



---

**DRAFT**  
**CAPITAL IMPROVEMENT ELEMENT**  
**2010 COMPREHENSIVE PLAN UPDATE**  
**CITY OF KEY WEST**

**Introduction**

The Capital Improvements Element (CIE) is intended to provide capital infrastructure planning for public facility needs identified for the first five years of the ten year horizon addressed in the Comprehensive Plan. All improvements required in the plan which exceed **\$15,000** are addressed in the Capital Improvements Element. In addition, because levels of service requirements for infrastructure planning is an essential component of capital scheduling, this element will also provide updated infrastructure planning status information and revised levels of service for each key facility, as follows:

- Sanitary Sewer
- Stormwater Management
- Solid Waste
- Parks and Recreation
- Transportation

The City has prepared two Evaluation and Appraisal Reports (EAR) outlining amendments that need to be made to the Comprehensive Plan on an element-by-element basis, which direct amendments to the CIE. The Department of Community Affairs (DCA) found the two reports to be sufficient, the first in 2005 and the second in 2007, respectively. However, no subsequent EAR-based amendments were prepared by the City. In addition, although the EARs both indicated that changes to the CIE and levels of service were necessary, neither document provided adequate data and analysis to guide a thoughtful amendment process. Therefore, this report updates infrastructure information as a first priority, and anticipates that further items will be scheduled into the CIE as each subsequent element of the plan is completed.

In order to update infrastructure level of service standards, the existing concurrency requirements in the Comprehensive Plan were reviewed, and more current professional methodologies were applied with the intent to provide concurrency standards that more adequately reflect the City's infrastructure capacity. Rule 9J-5 of the Florida Administrative Code defines levels of service (LOS) as "indicators of the extent or degree of service provided by, or proposed to be provided by, a facility based on and related to the operational characteristics of the facility... levels of service shall indicate

---

the capacity per unit of demand for each public facility.” In lay man’s terms, the LOS is a way to measure the infrastructure needs for each new development.

The CIE addresses the first five years of the overall ten year planning horizon in the Comprehensive Plan. The CIE is intended to be updated annually, and although the timeframe is not specified when the update is required, the City expects to initiate annual CIE updates at the beginning of each fiscal year, after the annual budgeting process is concluded. Section 163.3164 (32) of the Florida Statutes requires that the City demonstrate financial feasibility for each scheduled item in the first three years. Financial feasibility is defined as meaning that sufficient revenues are currently available or will be available from committed funding sources for the first 3 years, or will be available from committed or planned funding sources for years 4 and 5, of a 5-year capital improvement schedule for financing capital improvements. Examples of these types of funding sources include ad valorem taxes, bonds, state and federal funds, tax revenues, impact fees, and developer contributions which are adequate to fund the projected costs of the capital improvements identified in the Comprehensive Plan necessary to ensure that adopted level-of-service standards are achieved and maintained within the period covered by the 5-year schedule of capital improvements.

### Facility Analysis

In order to update the levels of service for each facility, an assessment of each facility, including an identification of operational status (including deficiencies, if any), was conducted. In addition, new research on non-residential square footage in the city (see Appendix X) and updated figures on residential use based on an updated population study (see Appendix X) were taken into consideration. Each facility is described below.

#### *Sanitary Sewer*

The City’s sanitary sewer system consists of one main facility on Key West Island and a second privately operated utility within the incorporated area of Stock Island. The main facility consists of a collection system (underground transmission lines and pump stations) and an advanced wastewater treatment system with deep well injection located on Fleming Key. The private facility on Stock Island consists of a package plant ...

Note: Include the following:

- Descriptions of facilities
- Level of treatments
- Discharge capacities
- Average daily flows and peak flows

In response to near shore water pollution, sewer system leakages, and cross-contamination between sewer and stormwater systems that resulted in numerous beach closures between 1999 and 2000, the City updated its main sanitary sewer infrastructure to improve public health, safety, and protection of the environment. Below is a brief

---

summary of the measures that have been taken over the last decade to improve the quality of the City's wastewater system:

- Hydraulic testing of the watertight integrity of all public and private sewer systems was performed, and as leaky sewer laterals have been discovered, the City has required immediate replacement to prevent saltwater intrusion. This has effectively reduced the percentage of saltwater at the wastewater treatment plant by about 31 percent, and has reduced the average daily flow of wastewater from 8 million gallons per day to 4 million gallons per day.
- In September of 1999, the City expedited the implementation of its Sewer Reconstruction Capital Plan, which accelerated the completion of sewer collection system projects.
- In June of 2000, the City provided a Class 1 Deep Injection Well to prevent wastewater ocean outfall.
- The City's wastewater treatment plant was retrofitted to meet advanced wastewater treatment standards in May of 1999.
- Additionally, the majority of septic tanks and cesspits located in the City have been removed.
- As of the date of this plan, the City has replaced 46 miles of mainland sewer pipe, 27 miles of service laterals, 2.5 miles of sewer force main pipe, and 0.4 miles of storm sewers.

As a result of facility improvements, the average daily flow into the City's main existing wastewater treatment plant, located at Fleming Key, is 4.5 million gallons per day. The maximum flow that the wastewater treatment plant can sustain is 10 million gallons per day. According to the City's General Services Department, maximum flow is exceeded about 5-6 times per year, usually due to weather-related conditions. - note capacity reserved for the Navy (23%)- what is the approximate amount of Navy flow? -talk to Jay about the 80% rule i.e. how to view excess capacity as well as peak periods - also lets talk about Stock Island

Note: Include the following:

- 10 million gallons per day
- Reserve 20%
- Reserve 23% for the Navy
- 5.7 million gallons remaining for City usage

Note: Several factors can cause stress on the City's sewer collection system capacity. For example, heavy rain or flooding can cause sanitary sewer overflow. The City's sewer system infrastructure currently is comprised of a single network of daisy-chained pump

---

stations that carry sewage from Key West (not including North Stock Island) to the wastewater treatment plant on Fleming Key. In the event that sewage could not travel from pump station to pump station, the entire system could be compromised. In an effort to alleviate stress on the existing system, an alternate sewer flow system is planned for as part of scheduled roadway improvements to North Roosevelt Boulevard. This alternate system will direct sewage to the same wastewater treatment plant, but will allow the potential for flow to continue in the event that conditions in another part of the island are compromised.

Note: Include executive summaries for improvements to wastewater treatment plant.

The existing level of service requirements in the Comprehensive Plan distinguish between residential and non-residential uses. The level of service requirement for residential uses is 100 gallons per capita per day for permanent residents based on 90 gallons per capita per day for seasonal residents. For non-residential uses, the level of service requirement is 660 gallons per acre per day. Additionally, the Comprehensive Plan includes a level of service requirement for wastewater treatment plan effluent, so that levels do not exceed a total nitrogen concentration of 6mg/l; and a total phosphorus concentration of 4 mg/l on an average annual basis (Policy 9-1.6.1).

The levels of service for wastewater treatment need to be updated in several ways. An analysis of actual residential demand per capita (--- need to add citation here) found that XXX. Further, in an island where non-residential intensity often occurs on small lots far less than an acre in size, the commercial standard is simply not viable. An analysis of non-residential demand found (need to add citation). Put summary analysis in appendix.

Proposed updated levels of service are as follows:

X  
XX

### *Solid Waste*

In 2004, the City of Key West passed Resolution No. 04-082, which approved a 20-year hauling and disposal contract between the City and Waste Management, Inc. of Florida (WMIF).

When municipal solid waste is collected, it is first transported to the City's Transfer Station, located at Rockland Key. From there, the solid waste is transported to one of two wheelabrator waste-to-energy plants located in Broward County. Typically, the waste is delivered to the South Broward Wheelabrator Waste to Energy Facility (Wheelabrator South Broward, Inc.), however if circumstances prohibit the drop-off at that location, the solid waste is taken to the North Broward Wheelabrator Waste to Energy Facility (Wheelabrator North Broward, Inc.) in Pompano Beach, Florida. Both

waste-to-energy plants are capable of processing about 4,500 tons of waste per day. Under the contract with the City, WMIF has guaranteed to use the above-mentioned waste to energy facilities as the primary disposal site until February 9, 2014.

When waste is delivered to the facility, certain objects are removed and taken to one of two landfills: primarily the Central Sanitary Landfill and Recycling Center, located in Pompano Beach, Florida, or if circumstances prohibit the drop-off at that location, the material is taken to the Okeechobee Landfill, Inc., located in Okeechobee, Florida. Both landfills are operated by Waste Management, Inc. The Central Sanitary Landfill and Recycling Center receives about 3,500 tons of waste per day. At this rate, the facility has a projected capacity of about 15 years. The Okeechobee Landfill, Inc. receives about 5,000 tons of waste per day, and at this rate, is projected to have capacity for about 64 years.

Approaches to level of service standards for solid waste:

Billable Tons, Non Billable Tons, # of Units Count for 2009-2014

	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014
<b><u>Billable Tons: (1)</u></b>						
Residential	16,694	16,861	17,030	17,200	17,372	17,546
Commercial	26,659	26,926	27,195	27,467	27,742	28,019
Navy	1,745	1,745	1,745	1,745	1,745	1,745
Other Hauler	1,947	1,947	1,947	1,947	1,947	1,947
<b>Total Billable Tons</b>	<b>47,046</b>	<b>47,479</b>	<b>47,917</b>	<b>48,360</b>	<b>48,806</b>	<b>49,257</b>
<b><u>Non-Billable Tons: (1)</u></b>						
City Cans & Other WM Hauled:						
City Cans	1,785	1,785	1,785	1,785	1,785	1,785
City Cans - Seasonal	158	158	158	158	158	158
Clean Sweep Special Events	156	156	156	156	156	156
Clean Sweep Curbside	30	30	30	30	30	30
Public Works	600	600	600	600	600	600
Other City Bldgs. - Gen. Gov.	318	318	318	318	318	318
<b>Subtotal City Cans &amp; Other WM</b>	<b>3,047</b>	<b>3,047</b>	<b>3,047</b>	<b>3,047</b>	<b>3,047</b>	<b>3,047</b>
City Trucks	2,327	2,327	2,327	2,327	2,327	2,327
Public Housing	1,007	1,007	1,007	1,007	1,007	1,007
<b>Total Non-Billable Tons</b>	<b>6,382</b>	<b>6,382</b>	<b>6,382</b>	<b>6,382</b>	<b>6,382</b>	<b>6,382</b>
<b>Total Gross Tons/Adjusted</b>	<b>53,427</b>	<b>53,861</b>	<b>54,299</b>	<b>54,741</b>	<b>55,188</b>	<b>55,639</b>
<b><u>Haulout Disposal Tons:</u></b>						
Tons Bulk Waste Hauled (2)	54,512	55,057	55,607	56,163	56,725	57,292
	0	0	0	0	0	0
	0	0	0	0	0	0
<b>Subtotal Bulk Waste Hauled</b>	<b>54,512</b>	<b>55,057</b>	<b>55,607</b>	<b>56,163</b>	<b>56,725</b>	<b>57,292</b>

*Drainage*

*Parks and Recreation  
Transportation Concurrency*

---- Appendix:  
Population Study  
Land Use Inventory

DRAFT