

# Solid Waste

# Element

*Data, Inventory & Analysis*

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SUPPORT DOCUMENT

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# SOLID WASTE SUPPORT DOCUMENT

## 1. OVERVIEW

The primary purpose of the Solid Waste Element is to address the material and financial needs of the City's solid waste service; to identify the City's role in minimizing environmental impacts of waste generated within the City; and to identify a Level of Service standard which will maintain the health, safety and welfare of Orlando's residents and visitors.

The United States is facing a mounting challenge to effectively manage its solid waste in a cost effective and environmentally responsible manner. Over the past 40 years, waste has more than doubled, from 88 million tons generated in 1960 to about 251 million tons in 2006. While some of this increase is linked to a climb in the U.S. population, the steady growth of garbage is linked to the escalation of the American consumer lifestyle. People are buying more convenience items and are choosing from a wider variety of disposable products. According to a government website, the average American generates 4.5 pounds of trash every day. That's 1.8 pounds more trash than the average American produced in 1960 (1).

While the current green movement has made Americans more aware of their carbon footprint and the global greenhouse effect, habits have been slow to change. As it regards solid waste, most Americans do little more than sort their recycling items, fill up their garbage containers and set them out for the local collection. As long as the garbage trucks arrive on schedule and debris is removed, solid waste management is not a pressing concern.

Municipal governments such as the City of Orlando are faced with the challenging task of managing enormous quantities of solid waste in an environmentally responsible manner. In 2007, the City collected 91,135 tons of commercial solid waste, and 71,292 tons of residential solid waste, which included 46,878 pounds of garbage, 20,349 tons of recycled residential yard waste, and 4,065 tons of recycled waste. While the City does not operate any landfills, as a major contributor to the Orange County landfill, the City must accept its fair-share responsibility to minimize costs of disposal and to reduce or eliminate any environmental impact created within Orange County.

Talking about solid waste can be confusing since there are a number of terms from rubbish to trash which are often used interchangeably. In general, solid waste is defined *as materials being disposed of that are not liquid or released into the air*. A complete regulatory definition is available in Section 62-701, FAC.

The City of Orlando Solid Waste Management Division currently collects the following types of solid waste:

- a. Class I Waste: This class addresses solid waste which is not hazardous waste, and which is not prohibited from disposal in a lined landfill under Rule 62-701.300, F.A.C. Class I landfills receive an average of 20

tons of solid waste per day of general household, commercial, industrial and agricultural wastes.

- b. Class III Waste: This class includes construction and demolition debris, processed tires, asbestos, carpet, cardboard, paper, glass, plastic, furniture other than appliances, or other materials that are not expected to produce leachate which poses a threat to public health or the environment.
- c. Yard waste: Refers to vegetative matter resulting from landscaping maintenance or land clearing operations and includes materials such as tree and shrub trimmings, grass clippings, palm fronds, trees and tree stumps.

Yet another form of waste is hazardous waste. Sections 9J-5.003 and 62-730, FAC, define hazardous waste as *“solid waste which may cause illness or pose a threat to human health or the environment unless it is properly stored, transported and disposed of.”* The City does not collect any hazardous wastes. With the exception of household hazardous waste (HHW), hazardous waste is prohibited from the Orange County Solid Waste Management Facility.

While at the national level there are a number of different regulations which direct the management of solid and hazardous waste, the Resource Conservation and Recovery Act, 1984 (RCRA), as amended, and the Comprehensive Environmental Response, Compensation and Liability Act, 1980 (CERCLA), as amended, are the two primary pieces of legislation. The US Environmental Protection Agency (EPA) enforces these regulations through permits and fines and encourages compliance through education and grants.

Historically, the states have followed federal initiatives in carrying out solid waste management. The State of Florida regulates solid waste management under the Florida State Resource Recovery and Management Act of 1988, F.S. 403.705 to F.S. 706. The Florida Department of Environmental Protection (FDEP), under Chapter 17-701, FAC, has authority to enforce these rules which are collectively referred to as the State Resource Recovery Management Program. Accordingly, the FDEP enforces all aspects of solid waste--from certification of resource recovery equipment to the closure of landfills. Hazardous wastes are also regulated by FDEP under Chapter 17-730, FAC.

The Florida State Resource Recovery and Management Act (FSRCRA) gives counties the lead role in solid waste management and requires mandatory recycling. The City of Orlando, as one of the incorporated cities within Orange County, is party to an inter-local agreement with the County which stipulates that the County will accept the solid waste generated by the City.

## **New Directions in Solid Waste Management**

According to the EPA, RCRA was originally designed primarily as a system of:

“...controls over the management of wastes in this country, with two fundamental mandates: protect human health and the environment and conserve resources. To achieve these mandates, EPA and the states ...were provided with two primary tools: broad authority to regulate management of wastes and broad authority to enforce RCRA’s regulatory and statutory provisions...while there have been criticisms...this legislation has been successful...

...Uncontrolled dumping of hazardous wastes has decreased and the number of hazardous facilities has shrunk by half. Municipal solid waste landfills have been upgraded across the country and unlined hazardous waste landfills and lagoons have almost disappeared from our landscape....Post consumer recycling rates have risen dramatically and many industries have made impressive gains in pollution prevention by reducing the amount and toxicity of wastes they generate....” (2)

While the country has made strides since the 1960’s in managing its solid waste with the emergence of the green movement, the direction of solid waste management has suddenly taken a new direction. The Federal government is now interested in building a national sustainable program for pollution prevention, recycling, beneficial use, as well as conservation of materials once considered waste. It is hoped that this “cradle to cradle” rather than “cradle to grave” approach will help eliminate the majority of waste. Many communities are following the federal government’s lead, by embracing regionally relevant solid waste management programs which involve a sustainable use of resources, a life cycle approach to managing chemical risk, and safe, environmentally sound waste management. Key components to these new solid waste management programs include energy conservation, profit generation and public-private partnerships.

In light of these recent changes and the City’s innovative Greenworks program, the City of Orlando’s solid waste management plan will provide a new direction for the City’s solid waste management into the next decade. The first part of this support document provides an overview of solid waste legislation, and, within an operations framework, examines existing Orange County facility conditions and the City’s collection system.

The latter part of this support document describes the City’s solid waste system’s level of service (LOS), provides a needs and budget analyses as well as a performance evaluation. The needs analysis details how the City will provide adequate and financially feasible solid waste management services to City businesses and residents through 2030. The City’s strategy for providing solid waste management services through 2030 is promulgated in policy document.

## 2. SOLID WASTE MANAGEMENT – FEDERAL, STATE AND LOCAL LEGISLATION

“Ignorance is one of the biggest handicaps we face when it comes to deciding, as a society, whether or how to throw away various kinds of garbage....” (3)

### 2.A. FEDERAL LEGISLATION

When *Silent Spring* was first serialized in the New Yorker Magazine it outraged readers across the country. The provocative study explored the systematic destruction of the American environment and its long term negative impacts. While initial concerns focused on air and water pollution, they soon broadened to include all landscapes and human activities (4). One of the first pieces of environmental legislation to be passed was the 1963 Clean Air Act. It is hard to imagine now, but at that time municipal garbage incinerators lacked the most rudimentary controls. As one government official reported, “...it was just black smoke coming out of the stacks... (along with) foul odors and blowing trash (which) particularly bothered city dwellers...” (5)

The federal government took the first formal step to address solid waste management with the introduction of the non-regulatory 1965 Solid Waste Disposal Act. The Act recognized refuse disposal as a national problem, launched federal municipal solid waste research and established grants to assist states and municipalities develop new disposal programs.

Between 1965 and 1989, Congress enacted a series of laws that transformed the nation’s solid waste management practices. In addition to the 1965 Solid Waste Disposal Act, Congress introduced the 1970 Clean Air Act, the 1970 Resource Recovery Act, the 1976 Resource Conservation and Recovery Act (RCRA), the 1977 Clean Water Act, the 1978 Public Utility Regulatory Policies Act (PURPA), the 1980 Energy Security Act, the 1980 Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), the 1984 Safe Drinking Water Act, the 1984 Hazardous and Solid Waste (HSWA) Amendments to RCRA and the 1988 Ocean Dumping Ban. While amendments over the last twenty years have served introduce new technologies and management practices, it is this original battery of legislation that set the stage for modern solid waste management.

#### **RCRA – The Federal Resource Conservation and Recovery Act**

The legislative road to global waste management first began in 1969 when President Richard Nixon created the Environmental Protection Agency (EPA). The EPA, using penalties and permits, enforced the Clean Air and Clean Water Acts. These statutes were significant since they created ambient standards that provided the public with a fishable, swimmable, breathable environment.

While most emissions were now prevented from being directly discharged into the air or water, the Love Canal disaster brought soil and ground water pollution to the national forefront. In the mid seventies, Love Canal, a small community in Niagara Falls, New York, became the subject of national controversy following the discovery of toxic waste buried beneath the neighborhood. The Love Canal incident galvanized national support and helped move forward a new slate of environmental legislation.

In 1976, the Solid Waste Management Act was amended by the new Resource Conservation and Recovery Act (RCRA). Administered under EPA's Office of Solid Waste, RCRA is the primary federal law governing the federal government's role in handling and disposing of solid waste, setting standards for state and local waste management, and assisting states with their solid waste program and energy conservation. Our modern day recycling programs are a product of RCRA since this legislation institutionalized recycling, resource conservation, and proper waste management.

RCRA (CFR 40 parts 260 through 265), established three distinct, yet interrelated, programs. The national solid waste program is detailed under RCRA Subtitle D. It encourages states to develop comprehensive plans to manage nonhazardous industrial solid waste and municipal solid waste, sets criteria for municipal solid waste landfills and other solid waste disposal facilities, and prohibits the open dumping of solid waste.

The second national program addresses hazardous waste under RCRA Subtitle G and establishes a "cradle to grave" system for controlling hazardous waste from the time it is generated to its disposal.

The third national program, RCRA Subtitle I, addresses underground storage tanks (UST) and regulates underground storage tanks containing petroleum products and hazardous substances. RCRA was strengthened by Congress in November 1984 with the passing of the Federal Hazardous and Solid Waste Amendments (HSWA).

While RCRA amendments have had a far reaching impact on how America handles solid waste, it has been most effective in the phasing out of dangerous land disposal of hazardous waste. RCRA has been amended on two occasions since HSWA. The Federal Facility Compliance Act of 1992 strengthened enforcement of RCRA at Federal facilities and served to stimulate waste reduction, recycling, and procurement of recycled goods in all federal agencies. The Land Disposal Program Flexibility Act of 1996 provided regulatory flexibility for the land disposal of certain wastes.

While RCRA is all-encompassing, it only addresses active and future facilities and does not regulate abandoned or historical sites which are managed under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)—commonly known as Superfund. CERCLA was passed in 1980 and provided EPA with authority and funds to respond to incidents requiring site clean-up and emergency mitigation. The Act also defined the liability



of businesses engaged in hazardous waste generation, transport or disposal, and established enforcement processes.

### **Enforcement of Federal Laws**

The United States Environmental Protection Agency (EPA) and the United States Army Corps of Engineers (COE) are the Federal agencies historically responsible for monitoring the environmental impacts of solid waste facilities. Specifically, impacts on air and water quality are reviewed by EPA while the COE monitors dredge and fill activities.

### **New Directions in Federal Solid Waste Management**

“The amazing feature of the Garbage Crisis of the 1990’s is that it was the direct result of environmental progress in waste disposal techniques.” (6)

In 1987, solid waste management hit the national headlines with the Mobro 4000 incident. Mobro, an aging garbage barge, sailed from New York and then, for the next several weeks, chugged up and down the U.S. East Coast unable to find a landfill which would accept its cargo of debris. The Mobro incident captured media attention and galvanized the erroneous perception that there was an ongoing national “garbage crisis”. Not reported in the national news was the fact that while several thousand older and unsafe landfills had been closed across the nation since the early 1970’s, hundreds of newer, larger and safer sanitary landfills had been built, thereby increasing the net US landfill capacity.

As discussed by Phillips in his treatise on *Managing America’s Solid Waste*, America seems to move from crisis to crisis in dealing with municipal solid waste. “(T)he country seems to have a garbage crisis every 15 to 30 years since 1875 because problems are only partially addressed. There are three important lessons to keep in mind when dealing with solid waste:

- Solid waste management improves to the degree that local governments invest in better analytical methods and more efficient technologies;
- Better technologies and methods come from ongoing research and development, including the kind of long range basic research funded by the federal government; and,
- Public health suffers if solid waste management fails to use the best available technologies and methods...”(7)

The perception of a garbage crisis in the late 1980’s presented opportunities for private industry to expand the solid waste transportation and disposal business network, environmental groups to create a forum for espousing the benefits of recycling, and government to pursue new solid waste standards.

During the 1990’s federal support of solid waste technology development was starting to evolve. The Environmental Protection Agency began its present direction of moving away from pollution control mandates to more voluntary strategies that would encourage private-public

partnerships and promote resource efficiency. In 1991, EPA issued improved solid waste landfill standards that addressed siting, groundwater protection, monitoring, and post-closure care. The agency also issued new performance and emissions standards for Municipal Solid Waste combustors.

In 1991, there were more than 3,000 household hazardous waste community collection programs across the country, a remarkable statistic since twenty years earlier there were only a handful of local facilities. In 1992, the first of a series of Executive Orders (Orders 12780, 12873, and 13148) to stimulate waste reduction, recycling, and procurement of recycled goods in all federal agencies was introduced by George H.W. Bush. President Bill Clinton and President George W. Bush have issued similar orders in 1994 and 2007, respectively.

In 1993, EPA ended its solid waste research program for the second time in less than 15 years all the while championing innovative solid waste methods. Political support dwindled for recycling incentives and packaging and product regulations failed. In 1994, EPA introduced two new programs: *Wastewise* to assist educational institutions, businesses and other large facilities reduce waste and recycle more materials; and the *Jobs Through Recycling* initiative to join economic development and recycling in communities through networking, grants and information sharing. In 1996, the Environmental Protection Agency set a new national recycling goal of 35%. Surprisingly, there was a small but vocal backlash against this recycling goal, with some opponents questioning the true environmental and economic benefits of recycling. (9)

Even so, EPA's recycling push has proven to be effective. By the end of the 20th century, the U.S. was recycling nearly 30 percent of its waste, with new innovations and technologies leading the way into the next millennium. At the start of 2000, EPA promoted research showing a link between global climate change and solid waste management emphasizing that waste reduction and recycling help stop global climate change. *Pay-As-You-Throw* Programs were also gaining popularity. In more than 5,000 communities across America, residents paid for solid waste collection based on the amount of waste they throw away, thereby encouraging recycling and waste reduction.

### **The Greening of America**

Increasingly, Americans are realizing they need to use materials and energy more efficiently and create less solid waste. Progressive solid waste practices are now more complicated than simply adding emission controls to incinerators, liners to landfills or closing dumps. A paradigm shift is underway in how we think about waste—not only that it should be minimized but more importantly, that it should be used again as a resource.

The wise management of material and energy resources will require a change in how we organize our society in planning for environmentally green development. Future waste management will involve internalizing the life cycle costs of materials from their inception point to disposal. Traditional regulation of specific technologies will have to be replaced with flexible,

performance based standards. Advancement will occur with research and innovation, not with prescriptive regulations.

As stated on the EPA website, the future of resource conservation has a foothold in the past.

“...a generation ago Congress passed the Resource Conservation and Recovery Act (RCRA) with the goal to ‘recover energy and other resources from discarded materials’.... Consequently, we have dealt with waste management issues through tough, enforceable regulations, by cleaning up contaminated sites, and by strictly controlling disposal. Today, we need a new approach. We need to build a sustainable program for pollution prevention, recycling, beneficial use, and conservation of these materials we once considered merely waste. This type of approach is a ‘cradle-to-cradle’ system for materials management. It promises to move us vigorously toward a world where nearly all materials are reused or recycled...” (8)

EPA's Office of Pollution Prevention and Toxic Substances (OPPTS) is working to improve efforts to save and recover valuable materials. OPPTS works to reduce risks from highly toxic materials. Its *Pollution Prevention (P2) Program* strives to reduce or eliminate waste before it is generated.

Since 2002, EPA has sought to address municipal solid waste issues through the *Resource Conservation Challenge (RCC)*. The challenge is a national effort to conserve natural resources and energy by managing materials more efficiently. *RCC* has five goals:

- 1) Assisting the nation to achieve a 35 percent recycling goal as it concerns paper, food scraps, yard trimmings and packaging and container materials by working with states, local governments, national recycling organizations, and recycling businesses to provide more opportunities for recycling at local levels;
- 2) Reusing and recycling industrial waste;
- 3) Protecting health and ecosystems by reducing risk from toxic chemical waste;
- 4) Promoting and practicing environmental stewardship for electronic products; and,
- 5) Changing our habits, processes, and practices.

A key program in the *RCC* is *America's Marketplace Recycles!* This program encourages a profit driven recycling relationship between commercial and private sectors. For over a decade, the Mall of America (Minnesota) has had a waste to livestock feeding program and sells recyclable paper goods to local paper-mills. This program demonstrates that recycling can increase corporate profits, save energy and enhance the environment.

EPA is now charting a new direction, building on the *RCC Program* and the *P2 Program*. As articulated in EPA's vision plan, the agency is looking to a future where waste will be a “concept of the past” (EPA, *Beyond RCRA: Prospects for Waste and Materials Management in the Year 2020*). An ambitious goal, EPA recognizes that success will be based on the nation's willingness to embrace full cycle, “cradle to cradle” resource conservation. EPA also acknowledges that some waste disposal will always continue to be a necessary, yet less desirable, option.

## **2.B. STATE LEGISLATION**

For over thirty years, state governments, including the State of Florida, have regulated solid waste management. They have responded to federal solid waste initiatives by creating state solid waste agencies, developing state-wide solid waste management plans and creating laws to regulate local solid waste management practices. State laws often require local governments to implement recycling, waste reduction, or specific disposal methods. While states are also responsible for enforcing federal solid waste regulations, such tasks are often delegated to local governments.

The Florida Resource Recovery and Management Act of 1988 is a direct response to federal initiatives to improve solid waste management. At the State level, the Florida Department of Environmental Protection (FDEP) plans for and regulates the storage, collection, transportation, separation, processing, recycling and disposal of solid waste as authorized by Chapter 62-701, FAC. Section 403.706, Florida Statutes (FS), was designed to implement the provisions of the Florida Resource Recovery and Management Act.

The Florida Resource and Recovery Act mandates a 30 percent reduction in the amount of waste received at landfills. This Act also provides for the development of hazardous waste management programs. The FDEP assesses the impacts of solid waste facilities on water and air quality and is the agency which provides permits for constructing and operating solid waste facilities. Water quality standards, which must be met at landfills (Chapters 62-520 and 62-522, FAC), are monitored by FDEP to evaluate the movement and composition of any potential surface or groundwater discharge.

State legislation has placed time limits on the elimination of specific solid wastes and hazardous wastes. By 1994, the City of Orlando, as required by State law, reduced its waste load by 30% with less than one half of this reduction from yard trash, white goods, construction wastes or tires. A summary of restrictions that the City in partnership with Orange County have met over the past three decades is provided in Figure SW-1. No additional restrictions have been required since the mid-1990's.

The City of Orlando and Orange County do not manage regulated hazardous wastes. Hazardous wastes are regulated by Florida Department of Environmental Protection under Chapter 17-730, FAC. These rules apply to owners, operators and transporters of hazardous waste, as well as provide permit criteria for the operation of hazardous waste facilities. Other rules under Chapter 17-730 implement County and regional hazardous waste management programs, management by governmental agencies and siting of a multi-purpose hazardous waste facility.

In 1990, Orange County Solid Waste Division instituted a Household Hazardous Waste (HHW) collection program. This program collects non-regulated hazardous wastes generated by Orange County residents and participating municipalities. At present, there are three collection

sites: Orange County Landfill, LB McLeod Road Transfer Station, and Porter Road Transfer Station. Community collection events are held quarterly at various other County facilities.

### FIGURE SW-1: SUMMARY OF ACCOMPLISHMENTS

<b>Time Period</b>	<b>Accomplishments</b>
October 1, 1988	Used oil restricted from landfill
January 1, 1989	Lead-acid batteries restricted from landfill
July 1, 1989	Counties in Florida initiate formal recycling programs Used tires are restricted from landfills
January 1, 1990	White goods restricted from landfill
January 1, 1992	Yard trash restricted from landfill
December 31, 1994	30% reduction of solid waste into landfill

## 2.C. LOCAL REGULATIONS

### Orange County

Due to the non-jurisdictional nature of natural resources, a number of Orange County's ordinances directly impact its municipalities. As described under County Ordinance No. 99-16 which addresses solid waste, the Orange County Utilities Department is responsible for the management and operation of the County's refuse disposal facilities, which, through the establishment of an inter-local agreement, serve the City of Orlando. Permitting of privately operated solid waste management facilities within unincorporated Orange County is carried out by Orange County's Environmental Protection Division (OCEPD). Transfer operations and refuse operations are conducted at the County Solid Waste Management Facility and transfer station sites by the Orange County's Utilities Department's Solid Waste Division. The mandate of this division is to operate and maintain solid waste management services and facilities, and ensure compliance with permitting requirements.

### Interlocal Agreement

As noted earlier, the City of Orlando and Orange County have an agreement which establishes an integrated County Solid Waste Management System. This system is designed to serve the disposal needs of all Orange County residents and meet the concurrency requirements of the Local Government Comprehensive Planning and Land Development Regulation Act (Chapter 163 Part II, F.S.). The inter-local agreement also establishes disposal and transfer fee rates, recycling grant sharing, and establishes access to City residents for a number of specialized services. These services include: the Household Hazardous Waste (HHW) transfer facilities and events, County Compost Give-Away Program and the County Solid Waste Hotline.

## **City of Orlando**

Chapter 28 of the City Code regulates solid waste collection within the City limits. As defined under Section 28.02, “...(i)t is the policy of the City of Orlando to enhance the beauty and quality of the environment, conserve and recycle natural resources, prevent the spread of disease and the creation of nuisances, protect the public health, safety, and welfare of the general public through the adoption, administration and regulation of a solid waste management program...” Chapter 28 is divided into three articles. Article I provides definitions, defines authority, and outlines the City’s responsibility in collecting solid waste. As stated in Section 28.05, “...all solid waste accumulated in the City shall be collected, conveyed and disposed of by the City or its designated agents, licensees, franchises or contract representatives under the direction of the Solid Waste Division...”

Article II addresses residential and commercial solid waste collection and disposal and outlines fees, collection frequencies, and bundling criteria for collection. At present, the quantity of residential solid waste, for a daily pick up, is limited to one 95-gallon cart of garbage and four loose yards of rubbish. Collection restrictions are also placed upon contagious, flammable, or explosive materials. There are also specific requirements for construction and demolition debris producers, outside collectors and industrial waste transport.

The last article, Article III, was created due to enormous public interest in preserving the environment by reducing the amount of solid waste sent to landfills. As stated under City Code, Chapter 28 Section 28.14 “...(b)ecause of the solid waste disposal problems and potential solution to some of these problems provided by recycling, it shall be the policy of the City of Orlando to encourage recycling of recyclable materials to the fullest extent possible...” Accordingly, this article provides rules governing the collection, storage or scattering of recyclable materials. At present, the City has voluntary single family and multi-family recycling programs. Recyclable materials must be placed in the plastic recyclable material containers furnished by the City. Moreover, recyclable material when stacked and bound pursuant to Section 28.15(1)(a) shall not exceed 40 pounds in weight. The latter part of this article addresses the registration of private entities engaged in recycling.

### **3. LANDFILLS**

Not so long ago a community’s refuse was dumped in distant locations, forming mountains of garbage that loomed above the horizon. Depending on which way the wind blew, public dumps could be perceived from miles away. Due to government legislation, much has changed over the past 50 years. No longer do “junkmen” run open-field dumps, surrounded by smoking incinerators. Today, professionals such as environmental planners, biochemists and civil engineers operate modern landfills. These landfills have evolved into carefully engineered containment systems, designed to separate the solid waste from the environment and minimize the negative ecological impact.

Different types of landfills are designed for different types of wastes. Construction and demolition debris (C&D) landfills are built for the disposal of asphalt, shingles, wood, bricks, and glass. Municipal solid waste (MSW) landfills are created for the disposal of residential, non-hazardous commercial, and non-hazardous industrial wastes. A small number of specifically designed landfills serve as the final disposal option for treated hazardous wastes that once were flammable or toxic wastes.

Chapter 17-701.050 of the Florida Administrative Code, classifies landfills into three (3) classes by the amount and type of solid waste that is accepted. Class I landfills receive an average of 20 tons or more of waste per day or 50 cubic yards or higher per day with a mandatory daily cover. Class II landfills receive less than 20 tons per day or less than 50 cubic yards per day with a mandatory cover once every four days. Class III landfills receive only demolition or construction wastes or yard trash with a mandatory cover once every week and may be exempt from liner, leachate and gas control requirements. The Florida Department of Environmental Protection (FDEP) issues permits for Class I and II landfills. Orange County issues permits for Construction and Demolition Debris and Class III Waste Disposal Sites in unincorporated Orange County.

### **3.A. ORANGE COUNTY LANDFILL**

The principal landfill in Orange County is the 1,500-acre Orange County Solid Waste Management Facility which is generally located east of the Central Florida Greenway and south of Curry Ford Road. Operated by Orange County's Solid Waste Division, it is the largest government-owned landfill in Florida and the state's third-largest overall. First opened in 1972, it contains Class I and Class III disposal areas. On a daily basis, this facility receives over 3,000 tons of solid waste. Currently, two cells are permitted as operational.

Refuse cells in the landfill are designed to utilize the high-rise method, where refuse is layered so as to create a mountain effect and remains above the groundwater table. Since 1990, Class I landfills have been required to be lined to prohibit the escape of leachate. Liners were not originally used at the principal Orange County site because the Florida Department of Environmental Protection did not require a liner for the County's initial disposal program.

In addition to the 1,500 acre facility site, Orange County recently acquired an additional 3,300 acres which will serve to expand the landfill area. This acreage is situated directly adjacent to the existing landfill. The additional acreage will create a buffer from future residential development, facilitate wetlands restoration and extend the life of the landfill by 20 years.

#### **Reuse of Landfill Runoff**

It has long been known that landfill garbage produces by-products such as runoff water and methane gas. State regulators, in the early 1990's, identified water-quality violations in treated runoff from the Orange County landfill which was being discharged into a cypress swamp feeding the Little Econlockhatchee River. In order to correct this problem, now, on a daily basis,

approximately 2 million gallons of the landfill's treated stormwater is piped 1.5 miles to the Orlando Utilities Commission's Curtis H. Stanton Energy Center instead of into surrounding habitat. Not only is the stormwater from the landfill vaporized during the cooling process, no potable water needs to be drawn thereby conserving water and energy.

### **Methane Gas-to-Energy System**

Orange County's landfill also houses a gas-to-energy system which consists of 40,000 lineal feet of collection pipe, a gas transmission pipeline, and a pump station. Designed by the Orange County Solid Waste Department and several consultants, the gas-to-energy system was recently sold to DTE Biomass Energy, Inc. DTE Biomass will own and operate the landfill gas recovery project over the term of a 20-year contract with Orange County. The project takes advantage of \$4 million in federal funding and tax incentives allowing OUC's Stanton Energy Center to partially replace finite fossil fuel with a cleaner burning, renewable energy source.

The gas-to-energy system uses landfill gas which is collected from approximately 200 acres of waste which has been deposited at the Orange County landfill since the early 1990s. After collection, the gas is sent to OUC's Stanton Energy Center where it is used to generate electricity. The waste at the landfill, in addition to the waste expected to be deposited over the next 20 years, will be the source of as much as 6,000 standard cubic feet of landfill gas per minute, or enough fuel for OUC to generate electricity for 13,000 homes.

This project benefits Orange County and its partners both financially and environmentally. Orange County stands to make \$400,000 per year for rights to the landfill gas, in addition to the \$5 million system purchase price. The Orange County landfill gas project will reduce methane emissions by almost 31,000 tons per year at capacity, improving the global environment and ensuring a healthy environment. As an added benefit, the project has already reduced landfill odor complaints. The Orlando Utilities Commission has benefited by being able to take advantage of the less expensive fuel, reduced emissions, and tax incentives granted to project developers to enhance the feasibility of retrofitting boilers to burn landfill gas.

With the success of this project, Orange County is considering adding horizontal gas collection lines into future landfill cells as the landfill lifts are constructed to optimize gas collection. In addition, the County is considering constructing leachate recirculation lines to reduce leachate and maximize moisture content for gas generation.

### **Landfill Capacity**

The City represents less than one-sixth of the total solid waste deposited at the Orange County landfill. It is anticipated that the active Orange County landfill site will reach capacity in and around 2030. Through land acquisition and planning, efforts are already underway to provide future landfill capacity.



The cost to operate an acre of landfill is increasing as well. State regulations now require all cells at the landfill be lined, which increases the cost of the landfill. Currently, estimated start-up costs for landfills run between \$160,000 and \$180,000 per acre. But few people realize that when a landfill is closed, a tremendous continuing cost to monitor its effects upon the environment remains for future generations. Any increase in the landfill life span will be rewarded in monetary and environmental savings long into the future. Since the City represents one of the primary users of the landfill, the City must accept responsibility to prolong its lifespan and defer costs of operation. Figure SW-2 indicates that a number of cells have not reached capacity. Cell 12 will not meet its anticipated fill date until 2031.

**FIGURE SW-2: ORANGE COUNTY’S LANDFILL REMAINING CAPACITY**

Cell	Acres	Waste Capacity (CY)	Anticipated Operational Start Date	Anticipated Fill Date	Years Cell is in Operation
<b>9</b>	55	5,894,000	2005	2011	6
<b>10</b>	66	8,591,000	2010	2018	8
<b>11</b>	75	8,457,000	2017	2025	6
<b>12</b>	76	7,967,000	2024	2031	6
<b>Total</b>	<b>272</b>	<b>30,909,000</b>			<b>26</b>

*Source: Orange County Solid Waste Department, 2008*

### **3.B. PRIVATE LANDFILLS IN ORANGE COUNTY**

As detailed under Figure SW-3, there are five private Class III facilities operating in Orange County. Unlike publicly-run Class I facilities, these private landfills do not have the same liner or leachate control requirements and standards. As demonstrated through research, C&D debris and Class III waste do not decompose at the same rate as Class I waste. Accordingly, the generation of leachate is expected to be minimal. Nevertheless, as required under State regulations (FAC 62-701) and Orange County Codes, private landfills must undergo groundwater and waste stream monitoring, regulatory monthly inspections, financial assurance requirements, and closure and post-closure care. For post-closure Class III facilities, these activities must be performed for 30 years, while for C&D debris landfills they must be carried out for five years.

The original Orange County Solid Waste Management Ordinance (#92-19) regulated privately operated landfills in unincorporated Orange County. In June of 1999 and then in December of 2005, the ordinance was amended to address private facilities which carried out activities such as composting, used oil recycling, waste tire processing, incinerators, materials recovery, yard trash and land clearing debris recycling, and transfer stations. In general, the Solid Waste Management Ordinance addresses all state requirements, but also includes stricter requirements in the areas of landfill. Another important modification, approved in December 2005, was the creation of a mechanism that allows the use of one financial assurance

instrument to cover the State and County closure and post-closure care cost in the case of abandonment of a private facility.

Operators of private landfills are required to submit the estimated life of the site with their applications. Additionally, they are required to report quarterly the data needed for EPD to track the remaining airspace. This information provided by the operators allows EPD to project future remaining air space at the privately owned landfills.

**FIGURE SW-3: PRIMARY ACTIVE LANDFILLS AND DUMPS – 2007**

<b>Facility</b>	<b>Ownership</b>	<b>Class</b>
Orange County Landfill	Orange County	Class I/Class III
Keene Road Landfill	Private	Class III
Keene Road Disposal	Private	Class III*
Golden Gem Road Landfill	Private	Class III
Vista Landfill, LLC., (Buttrey/Keene Road South)	Private	Class III
Bay Lake	Private	Class III
Hubbard Company (Mid Florida Materials)	Private	Private Construction and Demolition (C & D) Debris Facilities
Pine Ridge C and D Debris Landfill (AKA 545 Sanifill LF)	Private	
West Orange Environmental Landfill	Private	

\* Located within the City of Apopka

Source: Florida Department of Environmental Protection Division,  
[http://www.dep.state.fl.us/waste/categories/solid\\_waste](http://www.dep.state.fl.us/waste/categories/solid_waste), April 2007.

Other active but smaller landfills, dumps and related facilities include: Reedy Creek Transfer Station, All-Rite Recycling, Recycle America of Orange County, Central Florida Rock and Supply, Inc., Perma-Fix of Orlando, Inc., West Orange Environmental Resources/CDS, Honey Bee Ranch LCD, Taft Recycling, Angelo’s Recycled Materials, Inc., A-1 Auto Salvage, E & H Car Crushing Co., Rocket Blvd. Materials Recovery Facility, and US Filter Recovery Services.

### **3.C. FUTURE USES OF LANDFILLS**

The environmental impact of our waste has been reduced as the design, operation, and management of landfills has improved. Landfill design now involves a wide array of engineering safeguards which facilitate the reclamation of closed landfills. Several closed landfills have been successfully converted into community green space, recreational areas, golf courses, as well as commercial, industrial, and residential uses. A successful reuse project in Florida is the 70 acre Northwest 58<sup>th</sup> Street Landfill Superfund site in Miami-Dade County, which was recently converted into a wildlife habitat and soccer facility.

Landfills can also be mined. In landfill mining, the landfill is excavated, and the fill is processed in an effort to recover valuable products. The separation process involves a number of different

mechanical separation procedures. Some recoverable products include recyclable materials, valuable minerals, combustible fractions, soil, and, thus, landfill space. In addition to finding non-traditional uses for the closed landfills, there are also alternate technologies. These technologies are described under the Orange County Landfill section.

The City is also joining Orange County and Orlando Utilities Commission (OUC) to pursue a solid waste gasification facility. Most gasification plants work by subjecting waste to extreme heat in the absence of oxygen. Under these conditions, the waste breaks down to yield a blend of hydrogen and carbon monoxide called *syngas* that can be burned in turbines and engines. Until recently, high operating costs has held back generalizing technology in North America. Nonetheless, demonstration projects in Ontario (Canada) and Hawaii will help other communities develop affordable technology. The benefits are significant since the City would be able to eliminate the recycling fleet and all materials could be placed in a single cart for disposal at the gasification facility.

### **3.D. CITY OF ORLANDO SOLID WASTE DISPOSAL**

All solid waste collected within the City Limits is collected by the City of Orlando or its designated agents and is deposited in Orange County's sanitary landfill located east of Orlando. The City does not have jurisdiction in the disposal of solid waste. The state has delegated this responsibility to the County, which is taking the necessary steps in assuring there will be adequate disposal capacity in the future. There are no permitted landfills within the City of Orlando.

#### **Transfer Stations**

There are three permitted transfer stations within the City: the McLeod Road Transfer Station (which is leased to Orange County), Waste Management's Orlando Transfer, and the Kaley Street Transfer Station (a closed facility owned by Waste Management, Inc). The McLeod Road Transfer Station, located on McLeod Road, began operations in April 1986. The capacity of the facility is 600 tons/day. The McLeod Road Transfer Station, which was previously an incinerator facility owned by the City of Orlando, is functioning adequately with minimal delays during vehicle unloadings. The County's conversion of this facility to a transfer station allowed it to close the less efficient 200 ton/day Tropical Transfer Station.

There are two additional transfer facilities near the City Limits. The Taft Transfer Station is operated by Waste Service of Florida, Inc. and is just west of OIA (multipurpose transfer station). The Porter Transfer Station is owned by Orange County northwest of the Rosemont area of the City.

#### **Inactive Landfills**

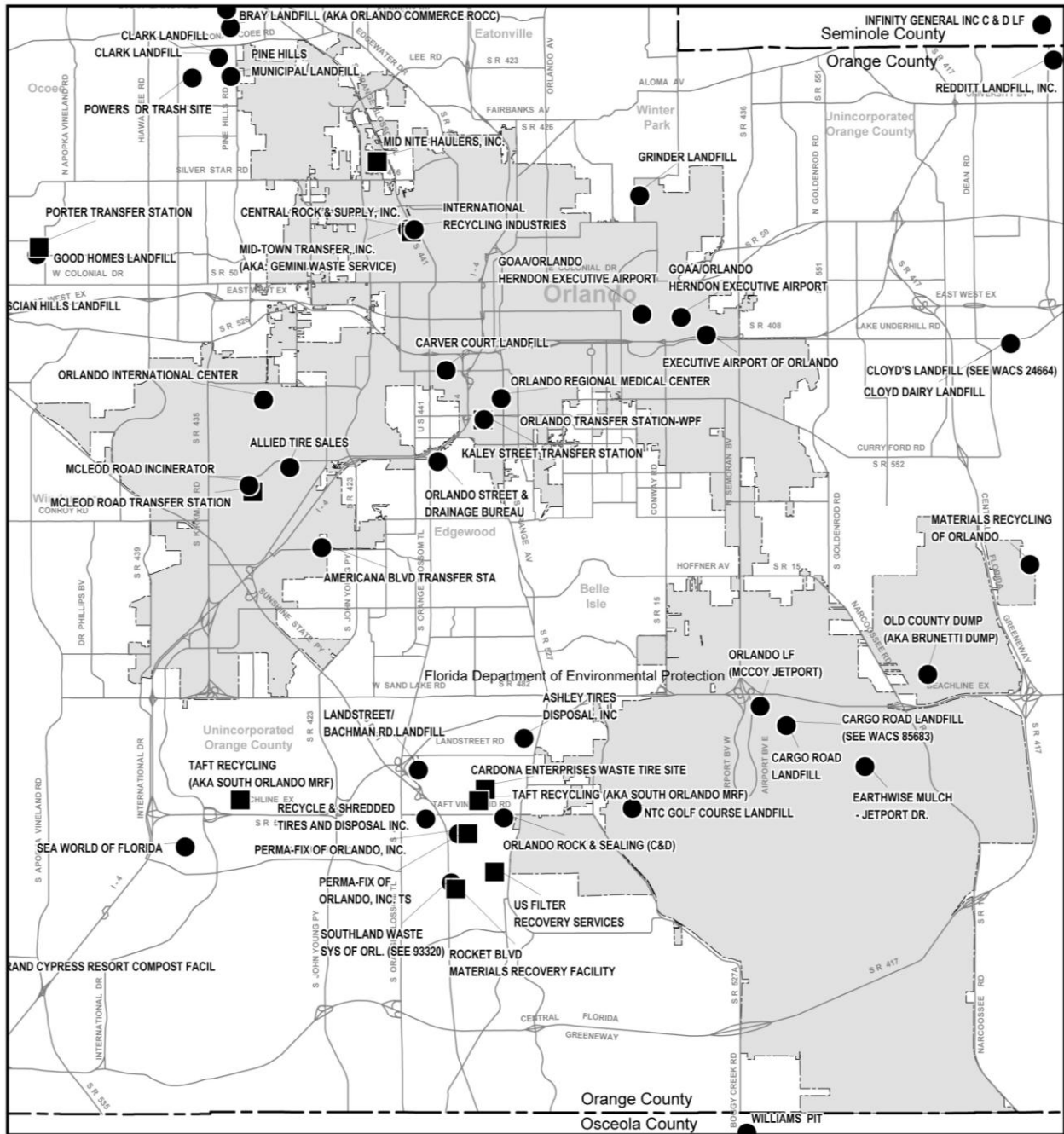
While there are no legally permitted active landfills within the City limits, there are numerous inactive landfills within City limits and the planning area. Inactive landfills have the potential to

impact the City's water and land resources. Solid waste disposal in unlined landfills allows contaminated leachate to percolate into the groundwater or discharge into surface waters. Most of the inactive landfills were opened and abandoned before regulations were enacted to regulate the type of material landfilled, and to require disposal and closure criteria.

Many inactive landfill locations are still unknown and may be affected by new development. When these inactive landfills are located in aquifer recharge areas and/or potable water well fields, they can cause contamination of local water resources. Figures SW-4 and SW-5, on the following pages, provide information about the location of active and inactive landfills, dumps and related facilities in and around the City of Orlando.

**Figure  
SW-4**

**Active & Inactive Dumps,  
Landfills and Related Facilities**



**LEGEND**



-  Orlando City Limits
-  Active
-  Inactive



City of Orlando Economic Development Department  
City Planning Division August, 2008

Source: Florida Department of Environmental Protection

**FIGURE SW-5: INACTIVE AND CLOSED LANDFILLS, DUMPS AND RELATED FACILITIES FOUND IN AND AROUND THE CITY OF ORLANDO – 2007**

<b>Name</b>	<b>Status*</b>	<b>Location</b>
ACME Recycling Inc	Inactive	Apopka
A-K Closed LF	Closed	Orlando
Allied Tires Sales	NFA	Orlando
Americana Blvd. Transfer Station	Clean-Up	Orlando
Bert's Waste Tires	Clean-Up	Orlando
Bray Landfill	Closed	Orlando
Cargo Road Landfill	Closed	Orlando
Cargo Road Landfill (See WACS 85683)	Inactive	Orlando
Carver Court Landfill	NFA	Orlando
CBS	NFA	Apopka
Clark Landfill	NFA	Lockhart
Cloyd Diary Landfill	NFA	Orlando
CWI ( AKA Schofield/545)	Inactive	Bay Lake
Danco	Clean-up	Plymouth
Demonstration Landfill	Closed	Orlando
Fields Robinson LCD	Inactive	Apopka
GOAA/Orlando Hernadon	Clean up	Orlando
Good Homes Landfill	NFA	Orlando
Grand Cypress Resort Compost Facility	NFA	Lake Buena Vista
Grinder Landfill	NFA	Orlando
I.G. Fonte	Clean Up	Orlando
International Recycling Industries	Clean Up	Orlando
Itner Trash Site	NFA	Apopka
Kaley Street Transfer Station	Clean Up	Orlando
Keene Road Disposal	Inactive	Apopka
Landstreet/Bacman Rd. Landfill	NFA	Orlando
Lucien Hills Landfill	Clean Up	Orlando
McCleod Road Incinerator	NFA	Orlando
Mid-Florida Materials	Inactive	Apopka
Mid-Town Transfer, Inc.	Clean-Up	Orlando
NTC Golf Course	NFA	Orlando
Old County Dump ( AKA Brunetti)	Closed	Orlando
Orange County HWY/Avalon C&D	Inactive	Winter Gardens
Orange Cty SW Energy Conversion Project	Inactive	Lake Buena Vista
Orange County TS #2	NFA	Apopka
Orlando International Center	NFA	Orlando
Orlando LF ( McCoy Jetport)	Closed	Orlando
Orlando Regional Medical Center	Clean Up	Orlando
Orlando Rock and Sealing ( C&D)	NFA	Orlando
Orlando Street and Drainage Bureau	NFA	Orlando

Name	Status*	Location
Pine Hills Municipal Landfill	Closed	Orlando
Pine Ridge ( AKA Sanifill)	Inactive	Winter Garden
Plymouth Landfill/Class III	NFA	Orlando
Powers Drive Trash Site	NFA	Orlando
Reaves Road LF	NFA	Ocoee
Reclamation & Restoration Inc.	NFA	Lake Buena Vista
Route 50 Recycling	NFA	Orlando
Southland Waste System of Orlando	Inactive	Orlando
Tangerine Trash Site	Closed	Zellwood
Tire Eagle Inc	Clean Up	Apopka
Vulcan	Inactive	Orlando
Walt Disney World SLF	Inactive	Lake Buena Vista
Winter Garden Crest Ave WWTP	Closed	Winter Garden
Winter Garden Trash Site	NFA	Winter Garden
WMI-Landfill Recyclables	Clean Up	Orlando

\*NFA: No further action

Source: Florida Department of Environmental Protection Division,  
[http://www.dep.state.fl.us/waste/categories/solid\\_waste](http://www.dep.state.fl.us/waste/categories/solid_waste), April 2007.



*Solid Waste Claw Truck*

## 4. COLLECTION SYSTEM

### 4.A. SOLID WASTE AND RECYCLING COLLECTION

The City does not collect solid waste from any other jurisdiction nor does another jurisdiction collect within the City. As of January 2008, the Division of Solid Waste Management had a total of 60 trucks for residential and commercial pick up including four claw trucks for bulk refuse. Pick-up for residential collections runs on two-day cycles. Commercial pick-ups are provided on an as-needed basis and run on a 6-day week. There are 14 automated residential routes and 10

commercial routes which serve 47,188 standard residential curbside collection customers, and 9,978 commercial customers. The average number of homes per route is 1,200 with the largest being 1,300 homes. There are currently 36 private companies collecting commercial solid waste within the City through non-exclusive franchise agreements. These companies are allowed to provide "roll-off" and construction container services within the City. The franchise solid waste collection data has not been included in this analysis.

The City's collection service is very efficient when compared to the industry standard of 900 homes per route. Historical solid waste generation for the City is shown in Figure SW-6. Total solid waste collection has marginally increased over the past four years to 165,975 tons in 2007. Residential waste accounts for approximately 43% of all waste collected in 2007 with commercial waste accounting for the remainder. It is anticipated that the residential share will continue to decrease.

Figures SW-7A, 7B, and 7C show the City's residential, commercial, and recycling collection routes.

**FIGURE SW-6: HISTORICAL CITY SOLID WASTE COLLECTIONS IN TONS: 1995-2007**

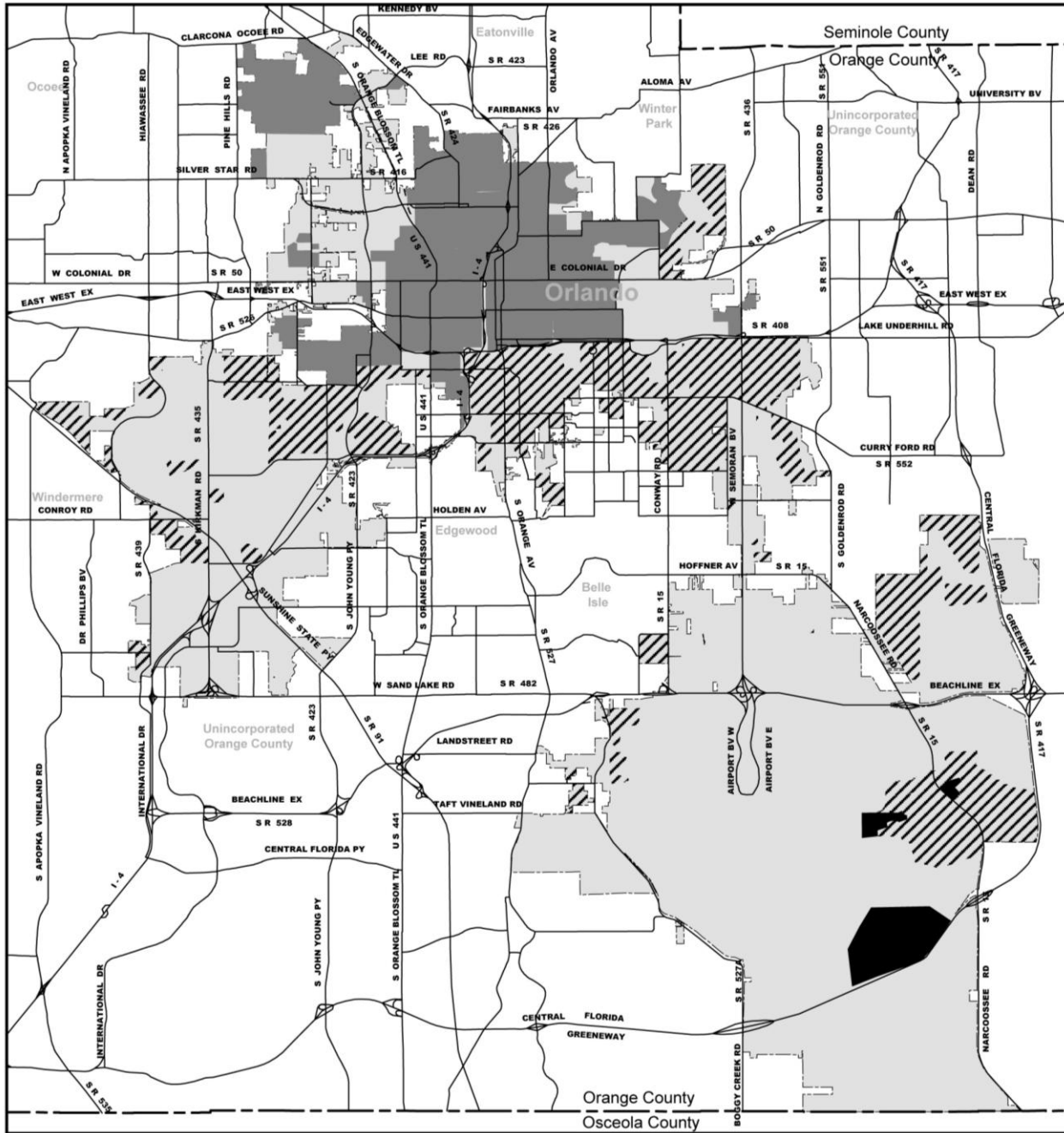
<b>Year</b>	<b>Residential</b>	<b>%</b>	<b>Commercial</b>	<b>%</b>	<b>Bulk</b>	<b>%</b>	<b>Total</b>
1995	60,539	46.9	65,656	50.9	2,905	2.3	129,100
1996	61,881	44.7	73,591	53.2	2,906	2.1	138,378
1997	60,870	45.6	69,717	52.2	3,006	2.3	133,593
1998	61,387	45.0	71,873	52.7	3,067	2.3	136,291
1999	65,129	46.2	72,680	51.5	3,128	2.3	140,937
2000	69,223	46.4	76,431	51.3	3,190	2.3	148,885
2001	68,914	45.5	79,208	52.3	3,254	2.2	151,376
2002	68,793	44.1	83,812	53.7	3,287	2.2	155,892
2003	67,319	43.7	83,177	54.0	3,336	2.3	153,832
2004	68,165	43.2	86,243	54.6	3,387	2.2	157,795
2005	69,201	43.0	89,298	55.0	3,427	2.0	161,926
2006	70,239	43.5	88,053	54.5	3,495	2.0	161,787
2007	71,292	43.0	91,135	54.5	3,548	2.5	165,975

Source: City of Orlando Solid Waste Management Division, 2008

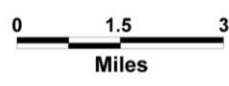


**Figure  
SW-7A**

# Residential Garbage Collection Routes



**LEGEND**



- Monday/Thursday Residential Pickup
- Tuesday/Friday Residential Pickup
- Wednesday Pickup
- Non Residential Pickup
- Orlando City Limits

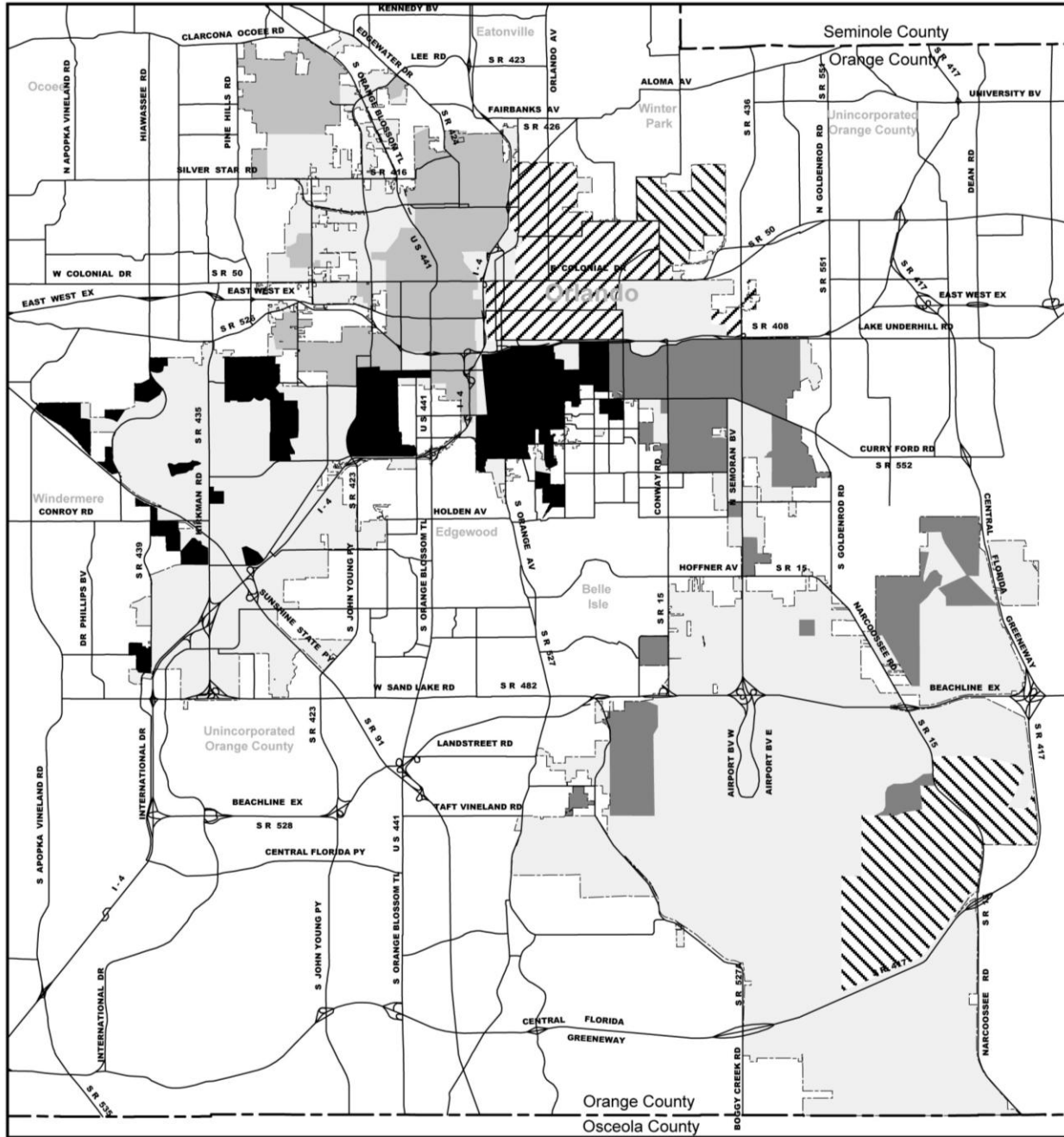


City of Orlando Economic Development Department  
City Planning Division August, 2006

Source: Solid Waste Management Division

**Figure  
SW-7B**

# Residential Recycling Collection Routes



**LEGEND**



- Monday Residential Pickup
- Tuesday Residential Pickup
- Wednesday Pickup
- Thursday Pickup
- Friday Pickup
- Non Residential Pickup
- Orlando City Limits

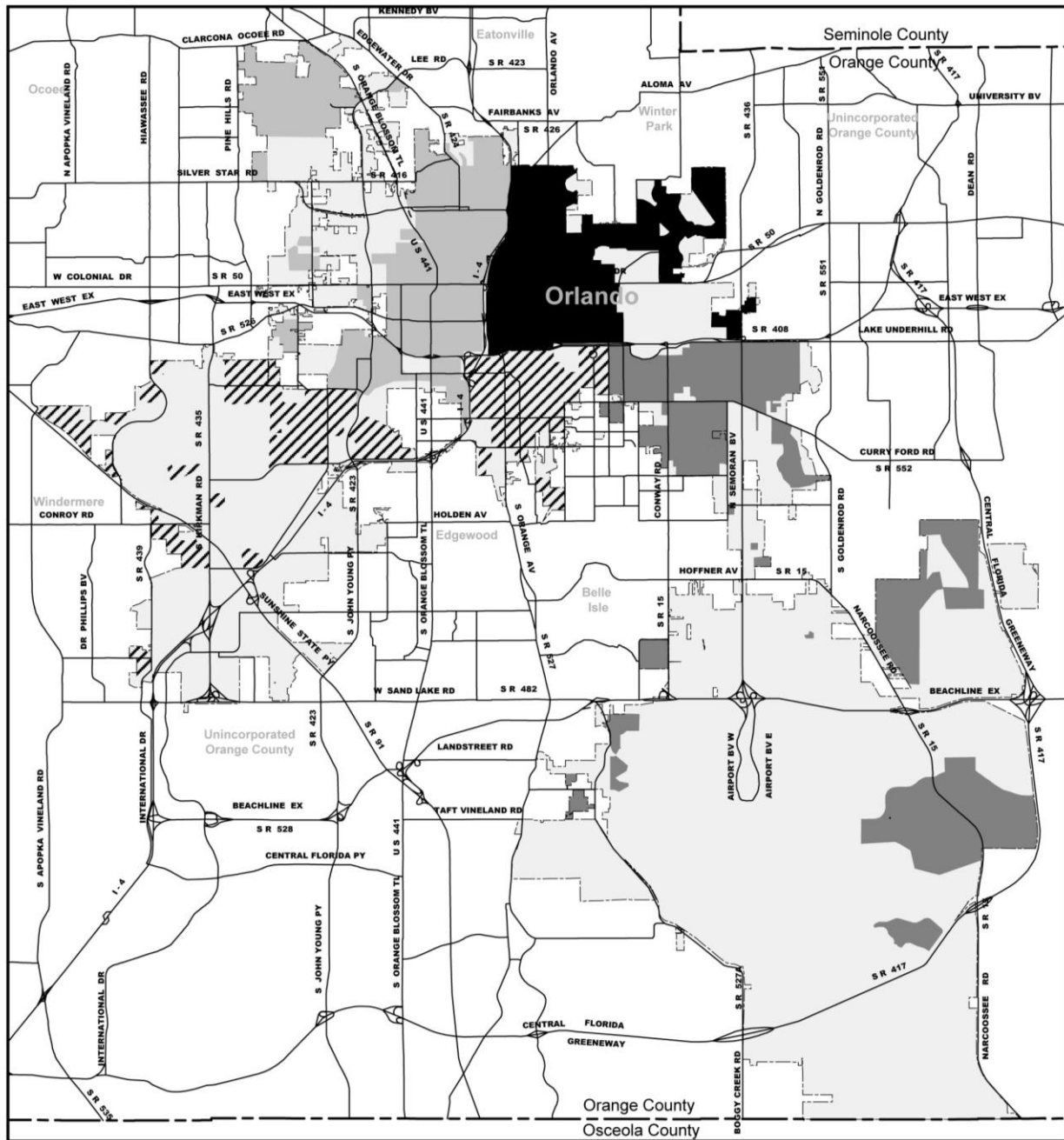




City of Orlando Economic Development Department  
City Planning Division August, 2008

Source: Solid Waste Management Division

**Figure  
SW-7C**

**Residential Yard Waste Collection Routes**



<b>LEGEND</b>	<ul style="list-style-type: none"> <li><span style="display: inline-block; width: 20px; height: 10px; background-color: #cccccc; border: 1px solid black; margin-right: 5px;"></span> Monday Residential Pickup</li> <li><span style="display: inline-block; width: 20px; height: 10px; background-color: #808080; border: 1px solid black; margin-right: 5px;"></span> Tuesday Residential Pickup</li> <li><span style="display: inline-block; width: 20px; height: 10px; background: repeating-linear-gradient(45deg, transparent, transparent 2px, black 2px, black 4px); border: 1px solid black; margin-right: 5px;"></span> Wednesday Pickup</li> <li><span style="display: inline-block; width: 20px; height: 10px; background-color: black; border: 1px solid black; margin-right: 5px;"></span> Thursday Pickup</li> <li><span style="display: inline-block; width: 20px; height: 10px; background-color: #e0e0e0; border: 1px solid black; margin-right: 5px;"></span> Non Residential Pickup</li> <li><span style="display: inline-block; width: 20px; border-bottom: 1px dashed black; margin-right: 5px;"></span> Orlando City Limits</li> </ul>	 <p><b>NORTH</b></p>
 <p>0      1.5      3 Miles</p>		
<p>City of Orlando Economic Development Department City Planning Division August, 2008</p>		<p>Source: Solid Waste Management Division</p>

In Figure SW-8, City solid waste generation is compared to County solid waste generation. County figures represent the total amount of all solid waste deposited in the county landfill. The ratio of City solid waste to the total County collection has shown a relatively steady decrease from 17.62% to 14.19% between 1999 and 2006. It is assumed that the main reason for the decline is due to the tremendous residential growth in other municipalities and in the unincorporated areas of Orange County. It is also anticipated that the City's portion of County waste will continue to decline based upon the County's waste and population projections as well as existing recycling efforts and increased franchise collections.

**FIGURE SW-8: COMPARISON OF CITY TO COUNTY SOLID WASTE GENERATION (TONS): 1999-2006**

<b>Year</b>	<b>City</b>	<b>County</b>	<b>%</b>
<b>1999</b>	140,937	799,658	17.62
<b>2000</b>	148,885	808,135	18.42
<b>2001</b>	151,376	859,751	17.60
<b>2002</b>	155,892	977,087	15.95
<b>2003</b>	153,832	1,081,518	14.22
<b>2004</b>	157,795	1,350,153	11.68
<b>2005</b>	161,926	1,152,412	14.05
<b>2006</b>	161,787	1,139,757	14.19

*Source: City of Orlando Solid Waste Division-Data-1999-2006; Orange County Solid Waste Department, 2008*

The *Orange County, Florida and the City of Orlando, Florida for City Use of the County Solid Waste Management System Interlocal Agreement* stipulates that Orange County will accept the solid waste generated by the City of Orlando. The agreement also requires that the City of Orlando shall deliver at least eighty percent (80%) of all Class I residential garbage it collects for disposal to the County Solid Waste Management System Class I facility at specified disposal fee rates. Moreover, for purposes of concurrency the City of Orlando may incorporate the interlocal agreement by reference into the Solid Waste and Capital Improvement Elements.

Projected generation figures for the City are provided in the County's Solid Waste Master Plan. The City of Orlando has been allocated a landfill capacity of 24% from 2007 until 2030. A comparison of County allocation to the City's projections show the City is well below the County's allocation. In addition, the County has obtained an additional 3,000 acres for disposal, which should be on line before the existing landfill capacity is exhausted.

#### **4.B. HAZARDOUS WASTE COLLECTION**

The City of Orlando does not have jurisdiction in regulating hazardous wastes within its corporate limits. It also does not collect any hazardous wastes from its customers. The Florida Department of Environmental Protection and Orange County's Environmental Protection

Department are the lead agencies responsible for managing any hazardous wastes generated within the City Limits.

Actual figures for the amount of hazardous wastes generated in the City are not available. However, FDEP published a report in 1987 entitled "*Local Hazardous Waste: Management Assessment Data*" for Orange County. From this data, the City can estimate its percentage of hazardous waste generation within the County. This method assumes that the generation rates of hazardous wastes are equal throughout the County. In fact, this method underestimates the volume of hazardous waste in the City because the City contains a higher proportion of industrial land uses than other areas. However, new industrial parks are being built in developing areas of the County and this will lower the City's share of future generation. Figure SW-9 shows the percent of hazardous waste generated in Orange County (including cities) by type in 2006. The largest hazardous waste type is latex paint, which makes up approximately 52.59% of all hazardous waste generated. The City's share of hazardous waste can be calculated by multiplying the percentage of total City waste by the total amount of annual hazardous waste. Figure SW-10 shows the estimated hazardous waste generated inside City limits.

**FIGURE SW-9: HAZARDOUS WASTE GENERATED IN ORANGE COUNTY BY TYPE IN 2006**

<b>TYPE</b>	<b>POUNDS</b>	<b>% of TOTAL</b>
Flammable Liquid	72,502	7.82
Flammable Solid	35,215	3.80
Aerosols	2,934	0.32
Roof Material	0	0
Corrosives	24,045	2.59
Oxidizers	4,483	0.48
Pesticides	47,501	5.12
Household Batteries	426	0.05
Non Regular Materials	0	0
Oil Based Paints	57,091	6.51
Antifreeze	17,121	1.85
Waste Oil	116,486	12.56
Latex Paint	487,800	52.59
Acid Batteries	62,000	6.68
<b>TOTAL</b>	<b>927,604</b>	<b>100%</b>

*Source: Orange County Solid Waste Department, 2008*

**FIGURE SW-10: ESTIMATED ANNUAL CITY HAZARDOUS WASTE 1999-2006**

Year	Solid Waste (Tons) in the City	Hazardous Waste (Tons) in the City
1999	140,937	57.22
2000	148,885	60.45
2001	151,376	61.46
2002	155,892	63.29
2003	153,832	62.46
2004	157,795	64.06
2005	161,926	65.74
2006	161,787	65.69

*Source: City of Orlando Planning Division, 2008*

In 2006, the County generated approximately 927,604 pounds of hazardous waste. The City's share of hazardous waste can be calculated by dividing the annual hazardous waste figure for the County by the 2006 annual County non-hazardous waste. This equals 0.000406 tons of hazardous wastes for every ton of non-hazardous waste. Using this multiplier, Figure SW-10 shows the estimated hazardous wastes generation inside the City limits.

Figure SW-11, below, gives the hazardous waste management practices used in the disposal of common hazardous wastes in Orange County.

**FIGURE SW-11: ORANGE COUNTY HAZARDOUS WASTE DISPOSAL METHODS**

Waste Description	Disposal Method
Flammables	Fuel Blend
Pesticides	Incineration
Acid	Treatment
Caustics	Treatment
Waste Oil	Recycle
Batteries	Recycle
Florescent Bulbs	Recycle

*Source: Orange County Solid Waste Department, 2008*

Orange County has also established permanent hazardous waste disposal sites at the County landfill and the McLeod Road Transfer Station. Disposal can also be accomplished through the eight local hazardous waste transporters that are registered with the Florida Department of Environmental Protection (FDEP). Despite the availability of these services, hazardous waste generated within the City typically goes untreated or improperly disposed. Common problems include ignorance of proper disposal methods and unwillingness to spend the time and money needed to make a special trip to a disposal site.

The US EPA and FDEP have also taken steps to reduce hazardous waste generation through innovative programs, such as the *Hazardous Waste Minimization Program*. While this program works with industries to curb the production of hazardous by-products, problems from improper residential disposal of hazardous substances have not been ignored. Orange County's Household Hazardous Waste Program received the *North American Hazardous Materials Management Association's 2006 National Award for Program Excellence in the Large Population Category*. The County's program is funded by landfill disposal fees paid by City residents for general solid waste collection, therefore disposal of hazardous waste is free of charge to City residents. By law, hazardous waste cannot be collected curbside. Household hazardous waste, such as cleaning products, pesticides, and paint can be disposed of by City residents at the Orange County Landfill, L.B. McLeod Transfer Station and Porter Road Transfer Station.

Recognizing the problem of hazardous disposal, the City should continue to support County and FDEP "Amnesty Days" for hazardous waste pick-up. The City should continue to coordinate its efforts with the Orange County Environmental Protection Department in obtaining a complete list of hazardous waste generators within the City and the amounts and type of wastes generated. In addition, the City should support the educational efforts of the County's EPD. The educational program should also work in coordination with the City's Greenworks initiative to reduce the use of hazardous material and promote safe hazardous waste disposal.

## **5. RECYCLING**

There are five effective alternative methods to landfilling solid waste. These include: 1) source reduction, 2) reuse, 3) recycling, 4) composting, and 5) thermal conversion with stringent air quality controls.

Source reduction is increasing through initiatives by the retail sector. Retailers have begun to specify that goods with greatly reduced packaging should be provided by their wholesalers. Buying bulk and fresh foods is one way the individual consumer can greatly reduce their solid waste generation.

Reuse is also difficult to accomplish through City initiatives because it requires changes in consumer habits. However, lobbying efforts at the state level to help push reuse and recycling legislation, such as the Beverage Container Deposit Legislation, is an area in which local governments are just beginning to exert their influence. The City can be most effective in the recycling and composting alternatives.

Thermal conversion can be implemented through intergovernmental coordination and has great potential as new technologies mature. Thermal conversion of solid waste such as gasification has the potential to dramatically reduce the waste deposited in landfills while providing a significant source of sustainable energy.

## **5.A. RECYCLING IN CENTRAL FLORIDA**

In 2006, about 30 percent of waste material was recycled in Orange County, for a total of 67,770 tons. This percentage is slightly higher than the State of Florida, which during the same year, recycled only 25 percent of its waste, for a total of 9.1 million tons.

Looking at the costs of recycling, in 2006, Orange County spent approximately \$3.6 million to operate its program and had a deficit of \$111,000. Excluding several subsidies from the Florida Department of Environmental Protection, the program operates solely from customer solid waste fees. Orange County residents pay \$167.57 a year for garbage services. A portion of these fees are used to fund recycling. (10)

A new area of recycling is e-waste. Also known in the industry as "e-scrap," it includes laptops, cell phones, computer keyboards and remote controls. These items usually contain lead and other hazardous heavy metals. At the Orange County Landfill, they collect approximately 14,000 pounds of e-waste a month. In order to divert e-waste from the typical stream of household garbage, it is being separated and given to private companies who then sell parts. As with tires, paper and plastics, aggressive recycling of e-waste helps extend the lives of landfills.

The City has implemented a very successful voluntary recycling program with 34% compliance in 2006. The program has been in operation for about twenty years. The first phase of the program, in 1987, involved residential newspaper pick-up. (Offices and commercial businesses were not included in this first phase of the program.) The second phase of the program, the Multi-Materials Recycling program, which began in 1989, collects cans, glass, and plastic at the curbside for single-family residences.

The City actively facilitates the expansion of private recycling programs in an effort to maximize commercial diversion. The 2006 single cart recycling pilot program allows customers to recycle mixed materials and shows the City's commitment to solid waste technology. Last year, the City of Orlando received a grant from the Florida Department of Environmental Protection for \$44,000 to fund the planning of a commercial recycling program. These funds will be used to develop an inventory of suitable businesses, identification of collection sites and an outreach program.

Yard waste is another area of recycling. A yard waste recycling program was implemented by the City prior to the January 1, 1992 deadline established by the Solid Waste Management Act. Yard waste is collected separately from other waste at the curb and taken to a composting facility. Figure SW-12 gives the total financial benefits from the City's recycling efforts.



## 5.B. KEEP ORLANDO BEAUTIFUL PROGRAM

Keep America Beautiful (KAB) was established many decades before “green” was fashionable. Created in 1953, it first came about when a “... group of corporate and civic leaders met in New York City to discuss a revolutionary idea— bringing the public and private sectors together to develop and promote a national cleanliness ethic...” (11) As the nation's largest volunteer-based community education and action organization, Keep Orlando Beautiful has a network of nearly 1,000 affiliates and participating organizations. KAB establishes public-private programs and partnerships which engage citizens to take responsibility for enhancing their community's environment.

The City's Keep Orlando Beautiful (KOB), Inc. is an affiliate of Keep America Beautiful. It was founded in 1987 as a 501(C)3 nonprofit organization. KOB's mandate is to improve the aesthetic and ecological value of the City through litter control; to encourage better methods of handling solid waste; and to promote voluntary recycling. The program is administered by the City of Orlando's Streets and Stormwater Division of the Public Works Department. KOB currently administers ten programs. Activities include sponsoring community beautification and improvement projects; initiating neighborhood clean-up/fix-up campaigns; co-sponsoring distribution of educational materials to the public; and supporting residential and commercial voluntary recycling programs. An advisory council of thirty-two community leaders supports the program in meeting its goals.



## 5.C. RECYCLING EDUCATION

Improving customer awareness is one of the primary obstacles facing any successful recycling program. Education must emphasize the potential health risks to the present population and to future populations, along with the many economic and environmental benefits of recycling.

Emphasis upon school education programs is essential in affecting present waste generation and disposal habits. Another target area should be offices. The economic impact of recycling on other aspects of City collection and disposal services should also be outlined. In addition, reduced solid waste will save money for litter control, and street and lake cleaning.



## 5.D. BENEFITS OF RECYCLING

Recycling in Orlando has changed over the last ten years. In 1998, the predominant recycled product was paper. Today, it is yard waste. As

yard waste has increased, total recycling revenue has dropped. The City should strive to encourage composting and other methods to deal with yard waste while encourage recycling of more cost effective/rentable materials.

**FIGURE SW-12: PAPER AND MULTI-MATERIALS RECYCLING BENEFITS**

Year	Paper Tons	Multi-Materials Tons	Yard-Waste Tons	Total Recycled Tons	Revenue	Tipping Fee Savings	Total Benefits
1998	3,934	2,733	18,020	24,687	\$263,732	\$231,376	\$495,108
1999	1,751	2,260	19,775	25,288	\$92,394	\$207,655	\$300,049
2000	3,930	2,268	20,239	26,437	\$58,950	\$160,590	\$219,540
2001	3,727	2,222	21,105	27,054	\$55,905	\$163,113	\$219,018
2002	3,549	2,283	21,715	27,547	\$70,980	\$167,691	\$238,671
2003	3,676	2,227	20,403	26,306	\$73,520	\$160,072	\$233,592
2004	3,475	1,769	20,350	25,594	\$69,500	\$146,622	\$216,122
2005	3,160	1,695	15,515	20,370	\$88,480	\$121,770	\$210,250
2006	2,827	1,657	19,102	23,586	\$90,464	\$136,746	\$227,210
2007	2,138	1,927	20,349	24,414	\$83,382	\$150,634	\$234,016

Source: Solid Waste Management Division, 2008

## 6. ENVIRONMENTAL IMPACTS

The collection and transport of solid waste has little or no direct environmental impact, other than collection vehicle emissions. The primary impact comes from the landfilling of the solid waste. The landfill and any environmental impacts are the responsibility of Orange County. However, the City of Orlando is an active user of the landfill, and provides over 14% (2006) of its waste. It therefore must assume responsibility to ensure that the City's collection methods minimize any adverse impacts.

The environmental problems of a landfill are primarily the result of leachate. While required landfill liners serve to attenuate most leachate problems, leachate flow issues still arise. Leachate is produced by the process of water percolating through the waste and removing soluble materials, such as nutrients or trace metals. The contaminants contained within the leachate can then pollute the groundwater and surface water. The landfill operator can only try to arrest the flow of leachate from the site. The operator has little control over what is deposited at the site except for cursory inspections of trucks entering the facility. The collector of the solid waste should exert control to reduce materials that will ultimately create the pollution problems.

The distribution of the solid waste stream reveals possible sources that cause environmental impacts. Figure SW-13 gives a representative distribution of the content of solid waste. Paper, plastic, aluminum and glass account for approximately 30% of the waste stream. Much of this material is already being recycled by the City. However, the main sources of pollutants are

from yard and food wastes and unknown organic and inorganic wastes, such as pesticides, diapers and paint cans, which comprise 33.7% of the residential and 22.0 % of the commercial waste stream.

Yard and food waste components can be composted, which will reduce the environmental impact and prolong the life of the landfill. Composting of food wastes will reduce landfill leachate and reduce the impact (via sink garbage disposals) to the wastewater system. Making it easier to properly dispose of hazardous materials and educating the public to the dangers from improper disposal can reduce the impact of hazardous wastes on our environment.

**FIGURE SW-13: TYPICAL DISTRIBUTION OF CITY SOLID WASTE**

<b>Component</b>	<b>Residential %</b>	<b>Commercial %</b>
Mixed Paper	15.8	21.1
Newsprint	8.7	7.9
Corrugated	14.6	14.8
Plastic	9.4	14.6
Yard Waste	9.8	3.2
Food Waste	13.6	10.2
Wood	1.7	5.6
Other Organic	7.7	6.0
Ferrous	5.1	5.4
Aluminum	1.3	1.2
Glass	9.7	7.4
Other Inorganic	2.6	2.6

*Source: "Residential Refuse Collection and Disposal Alternatives." Malcolm-Pirnie, September 1986.*

## **7. LEVEL OF SERVICE**

Level of Service (LOS) is defined as the capacity per unit of demand for a public facility. The LOS is expressed in terms of pounds per capita per day (lb/c/d) or pounds per land use unit per day (ex: lb/sq.ft./d). However, users perceive a solid waste LOS in terms of the frequency of pick-ups at the lowest cost. In this respect, the City offers an adopted residential LOS standard of four pick-ups per week (2 garbage, 1 recycling, and 1 yard waste) and an adopted commercial LOS standard of six days a week and as on an "as needed basis".

Figure SW-14 shows the 2007 per capita demand based upon actual solid waste collection figures. The commercial population figures were adjusted to reflect the seasonal and employment population to avoid double counting of residential customers. The total population figure represents the resident, employment, and seasonal populations.

**FIGURE SW-14: SOLID WASTE EXISTING PER CAPITA DEMAND- 2007**

Land Use	Pounds/Day	Population	LOS (lbs/person/day)
Residential	410,082	235,779	1.74
Commercial	499,370	186,023	2.68
<b>Total</b>	<b>909,452</b>	<b>421,802</b>	<b>2.21</b>

*Sources: City of Orlando Solid Waste Management Division; City Planning Division*

An adopted per capita LOS is difficult to monitor because population figures are typically estimated based on demographic data, which is not updated frequently enough to manage a concurrency program. Therefore, the City’s adopted LOS standards are based on land uses. The City’s adopted LOS reflects a commitment to collect a given amount of solid waste from residential and commercial customers.

Figure SW-15 provides existing LOS by land use. This measure is calculated from demand, and reflects the amount of service the City’s customers need to dispose of all the solid waste they generate. The City commits to picking up this amount of solid waste by incorporating these results into Policy 1.1.1, the adopted LOS standards. During the next EAR process, the City will again evaluate existing level of service and modify the adopted LOS standards as needed to accommodate demand.

The levels of service shown in Figure SW-15 are derived from actual collection data provided by the City’s Solid Waste Management Division. In particular, residential demand is based on multi-family and single family pick-up. It should be noted that the City of Orlando does not pick up from all residential units in the City. A number of residential communities have private pick up through roll-off compactors. Similarly, as it concerns commercial pick-up, the City does not pick up from all commercial sites. However, given that the total square footage of commercial customers is not available, City-wide figures were used instead. The City-wide commercial square footage includes all commercial, office, retail, hotel, industrial, hospital and civic land uses found within the City of Orlando. Hotel tonnage is calculated by multiplying hotel rooms by the average hotel room size of 400 sq. ft. to give an estimated commercial square footage equivalent.

**FIGURE SW-15: SOLID WASTE EXISTING LAND USE LOS – 2007**

Land Use (unit)	Pounds/Day	Unit of Measurement	LOS (lbs/unit/day)
Residential (du)	390,641	47,118	8.29
Commercial (1,000 sq. ft.)	499,370	126,108,903	3.96

*Sources: City of Orlando Solid Waste Management Division; City Planning Division*

In general, the solid waste LOS should indicate the extent or degree of service provided by the Solid Waste Division. The above figures are the basis for the City’s adopted LOS standards since

they most accurately reflect the City's performance and industry standards. It should be noted that the City's adopted LOS is similar to the County's LOS standards.

## **8. NEEDS ASSESSMENT**

The purpose of this analysis is to determine the capital needs to maintain the LOS, and the costs of those capital needs, to 2030 at five-year intervals. The first step is to determine the amount of surplus or deficit capacity available to meet projected demand. Next, the cost to provide additional capacity is estimated. Third, revenues are projected based on best available information. Finally, projected revenues are compared to projected cost of new capacity. As this analysis demonstrates, the projected cost of new solid waste collection trucks is significantly lower than the projected increase in revenues. Therefore, the City expects to continue to be able to meet adopted LOS standards through the planning period.

### **8.A. CAPACITY ANALYSIS**

The City has responsibility for collecting solid waste from residential and commercial customers, with the exception of some who prefer private collection services. The City collects garbage, recycling materials, and yard waste. It does not collect hazardous waste. The City also does not have statutory responsibility for the Orange County landfill. Therefore, capacity is limited to the need to serve the City's commercial and residential solid waste customers.

Capacity is estimated based on growth projections and average demand for service. Land use projections were taken from the 2006-2030 City of Orlando, Growth Projections Report which was used in developing Future Land Use Element (See Figure LU-7). For each increment of growth, demand for solid waste service was calculated according to the adopted LOS standards shown in Policy 1.1.1. The projections start from actual collection in 2007. Projections by the Solid Waste Division indicate that the volume of solid waste will generally grow by 5.34% through 2015 and then the growth rate will decrease to less than 1% annually by 2030. Projected collections through 2030 are shown in Figures SW-16 and SW-17.

In order to provide solid waste service, capital needs are limited to truck replacement and additions. The need for a new truck or route is often difficult to estimate. The single trip capacity of a truck depends upon the type of waste and the compaction capability of the truck. Moreover, the daily capacity of a truck also depends upon the driving time between customers and the landfill. Nonetheless, by taking the average of all these factors, an average capacity per truck can be calculated and a level of service can be developed.

According to the Solid Waste Division, in 2008, they have a fleet of 14 front-end loaders, 7 rear-end loaders, 20 automated side-loaders, 4 claw trucks, 4 roll-off/claw trucks and 11 recycling vehicles. The City provides service on fourteen (14) automated residential routes, one (1) rear-end semi-automated routes, four (4) yard waste routes, seven (7) recycling routes and ten (10) commercial routes.

## **Residential Pick-Up**

Residential pick-up involves three components: Curbside garbage collection, curbside recycling collection and curbside yard waste. Projections for pick-up demand are provided in Figure SW-16.

Curbside Garbage Collection: In 2007, the City of Orlando Solid Waste Division picked up garbage at 47,118 residences. The City operated sixteen 30 cubic yard automated trucks resulting in the annual collection of 46,878 tons of residential solid waste. In general, each truck is running at capacity and working on a four-day work week or 208 working days per year. Based upon these assumptions, the average capacity of 28,172 pounds per residential truck per day is calculated as follows:

$$46,878 \text{ T} * 2000 \text{ lbs/T} \div 16 \text{ trucks} \div 208 \text{ day/yr} = 28,172 \text{ lbs/truck/d}$$

This figure can be divided into the daily projected tonnage of garbage to project truck needs to 2030. By 2030, it is estimated that the service area will grow to 53,916 households and that 53,647 tons of garbage will be collected by 19 trucks. On average, trucks will be picking up 27,149 pounds of garbage a day.

Curbside Recycling Collection: In 2007, the City of Orlando Solid Waste Division picked up recycling materials at 47,118 residences. The City operated 6 recycling trucks resulting in the collection of 4,065 tons of residential solid waste. In general, each truck is running at capacity and working on a four-day work week or 208 working days per year. Based upon these assumptions, the average capacity of 6,514 pounds per recycling truck per day is calculated as follows:

$$4,065 \text{ T} * 2000 \text{ lbs/T} \div 6 \text{ trucks} \div 208 \text{ day/yr} = 6,514 \text{ lbs/truck/d}$$

This figure can be divided into the daily projected tonnage of recycling to project truck needs to 2030. By 2030, it is estimated that the service area will grow to 53,916 households and that 4,651 tons of recycling will be collected by 7 trucks. On average, trucks will be picking up 6,389 pounds of recycling a day.



*The City's Red and Blue Recycling Containers*

Curbside Yard Waste Collection: In 2007, the City of Orlando Solid Waste Division picked up yard waste at 47,118 residences. The City operated 4 trucks per day resulting in the collection of 20,349 tons of yard waste. In general, each truck was running at capacity and working on a

four-day work week or 208 working days per year. Based upon these assumptions, the average capacity of 48,916 pounds per residential truck per day is calculated as follows:

$$20,349 \text{ T} * 2000 \text{ lbs/T} \div 4 \text{ trucks} \div 208 \text{ day/yr} = 48,916.86 \text{ lbs/truck/d}$$

This figure can be divided into the daily projected tonnage of yard waste to project truck needs to 2030. By 2030, it is estimated that the service area will grow to 53,916 households and that 23,285 tons of yard waste will be collected by 5 trucks. Trucks will be picking up 44,779 pounds of yard waste a day.

**FIGURE SW-16: RESIDENTIAL SOLID WASTE COLLECTION**

**Curbside Garbage Collection**

Year	Tons/Year	Trucks	Work Days	Tons/Truck /Day	Lbs/Truck /Day	Homes (DU)	Tons/DU /Year	Lbs/DU /Year	Lbs/DU /Day	% Growth
2007	46,878	16	208	14.09	28,172	47,118	0.995	1,990	5.45	
2010	48,340	17	208	13.67	27,342	48,583	0.995	1,990	5.45	3.02%
2015	51,070	18	208	13.64	27,281	51,326	0.995	1,990	5.45	5.34%
2020	52,932	18	208	14.14	28,276	53,198	0.995	1,990	5.45	3.52%
2025	53,182	18	208	14.20	28,409	53,449	0.995	1,990	5.45	0.47%
2030	53,647	19	208	13.57	27,149	53,916	0.995	1,990	5.45	0.87%

**Curbside Recycling Collection**

Year	Tons/Year	Trucks	Work Days	Tons/Truck /Day	Lbs/Truck /Day	Homes (DU)	Tons/DU /Year	Lbs/DU /Year	Lbs/DU /Day	% Growth
2007	4,065	6	208	3.26	6,514	47,118	0.086	173	0.47	
2010	4,191	7	208	2.88	5,757	48,583	0.086	173	0.47	3.02%
2015	4,428	7	208	3.04	6,082	51,326	0.086	173	0.47	5.34%
2020	4,590	7	208	3.15	6,304	53,198	0.086	173	0.47	3.52%
2025	4,611	7	208	3.17	6,334	53,449	0.086	173	0.47	0.47%
2030	4,651	7	208	3.19	6,389	53,916	0.086	173	0.47	0.87%

**Curbside Yard Waste Collection**

Year	Tons/Year	Trucks	Work Days	Tons/Truck /Day	Lbs/Truck /Day	Homes (DU)	Tons/DU /Year	Lbs/DU /Year	Lbs/DU /Day	% Growth
2007	20,349	4	208	24.46	48,916	47,118	0.432	864	2.37	
2010	20,982	5	208	20.17	40,349	48,583	0.432	864	2.37	3.02%
2015	22,166	5	208	21.31	42,628	51,326	0.432	864	2.37	5.34%
2020	22,975	5	208	22.09	44,182	53,198	0.432	864	2.37	3.52%
2025	23,083	5	208	22.20	44,391	53,449	0.432	864	2.37	0.47%
2030	23,285	5	208	22.39	44,779	53,916	0.432	864	2.37	0.87%

Source: City of Orlando Solid Waste Division, 2008

## Commercial Trucks

As of 2007, the City operated 11 commercial trucks collecting 91,135 tons of waste. Commercial collection is accomplished on a 6-day work week or 260 work days with each truck running at capacity. Based upon these assumptions, the average capacity of pounds per commercial truck per day is calculated as follows:

$$91,135 \text{ T} * 2000 \text{ lbs/T} \div 11 \text{ trucks} \div 260 \text{ day/yr} = 63,731 \text{ lbs/truck/d}$$

This figure can be divided into the daily projected tonnage of recycling to project truck needs to 2030. By 2030, it is estimated that the 141,517 tons of commercial waste will be collected by 17 trucks. On average, trucks will be picking up 64,035 pounds of garbage a day. Figure SW-17 provides the projected demand for pick-up based on these assumptions.

**FIGURE SW-17: COMMERCIAL SOLID WASTE PICK-UP**

Year	Tons/Year	Trucks	Work Days	Tons/Truck /Day	Lbs/Truck /Day	Square Feet	Tons/ sq.ft./Yr	Lbs /sq.ft./Yr	Lbs/1000 sq.ft/Day	% Growth
2007	91,135	11	260	31.87	63,731	126,108,903	0.001	1.45	3.96	
2010	102,339	13	260	30.28	60,555	141,612,047	0.001	1.45	3.96	10.95%
2015	119,906	14	260	32.94	65,882	165,921,176	0.001	1.45	3.96	14.65%
2020	130,685	16	260	31.41	62,829	180,837,059	0.001	1.45	3.96	8.25%
2025	137,032	17	260	31.00	62,005	189,618,964	0.001	1.45	3.96	4.63%
2030	141,517	17	260	32.02	64,035	195,825,556	0.001	1.45	3.96	3.17%

Source: City of Orlando Solid Waste Division, 2008



*Commercial Solid Waste Vehicle*



## 8.B. PROJECTED CAPITAL NEEDS

For the purpose of analysis, the 2007 cost per truck was determined to be \$218,000. Incremental trucks needs are based upon service population and land use projections. As shown in Figure SW-18, there is no anticipated deficit because of the relatively low capital costs of trucks. The maximum capital costs peaks in 2010, with \$872,000. Capital costs decline to \$218,000 in 2030. In total, by 2030, 10 additional trucks will have to be purchased for a total of capital expenditure of \$2,180,000. The greatest portion of this capital cost will be for 5 Commercial trucks.

**FIGURE SW-18: INCREMENTAL TRUCK NEEDS 2010 TO 2030**

Year	Residential Garbage	Residential Recycling	Residential Yard Waste	Commercial	Total Trucks	Capital Cost
2007	0	0	0	0	0	\$0
2010	1	1	1	1	4	\$872,000
2015	1	0	0	1	2	\$436,000
2020	0	0	0	2	2	\$436,000
2025	0	0	0	1	1	\$218,000
2030	1	0	0	0	1	\$218,000
<b>Totals</b>	3	1	1	5	10	\$2,180,000

*Source: Solid Waste Division, July 2008*

## 8.C. REVENUE PROJECTIONS

Figure SW-19 provides the solid waste capital expenditure revenue projections for residential and commercial pick-up. Revenues are generated from service charges and do not include additional revenues, if any, from the sale of recycled materials. The City solid waste program is funded through an enterprise fund. In 2007, the City currently charges single family residents \$15.08 per month per month for four weekly pick-ups (2 garbage, 1 yard waste, and 1 recycling). The fee for multi-family is lower but is only a small percentage of the service population and was not included in the calculations. Commercial and non-standard multi-family units are charged \$5.59 per cubic yard on an as needed basis. In 2007, City Council voted to adopt an automatic 2.5% increase per year.

**FIGURE SW-19: REVENUE SUFFICIENCY FOR PROJECTIONS FOR THE ADDITION OF CAPITAL (TRUCKS) THROUGH 2030**

Year	Residential Units	Residential Fee (Rate)*	Residential Revenue	Commercial Revenue	Total Revenue	Annual Increase Revenue
2007	47,118	\$15.08	\$8,526,473	\$14,159,193	\$22,685,666	
2008	47,589	\$15.46	\$8,827,031	\$14,513,173	\$23,340,204	\$654,538
2009	48,065	\$15.84	\$9,138,184	\$14,876,002	\$24,014,186	\$673,982
2010	48,340	\$16.24	\$9,420,215	\$15,247,902	\$24,668,118	\$653,931
2011	48,823	\$16.65	\$9,752,278	\$15,629,100	\$25,381,378	\$713,260
2012	49,312	\$17.06	\$10,096,046	\$16,019,827	\$26,115,873	\$734,495
2013	49,805	\$17.49	\$10,451,931	\$16,420,323	\$26,872,254	\$756,381
2014	50,303	\$17.93	\$10,820,362	\$16,830,831	\$27,651,193	\$778,939
2015	51,070	\$18.37	\$11,260,025	\$17,251,602	\$28,511,627	\$860,434
2016	51,581	\$18.83	\$11,656,941	\$17,682,892	\$29,339,833	\$828,206
2017	52,097	\$19.30	\$12,067,848	\$18,124,964	\$30,192,813	\$852,979
2018	52,513	\$19.79	\$12,468,501	\$18,578,088	\$31,046,589	\$853,777
2019	52,568	\$20.28	\$12,793,531	\$19,042,540	\$31,836,071	\$789,482
2020	52,932	\$20.79	\$13,204,171	\$19,518,604	\$32,722,775	\$886,704
2021	52,958	\$21.31	\$13,541,042	\$20,006,569	\$33,547,611	\$824,837
2022	52,985	\$21.84	\$13,886,508	\$20,506,733	\$34,393,242	\$845,630
2023	53,011	\$22.39	\$14,240,788	\$21,019,402	\$35,260,189	\$866,948
2024	53,038	\$22.95	\$14,604,106	\$21,544,887	\$36,148,993	\$888,803
2025	53,182	\$23.52	\$15,009,867	\$22,083,509	\$37,093,375	\$944,383
2026	53,209	\$24.11	\$15,392,806	\$22,635,597	\$38,028,402	\$935,027
2027	53,235	\$24.71	\$15,785,515	\$23,201,486	\$38,987,001	\$958,599
2028	53,262	\$25.33	\$16,188,243	\$23,781,524	\$39,969,766	\$982,765
2029	53,288	\$25.96	\$16,601,245	\$24,376,062	\$40,977,307	\$1,007,541
2030	53,647	\$26.61	\$17,130,772	\$24,985,463	\$42,116,235	\$1,138,928

\*Multifamily units are charged a slightly lower rate but make up a small percentage of pick-up and are not reflected in the above chart.

Source: Solid Waste Division, July 2008

**8.D. SURPLUS/DEFICIT ANALYSIS**

By comparing the projected capital costs to the projected growth in revenues, it is clear that future growth will be able to fund future capital needs. Figure SW-20 shows that cumulative capital costs account for less than 24 percent of the cumulative growth in revenues.

**FIGURE SW-20: INCREMENTAL TRUCK NEEDS 2010 TO 2030**

<b>Year</b>	<b>Cumulative Revenue Increases</b>	<b>Cumulative Capital Costs</b>	<b>Net Cumulative Revenues Remaining Available for Other Uses</b>
<b>2010</b>	\$1,982,451	\$872,000	\$1,110,451
<b>2015</b>	\$3,843,510	\$1,308,000	\$2,535,510
<b>2020</b>	\$4,211,148	\$1,744,000	\$2,467,148
<b>2025</b>	\$4,370,600	\$1,962,000	\$2,408,600
<b>2030</b>	\$9,393,460	\$2,180,000	\$7,213,460

Source: Solid Waste Division, July 2008

**9. PERFORMANCE ASSESSMENT**

Performance of the solid waste service in the City of Orlando is best judged by the number of pick-ups that are missed during the year. As reported earlier, the City had 47,118 residential customers and 9,978 commercial customers as of January 2008. This entails 9,113,992 residential stops and 564,288 commercial stops per year. Only 00.015% (2,848) of the residential stops and 0.097% (1,055) of the commercial stops were missed. In addition, an industry standard of 900 homes per route is considered average. The City of Orlando has an average number of homes per route of 1,200 with the largest route containing 1,300 homes. Monthly service charges are also indicative of the performance of the system. Figure SW-21 compares Orlando's rates with those in the Central Florida area. The City of Orlando has a very low service charge compared to other local services.

**FIGURE SW-21: COMPARATIVE COLLECTION AND TIPPAGE FEES FOR LOCAL SOLID WASTE FACILITIES**

<b>Location</b>	<b>Residential (2 pickups/wk)</b>	<b>Commercial (variable pickup)</b>	<b>Tippage (\$/ton)</b>
Orlando	\$15.08/mo.	\$5.59/yd <sup>3</sup>	\$32.50/ton
Apopka	\$16.00/mo	\$26.49/yd <sup>3</sup>	\$32.50/ton
Winter Park	\$12.78/mo.	\$19.78/cart	\$32.50/ton
Tampa	\$25.25/mo.	\$41.58/yd <sup>3</sup>	\$71.00/ton (+\$10-12/mo rental fee)
Miami	\$35.00/mo.	NA	\$59.00/ton
St. Pete	\$21.67/mo.	\$33.02/yd <sup>3</sup>	\$37.50/ton

Source: Orlando Solid Waste Management Division, 2008

## 9.A. PROBLEMS AND OPPORTUNITIES

### **Recycling**

**Problem:** Section 403.706(4)(a), Florida Statutes, states that: "...A county's solid waste management and recycling programs shall be designed to provide for sufficient reduction of the amount of solid waste generated within the county and the municipalities within its boundaries in order to meet goals for the reduction of municipal solid waste prior to the final disposal or the incineration of such waste at a solid waste disposal facility. The goals shall provide, at a minimum, that the amount of municipal solid waste that would be disposed of within the county and the municipalities within its boundaries is reduced by at least 30 percent ..."

The State of Florida's solid waste management regulations have placed definitive time deadlines on municipalities to reduce their solid waste generation and their impact on the County's landfill. The City has eliminated yard trash deliveries to the landfill and diverted, through recycling, 24,414 tons of materials (see Figure SW-12) or 34% of total amount of residential solid waste. While the City's recycling program has consistently met its recycling goals for the past 15 years, recycling activities need to expand.

**Opportunity:** EPA's Resource Conservation Challenge (RCC) urges Americans to meet or beat two goals by 2008: Boosting the national recycling rate from 30 percent to at least 35 percent and curbing, by 50 percent, the generation of 30 harmful chemicals normally found in hazardous waste. The City should continue its efforts to implement new and innovative recycling programs to meet and exceed EPA's new 35% recycling goal and strive for 50%, thereby matching Orange County's recycling goal (A New Vision for Orange County). Partnerships and incentives should be developed which encourage increases in financially beneficial commercial recycling. New technologies and strategies should be introduced to increase office recycling. Participation in *America's Marketplace Recycles!* should be encouraged. Also, greater efforts should be made to increase recycling participation through advertising and education similar to EPA's program of *Wastewise* and *Jobs Through Recycling*.

### **Monitoring of Inactive Landfills**

**Problem:** Inactive landfills in and around the City of Orlando need to be monitored.

**Opportunity:** The City should cooperate with regulatory authorities in monitoring these inactive landfills for possible contamination and take appropriate measures to address any problems discovered.

### **Disposal of Hazardous Waste**

**Problem:** The City is responsible for generating more than 65 tons of hazardous waste per year.

Opportunity: The City should take an active role in ensuring the proper disposal of hazardous waste generated within the City limits. The City should continue cooperating with Orange County Environmental Protection Department in its household hazardous waste monitoring and education efforts. Additional or more convenient household hazardous waste drop-off points should be considered.

### **Volume and Type of Solid Waste**

Problem: In 2007, the City collected 91,135 tons of commercial solid waste and 71,292 tons of residential solid waste, which included 46,878 pounds of garbage, 20,349 tons of recycled residential yard waste, and 4,065 tons of recycled waste. Service is based upon 2 pick-ups per week for residential and a commercial service of six days a week and as on an “as needed” basis.

As detailed in Figure SW-15 above, the average City household produced approximately 8.29 pounds of household refuse and recycling materials per day. Of this amount, 5.45 pounds are domestic garbage and 2.84 pounds are recycling-related materials.

Opportunity: Efforts should be made to reduce the amount of solid waste generated concurrently with efforts in reducing the amount being land-filled by instructing businesses to reduce packaging and by educating individuals to buy “greener”. In addition to reducing the overall amount, citizens should be encouraged to decrease the total amount of household waste and increase the total amount of non vegetative recycled materials.

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