Waste Reduction and Recycling

Introduction

Waste Reduction is an integral part of Florida's municipal solid waste (MSW) management system. In Florida it is measured by assessing the amount of waste that is not being combusted in one of the State's waste-to-energy facilities or buried in a landfill. The most recognizable form of waste reduction in Florida is recycling. Section 403.706, Florida Statutes, established two goals for waste reduction and recycling:

Counties with populations greater than 75,000 were required to meet a 30% adjusted waste reduction rate for all MSW by the end of calendar year 1994. Counties with populations below 75,000 could elect to provide residents the "opportunity to recycle" in lieu of achieving the 30% reduction goal.

All counties were required to initiate a recycling program designed, at a minimum, to recover a majority of the newspaper, glass, aluminum cans, plastic bottles and steel cans from the solid waste stream.

Is Florida Reducing Its Waste?

When assessed on a per capita basis, the level of waste disposed has been steadily declining in past years (Figure 8). In 1998, however, the total amount of MSW being reported as disposed is greater than previous years. This is primarily because the Department implemented a Construction and Demolition material reporting mechanism which provided more accurate accounting of waste material being managed than was previously available to the Department. This uncovered a greater amount of MSW being managed than was previously known, while the tons of materials recycled changed little in either a positive or negative direction (other than C&D material). As a result,

Figure 8: Florida's MSW Recycling and Disposal per Capita (July 1, 1989 - December 31, 2000)

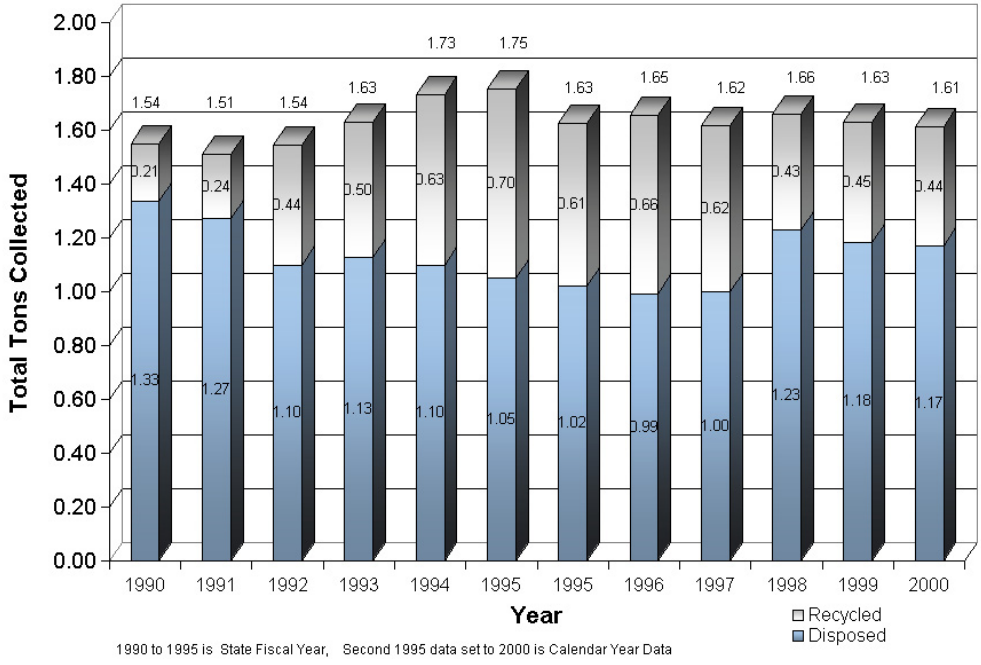
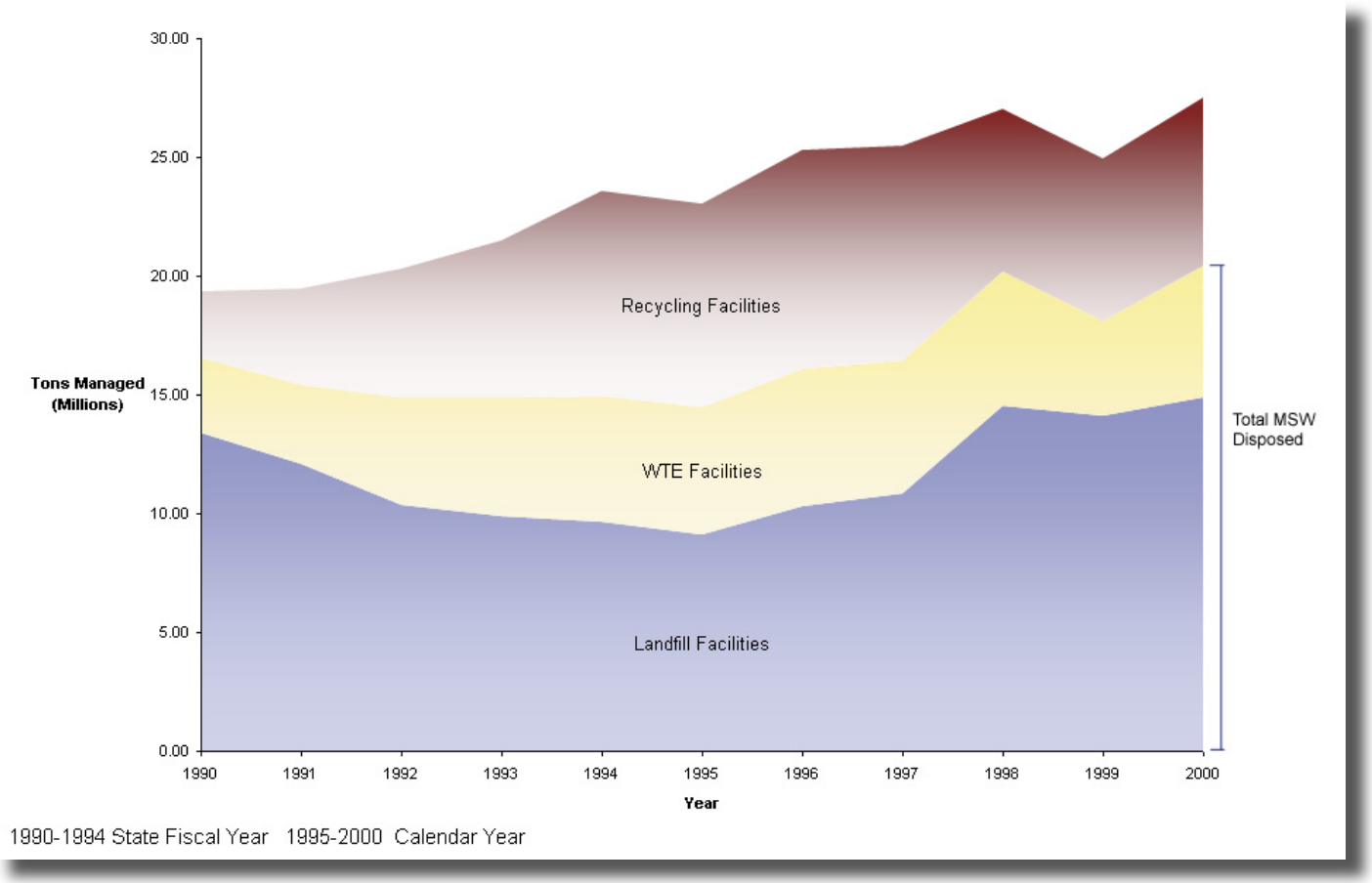


Figure 9: Total Tons of MSW Managed by Florida Facilities (1990-2000)



the calculations for the percentage of materials recycled showed decreases, as did the calculations for the per capita amounts of recycling. Conversely, the calculations for the percentages of materials disposed showed increases.

Measuring Florida's progress towards waste reduction requires a "base year" to be determined. However, the Florida Legislature has not defined one. Using FY88-89 as the base year, only 18 counties met the 30 percent waste reduction goal by 2000. Using FY92-93 as the base year, only 13 counties met the goal in 1998. On a statewide basis, Florida has at best only achieved a per capita waste reduction rate of 27 percent.

For specific waste reduction progress, reference Table 2B in the appendices or at:

http://www.dep.state.fl.us/waste/categories/recycling/pages/01.htm

When progress towards the waste reduction goal is assessed as a function of total tons managed (versus per capita), the State's progress toward waste reduction becomes less clear (Figure 9). The total amount of MSW being managed by disposal facilities appears to be on the increase since 1995. This trend may simply be a function of the State's rapid population growth. With roughly 700 new residents per day, Florida's waste reduction program cannot keep pace.

"Recycling" as a proxy for Waste Reduction

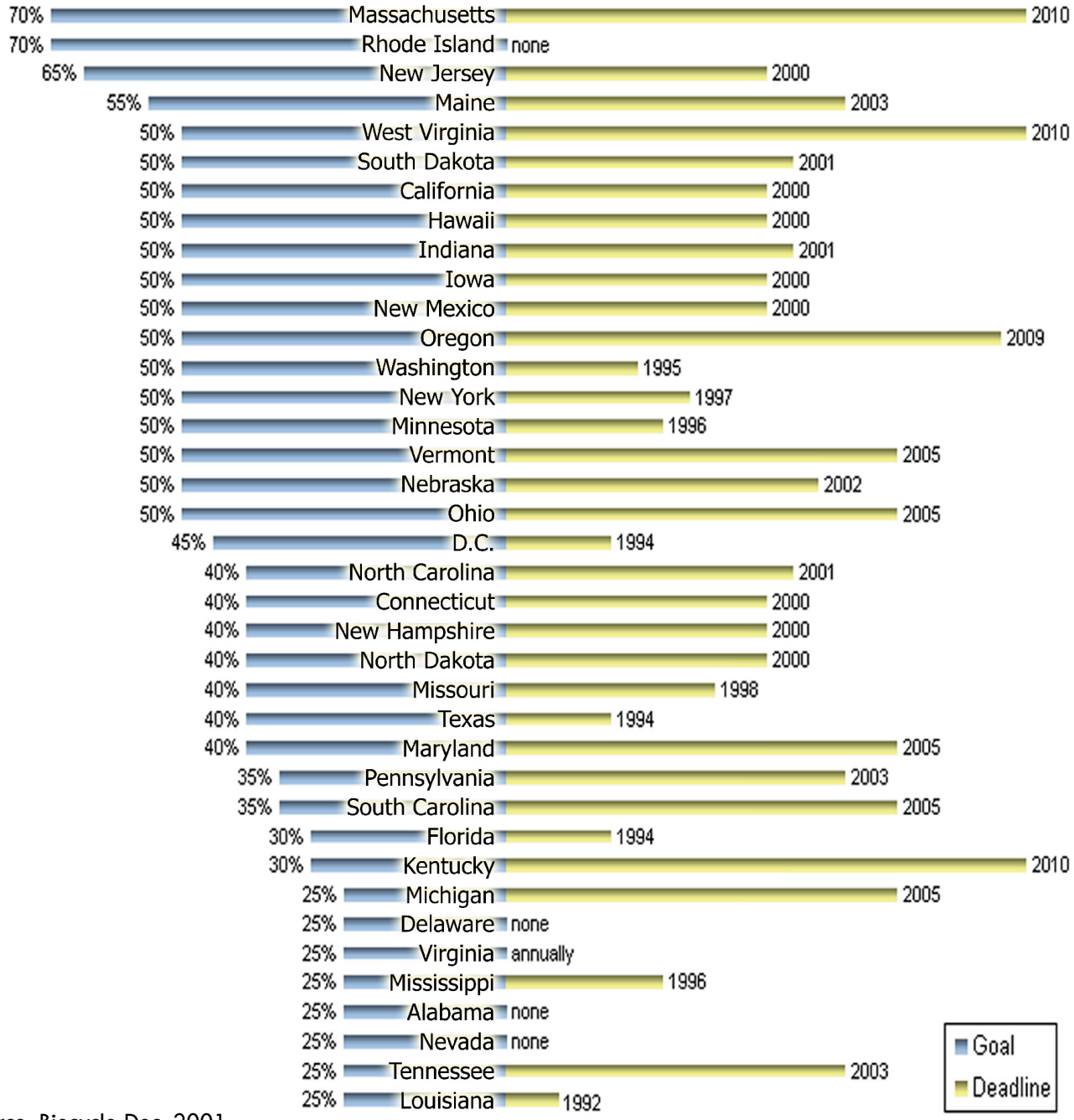
Although Florida Statute 403.706 establishes a goal for waste reduction, the language is commonly interpreted by the legislature, state agencies, local governments and the general public as a recycling rate. Because growth in recycling approximates Florida's progress towards waste reduction, the balance of this report will focus on an analysis of the State's recycling rates.

Florida's Recycling Program

Florida collected 25.8M tons of MSW 2000. Of that amount, 7.0M tons were recycled. Recycling is defined by Florida Statute 403.703 as any process by which solid waste, or materials which would otherwise become solid waste, are collected, separated, or processed and reused or returned to use in the form of raw materials or products. Recycling is an important strategy in Florida's plan to reduce the amount of waste material being landfilled annually.

Recycling goals and deadlines for 37 states and the District of Columbia are reported in Figure 10. The various state goals range from 70% in Massachusetts and Rhode Island to 25% in 8 states in including Mississippi and Alabama. It should not be assumed

Figure 10: State Diversion Goals and Deadlines



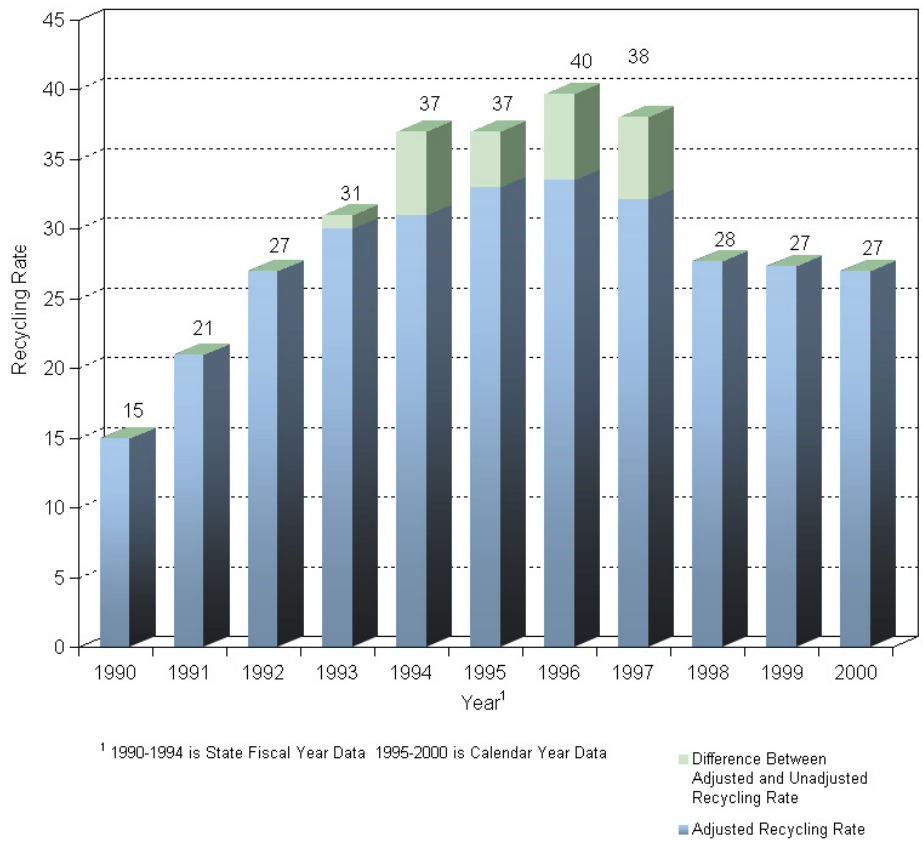
Source: Biocycle Dec. 2001

Table 3: Florida Municipal Solid Waste Collected and Recycled (CY 1999-2000)

Materials	Municipal Solid Waste Collected[1]				Municipal Solid Waste Recycled									
	Tons per Year	% of Total Tons	Tons per Year	%of Total Tons	Public Tons	Private Tons	Public Tons	Private Tons	Total Tons	% of Total Tons	Total Tons	% of Total Tons	Material Recycling Rate[2] (percent)	
	1999		2000		1999		2000		1999		2000		1999	2000
1. Newspapers	1,377,973	5.5	1,346,712	5.2	371,118	192,452	333,531	245,090	563,570	8.3	578,621	8.2	40.9	43.0
2. Glass	762,921	3.1	741,184	2.9	125,757	81,662	88,017	78,458	207,419	3.0	166,475	2.4	27.2	22.0
3. Aluminum Cans	159,226	0.6	171,285	0.7	11,901	19,698	11,124	20,972	31,598	0.5	32,096	0.5	19.8	19.0
4. Plastic Bottles	252,203	1.0	285,125	1.1	31,358	6,264	28,591	14,599	37,622	0.6	43,191	0.6	14.9	15.2
5. Steel Cans	300,373	1.2	313,294	1.2	67,302	40,118	55,201	32,380	107,419	1.6	87,581	1.2	35.8	28.0
6. C & D Debris	4,928,851	19.8	5,954,855	23.2	11,573	287,549	24,430	491,141	299,122	4.4	515,571	7.5	6.1	8.9
7. Yard Waste	3,876,383	15.5	3,613,907	14.0	1,207,707	652,013	1,074,763	867,838	1,859,720	27.3	1,942,601	27.5	48.0	53.7
8. White Goods	230,524	0.9	284,653	1.1	46,830	66,541	48,106	104,380	113,371	1.7	152,486	2.2	49.2	53.6
9. Tires	179,340	0.7	168,544	0.7	19,993	35,209	21,472	32,390	55,202	0.8	53,863	0.8	30.8	32.1
10. Other Plastics	974,858	3.9	1,018,582	4.0	1,413	9,670	1,628	9,910	11,083	0.2	11,538	0.2	1.1	1.1
11. Ferrous Metals	2,170,814	8.7	2,121,539	8.2	145,776	1,151,130	162,907	1,152,642	1,296,906	19.0	1,315,549	18.7	59.7	62.2
12. Non-Ferrous Metal	548,858	2.2	515,197	2.0	15,174	166,399	22,594	175,904	181,573	2.7	198,498	2.8	33.1	39.0
13. Corrugated Paper	2,131,212	8.5	2,177,959	8.5	97,458	951,319	90,535	922,672	1,048,778	15.4	1,013,207	14.4	49.2	47.0
14. Office Paper	746,726	3.0	911,344	3.5	14,390	121,079	10,222	153,768	135,469	2.0	163,991	2.3	18.1	18.0
15. Other Paper	2,167,918	8.7	2,212,239	8.6	51,650	90,446	42,952	121,250	142,096	2.1	164,201	2.3	6.6	7.4
16. Food Wastes	1,329,485	5.3	1,386,026	5.4	2,737	55,463	2,089	63,482	58,200	0.9	65,574	0.9	4.4	4.7
17. Textiles	615,028	2.5	642,082	2.5	454	32,091	281	18,997	32,545	0.5	19,278	0.3	5.3	3.0
18. Miscellaneous	2,198,147	8.8	1,888,644	7.3	145,533	149,119	17,337	109,389	294,651	4.3	126,726	1.5	13.4	7.0
19. Process Fuel[3]	N/A	N/A	N/A	N/A	192,322	153,253	228,282	174,959	345,575	5.1	403,241	5.7	100.0	100.0
Total[4]	24,950,840	100.0	25,753,171	100.0	2,560,445	4,261,473	2,264,062	4,790,221	6,821,918	100.0	7,054,288	100.0	27.3	27.4

[1] Municipal solid waste collected is the total recycled, landfilled and combusted.
[2] Unadjusted recycling rate.
[3] Process fuel is composed of yard, wood and paper waste used in process boilers.
[4] Process fuel is not included in the total. The tonnage collected has been counted in other material categories.

Figure 11: Annual Adjusted and Unadjusted Recycling Rate (1990-2000)



that a higher numerical goal in one state is harder to reach or represents more recycling than a lower goal in another state. Various states use different methods of calculating progress towards their goal. For example, some states allow automobile recycling to count towards their goal, while others (including Florida) do not. Over the past several years, various states and the USEPA have attempted to standardize recycling and waste reduction accounting processes nationwide. This effort has been frustrated because numerous state statutes define solid waste terms and formulas in various ways, while the federal government has no authority to impose any particular accounting process on the states.

Table 3 summarizes the recycling data for 19 categories of material collected in Florida in 1999 and 2000. The amount recycled through publicly-owned versus privately-owned facilities is broken out for each material type. The recycling rate for each material is shown far right columns. At first glance, several rates might appear much lower than numbers published through industry trade groups. For example, Florida reports a 19 percent recycling rate for aluminum cans in 2000, whereas the national industry estimate is 56 percent. This discrepancy might be explained by noting that the waste composition analyses of many Florida counties have not been updated in several years. This could result in an artificially high estimate of the amount of aluminum cans in the MSW stream and thus a lower recycling rate. Another explanation may be that the "bottle bill" states (those states that offer a return deposit on bottles) have such a high recycling rate that it pulls the national average up.

The focus of this report is the data presented by each of Florida's counties. That data for 1999 and 2000 shows the "unadjusted" and the "adjusted" recycling rates to be 27 percent. A discussion of the distinction between adjusted and unadjusted follows.

Progress Toward Meeting the 30 Percent Recycling Goal

Florida Statute 403.706(4)(a) requires that no more than one-half of the 30 percent waste reduction/ recycling goal can be met by a combination of certain special wastes: yard trash, white goods, C & D debris, tires, and process fuel. Process fuel is composed of pre-treated yard trash, wood and paper waste used in process boilers.

Figure 12: Recycling in Florida's Counties (CY 2000)

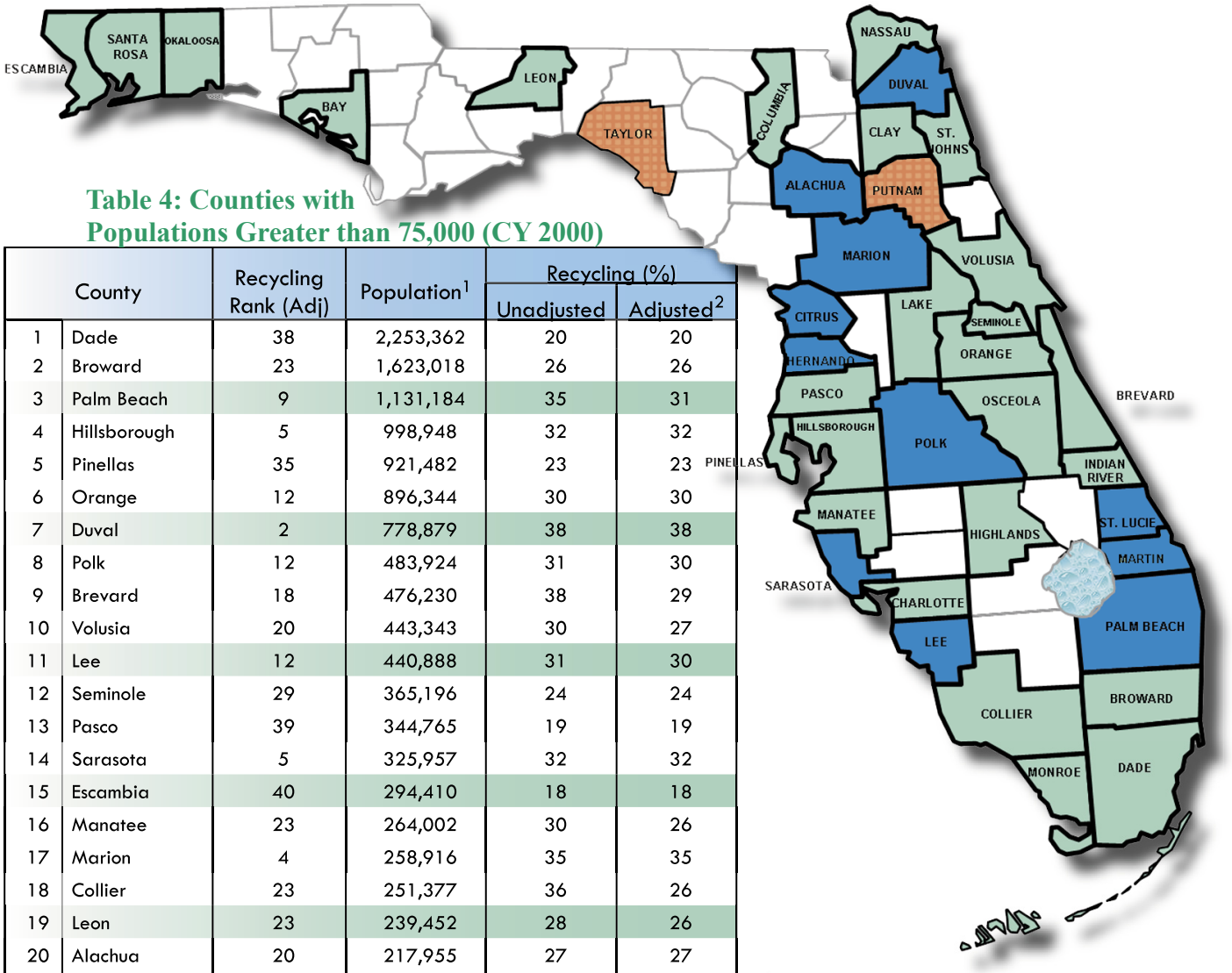


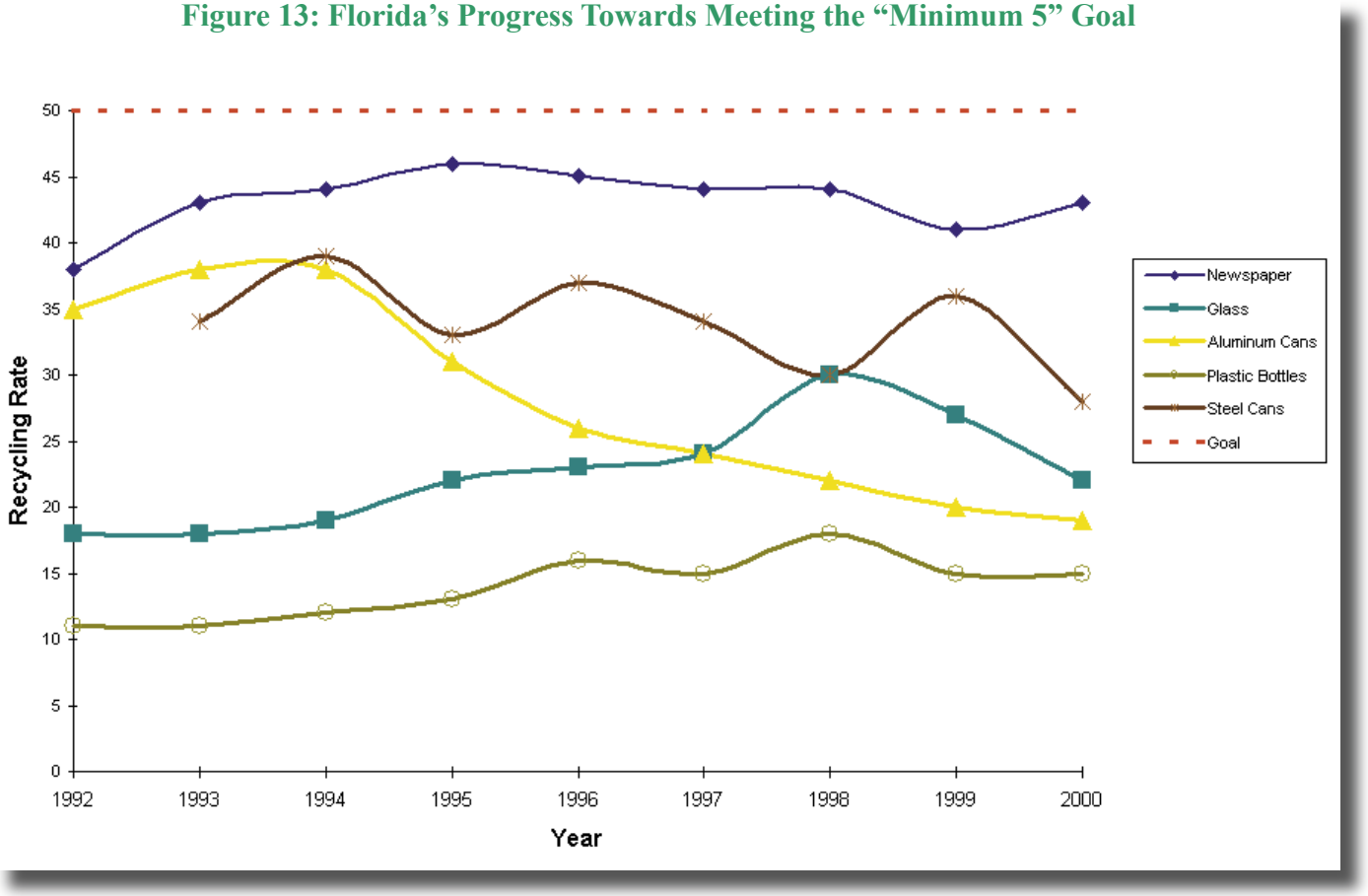
Table 4: Counties with Populations Greater than 75,000 (CY 2000)

	County	Recycling Rank (Adj)	Population[1]	Recycling (%)	
				Unadjusted	Adjusted[2]
1	Dade	38	2,253,362	20	20
2	Broward	23	1,623,018	26	26
3	Palm Beach	9	1,131,184	35	31
4	Hillsborough	5	998,948	32	32
5	Pinellas	35	921,482	23	23
6	Orange	12	896,344	30	30
7	Duval	2	778,879	38	38
8	Polk	12	483,924	31	30
9	Brevard	18	476,230	38	29
10	Volusia	20	443,343	30	27
11	Lee	12	440,888	31	30
12	Seminole	29	365,196	24	24
13	Pasco	39	344,765	19	19
14	Sarasota	5	325,957	32	32
15	Escambia	40	294,410	18	18
16	Manatee	23	264,002	30	26
17	Marion	4	258,916	35	35
18	Collier	23	251,377	36	26
19	Leon	23	239,452	28	26
20	Alachua	20	217,955	27	27
21	Lake	23	210,528	26	26
22	Saint Lucie	19	192,695	39	28
23	Osceola	62	172,493	7	7
24	Okaloosa	44	170,498	16	16
25	Bay	44	148,217	16	16
26	Charlotte	37	141,627	21	21
27	Clay	29	140,814	24	24
28	Hernando	5	130,802	32	32
29	Martin	9	126,731	32	31
30	Saint Johns	52	123,135	12	12
31	Citrus	29	118,085	31	30
32	Santa Rosa	36	117,743	28	22
33	Indian River	29	112,947	39	24
34	Highlands	23	87,366	26	26
35	Monroe	49	79,589	14	14

[1] 2000 Populations used by FDEP to allocate Recycling and Education (R&E) Grants for the 2000-2001 grant cycle.

[2] The Legislature established a goal of 30% by the end of 1994 for Counties with a population over 75,000.

Figure 13: Florida's Progress Towards Meeting the "Minimum 5" Goal



A county's unadjusted recycling rate is calculated by dividing the weight of recycled MSW by the total weight of MSW. Recycling rates are then adjusted to reflect the statutory requirements for special wastes. The adjusted recycling rate is determined by first calculating the percent of special wastes recycled. Divide the total weight of special wastes recycled by the total weight of all MSW. If the result is less than 15 percent, no adjustment is needed. If the result is greater than or equal to 15 percent, take the unadjusted recycling rate percent, subtract the percent of special waste recycled, and add 15 percent. The result will be the adjusted recycling rate. Figure 11 represents Florida's annual progress in recycling.

After a dramatic increase from 1989 to 1994, and a leveling off of the rates from 1995 to 1997, Florida's adjusted and unadjusted recycling rate has dropped to 27 percent. As far as the Department can tell, this drop is attributable more to improved accounting methods than any real change in recycling activities throughout the state. As mentioned earlier, the Department implemented a Construction and Demolition reporting mechanism which allowed for more accurate accounting of material being managed. The C&D reporting mechanism uncovered a greater amount of MSW being managed, which resulted in recycling rates decreasing and disposal rates increasing.

All counties under 75,000 population are exempted by statute from having to reach the 30 percent recycling goal. Of the 35 counties over 75,000 population, only eleven met the recycling goal in 2000. Ten more counties reported rates between 25 and 29 percent. This is shown graphically in figure 12 on the previous page.

For county specific information, reference Table 5A in the appendices or at:

http://www.dep.state.fl.us/waste/categories/recycling/pages/01.htm

Figure 14: Composition of Florida's Recycling Stream (CY 2000)

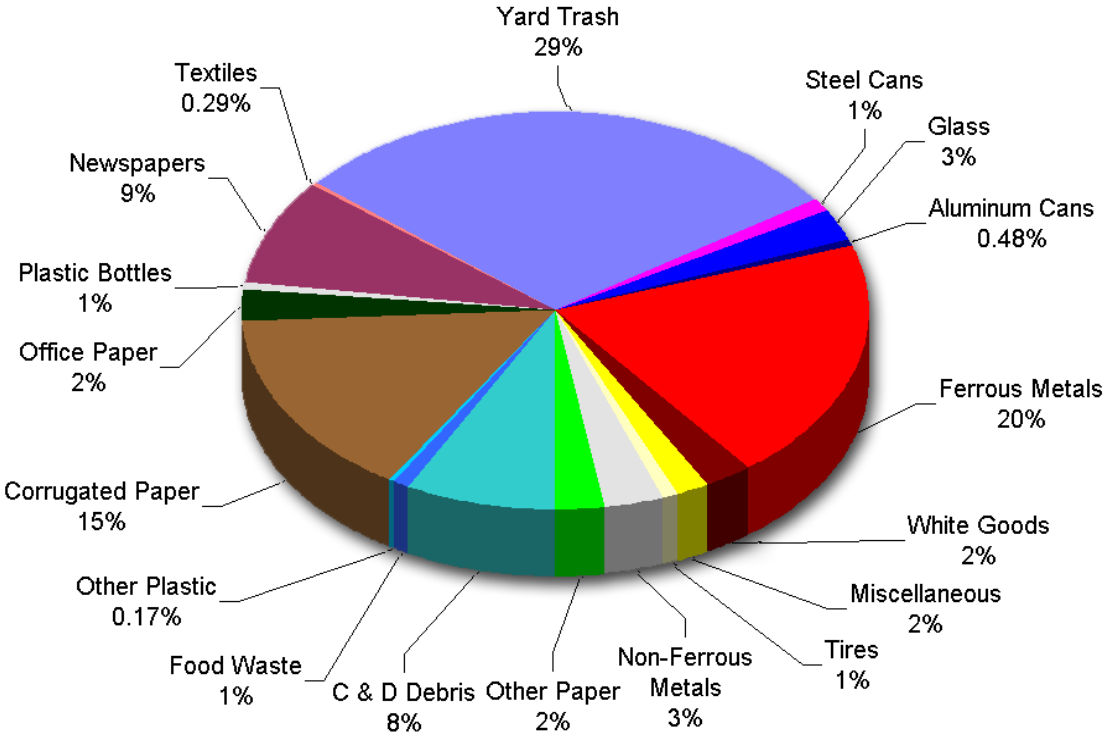
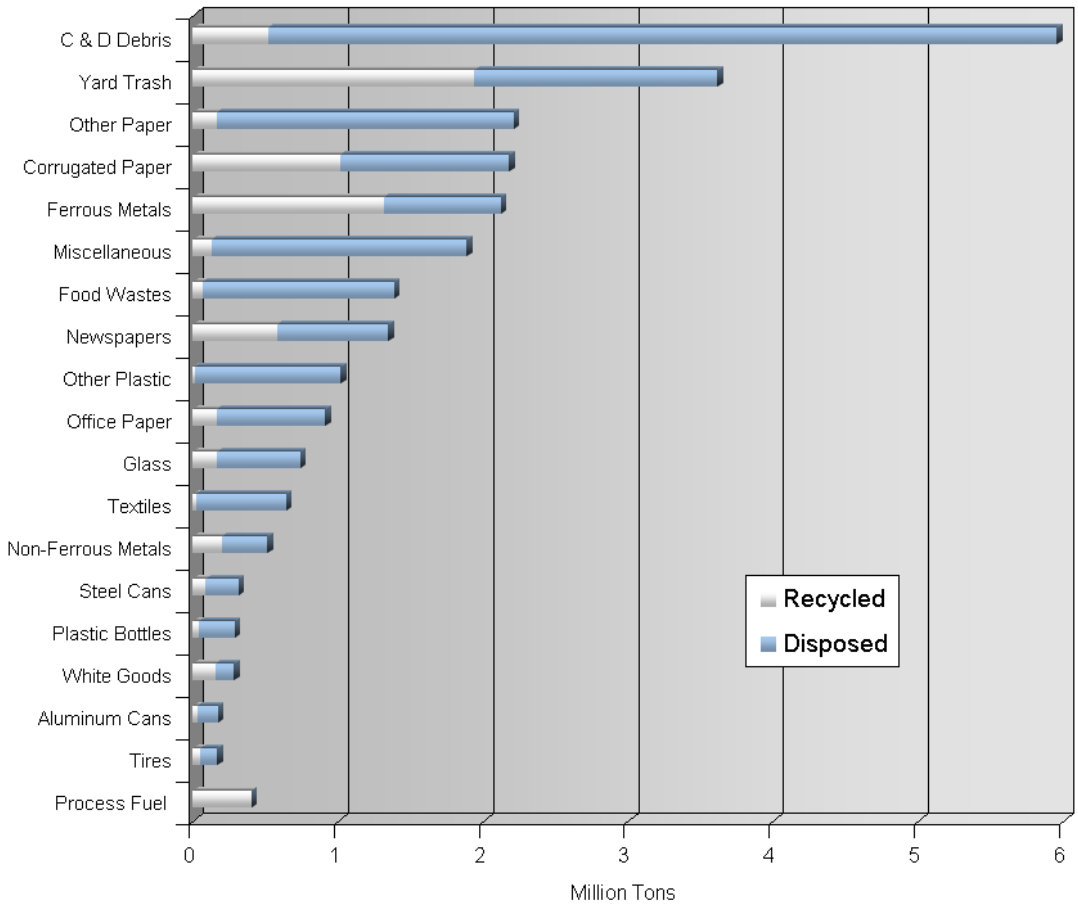


Figure 15: Materials Recycled and Disposed in Florida (CY 2000)



Progress Toward Meeting the 50% "Minimum 5" Goal

Like the 30 percent waste reduction/recycling goal, there is some disagreement as to how the "Minimum 5" goal is to be interpreted. The law requires that local programs be designed to recover the majority of the newspaper, glass, plastic bottles, aluminum cans and steel cans (a.k.a. Minimum 5) from the waste stream. One interpretation of the wording of this goal is that the only way to know if a program is designed to reach the goal is when it is actually reaching it.

In 1999 none of the 67 counties met the 50% recycling goal for all of the Minimum 5 materials. In 2000, only one county, Collier, met this goal. However, 36% of all the counties have achieved the goal for one or more materials in 1999 and 39% in 2000. 10% achieved the goal for two or more materials in 1999 and 18% in 2000. In 2000, 17 counties met the goal for newspaper, six counties met the goal for steel cans, eight counties met the goal for aluminum cans, eight counties met the goal for glass, and four counties met the goal for plastic bottles. Figure 13 shows Florida's overall progress toward achieving the 50 percent recycling goal for each material type since 1992.

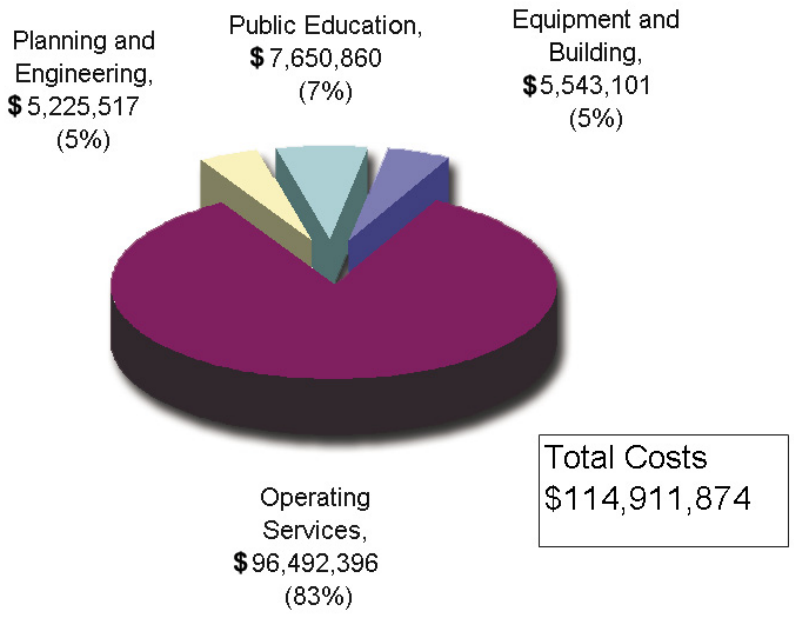
Materials Recycled

Florida accumulated data on 18 categories of materials collected for recycling for 2000. See Figures 14 and 15. The highest individual material recycling rates were yard trash at 29 percent, ferrous metals (not including steel cans or white goods) at 20 percent, corrugated paper at 15 percent, and newspaper at 9 percent. The lowest recycling rates were for "other plastics" at 0.14 percent, textiles at 0.29 percent, food waste at 1 percent, and "other paper" at 5 percent.

In past editions of this report, C&D debris was reported as having one of the highest recycling rates of all materials. In 2000, it is listed at 8%. Knowledgeable observers in the public and private sectors were skeptical that the rates were really as high as reported. With the advent of the new C&D reporting mechanism which allowed for more accurate accounting of materials, the C&D recycling figures greatly decreased.

For county specific information on recycling rates, reference Tables 3B, 4B and 5B in the appendices or:
http://www.dep.state.fl.us/waste/categories/recycling/pages/01.htm

Figure 16: Florida Recycling Program Cost Summary (CY 2000)



Cost of Recycling

As part of the reporting requirements to be eligible to receive annual State Recycling and Education Grants, each county must summarize the costs associated with their respective recycling programs. The costs are broken down into several categories including equipment and buildings, operating services, planning/engineering studies, and public education. These categories are further broken down into public (government) or private sectors (business) categories. Figure 16 shows the amount spent in each

Table 5: County Recycling Program Cost Summary for Florida[1] (FY 2000-2001)

Cost Categories	Dollars Spent and Encumbered[2]		
	R&E Funds	Local Funds[3]	Total
Equipment & Building[4]			
Public Sector[5]	1,039,519	4,503,582	5,543,101
sub-total	1,039,519	4,503,582	5,543,101
Operating Services[6]			
Public Sector[5]	1,543,036	32,119,782	33,662,818
Private Sector Contracts[7]	1,200,311	61,629,267	62,829,578
sub-total	2,743,347	93,749,049	96,492,396
Planning/Engineering Studies[8]			
Public Sector[5]	66,434	163,197	229,631
Private Sector Contracts[7]	36,433	4,959,453	4,995,886
sub-total	102,867	5,122,650	5,225,517
Public Education[9]			
Public Sector[5]	1,941,864	3,364,747	5,306,611
Private Sector Contracts[7]	424,463	1,919,786	2,344,249
sub-total	2,366,327	5,284,533	7,650,860
Total Public Costs	4,590,853	40,151,308	44,742,161
Total Private Contract Costs	1,661,207	68,508,506	70,169,713
Grand Total Used	6,252,060	108,659,814	114,911,874
Costs Per Capita[10]	0.41	7.09	7.50
Grant Award[11]	6,442,264		
Remaining R&E Funds Not Used[12]:	190,204		

1 Information in this table includes compiled cost data provided by the counties for both the county governments and the participating municipalities found within its borders.

2 Includes all dollars spent or committed via a purchase order by the local governments on recycling programs during the county fiscal year.

3 Includes any local revenues (non-R&E grants) such as tip fees, advalorem taxes, special assessments, recycling fee via waste disposal bill, material sales revenue etc.,spent on the recycling program.

4 Funds spent and encumbered for the acquisition of recycling equipment and recycling facilities.

5 Publicly funded and operated entities such as a county or city governments, regional planning councils, public universities, school boards, etc. May include contracts or purchase orders with public entities.

6 Funds spent and encumbered for the acquisition of services relating to the collection, processing, marketing and sales of recycled material.

7 Privately owned and operated entities, including non-profit organizations, contracted or retained through a purchase order to provide services or products to the local government for its recycling program.

8 Funds spent and encumbered for the acquisition of planning and/or engineering products or services relating to the recycling program.

9 Funds spent and encumbered for the acquisition of educational products or services for schools or the general public relating to the recycling program.

10 Based on the 2000 Governor's Office population estimate.

11 The total R&E grant award for the county fiscal year. This figure must equal R&E Used + Not Used.

12 All remaining R&E grant funds not spent or encumbered during the county fiscal year.

category statewide in county fiscal year 1999-2000. Recycling and Education (R&E) Grant funds allocated for county fiscal year 1999-2001 totaled $17.1M. Total recycling program related funds expended by local governments not including the State grant funds was $108.7M. This equates to $7.09 per capita. Combined R&E grant funds and local government recycling program expenditures totaled $114.9M for a per capita cost of $7.50 (as shown in Table 5).

The private sector received nearly 64% of the total funds expended for recycling through the R&E grant and local government funds. This equates to $70.2M. The public sector utilized the remaining $44.7M.

Local governments throughout Florida spend about $17.38 of their own dollars for every $1 they receive in State R&E grant funds on a statewide average basis. However, these ratios fluctuate dramatically on a county by county basis.

For county specific information, reference Table 9B in the appendices or at:

http://www.dep.state.fl.us/waste/categories/recycling/pages/01.htm

Innovative Grants

In FY 1997-98, the Legislature initiated the Innovative Grants for waste reduction and recycling, continuing them for four years until stopping in FY 2001-02. The Legislature resuscitated the program in HB 851 in the year 2002, with some similarities to the past program. There are also some significant differences:

- Counties are no longer the only eligible applicants.
- Waste tires are specifically added as a focus.
- The Legislature, not DEP, makes the final determination as to what specific projects will be funded.

Details for this new wording are delineated in Section 403.7095, Florida Statutes (page 27-28 of HB 851):

(1) The department [DEP] shall develop a competitive and innovative grant program for counties, municipalities, special districts, and nonprofit organizations that have legal responsibility for the provision of solid waste management services that:

(a) Demonstrate technologies or processes that are not in common use in Florida, that represent a novel application of an existing technology or process, or that overcome obstacles to recycling and waste reduction in new or innovative ways;

(b) Demonstrate innovative processes to collect and recycle or reduce materials targeted by the department and the recycling industry; or

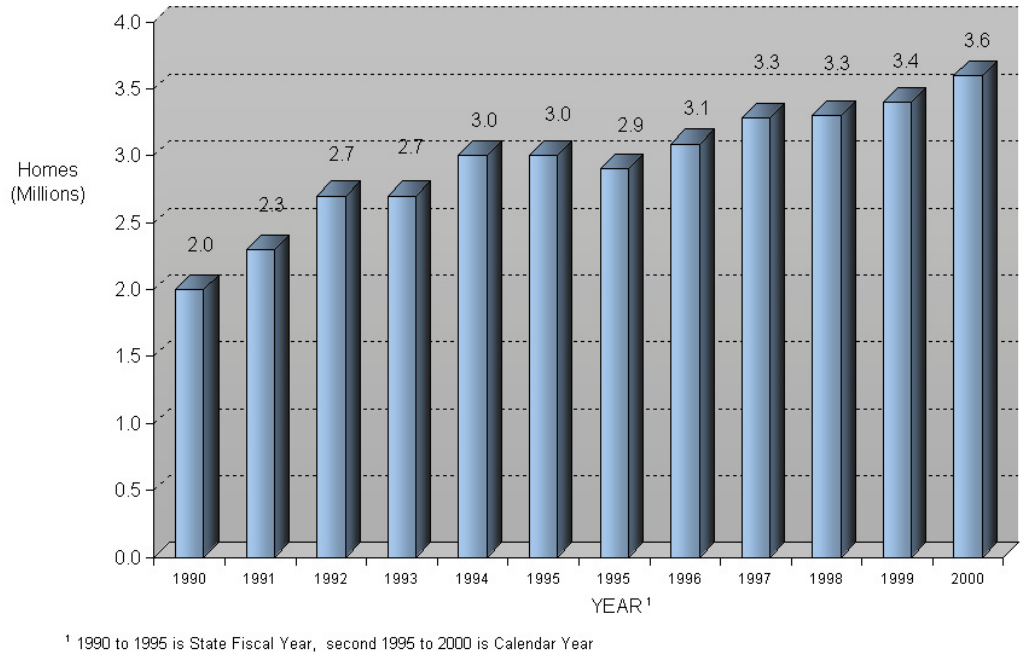
(c) Demonstrate effective solutions to solving solid waste problems resulting from waste tires, particularly in the areas of enforcement and abatement of illegal tire dumping and activities to promote market development of waste tire products.

Because the Legislature recognizes that input from the recycling industry is essential to the success of this grant program, the department shall cooperate with private-sector entities to develop a process and define specific criteria for allowing their participation with grant recipients.

(2) The department shall evaluate and prioritize the annual grant proposals and present the annual prioritized list of projects to be funded to the Governor and the Legislature as part of its annual budget request submitted pursuant to chapter 216, beginning with fiscal year 2003-2004. Potential grant recipients are encouraged to demonstrate local support for grant proposals by the commitment of cash or in-kind matching funds.

A DEP review committee evaluates proposals and scores them based on detailed selection criteria established by the Department with input from the recycling and waste reduction industry and counties. Awards are made to those projects which demonstrate sufficient innovation, based

Figure 17: Number of Single Family Homes Where Curbside Recycling is Available (July 1, 1990 - December 31, 2000)



[1] 1990 to 1995 is State Fiscal Year, second 1995 to 2000 is Calendar Year

on the selection criteria and to the extent funding allows. In the first four years of the program, the Department has awarded $9 million to 42 projects. At this writing, it is not known how much money will be available for FY 03-04.

To review past project awards, please refer to the web directory containing proposals, awards, and final reports for each grant cycle at:

http://www.dep.state.fl.us/waste/categories/recycling/pages/01.htm

Curbside Recycling and Recycling Participation

Curbside recycling was available to about 9.1M Florida residents in 3.6M homes in 2000. These programs employed predominantly three types of materials collection: commingled at the curb by residence, sorted by material type at the curb by residents or at time of collection by the collection personnel, or by a blue bag process. As of June 2001, there were 333 curbside recycling programs in the State collecting over 21 different types of materials.

Residential: In 2000, curbside recycling was available to 75 percent of the single-family homes and 70 percent of the multi-family units in Florida. Of those units with curbside recycling available, participation was 76 percent for single-family homes and 63 percent for multi-family units.

Figure 17 shows the trend from 1990-2000 for the number of single family homes with available curbside recycling. Between 1990 and 2000, there was a 56 percent increase in the availability of curbside collection in the State.

Where curbside recycling was not available, residents may have been able to participate through drop off sites, mobile drop off stations and/or buy back centers. County recycling coordinators reported that 19 percent of single-family homes and 15 percent of multi-family units utilized drop off sites, 2 percent of single-family homes and 3 percent of multi-family units participated in mobile drop off stations, and 7 percent of multi-family units and 9 percent of single family units took their materials to buy back centers.

Commercial: Scheduled recycling service was available to 58 percent of commercial establishments, while on-call service was available to 33 percent. Of those commercial establishments that had scheduled service available, 46 percent participated. Of those commercial establishments that had on-call service available, 15 percent participated. The average percent participating in on-call service is misleading as several counties list participation at 100%, while others are very low, thus affecting the average. Of all the commercial

establishments in the State, including those with no recycling service available, the total participation rate was 27 percent for scheduled collection and 5 percent for on-call collection.

For specific county information, reference Tables 11B - 13B in the appendices or at:


http://www.dep.state.fl.us/waste/categories/recycling/pages/01.htm

Recycling and Florida's Economy

The Florida Department Environmental Protection (FDEP) commissioned a study that was conducted by R.W. Beck, Inc. as part of the National Recycling Coalition's U.S. Recycling Economic Information (US REI). This study gathered economic information on Florida's recycling industry in 1999. Findings from the study indicated that over 32,000 men and women were employed in some recycling capacity in Florida and with 51 percent of these jobs belonging to the private sector and 49 percent to "local" collection and processing. In addition, the study found that the annual wage of a full-time recycling employee in 1999 was estimated to average just over $28,000. A full-time employee in the reuse/remanufacturing sector averaged over $16,000. The findings also indicated that recycling activity throughout Florida has required a significant investment of time and resources by both the private and public sectors with an estimated $2.7 billion invested in Florida's recycling infrastructure since 1988-89.

Recovered Materials Dealers Certification and Reporting Program

The Certification of Recyclers rule (62-722, F.A.C.) is currently in effect pursuant to the requirements of 403.7046, F.S. This rule became effective on January 1, 1995. The primary intent of this rule is to establish a recycler certification program for obtaining accurate information on the quantities and county of origin of the following 13 recovered materials being handled in Florida: newspaper, corrugated cardboard, high grade office paper, mixed paper, plastic bottles, all other plastics, aluminum cans, other non-ferrous, steel cans, other ferrous, glass, textiles and rubber.

One of the major challenges in drafting this rule was assuring accuracy of the reporting process. The counties must have good information in order to determine their compliance with the mandated recycling goals. In the past, one possible source of error in recycling rate data was due to the possibilities of double counting of material by two or more counties since the data was dependent on voluntary reporting by the private sector.

During the development of the rule, DEP established a Technical Advisory Committee which recommended that a handler of recovered materials (as defined) must be certified and provide an annual report for the preceding year directly to DEP once a threshold of 600 tons per year is exceeded for any one or combination of materials types. This includes dealer/processors and end users, or generators that by-pass dealer/processors and ship 600 tons or more directly out of state or to Florida end users. The report must include quantities for each recovered material handled by county of origin. All reported information from private recyclers are aggregated and kept confidential. Counties may require that the same data reported to the State annually must be reported directly to them on a quarterly basis.

For the 2002-2003 fiscal year, there were 155 recyclers certified. The certified recyclers listed over 300 facilities which handled recovered materials as defined above. These facilities included transfer stations, material recovery facilities, and recovered materials processing facilities.
It should be noted that the business entity or recycling company itself must be certified and not each individual facility.

For a list of the Florida's certified recyclers, reference Table 14B in the appendices or at:


http://www.dep.state.fl.us/waste/categories/recycling/pages/01.htm

Existing and Proposed Recycling Facilities

Florida has a total of 50 Materials Recovery Facilities (MRFs) and 161 Recovered Materials Processing Facilities (RMPFs). RMPFs process materials that have been cleaned by MRFs or collected directly from residential or commercial generators that have source separated recycled materials. The State has 666 drop-off centers for materials to be recycled and 194 buy back centers.

For a complete list of recycling facilities, reference Table 15B in the appendices or at:

http://www.dep.state.fl.us/waste/categories/recycling/pages/01.htm

Composting Florida's Organic Materials

What are Organic Materials?

This section deals with materials that pertain to the vegetable or animal world. The same processes in nature that break down these materials into humus are used to produce compost. The time needed to produce compost is decreased as process conditions are optimized.

Compost can be used in many ways such as a soil amendment, artificial topsoil or growing medium amendment. While compost contains some plant nutrients, it is not typically considered a fertilizer. Some benefits from using compost include retaining soil moisture and nutrients, improving soil aeration, returning nutrients to the soil, and suppressing soil-borne pests. Using compost products is considered recycling, and may be the oldest form of recycling. But organic materials can be processed into other useful materials besides compost. For instance, yard trash and clean wood can be processed into mulch or fuel wood.

Composting of Solid Waste and Yard Trash Processing Facilities

Chapter 62-709, Florida Administrative Code (F.A.C), contains the regulations for composting of solid waste and for yard trash processing facilities. The provisions regarding yard trash processing facilities were adopted on November 22, 2000.

For purposes of this rule, compost is defined as solid waste which has undergone biological decomposition of organic matter, has been disinfected using composting or similar technologies, and has been stabilized to a degree which is potentially beneficial to plant growth and which is used or sold for use as a soil amendment, artificial top soil, growing medium amendment or other similar uses. Mature compost bears little resemblance to the organic material from which it originated.

Yard trash processing facilities include both recycling facilities and transfer stations. These facilities can process either yard trash, which is material generated by landscape maintenance or land clearing operations, or clean wood. Clean wood is defined as wood, including lumber, tree and shrub trunks, branches, and limbs, which is free of paint, glue, filler, penthachlorophenol, creosote, tar, asphalt, other wood preservatives or treatments

Yard trash processing facilities can register annually instead of having to obtain a solid waste management permit, providing they comply with the requirements specified in Rule 62-709.320, F.A.C. These requirements were developed with close cooperation between the regulated community (private and local government operations) and the regulators (state and local government).

Copies of the regulation and forms may be downloaded from http://www.dep.state.fl.us/waste/quick_topics/rules/default.htm.

Potential Volume

Backyard composting and in situ grass clipping management should be encouraged, as they are the best method for managing these wastes. However, local governments must still handle large amounts of organic material. The compostable fraction in the municipal solid waste (MSW) stream includes food, paper, clean wood and yard trash.

Local governments collected 25 million tons of MSW in 1999. Of that amount, the organic solid waste portion accounted for about 12 million tons, or 48 percent. If all of this material were processed into usable compost, the yield would be about 6 million tons of compost. Yard trash alone accounts for 3.9 million tons, or 16 percent of the MSW stream. Approximately 1.9 tons or about 49 percent of the yard trash collected were recycled in 1999.

In calendar year 2000, local governments reported collection of 25.7 million tons of MSW. The organic solid waste portion accounted for about 12 million tons, or 47 percent. If all of this material were processed into usable compost, the yield would be about 6 million tons of compost. Yard trash accounts for 3.6 million tons, or 14 percent of the MSW stream. Counties reported 1.9 tons or about 54 percent of the yard trash collected was recycled in 2000.

Composting and Yard Trash Processing Facilities and Department Policy

There are 108 yard trash processing facilities that are registered or are addressed under another Department solid waste permit as of July 19, 2002. These facilities are listed in Table 6.

There are also six permitted composting facilities and a permit application being processed for an innovative grant project located in six counties. These composting facilities use a windrow process or an in-vessel treatment system followed by a windrow process.

These permitted facilities, listed in Table 6, compost a variety of organic wastes, including mixed MSW, food waste, or manure. This list does not reflect the number of registered yard trash facilities that may be composting, exempted composting facilities (i.e., small facilities and normal farming operations), or the number of domestic residuals composting facilities that include yard trash in their operations.

Documents on the Web

There are three documents available from the Department's web site that may be useful. These can be downloaded at http://www.dep.state.fl.us/waste/quick_topics/publications/default.htm.

"Recycling Yard Trash: Best Management Practices Manual for Florida" was developed in 1996 by Florida Organics Recyclers' Association under contract with the Center for Solid and Hazardous

Table 6: Solid Waste Composting Facilities in Florida, 2002

County	Facility Name	Type	Contact	Firm	Telephone	Design Capacity
Duval	Jacksonville Zoological Gardens	MAN	Marlo Doherty	Jacksonville Zoological Gardens	904/757-4463 Ext.159	45 T/D
Franklin	Franklin County Compost Facility	*	Van Johnson	Franklin County	850/670-8167	2600 Yd3/Yr
Hillsborough	Bush Gardens Composting Facility	**	Tom Burke	Busch Entertainment Corp	813/987-5354	4000 Yd3 on site
Marion	Muckraker's Inc.	MAN	Becky Thomas Montgomery	Muckraker's Inc.	352/237-4011	800 Yd3/D
Sarasota	County Innovative Grant Project	***	Gary Bennett	Sarasota County	941/486-2600	90 T/M
Sumter	Sumter Co. Vol Reduct & Ldfl	MSW	Garry Breeden	Sumter Co Public Works Dept	352/793-0240	160 T/D

MAN	Manure
MSW	Municipal Solid Waste
*	Seafood, septage and yard trash (stopped till waste stream is again generated)
**	YT, clean wood & manure
***	Food waste (permit application in house)

Waste Management. The manual offers advice on establishing new facilities, avoiding or solving problems, and distinguishing between recycling and disposal. It provides industry-generated and peer-reviewed operating recommendations for yard trash processing facilities in Florida. It is not a technical "how to" reference, but does outline considerations for initiating and operating these facilities. The recommendations in the manual are not regulations, but are best management practices that can assist facilities in operating in a safe and environmentally sensitive manner.

"Compost Use in Florida" was developed in 1998 by the Center for Solid and Hazardous Waste Management under contract with the Department. This booklet includes research results from past projects, and provides information to potential users on the benefits of using compost. The information contained in the booklet can help such users assess the value of incorporating compost into their operations. This information highlights benefits to citrus and vegetable crops, landscape and nursery industry, turf grasses, forest lands and reclamation of phosphate mine lands. It not only helps point out to compost producers some of the characteristics that a particular industry may need, but also information that potential users need to be aware of when considering using compost.

"Organic Recycling Facilities in Florida" was developed by Recycle Florida Today under contract with the Department in 2000. The purpose of this facility directory was to:

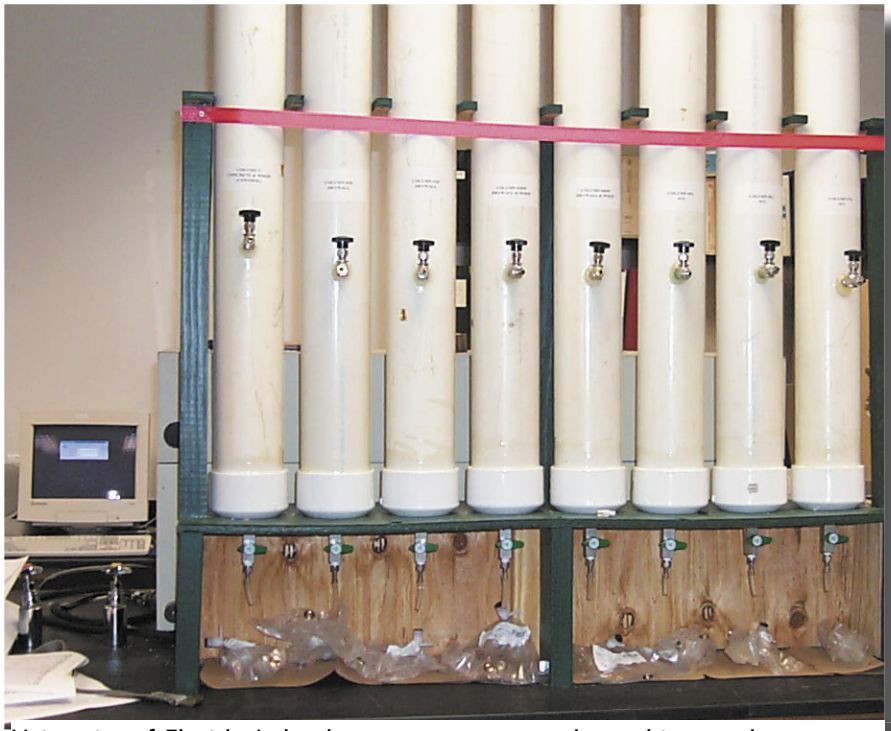
-Assist in the marketing of recycled organic products

-Provide a single source product information guide for potential users of organic products

-Provide a source of producer information for regulators, product and equipment vendors

Florida's Pollution Prevention Program

The Pollution Prevention (P2) Program assists businesses in becoming more competitive by showing how to maximize production efficiency while eliminating many potential liabilities. With the technical assistance provided by this multi-disciplinary team, facilities can replace harmful substances with non-toxic or less harmful materials and learn to use raw materials, water, energy and other resources efficiently.



University of Florida Lab where pressure treated wood is tested.
Photo Bill Hinkley

P2 Program professionals with extensive industrial experience in production scheduling, materials handling, unit operations, inventory control and equipment maintenance provide P2 support upon request. More than 500 local governments and Florida businesses committed to eliminate or reduce their generation of hazardous waste have received on-site assessments. Countless additional individuals have received technical assistance from telephone consultations, process-specific research, and workshop presentations.

What is Pollution Prevention and What Can it Do For You?

Pollution prevention (P2) is a management tool that eliminates, conserves, or reuses materials that cause pollution. Solutions may include replacing, conserving, reducing the use of, or reusing materials. One of the most important components in pollution prevention is the avoidance of the transfer of pollutants between air, land and water. Ideally, businesses and organizations using the P2 approach generate products or services without generating toxic emissions or hazardous waste.

Many businesses and government facilities effectively employ P2 initiatives that result in big savings. Long-term cradle-to-grave liabilities, hazardous waste management fees, and clean-up costs resulting from improper disposal of hazardous substances can be eliminated or reduced. Worker exposure to toxins may be reduced, and lower raw material and labor costs may result.

Prevention differs greatly and is preferable to the concept of pollution control. Pollution control refers to an after-the-fact technology that contains the effects of pollution in one place. Prevention technology, at its best, follows the waste upstream and eliminates it at the source. At a minimum, prevention technology goes beyond compliance standards and outperforms control equipment.

Success Stories

Within the last decade, many enterprising companies throughout Florida, such as Tropical Shipping and Chromalloy Florida, adopted pollution prevention (P2) as an integral part of their business strategy. Government agencies, such as the Leon County Schools Transportation Department, have also found that the best way to control the expenses and liabilities associated with wastes and emissions is to eliminate the processes and raw materials that created them in the first place. Their success stories can be found in detail in the publication titled *Maximizing Profits for Business and the Environment: Pollution Prevention Activities in Florida.* This and other publications are available from the P2 Program. To order, leave a message at the P2 Program's toll-free number, 1-800-741-4337 (press option "8"), or call a representative directly at 850-245-8707 or SunCom 205-8707. Questions or comments may also be submitted electronically

Technical Assistance

The cornerstone of the Program's technical assistance efforts is the P2 assessment, which involves an on-site evaluation of product inventory, processes and energy consumption. The assessment team identifies and recommends facility-specific P2 opportunities, such as less wasteful processes, raw material or product substitutions, and/or more efficient equipment. Information on the economic advantages and environmental benefits that result from each P2 recommendation are provided. Statewide P2 Retired Engineers assist in providing this service.

P2 Program engineers are also available to answer technical inquiries or to utilize the Internet to access libraries maintained by the USEPA. Speakers are also available for workshops and trade association meetings.

Outreach

The *P2 Links* newsletter is published three times a year and is available electronically at the P2 Program web site

http://www.dep.state.fl.us/waste/categories/p2

or by paper copy. Several issues have dealt with technical topics and success stories, while others have provided a forum for government P2 programs.

Each summer, a Statewide Pollution Prevention Conference features speakers from industry, business, military, government and environmental groups. The conference provides unique opportunities for professionals to exchange P2 information and ideas, and to explore innovative cost-effective solutions. Session topics range from industry-specific basic and advanced P2 technologies to governmental initiatives at the

state and local levels. The conference also allows participants to gain first-hand knowledge of other P2 program practices through exhibits and tours.

Beginning the third Monday in September each year, the P2 Program and the Florida Pollution Prevention Roundtable (FLPPR) join other states in promoting National Pollution Prevention Week. A variety of activities sponsored by participating local governments take place throughout the state, including business workshops, industry seminars, poster contests, and public access television shows. The state theme for P2 Week 2002 was *"Greening Your Home and Office Workplace"*. Previous campaigns have included mercury thermometer exchanges and water conservation and protection information.

Partnerships

The P2 Program recognizes the value of forming partnerships with government agencies, including the state educational system, as well as non-profit organizations and trade associations. These partnerships often lead to the development of Best Management Practices (BMPs), which are environmentally and economically beneficial to many businesses. The fertilizer blending and printing industries have adopted BMPs developed by partnerships between trade associations, FDEP media programs and district offices, and the P2 Program.

Ongoing P2 partners include the U.S. Environmental Protection Agency, the Florida Pollution Prevention Roundtable, and the Department of Defense. Newer partnerships include the Florida Green Building Coalition, Florida Solar Energy Center, and the engineering programs of the University of Florida and Florida Agricultural and Mechanical University/ Florida State University.

Toxics in Packaging

Heavy metals such as lead, cadmium, mercury and hexavalent chromium have historically been used in packaging and packaging components to enhance color and durability of printed surfaces. Damage to the environment and public health can occur when packages are disposed and the heavy metal content leaches out contaminating soils and surface and groundwater.

Chapter 62-723, F.A.C. was promulgated with the intent to prevent and minimize hazards to the public and the environment by reducing the use of heavy metals in packaging in accordance with Section 403.7191, Florida Statutes. Additionally, the rule was written such that it is not to impede or discourage the expanded use of recycled materials in the production of packaging and its components.

Legislation for this rule was passed in 1993 as Section 28 of Chapter 93-207 Laws of Florida. Chapter 17-723, F.A.C., was adopted by the Florida Department of Environmental Protection and became effective on July 1, 1994. This rule was repealed by the Department in 1996 and is no longer in effect. However, the requirements of the law, Chapter 93-207 Laws of Florida, are still in effect and being enforced by the Department.

The legislation specifies that heavy metals in packaging will be phased out over a period of 2 years. After July 1, 1996, no package or packaging component can exceed a total combined concentration of lead, cadmium, mercury, and hexavalent chromium greater that 100 parts per million by weight (0.01 percent). An exemption to this rule is provided for health and safety as required by Federal or State law or where there is no feasible alternative.

Since the law was passed, several companies from outside the State of Florida have applied for and received exemptions from the law based on health and safety considerations. These exemptions were in effect until January 1999.