total amount of C&D generated

in Dutchess annually is 70,000 to 75,000 tons. Of this amount approximately 42-46% is recycled, primarily by Blacktop Maintenance, and the balance, approximately 40,000 tons, or 53-57% is landfilled at facilities outside of Dutchess County.

### **3.5.3 Ash Landfill**

As noted above, the combustion process at the RRF produces approximately 50,000 tons per year of ash residue from the combustion of approximately 150,000 tons of MSW. Under the current Operating Agreement with Covanta Energy, the DCRRA is obligated to provide disposal of this material. This obligation has been fulfilled through the periodic procurement of haul and dispose contracts with vendors, and through negotiated arrangements with other municipalities for acceptance of the material. Currently ash residue is used as an alternative daily cover material (ADCM) under Beneficial Use Determinations (BUDs, granted by the New York State Department of Environmental Conservation) at four (4) landfills: Madison County, Steuben County, Ontario County and Delaware County. Approximately 25,000 tons per year is taken to the Ontario County Landfill, with the remaining 25,000 tons divided approximately evenly between the other three landfill facilities. Each landfill accepts the ash as ADCM. The amount of ADCM each can accept is based upon the need for ADCM at the facility, which in turn is based upon the total volume of other wastes accepted which require daily cover.

### **3.5.4 Current And Future Market Restrictions**

The fluctuation in market prices for recyclable material drives the fluctuation in the volume of recyclables received by the Agency at the MRF. When markets are good it would normally follow that DCRRA revenue would rise, but this is not always the case. During these market conditions both generators and haulers seek other outlets to gain a financial benefit. While the revenues from the sale of recyclable materials have exceeded the cost of operating the MRF in recent years, revenue is not as high as it

should be. This is partly due to having little control over where private haulers bring the materials.

When the market for a recyclable material(s) is good, some companies market the materials themselves. To counteract this, the DCRRA lowers or eliminates tip fees to encourage haulers to bring in materials, but the haulers will go where it is most profitable. For this reason, the MRF has not been operating at capacity for the past few years. When the market price for a material goes down, more material is delivered to the MRF. Re-implementing flow control would help to alleviate some problems with the MRF operation.

The restriction to the amount the MRF can handle at the dual stream facility is another current market restriction. Plans to develop a new, high-volume single stream facility would eliminate this constraint. The facility would handle all recyclable materials within the County and be able to take advantage when the markets are profitable.

Another restriction to market development is the technology factor. Currently the County does not recycle #4 or #6, which include plastic bags and styrofoam. These materials do not lend themselves to current recycling technology. While many area grocery stores accept plastic bags for recycling, the limited resources for recycling of this material is one reason that most of these stores also offer money off the bill for each reusable cloth bag utilized. The County promotes the use of reusable and recyclable materials, and unless #4 and #6 materials either become obsolete or marketable they will remain part of MSW.

In addition, markets for mixed-color glass are extremely weak. Breakage of glass in all stages of the collection and sorting process, from placement at curbside by residents, to breakage in compaction, transport, tipping and sorting is a chronic problem. Mixed broken glass is therefore a large fraction of the total glass tonnage arriving at recycling facilities. As a result, it has been difficult for any recycling facility to effectively color separate significant quantities of glass, and while markets exist for color-separated

glass, only small quantities of this glass can typically be marketed. Instead, much of the glass processed at most MRFs is of mixed color, and there is little demand for this material. However, most of this material is beneficially used in landfill applications or as aggregate.

## **CHAPTER 4: FUTURE PLANNING UNIT PROJECTIONS AND SOLID WASTE CHANGES**

### **4.1 Anticipated Changes to the Dutchess County Planning Unit.**

As the following data will show, Dutchess County has experienced the effects of the recent economic downturn, similar to the rest of the country. It will also show that Dutchess has had continual growth, in spite of the economy, unlike many Upstate New York counties.

#### **4.1.1 Expected Residential Development.**

Building permit data between 1999 and 2008 show an average of 836 new residential buildings with an average of 1,018 units per year. This data reflects a high of 1,066 new buildings in 1999, to a low of 384 in 2008. The trend for new residential construction has been mainly single-family homes, except for 2008 when of the 746 units constructed, 392 were for multi-family units.

Due to the favorable location of Dutchess, in both commute time from larger cities and the desirability of the area, it is expected that the County will rebound in new residential development once the economy has rebounded. There are plans for significant residential development in the pipeline now.

According to the 2008 Major Projects Report published by the Poughkeepsie-Dutchess Transportation Council (PDTC), both the southern and central regions of the county are experiencing a high number of development proposals. At the end of 2008 there were 119 residential proposals with a total of 16,190 proposed housing units.

The towns of Dover, East Fishkill, Fishkill, Hyde Park, LaGrange, Pine Plains, and Poughkeepsie have over 1,000 proposed housing units each, with a combined total of 12,705 units. These seven towns alone account for over 78 percent of all units

proposed in Dutchess County, for projects meeting the Major Projects criteria of 10 units or more in rural communities and 25 units or more in suburban municipalities.<sup>6</sup>

Also notable is the number of apartments, condominiums, and townhouses that are proposed throughout the County, with at least 7,359 units (not including several projects that have yet to define the number of units), which accounts for 45 percent of all proposed housing units on the list. A considerable number of senior housing units are also proposed, 2,399, most of which are apartments, townhouses and condominiums.

Included in these numbers is the largest residential and commercial development in the County's history. In the Town of Dover, on the eastern edge of the County, the redevelopment of the former Harlem Valley Psychiatric Center is underway. The development calls for a mixed-use community centering on an existing train station. The plans include 1,376 dwellings in a wide variety of unit-types, approximately 238,500 square feet of commercial space, and approximately 70,250 square feet of community facility or recreation center space, including reuse of an existing 9-hole golf course.

Also included in the numbers above is a proposal by Dutchess County Community College, located in the Town of Poughkeepsie, for the development of on-site housing for students. The 450-student residential dormitory could significantly change the make-up of this community college by the addition of live-in students.

#### **4.1.2 Planned Commercial Development.**

The PDTC Major Projects 2008 annual report shows that there are 87 non-residential proposals for a total of 7,517,892 square feet of commercial space. This number

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<sup>6</sup> Urban municipalities: cities of Beacon and Poughkeepsie, towns of East Fishkill, Fishkill, Hyde Park, LaGrange, Poughkeepsie and Wappinger, and the villages of Fishkill and Wappingers Falls. Rural municipalities: towns of Amenia, Beekman, Clinton, Dover, Milan, North East, Pawling, Pine Plains, Pleasant Valley, Red Hook, Rhinebeck, Stanford, Union Vale, and Washington and the Villages of Millbrook, Millerton, Pawling, Red Hook, Rhinebeck, and Tivoli.

represents only those projects meeting the report criteria of 10,000 square feet in rural municipalities and 25,000 square feet in suburban municipalities.

Many of the proposed commercial projects are for retail, office, hotel/motel and health care. A hospital in the City of Poughkeepsie has plans for a 78,000-square-foot expansion to house a medical complex with cafeteria, and an associated 850 space parking garage. The New York Army National Guard has proposed to build a maintenance depot in the Town of Beekman that is expected to create 75-100 permanent jobs. The development project in the Town of Dover, mentioned above, includes plans for over 200,000 square feet of commercial space, including a 40,000 square foot grocery store. In the Town of LaGrange there are plans for a Town Center which includes retail, offices and a hotel, totaling over 265,000 square feet of commercial space.

#### **4.1.3 Planned Industrial Development.**

The largest industrial proposal is for a photovoltaic cells manufacturer, used by solar module suppliers, to locate in the Town of East Fishkill. It is anticipated that at least 150 new jobs in the next two years will be created by this firm. There are also plans for a significant expansion of an existing manufacturing firm in the City of Beacon.

IBM is still the largest industry in the county, even though its employment has decreased since the early 1990s. The future growth of this industry is uncertain at this time, but it is expected to remain one of the County's major employers.

#### **4.2 Special Conditions.**

Dutchess County is in a position to continue to grow, both in residential and non-residential developments. The County is within commuting distance of New York City, has favorable home prices, and is continually expanding the already large number of

recreational and historic attractions. It is expected that the number of waste generating establishments and activities will only increase.

### **4.3 Projections of Changes to the Waste Stream.**

It is projected that increases in the volume of MSW will be offset by source reduction through product stewardship, improved recycling, expanded organics composting, and direction of waste to the RRF in order to optimize its capacity.

The County plans to increase enforcement of County Local Law No. 4 which provides for the mandatory collection and disposition of recyclables, and enhance the educational outreach and public information materials to promote the benefits of recycling and the planned change to single stream recycling. Where there is currently weak or sporadic participation in recycling, such as some industries, businesses, institutions and public places, efforts will be made to educate and ultimately enforce the County's source separation/recycling requirements. Also, recovery of organics, including food waste from large scale generators, will be a priority over the planning period. These actions will be the primary means to change the current waste stream.

These initiatives will increase the recovery of recyclables and organics thereby reducing the volume of those materials going to the RRF and increasing the operating efficiency of the RRF, allowing the facility to operate closer to optimum conditions. These initiatives will also reduce the volume of waste sent to out-of-county landfills. If implemented by the County, flow control will better enable the County to ensure that the recyclables are actually being collected and disposed of properly, and better enable control over enforcement of the County regulations regarding recycling. Flow control, or other measures to capture local waste, can also help ensure that the waste-to-energy facility operates at maximum capacity

The plans for a single stream recycling facility will allow the County to handle all of the current and anticipated tons of recycled material. It is estimated that over 10,000 tons,

of the estimated 24,000 tons of recyclable materials, are currently handled outside the County. A single stream facility would handle all recyclables generated within the County. In addition, with single stream and increased education and enforcement, it is anticipated the recycling rate could be increased by over 50%.

There is currently no Agency facility for the composting of yard or food waste. There are a number of existing organics recovery programs including McEnroe Farm, Sweet Pea Farm, Adams Fairacre Farms, Migliorelli's, Bard College, Vassar College [separation still occurs, composting at that location has been ceased], Marist College, The Culinary Institute, the County DPW [deer carcasses], Town of North East, Town of Pine Plains, IBM Fishkill, the Linden Avenue school, Royal Carting, Tri County Municipal Waste, the City of Poughkeepsie, and the Town of Poughkeepsie. With the support and cooperation of the existing programs noted above, organics recovery can be significantly increased.

Although information on the volume of organics currently recovered through composting is limited at best, it is estimated that over 1,200 tons of in-County organic waste are being composted now. The Culinary Institute of America (CIA) alone diverts over 600 tons per year of food waste for recovery by McEnroe Organics. It is projected that 5,000 tons or more could be composted using existing systems with better education. The County plans on concentrating efforts for diversion with institutional food preparation waste as a first priority before expanding to other generators and post-consumer waste streams.

The County supports efforts for reduction of waste through the use of recyclable materials for packaging, but is limited to the successes of others in this area. At the manufacturing level, redesigning products and packaging with waste reduction as a goal is necessary. At the consumer level, changing purchasing and disposal habits and attitudes is needed. Measurable results will probably not be achieved, however, until it is mandated by legislation at the state and federal levels. In the meantime, the County

will promote consumer education programs and update waste disposal regulations as technologies for recyclable materials develops.

#### **4.4 Waste and Recyclables Projections.**

The volume and character of solid waste is directly related and proportional to the population, income levels, new development, commercial sales, and industrial activity in the region. As noted above, it is expected that the County population will increase, there will be new single family and multi-family development, and there will be new commercial and industrial development within the planning period.

Conservatively, it can be projected that the County's population will grow at the same rate in the next 10 years as it did in the past 10 years, approximately 5%. This would make the population approximately 308,240 in 2020. However, given the fact that the economy has been down for much of the past 10 years and there are still a number of commercial and industrial projects slated for construction, a 5% population growth projection may be too low. The County Planning Department [through the Poughkeepsie – Dutchess County Transportation Council] projects the County population to grow by 10% to 324,006 by 2020.

A 5% to 10% increase in population over the next 10 years could well translate into an increase of 7,819 to 15,638 tons per year of residentially generated municipal solid waste, all other things remaining constant [and based upon the estimate that 60% of the MSW generated comes from the residential sector]. A similar 5% to 10% increase in waste generated from commercial/industrial/institutional activity translates into an additional 5,213 to 10,425 tons per year from those sectors. Based on these calculation factors alone, it is reasonable to project that the volume of MSW generated in Dutchess County could increase by approximately 13,032 to 26,063 tons per year by 2020.

That potential increase in waste generation may be offset, to a degree, by State product stewardship initiatives and laws for an expanded product list based upon New York State's new electronics waste law. Similarly, informed consumer buying habits may

reduce per capita waste generation. New recycling opportunities, such as the more convenient single stream approach, are expected to offset increases in waste generation. Therefore, for the purpose of making a projection for this plan for the next 10 years, it is estimated that the increase in waste from increases in population and commercial industrial development will be offset by source reduction and improved recycling. As shown in Table 13, the volume of waste recovered through recycling and composting will increase while the overall volume of waste will remain constant for the reasons noted herein.

The following summarizes the basis for the projections in Table 13:

2010 The existing system - existing recycling levels, the RRF at 92% capacity, and the balance of waste landfilled.

2015 An improved system – recycling increased to 35,000 tons per year, composting at 5,000 tons per year, and the existing RRF at 100% capacity.

2020 A new system – recycling increased to 45,000 tons per year, composting at 5,000 tons per year, and the RRF expanded with a third boiler for a total capacity of 199,000 tons per year.

The estimates provided in Table 13 [ like those in Table 6] rely on the EPA analysis of the waste stream and track closely with the DEC waste composition estimates. It should be noted that EPA's method shows many elements usually included in the broad category of municipal solid waste (MSW) as separate material types, resulting in what appears to be a low percentage of MSW. It should also be noted that estimates for private recycling [ based on surveys done by the Agency from 2006 -2009], C&D, and the actual volume of ash from the RRF have been added to Table 13.

TABLE 13

WASTE & RECYCLING PROJECTIONS

Material Type	2010					2015					2020				
	Generation	Recycling	Energy Recovery	Landfill	Reduction	Recycling	Energy Recovery	Landfill	Reduction	Recycling	Energy Recovery	Landfill			
Aluminum Cans	2,606	104	1,460	1,042	1,339	760	507	1,339	760	507	1,339	507			
Steel Cans	2,606	104	1,460	1,042	1,339	760	507	1,339	760	507	1,339	507			
Glass	13,031	521	7,298	5,212	3,694	560	8,777	3,694	560	8,777	3,694	8,777			
HDPE	2,606	104	1,460	1,042	339	1,360	907	339	1,360	907	339	2,267			
PET	2,606	104	1,460	1,042	339	760	1,507	339	760	1,507	339	2,267			
Corrugated Cardboard	18,244	2,468	10,216	5,560	12,371	3,524	2,349	14,871	3,524	3,373	3,373	3,373			
Magazines	5,212	208	2,919	2,085	1,678	2,120	1,414	2,678	2,120	534	534	534			
Newspapers	13,031	2,102	5,717	5,212	2,721	8,186	2,124	4,221	2,721	7,810	7,810	7,810			
Office Paper	10,425	417	5,838	4,170	1,355	7,960	1,110	1,355	1,355	9,070	9,070	9,070			
Phone Books	2,606	104	1,460	1,042	339	1,360	907	339	1,360	2,267	2,267	2,267			
Text Books	2,606	104	1,460	1,042	339	1,360	907	339	1,360	2,267	2,267	2,267			
Food Scraps	54,732	851 (C)	32,329	21,552	3,000 (C)	39,039	12,693	3,000 (C)	3,000 (C)	51,732	51,732	51,732			
Yard Trimmings	2,606	104 (C)	1,460	1,042	500 (C)	1,264	842	500 (C)	500 (C)	2,106	2,106	2,106			
Grass	2,606	104 (C)	1,460	1,042	500 (C)	1,264	842	500 (C)	500 (C)	2,106	2,106	2,106			
Leaves	2,606	104 (C)	1,460	1,042	500 (C)	1,264	842	500 (C)	500 (C)	2,106	2,106	2,106			
Branches	2,606	104 (C)	1,460	1,042	500 (C)	1,264	842	500 (C)	500 (C)	2,106	2,106	2,106			
Mixed Paper (Gen)	13,031	521	7,298	5,212	1,694	9,802	1,535	1,694	1,694	11,337	11,337	11,337			
Mixed Paper (Res)	10,425	417	5,838	4,170	1,355	8,422	628	1,355	1,355	9,050	9,050	9,050			
Mixed Paper (Of)	10,425	417	5,838	4,170	1,355	8,422	628	1,355	1,355	9,050	9,050	9,050			
Mixed Metals	10,425	417	5,838	4,170	1,355	8,422	628	1,355	1,355	9,050	9,050	9,050			
Mixed Plastics	18,244	730	10,216	7,298	2,372	12,523	3,349	2,372	2,372	15,872	15,872	15,872			
Clay Bricks	5,212	0	0	5,212	0	5,212	5,212	0	0	5,212	5,212	5,212			
Concrete	5,212	208	4,378	5,004	208	4,082	5,004	1,016	1,016	8,803	8,803	8,803			
Dim Lumber	7,819	313	4,378	3,128	1,016	2,840	2,721	1,016	1,016	39,102	39,102	39,102			
MSW	39,102	0	26,406	12,696	0	28,406	12,696	0	0	8,803	8,803	8,803			
Private Recycling	199,130	199,130	199,130	199,130	209,087	38,850	38,850	219,541	219,541	36,713	36,713	36,713			
Construction & Demolition Debris	74,000	34,000	74,000	40,000	38,850	52,900	52,900	44,872	44,872	67,250	67,250	67,250			
WTE Ash (A)	50,000	0	50,000	50,000	0	50,000	50,000	0	0	0	0	0			
<b>GRAND TOTAL</b>	<b>583,760</b>	<b>243,760</b>	<b>144,729</b>	<b>195,271</b>	<b>0</b>	<b>288,145</b>	<b>152,884</b>	<b>161,228</b>	<b>2,000</b>	<b>309,413</b>	<b>194,355</b>	<b>124,178</b>			

(A) Alternate Daily Cover  
(C) - Compost

#### **4.5 Anticipated Effects of the Changes.**

One change to current management practices will be the educational component. Since increased recycling and reuse is a primary goal, the how and why of ways to increase these numbers is a priority. Getting the word out on what can be recycled and where it can be recycled is a key element. This information is currently available on the County's and DCRRA's website, but the website needs to be improved and a dedicated educational facility and program is needed and will enhance these efforts.

Another change will be to provide increased composting opportunities for both residential and non-residential entities. Assisting commercial enterprises in organic diversion is essential to reaching the composting goals of this plan. Working with these entities on education and available facilities is a necessity. Along with this, providing information to individual residential composters and information on where to obtain composting bins, should be made more available.

In order to re-implement flow control the County would have to operate additional transfer stations, which will carry with it an increase in costs. Currently, even with increased recycling and composting, the waste-to-energy facility cannot handle all of the County's MSW. In order to have control over all of the MSW, there will have to be transfer stations in appropriate locations in the County where MSW could then be directed to designated landfills, or other appropriate facilities. This will require additional staff and oversight.

Another major change will be in code enforcement. At this time there is limited capability to enforce the County's hauler licensing requirements and to monitor recycling compliance. A dedicated enforcement staff is needed, especially if flow control is re-implemented. To effectively enforce County regulations over an 801 square mile area, a full-time enforcement component within the County Department of Solid Waste Management is a priority.

## **CHAPTER 5: TECHNOLOGY EVALUATION**

### **5.1 Current Technologies Used by DCRRA for Dutchess County**

#### **Municipal Solid Waste**

The main technology for disposal of solid waste in Dutchess County is the use of a waste-to-energy system (RRF). The RRF has been in operation since 1989. The County recognized early on, as did the NYS Department of Environmental Conservation, that a waste-to-energy operation is preferable to landfilling. The technology has served the County well and has actually improved with the Clean Air Act upgrades completed in 2003.

The RRF is a “mass burn” design, equipped with two (2) O’Connor rotary waterwall combustors, each rated at a maximum capacity of 256 tons per day (tpd), and collectively permitted to operate at an annual average of 450 tpd. The RRF was designed to accommodate the future construction of a third combustor and boiler train and this remains an option for DCRRA.

The RRF produces steam which is used to generate electric power through a 9.2 MW turbine generator, and can be made available for direct sale for use as a heating source. During the period 1989 through 1998, a portion of the steam generated was sold for use at the IBM South Road complex, with the remainder converted to electricity and sold to Central Hudson, a local utility company. In 1998 the sale of steam to IBM was discontinued and is not expected to be resumed. The loss of the RRF steam sales customer represented a net loss in the efficiency of the RRF, as the installed 9.2 MW turbine generator was not designed to convert the full steam production from the RRF into electricity in order to maximize the profits from electric sales. The RRF extracts approximately 315 KWh per ton of waste processed.

The operating performance of the RRF is discussed more fully in Chapter 3, and recommended improvements to the RRF are discussed in Chapter 6.

The O'Connor rotary waterwall combustor is no longer being manufactured. However replacement parts for continuous maintenance are available and have been obtained without difficulty by the facility operator. A review of the performance and condition of the RRF by HDR Engineers in 2007 found that with appropriate maintenance, the RRF has a useful life expectancy of more than 20 years.

The O'Connor design has limitations in both power generation and combustion efficiency when compared to other designs in use in the United States and in Europe. The amount of energy that can be extracted from a quantity of waste is dependent upon a number of factors, including the energy content (BTU value) of the waste, its relative moisture content, its homogeneity and other factors. The amount of energy that can be exported for sale is limited by the amount that is required for in-plant consumption, which is generally a fixed amount. Improvements to the air pollution control system of the facility over the years have increased the amount of energy required for internal use, and this has reduced the amount of power that is available for export and sale to Central Hudson Gas & Electric. As noted, the RRF has consistently provided approximately 315 KWh/ton of electric power for export. Other boiler designs in use today can combust larger quantities of MSW and generate up to 650 KWh/ton with optimal MSW feedstock in terms of BTU value and consistency.

The combustion process at the RRF produces approximately 50,000 tons of ash residues from the combustion of approximately 150,000 tons of MSW. This amount of residue is higher than the anticipated reduction of MSW to 25% by weight projected in the original design and contract. The performance of the RRF in this respect is identical to that of its sister facility in Islip, New York, and is generally attributable to the O'Connor design, although ash weights have also increased due to the addition of reagents and moisture absorption from the improved air pollution control system. The Agency has made concerted efforts, including the construction of new facilities and

installation of new equipment to dewater the ash, to reduce weight and thereby reduce haul costs. It should also be noted that while the reduction in the weight of ash is important, an even more critical factor is volume reduction because that is what saves landfill capacity. The approximate 90% volume reduction achieved by the RRF reduces the dependence on landfilling and conserves expensive landfill capacity.

Despite the relative inefficiencies of the O'Connor design in these areas, its overall performance has met or exceeded design performance warranties, and the RRF has provided reliable service since 1989.

### **Recyclables**

Since 1990 the County has had mandatory recycling. The DCRRA oversees a Materials Recovery Facility (MRF), located on Fulton Street in the Town of Poughkeepsie, which is housed in a building owned by the County. It has been operated by Hudson-Baylor Corp. since 2002. The MRF is capable of handling up to 18,000 tons of material per year through a dual stream processing system that sorts paper and cardboard or commingled aluminum, metal, plastic and glass containers in separate shifts.

The MRF is in poor condition and is equipped with obsolete equipment and technology. It is not capable of handling all of the recyclables generated from residences in the County, and is not a candidate for expansion. While it can continue operations for the near term, it should be replaced by a modern "single stream" facility with sufficient floor area for tipping and materials storage to accept all of the residential recyclables generated in the County.

### **Construction and Demolition Debris [C&D]**

Five privately operated Construction and Demolition Debris Processors are located within Dutchess County. Of these, four effectively recover and recycle C&D materials, primarily concrete, asphalt pavement, brick, block, soil, tile, reinforcing rod and wire

mesh. This Plan supports the increased recovery of C&D materials through the provision of additional information and technical assistance.

The DCPU also encourages deconstruction as a method of reuse, rather than landfilling. Deconstruction is the selective dismantlement of building components, specifically for re-use, recycling, and waste management. It differs from demolition where a site is cleared of its building by the most expedient means and materials are either landfilled or recycled. Deconstruction involves carefully taking apart portions of buildings or removing their contents with the primary goal being reuse. It can be as simple as stripping out cabinetry, fixtures, and windows, or as involved as manually taking apart the building frame.

The process of dismantling structures has been revived by the growing field of sustainable, “green” building. Buildings, like all materials and products that are discarded in the municipal solid waste stream, have a life-cycle. Deconstruction focuses on giving the materials within a building a new life once the building as a whole can no longer continue. At the end of a building’s life, demolition generates large amounts of materials that can be reused or recycled, principally wood, concrete and other types of masonry, and drywall. The Agency will provide additional information to demolition and deconstruction contractors in the future.

### **Household Hazardous Waste [HHW]**

Currently, the Agency provides an annual program of eight (8) collection events for household hazardous waste (HHW) which consists of paints, solvents, pesticides, herbicides, pool chemicals, photographic chemicals, batteries, mercury switches, florescent bulbs, and a wide-range of electronic items. The removal of these materials is of a particular benefit to Dutchess County because it reduces the input, and therefore, emissions of heavy metals such as mercury and lead from the RRF. The sponsorship of eight (8) collection events is a major commitment by the Agency and it also reflects how highly-valued the service is by the residents of Dutchess County. Currently, the

Agency allocates approximately \$125,000 per year for household hazardous waste management. The Agency's management of HHW is consistent with current State policy.

### **Pharmaceuticals and Other “Product Stewardship” Wastes**

In recent years the Agency has started a program to accept outdated and discarded pharmaceuticals. This service has been extended to generators from Columbia, Delaware, Rockland, and Ulster Counties. The Agency is well positioned to continue to provide that service to other planning units and special waste generators in the future.

The experience gained by the County and Agency also puts the Agency in a good position to provide services that may come from the State's initiatives for product stewardship---policies that will require manufacturers to be responsible for the end of life management of specified items. In 2010, the State legislature passed such a law for electronic waste. In the future, the Agency may be able to contract with manufacturers to provide the collection service required by State law, thereby offsetting part or all of the costs associated with programs.

### **5.2 Capacity and Sizing of SWM Facilities.**

Both the RRF and the MRF were initially designed to service a “core area” in the southwest quadrant of the County, where the bulk of the population of the County resided. The County's original Solid Waste Management Plan, adopted in 1992, contemplated the eventual expansion of the services provided to the people of the County through the RRF and the MRF, the only two (2) facilities established at that time. The plan contemplated expansion of both recycling and waste-to-energy service to the rest of the County, using flow control legislation originally adopted in 1984, as the means to secure the waste stream and support the construction of new infrastructure.

The RRF has not been expanded as originally planned for, and continues to process only about two-thirds of the non-recyclable fraction of the municipal waste stream. As detailed in Chapters 1 and 2, and as contained in the 2009 FCSWMA report, it is estimated that approximately 250,000 tons per year of MSW is generated in Dutchess County, not including wastewater treatment plant sludges and construction/ demolition debris.

In 2009 the Agency received 150,641 tons of MSW for processing at the RRF. This means that approximately 99,359 tons of MSW generated in Dutchess County was taken to disposal facilities outside the County for disposal.

Similarly, the MRF is undersized and processes only a portion of the County's recyclables, and is not capable of handling more than 18,000 tons/yr. Recyclable material that cannot be handled in-county goes to numerous out-of-County facilities.

The volume of the MSW waste stream in Dutchess is approximately 40% greater than the capacity of the RRF, and the amount of recoverable recyclables is two (2) times greater than the capacity of the MRF. Most of the approximately 99,000 tons per year of MSW that is not handled by the RRF is transported to and disposed of in a variety of landfills in northern, central and western New York, while a relatively small amount is transported to waste-to-energy facilities in Westchester and Washington counties. A significant fraction of non-recyclable waste is also transported privately for disposal at out-of-county locations. The private sector provides some recycling services in addition to the public services offered at the MRF.

As discussed more fully in Chapter 6, increased capacity for recyclables processing should be provided with a new facility. Following implementation of efforts to increase recycling and composting activities in the County, the Agency should consider an increase in the capacity of the RRF to reduce the amount of material transported to distant landfills

### **5.3 Technology Options and Costs.**

#### **5.3.1 Recycling.**

As noted previously, the existing Materials Recovery Facility in use to process recyclables from the County is limited in its capabilities. It is not well-suited to accommodate increased volumes which are likely in the future based on a renewed commitment to recycling by the DCRRA. Also, the existing facility would not be easily adapted to new “single stream” equipment.

DCRRA and the County have explored the development of a new regional Materials Recovery Facility that could capture the benefits of higher volumes and economies of scale. It is recognized that in the evolution of materials recovery facilities is toward a larger regional scale and the technology trend is toward single stream. In a June 2010 article in MSW Management Elements 2011, it was estimated that 74% of Americans have access to curb side recycling and that 54% of those curb side programs are now single stream.

In considering the options available it should be emphasized that the feasibility and viability of a new, single stream facility will depend on commitments of a base volume of recyclable material to offset both the capital investment and annual operating expense. Industry representatives indicate that it is preferable, and more cost-effective, to develop material recovery facilities with a capacity of at least 50,000 tons per year and preferably 90,000–100,000 tons per year. If flow control legislation is adopted, DCPU residential recyclables will represent an estimated 35,000 to 45,000 tons per year. Similar commitments from neighboring counties would be helpful for a new regional scale, single stream facility.

The benefits of a single stream recycling system are significant. First, it is easier and more convenient for homeowners as well as commercial generators to have all the recyclables go in one set out bin. It makes public education more straightforward and a

new public participation campaign coupled with the new level of convenience should increase participation and the volume of recyclables recovered. Of equal importance is the benefit to haulers. Single stream allows haulers to collect faster, to move to automated collection more easily, to potentially employ packer trucks for the collection of recyclables, and in some cases, to reduce the number of trucks needed. Single stream materials recovery facilities utilize a more automated system for processing recyclables, thereby reducing the number of sorters and the associated costs.

As single stream is implemented, it will be vitally important to have an expanded and prominent public information, education and outreach program. This will bring a renewed focus to recycling and should be aimed at getting all generators [residents, businesses, industries and institutions] to join the effort to separate recyclables from the waste stream and to make sure they are targeting all eligible recyclables. When the transition is made to single stream, there will be an additional significant opportunity to “spotlight” recycling coupled with new measures that will make it even easier for residents to participate.

Industry representatives were contacted and information was reviewed on single stream materials recovery facilities in Phoenix, Arizona; Scottsdale, Arizona; San Antonio, Texas; and Liverpool, New York. There are a number of materials handling companies such as Besner, Bollegraf and Hudson Baylor (the current MRF operator) and solid waste/recyclables management companies (Allied, Recycle America/Waste Management, Inc., New England CRNC, Hudson Baylor) which have developed the technology and equipment to a point that single stream MRFs can provide regular, reliable, and cost-effective recyclables processing capacity. The quality of the material output from single-stream MRF's is high and at least equal to the quality from dual stream facilities, thereby insuring stability in marketing the material.

Based on these discussions, it is estimated that a pre-existing building of suitable size for a single stream facility could be equipped with modern single stream sorting equipment for a cost of \$6-\$7 million; and a new, fully-equipped building of 50,000

square feet could be constructed for approximately \$12-\$13 million. The development of a regional Materials Recovery Facility that could capture the benefits of higher volumes and economies of scale would be preferable.

### **5.3.2 Organics**

The term organics can refer to a wide range of materials found in the broad classification of municipal solid waste [MSW], including leaves, brush, grass clippings, garden waste, and food waste. In some circumstances, the DEC also includes non-recyclable papers in their organics category. Organics are generated in residential, commercial, industrial, institutional, recreational, and all other land use or socio-economic classifications. The disposition of organics is similarly characterized by a wide array of practices ranging from back yard composting to redirection of left -over food from large scale cafeterias and restaurants by organizations serving the indigent population to processing at central facilities that create products for agricultural and landscape uses.

The DEC has targeted the recovery of organic wastes as the top recycling priority in the draft State solid waste management plan “Beyond Waste”. As noted in the DEC plan:

*“the best approach for any particular organic waste stream will depend on a number of factors, including the volume and makeup of the material, the space available for aggregation and management, flexibility, cost, GHG emissions, transportation distances, etc.”.*

As more information is gathered by the Agency on the volume and nature of organics generated in the County, especially food waste, they can follow the State’s approach, evaluate the most suitable technology or technologies, and then work with the private operators interested in moving forward to develop additional processing capacity through the most appropriate and cost effective technology or technologies.

The State plan also provides a snap shot of current and emerging technologies used for processing organics as a means to recover or create a usable product including:

**Composting** - the aerobic biological decomposition to produce a stable, humus like material. This can be done simply with back yard bins or other containers or in a larger scale engineered facility that closely monitors conditions and regulates the levels of oxygen, water, and temperature.

**Anaerobic Digestion** – the biochemical degradation process that converts organics into gas [a combination of methane, carbon dioxide, and hydrogen sulfide according to the DEC] in the absence of oxygen. This approach must be done at a central facility which requires extensive engineering to document regulatory compliance for air emissions as well as water quality. The draft State plan also notes that the Tellus Institute:

*“estimates that the energy generation potential of anaerobic digestion at 250 kWh per ton of materials, as compared to 105 kWh per ton in landfills and 585 kWh per ton in MWC” [Municipal Waste Combustors or waste to energy facilities].*

**Vermicomposting** – the degradation of organic waste using worms, where the worms consume the organics and excrete manure for use as a soil amendment.

**Rendering** – the drying, separation and other processing of waste animal tissue to produce fats, greases, tallow, protein meal, and other by-products.

**Heat Drying** – the removal of water from biosolids to produce powdered or pelletized fertilizers.

**Chemical Stabilization** – the application of lime or lime equivalents to achieve pathogen destruction.

**Household In-Sink Food Disposers** – the use of residential scale units which grind organic solids to allow transport with other wastewater to a treatment facility.

Neither the Agency nor the County is in a position to complete the extensive research and development necessary to determine the feasibility and utility of these and other potential organics processing technologies. Nor would it be prudent to invest public money in unproven technology or where there may be long term environmental or public health impacts. The Agency concurs with the DEC assessment in the draft State plan :

*“As this is a dynamic area of waste management, new technologies for organics recycling will likely surface in the coming years, each posing environmental concerns that must be properly addressed prior to planning for their use. Their resultant products must also be fully understood. For example, depending on the waste that is being processed, pathogens, heavy metals, or pesticide/herbicide residues may be present and would need to be managed.”*

### **5.3.3 Construction and Demolition Debris Processing.**

Construction and demolition debris (C&D) is a significant component of the overall waste stream, estimated at 70,000 – 75,000 tons per year. In Dutchess in 2009, approximately 40,000 tons of mixed C&D was exported for landfill disposal by area transfer stations, while over 34,000 tons of various materials were recycled. Mixed C&D typically contain a combination of materials (such as sheetrock, concrete, brick, plaster, painted/preserved wood, asphalt shingles) and products (such as fixtures, wiring, plumbing, appliances) as well as MSW. The roll-off containers used at construction and demolition sites are targets for unauthorized dumping of MSW or trash of any type from neighbors, workers or others. There is a potential for problems if this waste stream is not carefully managed.

The primary driver for the separation and recovery of recyclable materials at construction or demolition job sites is the avoidance of the cost of conventional disposal

at landfills. In a competitive building environment, a builder will seek out available means of lowering disposal costs as part of the overall cost of the job. Such competitive conditions favor the use of recovery and recycling methods for C&D, and for so long as such conditions prevail, haulers, processors and builders have an incentive to coordinate their efforts and provide effective means of recycling valuable materials. Such competitive conditions are prevalent in Dutchess County, and in addition, as discussed in Chapter 3, landfills capable of accepting unprocessed C&D are located at some significant distance from the County. These conditions tend to favor local processing and recovery. Recognizing the constraints presented by low cost landfill fees, the Agency will increase efforts to provide information to contractors promoting the recovery of elements of C&D. Market conditions will continue to be tracked and the technology options noted below will continue to be evaluated and considered.

### **Job-Site Separation**

The County could consider adoption of a local law that would require contractors, haulers, and do-it-yourselfers to provide for the separation of the materials comprising C&D at the job site. This would involve placing multiple containers (typically roll-off boxes) at the job site and establishing a discipline on all workers to keep materials segregated. The number of separations would depend on the ultimate method of processing and marketing. It must be noted that this approach would be difficult to manage or enforce. Construction, renovation and demolition work is widely scattered and done by a variety of contractors, homeowners and businesses. The management/enforcement cost to the County could be significant. It is conceivable that it could occupy one full-time enforcement person.

This kind of approach is used on a limited basis currently, usually at large jobs and more at construction than demolition jobs. The provision of additional information by the Agency can help promote greater levels of material recovery.

### **Building Materials Reuse Center**

The concept of establishing a center and system to receive and re-sell used building materials has been implemented in 16 locations in New York State, according to DEC. Each of these operates on their own and in differing ways. There is one such facility nearby, Hudson Valley Materials Exchange. Essentially, contractors and individuals may donate salvageable materials (with certain limitations) which are then re-sold for reuse in renovation or new construction projects. Such efforts may include a “de-construction” program which employs crews to disassemble structures scheduled for demolition in order to salvage reusable building materials. Based on information from such a program in Tompkins County, such a de-construction effort would not produce enough revenue to cover all the costs. It should also be noted that reusing salvaged building materials involves certain challenges such as matching sizes and dimensions of new building materials which can translate into additional time and money. It would require a significant investment to establish a building materials reuse center, including establishing a warehouse, developing an inventory control system, and providing operating staff. At this time there would not be sufficient revenues generated to fully offset the costs.

### **Production of Alternative Daily Landfill Cover (ADC)**

The use of C&D as an alternative daily landfill cover has become widespread in New York State. On the plus side, this practice provides a lower disposal cost for waste generators and insures that an often contaminated waste stream is going into a landfill for safe disposal.

Although the use of C&D for ADC started with the C&D being processed into three-inch minus material prior to delivery to the landfill, it is now common that unprocessed C&D is delivered directly to the landfill where it is run over by a waste compactor, bulldozer, or tracked excavator to crush the waste and make it more suitable for cover. By avoiding pre-processing, the cost of handling the C&D waste is reduced significantly. In

the past, ADC was recognized by the State as recycling but the draft State solid waste management plan calls for a change to that classification. The recycling classification has meant that some generators and haulers have avoided compliance with some local delivery requirements even though the material is simply going to an out-of-County landfill.

### **Full-Scale C&D Processing and Recovery**

The most comprehensive approach to recovering materials from the construction and demolition debris waste stream would involve the development of a facility with a tip floor and a series of conveyors, sorting lines, and equipment to segregate, screen, clean, crush or shred materials to transform them into materials that can be marketed for recovery. Potential end uses could include feedstock for the manufacture of sheetrock, scrap metal for new metal products, clean wood for production of landscape materials (i.e. wood chips, mulch), and wood for energy recovery.

The only operating facility in the State that achieves such full-scale C&D processing and recovery is Taylor Recycling in Montgomery, New York. Taylor has a proven track record and a review of the facility reveals that it is well run and achieving the results planned by the Taylor group. However, the development of such a facility could be on the order of \$8-\$10 million, and the revenue from tip fees would not be adequate to support that level of financial commitment from public funds. However, existing C&D processors within the County may be encouraged to examine and implement this technical approach.

### **5.3.4 Emerging Technologies.**

The draft State solid waste management plan defines emerging technologies as those alternatives to municipal waste combustion or landfilling that use thermal, biological, or chemical processes to convert the organic portion of the waste stream into a “syngas”

which can be used to produce electricity, synthetic fuels, or chemical products. These include pyrolysis, gasification, and plasma arc technologies. Just as with technologies for processing organics noted above, these technologies must be evaluated for their operating, financial and environmental track record. Specifically, the DEC states that there are still many questions on emerging technologies including:

“Can the technology be scaled up successfully and for long term operations?

Will costs and revenues be as proposed by the project sponsor for the life of the project?

Will the system be available, and the project sponsor solvent, at the time contracted for delivery and operation?

Will the project sponsor be available throughout the life of the project for servicing and operation assistance?

Will the system perform as expected during the life of the project?

Will the project have good reliability and greater than 85% availability when waste is delivered?

Will the environmental impacts be as described by the project sponsor?”

The issues for consideration of systems and technologies for the processing of MSW or some component of MSW are virtually the same, and in fact have guided the County as it has developed its current system. The Agency and the County will continue to monitor developments in this area.

### **5.3.5 Waste-to-Energy.**

In order to extend the useful life of the waste-to-energy facility through 2030 and beyond, a detailed analysis of the facility and an estimate of the capital expenditures that would be needed at various points over the next 20 years of operations in order to continue satisfactory performance should be performed. Further, as discussed in

Chapter 6, some immediate and long term improvements to the RRF can be made in order to increase efficiency without increasing the Facility's current throughput.

However, depending upon the success of planned improvements to waste reduction and recycling efforts, population changes and other factors, circumstances may arise where it is advisable for the Agency to consider the expansion of the capacity of the RRF. At present, 95,000 tons/yr of processible MSW is currently handled by private haulers and delivered to out-of-County landfills. A sizeable fraction of this amount can be recovered and recycled through improved source separation. If 33% of this amount can be recovered for recycling, over 60,000 tons will remain, and can be directed to the RRF through flow control legislation. For environmental and economic reasons, if this tonnage cannot be recycled it should be processed to recover energy rather than be landfilled.

Currently, WTE Facility expansions are being planned or constructed at Lee County, Florida; Hillsborough County, Florida; Honolulu, Hawaii; York, Pennsylvania; Olmsted, Minnesota; Hempstead, New York; Islip, New York and Harford County, Maryland. The size and costs of these expansions vary. Comparisons of costs per ton of new capacity reveal a wide range of variation, reflecting differences in design, site restrictions and other local conditions. In general, the costs are significant. Examples are \$193,000.00 per design ton at Lee County, Florida to \$233,000.00 per design ton at Hillsborough County Florida, both of which are approximately 700 tpd expansions currently under construction. In New York, neither Covanta Energy Hempstead nor the Islip Resource Recovery Agency has publicly announced costs for the expansions of their respective facilities. Studies performed for the Montgomery-Otsego-Schoharie Solid Waste Authority (MOSA) have estimated costs at \$225,000.00 per design/ton. We have no reason to believe that costs for an expansion of the Dutchess RRF would be different.

The absence of a local ash landfill owned by the DCRRA means that the County continues to depend on competitive bids for the transport and disposal of ash residue at landfills outside the County, and in fact, at significant distance from the County. Ideally,

the County would have its own ash landfill. Although it might be equal in cost to the current cost of export, it would stabilize costs over the long term and eliminate the risk of price hikes due to fuel increases and a constriction in disposal capacity. However, the identification and evaluation of potential sites, completion of the SEQRA and permitting processes, and the ultimate development of 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 before the facility can open. As a frame of reference, the Oneida–Herkimer Solid Waste Authority spent over 12 years and \$13 million to complete the SEQRA and permitting process and another three (3) years and \$31 million to build the newest landfill in New York State. The Oneida-Herkimer landfill is a 1,000 ton per day, 300,000 ton per year facility. Currently, and for the planning period, there are no plans to site an ash landfill within the County.

Although the ash from the RRF is currently classified as Alternate Daily Cover Material at all four landfills where it is sent, the State DEC should be much more proactive in identifying and evaluating other beneficial uses for the ash from waste-to-energy facilities.

#### **5.4 Collection Options.**

The collection of municipal solid waste is provided by a variety of methods in the County. A total of nine (9) municipalities (the Cities of Poughkeepsie and Beacon, and the Villages of Millerton, Millbrook, Pawling, Rhinebeck, Red Hook, Tivoli and Wappingers Falls) provide public collection either using municipal crews or competitively-bid contracts. This method of collection covers approximately 21% of the County population. In the other municipalities, service is provided by direct arrangements between haulers and homeowners or commercial/ industrial/institutional establishments. Some residents rely on the opportunity for drop-off at the network of transfer stations operated and maintained by local cities, towns and villages.

The choice of collection method in the County has traditionally been made at the city, town or village level. Neither the Agency nor the County has been engaged directly with waste collection. It is expected that the choice of collection method will remain at the local government level during the upcoming planning period, and further, that the predominant arrangement in the County will remain a private arrangement between a residential, commercial or industrial waste generator with a private sector hauler. However, through information provided below and through information that the Agency will provide on an ongoing basis through the planning period, local municipalities can be encouraged to examine things like collection districts to improve the efficiency and therefore cost of collection and to implement pay-as-you-throw programs to incentivize reduction and increase recycling.

#### **5.4.1 Public Collection.**

Solid waste collection at the local municipal level has been a traditional function of local governments to protect public health and the environment and to preserve the appearance of the community. Some municipalities have found it necessary to institute public collection to counteract predatory pricing by haulers, particularly in areas where there is a single dominant and usually national company, or where the hauler also owns the disposal facility. In other cases, municipalities have stepped in to guard the local government and the individual residents from environmental liability, because there have been numerous examples of haulers making unilateral decisions to take waste to substandard disposal facilities thereby making the waste generator responsible for any future environmental problem even though the generator did not select the disposal facility. And still other municipalities have gone into public collection to avoid the clutter, congestion, and chaos of having multiple haulers picking up waste on different nights within the same neighborhood.

Public collection is most common in more densely populated municipalities such as cities and villages. Local governments have sometimes provided collection service

directly with municipal crews, and in other cases they have done it through competitively bid contracts with private haulers.

There are a number of considerations for a municipality that identifies the need for public collection including the cost for purchasing collection equipment, the cost of wages and benefits, management of the collection workers, the method of billing residents for service, and the overall management of the service [set-out limits, procedures for special wastes, holiday collection, weather delays, complaints, etc.] In the final analysis, all these considerations represent a cost which can be estimated and compared with available alternatives.

In general, under a public collection plan, collection can be accomplished efficiently. One crew, either the private contractor who has the successful bid or the municipal employees retained by the community, would be collecting all waste and recyclables on a specified day. Duplication and route overlap would be eliminated. Routes could be set up to maximize the speed of collection as well as the payload. All set-out requirements would be standardized.

If the public collection approach were to utilize a private hauler through a bid process, the hauler would also benefit from eliminating the overhead and risk of collecting payment from homeowners, because this would be the responsibility of the municipality. If private haulers were used it also avoids the need for the municipality to incur the cost of collection equipment. However, whether the municipality or a private hauler purchases the equipment, the rate charged to the homeowner will be reflective of the costs for purchase, operation, and maintenance of the equipment required.

The Office of the New York State Comptroller (OSC) has done several reports through their Division of Local Government Services and Economic Development examining residential refuse collection. In such evaluations for several Upstate local governments, the OSC has concluded that residents contracting with private waste haulers paid significantly more than households provided with public collection or public contract

collection. The OSC evaluations have included Monroe County, the Town of Cortlandville, Town of Queensbury, Town of Kingsbury, Town of Moreau, Village of Hudson Falls, Village of South Glens Falls and the City of Glens Falls. [The OSC also notes a 1999 study for Onondaga County by the Syracuse University Maxwell School which found that where individual households contract for private subscription service on their own the costs are higher]

In general, the legal foundation for the provision of solid waste management services is provided by New York Municipal Home Rule Law (HRL), New York General Municipal Law (GML), and New York Environmental Conservation Law (ECL). More specifically, Section 120(w) of GML provides such authority for all levels of government.

Towns and counties are authorized to provide refuse collection services as a municipal-wide function pursuant to Town Law, §§ 81[1][f], 221[1] and County Law, § 226-b, respectively. Cities may provide refuse collection services pursuant to General City Law, § 20. Villages may provide refuse collection services to residents under Village Law, § 4-412.

#### **5.4.2 Pay As You Throw (PAYT)**

Pay-as-you-throw programs (also known as unit pricing or variable-rate pricing), feature arrangements where residents are charged for the collection of municipal solid waste—ordinary household trash—based on the amount they throw away. This creates a direct economic incentive to recycle more and to generate less waste.

Traditionally, residents pay for waste collection through property taxes or a fixed fee, regardless of how much—or how little—trash they generate. Pay-As-You-throw (PAYT) breaks with tradition by treating trash services just like electricity, gas, and other utilities. Households pay a variable rate depending on the amount of service they use.

Most communities with PAYT charge residents a fee for each bag or can of waste they generate. In a small number of communities, residents are billed based on the weight of

their trash. Either way, these programs are simple and fair. The less an individual throws away, the less he or she pays.

As noted above, the County leaves determinations on how to collect waste and recyclables to the local municipalities and to private haulers. Information on implementing a PAYT collection system can be obtained for EPA and DEC. Also, the Agency can provide information and assistance to any of its municipalities that wish to further evaluate PAYT. To a limited degree, some municipalities currently employ a PAYT system where residents pay a per bag fee when using the local municipal transfer station. There are currently a variety of methods of payment ranging from \$3.50 per bag with no permit fee, to a \$65.00 permit fee and \$4.00 per bag charge. One municipality charges \$0.10 per pound. There is also one community that charges a \$100.00 permit fee with no bag charge. All require residency.

PAYT programs may prove to be effective in many areas of Dutchess County. Successful implementation will require coordination between the local municipality, area haulers and the Agency. Among other key issues, an effective and convenient method of bag/tag distribution must be established, a billing and revenue mechanism to direct disposal revenues from bag/tag sales to the Agency must be established, and acceptance procedures at Agency facilities for MSW and recyclables must be developed. However, communities throughout New York State and elsewhere have developed multiple successful models for examination by Dutchess communities.

## **5.5 Neighboring Jurisdiction Impacts.**

### **5.5.1 Neighboring Planning Units.**

Dutchess County is bordered by the following NYS DEC designated solid waste management planning units:

Ulster County  
Westchester County  
Orange County  
Rockland County  
Sullivan County  
Putnam County  
Delaware County  
Greene County  
Columbia County

### **5.5.2 Measures To Secure Neighboring Jurisdiction Participation.**

Both the staff and Board members of the Agency maintain regular contact with representatives of the neighboring planning units on matters including, but not limited to, the movement of waste among the units, potential shared services, rates, current recycling practices and future plans, and regulatory matters. In the face of the many issues facing the industry, the Agency will expand its outreach and coordination with neighboring planning units to address issues such as the conversion to single stream and the potential for a regional approach as opposed to a county-by-county approach, the development of consistent and compatible public information on recycling within common media market areas, the potential for greater cooperation on special services such as pharmaceuticals collection, materials exchange centers, services for destruction of confidential and criminal justice system documents, and the development of alternative uses of ash from the RRF.

### **5.5.3 Limitations on Neighboring Planning Units.**

No neighboring planning unit currently operates a solid waste system that relies on waste generated within Dutchess County for revenue or volume. Therefore, it is not anticipated that actions taken by Dutchess County to manage waste generated within its borders will have an adverse impact on any other jurisdiction. However, some positive

effects on the programs administered in other jurisdictions may be realized by implementation of elements of the Dutchess LSWMP.

A regional single stream facility in Dutchess County will provide neighboring counties the same positive impacts as Dutchess. The ability to switch to single stream should increase participation rates in neighboring planning units, and provide benefits to haulers regionally.

If flow control is re-implemented in Dutchess, there will be less MSW leaving the County. The impact will be positive on the environment and the County. There will be more room in landfills for neighboring planning units which export all or most of the MSW. There may be a temporary negative impact on private facilities in neighboring municipalities that are currently accepting MSW and recyclables generated in Dutchess County.

## **5.6 Comprehensive Recycling Analysis.**

The Agency operates its system pursuant to applicable State regulations and the Comprehensive Recycling Analysis (CRA) and LSWMP approved by the DEC in 1991 and 1992. The approved CRA has been updated from the original LSWMP (1992), through the subsequent series of LSWMP compliance reports and through this LSWMP. The specific elements required by Part 360-1.9(f) have been prepared as integral elements of this LSWMP as described below.

A waste composition analysis including the identification and evaluation of the types of solid waste is contained in Chapter 2. As permitted by Part 360-1.9(f)(1)(i), published data from EPA and DEC is utilized. The description of strategies to achieve reduction and recycling is contained in Chapters 6, 7 and 8.

An evaluation of existing efforts to recover recyclables is contained in Chapters 1, 2, 3, 4 and 5. In addition, the County and Agency will in the future develop and administer

annual surveys of commercial, industrial and institutional generators of recyclables to more accurately record the actual levels of recycling occurring in the County. Information on recyclables markets is contained in Chapter 3.

The continued operation of the Agency's waste-to energy Facility is not expected to interfere with the priority afforded to recycling initiatives under this LSWMP. As discussed above, substantial increases in the amount of recyclables recovered from the waste stream will reduce the amount of non-recyclable MSW destined for disposal. However, the implementation of flow control in the County will allow the County and the Agency to direct remaining non-recyclable MSW to the RRF, and away from disposal at out-of-County landfills. Because the RRF is capable of processing only 164,000 of the 250,000 annual non-recyclable tons now generated in the County, increases in recycling and composting that may draw an additional 35,000 tons per year out of the waste stream will not adversely affect the operation of the Facility.

The RRF was designed with performance guarantees based upon an assumed Btu value for waste entering the Facility within a range between 3800 and 5000 Btu/lb. At performance testing in 1989, prior to the commencement of the County's recycling programs, the Btu content of the waste was measured at 4400 Btu/lb. In the years since 1989, recycling activity in both the private and public sectors has increased substantially, and the content of the waste stream has changed, with increased prevalence of high Btu content plastics and reduced incidence of inert materials such as glass. The Agency's consulting engineers currently estimate the Btu content of the waste stream to average just under 5000 Btu/lb., and to range between 4700 and 5200 Btu/lb. Consequently, it is expected that if improved recycling of high Btu content materials, such as plastics and paper, has the effect of reducing the average Btu content of the non-recyclable fraction, the reduction in heating value will serve to maintain the waste throughput within the design parameters of the Facility.

Future recycling plans are contained in Chapters 4, 5 and 6. The implementation schedule is Chapter 7. The legal framework for recycling is contained in Chapters 6 and 8. Potential future actions are contained in Chapter 12.

## **CHAPTER 6: INTEGRATED SYSTEM SELECTION**

This Plan recommends a series of specific actions to advance the Dutchess County solid waste management system from its current service level and fee structure to a self-sustaining and modern system with minimal environmental impacts.

### **6.1 Overall Assessment and Program Goals.**

As described in Chapter 3, above, the County of Dutchess and the DCRRA have long been committed to an integrated system of solid waste management founded upon two main publicly operated facilities for recyclables processing (the Materials Recovery Facility) and disposal of non-recyclable waste through combustion and generation of energy (the Resource Recovery Facility). The public sector, on the local level, also provides collection of waste and recyclables in some areas, through drop-off locations for waste and recyclables. The DCRRA provides household hazardous waste collections at various locations throughout the year. The County of Dutchess enforces local laws governing the collection, recycling and disposal of solid waste, and performs numerous functions to reduce and recycle waste generated by the county itself. Various private sector entities both within and outside of the County provide collection services, recyclables processing, composting, e-waste collection, transfer operations and landfilling.

While the current configuration of the integrated system provides substantial recycling activity and provides effective non-recyclable waste disposal for the region, not all elements of the system operate at optimum efficiency, and the long-term goals for the system, as envisioned in the 1992 Plan have not been fully achieved. This chapter will assess each major element of the current integrated system and recommend modifications and new goals for the next ten year planning period.

## 6.2 Program Goals.

In order to maintain current services and provide needed improvements, the solid waste management program for Dutchess County requires a stable long term revenue base. The Agency cannot currently secure sufficient waste revenues to operate its facilities and provide services to the public without subsidy from the County. The Agency's primary revenue source is the fee charged for the delivery of non-recyclable solid waste to the Agency's waste-to-energy Facility at Sand Dock Road in Poughkeepsie.<sup>7</sup> The core of the problem is that the Agency has no means of attracting waste to the RRF except by keeping the tipping fee competitive with the cost of transporting local waste to distant landfills. Eighty percent of the waste generated in Dutchess County is collected by private waste haulers, who are under no obligation to use Agency facilities, and can take advantage of low fees at out-of-County facilities if the Agency's fees are not kept low enough, through County subsidy, to attract their business.

At the same time, the Agency's approach to non-recyclable solid waste management through waste-to-energy is fundamentally sound. Waste-to-energy provides far greater environmental benefits than would be obtained if County waste was managed through long-haul disposal at out-of-County landfills. The Agency's Resource Recovery Facility operates well within all New York State Department of Environmental Conservation permit limits for the emission of regulated pollutants. Application of the US EPA's WARM program (discussed below) demonstrates that the use of waste-to-energy and recycling compared to landfilling produces significantly lower volumes of greenhouse gases and uses far less energy.

However, greater environmental benefits could be obtained through substantial improvements to the County's recycling program, including the establishment of a new

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<sup>7</sup> This fee is commonly referred to as a tip fee or tipping fee which is assessed on a per ton basis for the discharge of waste at a disposal facility. Revenue raised by the fee can cover the cost of disposal and, as is the case with the tipping fee at the Agency RRF, other expenses incurred for services such as recycling and household hazardous waste management. When a tipping fee covers more than just disposal costs, or when it covers a facility with higher levels of environmental protection and therefore higher costs, it is very difficult to compete with a facility like a landfill that is much less expensive to build and operate, and provides no other service.

single stream MRF, the significant expansion of organics recovery, and the numerous new recycling initiatives set forth in this Plan coupled with more efficient employment of the RRF.

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 (primarily long-haul transport and 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. Within these limitations, and building upon the strengths of the existing system, this Plan proposes the following general goals.

**A. Green The System** – Improvements in recycling, specifically the development of a new single stream materials recovery facility, can increase the amount of recovered materials, increase participation by residents and businesses, and allow greater efficiency for waste haulers. The recycling programs currently offered can be enhanced and expanded to include new initiatives such as the institution of recycling in public spaces, collection of hard cover books, provision of shredding for confidential document destruction, coordination among schools of recycling instruction and food waste composting, provision of information to promote the recovery of construction and demolition debris, coordination among the local municipalities of organics recovery, and the development of additional organics recovery capacity to build on the region's currently successful programs. New initiatives with the County's major institutions can capture additional organics for recovery and reuse. These initiatives will help reduce the environmental impacts associated with the solid waste generated by the residents, businesses, industries and institutions of Dutchess County. The Agency has an exemplary record of environmental compliance at the Resource Recovery Facility. The existing household hazardous waste program can be expanded to include small scale institutional/industrial/commercial generators [through a conditionally exempt small

quantity generator program] and continue to help maintain the performance and emissions record of the RRF. These waste reduction and recycling efforts should be made a priority and should be fully implemented and their effectiveness evaluated to then assess the quantity and character of the remaining non-recyclable waste stream. At that stage, the Agency and the County can better assess disposal options and can determine if there is a need for additional waste-to-energy capacity for waste that cannot be recycled.

**B. Level the Playing Field** – The Agency and the County should expand the solid waste system to serve all residents and businesses in the County. Currently, only a portion of the County is served by the RRF and the MRF, yet all County taxpayers subsidize the cost of operating the under-sized system. A County-wide public system can be established so that all residents are receiving the full-range of services provided by the DCRRA and all are paying equitably--based upon the amount of waste they generate. Measures, such as flow control, should be pursued to guarantee a uniform disposal cost and level playing field for all waste haulers whether they are large or small, public or private.

**C. Optimize Waste-to-Energy** – A County-wide, full-service waste management system would maximize recycling, reduce the amount of non-recyclable waste requiring disposal, and allow the Agency to provide new waste-to-energy capacity for the balance remaining. Operation of the RRF will be improved through reliable supply of waste, greater on-line availability and greater power production and revenue. In the near term, the Agency should commission a thorough study of the condition and life expectancy of the RRF in anticipation of a competitive procurement for a new operating agreement and possible capital improvements after the expiration of the current operating agreement in June 2014.

The following sub-sections will describe specific program recommendations based upon current conditions.

### **6.2.1 Program Administration: Flow Control as a Means to Apply Integrated Waste Management Principles on a County-wide Basis.**

As discussed in previous sections, the scope of the services offered by the public solid waste management system in Dutchess County does not extend to all residents and businesses in the County. Public infrastructure, in the MRF and RRF, is not adequate to accommodate all of the recyclable and non-recyclable waste generated within the County, and a large fraction of all waste and recyclable materials are collected, processed and disposed of by private sector entities. Recycling activities in both the public and private sectors of the County are limited by a lack of modern infrastructure. Disposal markets for non-recyclable waste are highly competitive, and tonnages gravitate to “least-cost” options. As a result, the Agency cannot attract waste or recyclables to its facilities without County subsidy, and the financial foundation for both present operations and future growth in the solid waste program is unstable.

“Flow control” of locally generated waste and recyclables is a regulatory tool available to the County and the Agency to address these problems.

The term “flow control” is a short-hand reference to state or local laws that direct the flow of waste generated in a given area to specific disposal facilities, transfer stations, recycling facilities or solid waste systems that are designated by the government. Flow control laws are typically applied to generators of solid waste, and to persons or businesses that collect waste within the jurisdiction of the municipality adopting the law. The law can identify specific fractions of the waste stream, such as recyclable or compostable material, construction and demolition debris, and non-recyclable municipal solid waste, and direct each fraction to a facility appropriate for its disposition.

Flow control is a management tool for local government that can provide several different benefits. For a municipality that has elected to provide disposal or recycling service to its residents and businesses, and has invested capital in the construction and operation of solid waste facilities, flow control laws can regulate collection of waste in a

manner that ensures that proper material goes to each facility, that environmental risks are minimized, that recycling and source separation laws are effectively enforced, and that the costs of the facilities can be recovered through fees charged according to the amount of waste delivered.<sup>8</sup>

In 1984, Dutchess County adopted a flow control law to direct waste generated in Dutchess to the resource recovery facility planned for construction. However, In 1994, the United States Supreme Court, in *C&A Carbone v. Town of Clarkstown*, declared that a flow control law adopted by the Town of Clarkstown, New York, violated the commerce clause of the constitution. The Court found that the Clarkstown law impermissibly favored the local facility designated to receive the town's waste, and discriminated against facilities located in other states that were prohibited from competing with that facility. The *Carbone* decision prompted many similar challenges to flow control laws in other jurisdictions. Many laws were declared unconstitutional in the years that followed, and many municipalities, including Dutchess County, suspended enforcement of their laws to avoid challenges.

In 2007, the Supreme Court again addressed the subject of flow control, upholding the flow control laws of Oneida and Herkimer Counties in *United Haulers Association v. Oneida-Herkimer Solid Waste Management Authority* 550 U.S. 330 (2007). In *United Haulers*, the Court distinguished the laws and waste system presented by Oneida and Herkimer Counties from the situation presented in *Carbone*. The Court ruled that flow control laws that benefit publicly-owned facilities, and bar all private facilities, regardless of their location, from access to local waste, do not discriminate against interstate commerce. The Court distinguished *Carbone* because Clarkstown's law favored a local private facility over other private competitors. Under the rule articulated in *United*

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<sup>8</sup> Flow control laws were widespread in the United States in the 1980s, and their use was frequently relied upon by purchasers of municipal bonds for solid waste facilities, particularly where the primary source of repayment was the anticipated revenue expected from the payment of disposal or "tipping" fees by users of the new facility. Local legislatures, in determining to build a new disposal facility with taxpayers' funds for taxpayers' waste, adopted laws directing local waste to the facility so that sufficient revenues could be derived to operate the facility and repay the bonds. The use of revenue financing was attractive for two (2) reasons. It was equitable in distributing the cost of the facility proportionately among those who generated solid waste, and it established a funding source independent of ad valorem property taxation.

*Haulers*, flow control laws favoring public facilities are to be evaluated under a more lenient standard, balancing the public benefits of the laws against the incidental burdens they may impose on interstate commerce. Significantly, the Court found that revenue generated by the flow control laws, with or without additional environmental and public health benefits, is a legitimate public benefit to weigh in the balance against burdens on interstate commerce.

As a result of the *United Haulers* decision, flow control is available to the County to expand and improve the environmental services provided by the Agency to all of the County's residents and businesses, while gradually eliminating the annual payment of the Net Service Fee. However, the use of this tool is subject to certain constitutional and practical limitations.

Currently the DCRRA operates two (2) facilities: the Resource Recovery Facility (RRF) and the Materials Recovery Facility (MRF). Both are publicly owned, meeting the basic criteria for application of a more lenient "balancing test" standard under *United Haulers*. However, both facilities have limited capacity. The RRF can be expected to process no more than 164,000 tpy out of the approximate 250,000 tons of processible waste estimated to be generated in the County each year. The MRF can potentially process approximately 19,000 tons of recyclables each year, but we estimate that 35,000 to 45,000 tons of recyclable materials could be extracted from the waste stream through source separation each year. If a flow control law immediately directed all of the processible non-recyclable waste to the RRF, and all of the source separated recyclables left curbside to the MRF, neither facility could accommodate the tonnage.

An alternative to a County-wide flow control law is a law that directs only a portion of the waste stream to the RRF and the MRF. Under such an approach, the waste stream could be divided geographically, with all waste and recyclables in a particular area, or group of towns, directed to the RRF or MRF, and the remainder allowed to utilize private or other public disposal service. Another alternative is an administrative system whereby each local hauler, and each constituent municipality, would be directed by the

County to deliver a percentage of the waste it collects to the RRF or the MRF, and authorized to deliver the balance to another disposal service.

However such “partial flow control” alternatives hold limited benefit to the Agency and the County. The primary benefit would be the certainty that both the RRF and the MRF would receive all of the tonnage needed to maximize operations at each facility. While certainty of operational capacity is a tangible benefit, “partial flow control” does not solve the financial problem facing the Agency and the County.

The Net Service Fee could be eliminated under a partial flow control system, but this would require that the tip fees charged at the RRF be increased to reflect all DCRRRA costs. Assuming an annual throughput of 150,000 tpy, the fee to fully support the Agency’s 2009 budget would be \$127.00 per ton. In a partial system based on geography, the area subject to flow control would pay \$127.00/ton, while areas not subject to flow control would pay considerably less. There appears to be no principled way to identify which areas of the County should be subject to the higher fee and which should not.

In a partial system where each constituent municipality and each hauler were obliged to send a percentage (est. 66%) of their waste to the RRF, some customers might be charged the full \$127.00 and some much less, or all would be charged a blended rate, approximating an average between the Agency fee and the market rates then available. A “blended rate” approach would eliminate County subsidy of the tip fee, but it would still sharply increase disposal costs to consumers, and would be difficult to administer. It would require oversight of hauler billing practices to establish an equitable common rate, in addition to enforcement of limits on the amount of waste that private haulers could send out-of-County. In addition, a fractional obligation would still tend to place a greater burden on municipal programs, such as the City of Poughkeepsie, which directs all of its waste to the RRF and has no capability for transferring waste for long-distance disposal elsewhere. The City, and the other municipalities that currently supply the

RRF with 20% of its tonnage, would not benefit. This Plan does not find that a “partial flow control” system would be either administratively practical or financially beneficial.

Flow control would be best employed in support of a County policy to manage all of the general categories of non-recyclable MSW and residential recyclables, consistent with the recycling improvements recommended in this Local Solid Waste Management Plan.

## **6.2.2 Management of Source Separated Recyclables.**

### **6.2.2.1 Assessment of Current Infrastructure.**

Dutchess County Local Law #4 of 1990 requires the source separation and recycling of the following materials:

Glass (all colors)	
Plastics (#1, #2, #3, #5, #7)	Metal Containers
Aluminum Products	
Magazines	
Corrugated Cardboard	
Office Paper	

The Agency also coordinates programs for the recovery of other recyclables such as appliances, tires, automotive batteries and electronics.

As noted above, waste and recyclables collection for most Dutchess County residents, and all Dutchess County businesses, industries and institutions, is provided by private haulers under individual agreements with generators. While Dutchess local law requires that recyclables collection be provided to local residents, there is little data available to assess the performance of private recycling collections, either to residential or commercial customers.

At the Agency’s Materials Recovery Facility, the operator, Hudson Baylor, is obligated to accept up to 73 tons per day and process up to 365 tons per week of commingled recyclables at the MRF, to accept all delivered pre-sorted recyclables from within the County, and to market the recovered materials. Hudson Baylor is responsible for all expenses in regard to the operation and maintenance of the MRF, processing equipment, mobile equipment and general housekeeping. The Agency is responsible for providing roll-off containers for process rejects and for the hauling and disposal of the rejects. The MRF Operator is responsible for inspecting the delivered materials to detect and refuse any loads with more than 10% non-recyclables, for rejecting any hazardous waste and for assuring that the rejects contain no more than 10% of recyclable materials. The Agency permits Hudson Baylor to bring in recyclables generated outside Dutchess County, on a merchant basis and without cost to the Agency, because in-County volumes are low and the additional volume allows the contractor to optimize operation.

**Table 14**  
**RECYCLING PERFORMANCE**

	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>
Tons Received	15,013	16,637	16,694	14,044	10,630
Material Sales	\$209,373.00	\$217,483.00	\$472,414.00	\$471,519.00	\$493,639.00
Tip Fees	\$136,515.00	\$162,084.00	\$160,764.00	\$167,580.00	\$ 32,004.00
Service Fee Payments	[\$250,000.00]	[\$250,000.00]	[\$250,000.00]	[\$250,000.00]	[\$250,000.00]
Other Expense				[\$ 12,079.00]	
Net Revenue/Expense	\$ 95,888.00	\$129,567.00	\$ 383,128.00	\$ 389,099.00	\$275,641.00

As this table indicates, the volume of recyclables delivered to the Agency MRF has dropped approximately 35% from 2006 to 2008.

In the October 2007 Official Statement for the Agency, bond refunding project engineer HDR (Henningson, Durham, Richardson Architecture & Engineering, P.C.) concluded that, “The MRF building is in need of substantial repairs....” If the Agency wants to

improve and increase recycling in Dutchess County, it would be necessary to procure a Materials Recovery Facility which is both larger and more suitably equipped for increased volumes. Although the current MRF location is central, the available floor space is extremely limited and the size and configuration of walls and overhead doors creates limitations that would require demolition and reconstruction.

#### **6.2.2.2 Single Stream Processing.**

In the 20 years since the design and construction of the Agency MRF, there has been an evolution in the methods of processing recyclables. Like most areas, Dutchess implemented a dual stream recycling system. A dual stream system requires the separation (at the point of generation) of paper recyclables (newspapers, magazines, cardboard, etc.) from container recyclables (cans, bottles, etc.). Over the past several years, the secondary materials processing industry has made major innovations that now allows all types of recyclables to be aggregated in one group -- commonly referred to as "single stream." This means that all the paper recyclables can be commingled with all the container recyclables at the point of generation.

In the review of technology for this Plan, industry representatives have been contacted and information has been reviewed on single stream materials recovery facilities in Phoenix, Arizona; Scottsdale, Arizona; San Antonio, Texas; and Liverpool, New York. A number of materials handling companies such as Besner, Bollegraf and Hudson Baylor (the Agency's current MRF operator) and solid waste/recyclables management companies (Allied, Recycle America/Waste Management, Inc., New England CRNC, Hudson Baylor) have developed the technology and equipment to a point that single stream MRFs can provide regular, reliable, and cost-effective recyclables processing capacity. Industry representatives indicate that it is preferable, and more cost-effective, to develop material recovery facilities with a capacity of at least 50,000 tons per year and preferably 90,000–100,000 tons per year. Based on discussions with industry representatives, it is estimated that a pre-existing building of suitable size could be

equipped with modern single stream equipment for \$6 - \$7 million. A new fully equipped 50,000 square foot building would cost on the order of \$12 - \$13 million.

The benefits of a single stream recycling system are significant. First, single stream collection is easier and more convenient for homeowners as well as commercial generators -- all designated recyclables can be placed in one bin and collected more frequently. Public education is more straightforward and a new public participation campaign coupled with the new level of convenience should increase participation and the volume of recyclables recovered. Of equal importance is the benefit to haulers. Single stream allows haulers to collect faster, to move to automated collection more easily, to potentially employ packer trucks for the collection of recyclables, and in some cases, to reduce the number of trucks needed. Single stream materials recovery facilities utilize a more automated system for processing recyclables, thereby reducing the number of sorters and the associated costs.

As noted previously, the existing Materials Recovery Facility is limited in its capabilities. It is not well-suited to accommodate increased volumes which are likely in the future based on a renewed commitment to recycling by the DCRRA. Also, the existing Facility would not be easily adapted to new "single stream" equipment.

In order to achieve a significant improvement in recycling it will be necessary to develop a new Materials Recovery Facility. Accordingly, the Agency should commit to the development of a new, single stream facility. The Agency should also explore the feasibility of developing a new Materials Recovery Facility on a regional basis to capture the benefits of higher volumes and economies of scale. Greater coordination with and cooperation from neighboring planning units can help solidify the public-private initiative which is in the early stages of consideration and development by the Agency. In considering the options available it should be emphasized that the feasibility and viability of a new, single stream facility will depend on commitments of a base volume of recyclable material to offset both the capital investment and annual operating expense. If the County and the Agency implement flow control or another means to secure

delivery of residential recyclables it will represent an estimated 35,000 to 45,000 tons per year, which should serve as a good base volume to move forward. As noted above, this would be further enhanced by similar commitments from neighboring planning units. Depending on how the Agency procures a new facility (specifically, how the issue of acceptance of recyclables from outside the County is handled), similar commitments from neighboring counties may be required by the private partner. Such a commitment from an intermunicipal partner could include sharing in a portion of the capital construction cost, but at a minimum it would have to include a firm commitment of a specific annual tonnage. From this point, the financial terms would have to be negotiated.

Alternatively, the Agency could explore the possibility of a privately developed new single stream facility that would serve Dutchess and possibly other neighboring counties. As noted, this would require a firm commitment of a specific volume of recyclables. This option would be more attractive if the private party, and not the Agency, were to take responsibility for siting and development. However, one potential downside would be that without a commitment to a specific site in Dutchess County, there could be a significant haul distance to such a new private facility. Also, although the up-front capital construction cost would be avoided, that cost would be reflected in the fee charged to use the facility.

Another potential means to improve the recyclables processing capabilities of the system, at least in the short term, could involve an intermunicipal agreement for the Agency to utilize the Ulster County Resource Recovery Agency (UCRRA) MRF, which is in close proximity to Dutchess County and which is currently underutilized. A partnership with Ulster could theoretically be negotiated to allow for the use of the UCRRA MRF in a relatively short time. However, the existing UCRRA MRF is a dual stream facility which limits the ultimate ability of Dutchess County haulers to implement the convenience of single stream collection and achieve significantly higher recycling rates. Absent a conversion of the UCRRA MRF to single stream technology, the best

long term approach would be for Dutchess County to continue its efforts toward a new single stream facility.

A new single stream MRF would be designed to receive and process recyclables generated primarily from residences, collected by public or private haulers. While such a facility could receive commercially generated materials, it is anticipated that most commercial recycling arrangements will remain as private sector business transactions. Such arrangements should be encouraged by public policy. However, increased efforts can be made by the Agency and the County to gather better information on the types and volumes of recycled materials transacted in private markets. Such information will allow the Agency and the County to assess the success of the program, make necessary adjustments, and plan for the future.

It will be important that a coordinated public information and education be implemented. This will bring a renewed focus to recycling and should be aimed at getting residents to join the effort to separate recyclables from the waste stream and to make sure they are targeting all eligible recyclables. When the transition is made to single stream, there will be an additional significant opportunity to “spotlight” recycling coupled with new measures that will make it even easier for residents to participate. The Agency will explore the potential to provide real time video links of the operation of the MRF, as well as the RRF, to colleges, public schools and others who may be interested. An expanded web site capability can improve on the data available to the public and utilize interactive components as part of a comprehensive education program.

#### **6.2.2.3 Impact of the Proposed Recyclables Recovery Effort on Existing Recyclables Recovery Programs.**

The introduction of single stream collection and processing would result in a significant increase in recycling. A new, regional scale single stream facility may double the amount currently recycled in Dutchess County. There would no longer be a need to separate fiber and other recyclables, making it easier for consumers to recycle. The

theory is; the easier it is to do, the more likely it will be done. In addition, carters would be able to automate the collection for more efficient and economical service.

Any new single stream facility would include an educational component. The County plans to increase enforcement of County Local Law No. 4 which provides for the mandatory collection and disposition of recyclables, enhance educational outreach and public information materials to promote the benefits of recycling and the planned change to single stream collection. Where there is currently weak or sporadic participation in recycling, such as some industries, businesses, institutions and public places, efforts will be made to educate and ultimately enforce the County's source separation/recycling requirements. Also, public education and information on the recovery of organics, including food waste from large scale generators, will be a priority over the planning period.

The development of a new single stream facility will be coupled with the establishment of an education center. This would serve as the focal point for recycling information and may include real time video feeds of the operations along with interactive tours and information materials available on all reduction and recycling opportunities in the County

A single stream facility could coincide with the re-implementation of flow control. This would ensure enough volume to make such a facility viable, while also providing more control over enforcement of the County's regulations. Currently, the County does not have the ability to direct recyclables to a County-owned facility, and therefore, has limited control over where the recyclables are taken and ensuring that the materials are actually being recycled.

With a new facility and control over its waste stream, the County would no longer have to rely on estimated data for the amount that is recycled. If all the materials were directed to a new single stream facility, recordkeeping and enforcement could be guaranteed.

#### **6.2.2.4 Yard Waste and Organics Composting.**

As described in Chapter 3, there are a number of well-established programs for green waste collection and composting at numerous municipal locations throughout the County. The Agency will increase its support of these programs through the provision of public information and by spearheading opportunities for networking among the various operations. Similarly, there are well established food waste separation and collection programs at Vassar College, Bard College, Marist College, the Culinary Institute, and State prisons in the County. Significantly, the County is home to McEnroe Organic Farm which has an ongoing organics composting facility that is successfully recovering food waste and an additional wide range of other organic waste streams. As described in Chapter 3, there are several other smaller scale organics recovery operations in the County. The Agency will work to improve the information exchanged among these facilities, to maximize the utilization of existing processing capacity, and the development of new capacity through public-private partnerships in the future.

The future Dutchess County integrated solid waste management system will build on the well-established, successful, existing programs. First the Agency will evaluate expanding the existing food waste separation programs to the other major institutional food waste generators such as the other colleges in the County as well as the hospitals, public schools, the County jail, and other large scale food processing generators.

Following this, the Agency will extend its evaluation to major commercial generators such as restaurants following a similar survey process noted above for institutional food waste.

The early experience in the ongoing residential food waste collection program raises some concerns with participation, the needed collection frequency, the most suitable type of collection vehicle, and the effectiveness of road side collection programs compared to simple back yard compost operations. The Agency will track the pilot

program performance and results as well as other residential food waste collection in the State and throughout the country.

The Agency will continue and improve its partnership with Cornell Cooperative Extension to provide extensive information to home owners on how to set up back yard composting, a long standing and very effective method of composting both green waste and most food waste. This can help continue to reduce the volume of waste which must be taken for disposal.

Overall, in the future the Agency will continue to provide information to organics waste generators, compile information on volumes from all sectors, and carefully track the development and track record of organics processing technologies.

### **6.3 Summary of New Recycling Initiatives and Programs.**

In addition to the Agency's commitments to the development of a new regional scale single stream materials recovery facility and the substantial improvement and expansion of organics recovery in the County, there are numerous new waste reduction and recycling initiatives that will be implemented and integrated with the development of the new recyclables and organics processing capacity to support those facilities and to further elevate the levels of public awareness and the recovery of material from the waste stream. These include:

1. Development of a full scale schools recycling program that will include:
  - Written materials which teachers at all grade levels can integrate with their routine science and civics curriculums.
  - A component of the Agency website dedicated to support of recycling in the schools including a video link to the new single stream MRF, information and links for research, Q&A, and networking with other school recycling programs.

- Provision of the Agency Recycling Coordinator to make presentations to classes and other school groups. and to provide assistance in establishing recycling/environmental service clubs.
  - Provision of standard waste and recycling bid and contract documents that promote reduction and recycling and create financial savings through reduction and recycling.
  - Provision of technical assistance to establish food waste composting at school food preparation and cafeteria facilities.
  - Development of recycling contests and awards.
2. Development of a new state of the art Agency web site that provides comprehensive information on all aspects of recycling and solid waste management in the County, a special component for schools recycling, a link with the education center at the new single stream MRF including a video link, interactive capability, and links that provide additional resources.
  3. Development of a new program for Conditionally Exempt Small Quantity Generators of hazardous waste.
  4. Development of a new service for shredding of confidential records.
  5. Adding new recyclables through special programs such as the recovery of hard cover books.
  6. Provision of “waste and recycling audits” for businesses, industries and institutions.
  7. Enhancement of public information on opportunities for HHW and pharmaceuticals services.
  8. Provision of information to all sectors on mandatory recycling, with a goal of establishing meaningful public space recycling as well as regular recycling at businesses, industries and institutions.
  9. Explore enforcement possibilities through potential partnerships with the County Health Department inspection programs and other established programs that have regular contact with major waste generators.

10. Explore partnerships with private sector groups such as the chambers of commerce for both regular recycling and special programs such as e-waste collections.
11. Enhance collaboration with Cornell Cooperative Extension for public education, particularly in the area of individual composting.
12. Institution of regular meetings with recycling and solid waste management stakeholders in the County including all the municipalities that provide transfer/collection/convenience services, private haulers, and processors such as the private compost operation owners. Through this, the Agency can provide information and assistance to municipalities to implement PAYT and other recycling incentive programs.
13. Establish a regular schedule of presentations to service clubs and organizations, and hold regular public forums and workshops to educate the public on new and planned initiatives.
14. Establish a regular schedule of communication with the leaders of neighboring planning units.
15. Evaluate the standardization of recycling requirements at the various municipal convenience/drop-off stations. Start with integrating the individual municipal requirements and a location map on the new Agency web site.
16. Provide information to contractors that will promote recovery of construction and demolition debris.
17. Evaluate the feasibility of an Agency sponsored materials waste exchange.

#### **6.4 Disposal of Non-Recyclable Materials: Waste-to-Energy and Landfills.**

##### **6.4.1 Comparative Environmental Impacts of Waste-to-Energy Technology and Landfills.**

It has long been recognized that a comprehensive integrated solid waste management system is the best approach to achieve the highest levels of environmental protection to meet the service needs demanded by homeowners, businesses, industries and

institutions, and to provide the fiscal stability important to the public, system managers and elected officials. In essence, an integrated system is one that manages the waste stream by its component parts, matching these parts to the best technology identified by the community being served, and (in terms of identifying proven and reliable technology), by solid waste engineers and scientists. An integrated system is one that uses a variety of programs and facilities aimed at the waste management hierarchy of waste prevention (reduction) followed by reuse, recycling, energy recovery and finally, landfilling of the materials which cannot be recovered. This replaces the outdated approach of trying to manage a complex amalgam of numerous elements comprising municipal solid waste by just a single, mass disposal option. Through a combination of coordinated facilities and programs, an integrated system maximizes material and energy recovery while minimizing waste that must be landfilled. Dutchess County has facilities and programs that comprise part of an integrated system and which can be enhanced in the future.

As a guide to how the integrated system can be improved in the future, information from the USEPA, NYSDEC and a variety of recognized trade organizations has been examined. As a matter of general principle, the greatest benefits come from the top of the solid waste hierarchy. Waste that is never produced [commonly referred to as waste reduction, waste prevention, and source reduction] obviously creates no environmental impacts in terms of mining virgin materials for production, transportation, recovery and disposal, and there are no associated costs. Materials that can be recovered, processed and transformed into new products [recycled] have lower environmental impacts and costs by avoiding the use of new virgin materials. Materials that cannot be recovered and recycled can still be beneficially reused through energy recovery which offsets the use of finite natural resources for energy production. All these present fewer environmental impacts and lower long-term costs than sending all the materials for landfill disposal.

For waste that is not reduced at the source or recycled, there are two (2) realistic and proven options -- waste-to-energy and landfill. The United States Environmental

Protection Agency (EPA) has performed comparative studies of the emission of greenhouse gases (GHGs) from waste-to-energy facilities and landfills. Decomposition of solid waste in a landfill environment generates methane gas, generally considered by some to be more potent as a greenhouse gas than carbon dioxide (CO<sub>2</sub>). Comparing GHG emissions from a landfill equipped with an effective (75% capture) landfill gas control system and a corresponding Landfill Gas-to-Energy facility with GHG emissions from a waste-to-energy facility processing the same tonnage, EPA found that landfills generate two to six times the amount of GHGs as WTE facilities, while WTE is seven to eleven times more efficient at recovering energy from the wastes. WTE also generates less SO<sub>2</sub> and NO<sub>x</sub> than LFGTE facilities.<sup>9</sup>

There have been efforts over the past 20 years to quantify the relative environmental impacts of various waste management alternatives and components to an integrated system. One such method, which is now widely recognized, was developed by the EPA using both the relative emissions of greenhouse gases (GHG) and consumption of energy to quantify the relative environmental benefits of alternative solid waste management programs and facilities. This method is the Waste Reduction Model (WARM).

The WARM model has been applied to four different scenarios for management of the Dutchess County waste stream. The model serves to illustrate the relative environmental benefits, or more specifically the relative reduction in greenhouse gas emissions (GHG), for:

1. A landfill based system (all waste landfilled with 75% methane capture for landfill gas-to-energy (LFGTE))
2. The existing system (existing recycling levels and RRF at 92% capacity, balance of waste landfilled with 75% LFGTE)

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<sup>9</sup> *Understanding the Energy Benefits from Materials and Discards Management*, S. Thornloe and O. Kaplan, EPA Office of Research and Development, May 7, 2009.

3. An improved system (recycling increased to 35,000 tpy, 5,000 tpy composted, RRF at 100% capacity, balance landfilled with 75% LFGTE)
4. A new system (recycling increased to 45,000 tpy single stream, 5,000 tpy composted, RRF expanded with third boiler and 199,000 tpy capacity, balance landfilled with 75% LFGTE)

The tonnage inputs for each scenario along with the total change in GHG emissions for each scenario are shown in Table 16. The data inputs are attached as Appendix A..

**Table 15**  
**WARM MODEL SUMMARY<sup>10</sup> - TONS**

	1. Landfill Based System	2. Existing System	3. Improved System	4. New System
Reduction	X	X	X	2,000
Recycle	X	9,363	35,000	45,212
Compost	X	1,267	5,000	5,000
Waste-to-Energy	X	144,729	155,000	199,576
Landfill	260,630	105,271	65,630	8,842
Total Waste	260,630	260,630	260,630	260,630
<hr/>				
GHG Emissions	21,205			
GHG Benefit		(31,341)	(58,772)	(73,094)

Overall, the WARM analysis shows that Dutchess County has made significant strides in reducing greenhouse gas emissions compared to emissions from a landfill based system, avoiding the emission of approximately 31,341 tons of carbon equivalent to the environment per year. Perhaps more importantly, an 88% improvement in the reduction of greenhouse gases could be accomplished by improving recycling and composting

<sup>10</sup> GHG – Greenhouse Gases (units are MTCE – Metric Tons of Carbon Equivalent). Negative numbers indicate a reduction in emission volumes; therefore, the larger the negative number the greater the environmental benefit.

coupled with increasing the throughput of the RRF by approximately 10,000 tons per year.

In looking to the future, by developing a new regional single stream materials recovery facility and by increasing the capacity of the RRF (and thereby reducing the County's dependence on landfilling) the Agency could more than double the reduction in greenhouse gas emissions compared to the existing system.

In addition to the direct greenhouse gas benefits, there are significant improvements in the overall energy consumption of the existing subsystem compared to a landfill based system. As shown in Table 17, energy use of a landfill system is estimated by the WARM model to be 92,545 million BTU's per year. The existing system utilizes 1,100,000 million BTUs less energy than a landfill based system. That reduction would be increased by 70% with improvements to recycling, composting and an increase in the RRF throughput of approximately 10,000 tons per year. Similar to the positive impact on greenhouse gas emissions, if a new system were built employing single stream recycling, more composting, and an RRF capacity of approximately 200,000 tons per year, the energy benefits would more than double those of the existing system.

**Table 16**

**WARM Estimated Energy Consumption**

BTU's Per Year

1. Landfill Based System	92,545
2. Existing System	-1,131,140
3. Improved System	-1,925,640
4. New System	-2,397,716

**6.4.2 Resource Recovery Facility Assessment.**

In a Consulting Engineer's Report dated October 19, 2007, prepared in connection with the issuance of the 2007 Bonds, the Agency's engineer, Henningson Durham & Richardson Architects and Engineers (HDR) found that the RRF was in good operating condition with no major operating deficiencies identified. HDR concluded that the useful

life of the Facility can be expected to exceed the term of the 2007 Bonds (2027) if operated and maintained in accordance with the Service Agreement and accepted industry practice. Specifically, HDR found that it is reasonable to conclude that the Facility could continue to meet its Performance Guarantees, including annual throughput (140,000 tpy), operational availability (85%), steam generation (4.8 klb/ton), and electric power generation (46,000,000 KWh/yr), if properly operated and maintained.

The environmental performance of the Facility has been well within its permitted limits. The Facility's Title V Air Permit was amended by the NYSDEC to incorporate stricter standards promulgated by the EPA in 40 CFR 60 subpart BBBB. In stack tests following installation of the capital improvements funded by the 2007 Bonds, the Facility emitted no more than 18% of allowable particulate matter, 41% of allowable SO<sub>2</sub>, 78% of allowable NO<sub>X</sub>, 7% of allowable dioxins and 5% of allowable metals. The installed air pollution controls yielded reductions of over 88% in emissions of sulfur dioxide, 92% of hydrogen chloride and 94% of mercury.

#### **6.4.3 Resource Recovery Facility Recommended Improvements.**

Currently, the Facility is approaching its 20<sup>th</sup> anniversary of performance acceptance. Over this period, equipment and components have been repaired and replaced in a manner sufficient to achieve the relevant Performance Guarantees contained in the Service Agreement. However, the current Service Agreement with Covanta will expire in June 2014, and prior to that date, the DCRRA will have to procure a new operating contract for the Facility, through competitive bidding under General Municipal Law §120-w. In preparation for that procurement, the DCRRA should 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 to 25 years. Such an assessment will allow the DCRRA to provide for capital improvements when needed, and will provide

prospective bidders for the post-2014 Service Agreement with technical information necessary to submit an informed proposal.

The results of this review can be used by the Agency Board to plan future work and expenditures, and should be made available to prospective bidders in the procurement for an operating contract after 2014.

Specific Facility improvements that are recommended include the following:

**Turbine Upgrade** - The efficient capture of electric energy from waste processed at the RRF, will remain important for both economic and environmental reasons. The Agency should evaluate the potential for an increase in its operating efficiency and net revenues through the replacement or retro-fit of its current turbine generator with a larger, more efficient unit. As noted above, the original design of the RRF intended that a significant fraction of the steam generated from the combustion of MSW would be sold directly to a steam customer located off-site. As a result, the turbine installed at the RRF was not designed to recover energy from all of the steam generated. The termination of the original steam sale left the RRF without the capacity to efficiently produce additional electric power for sale.

Officials at Islip, New York are investigating the rehabilitation of its existing 12MW turbine with new internal components capable of generating up to 15 MW at a cost of approximately \$6 million. Islip estimates that the increase in turbine capacity could allow the sale of up to 3,000,000 additional KWh per year.

In 2008-09, management of a Montenay-operated, 700 tpd waste-to-energy facility in Charleston, South Carolina, researched a retro-fit of its existing turbine. The Charleston facility, designed and built by Foster-Wheeler, was configured to generate steam for sale to a neighboring US navy base, as well as to power a turbine to generate electricity. In the mid-1990s the Navy base closed, although the Navy continued to honor its steam purchase contract, which expires in 2010. Like the Dutchess Facility,

the Charleston Facility extracts approximately 310 KWh/ton of waste processed. In the proposal considered, the Facility's 12.5 MW turbine would be fitted with new interior components in its existing shell. The turbine manufacturer, Dresser-Rand, proposed a retro-fit that would increase the amount of energy recovered from each ton of waste from 310 KWh to 440 KWh at a cost of approximately \$7 million. Montenay estimated that the turbine upgrade would provide an additional \$1.8 million per year in revenue, and would pay for itself within four years.

Plant staff at Dutchess estimated in 2009 that a similar retro-fit to the existing RRF turbine generator would cost approximately \$3 million.

**Fan Replacement** - In addition, the replacement of existing 125 and 250 hp fans with more energy-efficient models could reduce plant power consumption significantly. If the internal consumption of power in the operation of the Facility can be substantially reduced, the Facility's generation of power for export would be increased, with a direct and corresponding increase in the net revenue to the Agency from power sales.

It should be stressed that engineering estimates should be performed to determine the actual amount of increased power available for sale that a replacement or retro-fit of the RRF turbine and fans could provide. Comparisons with other facilities and other improvements are of limited value unless Facility conditions, other related equipment, and local power sale contracts are understood and considered. It is recommended that the potential benefits of a turbine replacement or retro-fit be examined against the cost and feasibility of making such an improvement.

**Facility Expansion** – Following assessment of efforts to increase recycling and composting, the Agency should explore the cost and feasibility of expanding the RRF to accommodate the balance of the waste generated in Dutchess County. At present, there is an additional 95,000 tons/yr of processible MSW that is currently handled by private haulers and delivered to out-of-County landfills. A sizeable fraction of this amount can be recovered and recycled through improved source separation. If 33% of

this amount can be recovered for recycling, over 60,000 tons will remain. For environmental and economic reasons, this tonnage should be processed to recover energy rather than be landfilled.

Currently, WTE Facility expansions are being planned or constructed at Lee County, Florida; Hillsborough County, Florida; Honolulu, Hawaii; York, Pennsylvania; Olmsted, Minnesota; Hempstead, New York; Islip, New York and Harford County, Maryland. The size and costs of these expansions vary. Comparisons of costs per ton of new capacity reveal a wide range of variation, reflecting differences in design, site restrictions and other local conditions. In general, the costs are significant. Examples are \$193,000.00 per design ton at Lee County, Florida to \$233,000.00 per design ton at Hillsborough County Florida, both of which are approximately 700 tpd expansions currently under construction. In New York, neither Covanta Energy Hempstead nor the Islip Resource Recovery Agency has publicly announced costs for the expansions of their respective facilities. Studies performed for the Montgomery-Otsego-Schoharie Solid Waste Authority (MOSA) have estimated costs at \$225,000.00 per design/ton. Costs for an expansion of the Dutchess RRF would be similar.

While expansion of the RRF would require a significant capital investment by the Agency, the long-term waste disposal needs of the region require that it be seriously considered. First, the ability of the Agency to continue to emphasize recycling and recover energy from non-recyclable waste, will require a comprehensive system, capable of meeting the waste disposal needs of all of Dutchess County. Expansion of the RRF will be a more feasible, and environmentally-superior option than developing a new MSW landfill within the County. Second, the ability of the private sector to provide low-cost landfill disposal for the balance of the waste generated in Dutchess County for the next 25 to 30 is far from clear. Disposal costs over the past 20-year period have been volatile, and costs will be subject to regulatory and economic forces in the future. Third, environmental and regulatory considerations argue strongly for waste-to-energy as a superior method of management in terms of minimizing both conventional pollutants and greenhouse gases. Fourth, responsible energy policy argues for the use

of waste as a renewable energy resource, likely to increase in value for the generation of power as national policy discourages the use of fossil fuels in coming years.

Many technical issues require examination before an expansion can be fully evaluated. These issues will necessarily include questions as to the expected useful life of various components of the existing Facility, and the amount of capital investment that will be required to perform major rehabilitation or replacements over the next 25 years. We believe that such an examination should be conducted, and its results made available to the public, in preparation for the procurement process for future operation of the Facility. The current operations agreement with Covanta will expire on June 30, 2014. A competitive procurement for a new operating contract will open for negotiation all issues of operation, maintenance, revenue sharing and capital construction of major and minor improvements to the RRF over the term of the new agreement. The Agency should make its own thorough evaluation of the condition and potential of the Facility, not only to assist prospective bidders in their assessments, but to evaluate the merits of the proposals made by firms interested in assuming responsibility for the Facility after June 2014. Sufficient time should be afforded in the procurement process to allow bidders to conduct a thorough evaluation of the RRF, to formulate and propose the terms of operation, revenue sharing and capital responsibility, and to negotiate the terms of a new agreement.

The procurement process should be commenced in early 2012, to allow at least 30 months for preparation and analysis of proposals, to conduct negotiations and to identify and address any environmental concerns that may be relevant. The importance of the procurement process cannot be understated. For this reason, the Agency should undertake its own evaluation of the Facility as soon as possible, so as to be fully informed with respect to the issues involved. From this process, the Agency can inform itself and the County of the opportunities that may be secured from capital investment by a new operator, or from the Agency itself.

#### **6.4.4 Landfills Available for Interim or Permanent Use.**

##### **6.4.4.1 For MSW.**

As discussed above, it is estimated that up to 95,000 tons of MSW generated within Dutchess County is disposed of in out-of-County landfills by private sector haulers each year. While 10,000 to 12,000 additional tons could be processed at the RRF under optimal conditions, the balance of the non-recyclable waste stream in Dutchess will require out-of-County disposal until in-County facilities can be provided. Additional recycling initiatives could reduce this amount by up to 30,000 tons, leaving a need for approximately 55,000 tons of annual disposal capacity for non-recyclable MSW over the long term.

To insure a consistent and comprehensive solid waste management program that is fully capable of inspecting and insuring that recyclable material is removed from the MSW, that items constituting HHW are removed from the MSW, and that there is uniform compliance with other applicable environmental standards, Dutchess County should take responsibility for the disposition of the residual MSW that cannot be handled at the RRF. In addition to the noted environmental and compliance benefits, by careful procurement of a disposal facility, the DCRRA can minimize risk of future environmental claims that often arise from substandard disposal facility construction or operation. (At least one major private hauler based in Dutchess County has been targeted in litigation to recover post-closure costs at landfill facilities.)

##### **6.4.4.2 For Ash.**

Ash residue is currently used as an alternative daily cover under Beneficial Use Determinations (BUDs, granted by the New York State Department of Environmental Conservation) at four (4) landfills: Madison County, Steuben County, Ontario County and Delaware County. Because the ash is approved for use as cover material, the cost of ash management to the Agency is less than the cost of transporting and disposing of ash as a waste material. Currently ash management costs are approximately \$47.93

per ton of residue. Expressed as a function of tons of MSW processed, the cost in 2008 was \$16.77 per ton. It is anticipated that similar arrangements can be continued, provided that BUD determinations can be continued and sufficient need for cover material at the host landfills remains. However, ash disposal will remain subject to changes in landfill economics over the long term. Also, as noted previously, it is very important that DEC step up their research and development efforts to identify new, additional beneficial uses for this ash.

At the outset of the creation of the Agency and when the decision was made to move forward with the development of the RRF in 1984, several potential landfill sites in Dutchess County had been identified and reviewed under the State Environmental Quality Review Act ("SEQRA") for ash and bypass waste disposal. According to the Final Solid Waste Management Plan For Dutchess County (February 1992), the Agency intended to acquire the rights to use an existing permitted landfill located in the Town of Fishkill for the disposal of ash residue, non-processible and bypass waste. The Agency had also entered into an option agreement for the purchase of an adjacent 124-acre parcel for future expansion.

Following this, operating problems were experienced at the existing landfill and the DEC determined that the site was underlain by a primary groundwater aquifer. The application for renewal of the landfill permit was subsequently denied by the DEC and the Agency discontinued its efforts to permit and acquire the site. Subsequently, the Agency and the County made a decision not to pursue the development of a local ash landfill.

The absence of a local ash landfill owned by the Agency means that the County continues to depend on competitive bids for the transport and disposal of ash residue at landfills outside the County, and in fact, at significant distance from the County. Obtaining an adequate number of competitive bids has not been a problem and the current disposal market is reflecting the downturn in the overall economy resulting in an excess of landfill capacity and associated low prices.

Ideally, the Agency would have its own ash landfill. Although it might be equal in cost to the current cost of export, it could stabilize costs over the long term and eliminate the risk of price hikes due to fuel increases and a constriction in disposal capacity. However, the identification and evaluation of potential sites, completion of the SEQRA and permitting processes, and the ultimate development of 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 before the facility can open. As a frame of reference, the Oneida–Herkimer Solid Waste Authority spent over 12 years and \$13 million to complete the SEQRA and permitting process and another three (3) years and \$31 million to build the newest landfill in New York State. The landfill is a 1,000 ton per day, 250,000 ton per year facility.

The Agency Board of Directors may consider the potential for starting the process to develop its own landfill after implementing the upgrades to the system in the areas of recycling, organics recovery and the Resource Recovery Facility. In the future, with the status of the available capacity in contract landfills unknown, it could be important for the Agency to have a local option.

#### **6.4.4.3 For Construction & Demolition Debris.**

Landfill capacity for C&D is expected to remain available, as each of the major facilities accepting MSW from Dutchess County also accept C&D. According to 2008 NYSDEC estimates, the six largest privately owned landfills in New York State have a collective unused permitted capacity of over 137 million tons.

However, the Agency and the County recognize that fewer of these tons could be landfilled if more C&D debris were recycled. It is noted that substantial recycling of clean concrete, asphalt, brick, block and rock is being accomplished at Blacktop Maintenance in Poughkeepsie. It is anticipated that expected growth of population and building in the County will fuel demand for supplies of recycled aggregate and other

basic building materials. Consequently it is anticipated that continued growth in the recycling of concrete, asphalt and other materials, including the use of recycled material in ready-mix products will occur.

However, relatively little conventional mixed C&D is being recycled at transfer stations. The County and the Agency may encourage the development of recycling capabilities at existing transfer facilities, or the establishment of new sites to employ labor and equipment to extract wood, metals, and other material from mixed C&D.

#### **6.4.5 Transfer Capacity.**

If the Agency assumes responsibility for the disposal of the non-recyclable fraction of the MSW waste stream generated within Dutchess County, it can direct the delivery of this material to designated public facilities through flow control legislation. Having assumed responsibility and taken possession of this waste, the Agency can contract with out-of-County landfills or other facilities to provide disposal. In order to implement the management of this fraction of the waste stream, the Agency should acquire, or otherwise provide for transfer station facilities and procure a long-haul disposal contract.

Based on the large geographic area and the diverse character of Dutchess County, it will be necessary to provide conveniently-located transfer stations to serve private and public haulers in all areas of the County. Although there is an extensive network of municipal transfer stations, none appear suitable in size or location to upscale so they could receive significantly increased waste volumes.

The RRF is and should continue to be the primary designated location for delivery and discharge of solid waste. This priority designation must be done to insure optimum volumes for efficient plant operation and maximum energy recovery.

Based on a review of land use and the road network in the County, it is recommended that two (2) additional transfer stations be considered to serve the northern and

southern parts of the County. In the north, the Ulster County Resource Recovery Agency transfer station in Kingston could provide the service necessary. In the south, a new or existing facility would have to be secured through a competitive RFP. The operation of the two new transfer stations and the new priority designation of the RRF should be evaluated on an ongoing basis and adjustments should be made to reflect the actual waste volumes delivered as well as the haulers' experience with travel times. To accomplish the best balance and to insure that convenient service is provided, adjustments may be needed in the service areas of the transfer stations and the RRF. It may be possible that a third new transfer station will be needed to serve the large rural area in the eastern portion of the County, which is separated from the population corridor by a limited highway network and the Taconic Mountains and the Hudson Highlands Range.

An expanded transfer station approach would require a dispatch function to insure that optimum volumes are taken to the RRF. The RRF itself can serve as a transfer station with the excess waste not used for energy recovery (plus the ash residue) being sent to a contract landfill for disposal. This approach would continue until the RRF is expanded, at which time all haulers could be dispatched directly to the RRF.

Specifically, the establishment of three locations for the delivery of waste by municipalities and commercial haulers is recommended as follows:

RRF - The first priority for MSW generated in Dutchess County will be delivery to the DCRRA-RRF, Sand Dock Road, Poughkeepsie. The pattern of waste deliveries and operation of the RRF would essentially follow what has been done by the Agency in recent years. One important difference is that during low waste periods, additional waste would be directed to the RRF to insure continuous optimal operation. Additional waste generated in close proximity would be directed to the RRF to increase convenience and lower transportation expenses for haulers. Residual waste volumes not needed for the RRF will either be transported to the UCRRA transfer station in Kingston, or directly to the contract disposal facility. On a preliminary basis, it is

projected that the RRF would serve Poughkeepsie, LaGrange, Union Vale, Hyde Park, Pleasant Valley, Washington and Amenia.

New Northern Transfer Station – The Agency may consider an inter-municipal agreement with the UCRRA for the transfer and disposal of residual waste to a contract disposal Facility. This may benefit both Counties by creating a critical mass of 175,000 to 200,000 tons per year of MSW that should attract volume pricing in a market-bid situation. Also, it would take advantage of the existing UCRRA transfer station in Kingston and will eliminate the current loss of waste from the northern section. In considering an inter-municipal agreement, the following provisions should be kept in mind:

- a. The first priority for MSW generated in Dutchess County will be delivery to the RRF.
- b. No guarantee of a minimum daily, monthly or annual waste volume should be made. The agreement should be a commitment to deliver all waste received after the volume necessary for the RRF is satisfied. The commitment by Dutchess County to enact and enforce local laws should serve as an adequate pledge for Ulster or any other prospective disposal facilities.
- c. The RFP to secure a disposal Facility (after the current contract expires) should include a requirement for an environmental indemnification of Dutchess County and the DCRRA by the disposal Facility.
- d. Provision should be made to allow the award to more than one (1) disposal Facility; and specific terms should be included for the use, through an inter-municipal agreement, of a public disposal Facility.

New Southern Transfer Station – It is recommended that a transfer station capability be considered for the Southern part of the County to take deliveries from public and private

haulers in that area. This would be accomplished through a competitive RFP process. Waste received at this location will either be transported to the UCRRA transfer station in Kingston or directly to the contract disposal facility. On a preliminary basis, it is projected that the Southern Transfer Station would serve Fishkill, Wappinger (part), East Fishkill, Beekman, Pawling and Dover.

**Rail Trans-Load Capability** - The use of rail hauling for solid waste destined for disposal at distant locations is a growing practice for New York Planning Units that rely on distant landfills for disposal. Transportation costs, on a per ton basis can be lower than costs for trucking the same amount of material, and rail extends the range of affordable shipment. Moreover, many landfills in southern and mid-western states, as well as western New York, are equipping their facilities with rail transload facilities to accommodate the receipt of waste shipped in this manner. However, the capital cost of developing a local rail transfer facility can be high.

The Dutchess County Planning Department Transportation Study (2007) reports that freight rail service in the County is provided by CSX Railroad, which operates 4-8 trains daily, usually at night to avoid conflict with passenger service. However, only 4% of goods moving to or from Dutchess County are transported by rail, with the balance moving via truck transport, or in the case of heavy bulk material, Hudson River barges.

The Plan has not examined the feasibility of expanding the use of freight-rail service for ash or waste materials in detail because of its primary focus on improvements to recycling as a means of reducing the amount of waste exported from Dutchess County. However, the use of rail transport can and should be considered by the Agency and the County after full implementation of feasible recycling strategies, if evaluation reveals that additional capacity at the RRF is not feasible or desirable, and substantial quantities of material will continue to be exported for landfill disposal.

## **6.5 Summary of Needed Facility Improvements.**

This Plan proposes a series of specific actions to advance the Dutchess County solid waste management system from its current service level and fee structure to a self-sustaining and modern system with minimal environmental impacts. Achievement of all of the goals outlined here will require long-term commitment and steady, incremental progress over several years. The major steps recommended, are as follows:

### Summary of Recommended Actions

1. Implement flow control or an equivalent effective means to direct all solid waste and residential recyclables generated in Dutchess County to appropriate facilities in order to provide a comprehensive, coordinated, and integrated management system.
2. Implement a budgetary mechanism to provide a dedicated revenue source for environmental protection services such as recycling, household hazardous waste management, and operation of the upgraded air pollution control system and to build reserves for future environmental protection facilities and projects.
3. Develop a new regional scale single stream materials recovery facility.
4. Develop a survey to document the volumes and current management practices for green waste and for all major institutional generators of food waste in order to evaluate the potential for increased organics recovery.
5. Adopt a capital budget plan that designates new facilities and existing Facility upgrades and establishes a method to build reserves over the next five years to finance existing facility upgrades like the turbine and fan retrofit at the RRF and the development of new facilities such as the MRF.
6. Complete RFP's to secure transfer station capabilities for haulers for waste generated in the southern and northern sectors of the County.
7. Initiate a diagnostic study of the existing RRF to identify the scope and cost of major maintenance, replacements and upgrades that will be required to extend the operating life of the Facility over the next 25 to 30 years.

8. After evaluation of the performance of new single stream recycling, waste reduction and product stewardship, and increased organics recovery consider the development of appropriately sized additional waste-to-energy capacity.
9. Continue to evaluate the development of a local ash landfill.

## **6.6 Collection Arrangements.**

Existing public collection services provided by local governments to residents are expected to continue throughout the next ten year planning period, although the decision-making power to continue these services rests exclusively with those municipalities. Many residents rely on the extensive network of transfer stations operated by local government and the great majority of Dutchess residents, and virtually all businesses and institutions rely upon private collection arrangements with local haulers. Local governments within Dutchess County have the authority to establish, modify, or regulate collection services. The Agency and the County will invite all municipalities within the county to comment on this Plan, and will apprise each of any aspects of implementation that will affect their collection operations. It is not anticipated that the implementation of the Plan will adversely affect the on-going collection operations of municipal programs.

This Plan contemplates that private sector collection of commercial waste and construction and demolition debris throughout the County will continue. The County will continue to request the reporting of information as to tonnages of MSW, recyclables and C&D to assist in the assessment of the progress of the Plan in achieving its goals. To the extent that sufficient organic composting capacity is developed within the County, modifications to the County's solid waste laws may be considered to direct appropriate organic waste streams, such as yard waste and food waste, to appropriate facilities.

It has been noted that one hauler currently holds a dominant position in the private collection marketplace of the County. This Plan does not contemplate any direct action by the County to interfere in the competitive marketplace for waste collection services.

However, it is anticipated that the entry of new collection firms into the marketplace will be eased by the adoption of flow control, the establishment of more convenient transfer stations for MSW and recyclables, and the application of a uniform tipping fee to all haulers working in the County. These actions will have the effect of “leveling the playing field” for small haulers who do not have the resources or sites for their own transfer capacities. Experience in other communities shows that the implementation of flow control and a uniform disposal fee for all haulers tends to increase the number of firms competing for collection work, and that competition for collection business improves services to consumers.

#### **6.7 Market Agreements.**

The Agency plans to continue to rely on a public-private partnership for operation of both its public Materials Recycling Facility (whether the current dual stream or planned single stream facility) and its Resource Recovery Facility. These arrangements have served the Agency well in the past. The Agency’s MRF contractor was successful in marketing all material processed at the MRF during the 2008-2009 recyclables market decline, and has maintained access to spot markets for short term needs, as well as brokerage arrangements for long term agreements. Three to five different contracts are maintained for the sale of recyclables.

The Agency’s new RRF operator, Covanta Energy, is the largest and most experienced operator of waste-to-energy facilities in the nation, and has an excellent record of compliance at the six facilities it operates in the state of New York.

#### **6.8 Funding Sources.**

This Plan contemplates the construction of new infrastructure for several aspects of the integrated system. These include a new single stream materials recovery facility, one or more new organics composting facilities, transfer station acquisitions and improvements, upgrades to the turbine generator and other elements of the Resource

Recovery Facility, and a potential expansion of the Resource Recovery Facility. The total cost of all such construction is not now known, but will be substantial.

There are two potential means of funding such construction. One means is a purely public expenditure accomplished by the issuance of Agency bonded debt. The ability of the Agency to issue new debt for solid waste projects will depend upon the Agency's ability to demonstrate to bond buyers that its revenues from tipping fees and other sources will be sufficient to meet its obligations. Consequently, an essential first step will be the enactment and enforcement of flow control legislation or equivalent action to stabilize the flow of waste and recyclables to Agency facilities. Although the Agency has had a good record in establishing positive credit ratings for previous bond issues, this record, at least in part, has been due to the contractual commitment of the County through the Disposal Agreement. The Agency may not be in a position to go to the bond market for new capital until at least two years after flow control measures are implemented and revenues are stabilized.

The other means of funding is through private investment, induced by the opportunity to realize profit from the processing and sale of recyclables or organics, and the processing of waste into energy. The potential to induce investment by the private sector in solid waste infrastructure can be assisted by local government action, particularly by action which vests title and control of a waste stream in the Agency or the County, thereby making a substantial amount of raw material, in the form of unprocessed recyclables, organic or MSW available for contract with a private entity. Different opportunities for infrastructure components will arise as technology advances and demand for raw material increases.

As discussed more fully in Chapter 7, the construction of new infrastructure will not occur all at once, but will be sequential. The opportunity for private investment in a public/private partnership is currently present for the development of a single stream MRF. As discussed above, no single stream MRF currently exists in the lower Hudson Valley. Because of the convenience that single stream processing offers to both

residential generators and the haulers that serve them, it is reasonable to assume that if such a facility were established locally, haulers wishing to take advantage of single stream collection would patronize the facility. If such a facility could be constructed at a cost that would allow for low tipping fees with sufficient revenue from sales, a private vendor would be justified in making that investment.

The role of the Agency and the County in such a public/private partnership may be to assist in locating a site for the facility, in directing the flow of residential recyclables to a public facility, and in the execution of a long term contract for delivery and processing of that material by the private operator. Using Dutchess County - generated and Agency-controlled recyclables as an “anchor” waste stream, a private operator could attract other materials from neighboring communities. In addition, the Agency or the County could contract with neighboring municipalities to receive and process their recyclables streams through the Agency’s contract with the operator. The terms of a public contract with a facility operator could be structured to provide for low tipping fees and/or a share of the revenue derived from sales of processed material.

A similar arrangement could be developed for the siting and construction of one or more organics recycling facilities. It is anticipated that the initiatives in organics composting to be undertaken through implementation of the New York State Solid Waste Management Plan will improve the market for finished compost materials and establish proven and cost effective technologies for yard and food wastes. If costs of these technologies can be established at levels below the costs for MSW disposal, it is reasonable to assume that generators of yard wastes, such as landscapers and municipalities, and generators of food wastes, such as the County’s colleges and universities, medical and correctional institutions, and ultimately food service businesses, will patronize these facilities as a means of reducing waste management costs. The role of the County and the Agency may be to assist in the siting of such facilities, and the promotion of composting to the public as a primary means of waste management. However, it is anticipated that the development of large scale composting facilities within Dutchess County will occur on a slower scale, as technologies are established and market demand grows.

Needed capital improvements to the Resource Recovery Facility could be funded either through issuance of new Agency debt, or through private funding by the operator of the RRF. In either case, the source of funds to repay capital investment will be tipping fees charged for the disposal of non-recyclable material at the RRF. As noted above, the operations contract for the RRF will expire in June 2014, and a procurement for a new operator will be undertaken in 2012 or sooner. The procurement can address the level of interest in operations, and the commitment of a new operator to fund capital improvements, including, if circumstances justify it, an expansion of the Facility. However, while certain improvements to improve efficiency can and should be financed by either public or private funds in the short term, a decision on the need to expand the Facility should be deferred until the improvements in recycling and composting infrastructure are made.

Funding for transfer station improvements may be made through public investment, although every effort should be made to identify pre-existing facilities that will not need major capital improvement. Nevertheless, it is anticipated that some improvements will be required for any facility, in order to safely and efficiently manage the volumes of material expected to pass through Agency management. It is expected that revenues from the use of these facilities will support the needed improvements, and that public debt issuance will not be required.

#### **6.9 Entity Responsible for Operation and Management.**

This Plan does not propose any change in the management structure for the integrated solid waste management system. The Dutchess County Department of Solid Waste Management will remain responsible for the formulation and implementation of programs for the collection and disposal of solid waste generated within the County. The Department will continue to report to the County Executive with any appropriate recommendations regarding integration of both public and private facilities for accepting, hauling, processing and disposing of solid waste. The County Legislature has adopted

a series of local laws making provisions to manage solid waste and recycled materials. These laws empower the Commissioner of Solid Waste to promulgate rules and regulations to carry out the adopted laws including the licensing of waste haulers and collectors and to designate recyclable materials to be separated from other solid waste or to remove previously designated recyclable materials from the list of recyclable materials.

The DCRRA will continue to plan, construct, own and operate solid waste management facilities. The DCRRA will oversee recycling and the operation of the Materials Recovery Facility (MRF). The DCRRA will continue to sponsor annual Household Hazardous Waste Collection Days for toxic and electronic waste, and medications disposal days. The DCRRA will also continue to manage, through its contract operator, the Resource Recovery Facility, newly established transfer stations, and any public organics recycling facilities that are subsequently created. Most importantly, the DCRRA will function as the administrator of the direction of local waste streams to the appropriate recycling, composting and disposal facilities.

The relationship between County and DCRRA responsibility can be summarized as follows:

<u>COUNTY:</u>	<u>AGENCY:</u>
Policy	Oversees operation of WTE Facility
Enforcement	Oversees Operation of MRF
Plan Approval	Designated Planning Agency
Coordination	Repay Revenue Bond
Net Service Fee	Manage Ash Disposal

#### **6.10 Availability of Staff for Implementation.**

The current staff of the DCRRA is capable and available to implement all recycling activities, current and future, of the Dutchess County Planning Unit recycling programs. The Commissioner of Solid Waste Management and staff, including an enforcement

capability, will apply the laws of the County, including licensing activities, and provide oversight of the DCPU Solid Waste activities.

#### **6.11 Alternatives if Private Sector Management is not Functioning Adequately.**

Dutchess County has chosen a recyclables recovery program with plan elements incorporating the Dutchess County Department of Solid Waste Management, the Dutchess County Resource Recovery Agency, local municipalities, private haulers, and a private operator. The alternatives to private sector management are:

County-wide collection: Collection, processing, marketing of all source separated materials is logistically difficult and contrary to existing practices. The current recyclables recovery plan builds from existing local patterns of collection, processing and marketing practices. While a County-wide program for all components would be feasible, it would not have the general support of the community.

Decentralized recovery: Local programs for all components would involve all local municipalities in the comprehensive solid waste management planning which they have neither the resources nor the staff to do. This would require the 30 municipalities within the DCPU to invest in processing equipment and labor with individual municipal marketing arrangements.

Intra-County regional programs: Dutchess County spans a large geographic area north to south with many rural and semi-rural communities. Joint municipal programs thus have some appeal, and are already in use. For example, Union Vale and Beekman utilize the same transfer facility. These are encouraged and some joint use of transfer stations and recycling drop off centers or cooperative marketing of certain materials not handled by the MRF, such as compost, should increase. Thus, these intra-County programs are not seen as an alternative, but are incorporated into the current plan.

Composting: Backyard, private and municipal composting programs are historical practice and will continue to be encouraged. Where one or more municipalities wish to incorporate yard wastes from surrounding municipalities into its own municipal yard waste composting program, they will be encouraged to do so.

Inter-County: Inter-County cooperation is being contemplated for some aspects of solid waste management, where practical. When a single stream MRF is operational, it should have available capacity to accept materials from other jurisdictions. Informal discussions have already taken place in this regard.

#### **6.12 Relationship Between Private Sector Management and the Planning Unit.**

The current plan not only assigns some products to private processing, it also draws upon the expertise of a full-service recycling firm for processing and marketing of designated materials, while the DCPU maintains program management and fiscal responsibility of the MRF. Although a full privatized system would reduce financial risk to the community, efficient plant design, maximum revenues, potential flow control and control over program operations would be sacrificed. Private sector initiatives for those portions of the integrated system, such as C&D processing and recovery, tires, and municipal yard waste composting will continue to be encouraged and supported. If the private sector is unable or unwilling to develop the processing capabilities needed to properly manage portions of the solid waste stream, then the DCPU will work to develop appropriate management strategies.

## **CHAPTER 7: IMPLEMENTATION SCHEDULE**

This plan recommends a series of specific actions to advance the Dutchess County solid waste management system from its current service level and fee structure to a self-sustaining and modern system with minimal environmental impacts. Achievement of all of the goals outlined here will require long-term commitment and steady, incremental progress over several years. The following are the major recommended actions.

### **7.1 Prevention-Source Reduction.**

Disseminate information to residents and businesses on ways to reduce waste through purchasing practices, buying recyclable and recycled products and materials, and reuse of materials and products.

Support State initiatives on product stewardship and other source reduction measures.

Develop a full scale schools recycling program that will include:

- Written materials which teachers at all grade levels can integrate with their routine science and civics curriculums.
- A component of the Agency website dedicated to support of recycling in the schools including a video link to the new single stream MRF, information and links for research, Q&A, and networking with other school recycling programs.
- Provision of the Agency Recycling Coordinator to make presentations to classes and other school groups, and to provide assistance in establishing recycling/environmental service clubs.
- Provision of standard waste and recycling bid and contract documents that promote reduction and recycling and create financial savings through reduction and recycling.

- Provision of technical assistance to establish food waste composting at school food preparation and cafeteria facilities.
- Development of recycling contests and awards.

Develop a new state of the art Agency web site that provides comprehensive information on all aspects of recycling and solid waste management in the County, a special component for schools recycling, a link with the education center at the new single stream MRF including a video link, interactive capability, and links that provide additional resources.

Explore partnerships with private sector groups such as the chambers of commerce for both regular recycling and special programs such as e-waste collections.

Enhance collaboration with Cornell Cooperative Extension for public education, particularly in the area of individual composting.

Institute regular meetings with recycling and solid waste management stakeholders in the County, including all the municipalities that provide transfer/collection/convenience services, private haulers and processors, such as the private compost operation owners. Through this, the Agency can provide information and assistance to municipalities to implement PAYT and other recycling incentive programs.

Establish a regular schedule of presentations to service clubs and organizations, and hold regular public forums and workshops to educate the public on new and planned initiatives.

Establish a regular schedule of communication with the leaders of neighboring planning units.

Expand and extend current Agency and County government initiatives for print conversion, use of electronic document storage, use of electronic patient records,

conversion to electronic newsletters and reports, use of websites both for posting information and for interaction with the public, use of e-files by the department of taxation and finance, for duplex printing, paper reuse, for web based surplus sales, for use of recycled oil for equipment and automotive lubricants, for battery and tire recovery, and for specification of the use of recycled asphalt in County and local municipal paving jobs.

## **7.2 Recycling.**

Help spearhead the development of a new regional scale single stream materials recovery facility.

Continue HHW recovery efforts through dedicated HHW collection days, educational activities, and encouragement of product stewardship.

Develop a new program for Conditionally Exempt Small Quantity Generators of hazardous waste.

Develop a new service for shredding of confidential records.

Add new recyclables through special programs such as the recovery of hard cover books.

Provide “waste and recycling audits” for businesses, industries and institutions.

Enhance public information on opportunities for HHW and pharmaceuticals services.

Provide information to all sectors on mandatory recycling, with a goal of establishing meaningful public space recycling as well as regular recycling at businesses, industries and institutions.

Explore enforcement possibilities through potential partnerships with the County Health Department inspection programs and other established programs that have regular contact with major waste generators.

Evaluate the standardization of recycling requirements at the various municipal convenience/drop-off stations. Start with integrating the individual municipal requirements and a location map on the new Agency web site.

Provide information to contractors that will promote recovery of construction and demolition debris.

Evaluate the feasibility of an Agency sponsored materials waste exchange.

Continue to evaluate the development of beneficial uses for ash.

Develop an improved means of surveying and reporting commercial/industrial/institutional recycling and waste collection and disposal

Meet with neighboring planning units to discuss the development of a new single stream recycling facility as a public – private partnership and determine their potential interest in participating.

Expand the list of acceptable recyclables as the new single stream material recovery facility and markets permit.

### **7.3 Organics Recovery.**

Develop a survey to document the volumes and current management practices for green waste and for all major institutional generators of food waste in order to evaluate the potential for increased organics recovery.

Provide information to major food waste generators on the availability of organics recovery facilities.

Work with major organics generators, such as the colleges and State prisons, and local haulers to identify the potential to utilize and expand upon existing organics processing operations.

Work with Cornell Cooperative Extension to provide information to homeowners and special groups [garden clubs, Master Gardeners] on both back yard composting and the availability of organics recovery facilities.

Continue to track and evaluate the volume and make up of organics generated in the County, the space available for aggregation of organics, issues with collection, emerging technologies which may become available to process organics, and the associated costs.

#### **7.4 Energy Recovery.**

Initiate a diagnostic study of the existing RRF to identify the scope and cost of major maintenance, replacements and upgrades that will be required to extend the operating life of the RRF over the next 25 to 30 years.

Upgrade the RRF fans to achieve energy cost savings.

Upgrade the existing turbine to capture more energy, and therefore optimize electric sales, from the steam produced at the RRF.

Secure a new contract for RRF operations through a competitive GML 120W RFP procurement at the expiration of the current operating agreement.

Explore the feasibility and cost of expanding the RRF capacity to process the balance of nonrecyclable waste generated in the County but currently taken to out-of-county landfills.

#### **7.5 Transfer and Disposal.**

Complete an RFP process to secure transfer station capability for haulers for waste generated in the northern and southern parts of the County.

Continue to evaluate the development of a local ash landfill.

#### **7.6 Administrative/Legal/Financial.**

Adopt the 2010 Dutchess County Local Solid Waste Management Plan.

Develop a dedicated revenue source for environmental services as an alternative to the Net Service Fee. A revenue source will be needed to fulfill the County's twenty year old legal funding obligation to the Waste to Energy Facility for the Net Service Fee (NSF) and will provide funding for the necessary expenses of the Solid Waste Management Department. It will also be used for maintenance and capital reserves to eliminate the cost spikes that have occurred when additional debt service is required to make unforeseen repairs or capital improvements to the Waste-to-Energy facility.

Adopt an amended County Flow Control Local Law or other mechanism to provide a comprehensive, coordinated, and integrated management system.

Adopt a capital budget plan as part of the budget that designates new facilities and existing facility upgrades to be accomplished over the next five (5) years.

As a condition of annual hauler permits, require the submission and certification of data to document where all recyclables and waste they collect are taken.

Secure a full-time enforcement capability to insure County law compliance.

Support a pilot program for a PAYT system in a suburban area.

**Table 17**  
**IMPLEMENTATION SUMMARY**

<b>YEAR</b>	<b>DESCRIPTION OF ACTION</b>	<b>GOAL - RESULT</b>	<b>RESPONSIBLE PARTY</b>
2011	Meet with planning units on single stream MRF	Regional cooperation	DCRRA County
2011	Adopt LSWMP		DCRRA County
2011	Adopt Budgetary measure to address payment of Net Service Fee	Financial Stability	County
2011	Consider New Flow Control Local Law	Financial and Operating Stability	County
2011-13	Development of a full scale schools recycling program	Increase Recycling	DCRRA
2011-12	Develop New Agency Website	Increase Waste Reduction & Recycling	DCRRA
2011-12	Develop CESQ Program for Hazardous Waste	Reduce Toxics	DCRRA
2011-12	Develop Shredding Program for Confidential Records	Increase Recycling	DCRRA
2011-20	Provide Waste & Recycling Audits to Business	Increase	DCRRA

		Recycling	
2011-20	Explore Cooperative Enforcement with County Health Dept., Other Agencies	Increase Recycling, Reduce Toxics	DCRRA County
2011-20	Regular Meetings with Municipalities, Other Solid Waste Stakeholders, Other Planning Units	Increase recycling Waste Reduction	DCRRA County
2011-13	Evaluate Standardization of Drop-Off Recycling Programs with Municipalities	Increase Recycling	DCRRA
2011-13	Evaluate Materials Waste Exchange	Increase Recycling	DCRRA
2011 - 2020	Disseminate Reuse and Reduction Information	Reduce Waste	DCRRA
2011 - 2020	Support State Product Stewardship Initiatives, Develop Public-Private Partnerships for E-Waste Programs	Reduce Waste	DCRRA County
2011 - 2020	Expand Agency - County Waste Reduction Programs	Reduce Waste	DCRRA County
2011 - 2020	Continue HHW Program, Enhance Public Information on Pharmaceuticals	Reduce Toxics	DCRRA
2011 - 2020	Continue to Explore Ash Reuse Possibilities	Reduce Landfilling	DCRRA
2011 - 2020	Expand List of Eligible Recyclables, Hardcover Books, Etc.	Increase Recycling	DCRRA County
2011 - 2020	Track Volume and Character of Organics	Increase Recycling	DCRRA
2011 - 2020	Evaluate Development of Local Ash Landfill	Reduce Expenses	DCRRA

		Increase Reliability	
2011 - 2020	Establish a Capital Budget Plan	Stabilize Expenses	DCRRA County
2011 - 2020	Require Hauler Data and Certification	Better Planning	DCRRA
2011-2012	Encourage Development of New Single Stream MRF	Increase Recycling	DCRRA
2012	Develop Green Waste and Food Waste Survey	Increase Recycling	DCRRA
2011	Provide Information on Back Yard Composting	Reduce Waste	DCRRA Coop Ext
2011-13	Develop New Transfer Station Capability	Improve Operations	DCRRA
2011	Consider Budgetary Measures for Payment of Net Service Fee	Stabilize Finances	County
2011	Consider Adoption of Local Law Implementing Flow Control Over Solid Waste and Recyclables	Stabilize System	County
2011	Secure Enforcement Capability	Compliance	County
2011-2020	Develop/Commercial/Industrial/Institutional Recyclables and Waste Survey	Better Planning	DCRRA
2011-2020	Provide Organics Generators With Information on Processing Facilities, Enhance Cooperation with Cornell Cooperative Extension	Increase Recycling	DCRRA
2011-2020	Explore Use of Existing Organics Facilities	Increase Recycling	DCRRA
2012	Expand Recycling at Public Facilities and Functions	Increase Recycling	County
2012	Initiate Diagnostic Study of RRF	Improve	DCRRA

		Energy Recovery	
2012	Upgrade RRF Fans	Reduce Expenses	DCRRA
2013	Upgrade RRF Turbine	Increase Energy Recovery Revenues	DCCRA
2013	Initiate Pilot PAYT Program	Increase Recycling	DCRRA T/V/C
2014	Procure New RRF Operator	Improve RRF Operations	DCRRA
2015-2020	Evaluate RRF Expansion	Improve Energy Recovery	DCRRA

## **CHAPTER 8: NEW LAWS & REGULATIONS LEGAL/INSTITUTIONAL ANALYSIS**

### **8.1 Legal Constraints to the Selected Recovery Program.**

There are no laws with jurisdiction in Dutchess County that would prevent the implementation of the comprehensive LSWMP, the Recyclables Recovery Program, constrain MRF operation, or inhibit County and municipal programs. It is possible that once the program is fully operational and some evaluation has taken place, additional laws may be recommended for consideration by the Dutchess County Legislature to facilitate program objectives. Such laws may include revenue measures, packaging legislation and procurement laws.

### **8.2 Schedule and Description of Regulations Needed to Implement Programs.**

Two initiatives are contemplated to assist in the implementation of this Plan. One is a budgetary mechanism that would establish a dedicated revenue source for the payment of Net Service Fee obligations. It is expected that the Dutchess County Legislature will address this concern.

The second is the adoption of a new flow control law or other measure that would empower the County to direct portions of the waste stream to appropriate public facilities. Adoption and implementation of such a measure would allow the Agency to establish tipping fees at appropriate levels, maximize the efficient utilization of existing and planned facilities, and ultimately eliminate the need for the Agency to rely on Net Service Fee payments from the County to meet its obligations.

#### **8.2.1 Flow Control Amendment.**

The following discussion addresses the steps necessary in the event that a flow control law is considered by the County. An amendment to Local Law No. 1 of 1984, a Local Law Providing for the Management of Solid Waste Generated within the County of

Dutchess, would be the vehicle to accomplish this. A revised local flow control law can be a valuable tool in expanding the DCRRA's current level of services to a County-wide system focused on increased recycling, composting and energy recovery from solid waste. It would provide the means to incorporate private and public collection services into the system, and assist in the planning for the additional infrastructure needed to achieve the goals outlined in the County's Solid Waste Management Plan.

A draft local law amending Local Law No. 1 of 1984 to re-establish flow control within the County was prepared with the 2009 FCSWMA Report. The proposed draft establishes an administrative system to review alleged violations, as opposed to prosecution in a criminal court. Jurisdiction to hear cases of alleged violations would be vested in a hearing officer obliged to provide basic due process rights to all alleged violators. Civil penalties, gradually escalating with repeat offenses, would ultimately culminate with the potential revocation of the offending hauler's license to do business in the County.

The object of the administrative system will be to induce compliance by the regulated haulers, who will be primarily concerned that the system is enforced uniformly and consistently. Experience in other communities suggests that haulers experiencing flow control regulation for the first time will react in a variety of ways. The foremost concern will be that a competitor will not comply, and will thereby escape payment of a higher tip fee, and use that competitive advantage to attract new customers. The municipal response to this concern must be adequate staffing and preparation to monitor compliance, identify and promptly prosecute violators.

This will require a staff familiar with the service areas of local haulers, together with an understanding of their collection routes and the distances from these routes to out-of-County disposal facilities and local transfer stations. Sufficient field personnel should be employed to identify haulers who are not delivering waste to the County's designated facilities, supported by Agency staff who can report tonnages delivered and, identify probable violators for observation and attention. Training for enforcement personnel

should include familiarity with prepared form summonses, violation notices and supporting affidavits. Field personnel should be prepared to issue violations for 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 commingling of recyclables with MSW at or after the point of collection.

Given the number of haulers working currently in Dutchess, it is recommended that three field personnel be assigned to enforcement at the outset of the program. Of these, at least one individual should be retained as a full-time field officer following the initial six months of enforcement. Experience in other communities shows that once the enforcement effort is proven consistent and even-handed, compliance becomes normal operating practice for the hauling community. The staff devoted to enforcement at the beginning of the program should be larger, and individuals might be borrowed from other assignments for temporary posting. The knowledge gained by these individuals will be valuable, however, and the County should make efforts to draw on their expertise when needed. The cost for enforcement personnel should be paid from the revenues gained from the delivery of a greater volume of waste.

### **8.3 Analysis Of Use in the LSWMP**

#### **8.3.1 Incentive Based Pricing (PAYT)**

Incentive-based Pay-As-You-Throw (PAYT) programs have proven to be effective means of increasing recycling rates in many areas. PAYT programs typically require residents to place non-recyclable wastes in special bags, or in ordinary bags marked with special tags purchased from the municipality. The price of the bag or tag supports the cost of the disposal of the non-recyclable waste, as well as any incidental costs of processing recyclables, which are not subject to the charge. The incentive to the resident is to minimize the amount of waste placed in the bag/tag system, and maximize the amount of material placed in recycling containers. The PAYT fee for bags or tags would support the disposal cost of waste and the processing cost of recycling.

Residents would continue to pay the hauler to collect waste and recyclables, but haulers would be able to “tip” approved non-recyclable bags, as well as source separated recyclables, at a municipal facility at no cost. If properly implemented, the monthly bill to the resident from the hauler should decrease as the disposal component is shifted to the PAYT bag system, and the hauler then charges only for the cost of collection.

PAYT programs may prove to be effective in parts of Dutchess County. One or more pilot programs in suburban areas, where collection is done by private haulers, are suggested. An agreement with the hauler and the residents, for a set area, would be needed to initiate a pilot program for PAYT. The agreement would have to include a fee reduction for opting for a smaller sized container for solid waste, with a larger recyclable container, and less frequent collection. A means of purchasing and distributing bags or tags from the local municipality would have to be established, and a policy to govern how haulers would handle waste that is not properly bagged/tagged would have to be developed.

More than one effective means of implementing PAYT can be explored. The role of the County and the Agency should be to assist in educating local government officials, bringing haulers, government officials and retail establishments together to construct the basic elements of a PAYT system. The Agency can assist in enforcement of the program through its billing and waste inspection procedures at the RRF or planned transfer stations.

### **8.3.2 Hauler Licensing.**

All entities that collect, transfer, transport, store, dispose or deliver solid waste in Dutchess County must be licensed by the Dutchess County Department of Solid Waste Management pursuant to Local Law #1 of 1984 and the Dutchess County Department of Solid Waste Management's Rules and Regulations. In order to assist in the implementation of flow control via an amendment to Local Law #1, some modifications to the current licensing mechanism in the county are suggested.

The County's current license application packet requires the submission by the applicant of a variety of information that would be useful in enforcing a flow control law. The required submissions include information on waste and recyclable tonnage collected, point of disposal and approximate number of customers. However, there is no current procedure for confirming the accuracy or timeliness of the information submitted. It is recommended that the customer information now required be expanded to include area-based numbers for residential customers (e.g., number of residences collected in a town or other area), lists of commercial customers with the size of any containers provided and the frequency of collection. Such information should be updated quarterly, or at such other intervals as the County finds to be workable. Customer information can be used to estimate the total amount of waste that is collected by the hauler in a given period, and this estimate can be compared with actual deliveries to Agency facilities.

Field enforcement personnel can review the submitted customer lists to determine if a hauler is collecting at more stops than reported, or if waste from any stops is being transported to non-Agency facilities. Review of customer lists against delivered tonnage can identify subjects for further investigation, and can provide a point of departure for surveillance and evidence gathering in a prosecution.

## **CHAPTER 9: INTERIM SOLID WASTE MEASURES**

This LSWMP recognizes that the current Dutchess County Solid Waste Management system is established and fully functional. However, it also recognizes that improvements are needed and has set forth a detailed and sequential series of actions to expand and improve the services offered to Dutchess County residents and to improve waste reduction, recycling and energy recovery performance consistent with New York State policy. Because the implementation of each facility and policy recommendation will be a permanent improvement over the status quo, there are no specific measures that can be considered interim measures.

## **CHAPTER 10: EXPORT CERTIFICATION**

As noted above, the Agency currently receives and processes part, but not all of the waste generated in Dutchess County. With the exception of ash residue from the RRF that is exported and used for Alternate Daily Cover, none of the waste currently managed by the Agency is exported, and the long term goal of this LSWMP is to manage all Dutchess County Waste locally. To the extent that waste falling under the control of the Agency is required to be exported, disposal capacity will be procured pursuant to competitive public bidding. The Agency will include in all such bid documents a requirement to certify adequate capacity for local waste for a period of not less than five years.

**CHAPTER 11: ADMINISTRATIVE STRUCTURE**

**11.1 Responsibilities.**

The Dutchess County Resource Recovery Agency and the County of Dutchess, through the County Department of Solid Waste, each perform significant functions in the management of the solid waste system. In general, the DCRRA is responsible for the financing, construction and operation of the major public waste management facilities in the County, and the coordination of City, Town and Village waste services within the overall integrated system. The County Department of Solid Waste is responsible for the licensing and regulation of private solid waste services, and enforcement of local laws relating to solid waste and recycling. The Agency establishes and collects fees for use of Agency facilities, and these fees provide the primary revenue source for operation of the public solid waste system. The County, by agreement with the Agency, is responsible for appropriation of supplemental funding, as needed, to support the solid waste system.

**11.1.1 Implementation of Each Element of the Integrated System.**

The relationship between the County and the DCRRA responsibility for implementation of integrated system improvements can be summarized as follows:

**COUNTY:**

Policy  
Enforcement  
Plan Approval  
Coordination  
Net Service Fee

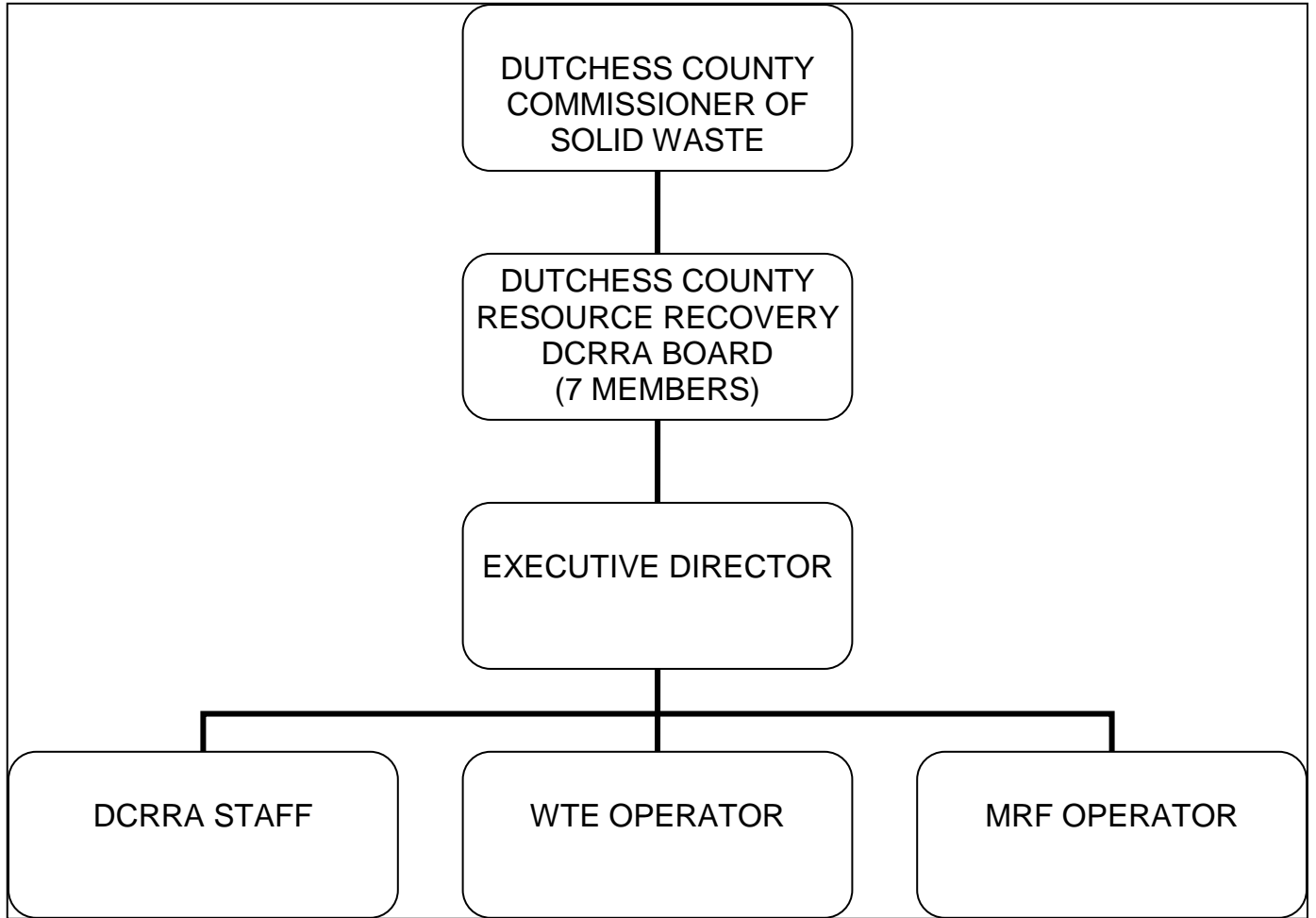
**AGENCY:**

Oversees operation of WTE Facility  
Oversees Operation of MRF  
Designated Planning Agency  
Repay Revenue Bond  
Manage Ash Disposal

11.1.2 Operating the Various Portions of the Integrated System.

11.2 Organizational Chart.

**Table 18**



## **CHAPTER 12: FUTURE ACTIONS TO FURTHER THE SWM HIERARCHY**

### **12.1 Prevention-Source Reduction.**

The top of the solid waste management hierarchy articulated in the Solid Waste Management Act of 1988 is waste reduction. Unfortunately, as noted in the 2010 State draft solid waste management plan, society is producing more waste than it was 20 years ago. While the infrastructure for recycling has been extensively developed over the past two decades, the policies aimed at true waste reduction have been minimal and are only now just beginning to be advanced.

The County and the Agency have and will continue in the future to support waste reduction through product stewardship initiatives at the State and national levels because the necessary policies and actions cannot be implemented at the local level.

### **12.2 Recycling.**

As described in this plan, recycling, the second tier in the solid waste hierarchy, is currently accomplished by both the Agency's MRF and a network of private collection and processing initiatives. However, the existing dual stream MRF is run down and outdated. The implementation of flow control to direct all residential recyclables to the Agency's facility coupled with a new public-private partnership to develop a new regional scale single stream MRF will significantly improve and increase recycling in Dutchess County. It is envisioned that such a new facility will, at a minimum, serve all of Dutchess County and stimulate an estimated tripling of the current volume of recyclables captured at the MRF. The Agency plans to consult with neighboring planning units to determine the feasibility of their participation in a new single stream MRF. Similarly, it is expected that the private partner will reach out to other market areas in and out of New York State to maximize the output from the facility.

As indicated in this Plan, the Agency will expand the list of eligible recyclables as the MRF and markets are developed.

This Plan also calls for improvements in setting up recycling in public spaces and at public events, both of which will help increase the recovery of recyclables in the future.

It will also be important that a coordinated public information and education component be implemented. This will bring a renewed focus to recycling and should be aimed at getting residents to join the effort to separate recyclables from the waste stream and to make sure they are targeting all eligible recyclables. When the transition is made to single stream, there will be an additional significant opportunity to “spotlight” recycling coupled with new measures that will make it even easier for residents to participate.

This Plan also intends to build on the existing food waste composting programs at the colleges, State prisons, and private compost operations in the County. The Agency plans efforts to inform large institutional and industrial food waste generators of available facilities and programs. The Agency will also work with haulers to evaluate the feasibility of food waste collection options. Finally, the Agency will continue to track the development and performance of technologies for processing organics that may be available in the future.

Currently the Agency holds eight household hazardous waste collections days at the RRF and at various locations around the County. Residents can bring in containers that are marked with, “Warning: Hazardous, Flammable, Poisonous, Corrosive” and electronic equipment. It is estimated that 60-70 tons of electronics, 30,000 gallons of hazardous chemicals, and 800-900 lamps are recycled at these events every year. This program will continue in the future.

In 2009, collection days for unused and expired medications were added and this program is being offered as a service to neighboring planning units.

### **12.3 Energy Recovery.**

The Agency plans to continue to recover energy from MSW, the third tier in the solid waste management hierarchy. Improvements are planned to the RRF that will cut energy expenses and increase energy recovery. The Agency also plans to evaluate the expansion of the RRF to process waste now being trucked to distant landfills. This would improve the system and help further the State's goal of reducing dependence on landfilling.

### **12.4 Procurement Practices.**

The Agency and the County will continue to purchase materials and supplies which are recycled and recyclable whenever it is practically and financially feasible.









# LANDFILL BASED SYSTEM

**Energy Analysis - Summary Report**

(Version 9.01, 3/09)

Analysis of Energy Use from Waste Management for GERHARDT

Prepared by DCRRA

Reporting Period for this Analysis is from 1/1/08 to 12/31/08

**Energy Use from Baseline Waste Management (million BTU): 92,545**

Material	Tons Recycled	Tons Landfilled	Tons Combusted	Tons Composted	Million BTU
Aluminum Cans	0	2,606	0	N/A	2,530
Steel Cans	0	2,606	0	N/A	2,530
Glass	0	13,031	0	N/A	12,649
HDPE	0	2,606	0	N/A	2,530
PET	0	2,606	0	N/A	2,530
Corrugated Boxes	0	18,244	0	N/A	-1,173
Magazines/third-class mail	0	5,212	0	N/A	2,881
Newspaper	0	13,031	0	N/A	7,855
Office Paper	0	10,425	0	N/A	-8,105
Phonebooks	0	2,606	0	N/A	1,571
Textbooks	0	2,606	0	N/A	-2,026
Dimensional Lumber	0	7,819	0	N/A	3,408
Food Scraps	N/A	54,732	0	0	16,495
Yard Trimmings	N/A	2,606	0	0	1,590
Grass	N/A	2,606	0	0	1,679
Leaves	N/A	2,606	0	0	1,864
Branches	N/A	2,606	0	0	1,136
Mixed Paper (general)	0	13,031	0	N/A	33
Mixed Paper (primarily residential)	0	10,425	0	N/A	532
Mixed Paper (primarily from offices)	0	10,425	0	N/A	281
Mixed Metals	0	10,425	0	N/A	10,120
Mixed Plastics	0	18,244	0	N/A	17,710
Mixed MSW	N/A	39,102	0	N/A	3,808
Clay Bricks	N/A	5,212	N/A	N/A	5,059
Aggregate	0	5,212	N/A	N/A	5,059

**EXISTING SYSTEM**

## Energy Analysis - Summary Report

(Version 9.01, 3/09)

Analysis of Energy Use from Waste Management for DCRRRA  
 Prepared by GERHARDT  
 Reporting Period for this Analysis is from 1/1/08 to 12/31/08

**Energy Use from Baseline Waste Management (million BTU): -1,131,140**

Material	Tons Recycled	Tons Landfilled	Tons Combusted	Tons Composted	Million BTU
Aluminum Cans	104	1,042	1,460	N/A	-19,511
Steel Cans	104	1,042	1,460	N/A	-26,033
Glass	521	5,212	7,298	N/A	7,869
HDPE	104	1,042	1,460	N/A	-34,148
PET	104	1,042	1,460	N/A	-19,795
Corrugated Boxes	2,468	5,560	10,216	N/A	-115,448
Magazines/third-class mail	208	2,085	2,919	N/A	-15,212
Newspaper	2,102	5,212	5,717	N/A	-80,390
Office Paper	417	4,170	5,838	N/A	-49,877
Phonebooks	104	1,042	1,460	N/A	-13,034
Textbooks	104	1,042	1,460	N/A	-11,477
Dimensional Lumber	313	3,128	4,378	N/A	-37,558
Food Scraps	N/A	21,552	32,329	851	-69,045
Yard Trimmings	N/A	1,042	1,460	104	-3,434
Grass	N/A	1,042	1,460	104	-3,398
Leaves	N/A	1,042	1,460	104	-3,324
Branches	N/A	1,042	1,460	104	-3,615
Mixed Paper (general)	521	5,212	7,298	N/A	-67,162
Mixed Paper (primarily residential)	417	4,170	5,838	N/A	-53,334
Mixed Paper (primarily from offices)	417	4,170	5,838	N/A	-46,184
Mixed Metals	417	4,170	5,838	N/A	-23,734
Mixed Plastics	730	7,298	10,216	N/A	-197,686
Mixed MSW	N/A	12,696	26,406	N/A	-255,501
Clay Bricks	N/A	5,212	N/A	N/A	5,059
Aggregate	208	5,004	N/A	N/A	4,831

# IMPROVED SYSTEM

## Energy Analysis - Summary Report

(Version 9.01, 3/09)

Analysis of Energy Use from Waste Management for DCRRRA  
 Prepared by GERHARDT  
 Reporting Period for this Analysis is from 1/1/08 to 12/31/08

### Energy Use from Alternative Waste Management Scenario (million BTU): -1,975,640

Material	Tons Reduced	Tons Recycled	Tons Landfilled	Tons Combusted	Tons Composted	Million BTU
Aluminum Cans	0	1,339	507	760	N/A	-275,440
Steel Cans	0	1,339	507	760	N/A	-39,264
Glass	0	3,694	8,777	560	N/A	899
HDPE	0	339	907	1,360	N/A	-44,200
PET	0	339	1,507	760	N/A	-24,423
Corrugated Boxes	0	12,371	2,349	3,524	N/A	-217,686
Magazines/third-class mail	0	1,678	1,414	2,120	N/A	-12,180
Newspaper	0	2,721	2,124	8,186	N/A	-113,560
Office Paper	0	1,355	1,110	7,960	N/A	-72,392
Phonebooks	0	339	907	1,360	N/A	-14,949
Textbooks	0	339	907	1,360	N/A	-10,774
Dimensional Lumber	0	1,016	2,721	4,082	N/A	-34,692
Food Scraps	N/A	N/A	12,693	39,039	3,000	-86,242
Yard Trimmings	N/A	N/A	842	1,264	500	-2,770
Grass	N/A	N/A	842	1,264	500	-2,741
Leaves	N/A	N/A	842	1,264	500	-2,682
Branches	N/A	N/A	842	1,264	500	-2,917
Mixed Paper (general)	N/A	1,694	1,535	9,802	N/A	-113,049
Mixed Paper (primarily residential)	N/A	1,355	628	8,442	N/A	-94,665
Mixed Paper (primarily from offices)	N/A	1,355	628	8,442	N/A	-77,435
Mixed Metals	N/A	1,355	3,628	5,442	N/A	-94,203
Mixed Plastics	N/A	2,372	3,349	12,523	N/A	-325,602
Mixed MSW	N/A	N/A	5,640	33,462	N/A	-324,791
Clay Bricks	0	N/A	5,212	N/A	N/A	5,059
Aggregate	N/A	0	5,212	N/A	N/A	5,059

**NEW SYSTEM**

## Energy Analysis - Summary Report

(Version 9.01, 3/09)

Analysis of Energy Use from Waste Management for DCRRA  
 Prepared by GERHARDT  
 Reporting Period for this Analysis is from 1/1/08 to 12/31/08

### Energy Use from Alternative Waste Management Scenario (million BTU): -2,397,716

Material	Tons Reduced	Tons Recycled	Tons Landfilled	Tons Combusted	Tons Composted	Million BTU
Aluminum Cans	0	1,339	0	1,267	N/A	-275,603
Steel Cans	0	1,339	0	1,267	N/A	-48,426
Glass	0	3,694	3,630	5,707	N/A	-1,328
HDPE	0	339	0	2,267	N/A	-63,633
PET	0	339	0	2,267	N/A	-41,689
Corrugated Boxes	0	14,871	0	3,373	N/A	-254,990
Magazines/third-class mail	2,000	1,678	0	1,534	N/A	-76,124
Newspaper	0	5,221	0	7,810	N/A	-152,891
Office Paper	0	1,355	0	9,070	N/A	-79,595
Phonebooks	0	339	0	2,267	N/A	-23,244
Textbooks	0	339	0	2,267	N/A	-16,660
Dimensional Lumber	0	1,016	0	6,803	N/A	-60,179
Food Scraps	N/A	N/A	0	51,732	3,000	-119,921
Yard Trimmings	N/A	N/A	0	2,106	500	-5,666
Grass	N/A	N/A	0	2,106	500	-5,666
Leaves	N/A	N/A	0	2,106	500	-5,666
Branches	N/A	N/A	0	2,106	500	-5,666
Mixed Paper (general)	N/A	1,694	0	11,337	N/A	-124,666
Mixed Paper (primarily residential)	N/A	1,355	0	9,070	N/A	-99,427
Mixed Paper (primarily from offices)	N/A	1,355	0	9,070	N/A	-81,806
Mixed Metals	N/A	1,355	0	9,070	N/A	-95,727
Mixed Plastics	N/A	2,372	0	15,872	N/A	-383,370
Mixed MSW	N/A	N/A	0	39,102	N/A	-380,176
Clay Bricks	0	N/A	5,212	N/A	N/A	5,059
Aggregate	N/A	5,212	0	N/A	N/A	-657



## **APPENDIX B**

### **RESPONSIVENESS SUMMARY**

#### **Dutchess County Local Solid Waste Management Plan**

The Agency and County retained Germano & Cahill, P.C. and Gerhardt, LLC in June 2010 to prepare an LSWMP for the consideration of the Agency and the County. A draft was delivered to the Agency in July. After review by the Agency on August 18<sup>th</sup>, the Agency commenced the SEQRA lead agency designation process and established a schedule for public comment. On September 1<sup>st</sup>, the draft LSWMP was posted on the Agency website and distributed to County and State officials. The consultants met twice with representatives of the State Department of Environmental Conservation. The draft was presented to the County Legislature on September 13<sup>th</sup>. A public hearing was held on October 12<sup>th</sup>, and the public comment period closed on October 15<sup>th</sup>. Copies of the notices and postings are attached hereto. The following summarizes the comments made through the public review process and provides responses.

- 1. Comments were made that the current levels of recycling in the County are inadequate; that recycling targets should be expressed as a percentage of the waste stream; that support single stream recycling, and that new recycling and compost facilities should be built.*

The Plan recognizes that the current level of public recycling through the Agency materials recovery facility [MRF] is inadequate. Targeted improvements in the level of public recycling called for by the Plan are expressed in terms of increased tonnages directly managed by and measured at Agency facilities (e.g., an increase in source separated recyclables from 10,000 tpy to 35,000-45,000 tpy through a single stream facility in §6.2.2.2) rather than as percentages of the waste stream. Because the Agency receives and measures only a fraction of the total waste and recyclables generated and hauled from the County, County-wide generation figures must be estimated from population data, published NYSDEC generation studies, and private facility reports filed with the NYSDEC. These estimates provide a broad measure of the local waste stream, but are less useful, and more difficult to verify, than hard tonnage targets for planning purposes. Nevertheless, many commenters have expressed comments and policy suggestions in terms of the relative fraction of the waste stream that is now recycled, and could be recycled in the future. In doing so, the recycling performance level cited by several individuals is incorrect. The current estimated recycling rate is 46% which is projected to increase to at least 55% during the 10 year planning period, as discussed below.

The Plan proposes to substantially increase public recycling as the primary means of reducing the current dependence on waste exportation and disposal in landfills. The Plan proposes to reach the new level of recycling through the development of a new single stream MRF coupled with a wide range of new public outreach and education initiatives which have been added to the Plan at Section 6.3. These new initiatives include:

- A. Development of a full scale schools recycling program that will include:
- Written materials which teachers at all grade levels can integrate with their routine science and civics curriculums;
  - A component of the Agency website dedicated to support of recycling in the schools including a video link to the new single stream MRF, information and links for research, Q&A and networking with other school recycling programs;
  - Provision of the Agency Recycling Coordinator to make presentations to classes and other school groups and to provide assistance in establishing recycling/environmental service clubs;
  - Provision of standard waste and recycling bid and contract documents that promote reduction and recycling and create financial savings through reduction and recycling;
  - Provision of technical assistance to establish food waste composting at school food preparation and cafeteria facilities;
  - Development of recycling contests and awards.
- B. Development of a new state-of-the-art Agency website that provides comprehensive information on all aspects of recycling and solid waste management in the County, a special component for schools recycling, a link with the education center at the new single stream MRF including a video link, interactive capability, and links that provide additional resources.
- C. Development of a new program for Conditionally Exempt Small Quantity Generators of hazardous waste.
- D. Development of a new service for shredding of confidential records.
- E. Adding new recyclables through special programs such as the recovery of hard cover books.
- F. Provision of “waste and recycling audits” for businesses, industries and institutions.
- G. Enhancement of public information on opportunities for HHW and pharmaceuticals services.
- H. Provision of information to all sectors on mandatory recycling, with a goal of establishing meaningful public space recycling as well as regular recycling at businesses, industries and institutions.
- I. Exploration of enforcement possibilities through potential partnerships with the County Health Department inspection programs and other established programs that have regular contact with major waste generators.

- J. Exploration of partnerships with private sector groups such as the chambers of commerce for both regular recycling and special programs such as e-waste collections.
- K. Enhancement of collaboration with Cornell Cooperative Extension for public education, particularly in the area of individual composting.
- L. Institution of regular meetings with recycling and solid waste management stakeholders in the County including all the municipalities that provide transfer/collection/convenience services, private haulers and processors such as the private compost operation owners. Through this, the Agency can provide information and assistance to municipalities to implement PAYT and other recycling incentive programs.
- M. Establishment of a regular schedule of presentations to service clubs and organizations, and hold regular public forums and workshops to educate the public on new and planned initiatives.
- N. Establishment of a regular schedule of communication with the leaders of neighboring planning units.
- O. Evaluation of the standardization of recycling requirements at the various municipal convenience/drop-off stations. Start with integrating the individual municipal requirements and a location map on the new Agency website.
- P. Provision of information to contractors that will promote recovery of construction and demolition debris.
- Q. Evaluation of the feasibility of an Agency sponsored materials waste exchange.

It is important to note that the Plan calls for the facilities and programs that will allow for increases in recycling even beyond the projections in Table 13A below and Table 13 of the Plan. There should be no restriction on the further expansion of recycling activity with the growth of markets and the emergence of new technology during the planning period. Much will depend on the levels of interest and participation by the general public and the availability of funding.

As is shown in Table 13 in the Plan and which is further highlighted in the table below, the current rate of recycling in Dutchess County is 46%, using the standard method employed by planning units throughout the State to calculate the recovery of recyclables through both public and private programs. The projected increase in recycling between 2010 and 2020 of 46% to 55%, will be accomplished primarily by quadrupling the public sector recycling [through the new single stream MRF] and an estimated 10% increase in private sector recycling activity. As also shown in Table 13A below, the Plan projects that this substantial increase in recycling, coupled with improvements in efficiency at the RRF [and potentially later adding a third incineration train at the RRF], will reduce the

volume of waste exported to landfills from 23% to 4%. The table also shows that if public recycling is increased to 55,000 tpy, then by 2020, an overall recycling rate of 57% could be achieved. However, if the RRF is not expanded, the amount of waste exported to landfills in 2020 would be 11% instead of 4%.

**Table 13A**

	2010	2015	2020	No RRF Expansion
Public Recycling	10,630	40,208	45,000	55,000
Private Recycling	199,130	209,087	219,541	219,541
Total Recycling	209,760	249,295	264,541	274,541
Waste-to-Energy	144,729	152,884	194,355	152,884
Landfill/Export	105,271	69,478	20,215	51,716
Total Disposed	250,000	222,362	214,600	204,600
Total Waste Material	459,760	471,657	479,141	479,141
<b>Recycling Rate</b>	<b>46%</b>	<b>53%</b>	<b>55%</b>	<b>57%</b>
<b>Energy Recovery Rate</b>	<b>31%</b>	<b>32%</b>	<b>41%</b>	<b>32%</b>
<b>Landfill Rate</b>	<b>23%</b>	<b>15%</b>	<b>4%</b>	<b>11%</b>

NOTE: The private recycling numbers shown above and in Table 13 of the Plan are taken from annual surveys done by the Agency and reported to the DEC. The data from Table 13 of the Plan on the generation and recycling of construction and demolition debris was not used to calculate the percentages above. The ash from the RRF [which is used as alternative daily landfill cover, thus replacing virgin soil resources and counted by some as a recyclable], was not used in calculating the percentages above. If both the C&D and RRF ash estimates were used, then the recycling rates for 2010, 2015 and 2020 would be 50%, 58% and 64%, respectively.

It should also be noted that there is potential for increased recovery of recyclables through developing technologies for the composting of food and other organic wastes. New York State's draft Beyond Waste Plan identifies a variety of technologies and calls for the development of a series of regional large scale compost facilities throughout the State of New York. Beyond Waste does not identify a particular means of funding, siting or technology selection for regional organic composting facilities. Severe budgetary constraints can be expected to limit the amount of public funding devoted to construction of new facilities on both the state and local level. Siting of a large, centralized facility capable of handling 1,000 or more tons per day of organic waste will be problematic in Dutchess County not only because technical concerns over facility size and issues such as odor control, but because the County's road network in rural, relatively under-populated areas will need improvement to handle the heavy truck traffic such a facility would generate.

Recognizing these challenges, the State's plan does not propose an immediate shift to residential source separation of green waste, but encourages preliminary efforts to develop composting of institutional and commercial organic wastes (e.g., cafeteria and restaurant wastes).

- 2. As this is a dynamic area of waste management, new technologies for organics recycling will likely surface in the coming years, each posing environmental concerns that must be properly addressed prior to planning for their use. Their resultant products must also be fully understood. For example, depending on the waste that is being processed, pathogens, heavy metal, or pesticide/herbicide residues may be present and would need to be managed.*

The Dutchess County Plan proposes to build on existing private programs and facilities, such as those at the area's colleges and McEnroe Organic Farm. If the privately sponsored "MagicSoil" concept becomes a reality, it will further advance organics recovery and could be supported by the County. At the same time, the Plan recognizes that there currently is not ample information on the organics waste stream and that surveys and analysis are needed before specific new programs are designed and implemented.

Finally, recycling efforts in Dutchess County can be expected to benefit from recycling initiatives developed and implemented at the State level, such as new product stewardship programs directed at recovery of discarded materials before they enter the municipal waste stream. The Plan encourages cooperation and facilitation with these and other programs.

- 3. Comments were made advocating the pursuit of a "zero waste" goal.*

Several commenters have advocated the adoption of a "zero waste" goal for the County. Sources referenced in the submitted comments define a "zero waste" plan as largely a call to action for societal change, production and manufacturing change, advanced by state and congressional action. The platform of "zero waste" goes beyond action that can be taken solely by the County, and involves issues that are not directly related to the provision of solid waste management services by a local community. The Dutchess County Local Solid Waste Management Plan is limited in its application to the management of the waste stream of the County, utilizing the governmental powers granted to the County and the Agency by the New York State Constitution and the State Legislature. Implementation of the Plan is also limited by the physical and financial resources available to the Agency and the County during the planning period.

The Zero Waste International Alliance [ZIA] publishes the following definition of "zero waste:"

"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."

Zero Waste America uses the following definition and suggests three (3) legislative steps to zero waste in the United States:

“Zero waste is the recycling of all materials back into nature or the marketplace in a manner that protects human health and the environment.

- A. Develop and implement a comprehensive ‘federal plan’ to end waste disposal through the use of disposal bans – these may be the best tools to support recycling, end waste disposal, and stop waste imports. States may implement ‘disposal bans’ now without waiting for federal action. Minimum recycled content standards, removing unnecessary toxic components, and producer responsibility regulations can also be used to support recycling and end waste disposal. In the absence of a federal plan, litigation in the federal courts is an option for the Department of Justice, state governments, private citizens, and others to compel the EPA, as well as the states and U.S. territories to enforce the state plan provisions of the Solid Waste Disposal Act.
- B. Congressional legislation is needed to prohibit the import and export of disposal waste from foreign countries. This is an issue not addressed in the Solid Waste Disposal Act. See: Foreign Waste Imports.
- C. Increase support by Congress of family planning programs and non-discriminatory immigration restrictions. See: Negative Population Growth and Population – Environmental Balance. However, this is not an endorsement of these groups or contraceptives [estrogen and progestin] which are harmful to health and the environment [particularly drinking water].”

The Citizens Environmental Coalition has published a “New Yorkers for Zero Waste Platform 2010” proposing 12 new mandates:

- A. Establish a moratorium on all new waste incinerators or combustors and expansions;
- B. Ban waste haulers and municipalities from sending recyclable materials for disposal;
- C. Halt all increases in capacity at the state’s largest landfills;
- D. Require all local solid waste planning units and haulers sending garbage for disposal to demonstrate the presence of adequate programs for waste reduction, recycling and composting in the service area;
- E. Rapidly implement organics collection programs and develop the needed composting and anaerobic digestion infrastructure. Ban yard trimmings from

disposal now, and enforce. Establish a statewide ban on the disposal of food scraps by 2013;

- F. Require all communities to adopt incentive/disincentive programs such as PAYT;
- G. Adopt extended producer responsibility [EPR] legislation;
- H. Regulate solid waste generated by all sectors. Bring waste haulers under the jurisdiction of DEC;
- I. State and local plans must decrease disposal by 85% by 2020;
- J. Ensure accurate measurement;
- K. Ensure that Zero Waste Programs are a substantial part of the new state Climate Action Plan;
- L. Establish a funding stream to fund more sustainable solid waste programs...licensing fees, facility permit fees, and surcharges on disposal should all be used. A surcharge of \$20.00 per ton of MSW generated could provide \$5.00 per ton to the state and \$15.00 per ton to local planning units.

The Dutchess County LSWMP supports policies to reduce the volume of waste generated by society, as those policies are developed and addressed through state legislation, such as the recent NYS Electronic Equipment Recycling and Reuse Act. Further steps toward “zero waste” that may be considered by the U.S. Congress and the State of New York can be reviewed by the Agency and the County as they arise during the upcoming planning period. Because the Agency and the County are empowered to address the management of solid waste generated within Dutchess County, the Plan identifies a series of concrete and feasible steps to increase recycling, recover energy from wastes that cannot be recycled and reduce reliance on landfills in other communities for the disposal of Dutchess waste. Nothing in the Plan precludes the Agency or the County from expressing support for, or working to induce the State Legislature to adopt, tenets of the “zero waste” movement described above.

4. *Comments were received both supportive of and critical of the idea of pursuing an in-county ash disposal landfill [ashfill].*

It is recognized in the Plan that the development of a new local ashfill would be an extremely difficult, time consuming, expensive and likely controversial process. This possibility, however, has been identified because the cost of long haul and disposal is not under local control, and the Agency and County will remain vulnerable to price hikes in fuel and transport cost, as well as tipping fee increases if the current long haul to disposal continues. The potential for in-County disposal of ash residue should remain an option to avoid these risks.

5. *Comments were received suggesting the development of new private facilities for the processing of certain portions of the waste stream.*

A representative of Hudson Baylor appeared at the public hearing and outlined the company's plan to develop a new single stream materials recovery facility in Beacon, which would be capable of receiving and processing recyclables generated in Dutchess County. This is consistent with the Plan and it represents the principal means of substantially increasing the recovery of recyclables through the replacement of the existing, outmoded facility. The track record of the single stream technology was reviewed and is recommended in the Plan.

A representative of MagicSoil submitted a comment indicating the company's intent to develop a "1000 ton per day regional food waste composting facility which will likely be located in the Town of East Fishkill." The individual goes on to state that "This won't cost the County or County taxpayers anything." This is also consistent with the development and expansion of public-private partnerships as outlined in the Plan. Although no specifics have been provided on feedstock materials or the track record of the technology, should this initiative be successful, it could provide for substantial recovery of organics generated in Dutchess County.

6. *Comments were made that the Plan privileges and over-emphasizes waste-to-energy disposal and the use of the Resource Recovery Facility (RRF) over recycling and organics composting, that the operation of the RRF is not cost-effective when compared to recycling technologies, that the RRF consumes more energy than it generates for sale, and that the use of the RRF should be phased out.*

The Plan proposes to substantially increase public recycling as the primary means of reducing the current dependence on waste exportation and landfilling. As set forth in the Table prepared in response to comment #1, it is estimated that over 105,000 tons per year of waste generated in Dutchess County is exported to landfills for disposal, in addition to the 150,000 tons that is converted to energy at the RRF. The Plan proposes to reduce the amount of waste exported and landfilled in other communities to less than 60,000 tons per year through increased emphasis on recycling, the development of a new single stream Materials Recovery Facility, and the gradual development of green waste composting at existing facilities in the County, including those located at the region's colleges and universities, and at privately operated facilities such as McEnroe Farms. The Plan further recommends that other recycling and composting initiatives be supported, encouraged and facilitated.

The draft of the New York State Solid Waste Management Plan "Beyond Waste" recognizes that recycling and waste-to-energy strategies are compatible:

*Experience in New York State, however, has shown that MWCs can co-exist with very strong recycling programs as evidenced by one of the State's highest recovery rates in Onondaga County-67%.*

Should recycling and composting initiatives exceed expectations and effectively reduce the amount of non-recyclable waste to zero, both landfilling and waste-to-energy disposal would be unnecessary and all such facilities could be phased out.

However, it must be recognized that pending the full development of all reduction, recycling and composting initiatives that are feasible for Dutchess County, a significant amount of non-recyclable waste will remain. The Plan identifies waste-to-energy (WTE) disposal at the Agency's existing Resource Recovery Facility as a superior disposal method than the available alternative: long haul transport to landfills. Currently, the RRF recovers and exports approximately 48.3 million kwh of energy for sale to Central Hudson Gas and Electric each year. As discussed in Section 6.4.1 of the Plan, the US EPA has found that WTE is seven to eleven times more efficient at recovering energy from the wastes, while landfills generate two to six times the amount of GHGs as WTE facilities.

The Plan does not recommend the expansion of the RRF. It recommends that the success of the waste reduction and recycling initiatives called for as a priority of the Plan be evaluated after they are fully implemented. If all feasible steps to reduce waste generation and maximize recycling have been taken and have not fully eliminated the export of solid waste to landfills outside of the County, the Agency should then consider the technical and financial feasibility of expanding the capacity of the RRF to eliminate landfilling of non-recyclable waste.

7. *Comments were made that the operation of the RRF results in the emission of toxic substances and contributes to poor air quality in the Dutchess County region.*

Air emissions from the RRF are regulated and monitored by the NYSDEC and the US EPA pursuant to a permit issued under Title V of the Clean Air Act. The Facility has met all regulatory requirements and in most cases operates significantly below allowable limits for pollutant discharges. In stack tests following installation of the capital improvements funded by the 2007 Bonds, the Facility emitted no more than 18% of allowable particulate matter, 41% of allowable SO<sub>2</sub>, 78% of allowable NO<sub>X</sub>, 7% of allowable dioxins and 5% of allowable metals. The air pollution controls installed as a result of the 1990 Clean Air Act Amendments yielded reductions of over 88% in emissions of sulfur dioxide, 92% of hydrogen chloride and 94% of mercury.

8. *Comments were made that the ash residue generated by the RRF is toxic material.*

The ash residue generated at the Facility is regularly tested by US EPA approved testing through the Toxic Compound Leaching Procedure (TCLP) to determine whether the residue could be classified as a hazardous waste. No TCLP test has ever resulted in a determination that ash residue from the facility is hazardous. Moreover, ash from the RRF has been approved by the NYSDEC through additional testing procedures for use as daily cover material at permitted landfills in New York State.

9. *Comments were made that the adoption of a “user fee” by the County as a means of addressing payment of the County’s Net Service Fee obligation should not be a recommendation in the Plan.*

In deference to comments expressed by Mr. Robert C. Rolison, Chairman of the Dutchess County Legislature, the recommendation that a user fee system be adopted to provide a dedicated source of funding for environmental improvements and as a means to allow the County to meet its Net Service Fee obligations pursuant to the Disposal Agreement between the Agency and the County, has been deleted from the Plan. The ways and means of appropriation of funding for County obligations is a matter within the sound discretion of the Legislature and not a core concern of a Local Solid Waste Management Plan prepared pursuant to the NYS Environmental Conservation Law. However, the Plan continues to recommend that the Agency and the County identify an equitable and reliable funding source for Net Service Fee obligations.

10. *Comments were made that the adoption of flow control by the County as a means of directing waste-to-County-designated facilities should not be a recommendation of the Plan.*

In deference to comments expressed by Mr. Robert C. Rolison, Chairman of the Dutchess County Legislature, the recommendation that a flow control law be adopted to direct solid waste and recyclables generated in Dutchess County to designated public facilities, has been deleted from the Plan. However, the Plan recognizes that flow control is an administrative tool available to the County, and the Plan retains a detailed discussion of the potential use of flow control to achieve various goals in managing the waste stream of the County.

11. *Comments were made that flow control should be adopted as a means of directing waste to County-designated facilities and improving Agency and County solid waste financing, and should be a recommendation of the Plan.*

The ways and means of enforcement of local laws to direct or encourage the delivery of waste and recyclables to the solid waste facilities of the Agency or the County is a matter within the sound discretion of the Legislature, and it is recommended that this comment be forwarded to the Legislature for its consideration.

12. *Comments were made that rail haul of solid waste, including ash residue, that is not recycled or disposed of at the RRF, should be explored by the Agency and the County.*

The use of rail hauling for solid waste destined for disposal at distant locations is a growing practice for New York Planning Units that rely on distant landfills for disposal. Transportation costs, on a per-ton basis, can be lower than costs for trucking the same amount of material, and rail extends the range of affordable shipment. Moreover, many landfills in southern and mid-western states, as well as western New York, are equipping their facilities with rail transload facilities to accommodate the receipt of waste shipped

in this manner. However, the capital cost of developing a local rail transfer facility can be high.

A discussion of the potential use of freight-rail service for movement of solid waste has been added to the Plan in Section 6.4.5 Transfer Capacity.

- 13. Comments were received from the Village of Red Hook regarding their waste and recyclables programs to the effect that, if adopted, flow control legislation should be crafted so as not to interfere with local PAYT programs or require transport of waste or recyclables from the northern to the southern part of the County.*

The accomplishments of the Village are recognized, especially the PAYT program which is driving a high rate of recycling. It is not the intent of anything in the Plan to cause a negative impact on the Village. Should the County elect to implement flow control, measures can be taken to insure that the Village's programs are not negatively impacted.

The Plan encourages the adoption of PAYT programs by the County's constituent municipalities, and the encouragement and support of the Agency in implementing such programs. Because local collection and drop-off practices vary widely among the County's towns and villages, the Plan does not recommend any diminishment in home rule authority, and encourages municipalities to innovate in crafting successful PAYT programs to meet local needs and preferences.

The Plan's discussion of flow control recommends that, if adopted, a transfer facility be provided for the towns and villages in the northern tier of the County, and that use of the Ulster County Resource Recovery Agency transfer station and MRF be considered, among other locations.

- 14. Comments were made that Recycle Depot was not identified in the Plan, that tipping fees should be equalized for all haulers, that solid waste permits should not be required for all haulers, that insurance requirements should be relaxed and that Construction and Demolition debris should not be subject to flow control.*

Recycle Depot is recognized in §3.5.2 of the Plan as one of the County's largest C&D processors. The Plan acknowledges the desirability of a "level playing field" for all haulers working in the County, particularly with respect to tipping fees. The Plan does not recommend that the Agency or the County become directly involved in the receipt or processing of construction debris, which should be continue to be managed by the private sector. However, the County and the Agency should continue to monitor the practices of C&D facilities to assist and encourage the development of their recycling capacities. The Plan does not recommend that flow control be adopted for C&D materials. The Plan does not make any recommendation regarding insurance requirements for haulers working in the County.

NOTICE

PUBLIC COMMENT PERIOD

DRAFT LOCAL SOLID WASTE MANAGEMENT PLAN

for

DUTCHESS COUNTY, NEW YORK

The Dutchess County Resource Recovery Agency ("DCRRA") has prepared a Draft Local Solid Waste Management Plan for Dutchess County (the "Draft Plan") pursuant to N.Y. Environmental Conservation Law §27-0107 to be effective January 1, 2011.

The Draft Plan is available for review on the DCRRA website, [www.dcrra.org](http://www.dcrra.org), at the DCRRA's offices, 96 Sand Dock Road, Poughkeepsie, NY 12601, M-F between 8:00 a.m. and 3:30 p.m., and at other locations listed on the DCRRA website.

Public comments on the Draft Plan will be received from September 1, 2010 through October 15, 2010 and may be mailed or delivered to the DCRRA offices, emailed to DCRRA at [lswmp@dcrra.org](mailto:lswmp@dcrra.org) or faxed to DCRRA at 845-462-6090, Attn: W. J. Calogero or D. Walsh.

A public hearing on the Draft Plan will be held, and notice of it will be published and posted on the DCRRA website.

September 1, 2010

DUTCHESS COUNTY RESOURCE RECOVERY AGENCY

By: WILLIAM J. CALOGERO

EXECUTIVE DIRECTOR

96 Sand Dock Road

Poughkeepsie, New York 12601

Phone: 845-463-6020

Website: [www.dcrra.org](http://www.dcrra.org)

Distribution of  
Notice of Public Comment Period

DRAFT LOCAL SOLID WASTE MANAGEMENT PLAN

The annexed Notice of Public Comment period was:

Emailed to the following on 8/27/20: Poughkeepsie Journal (published 9/1/10), Southern Dutchess News (published 9/1/10), Northern Dutchess News (published on 9/22/10) and NYS DEC ENB (posted 9/1/10).

Posted on DCRRA website on 9/1/10.

Sent on 8/30/2010 to Ritamary Bell (Town of Stanford Town Clerk) to be forwarded to all Town Clerks in Dutchess County with a request that it be posted.

Mailed 8/31/2010 to the following City & Village Clerks and City of Poughkeepsie Chamberlain: Town of Amenia, City of Beacon, Town of Clinton, Town of Dover, Town of Poughkeepsie, Town of East Fishkill, Town of Fishkill, Village of Fishkill, Town of Milan, Village of Millbrook, Village of Millerton, Town of Pawling, Village of Pawling, Town of Pine Plains, Town of Pleasant Valley, City of Poughkeepsie, Town of Red Hook, Village of Red Hook, Town of Rhinebeck, Village of Rhinebeck, Town of Stanford, Village of Tivoli, Town of Union Vale, Village of Wappingers Falls, Town of Wappinger and Town of Washington.

Mailed 8/30/10 to the following: Dutchess County Clerk, Orange County Clerk, Ulster County Clerk, Columbia County Clerk and Putnam County Clerk.

Mailed on 9/1/10 to: Roy Brown, Chairman, Columbia County Supervisors; Jolene D. Race, Director of Solid Waste, Columbia County; Edward A. Diana, Orange County Executive, Peter S. Hammond, Orange County Deputy Commissioner for Solid Waste; Lindsay Carille, Sr. Planner, Dutchess County Department of Planning; William R. Steinhaus, Dutchess County Executive; Mike Hein, Ulster County Executive DPW; Michael Bemis, Executive Director, Ulster County Resource Recovery Agency; Robert J. Bondi, Putnam County Executive; and Putnam County Department of Health.

Hand Delivered 8/31/2010 to the following: Red Hook Library, Adriance Memorial Library, Dover Plains Library, North East -

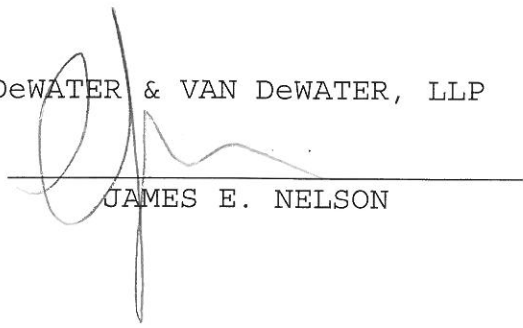
Millerton Library, Millbrook Library and Howland (Beacon) Library for posting. Copies of Draft LWSMP also delivered for public review.

Mailed 8/31/2010 to the following Dutchess County local waste haulers: Waste Management of New York, LLC; Carmen Barbato, Inc. 551 Main Corp (dba East Coast Services); Frontline Waste Management Corp. (dba Competition Carting); Hess Hauling; H.G. Page & Sons, Inc.; Industrial Recycling Systems, Inc.; Lamela Sanitation Services, Inc.; Liberta Brothers, Inc.; Mid Hudson Structural Concrete, Inc. (dba Recycle Depot); Nieco Container Corp.; Package Pavement Company, Inc.; Hudson Baylor Corp.; Riccelli Enterprises, Inc.; Royal Carting of Dutchess County Inc.; Santaro Development LLC; Think Green Junk Removal, Inc.; The Tirado Group (dba 1-800-Got-Junk); Upstate Shredding, LLC; Valley 82 Holding Corp (dba Welsh Sanitation Service); Covanta Hudson Valley; Robison's Refuse Service, Inc and Panichi Holding Corp. (dba Royal Carting Service).

Dated: November 24, 2010

VAN DeWATER & VAN DeWATER, LLP

By:

  
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JAMES E. NELSON

**NOTICE**  
**PUBLIC HEARING**  
**and**  
**PUBLIC COMMENT PERIOD**  
**DRAFT LOCAL SOLID WASTE MANAGEMENT PLAN**  
**for**  
**DUTCHESS COUNTY, NEW YORK**

The Dutchess County Resource Recovery Agency ("DCRRA") has prepared a Draft Local Solid Waste Management Plan for Dutchess County (the "Draft Plan") pursuant to N.Y. Environmental Conservation Law §27-0107 to be effective January 1, 2011.

A Public Hearing will be held at the City of Poughkeepsie Common Council Chambers, City Hall (3<sup>rd</sup> Floor), 62 Civic Center Plaza, Poughkeepsie, New York 12601 on October 12, 2010 from 5:30 p.m. to 7:30 p.m. for the purpose of accepting public comments on the Draft Plan.

The Draft Plan is available for review on the DCRRA website [www.dcrra.org](http://www.dcrra.org), at the DCRRA's offices, M-F between 8:00 a.m. and 3:30 p.m. and at the Adriance Memorial Library, 93 Market Street, Poughkeepsie, NY; the Dover Plains Library, 1797 Route 22, Dover Plains, NY; the Howland Public Library, 313 Main Street, Beacon, NY; the Millbrook Library, 3 Friendly Lane, Millbrook, NY; the North East/Millerton Library, Main Street, Millerton, NY; and the Red Hook Public Library, 7444 South Broadway, Red Hook, NY.

In addition to the Public Hearing, public comments on the Draft Plan will be received through October 15, 2010 and may be mailed or delivered to the DCRRA offices, emailed to DCRRA at [lswmp@dcrra.org](mailto:lswmp@dcrra.org) or faxed to DCRRA at 845-462-6090, Attn: W. J. Calogero or D. Walsh.

September 29, 2010

DUTCHESS COUNTY RESOURCE RECOVERY AGENCY  
By: WILLIAM J. CALOGERO  
EXECUTIVE DIRECTOR  
96 Sand Dock Road  
Poughkeepsie, New York 12601  
Phone: 845-463-6020  
Website: [www.dcrra.org](http://www.dcrra.org)

Distribution of  
Notice of Public Hearing

DRAFT LOCAL SOLID WASTE MANAGEMENT PLAN

The annexed Notice of Public Hearing was:

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Posted on DCRRA website on 9/22/10.

Sent on 9/25/2010 to Ritamary Bell (Town of Stanford Town Clerk) to be forwarded to all Town Clerks in Dutchess County with a request that it be posted.

Mailed 9/23/10 to the following: Dutchess County Clerk, Orange County Clerk, Ulster County Clerk, Columbia County Clerk and Putnam County Clerk.

Mailed 9/24/2010 to the following City & Village Clerks and City of Poughkeepsie Chamberlain: City Clerk - Beacon, Village Clerk - Fishkill, Village Clerk - Millbrook, Village Clerk - Millerton, Village Clerk - Pawling, Village Clerk - Red Hook, Village Clerk - Rhinebeck, Village Clerk - Tivoli, Village Clerk - Wappingers Falls, Deanne Flynn, Chamberlain of City of Poughkeepsie.

Mailed 9/24/2010 to the following: Town of Amenia, City of Beacon, Town of Clinton, Town of Dover, Town of Poughkeepsie, Town of East Fishkill, Town of Fishkill, Village of Fishkill, Town of Milan, Village of Millbrook, Village of Millerton, Town of Pawling, Village of Pawling, Town of Pine Plains, Town of Pleasant Valley, City of Poughkeepsie, Town of Red Hook, Village of Red Hook, Town of Rhinebeck, Village of Rhinebeck, Town of Stanford, Village of Tivoli, Town of Union Vale, Village of Wappingers Falls, Town of Wappinger and Town of Washington.

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Mailed on 9/24/10 to: Roy Brown, Chairman, Columbia County Supervisors; Jolene D. Race, Director of Solid Waste, Columbia

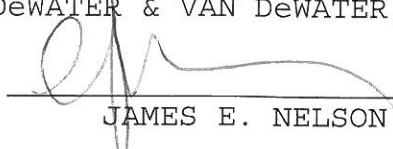
County; Edward A. Diana, Orange County Executive, Peter S. Hammond, Orange County Deputy Commissioner for Solid Waste; Lindsay Carille, Sr. Planner, Dutchess County Department of Planning; William R. Steinhaus, Dutchess County Executive; Mike Hein, Ulster County Executive DPW; Michael Bemis, Executive Director, Ulster County Resource Recovery Agency; Robert J. Bondi, Putnam County Executive; and Putnam County Department of Health.

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Dated: November 24, 2010

VAN DeWATER & VAN DeWATER, LLP

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JAMES E. NELSON