



2015

Urban Water Management Plan

Final | October 2016



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October 24, 2016

Mr. Dereck Goodwin
City of West Sacramento
1110 West Capitol Ave., 2nd Floor
West Sacramento, CA 95691

Subject: 2015 Urban Water Management Plan

Dear Mr. Goodwin:

We are pleased to submit for your use, the adopted City of West Sacramento (City) 2015 Urban Water Management Plan (UWMP). This version of the UWMP represents the final printed version of the 2015 UWMP as adopted on September 21, 2016. The 2015 UWMP was prepared in accordance with the Urban Water Management Planning Act (UWMPA) of 1983 and subsequent amendments, as well as other applicable regulations. The purpose of the UWMP is to maintain efficient use of urban water supplies, continue to promote conservation programs and policies, ensure that sufficient water supplies are available for future beneficial use, and provide a mechanism for response during water drought conditions. The report is organized according to the recommended format established by the California Department of Water Resources (DWR) as follows:

- Chapter 1 – Introduction and Overview
- Chapter 2 – Plan Preparation
- Chapter 3 – System Description
- Chapter 4 – System Water Use
- Chapter 5 – Baselines and Targets
- Chapter 6 – System Supplies
- Chapter 7 – Water Supply Reliability
- Chapter 8 – Water Shortage Contingency Plan
- Chapter 9 – Demand Management Measures
- Chapter 10 – Plan Adoption, Submittal, and Implementation

We would like to extend our thanks to you and other City Staff whose courtesy and cooperation were valuable components in completing this plan.

Sincerely,

CAROLLO ENGINEERS, INC.



Nicola Fontaine, P.E.
Project Manager

Enclosures: 2015 Urban Water Management Plan



CITY OF WEST SACRAMENTO

**2015 URBAN WATER
MANAGEMENT PLAN**

FINAL
October 2016



CITY OF WEST SACRAMENTO
2015 URBAN WATER MANAGEMENT PLAN

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INTRODUCTION AND OVERVIEW

1.1 BACKGROUND AND PURPOSE

The California Water Code (CWC) requires urban water suppliers within the state to prepare and adopt Urban Water Management Plans (UWMP) for submission to the California Department of Water Resources (DWR). The UWMP, which must be filed every five years, must satisfy the requirements of the Urban Water Management Planning Act (UWMPA) of 1983, including amendments that have been made to the Act. The UWMPA requires urban water suppliers servicing 3,000 or more connections, or supplying more than 3,000 acre-feet (AF) of water annually, to prepare a UWMP.

The purpose of the UWMP is to maintain efficient use of urban water supplies, continue to promote conservation programs and policies, ensure that sufficient water supplies are available for future beneficial use, and provide a mechanism for response during water drought conditions. This document, which was prepared in compliance with the CWC, and as set forth in the 2015 Urban Water Management Plan Guidebook for Urban Water Suppliers (March 2016) established by the DWR, constitutes the City of West Sacramento (City) 2015 UWMP.

This 2015 UWMP was prepared in compliance with the UWMPA (CWC §10610 et seq.) and the Water Conservation Bill of 2009 (Senate Bill [SB] X7-7) by Carollo Engineers. Contact information for the City and Carollo Engineers is included in the Contact Sheet provided at the beginning of this document.

The City recognizes the importance of maintaining a high quality reliable water supply. Although water is a renewable resource, it is limited. A long-term reliable supply of water is essential to protect the local and state economy. The main focus for the City is to provide high quality water, maximize the efficient use of water, and promote conservation.

1.2 URBAN WATER MANAGEMENT PLANNING AND THE CALIFORNIA WATER CODE

The CWC sections applicable to UWMPs are summarized in the sections below.

1.2.1 Urban Water Management Planning Act of 1983

In 1983, State Assembly Bill (AB) 797 modified the CWC Division 6 by creating the UWMPA. Several amendments to the original UWMPA, which were introduced since 1983, have increased the data requirements and planning elements to be included in the UWMPs.

Initial amendments to the UWMPA required that total projected water use be compared to water supply sources over the next 20 years, in 5-year increments. Recent DWR guidelines

also suggest projecting through a 25-year planning horizon to maintain a 20-year timeframe until the next UWMP update has been completed.

Other amendments require that UWMPs include provisions for recycled water use, demand management measures (DMMs), and a water shortage contingency plan. The UWMPA requires inclusion of a water shortage contingency plan which meets the specifications set forth therein. Recycled water was added in the reporting requirements for water usage and figures prominently in the requirements for evaluation of alternative water supplies, when future projections predict the need for additional water supplies. Each urban water purveyor must coordinate the preparation of the water shortage contingency plan with other urban water purveyors in the area, to the extent practicable. Water suppliers must also describe their water DMMs that are being implemented or are scheduled for implementation.

In addition to the UWMPA and its amendments, there are several other regulations that are related to the content of the UWMP. In summary, the key relevant regulations are:

- AB 1420: Requires implementation of DMMs/Best Management Practices (BMPs) and meeting the 20-by-2020 targets to qualify for water management grants or loans.
- AB 1465: Requires water suppliers to describe opportunities related to recycled water use and stormwater recapture to offset potable water use.
- Amendments SB 610 (Costa, 2001) and AB 901 (Daucher, 2001): Require counties and cities to consider information relating to the availability of water to supply new large developments by mandating the preparation of further water supply planning (Daucher) and Water Supply Assessments (Costa).
- SB 1087: Requires water suppliers to report single-family residential (SFR) and multi-family residential (MFR) projected water use for lower income areas separately.
- Amendment SB 318 (Alpert, 2004): Requires the UWMP to describe the opportunities for development of desalinated water, including but not limited to, ocean water, brackish water, and groundwater, as long-term supply.
- AB 105 (Wiggins, 2004): Requires urban water suppliers to submit their UWMPs to the California State Library.
- SB X7-7: Requires development and use of new methodologies for reporting population growth estimates, base per capita use, and water conservation. An agency can choose from four methods to establish their interim (2015) and year 2020 water conservation targets.

1.2.2 Applicable Changes to the Water Code since 2010 UWMPs

Changes to the CWC since 2010 UWMPs are summarized in Table 1-1.

Table 1-1 Applicable Changes to the Water Code since 2010 UWMPs			
Topic	CWC Section	Legislative Bill	Summary
Demand Management Measures	10631 (f) (1) and (2)	AB 2067, 2014	Requires water suppliers to provide narratives of water demand management measures.
Submittal Date	10621 (d)	AB 2067, 2014	Requires each urban water supplier to submit its 2015 plan to the DWR by July 1, 2016.
Electronic Submittal	10644 (a) (2)	SB 1420, 2014	Requires the plan, or amendments to the plan, to be submitted electronically to DWR.
Standardized Forms	10644 (a) (2)	SB 1420, 2014	Requires the plan, or amendments to the plan, to include any standardized forms, tables, or displays specified by DWR.
Water Loss	10631 (e) (1) (J) and (e) (3) (A) and (B)	SB 1420, 2014	Requires a plan to quantify and report on distribution system water loss.
Estimated Future Water Savings	10631 (e) (4)	SB 1420, 2014	Provides for water use projections to display and account for the water savings estimated to result from adopted codes, standards, ordinances, or transportation and land use plans, when that information is available and applicable to an urban water supplier.
Voluntary Reporting of Energy Intensity	10631.2 (a) and (b)	SB 1036, 2014	Provides for an urban water supplier to include certain energy-related information, including, but not limited to, and estimate of the amount of energy used to extract or divert water supplies.
Defining Water Features	10632	AB 2409, 2014	Requires urban water suppliers to analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains separately from swimming pools and spas.

1.2.3 Water Conservation Act of 2009 (SB X7-7)

Beginning in 2016, retail water suppliers are required to comply with the water conservation requirements in SB X7-7 in order to be eligible for State water grants or loans. Refer to Chapter 4 for detailed information on SB X7-7.

1.3 ABBREVIATIONS AND DEFINITIONS

To conserve space and improve readability, the following abbreviations are used in this report. The abbreviations are spelled out in the text the first time the phrase or title is used in each chapter and subsequently identified by abbreviation only.

AB	Assembly Bill
AF	acre-feet
AFY	acre-feet per year
AMI	Advanced Metering Infrastructure
AMR	Advanced Meter Reading
AWWA	American Water Works Association
BMPs	Best Management Practices
CAP	Climate Action Plan
CCF	Hundred Cubic Feet
cfs	Cubic feet per second
CII	Commercial, Institutional, and Industrial
CIMIS	California Irrigation Management Information Systems
City	City of West Sacramento
County	Yolo County
CUWCC	California Urban Water Conservation Council
CVP	Central Valley Project
CVPIA	Central Valley Project Improvement Act
CWC	California Water Code
District	Dunnigan Water District
DMMs	Demand Management Measures
DOF	California Department of Finance
DWR	California Department of Water Resources

EBMUD	East Bay Municipal Utility District
ETo	Evapotranspiration
°F	Degrees Fahrenheit
gpcd	Gallons per capita per day
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
LF	Linear Feet
LNWI	Lower Northwest Interceptor
M&I	Municipal and Industrial
MFR	Multi-Family Residential
mgd	million gallons per day
MOU	Memorandum of Understanding
MPN	Most Probable Number
NDWA	North Delta Water Agency
NPDES	National Pollutant Discharge Elimination System
PG&E	Pacific Gas and Electric
RHNP	Regional Housing Needs Plan
RWA	Regional Water Authority
RWEP	RWA Water Efficiency Program
RWQCB	Central Valley Regional Water Quality Control Board
SACOG	Sacramento Area Council of Governments
SB	Senate Bill
SFR	Single-Family Residential
SGMA	Sustainable Groundwater Management Act
SOI	Sphere of Influence
SRCSD	Sacramento Regional County Sanitation District

SWP	State Water Project
SWRCB	State Water Resources Control Board
TOC	Total Organic Carbon
UPRR	Union Pacific Railroad
USBR	United States Bureau of Reclamation
UWMP	Urban Water Management Plan
UWMPA	Urban Water Management Planning Act
WRA	Water Resources Association of Yolo County
WTP	Water Treatment Plant
WWTP	Wastewater Treatment Plant

PLAN PREPARATION

The City of West Sacramento (City) previously prepared an Urban Water Management Plan (UWMP) in 2010, which was approved and adopted on October 19, 2011. Following adoption, the 2010 UWMP was submitted to the California Department of Water Resources (DWR). This 2015 UWMP serves as an update to the 2010 UWMP. This section includes specific information on how the UWMP was developed, including efforts in coordination and outreach.

2.1 BASIS FOR PLAN PREPARATION

California Water Code (CWC) 10617 requires that urban water suppliers with 3,000 or more service connections or supplying 3,000 or more acre-feet (AF) of water per year prepare an UWMP every five years. The California Health and Safety Code defines a "Public Water System" as one that provides water for human consumption and has 15 or more service connections or regularly serves at least 25 individuals daily at least 60 days of the year. The number of municipal connections and volume of water supplied in 2015 by the City is reported in Table 2-1. Not all connections in the City are metered. Refer to Section 4.2 for the method used to estimate unmetered connection use.

Table 2-1 Retail Only: Public Water Systems			
Public Water System Number	Public Water System Name	Number of Municipal Connections 2015	Volume of Water Supplied 2015
CA5710003	City of West Sacramento	15,128	4,404,343
TOTAL		15,128	4,404,343
NOTES: Units of measure in this UWMP are CCF (hundred cubic feet). Source: Large Water System 2015 Annual Report to the Drinking Water Program for Year Ending December 31, 2015.			

2.2 INDIVIDUAL PLANNING AND COMPLIANCE

The City only manages one Public Water System and is not participating in a Regional UWMP. This 2015 UWMP solely reports on the City's service area, as shown in Table 2-2. The City has notified and coordinated with appropriate regional agencies.

Table 2-2 Plan Identification		
Select Only One	Type of Plan	Name of RUWMP or Regional Alliance <i>if applicable</i> <i>drop down list</i>
<input checked="" type="checkbox"/>	Individual UWMP	
<input type="checkbox"/>	Water Supplier is also a member of a RUWMP	
<input type="checkbox"/>	Water Supplier is also a member of a Regional Alliance	
<input type="checkbox"/>	Regional Urban Water Management Plan (RUWMP)	

2.3 CALENDAR YEAR AND UNITS OF MEASURE

The City is reporting on a calendar year basis and therefore, 2015 data includes the months of January to December 2015. Table 2-3 indicates the City's type of reporting year, and the units of measure for reporting water volumes throughout the 2015 UWMP.

Table 2-3 Agency Identification	
Type of Agency (select one or both)	
<input type="checkbox"/>	Agency is a wholesaler
<input checked="" type="checkbox"/>	Agency is a retailer
Fiscal or Calendar Year (select one)	
<input checked="" type="checkbox"/>	UWMP Tables Are in Calendar Years
<input type="checkbox"/>	UWMP Tables Are in Fiscal Years
Units of Measure Used in UWMP (select from Drop down)	
Unit	CCF
NOTES: Units of measure in this UWMP are hundred cubic feet (CCF).	

2.4 COORDINATION AND OUTREACH

The Urban Water Management Planning Act (UWMPA) requires that the UWMP identify the water agency's coordination with appropriate nearby agencies. The City coordinated its efforts with relevant agencies and parties to ensure that the data and issues discussed in the plan are presented accurately.

2.4.1 Wholesale and Retail Coordination

Retail agencies that receive a water supply from one or more wholesalers are required to provide wholesalers with projected water demand from that source, in five-year increments for 20 years. The City is an independent water supplier and does not purchase potable water from any other agencies nor does it sell treated water to other agencies (Table 2-4).

Table 2-4 Retail: Water Supplier Information Exchange
The retail supplier has informed the following wholesale supplier(s) of projected water use in accordance with CWC 10631.
Wholesale Water Supplier Name <i>(Add additional rows as needed)</i>

2.4.2 Coordination with Other Agencies and the Community

The City solicited participation from other agencies, organizations, and the community for the preparation of the 2015 UWMP. Table 2-5 summarizes how the UWMP preparation was coordinated.

2.4.3 Notice to Cities and Counties

The City is a member of the Water Resources Association of Yolo County (WRA), and therefore provided formal written notification to Yolo County (County) that the City's UWMP was being updated for 2015. The City also provided formal written notification to the Dunnigan Water District (District), DWR, United States Bureau of Reclamation (USBR), the Regional Water Authority (RWA), and North Delta Water Agency (NDWA). In accordance with the UWMPA, this notification was provided at least 60 days prior to the public hearing of the plan. Electronic copies of the final UWMP will be provided to these agencies no later than 30 days after submission to DWR. Appendix A contains copies of the outreach documents.

Table 2-5 Coordination with Appropriate Agencies								
Coordinating Agencies	Participated in Developing the Plan	Notified of UWMP Update	Commented on the Draft	Attended Public Meetings	Was Contacted for Assistance	Was Sent a Copy of the Draft Plan	Was Sent a Notice of Intention to Adopt	Not Involved No Information
Department of Public Works	✓		✓			✓		
Fire Department	✓							
Planning Department	✓				✓			
City Environmental Services	✓		✓					
Dunnigan Water District		✓					✓	
Yolo County		✓					✓	
Department of Water Resources		✓					✓	
United States Bureau of Reclamation		✓					✓	
Regional Water Authority		✓					✓	
North Delta Water Agency		✓					✓	
General Public						✓	✓	

SYSTEM DESCRIPTION

The Urban Water Management Planning Act (UWMPA) requires that the Urban Water Management Plan (UWMP) include a description of the water purveyor's service area and various aspects of the area served including climate, population, and other demographic factors.

3.1 GENERAL DESCRIPTION

The City of West Sacramento (City) is located in eastern Yolo County (County) in California's Central Valley. The City is bounded on its northern, eastern, and western sides by water bodies, including the Sacramento River (north and east) and the Sacramento River Deep Water Channel and Yolo Bypass (west). The closest neighboring cities are Sacramento to the north and east, Davis to the west, and Woodland to the northwest. The City is part of a four-county metropolitan area that includes the County, Sacramento County, and portions of Placer County and El Dorado County.

The City limits extend from the Sacramento River and Tule Lake Road on the north, the Sacramento River on the east, Shangri-La Slough on the south, and the Yolo Bypass on the west. Currently, there are areas within the City limits that are undeveloped and/or not connected to the water distribution system.

Lands north of the Sacramento Deep Water Channel bound by the Sacramento River and Interstate 80 are considered the North Area, including Washington/Broderick and Bryte, which are older, well-established neighborhoods. Lands south and east of the Sacramento Deep Water Channel are considered the Southport area. The historic industrial and farming community of West Sacramento occupied the central part of the present-day city north of the deep water channel, stretching from the Sacramento River in the east to the Yolo Bypass in the west. The north area includes a mix of residential, commercial, and industrial development. There is a large industrial development located in the southwestern portion of the north area that has high fire protection demands.

Residential land uses include single-family residential (SFR) (including mobile homes) and multi-family residential (MFR) (e.g., apartments, condominiums, and halfplexes). Other land uses include retail and service commercial, office, industrial, public or quasi-public uses, including parks and recreation, schools, and other facilities, agricultural/open space uses, and vacant land. While vacant parcels still exist throughout the City, in terms of total acreage, the bulk of this land is in the Southport area outside of the City's urban core.

3.1.1 Description of Transmission, Treatment, and Distribution Facilities

In January 1987, the City was incorporated and assumed ownership and responsibility for operation of the water system from the East Yolo Community Services District, which had

purchased the system in 1983 from the Washington Water and Light Company, a subsidiary of Citizens Utilities Company of California. In 1988, the City's Water Treatment Plant (WTP) went online. The WTP allowed the City to convert from reliance on groundwater to a usage of surface water from the Sacramento River.

The WTP treats surface water from the Sacramento River derived from Permit 18150, Central Valley Project (CVP) supplies, and the North Delta Water Authority (NDWA) Contract. The WTP uses a treatment process consisting of chemical coagulation, Actiflo® high rate clarification, dual media granular activated carbon filtration, and chlorine disinfection. At this location, treated water is pumped to customers and reservoirs via the distribution system.

The WTP was expanded in 2003-2004 to a maximum capacity of 58 million gallons per day (mgd). The permitted capacity of the WTP is 40 mgd from November to March and 58 mgd from April to October.

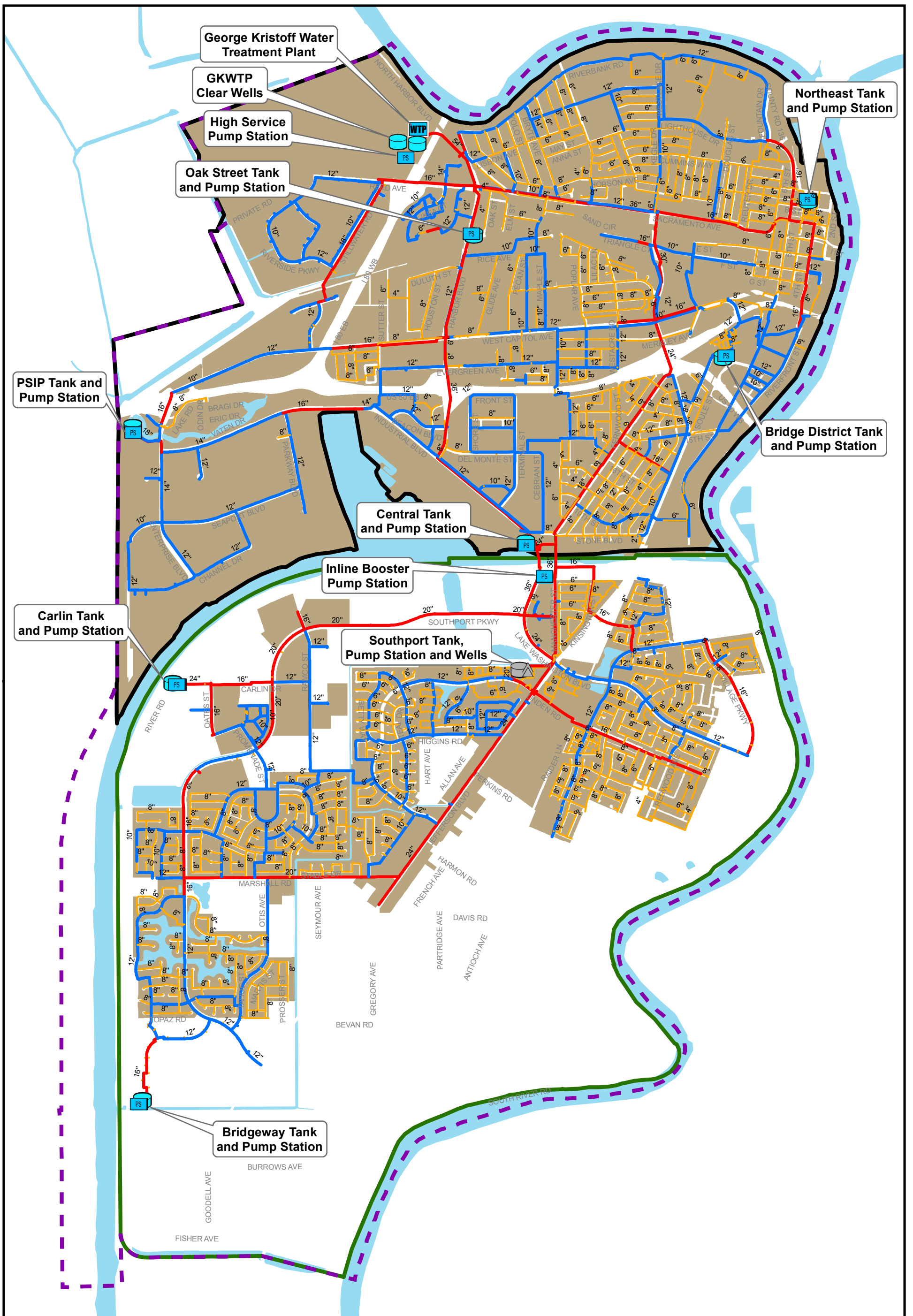
In 2014, the WTP originally named the Bryte Bend WTP, was renamed the George Kristoff WTP to honor the late George Kristoff, who was a local grass roots organizer and board member of the East Yolo Community Services District.

3.2 SERVICE AREA BOUNDARY MAP

Figure 3-1 shows the City limits, water service area, and the main distribution system components (large diameter pipelines and water tanks). The City's service area boundary overlaps with the City limits as shown in Figure 3-1.

3.3 SERVICE AREA CLIMATE

The City's climate is characterized generally as Mediterranean with an average annual rainfall of approximately 16 inches. Approximately 90 percent of the average annual precipitation occurs between November and April. Monthly precipitation has been as high as 9.46 inches and as low as 0.0 inches between the years of 2000 and 2015. The average summer temperature is a high of 92 degrees Fahrenheit (°F) and a low of 59°F. The average winter temperature is a high of 57°F and a low of 41°F. Normal relative humidity is 40 percent during the day and 85 percent at night. Evapotranspiration (ETo) values, which serve as indicators of how much water is required to maintain healthy agriculture and landscaping. The Reference ETo values for West Sacramento are determined by the City Parks and Recreation Department. Current values are 51.0 inches per year for areas north of the Deep Water Channel, and 52.5 inches per year for areas in Southport (south of the Deep Water Channel). Temperature, rainfall, and ETo averages for the City are presented in Table 3-0.

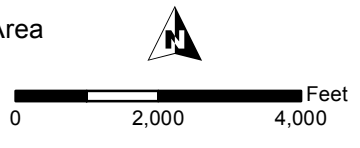


Legend

- WTP
- Tanks
- Pump Stations
- Inactive Tank
- Backup Wells
- Water Pipelines Diameter**
- 16" and Larger
- 10" - 14"
- 8" and Smaller
- City Limits
- Existing Water Service Area
- Water Features
- Southport Area
- North Area

SERVICE AREA

FIGURE 3.1



CITY OF WEST SACRAMENTO
2015 URBAN WATER MANAGEMENT PLAN



Table 3-0 Climate Characteristics					
Month	Standard Monthly Average ETo ⁽¹⁾ (inches)	Monthly Average Rainfall ⁽²⁾ (inches)	Monthly Average Temperature ⁽²⁾ (°F)		
			Average	Minimum	Maximum
January	1.55	2.75	46.9	39.6	55.7
February	2.24	3.04	51.0	42.6	60.8
March	3.72	2.27	55.8	45.7	67.1
April	5.10	1.22	59.1	48.0	72.1
May	6.82	0.67	66.0	53.4	81.1
June	7.80	0.19	72.3	57.9	88.6
July	8.68	0.00	76.4	60.2	94.3
August	7.75	0.01	75.0	59.5	92.9
September	5.70	0.15	72.0	57.2	88.6
October	4.03	0.74	63.6	51.3	77.4
November	2.10	1.15	52.6	43.9	63.3
December	1.55	3.81	47.1	40.1	55.3
Annual	57.0	16.0	--	--	--

Notes:

(1) Source: California Irrigation Management Information Systems (CIMIS) Reference Evapotranspiration Zone Map (Zone 14)

(2) Source: CIMIS Station 155 Bryte (Experimental). Represents monthly average from January 2000 to February 2016

3.3.1 Climate Change

The California Water Code (CWC) does not require that the UWMP address climate change, however the City prepared a Draft Climate Action Plan (CAP) in August 2010 that addresses some of these issues. The CAP is included as Appendix B.

Additionally, the City has completed the Climate Change Vulnerability Assessment (Appendix C). No vulnerabilities were identified for *Sea Level Rise* and *Hydropower* categories. For the category of *Water Demand*, it was noted that water use can vary by more than 50 percent seasonally. The City also indicated that water use curtailment measures are effective. For the category of *Water Supply*, it was noted that a portion of the water supply is from snowmelt and water diverted from the Delta. Additionally, it was indicated that the City does not have additional capacity for the storage of supply surpluses. For the category of *Water Quality*, it was noted that the City relies on surface water bodies with water quality issues related to eutrophication and that water quality shifts during rain events. The City lies within the 200-year floodplain and within the Sacramento-San Joaquin

Drainage District as noted in the *Flooding* category. It was also indicated that aging critical flood protection infrastructure exists in the region. For the category of *Ecosystem and Habitat Vulnerability*, it was noted that there are endangered or threatened species and rivers with quantified environmental flow requirements in the region. The City also indicated that the region relies on aquatic habits for recreation activities.

3.4 SERVICE AREA POPULATION AND DEMOGRAPHICS

This section summarizes historical, current, and projected population trends in the City. Population projections are essential to the planning process and form the basis for most planning decisions, yet projecting future growth is far from an exact science given the complex set of variables that can affect the rate of growth. Typically, projections are developed by taking past patterns and combining them with assumptions regarding the future to obtain an estimate of future growth rates. These projections serve to provide the City insight on the type and quantity of future growth as well as guidance regarding future planning activities; therefore, such planning activities can only be as effective as the ability of local officials to anticipate population growth.

The City experienced its most dramatic growth during the 1950s, as population more than doubled from 11,900 to over 25,000. From 2000 through 2010, the population grew 54 percent from 31,615 (2000 Census) to 48,744 (2010 Census). The projected population was estimated based on a 2.72 percent annual growth rate, consistent with the City's 2013-2021 Housing Element Update. The current and projected population for the City is contained in Table 3-1.

Table 3-1 Retail: Population - Current and Projected						
Population Served	2015	2020	2025	2030	2035	2040(opt)
	49,504	56,602	64,717	73,996	84,605	96,735
NOTES: 2015 population is per SB X7-7 Method for Population Estimates 2 (Persons-per-Connection Method). Projected populations calculated based on 2.72 percent annual growth rate.						

3.4.1 Other Demographic Factors

This section summarizes and analyzes past and current demographic information. Analyzing demographic data yields important information about possible shifts in demand for City services. It should be noted that the demographic data for comparative purposes is based on the 2010 Census. The median age in the City is 33.6, with 76.2 percent of the population being over 16 years of age (2010 Census). The population is split 49.4 to 50.6 percent male to female, respectively. The number of housing units was 18,681 (2010 Census). Nearly half (46.3 percent) of City households in 2010 were married couples and

23.3 percent of households included children. According to the 2013-2021 Housing Element Update for the City, employment is focused in construction, manufacturing, retail, educational, health and social services, arts and entertainment, and public administration. The median household income for the City was \$53,559 in 2010 (2010 Census).

SYSTEM WATER USE

The Urban Water Management Planning Act (UWMPA) requires that the Urban Water Management Plan (UWMP) identify the quantity of water supplied to the agency's customers including a breakdown by user classification. This section describes the water system demands and water demand projections.

4.1 RECYCLED VERSUS POTABLE AND RAW WATER DEMAND

This Chapter covers potable and raw water demand. Recycled water is addressed comprehensively in Chapter 6.

4.2 WATER USES BY SECTOR

Water demands served by the City of West Sacramento (City) are primarily residential (includes single-family residential [SFR] and multi-family residential [MFR]), commercial, industrial, and institutional (CII), and landscape irrigation. The following water use sectors and associated metered and unmetered deliveries, as shown in Table 4-0, were reported in the 2010 UWMP for 2010.

Use Type	Metered Volume	Unmetered Volume ⁽¹⁾	Total Volume
Single-Family Residential	67,954	1,968,912	2,036,866
Multi-Family Residential	0	341,510	341,510
Commercial/ Institutional ⁽²⁾	2,175,822	1,155,211	3,331,033
Industrial	0	0	0
Landscape Irrigation	0	0	0
Agriculture	0	0	0
Other	0	0	0
Total	2,243,776	3,465,633	5,709,409

NOTES: Units of measure in this UWMP are hundred cubic feet (CCF). Source: 2010 UWMP.

- Unmetered water deliveries are not measured by the City. The residential unmetered deliveries listed in this table are estimates based on metered SFR use in 2010, including usage factors to account for increased consumptions typically found with unmetered connections (1.5 times for SFR and 3.5 times for MFR).
- Commercial/Institutional includes industrial and landscape irrigation connections.

In 2015, 11,365 of 12,653 SFR connections were unmetered and all MFR connections (905) were unmetered. Six of 1,252 CII connection were not metered in 2015. All landscape connections (318) were metered in 2015. Consequently, estimates of water use are based largely on usage factors. The unmetered connection volumes presented in Table 4-0 for 2010 were also estimated using usage factors. The City expects to have completed metering its connections by January 2019. The total demands (metered and estimated unmetered) for potable water are presented in Table 4-1 for the 2015 calendar year.

Table 4-1 Retail: Demands for Potable and Raw Water - Actual			
Use Type <i>(Add additional rows as needed)</i>	2015 Actual		
<i>Drop use multiple times These are the only Use down list May select each Types that will be recognized by the WUEdata online submittal tool</i>	Additional Description <i>(as needed)</i>	Level of Treatment When Delivered <i>Drop down list</i>	Volume
Single Family		Drinking Water	1,484,293
Multi-Family		Drinking Water	384,623
Commercial	Includes Industrial and Institutional.	Drinking Water	1,400,018
Landscape		Drinking Water	310,251
Agricultural irrigation		Drinking Water	0
Losses		Drinking Water	825,159
TOTAL			4,404,343
NOTES: Units of measure in this UWMP are hundred cubic feet (CCF). Volume includes metered and unmetered use. Unmetered water deliveries are not measured by the City. The residential unmetered deliveries listed in this table are estimates based on metered SFR use in 2015, including usage factors to account for increased consumptions typically found with unmetered connections (1.5 times for SFR and 3.5 times for MFR). Unmetered CII deliveries were estimated using the ratio of metered CII use to metered CII connections. All landscape connections are metered.			

Table 4-2 contains the projected potable and raw water demands from 2020 through 2040. The demand projections are based on the City's 2020 gallon per capita per day (gpcd) target, the projected population in the specified year, and the water sector usage. To project the use per customer sector, it was assumed that the number of connections will grow consistently with the projected water demands; this is based on the relative distribution of customer types, accounts, and water use reported for 2015. However, the customer sector water deliveries in Table 4-2 are only general estimates of projected use, and may vary significantly based on future development and water conservation measures taken by each customer sector and future metering of service connections. Ultimately, the implementation, magnitude, and type of future development will determine the distribution of water use per customer sector. As the City continues to meter its service connections, more accurate

demand and delivery data may be collected and the values listed below may be refined. The projected water use in Table 4-2 does not include losses as it assumed that the City will more accurately determine and reduce losses once fully metered.

Table 4-2 Retail: Demands for Potable and Raw Water - Projected						
Use Type <i>(Add additional rows as needed)</i>	Additional Description <i>(as needed)</i>	Projected Water Use <i>Report To the Extent that Records are Available</i>				
<i>Drop down list</i> <i>May select each use multiple times</i> <i>These are the only Use Types that will be recognized by the WUEdata online submittal tool</i>		2020	2025	2030	2035	2040-opt
Single Family		2,680,226	3,064,502	3,503,873	4,006,238	4,580,630
Multi-Family		694,523	794,100	907,953	1,038,130	1,186,972
Commercial	Includes Industrial and Institutional	2,528,049	2,890,506	3,304,930	3,778,773	4,320,552
Landscape		560,228	640,551	732,389	837,395	957,456
Agricultural irrigation		0	0	0	0	0
TOTAL		6,463,025	7,389,658	8,449,145	9,660,536	11,045,609

NOTES: Units of measure in this UWMP are hundred cubic feet (CCF).

The City's total water demands for potable and raw water, and recycled water demand, based on the figures presented in Table 4-1, Table 4-2, and Table 6-4, are summarized in Table 4-3. No infrastructure exists at this time to support recycled water use within the City.

Table 4-3 Retail: Total Water Demands						
	2015	2020	2025	2030	2035	2040 (opt)
Potable and Raw Water <i>From Tables 4-1 and 4-2</i>	4,404,343	6,463,025	7,389,658	8,449,145	9,660,536	11,045,609
Recycled Water Demand* <i>From Table 6-4</i>	0	0	0	0	0	0
TOTAL WATER DEMAND	4,404,343	6,463,025	7,389,658	8,449,145	9,660,536	11,045,609

**Recycled water demand fields will be blank until Table 6-4 is complete.*

NOTES: Units of measure in this UWMP are hundred cubic feet (CCF).

4.3 DISTRIBUTION SYSTEM WATER LOSSES

Distribution system water losses ("real" losses) are the physical water losses from the water distribution system and the supplier's storage facilities, up to the point of customer consumption. The estimated distribution system water loss for the most recent 12-month period available (2015 calendar year) based on the draft AWWA American Water Works Association (AWWA) Method Guidance "Water Resources Water Audit Manual" is reported in Table 4-4.

Table 4-4 Retail: 12 Month Water Loss Audit Reporting	
Reporting Period Start Date (mm/yyyy)	Volume of Water Loss*
01/2015	825,159
NOTES: 1) Based on draft AWWA Water Resources Water Audit. 2) Units of measure in this UWMP are hundred cubic feet (CCF).	

4.4 ESTIMATING FUTURE WATER SAVINGS

"Passive" savings are water savings from codes, standards, ordinances, or transportation and land use plans. As shown in Table 4-5, future water savings above the City meeting and maintaining the 2020 gpcd target are not included in the total water use projections (Table 4-2).

Table 4-5 Retail Only: Inclusion in Water Use Projections	
Are Future Water Savings Included in Projections? (Refer to Appendix K of UWMP Guidebook) <i>Drop down list (y/n)</i>	No
If "Yes" to above, state the section or page number, in the cell to the right, where citations of the codes, ordinances, etc... utilized in demand projections are found.	
Are Lower Income Residential Demands Included In Projections? <i>Drop down list (y/n)</i>	Yes

4.5 WATER USE FOR LOWER INCOME HOUSEHOLDS

As shown in Table 4-5, lower income household demand projections are included in the total water use projections (Table 4-2 and Table 4-3).

The City's 2013-2021 Housing Element contains implementation programs and targets for affordable housing for low-income households. Some of the policies related to providing low-income housing in the City's 2013-2021 Housing Element are listed below:

- Five percent of newly constructed rental units shall be affordable for very low- and low-income households
- Ten percent of newly constructed ownership units shall be affordable for low-income households
- Pursue state and federal funding to assist with the City's new construction objectives of 658 extremely low-income units, 658 very low-income units, 923 low-income units, and 1,111 moderate-income units
- Assist in rehabilitating housing units with funding provided by all applicable programs (up to 200 multi-family units during the planning period)

The most recent Sacramento Area Council of Governments (SACOG) 2013-2021 Regional Housing Needs Plan (RHNP) has determined that the City has a very low- and low-income housing need of 2,239 housing units. The 2013-2021 Housing Element lists 2,239 housing units for extremely low-, very low-, and low-income levels, which agree with the RHNP assessment.

BASELINES AND TARGETS

The Urban Water Management Planning Act (UWMPA) requires that the Urban Water Management Plan (UWMP) identify the baseline water demand, urban water use target, and interim urban water use target for the City of West Sacramento (City).

The base daily per capita use is the first step in determining the various urban water use targets over the 20-year planning horizon. The current per capita use sets the “baseline” on which the urban and interim water use targets are determined. These targets are necessary to judge compliance with the 2020 use reductions set forth in the Water Conservation Bill of 2009 (Senate Bill [SB] X7-7).

5.1 BASELINE PERIODS

The first step in developing the baseline water use for the City is determining the applicable range and years for which the baseline average will be calculated. The UWMPA stipulates an agency may use either a 10 or 15-year average to determine its baseline. If 10 percent of total water deliveries in 2008 were from recycled water, then the agency can use a 15-year average baseline. Since the City had no recycled water deliveries to customers in 2008, a 10-year average must be used for baseline determination. In addition to the 10-year baseline, a 5-year baseline is also calculated, which will be used to establish the minimum criteria for the City’s use reduction targets. A summary of the 10-year baseline range (2001 to 2010) and 5-year baseline range (2006-2010) is included in Table 1 of the SB X7-7 Verification Forms (Appendix D). The 2010 UWMP 10-year baseline range (1999-2008) was changed due to the availability of 2010 census data.

5.2 SERVICE AREA POPULATION

The UWMPA requires that the 2010 census data be used in the baseline population calculations for the 2015 UWMP. The City's baseline population has been recalculated for the 2015 UWMP based on the 2010 Census data as described below.

Service area population is reported for each year in the baseline periods as well as 2015, the compliance year, in Table 3 of the SB X7-7 Verification Forms (Appendix D).

5.2.1 Population Methodology

The City's service area boundaries overlap by 50 percent with the boundaries of the City limits; therefore, the persons-per connection methodology for population estimates is used as shown in Table 2 of the SB X7-7 Verification Forms (Appendix C).

The persons-per connection methodology is based on the alternative methodology for service area population found in Appendix A of the Methodologies for Calculating Baseline

and Compliance per Capita Urban Water Use (October 1, 2010). The 2010 Census reported 48,744 residents in the City. Using the 2010 service area boundary with the 2010 census blocks, the 2010 service area population was determined to be 47,918. Population estimates were determined by anchoring the year 2010 residential connections to the year 2010 service area population, followed by scaling the estimate backward in the baseline period using active connections for the corresponding year.

A single ratio was developed for the year 2000 and 2010. Connections for the baseline years were grouped into a residential category that includes single-family and multi-family connections. The single ratio for persons per connection for the year 2000 and 2010 was calculated at 4.5 and 3.8, respectively. The 2010 ratio was applied to the years in the baseline period to estimate the population over the baseline period.

5.3 GROSS WATER USE

"Gross water use" means the total volume of water, whether treated or untreated, entering the distribution system of an urban retail water supplier with certain acceptable exclusions (i.e., recycled water, long term storage, conveyed to another urban water supplier, and agricultural use). Gross water use is reported for each year in the baseline periods as well as 2015, the compliance year, in Table 4 of the SB X7-7 Verification Forms (Appendix D).

As shown in Table 4-C.4 of the SB X7-7 Verification Forms (Appendix D), the City is not eligible for process water deductible exclusion. Therefore, the City has not subtracted process water from their gross water use.

5.4 BASELINE DAILY PER CAPITA WATER USE

The baseline daily per capita water use in each of the baseline years is calculated in Table 5 of the SB X7-7 Verification Form (Appendix D) by dividing annual gross water use by annual service area population. The average baseline daily per capita water use is summarized in Table 6 of the SB X7-7 Verification Form (Appendix D) for the 10-year baseline, 5-year baseline, and 2015 compliance year. The actual water use in 2015 was 4,404,343 CCF.

5.5 2015 AND 2020 TARGETS

The UWMPA requires urban water suppliers to determine the interim and urban water use targets for 2015 and 2020, respectively. As shown in Table 7 of the SB X7-7 Verification Forms (Appendix D), the 2020 target method used is Method 1.

The 2015 interim water use target is the planned daily per capita water use in 2015, a value halfway between the baseline daily per capita water use and the 2020 urban water use target (2015 UWMP Guidebook).

The 2020 urban water use target is how much water is planned to be delivered, in 2020 to each resident within an urban water supplier's distribution system area, taking into account water conservation practices that currently are and plan to be implemented (2015 UWMP Guidebook).

5.5.1 Target Methods

Four target methods have been developed, and identify the specific steps water suppliers shall follow to establish these targets. A brief description of each method, as well as the water use calculated using each methodology is included below.

5.5.1.1 Method 1 – 80 Percent of Base Daily Per Capita Water Use

Method 1 requires an urban water supplier to first determine the base daily per capita use. In order to determine the target using Method 1, 80 percent of the base daily per capita use (10-year base period) is calculated. Based on the 10-year baseline daily per capita use of 293 gallons per capita per day (gpcd) determined previously, the 2020 target use for Method 1 is 234 gpcd. This is shown in Table 7-A of the SB X7-7 Verification Forms (Appendix D).

5.5.1.2 Method 2 – Performance Standards

Method 2 requires water suppliers to use baseline commercial, industrial, and institutional (CII), indoor residential, and landscaped area water use to calculate a water use target. Based on the nature of the data required to determine a target using Method 2 and lack of metered usage data over the baseline period, it is not feasible for the City to use this methodology.

5.5.1.3 Method 3 – 95 Percent of Hydrologic Region Target

Method 3 requires water suppliers to use the hydrologic region target to calculate a water use target for 2020. In order to determine the target using Method 3, 95 percent of the region-specific conservation goal is calculated. Based on a target of 176 gpcd for the Sacramento River region, the Method 3 target is 167 gpcd. This is shown in Table 7-E of the SB X7-7 Verification Forms (Appendix D).

5.5.1.4 Method 4 – Savings by Water Sector

Method 4 identifies water savings obtained through identified practices and subtracts them from the base daily per capita water use value identified for the water supplier. The water savings identified that can be used to reduce the base daily per capita water use value include:

- Indoor residential use savings
- Metered savings
- CII savings

- Landscape and water loss savings

To calculate the commercial, institutional, and industrial (CII) savings, a retail water supplier must have data for the entire baseline period used in the base daily per capita water use calculation. The City does not have metered CII water use data over the baseline period (2001 to 2010); therefore, it is not feasible for the City to use this methodology.

5.5.2 5-Year Baseline - 2020 Target Confirmation

The final step in determining the applicability of the water use target for the City is to confirm that the water use targets meet the minimum reduction requirements as defined by the California Department of Water Resources (DWR). To confirm the target, the 5-year average baseline (267 gpcd) previously determined is used. In order to meet the minimum criteria, the chosen use 2020 target must fall below 95 percent of the 5-year baseline, which for the City is 254 gpcd. This is shown in Table 7-F of the SB X7-7 Verification Forms (Appendix D).

5.5.3 2015 Interim Urban Water Use Target

The 2015 Interim Target is the value halfway between the 10-year baseline gpcd and the confirmed 2020 Target. The Interim 2015 Target is 264 gpcd, as shown in Table 8 of the SB X7-7 Verification Forms (Appendix D).

5.5.4 Summary of Baselines and Targets

A summary of the various baselines, 2015 interim use target, and the confirmed 2020 target are summarized in Table 5-1. The 2020 water use target was determined using Method 1, which corresponds to 80 percent of the 10-year baseline. According to the 2015 UWMP Guidebook, this target is valid since it is less than the target confirmation criteria of 254 gpcd.

Table 5-1 Baselines and Targets Summary					
<i>Retail Agency or Regional Alliance Only</i>					
Baseline Period	Start Year	End Year	Average Baseline GPCD*	2015 Interim Target *	Confirmed 2020 Target*
10-15 year	2001	2010	293	264	234
5 Year	2006	2010	267		
*All values are in Gallons per Capita per Day (GPCD)					

5.6 COMPLIANCE DAILY PER CAPITA WATER USE (GPCD)

"Compliance daily per-capita water use means the gross water use during the final year of the reporting period. Water suppliers are required to calculate their actual 2015 water use (2015 calendar year) and evaluate whether their per capita 2015 target use was met and assess progress towards achieving their 2020 target water use. Refer to Table 5-2 and SB X7-7 Table 7 through Table 9 (Appendix D) for 2015 compliance.

Table 5-2: 2015 Compliance									
<i>Retail Agency or Regional Alliance Only</i>									
Actual 2015 GPCD*	2015 Interim Target GPCD*	Optional Adjustments to 2015 GPCD Enter "0" if no adjustment is made <i>From Methodology 8</i>					Adjusted 2015 GPCD*	2015 GPCD* <i>(Adjusted if applicable)</i>	Did Supplier Achieve Targeted Reduction for 2015? Y/N
		Extraordinary Events*	Economic Adjustment*	Weather Normalization*	TOTAL Adjustments*				
183	264				0	183	183	Yes	
<i>*All values are in Gallons per Capita per Day (GPCD)</i>									

The 2020 conservation target calculated for the City does not represent a significant effort to reach. In 2015, the City usage was 183 gpcd and the 2015 interim target is 264 gpcd. Therefore, meeting the 2020 target (234 gpcd) should not be difficult for the City. From 2010 to 2015, City water usage decreased by approximately 61 gpcd, with an average use of 219 gpcd between the years of 2012-2015. This decrease may have been due to the drought, recession, local business closures, and/or the City's water conservation efforts. The savings associated with the demand management measures (DMMs) that the City is currently implementing and plans to implement will continue to result in a reduction of water use, helping the City meet the 2020 water use target. The City will avoid placing a disproportionate burden on any customer sector to meet the 2020 water use target.

SYSTEM SUPPLIES

The Urban Water Management Planning Act (UWMPA) requires that the Urban Water Management Plan (UWMP) include a description of the agency's existing and future water supply sources for the next 20 years. The information on surface water supply presented in this Chapter was provided by Tully & Young.

The City of West Sacramento (City) has numerous water supplies to meet demands as well as short-term and long-term planning needs. Specifically, the City's three main water assets – State Water Resources Control Board (SWRCB) Appropriative Water Right Permit 18150, Central Valley Project (CVP) Contract 0-07-20-W0187, and the North Delta Water Agency (NDWA) Contract – provide the foundation of the City's water supply portfolio. All of these assets, as well as future assets that the City may develop, create sufficient water supplies to meet the City's existing and future demands.

6.1 PURCHASED OR IMPORTED WATER

The City purchases surface water through the agreements detailed in Section 6.2.

6.2 SURFACE WATER

The City has three surface water assets for use in its service area. These assets are: a water right with the SWRCB, a contract with the United States Bureau of Reclamation (USBR), and a water entitlement through NDWA. These assets were developed and secured over the course of the last half-century in an effort to encourage responsible growth by the City, create water supply redundancy, and to protect the City against drought conditions.

Throughout the 2013-2015 drought, the City was able to provide water supplies to meet its needs. The City's water supplies were not curtailed to such an extent as to prevent the City from making adequate deliveries to its customers. During 2015, the City was actively reducing its water consumption in order to meet the SWRCB's mandated water use restrictions. Although the City showed extensive water use reductions, absent the SWRCB's mandate, the City's conservation would not likely have been as great given the characteristics of the City's water supply assets and its historical use patterns. As such, the City's supplies have proven adequate to meet historical demands.

The combination of all of the City's surface water supplies indicates that the needed volumes are reliable in all year types. The distribution of those supplies, however, varies greatly depending on the year and the water supply conditions.

6.2.1 SWRCB Water Right Permit 18150

The City's Water Right Permit 18150 allows the City to divert water from the Sacramento River for use in its service area from January through June and again from September through December each year. Under the Permit, the City does not have the right to divert water during the high demand months of July and August.

The Permit is subject to a special water right condition called "Term 91" that allows the state to limit or eliminate the City's ability to use this water in certain hydrological and regulatory conditions. Term 91 is declared by the SWRCB when it is determined that the State Water Project (SWP) and USBR's Central Valley Project (CVP) are required to release stored water in excess of low natural flow to meet Sacramento Valley in-basin uses plus export demands. Natural flow is the flow that would have been occurred in the natural river systems if the dams in the Sacramento River watershed did not exist. In short, when direct diversions are not allowed because of Term 91, the City is denied water under the Permit. In dry conditions, Term 91 is most likely to be triggered and the City must curtail use of this water right. In extremely dry conditions, appropriate water rights are curtailed in order of priority that may force the City to forego water use under the right even earlier in the water year than may be triggered by the Term 91 condition. The City's Permit has often been subject to Term 91, with the Permit term in effect as early as March in some years. Whenever the Term 91 condition is triggered, the City is prohibited from diverting water under the Permit until the SWRCB lifts the Term 91 conditions.

As such, in normal years because of Term 91, the City suspends water diversions under its Permit beyond May and restarts diversions in late October. The total available supply under the Permit is 18,350 acre-feet per year (AFY) with a maximum diversion rate of 62 cubic feet per second (cfs). The supply is available for use anywhere in the City's service area. The City is diligently working to convert this Permit into a Water Right License by applying the water to reasonable and beneficial uses.

In dry years, this supply is only available in the months when the supply may be legally diverted – before Term 91 or water right curtailment orders are issued. As such, the supply in a single dry year has been reduced to 6,960 acre-feet (AF) from the 18,350 AF maximum. Moreover in extreme or extended dry conditions, the supply may be further reduced as Term 91 or water right curtailment orders are implemented. In these conditions, this supply is reduced to a maximum of 3,480 AF.

Under Standard Permit Term 91 of the City's appropriative right, diversions were reduced by 100 percent during the drought years of 1991 and 1992 between the months of June and October. In more recent years, Term 91 restrictions of varying severity and duration have become more typical; for the purposes of this UWMP, however, it is assumed that in a normal water year, Term 91 supply reductions will not impact the City's overall water supply strategy.

The City's Permit is incorporated into the USBR Contract described in the next section. The incorporation into that contract creates another layer of security in receiving deliveries of the permitted supply as provided by USBR's operation of Shasta Reservoir.

6.2.2 United States Bureau of Reclamation Contract 0-07-20-W0187

The City's CVP Contract 0-07-20-W0187 captures two parts of the City's water assets – Permit 18150 and a CVP Project Water supply. Under the contract, the USBR delivers both a base supply – the City's Permit water (18,350 AFY) – and a Project Supply – water derived from storage in Shasta Reservoir. The contract total is 23,600 AF. The Permit supply is subject to the same conditions as described above.

The Project Supply is a contract entitlement between the City and USBR. The City is required to purchase a minimum of approximately 9,400 AFY (increasing about 50 AFY until 2019) even though it has used approximately 5,200 AF of this water in recent years. Moreover, the City is required to purchase 20, 88, 100, and 100 percent of CVP Project supply as a percentage of the total water diverted during June through September, respectively, for use in the City's service area. The City is not required to divert the purchased water.

In dry conditions, this water supply may be reduced based upon the USBR Municipal and Industrial (M&I) Shortage Policy. This policy mandates reduction in CVP supply deliveries that are derived from a baseline condition. The baseline condition is generally derived from the last three years of actual use during normal water supply conditions. Although certain additional qualifying criteria may be incorporated into the project supply deliveries, this baseline is the starting point to calculate the volume of CVP water available to the City under dry conditions. USBR then reduces this baseline amount by a given percentage.

Before the recent drought, the most the CVP supply had ever been reduced was 75 percent of the three-year average use. But in 2015, due to USBR's operations planning, the North of Delta CVP supply for M&I contracts was reduced to only 25 percent of the three-year average use. This exceptional reduction in 2015 is considered an anomaly for purposes of dry year water supply planning. Even with this excessive reduction, the City was able to use alternative supplies to meet its customers' needs.

The City has successfully transferred surplus CVP supply in both normal and wet years. Since the City's total use is about 5,200 AFY and the minimum quantity that the City must pay for exceeds 9,000 AFY, the City has about 4,000 AF of CVP supply available in years where USBR provides 100 percent allocation. This surplus has been sold to other CVP contractors in the Sacramento Valley, as allowed under USBR's contracting provisions. Revenues from these water sales have been used to offset the payments to USBR associated with the City's CVP supply allocation.

Provisions in the contract allow for the renewal of the contract for successive periods and to increase or decrease the quantity of water available to the City. In 2019, when the City's

CVP contract expires, the City will seek to augment its CVP supply water assets in order to meet the City's future water supply needs. Specifically, the City is seeking to secure as much as 18,000 AF of CVP supply water under this contract by 2045.

The contract requires the City to prepare and implement a water conservation program for all water diverted from the river. Detailed information regarding the City's conservation efforts must be submitted to USBR for approval every five years. The 2010 UWMP was submitted to USBR for review and approval to satisfy this requirement. Upon completion, this 2015 UWMP will be submitted to USBR for review.

6.2.3 North Delta Water Agency Contract

The NDWA Contract is a contract between NDWA and the California Department of Water Resources (DWR) for deliveries of water to the NDWA service area under all conditions. The NDWA Contract provides water supply deliveries in exchange for a payment of \$170,000 per year to DWR. The annual payments to DWR are subject to adjustments every five years. Payments to the NDWA – that are used to pay NDWA expenses, including DWR fees – are made by all landowners within the NDWA boundaries through annual tax assessments on their properties, including the property owners within NDWA inside the City and its Sphere of Influence (SOI).

The City may use the NDWA Contract supply in areas within the City that lie within the NDWA boundaries. The majority of the City lies within the NDWA boundary. A portion of the City located generally north of the Union Pacific Railroad tracks is outside of the NDWA service area and is therefore unable to use NDWA water supplies. Accordingly, in dry conditions the only supplies available in this location are the supplies derived from the City's SWRCB Permit and USBR CVP contract.

The City uses the NDWA contract supplies as a back-up supply to meet its customers' needs under certain hydrological and regulatory conditions. Specifically, the City has historically used the supply only when other supplies are not available to meet the City's needs. During the 2014-2015 drought, the City relied heavily on the NDWA Contract supply to meet its residents' needs as the SWRCB Permit supply had been curtailed and USBR CVP supplies were significantly reduced. As such, the NDWA Contract supply was the most reliable dry year supply in the City's water supply portfolio. The City anticipates continuing to use this supply as a redundant supply to its supplement its other water assets. The NDWA Contract provides an extremely valuable water supply to the City. The water under this contract is 100 percent reliable in all year types.

6.3 GROUNDWATER

The City overlies the Yolo Subbasin (identified as Groundwater Basin Number 5-21.67 by the DWR) of the Sacramento Valley Groundwater Basin. The Yolo Subbasin covers

approximately 256,000 acres or 400 square miles. The Yolo Subbasin is bounded on the east by the Sacramento River, on the west by the Coast Range, on the north by Cache Creek, and on the south by Putah Creek. The Yolo Groundwater Subbasin is an unadjudicated basin. Long term trends do not indicate any significant decline in water levels in the vicinity of West Sacramento.

Historically, the sole source of water supplied to the City was groundwater. The City moved away from groundwater sources because of the heavy mineralization issues associated with groundwater that affected the quality of water delivered to its customers. As such, many of the groundwater wells in the City have been deactivated, abandoned, or are only considered for use during emergencies.

The City has three wells in its Southport Area: the Southport Treated Water Well with 2.9 million gallons per day (mgd) capacity; Well #19 with 1,000 gallons per minutes (gpm) capacity; and Well #20 with 1,600 gpm capacity. These wells are not currently used within the City for potable uses and therefore for the purposes of this UWMP planning horizon, it will be assumed that the City does not intend to utilize groundwater as a regular source of supply and has not recently utilized groundwater as a supply source. Since groundwater is not used for potable uses Table 6-1 has been left blank.

Table 6-1 Retail: Groundwater Volume Pumped						
<input checked="" type="checkbox"/>	Supplier does not pump groundwater. The supplier will not complete the table below.					
Groundwater Type <i>Drop Down List</i> <i>May use each category multiple times</i>	Location or Basin Name	2011	2012	2013	2014	2015
<i>Add additional rows as needed</i>						
TOTAL		0	0	0	0	0
NOTES: The City has backup groundwater wells, but does not currently use these for potable water supply.						

The City does recognize that groundwater assets may be used again by the City to either meet non-potable demands – like irrigation of parks and median strips – or treated and blended with surface water supplies to augment the potable water system. The City plans to develop and use groundwater assets in order to best manage its entire water portfolio in the future.

The Sustainable Groundwater Management Act (SGMA) of 2014, will alter how water supplies derived from groundwater are used throughout the Yolo Subbasin. The Water Resources Association of Yolo County (WRA) as well as the Yolo County Farm Bureau has begun to develop a governance structure to meet the requirements of SGMA. The City is a

member of WRA. The SGMA requires a Groundwater Sustainability Agency (GSA) to be formed by July 1, 2017 and a Groundwater Sustainability Plan (GSP) to be completed by 2022. The new governance and management of the basin will be an ongoing effort through the next water management planning cycle.

6.4 STORMWATER

The City has not identified any opportunities related to stormwater recapture to offset potable water use.

6.5 WASTEWATER AND RECYCLED WATER

The UWMPA requires that the UWMP address the opportunities for development of recycled water, including the description of existing recycled water applications, quantities of wastewater currently being treated to recycled water standards, limitations on the use of available recycled water, an estimate of projected recycled water use, the feasibility of said projected uses, and practices to encourage the use of recycled water.

6.5.1 Recycled Water Coordination

The City has not developed a recycled water plan at this time. It is anticipated, however, that water recycling planning discussions will take place in the future between the City and the Sacramento Regional County Sanitation District (SRCSD). SRCSD conveys and treats the City's wastewater beyond the boundaries of the City's service area.

Title 22 tertiary treatment and disinfection are required by SRCSD's new discharge permit. These treatment efforts render the water potentially suitable for alternative non-potable water uses. These uses potentially include, irrigating parks and median strips as well as meeting demands for other landscapes or industrial facilities located within the City's service area. This is a potential valuable source of water that the City could use to augment the reliability of the City's other potable supply assets and expand the City's water supply portfolio.

6.5.2 Wastewater Collection, Treatment Systems, and Disposal

In 2007, the City's South River Road wastewater treatment plant (WWTP) was taken offline and all wastewater flows were diverted outside of the City's service area through the newly constructed Lower Northwest Interceptor (LNWI), a major pipeline with pumping facilities constructed by SRCSD. The City collection system connects to the LNWI pipeline at a transfer facility next to the Parlin Ranch subdivision in Southport, south of Linden Road and adjacent to the Clarksburg Line Trail. Sewer flows are then conveyed by a gravity line to a pump station just south of the City limits where they are then pumped under the Sacramento River in a force main to the main treatment plant of SRCSD just north of Elk

Grove. The City continues to operate and maintain its existing wastewater collection system.

The SRCSD WWTP discharges treated wastewater to the Sacramento River and provides recycled water to customers in close proximity to the WWTP.

6.5.2.1 Wastewater Collected Within Service Area

Table 6-2 will be updated with the current wastewater volumes collected within the City limits in 2015 if the data is available.

Table 6-2 Retail: Wastewater Collected Within Service Area in 2015						
<input type="checkbox"/>						
There is no wastewater collection system. The supplier will not complete the table below.						
Percentage of 2015 service area covered by wastewater collection system <i>(optional)</i>						
Percentage of 2015 service area population covered by wastewater collection system <i>(optional)</i>						
Wastewater Collection			Recipient of Collected Wastewater			
Name of Wastewater Collection Agency	Wastewater Volume Metered or Estimated? <i>Drop Down List</i>	Volume of Wastewater Collected from UWMP Service Area 2015	Name of Wastewater Treatment Agency Receiving Collected Wastewater	Treatment Plant Name	Is WWTP Located Within UWMP Area? <i>Drop Down List</i>	Is WWTP Operation Contracted to a Third Party? <i>(optional)</i> <i>Drop Down List</i>
<i>Add additional rows as needed</i>						
City of West Sacramento	Metered		Sacramento Regional County Sanitation District	Sacramento Regional WWTP	No	No
Total Wastewater Collected from Service Area in 2015:		0				
NOTES: Units of measure in this UWMP are hundred cubic feet (CCF).						

6.5.2.2 Wastewater Treatment and Discharge within Service Area

No wastewater is treated or discharged in the City's service area as indicated in Table 6-3.

Table 6-3 Retail: Wastewater Treatment and Discharge Within Service Area in 2015										
<input checked="" type="checkbox"/>	No wastewater is treated or disposed of within the UWMP service area. The supplier will not complete the table below.									
Wastewater Treatment Plant Name	Discharge Location Name or Identifier	Discharge Location Description	Wastewater Discharge ID Number (optional)	Method of Disposal <i>Drop down list</i>	Does This Plant Treat Wastewater Generated Outside the Service Area?	Treatment Level <i>Drop down list</i>	2015 volumes			
							Wastewater Treated	Discharged Treated Wastewater	Recycled Within Service Area	Recycled Outside of Service Area
<i>Add additional rows as needed</i>										
Total							0	0	0	0
NOTES: All wastewater is treated and disposed of outside of the City's service area.										

6.5.3 Recycled Water System

6.5.3.1 Current and Projected Recycled Water Use

At the present time, no discussions have taken place between the City and SRCSD regarding the future availability and use of recycled water. Therefore, no plans currently exist to equip the City with recycled water infrastructure. As a result, current projected use of recycled water within the City's service area through 2040 is zero, as a recycled water source does not exist within the City service area at this time. There may be opportunity to use recycled water within the City's service area depending upon coordination with its regional partners and stakeholders.

6.5.3.2 Potential Uses of Recycled Water

No infrastructure exists at this time to support recycled water use within the City as shown in Table 6-4 and Table 6-5. If future recycled water planning discussions with SRCSD prove fruitful, however, potential uses of recycled water within the City could include:

- Urban (park and streetscape) landscape irrigation
- Residential irrigation
- School landscape irrigation
- Dual-plumbed business/commercial developments

At the present time, the City has not made any commitment to pursue any of the above recycled water uses. Currently, recycled water use is not economically feasible in this area since new infrastructure would be required and this burden would make recycled water costs prohibitive when compared to other water supplies available.

6.5.4 Actions to Encourage and Optimize Future Recycled Water Use

As recycled water planning discussions begin with SRCSD, recycled water projects may be identified and pursued by the City, provided that those projects are feasible and cost-effective, and that they will provide water supply benefits both to the City and to the greater SRCSD service area. If these conditions can be met, methods to encourage recycled water use can be developed to maximize project benefits.

At the present time, no recycled water use optimization plan has been developed due to the lack of recycled water infrastructure within the City's service area and that all wastewater is treated outside of the service area by SRCSD. As shown in Table 6-6, the City does not plan to expand recycled water use at this time.

Table 6-4 Retail: Current and Projected Recycled Water Direct Beneficial Uses Within Service Area									
<input checked="" type="checkbox"/>		Recycled water is not used and is not planned for use within the service area of the supplier. The supplier will not complete the table below.							
Name of Agency Producing (Treating) the Recycled Water:									
Name of Agency Operating the Recycled Water Distribution System:									
Supplemental Water Added in 2015									
Source of 2015 Supplemental Water									
Beneficial Use Type	General Description of 2015 Uses	Level of Treatment <i>Drop down list</i>	2015	2020	2025	2030	2035	2040 (opt)	
Agricultural irrigation									
Landscape irrigation (excludes golf courses)									
Golf course irrigation									
Commercial use									
Industrial use									
Geothermal and other energy production									
Seawater intrusion barrier									
Recreational impoundment									
Wetlands or wildlife habitat									
Groundwater recharge (IPR)*									
Surface water augmentation (IPR)*									
Direct potable reuse									
Other (Provide General Description)									
Total:			0	0	0	0	0	0	
*IPR - Indirect Potable Reuse									

Table 6-5 Retail: 2010 UWMP Recycled Water Use Projection Compared to 2015 Actual

<input checked="" type="checkbox"/>	Recycled water was not used in 2010 nor projected for use in 2015. The supplier will not complete the table below.		
Use Type		2010 Projection for 2015	2015 Actual Use
Agricultural irrigation			
Landscape irrigation (excludes golf courses)			
Golf course irrigation			
Commercial use			
Industrial use			
Geothermal and other energy production			
Seawater intrusion barrier			
Recreational impoundment			
Wetlands or wildlife habitat			
Groundwater recharge (IPR)			
Surface water augmentation (IPR)			
Direct potable reuse			
Other	<i>Type of Use</i>		
Total		0	0

Table 6-6 Retail: Methods to Expand Future Recycled Water Use

<input checked="" type="checkbox"/>	Supplier does not plan to expand recycled water use in the future. Supplier will not complete the table below but will provide narrative explanation.		
6-9	Provide page location of narrative in UWMP		
Name of Action	Description	Planned Implementation Year	Expected Increase in Recycled Water Use
<i>Add additional rows as needed</i>			
Total			0

6.6 DESALINATED WATER OPPORTUNITIES

The UWMPA requires that the UWMP address the opportunities for development of desalinated water, including ocean water, brackish water, and groundwater.

At the present time, the City does not foresee any opportunities for the use of desalinated water, including ocean water, brackish ocean water, and brackish groundwater, as a long-term supply since the City is not located near the coast or a brackish groundwater source.

6.7 EXCHANGES OR TRANSFERS

The UWMPA requires the UWMP to address the opportunities for development of short or long-term transfer or exchange opportunities.

6.7.1 Exchanges

Water exchanges entail water being delivered by one water user to another water user, with the receiving water user providing water in return at a specified time or when the conditions of the parties' agreements are met. The City does not have any planned or potential water exchanges.

6.7.2 Transfers

Water transfers entail a temporary or long-term change in the point of diversion, place of use, or purpose of use due to a transfer, sale, lease, or exchange of water or water rights.

The City has water transfer opportunities available both to provide and procure water. The City's varied water assets allow it to make water available to other users in California through readily accepted water transfer protocols. For instance, the City can deliver water in accordance with transfer provisions in the City's CVP contract. In addition, the City's location on the Sacramento River allows it to not only access a large variety of water supplies derived from the Sacramento River watershed (potentially for its own use or exchange), but also access to a primary delivery system – the Sacramento River – that would allow water to reach other areas in the State via the federal and state pumping facilities in the Delta. As such, the City is in a prime position to engage in water transfers in California.

The City has already executed water transfers in years past. For instance, the City entered a short-term water transfer agreement with the Dunnigan Water District (District) for the transfer of untreated surface water to the District. Under the agreement, the City sold a minimum of 1,000 AFY of CVP supply water to the District in exchange for payment. The special rules under the Central Valley Project Improvement Act (CVPIA) applicable to in-watershed CVP supply water transfers among CVP supply water contractors were utilized in developing and executing this transfer project. The City anticipates further CVP supply transfers under the in-basin water transfer provisions of the CVPIA.

Other transfer opportunities may also be available to the City. The City's ability to develop groundwater may allow it to engage in groundwater substitution transfers where the City delivers its surface water and replaces the amount delivered with groundwater. The City may engage in conservation-based transfers where the City derives benefits from its long-term water conservation efforts that reduce overall per capita demand freeing up unused, yet conserved supplies, for transfer. The City may engage in exchange arrangements with neighboring water purveyors where the City delivers a portion of its surface water asset to a water purveyor so that the water purveyor can deliver its water supplies to a third party. It is

likely that these more complex types of water transfers would occur in drier years when water pricing renders a complex transfer more enticing.

The City may also participate in the buyer's market for water in the future. Purchases of additional water supplies could come in the form of option agreements to provide water under certain hydrological or regulatory conditions. For instance, the City may wish to protect against extreme drought conditions and enter an option contract to purchase water for the months of April, May, September and October in case Term 91 is triggered earlier or longer than expected under certain hydrological conditions. These acquired supplies may serve areas beyond the reach of the City's NDWA contract.

The City has numerous water transfer opportunities in order to provide supplies to other water users in the state as well as acquire water supplies during certain conditions. These opportunities will be developed in the context of the next planning cycle for the City.

6.7.3 Emergency Interties

The City does not have any interconnections between its potable water system and potable water systems operated by other water suppliers.

6.8 FUTURE WATER PROJECTS

The UWMPA requires that suppliers describe water supply projects and programs may be undertaken to meet the projected water demands.

6.8.1 Future Supply Under Permit 18150

Permit 18150 Term 91 condition is subject to the regulatory uncertainties that are triggered by Delta water supply issues. Term 91 may occur earlier in the season in a normal water year. Similarly, if climatic conditions change – due to predicted outcomes of climate change – then potentially snowmelt and runoff patterns may change again affecting Term 91 triggers.

The City may also have some additional issues in perfecting water usage under Permit 18150 and in transitioning the Permit into a license through the SWRCB process. The Permit requires applying all water supplies described under the Permit to beneficial uses in the time allotted in the Permit. It may be difficult for the City to apply all water supplies under the Permit to the full extent feasible based upon the City's diversion capacity, its treatment capacity, and its delivery capacity in the months when the Permit water may be diverted. Although the total volume under the right at 18,350 AFY (62 cfs) could be used by the City, the limited window to divert and use that water may prove problematic. As such, the existing normal year diversion amounts should be used as a conservative estimate in the context of future use of this water asset. This maximum amount is 13,920 AFY.

6.8.2 Future Supply CVP Contract 0-07-20-W0187

The City's CVP contract expires in 2019. The expiration of this contract poses two issues to the City: (1) how will the contract renewal process implicate USBR's delivery of the City's permit supply under this contract (if at all); and (2) will the City be able to increase its CVP supply allocation under the contract in order to meet its full build-out need while preserving its NDWA supply as a backup supply. The City has initiated its assessment of CVP supply needs and has determined that this supply should be the City's primary supply over the course of the hottest and driest months of a calendar year – June, July, August and September. This characterization matches the characterization of the CVP supply water asset in the City's current water planning efforts and diversion patterns.

The City intends to initiate negotiations with USBR within the next year. These negotiations will focus on increasing the volume of CVP supply available under the CVP contract. USBR has conceded that it considers the NDWA supply a back-up supply to the City's primary supply sources. This characterization, coupled with the increased scrutiny on groundwater assets coming through the SGMA process, should help the City in its contract renewal process. For purposes of long-term planning, the City will assume that its contract renewal process allows supplies to meet its planned build-out demand conditions. A minimum of 9,680 AFY has been assumed as a conservative estimate of CVP supply allocation in 2020. It is anticipated that this CVP supply will continue to increase in reasonable incremental volumes through the planning horizon, nearly doubling at 18,000 AF, by 2045.

6.8.3 Future Supply of Groundwater

Development of groundwater wells to potentially blend with surface water assets and provide an additional layer of emergency back-up supply is a potential future supply available to the City. Although the City currently does not have significant well capacity to deliver water to meet its customer needs, it anticipates developing such capacity in the future. As such, future water supply characterizations indicate a conservative figure of 500 AF of groundwater available starting in 2030 and double that amount, to 1,000 AF, by 2045.

6.8.4 Future Supply from North Delta Water Agency Contract

Existing City policy indicates that this supply should primarily be considered a back-up supply in planning for normal years, single dry, and multiple dry years.

For purposes of future planning for normal years, the NDWA supply is limited to approximately 10 percent of the City's overall supply. For purposes of dry year planning, the NDWA supply makes up the entire deficit of supply that the City's primary water supplies do not fill.

6.8.5 Summary of Future Water Supply Projects

Table 6-7 summarizes the potential future water supply projects described above.

Table 6-7 Retail: Expected Future Water Supply Projects or Programs						
<input type="checkbox"/>		No expected future water supply projects or programs that provide a quantifiable increase to the agency's water supply. Supplier will not complete the table below.				
<input checked="" type="checkbox"/>		Some or all of the supplier's future water supply projects or programs are not compatible with this table and are described in a narrative format.				
6-13		Provide page location of narrative in the UWMP				
Name of Future Projects or Programs	Joint Project with other agencies?		Description (if needed)	Planned Implementation Year	Planned for Use in Year Type <i>Drop Down List</i>	Expected Increase in Water Supply to Agency <i>This may be a range</i>
	<i>Drop Down List (y/n)</i>	<i>If Yes, Agency Name</i>				
<i>Add additional rows as needed</i>						

6.9 SUMMARY OF EXISTING AND PLANNED SOURCES OF WATER

The City is entitled to 23,600 AFY of surface water through three surface water assets. The City has an appropriative right with SWRCB, a contract with USBR, and a contract with NDWA for diversion of surface water from the Sacramento River. The actual source and volume of water for the year 2015 is presented in Table 6-8.

Table 6-8 Retail: Water Supplies — Actual				
Water Supply	Additional Detail on Water Supply	2015		
<i>Drop down list</i> <i>May use each category multiple times.</i> <i>These are the only water supply categories that will be recognized by the WUEdata online submittal tool</i>		Actual Volume	Water Quality <i>Drop Down List</i>	Total Right or Safe Yield <i>(optional)</i>
<i>Add additional rows as needed</i>				
Surface water	USBR Contract	1,054,150	Raw Water	
Surface water	SWRCB Permit 18150	10,280,145	Raw Water	
Surface water	NDWA Contract	10,280,145	Raw Water	
Total		21,614,440		
NOTES: Units of measure in this UWMP are hundred cubic feet (CCF).				

The projected water supply for 2020, 2025, 2030, 2035, and 2040 are included in Table 6-9. The projected supplies include the future water supply projects detailed in Section 6.8.

6.10 CLIMATE CHANGE IMPACTS TO SUPPLY

The California Water Code (CWC) does not require that UWMPs address climate change. The potential water supply effects related to climate change have not been included in this UWMP. The IRWM Climate Change Vulnerability Assessment is included as Appendix C (refer to Section 3.3.1).

Table 6-9 Retail: Water Supplies — Projected

Water Supply	Additional Detail on Water Supply	Projected Water Supply <i>Report To the Extent Practicable</i>									
		2020		2025		2030		2035		2040 (opt)	
		Reasonably Available Volume	Total Right or Safe Yield (optional)	Reasonably Available Volume	Total Right or Safe Yield (optional)	Reasonably Available Volume	Total Right or Safe Yield (optional)	Reasonably Available Volume	Total Right or Safe Yield (optional)	Reasonably Available Volume	Total Right or Safe Yield (optional)
<i>Drop down list May use each category multiple times. These are the only water supply categories that will be recognized by the WUEdata online submittal tool</i>											
<i>Add additional rows as needed</i>											
Surface water	SWRCB - Permit 18150	6,063,552		6,063,552		6,063,552		6,063,552		6,063,552	
Surface water	USBR Contract	4,216,608		4,356,000		5,227,200		6,098,400		6,969,600	
Surface water	NDWA Contract	1,028,016		1,041,955		1,129,075		1,216,195		1,303,315	
Groundwater	City Wells	0		0		217,800		217,800		435,600	
Total		11,308,176	0	11,461,507	0	12,637,627	0	13,595,947	0	14,772,067	

NOTES: Units of measure in this UWMP are hundred cubic feet (CCF).

WATER SUPPLY RELIABILITY

The Urban Water Management Planning Act (UWMPA) requires that the Urban Water Management Plan (UWMP) address the reliability of the agency's water supplies. This includes supplies that are vulnerable to seasonal or climatic variations. In addition, an analysis must be included to address supply availability in a single-dry year and in multiple-dry years.

7.1 CONSTRAINTS ON WATER SOURCES

Water supply from the City of West Sacramento's (City)'s appropriative right is susceptible to several factors, including Standard Term 91 supply reductions, drought conditions, stringent downstream water quality objectives in the Delta, and diversions by more senior appropriative rights holders. Any combination of these factors may result in reductions in supply during certain periods of the year. This supply is legally unavailable during the high demand months of July and August. As a result of Standard Term 91 limits, this supply can be reduced as early as March. It is typically reduced by varying amounts during the month of June. Water supply from the City's United States Bureau of Reclamation (USBR) contract is susceptible primarily to drought conditions, when diversions from the Sacramento River may be reduced by USBR under its Sacramento River Central Valley Project (CVP) Municipal and Industrial (M&I) Water Shortage Policy. For the majority of the City, the North Delta Water Agency (NDWA) provides a supply that is essentially drought-proof. Inconsistencies in this supply could result from several factors, including drastic reductions in water quality in the Sacramento River and/or catastrophic interruptions to the source or to the City's water treatment facilities. The City does have a Disaster/Emergency Response Plan, which addresses many of the possible scenarios, which could interrupt supply from the Sacramento River.

Table 7-0 contains a summary of factors affecting water supply reliability and that may pose an opportunity for inconsistency in supply. Environmental factors represent supply restrictions that may be imposed due to downstream Delta water quality and quantity objectives. Water quality factors represent potential contamination of the river (described below in Section 7.1.2). Because the City's current supply is from the Sacramento River, potential contamination may limit supply for consumption. While some water quality factors may be mitigated through treatment, more severe impacts have the potential to impact supply available for distribution. Climatic factors represent potential restrictions due to drought and hydrogeological conditions.

Table 7-0 Factors Resulting in Inconsistency of Supply							
Source Information		Source Limitation					
Water Supply Sources	Specific Source Name	Water Quantity	Legal	Environmental	Water Quality	Climatic	Additional Information
USBR Contract 0-07-20-W0187	Sacramento River	Yes	Yes	Yes	Yes	Yes	-
SWRCB Permit 18150	Sacramento River	Yes ⁽¹⁾	Yes	Yes	Yes	Yes	-
NDWA Contract	Sacramento River	-	-	-	Yes	-	-
Notes: 1. Limited to 62 cubic feet per second (cfs) January to June and September to December. No diversion allowed during July and August.							

7.1.1 Water Supply Reliability

There are two aspects of supply reliability that can be considered. The first relates to immediate service needs and is primarily a function of the availability and adequacy of the supply facilities. The second aspect is climate-related, and involves the availability of water during mild or severe drought periods. This section examines the reliability of the water supply available to the City, under both normal and dry conditions.

As described in Section 6.2, the City’s water supplies are subject to future uncertainty. Specifically, the reliability of Permit 18150 in certain year types because of Term 91 and its Permit status as well as the uncertainty in the City’s CVP Contract renewal processes may render those two sources vulnerable. In contrast, the NDWA contract appears relatively stable as a long-term back-up supply.

7.2 WATER SUPPLY QUALITY

The UWMPA requires that the UWMP include a discussion of water quality impacts on the reliability of an agency’s water supplies.

The Sacramento River is a plentiful raw water source. However, upstream water management and use can affect the quality of water in the Sacramento River. Regulation of stream flow, which reduces high water flows and increases summer and fall flows, substantially lessens water quality variations and enhances its suitability for use.

Extensively-irrigated agriculture upstream of the City tends to degrade Sacramento River water quality. During the spring and fall, irrigation return flows are discharged to drainage

canals that flow directly into the river; during the winter, local runoff also flows over agricultural lands, increasing the turbidity in the water and introduces herbicides and pesticides into the river. Intensive agriculture in the Sacramento Valley, especially pesticide-dependent rice farming, increases the concentration of compounds such as Molinate and Thiobencarb. During the 2008-2009 growing season, Thiobencarb was detected more frequently and at higher concentrations than the preceding years. Although detections of this chemical were identified, they were all below the human health concern and secondary drinking water standard.

The California Department of Food and Agriculture, in cooperation with the State Water Resources Control Board (SWRCB), has implemented a tailwater management program for Sacramento Valley rice growers to reduce discharges of Molinate and Thiobencarb into the Sacramento River. The City, in partnership with the City of Sacramento, the County of Sacramento, and the East Bay Municipal Utility District (EBMUD) participates in the Rice Pesticide Workgroup, which monitors and reports rice pesticide discharge to the Central Valley Regional Water Quality Control Board (RWQCB). The City also participates in many other programs to keep the river clean, including the Keep the Waters Clean Campaign in partnership with the City of Sacramento, the County of Sacramento, and EBMUD; the Drinking Water Source Assessment Program which works to identify sources of contamination and respond to possible contamination; and the Regional Water Authority (RWA) Water Efficiency Program which works to help agencies better meet regulations in water conservation programs, and the Sanitary Survey of the Sacramento River Watershed in partnership with the City of Sacramento, City of Roseville, and EBMUD.

The City along with the City of Roseville, City of Sacramento, EBMUD, Sacramento County Water Agency, Placer County Water Agency, and the Woodland-Davis Clean Water Agency worked to develop a Sacramento River Watershed Sanitary Survey. This was prepared in accordance with the California Surface Water Treatment Rule that requires public water supply agencies using surface water to conduct a watershed sanitary surveys and update them every five years. The Sacramento River Watershed Sanitary Survey Update was completed in December 2010. Key findings from this survey include; 1) overall water quality of the Sacramento River is high and the river provides good quality source water, 2) highest turbidity levels occur during storm events and wet season caused by high river flow and precipitation, 3) Coliform and Total Organic Carbon (TOC) levels also increase during precipitation events, with a median value of 30 most probable number per 100 milliliters (MPN/100 mL), and 2 milligrams per liter (mg/L), respectively, 4) *Giardia* and *Cryptosporidium* levels were very low in this study, identified at or near the detection limit, and 5) Aluminum and iron levels are high, showing levels either at or higher than the secondary maximum contaminant levels in the source water. However, the processes at the water treatment plants in the area are sufficient for removing these constituents.

The City monitors water quality in the Sacramento River on a daily basis. Samples taken at the City water intake indicate that river water in the vicinity of the East Yolo water intake has

very low concentrations of total dissolved solids and has dissolved concentrations of heavy metals below laboratory analytical detection limits. The Sacramento River has historically been highly turbid and naturally carries high sediment loads. During peak regional storm events, the river's total sediment load often increases by several times its average levels. Turbidity and increased sediment load can result in longer particulate settling times at the George Kristoff Water Treatment Plant (WTP) when producing drinking water.

Numerous entities hold National Pollutant Discharge Elimination System (NPDES) permits for discharges into the Sacramento River above the City. Some of these are wastewater treatment plants (WWTPs) and cooling water discharges. Most of the permits are held by industrial dischargers such as food processing plants. Permitted discharge could contain a variety of contaminants including household pesticides, sediments, natural organic matter, heavy metals, oil, and grease.

Non-point source dischargers to the Sacramento River above the City include agricultural drains and urban runoff outlets. Non-point sources generally do not require NPDES permits. Contaminants that could affect water quality include agricultural runoff, household pesticides, sediments, natural organic matter, heavy metals, oil, and grease.

The George Kristoff WTP is a robust facility with high rate clarification processes (Actiflo®) as well as granular activated carbon filters. As a result, the City is capable of effectively treating very large volumes of water with a wide range of water quality parameters. In general, water quality in the Sacramento River has a limited effect on the City's ability to provide its service area with a reliable source of high quality drinking water. The City's drinking water meets all applicable water quality regulations (See Appendix E for a copy of the City's 2014 Water Quality Report).

7.3 RELIABILITY BY TYPE OF YEAR

This section considers the City's water supply reliability during three water scenarios: average year, single-dry year, and multiple-dry year period. An average year is also referred to as a "normal" year.

These scenarios are defined as follows:

- **Average year:** A year, or an averaged range of years, that most closely represents the average water supply available to the City. Generally a year in the historical sequence that most closely represents median runoff levels and patterns. It is defined as the median runoff over the previous 30 years or more. This median is recalculated every 10 years.
- **Single-dry year:** The year that represents the lowest water supply available to the City. Generally considered to be the lowest annual runoff for a watershed since the water-year beginning in 1903. Suppliers should determine this for each watershed from which they receive supplies.

- **Multiple-dry year period:** The period that represents the lowest average water supply available to the City for a consecutive multiple year period. Generally considered to be the lowest average runoff for a consecutive multiple year period (three years or more) for a watershed since 1903.

Since the City's only water supply in future years will come from the Sacramento River, seasonal and climatic changes may impact the availability of water. Historical curtailments in the City's supply occurred during drought years. These curtailments, however, had no effect on the portions of the City, which lie inside the NDWA boundary, as diversions under NDWA were not restricted. The specific years identified for average, single-dry, and multiple-dry water years presented in Table 7-1 were developed based on historical California Department of Water Resources (DWR) runoff records for the Sacramento Valley.

Table 7-1 is not compatible with the available water supply estimated for each of the water year types, as a percentage of the average water year because the supply portfolio components (USBR, SWRCB, and NDWA) will vary to supplement each other to meet the City's demands in all year types. The NDWA contract will provide adequate supply within its boundaries and varies to supplement the overall supply. Therefore, the supply quantities available under single-dry and multiple-dry year conditions are only critical for the area outside of the NDWA boundary. Additionally, the City plans to develop the groundwater wells to supplement supply.

7.4 SUPPLY AND DEMAND ASSESSMENT

7.4.1 Supplies and Demands for a Normal Water Year

During an average water year, a combined delivery of 23,600 AF of water is available to the City under its SWRCB appropriative right and USBR entitlements. Supply from the NDWA agreement is not limited for the portion of the City within the NDWA boundary. Future citywide demands, assuming the City can meet the water use targets will not exceed the supplies from these water supply sources. Table 7-2 provides an estimate of the projected normal year supply and demand totals. The increased supply after 2020 includes some additional groundwater being used within the City to either move through its potable water system or offset some potable demand (both having the same effect on the potential integration of supply and demand).

Table 7-1 Retail: Basis of Water Year Data			
Year Type	Base Year <i>If not using a calendar year, type in the last year of the fiscal, water year, or range of years, for example, water year 1999-2000, use 2000</i>	Available Supplies if Year Type Repeats	
		<input checked="" type="checkbox"/>	Quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. Location Page 7-5 and Chapter 6
		<input type="checkbox"/>	Quantification of available supplies is provided in this table as either volume only, percent only, or both.
		Volume Available	% of Average Supply
Average Year	2004		100%
Single-Dry Year	2015		
Multiple-Dry Years 1st Year	2013		
Multiple-Dry Years 2nd Year	2014		
Multiple-Dry Years 3rd Year	2015		

Table 7-2 Retail: Normal Year Supply and Demand Comparison					
	2020	2025	2030	2035	2040 (Opt)
Supply totals <i>(autofill from Table 6-9)</i>	11,308,176	11,461,507	12,637,627	13,595,947	14,772,067
Demand totals <i>(autofill from Table 4-3)</i>	6,463,025	7,389,658	8,449,145	9,660,536	11,045,609
Difference	4,845,151	4,071,849	4,188,482	3,935,411	3,726,458
NOTES: Units of measure in this UWMP are hundred cubic feet (CCF).					

7.4.2 Supplies and Demands for a Single-Dry Water Year

Focus during single-dry years is placed upon meeting demands outside the NDWA boundary. During a single-dry year, the SWRCB supply can be reduced by 50 percent resulting from an earlier Term 91 trigger and the USBR supply can be reduced by 25 percent in accordance with the USBR M&I Shortage Policy. The NDWA supply increases in order to meet deficits caused by reduction in the other available supplies. The supply also includes additional future groundwater supplies being available.

Table 7-3 provides an estimate of the projected single-dry year supply and demand totals. Demand reductions due to water shortage stage rationing measures are not included in the single-dry year demand estimates.

At buildout, the water demands for the area outside of the NDWA boundary are estimated to be 3,248 AFY (1,414,829 CCF). The water supply, even during the single-dry year, is well in excess of 3,248 AFY, assuming the area within the NDWA boundary is supplied water from the NDWA contract. The City will always have sufficient water available from its USBR and appropriative right entitlements (SWRCB Permit) to meet demands for the portion of the City outside of NDWA boundaries, even when the USBR and appropriative right deliveries are reduced to 25 percent of the contractual entitlement.

Table 7-3 Retail: Single Dry Year Supply and Demand Comparison					
	2020	2025	2030	2035	2040 (Opt)
Supply totals	11,308,176	11,461,507	12,637,627	13,595,947	14,772,067
Demand totals	6,463,025	7,389,658	8,449,145	9,660,536	11,045,609
Difference	4,845,151	4,071,849	4,188,482	3,935,411	3,726,458
NOTES: Units of measure in this UWMP are hundred cubic feet (CCF).					

7.4.3 Supply and Demand for Multiple-Dry Water Year Periods

The Multi-Dry Year water supply depicted in Table 7-4 shows a first and second year dry year reduction that matches the supply reductions in a Single Dry Year. However, in year 3 of a multi-year supply deficit, the plan adds additional supply reductions in accordance with future planning predictions. Permit 18150 is reduced by 75 percent indicating that Term 91 is in effect preventing diversions under this right in 8 out of 12 months in a calendar year. CVP supplies are reduced to 50 percent of their totals in accordance with USBR's M&I Shortage Policy as described in Section 7.1. NDWA allocations paradoxically increase to make up the supply deficits coupled with additional groundwater allocations. Although the demands remain consistent, it is anticipated that the demands will decrease in the second and third year of a multi-year dry scenario as a City's (or the SWRCB's) demand reduction measures are activated to reduce overall water demand on the City's available supplies.

7.5 REGIONAL SUPPLY RELIABILITY

The City is maximizing the use of local water resources (Sacramento River) and reducing waste through the implementation of demand management measures (Chapter 9.0). The City's efforts help to minimize the need to purchase water from other agencies.

Table 7-4 Retail: Multiple Dry Years Supply and Demand Comparison						
		2020	2025	2030	2035	2040 (Opt)
First year	Supply totals	11,308,176	11,461,507	12,637,627	13,595,947	14,772,067
	Demand totals	6,463,025	7,389,658	8,449,145	9,660,536	11,045,609
	Difference	4,845,151	4,071,849	4,188,482	3,935,411	3,726,458
Second year	Supply totals	11,308,176	11,461,507	12,637,627	13,595,947	14,772,067
	Demand totals	6,463,025	7,389,658	8,449,145	9,660,536	11,045,609
	Difference	4,845,151	4,071,849	4,188,482	3,935,411	3,726,458
Third year	Supply totals	11,308,176	11,461,507	12,637,627	13,595,947	14,772,067
	Demand totals	6,463,025	7,389,658	8,449,145	9,660,536	11,045,609
	Difference	4,845,151	4,071,849	4,188,482	3,935,411	3,726,458
Fourth year <i>(optional)</i>	Supply totals					
	Demand totals					
	Difference	0	0	0	0	0
Fifth year <i>(optional)</i>	Supply totals					
	Demand totals					
	Difference	0	0	0	0	0
Sixth year <i>(optional)</i>	Supply totals					
	Demand totals					
	Difference	0	0	0	0	0
NOTES: Units of measure in this UWMP are hundred cubic feet (CCF).						

WATER SHORTAGE CONTINGENCY PLANNING

The Urban Water Management Planning Act (UWMPA) requires that the Urban Water Management Plan (UWMP) include an urban water shortage contingency analysis that addresses stages of action to be undertaken by the urban water supplier in response to water supply shortages, including up to a 50 percent reduction in water supply, or state mandates, and an outline of specific water supply conditions which are applicable to each stage. In addition to actions, the City of West Sacramento (City) is required to develop mandatory prohibitions against specific water use during shortages and consumption reduction methods in the most restrictive stages.

8.1 STAGES OF ACTION

Water Shortage Contingency Planning includes actions (prohibitions, restrictions, and penalties) and conservation measures to be taken during droughts and catastrophic reductions in water supplies. This Water Shortage Contingency Plan, if implemented, would be enforced within the City's service area. In addition to actions, the City is required to develop mandatory prohibition against specific water use during shortages and consumption reduction methods in the most restrictive stages including up to a 50 percent reduction in water supply. The City must also identify specific water supply conditions, which are applicable to each stage.

The City has developed a five-stage conservation plan. The plan includes voluntary and mandatory stages. Supply shortages or state mandates will trigger the different water rationing stages. Shortage conditions are based on percent reduction of water supply. The stages of action in response to water supply shortages or state mandates, including up to a 50 percent or greater reduction in water supply, are summarized in Table 8-1. Detailed descriptions of each stage of action are included in the following sections.

Stage	Complete Both	
	Percent Supply Reduction ¹ <i>Numerical value as a percent</i>	Water Supply Condition <i>(Narrative description)</i>
0	0%	Normal Conditions
1	20%	Water Alert
2	30%	Water Warning
3	40%	Water Crisis
4	50%	Water Emergency

NOTES: Stages are based on guidance provided in the Regional Water Authority (RWA) document "*Water Shortage Stage Workshop Summary Report*" from March 2015.

For planning purposes, the City has assumed that the above stages could be triggered by water shortages created by a loss of pumping capacity caused by either intake or

distribution system failure or via state mandate to reduce diversion from the Sacramento River.

8.2 PROHIBITIONS ON END USES

There is currently a No Waste Provision in place at all times under the City Municipal Code Chapter 13.04, Article IX Water Conservation which reflects Ordinance 14-6. Appendix F contains the Municipal Code and Ordinance 14-6.

On May 9, 2016, the Governor of California issued an Executive Order declaring the following practices be permanently prohibited:

- Hosing off sidewalks, driveways, and other hardscapes
- Washing automobiles with hoses not equipped with a shut-off nozzle
- Using non-recirculated water in a fountain or other decorative water feature
- Watering lawns in a manner that causes runoff, or within 48 hours after measurable precipitation
- Irrigating ornamental turf on public street medians

In the event any provision of this Chapter conflicts or overlaps with any mandatory State regulation related to water conservation, the most stringent shall apply.

The City has several policies in place for the local fire department to follow during water shortages. These policies include the following:

- Leave caps on hydrants during routine maintenance
- Flow hydrants only if a problem is expected and or during mandatory flow tests
- Do not conduct free flowing wet drills unless the water can be recaptured
- Wipe down Fire Engines in lieu of washing them unless necessary and utilize a spray nozzle to minimize flow of water
- Do not flow the fire hose for school tours unless the water can be recaptured
- Ensure low flow shower heads on all showers in stations
- Check each station and irrigation system for leaks
- Limit landscape watering to only that which is required to prevent loss and do so in the early morning hours
- Combine loads of laundry wash as is feasible
- Run dishwashers only when completely full and on economy cycle

Table 8-2 contains the mandatory prohibitions and the water shortage stage when they are enacted.

Table 8-2 Retail Only: Restrictions and Prohibitions on End Uses

Stage	Restrictions and Prohibitions on End Users	Additional Explanation or Reference	Penalty, Charge, or Other Enforcement?
0	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	Fix leaks or faulty sprinklers within 72 hours.	Yes
	Water Features - Restrict water use for decorative water features, such as fountains	Decorative water features (fountains etc.) must recirculate water and shall be leak proof.	No
	Landscape - Limit landscape irrigation to specific times	All landscapes shall be watered during cooler morning and evening hours to reduce evaporation and minimize landscape runoff.	No
	Landscape - Restrict or prohibit runoff from landscape irrigation	Landscape watering shall be confined to a users property and shall not runoff onto adjacent properties, roadsides, to gutters.	Yes
	Landscape - Prohibit certain types of landscape irrigation	No landscape irrigation shall occur while it is raining.	Yes
	Other - Require automatic shut off hoses	Use shutoff nozzle on hoses.	Yes
	Other - Prohibit use of potable water for washing hard surfaces	Washing down impervious surfaces such as driveways and sidewalks is prohibited unless for public health and safety purposes.	No
	Other	Unauthorized use of hydrants is prohibited. Authorization for use must be obtained from water supplier.	Yes
	CII - Other CII restriction or prohibition	Commercial, industrial, institutional equipment must be properly maintained and in full working order.	No
	Other	Encourage customers to wash only full loads when washing dishes or clothes.	No
	Pools and Spas - Require covers for pools and spas	Encourage customers to use pool covers to minimize evaporation.	No
	Other	Encourage restaurants to only serve water to customers on request.	No

1	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	Fix leaks or faulty sprinklers within 72 hours.	Yes
	CII - Restaurants may only serve water upon request	Require restaurants to only serve water to customers on request.	Yes
	Landscape - Prohibit certain types of landscape irrigation	No restrictions on landscape watering with non-potable water.	No
	Landscape - Prohibit certain types of landscape irrigation	Up to three days per week turf watering when using potable water. Plant containers, trees, shrubs, and vegetable gardens may be watered additional days using only drip irrigation or hand watering.	Yes
2	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	Fix leaks or faulty sprinklers within 48 hours.	Yes
	Water Features - Restrict water use for decorative water features, such as fountains	Decorative water features that use potable water must be drained and kept dry.	Yes
	Other - Prohibit use of potable water for construction and dust control	Require a construction water use plan be submitted to the water supplier that addresses how impacts to the existing water users will be mitigated (such as dust control).	Yes
	Landscape - Other landscape restriction or prohibition	With the exception of landscape watered with non-potable water, limit the installation of new landscaping to drought tolerant trees, shrubs, and groundcover. Prohibit installation to new turf or hydroseed unless needed for erosion control. Customers may apply for a waiver to irrigate during an establishment period during the cool season if turf or hydroseed was installed for erosion control purposes.	Yes
	<i>Warm/Dry Season (May - September)</i>		
	Landscape - Limit landscape irrigation to specific days	Up to two days per week turf watering using potable water.	Yes
	Landscape - Prohibit certain types of landscape irrigation	Plant containers, trees, shrubs, and vegetable gardens maybe watered additional days using only drip irrigation or hand watering.	Yes
	<i>Cool/Wet Season (October - April)</i>		
Landscape - Prohibit certain types of landscape irrigation	Turf shall not be watered unless utilizing non-potable water during extended dry spells.	Yes	

	Landscape - Prohibit certain types of landscape irrigation	Plant containers, trees, shrubs, and vegetable gardens shall be watered only by drip irrigation or hand watering.	Yes	
3	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	Fix leaks or faulty sprinklers within 48 hours.	Yes	
	Pools - Allow filling of swimming pools only when an appropriate cover is in place.	Existing pools shall not be emptied and refilled using potable water unless required for public health and safety purposes.	Yes	
	Other water feature or swimming pool restriction	No new permits for pools will be issued.	Yes	
	Landscape - Other landscape restriction or prohibition	No new landscape installations or renovations will be permitted	Yes	
	Landscape - Other landscape restriction or prohibition	Previous waivers for watering during an establishment period will be revoked. Waivers for turf or hydroseed installed for erosion control will remain in place.	Yes	
	<i>Warm/Dry Season (May - September)</i>			
	Landscape - Limit landscape irrigation to specific days	Up to one day per week turf watering when using potable water.	Yes	
	Landscape - Prohibit certain types of landscape irrigation	Plant containers, tress shrubs, and vegetable gardens shall be watered only by drip irrigation or hand watering.	Yes	
	<i>Cool/Wet Season (October - April)</i>			
	Landscape - Prohibit certain types of landscape irrigation	Turf shall not be watered unless utilizing non-potable water during extended dry spells.	Yes	
Landscape - Prohibit certain types of landscape irrigation	Plant containers, trees, shrubs and vegetable gardens shall only be water using drip irrigation or hand watering.	Yes		
4	Other	Water use for public health and safety purposes only.	Yes	
NOTES: Stages are based on guidance provided in the Regional Water Authority document "Water Shortage Stage Workshop Summary Report" from March 2015.				

8.2.1 Defining Water Features

The water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, are to be defined separately from swimming pools and spas in the 2015 UWMPs and supporting documents. This chapter specifically identifies the water features to which prohibitions are applicable to, thus meeting the requirement. Publicly owned water features, such as stormwater canals, detention or retention basins, and artificial lakes, will not be filled with potable water when Stage 3 or above has been implemented, unless necessary to maintain the structural integrity of the feature.

8.3 PENALTIES, CHARGES, OTHER ENFORCEMENT OF PROHIBITIONS

The City's water waste penalties are imposed for both violation of the Municipal Code and for violations of the water shortages stages discussed in this chapter. General water waste penalties are described below:

- a) First Violation during any 12 month period: No penalty is imposed. Written notice describing the violation and the penalties for subsequent violations shall be issued to the owner and the occupant (if different than the owner) of the premises where the violation occurred.
- b) Second violation during any 12 month period: No penalty is imposed. Written notice describing the violation and the penalties for subsequent violations shall be issued to the owner and the occupant (if different than the owner) of the premises where the violation occurred.
- c) Third violation during any 12 month period: A written notice describing the violation shall be issued to the owner and the occupant (if different than the owner) of the premises where the violation occurred and a penalty of \$200 imposed.
- d) Fourth violation during any 12 month period: A written notice describing the violation shall be issued to the owner and the occupant (if different than the owner) of the premises where the violation occurred and a penalty of \$500 imposed.

The penalties or charges for excessive use during water shortages as described in this UWMP are as follows:

- a) Stages 1-2 water shortage: For first and subsequent violations of the water conservation measures in force, customers will receive the following sequence of enforcement measures:
 - 1. First violation: The person that committed the violation will be issued a written notice stating the violation type.

2. Second violation: The person shall be issued a written notice.
 3. Third violation: The person that committed the violation and the property owner shall be issued a written notice. The subject property water rates shall be increased five times the normal monthly rates for the month of the violation, and returned to normal thereafter.
 4. Fourth violation: The person that committed the violation and the property owner shall be issued a written notice. The subject property water rates shall be increased five times the normal monthly rates for the duration of the water shortage, and returned to normal thereafter.
- b) Stages 3 and 4 water shortage: For first and subsequent violations of the water conservation measures in force, customers will receive the following sequence of enforcement measures:
1. First violation: The person that committed the violation will be issued a written notice stating the violation type.
 2. Second violation: The person shall be issued a written notice.
 3. Third violation: The person that committed the violation and the property owner shall be issued a written notice. The subject property water rates shall be increased five times the normal monthly rates for the month of the violation, and returned to normal thereafter.
 4. Fourth violation: The person that committed the violation and the property owner shall be issued a written notice. The subject property water rates shall be increased five times the normal monthly rates for the duration of the water shortage, and returned to normal thereafter.
 5. Fifth violation: The person that committed the violation and the property owner shall be issued a shut-off letter warning of termination of service and possible reconnect fee.
 6. Sixth violation: Service shall be shut-off, and the property owner subject reconnection fee.

8.4 CONSUMPTION REDUCTION METHODS

The UWMPA requires that the UWMP include an urban water shortage contingency analysis that addresses methods to reduce consumption. Table 8-3 contains consumption reduction methods by water shortage stage.

Table 8-3 Retail Only: Stages of Water Shortage Contingency Plan - Consumption Reduction Methods		
Stage	Consumption Reduction Methods by Water Supplier	Additional Explanation or Reference <i>(optional)</i>
1-4	Expand Public Information Campaign	
1-4	Increase Frequency of Meter Reading	
2-4	Offer Water Use Surveys when funding is available	
2-4	Provide Rebates on Plumbing Fixtures and Devices when funding is available	
2-4	Provide Rebates for Landscape Irrigation Efficiency when funding is available	
2-4	Increase Water Waste Patrols	
3-4	Provide Rebates for Turf Replacement when funding is available	
3-4	Decrease Line Flushing	
3-4	Reduce System Water Loss	

8.5 DETERMINING WATER SHORTAGE REDUCTIONS

The UWMPA requires that the UWMP include a means to determine the actual water use reduction in the event of a water shortage.

Since many of the City's customers pay for water use based on a flat rate, consumption limits that would apply in the most restrictive stages of water shortage cannot currently be based on measured water use. Consequently, the proposed consumption limits for residential users are based on restrictions of a specific use, namely outdoor landscape irrigation. Once the City is fully metered, compliance with consumption limits can be based on measured water use.

For metered accounts, reductions in water use for each user can be determined based on meter readings. For unmetered accounts and the Service Area as a whole, reductions in water use must be determined by measuring daily and monthly surface water production at the George Kristoff Water Treatment Plant (WTP).

8.6 REVENUE AND EXPENDITURE IMPACTS

According to the UWMPA, the UWMP is required to include an urban water shortage contingency analysis that addresses the financial impacts from reduced water sales and proposed measures to overcome deficits (e.g., development of a reserve account or special rate adjustments).

Based on an analysis of the dependability of the City's existing water supply sources (surface water) and existing water rights, contracts, and agreements, the City does not anticipate a water supply shortage that would affect City revenues and expenditures significantly. The City will establish a budget/revenue stabilization fund to deal with revenue shortfall in the event of water supply shortage or usage decrease. In addition, the City is working on having a cash reserve balance in the operating fund that is equal to 180 days of operating expenditures. With these measure in place, the City does not believe any changes in the water supply and demand shall have a dramatic increase to the adopted rates. However, the City shall monitor water revenues and expenses closely to assure that "water shortage" adjustments to water rates are not required. Additional costs would be associated with increased monitoring during water shortage situations, namely due to an increase in the hours required to read water meters. The additional costs associated with this effort, however, are not expected to significantly impact City revenues and expenditures.

8.7 RESOLUTION OR ORDINANCE

The CWC requires that the City develop mandatory provisions and a draft water shortage contingency resolution as part of the UWMP to reduce water use, including prohibitions against specific wasteful practices, such as gutter flooding.

The City has a No Waste Provision in the City Municipal Code Chapter 13.04, Article IX Water Conservation, codified into code by Ordinance 14-6 (Adopted 8-14-16). Appendix F contains the Municipal Code and Ordinance 14-6. The prohibition of water waste is in effect at all times regardless of the water supply condition. The code defines and prohibits water waste and references the City's penalties and enforcement. In addition to water waste the code specifies requirements for swimming and wading pools and outdoor water use and conservation.

Within the current code the City Manager can declare a water shortage emergency and impose revised and/or additional limitations and time restrictions on outdoor water use. This Chapter of the UWMP contains the water shortage contingency plan and details the restrictions which would become effective, by stage, during a declared "Water Shortage Emergency." This water shortage contingency plan will be amended as needed by City Manager or designee.

8.8 CATASTROPHIC SUPPLY INTERVENTION

The UWMPA requires that the City develop stages of action to be undertaken during a catastrophic interruption of water supply in the Sacramento River or the City's water treatment facilities that could include flooding, major fire emergencies, regional power outage, an earthquake, water contamination, and acts of sabotage. In response to these possibilities, the City has developed an Emergency/Disaster Response Plan, which includes appropriate personnel listings, resource inventories, locations for emergency operations centers, response procedures, and the steps necessary to resume normal operations.

8.9 MINIMUM SUPPLY NEXT THREE YEARS

The CWC requires that the City estimate the minimum water supply available during each of the next three years (2016, 2017, 2018), assuming the driest three-year historic supply shortage. The water supplies (USBR, SWRCB, and NDWA) will vary to supplement each other to meet the City's demands in all year types (Refer to Section 7.2). Therefore, it is unlikely that the City would be faced with a dry-year situation in which its demands could not be met with available supplies. The estimate for the minimum supply for the next three years is included in Table 8-4.

Table 8-4 Retail: Minimum Supply Next Three Years			
	2016	2017	2018
Available Water Supply	11,308,176	11,308,176	11,308,176
NOTES: Units of measure in this UWMP are hundred cubic feet (CCF).			

DEMAND MANAGEMENT MEASURES

This chapter presents details of the Demand Management Measures (DMMs) contained in the Urban Water Management Planning Act (UWMPA), as well as the City of West Sacramento's (City's) existing and planned efforts to further develop their water conservation program. The City is committed to water conservation and has implemented and plans to implement several policies and on-going programs that promote and encourage water conservation.

The UWMPA presents two distinct methods for providing information related to DMMs. One method is to be a signatory to the Memorandum of Understanding (MOU) regarding Urban Water Conservation in California and be a member of the California Urban Water Conservation Council (CUWCC). The MOU requires the preparation of an annual report, which can be used to fulfill the DMM requirements of the Urban Water Management Plan (UWMP). The other method for a water supplier, who is not a member of the CUWCC and not a signatory to the MOU, is to describe their current water conservation programs and demonstrate how they comply with the DMMs specified in Water Code Section 10631.

The UWMPA was amended in 2014 to streamline DMMs from 14 specific measures to 6 more general requirements and an "other" category. Brief descriptions of the City's current and planned implementation of DMMs are included in the following sections.

9.1 INTRODUCTION

The City joined the Regional Water Authority (RWA) as a member and the RWA Water Efficiency Program (RWEF) as a participating member in 2007. The RWA is a joint powers authority that serves and represents the interests of 22 water-related entities in El Dorado, Placer, Sacramento, and Yolo counties. RWA was formed to serve and represent regional water supply interests and to assist its members in protecting and enhancing the reliability, availability, affordability, and quality of water resources. The RWEF supports members with conservation requirements related to the Water Forum, CUWCC, United States Bureau of Reclamation (USBR), Assembly Bill (AB) 1420, and Senate Bill (SB) X7-7. As an agency that represents the interests of several water suppliers, the RWA has obtained several grants for its members to use for water conservation programs.

The RWEF provides region-wide water efficiency activities such as school education, public outreach, and other water conservation best management practices (BMPs) utilizing widespread marketing to benefit the members. Additionally, RWEF offers other water efficiency services. These services have been incorporated with the City's current water conservation efforts to enhance their DMM programs.

Many of the RWA members are signatory to the Water Forum or the CUWCC. The CUWCC was created to increase efficient water use statewide. The CUWCC's goal is to integrate

urban water conservation BMPs into the planning and management of California’s water resources. The City is not a signatory to the MOU, Water Forum, or CUWCC. The City does not have a water conservation purveyor specific agreement and is not required to report water conservation activities to the Water Forum.

9.2 WATER WASTE PREVENTION ORDINANCES

This DMM involves adoption of an ordinance prohibiting water waste. The City Municipal Code contains the Water Waste Prohibition Ordinance (13.04.770). Appendix F contains the Municipal Code and Ordinance 14-6. This Water Waste Prohibition Ordinance is in place at all times and is not dependent upon a water shortage stage for implementation. See Chapter 8 for detailed information on stages of action, prohibitions of end uses, and penalties.

9.2.1 Implementation over the Past Five Years

The effectiveness of this DMM can be determined by a decrease in violators. The City began tracking offenses in 2014. Table 9-1 contains the number of warnings and offenses in 2014 and 2015. These are the total warnings and offenses for the calendar year, regardless of the stage of action.

Year	Number of Warnings	Number of Offenses
2014 ⁽¹⁾	132	106
2015	1875	986

Notes:
 (1) The City began tracking warning and offenses in 2014.

The City has a water waste prevention program. This program is reliant on reporting from the public or City Staff through two channels: online submission or the water waste hotline (916-617-4545). Once a report is posted, staff responds by inspecting the property for water waste. Whether the address is in violation or not, every reported address receives a notice. These notices list the possible violations, as well as resources to learn more about water waste and water conservation. While inspecting reported addresses, staff also looks for water waste in the neighborhood.

The City maintains water conservation webpages that provide information to the public about current water waste prohibitions. These webpages include instruction on reporting water waste. The City has also distributed materials accompanying utility bills informing residents and businesses about water waste. When new changes to water waste prohibition occur, as in the case of Water Shortages or State/Federal regulations, the City distributes materials informing the public.

9.2.2 Planned Implementation

The City will continue to enforce this DMM. The effectiveness of this DMM will be evaluated by monitoring the number of warnings and offenses. If an area is determined to have excessive violations, the City would implement a specific public outreach program informing the public about the Water Waste Prohibition Ordinance.

Efforts will be made to inform residents how to avoid common water waste practices. One of the most common practices is allowing irrigation to run-off to streets and gutters. Staff will provide instruction how to adjust sprinkler timers in order to avoid run-off in the future. Budget permitting, water surveys may be offered in the future. In these surveys, reviewing irrigation timers will be part of the process. Water surveys may also be offered to top water wasters in an effort to educate and prevent excessive waste. Resolution 14-48 amended the City Book of Fees to adopt fines and penalties for violations of the City's Municipal Code and Water Shortage Contingency Plan. Appendix G contains the City's Book of Fees' "Water Waste and Excessive Use Fines/Penalties."

9.3 METERING

Installing water meters and billing for actual water use provides a strong incentive for customers to use less water and equalizes service cost for each customer to their actual use (i.e. high water users would pay a more equitable share of the system costs). Water metering can reduce exterior landscape water use and can also achieve a modest reduction in interior water use.

9.3.1 Implementation over the Past Five Years

The City is currently in the process of implementing a water meter program Citywide. This program consists of several elements, including installation of new water meters in older neighborhoods and retrofitting existing meters. In addition, the City requires new development and major remodel projects to place meters on residential and business properties.

The City's metering program has been successful, and to date, the City is approximately 60 percent metered. The goal of the program is for the City to become 100 percent metered by 2018. In order to accomplish this, the City will continue water meter installations through stand-alone water meter projects that encompass entire neighborhoods, as well as in conjunction with water main replacement projects.

Currently, all commercial and industrial customers are metered in the City, and are billed on a metered rate. There are approximately 8,500 metered residential customers within the City. The City currently gives residential customers with water meters the option to continue with a flat rate billing structure, or to choose a tiered rate based on the volume of water consumed. The City plans to bill all of its customers by the metered rate in the near future. Note that in other cities where meters have been installed a reduction in water use has

been documented. The City should continue to monitor its consumption in newly metered areas to future establish the residential water use.

One important component of the metering system is that it allows usage information to be reviewed by customers. This information allows individual customers to track water usage and potentially conserve water. Water conservation information is provided to every customer who makes a call related to his or her water usage.

9.3.2 Planned Implementation

All connections will be metered by 2018, including converting all existing meters to the new fixed based system (Meter Implementation Plan). To complete meter installation the City has budgeted \$2.8 million. The City currently has a mixture of Advanced Meter Reading (AMR) and Advanced Metering Infrastructure (AMI) programs. The City intends to replace all AMR with AMI.

9.4 CONSERVATION PRICING

Water conservation is encouraged through a pricing system that rewards customers who use less water with financial incentives, while high water users are charged a higher rate. Often this is implemented through a tiered pricing system.

9.4.1 Implementation over the Past Five Years

The City currently meters and bills for actual water used for commercial and industrial customers, and for all City parks and median landscaping. All of these customers are billed monthly based on a monthly service charge (based on meter size) and a quantity charge (based on actual water consumption). For these customers, actual water use is billed at one rate. The residential commodity rate pricing consists of three tiers based on usage. The current City water service rates are included in Appendix H. Volumetric deliveries for non-metered users are not measured or recorded by the City; non-metered service connections are currently charged a flat rate for their service.

All connections will be metered by 2019, including converting all existing meters to the new fixed based system (Meter Implementation Plan). As the City continues to install water meters, the City will transition customers from flat rate pricing to commodity rate pricing.

9.4.2 Planned Implementation

The City will provide a comparison of the metered volume/cost to the flat rate cost on the customer's bills before the City fully implements the consumptive metered rates. The data collected by the installed meters will be used to establish a baseline of water use for later comparison. Additionally, current water use per capita will be compared with historic data (before and after conservation pricing is established).

9.5 PUBLIC EDUCATION AND OUTREACH

Examples of public education and outreach for water demand management can include coordination with other agencies and provision of programs promoting water conservation, speakers for the media or community groups, school education programs, public service announcements, water conservation bill inserts, information booths at public events, websites, newsletters and newspaper articles, rebates, and daily water use comparisons on customer's bills.

9.5.1 Implementation over the Past Five Years

The City currently has a well-developed public information program, and intends to continue to provide public information services and materials to remind the public about water and its stewardship. The City has implemented this DMM through the provision of residential newsletters (Environmental Services Division Newsletters), brochures, digital news updates (City iLights) and information on the City website. The newsletter traditionally has had a section related to water use, describing water use restrictions and providing water conservation tips, especially landscape watering during the peak summer months. The City has a number of brochures and other literature regarding specific conservation practices, which are available at various locations. These brochures include information on water-wise landscaping, ways to conserve water, and simple water repairs. These brochures are also available at City special events and community meetings.

Information on the City's website currently includes rebates, Drought Spotlight, water restrictions, water conservation tips, water waste reporting and workshops. The rebates page makes available material pertaining to local and state-wide rebate programs related to water conservation. The Drought Spotlight is a monthly article highlighting a residence or business that has made the change from traditional turf to water-wise landscaping. On the water conservation webpage, educational material and links are also provided to educate the public. The links direct viewers to both local partners, like EcoLandscape (a River Friendly educator) and state-wide partners, like Save Our Water (the outreach component of the California Department of Water Resources [DWR]). The water waste reporting page details how to report water waste; and the workshops page contains the latest workshop information as well as archived presentations.

Table 9-2 reports the number of documents distributed, and public events and school events attended to promote water conservation over the past five years.

Table 9-2 Public Education Implementation Over Past Five Years			
Year	Number of Documents Distributed⁽¹⁾	Number of Public Events	Number of School Events
2011	0	0	4
2012	28,638	1	3
2013	42,822	3	1
2014	71,942	3	2
2015	72,375	1	4
Notes:			
(1) Documents distributed includes electronic distribution of City iLights articles. Average annual number of subscribers was used to determine number distributed.			

The City offers workshops to promote water conservation. Topics in the past included: grey water, soils, irrigation, lawn conversion, water smart gardens, fix-a-leak, rain barrels, and others.

The City coordinates outreach efforts with the RWA. During emergency conditions, such as a drought, the City partners with RWA to send out regional messaging. This provides a unified message across nearby water agencies about best practices and prohibitions. Examples of coordinate outreach efforts include a free mulch give-away, water schools classes and region-wide workshops. RWA also provides a forum for water conservation coordinators to meet and discuss best practices, improving outreach effectiveness.

9.5.2 Planned Implementation

Public information can be one of the best tools to conserve water. As a participant in RWA's Water Efficiency Program, the City has participated in regional public outreach programs, including paid advertising on television and radio. During the severe drought, public outreach informed the public about mandated conservation measures. Public outreach has also helped promote events, such as a free mulch give away.

Public outreach benefits from reaching diverse audiences. Education will be provided to residents, businesses, public schools, multi-family complexes and other sectors of the public. Each sector will receive information specific to that group. For example, water surveys provide multi-family complexes and businesses site-specific water conservation education. In schools, education will be tailored to the grade level so that information is relevant and impactful. Residents will be reached through water surveys, water conservation demonstrations at local hardware stores, workshops and events.

The City will continue to educate the general public through printed material, online content, workshops, events and other city-wide efforts.

9.6 PROGRAMS TO ASSESS AND MANAGE DISTRIBUTION SYSTEM REAL LOSS

This DMM focuses on the water distribution system itself, and includes water audits, leak detection, and repair. The first step in a water audit is relatively straightforward: a comparison of the amount of water produced with the amount of water delivered to customers. The difference is termed “unaccounted water,” which includes actual losses (leaks) in the distribution system, authorized but unmetered use (e.g., hydrant flushing and firefighting), unauthorized water use, and meter error.

9.6.1 Implementation over the Past Five Years

The City has a Water Pipeline Replacement Program to replace older water pipelines within the City which are leaking, undersized, or are of inferior materials. From 1999 to 2006 60,000 linear feet (LF) of piping was replaced and between 2007 and 2010 an additional 20,425 LF of piping was replaced. The number of repaired leaks and length of pipeline replacement over the past five years is reported in Table 9-3.

Year	Number of Repaired Leaks	Pipeline Replacement (LF)
2011	334	7,265
2012	327	0
2013	143	0
2014	229	0
2015	95	0

9.6.2 Planned Implementation

The City plans to compare production and consumption records to audit the performance of the water system when the system is fully metered. This will help the City identify and correct system inefficiencies, reducing system losses. The results of this performance audit will be presented in the 2020 UWMP update.

The City should develop a regular leak detection program to focus work areas for the future. In addition, as a participant in RWA's Water Efficiency Program, the City could receive assistance to develop a leak detection program.

9.7 WATER CONSERVATION PROGRAM COORDINATION AND STAFFING SUPPORT

This DMM entails designating a water conservation coordinator responsible for managing water conservation efforts, promoting water conservation to agency staff, and evaluating

the results of efforts. The Water Conservation Coordinator tasks may include, but are not limited to monthly tracking of production versus consumption, enforcement of water use restrictions, and implementation of conservation programs.

9.7.1 Implementation over the Past Five Years

The City has a Water Conservation Coordinator. The name and contact information of the Water Conservation Coordinator is below.

Ryan Burnett, ryanb@cityofwestsacramento.org, 916-617-4590 (Environmental Services Division Main Line)

The Water Conservation Coordinator supervises DMM implementation, evaluates effectiveness, and communicates program goals to the community. The number of staff over the past five years is reported in Table 9-4.

Table 9-4 Water Conservation Program Over Past Five Years		
Year	Number of Part-Time Staff	Number of Full-Time Staff
2011	0	0.50
2012	0	0.50
2013	0	0.50
2014	0.50	0.50
2015	0.50	1.25

The Water Conservation Coordinator has been an important resource in centralizing water conservation efforts. The Coordinator interacts with residents on the local level and participates with water regulations on the state level. During the drought, the Water Conservation Coordinator performed the majority of water waste investigations, updated the public on water regulations, managed rebate programs, represented the city at regional meetings and educated the public on water conservation best practices. During non-drought conditions, the Water Conservation Coordinator focuses on long-term water efficiency, such as promoting rebates and educating the public about water-wise landscaping.

9.7.2 Planned Implementation

The effectiveness of this DMM is determined by the work performed by the Water Conservation Coordinator. The City should set up performance standards and goals, and compare them with the results. The City could educate community volunteers to aid the City in water conservation efforts. As metering becomes city-wide, the Water Conservation Coordinator will assist in readying residents and businesses for a commodity-based rate structure, specifically how they can save water and therefore save money. In addition, as a

participant in the RWA's Water Efficiency Program, the RWA can assist the Water Conservation Coordinator as necessary to improve the City's water conservation programs.

9.8 OTHER DEMAND MANAGEMENT MEASURES

The City will continue to evaluate implementation of new DMMs in the future to improve water conservation.

9.8.1 City Rebates

The City advertises several rebates programs detailed below and as listed in Table 9-5. Future rebates may include shut-off nozzles, toilet flappers, and irrigation controllers.

Year	Rebate Program	Rebate Recipients	Total Cost
2016 ⁽¹⁾	Irrigation Efficiency Rebate Program	12 (as of 6/14/16)	\$3,878
2016 ⁽¹⁾	PG&E Clothes Washer Rebate Program ⁽²⁾	23 (as of 6/14/16)	\$1,955
<u>Notes:</u>			
(1) Through June 2016.			
(2) This PG&E program is ending on December 31, 2016.			

9.8.1.1 Clothes Washer Rebate

The City and Pacific Gas and Electric (PG&E) offer residents up to \$150 off the purchase of most Energy Star "Most Efficient" 2016 clothes washer. Applications for PG&E rebates can be accessed through the City website and are also made available at local hardware stores. This PG&E program is ending on December 31, 2016.

9.8.1.2 Irrigation Efficiency Rebate Program

The City currently offers up to \$500 to residents upgrading their old irrigation system to a new water-wise one. The rebate applies to the purchase and installation of irrigation products such as drip irrigation, water efficient sprinkler nozzles, and smart irrigation controllers. This program is financed under Proposition 84.

9.8.2 Department of Water Resources "Save Our Water" Rebates

The DWR "Save Our Water" conservation program offers a toilet and a turf replacement rebate to City residents. The City promotes these rebates through the City website and educational materials distributed.

9.8.2.1 Turf Replacement Program

Single-family residents can receive a rebate up to \$2,000 to replace their turf with landscapes that require little water.

9.8.2.2 Toilet Rebate Program

Single-family residents can receive a rebate up to \$100 to replace their toilet (1.6 gallons per flush) with a qualified high-efficiency toilet (1.28 gallons per flush or less) per household.

9.8.3 Water Efficient Landscape Ordinance

The City adopted a Water Efficient Landscape ordinance 15-9 on December 16, 2015 (Appendix I) that amended the City's existing ordinance to be at least as effective as the State Model Water Efficient Landscaping ordinance. The City's ordinance and application package will improve water conservation and aid the community in the selection of appropriate and water efficient landscape components.

The Water Efficient Landscape Ordinance: 1) promotes the values and benefits of landscapes while recognizing the need to invest water and other resources as efficiently as possible; 2) establishes a structure for planning, designing, installing, maintaining, and managing water efficient landscapes in new construction and rehabilitated projects; 3) establishes provisions for water management practices and water waste prevention for existing landscapes; 4) uses water efficiently without waste by setting a Maximum Applied Water Allowance as an upper limit for water use and reduce water use to the lowest practical amount; and 5) promotes the benefits of consistent landscape ordinances with neighboring local and regional agencies. The ordinance applies to 1) new construction and rehabilitated landscapes for public agency projects and private development projects with a landscape area equal to or greater than 2,500 square feet, 2) new construction and rehabilitated landscapes which are developer-installed in single-family and multi-family projects with an aggregate landscape area equal to or greater than 2,500 square feet over the entire developed area, 3) new construction landscapes which are homeowner-provided and/or homeowner-hired in single-family residential (SFR) and multi-family residential (MFR) projects with a total project landscape area equal to or greater than 5,000 square feet, 4) existing landscapes installed before January 2010 greater than one acre, and 5) cemeteries. The ordinance also has water waste prevention measures and allows the City to establish and administer penalties to the project applicant for non-compliance with the ordinance to the extent permitted by law.

9.9 PLANNED IMPLEMENTATION TO ACHIEVE WATER USE TARGETS

The City has met their 2015 interim target of 264 gallons per capita per day (gpcd). The City's 2015 usage was 183 gpcd. If the city continues to maintain water conservation

measures and does not significantly increase usage when drought conditions are not present, meeting the 2020 target (234 gpcd) should not be difficult for the City.

The City is committed to water conservation and has implemented several policies and on-going programs that promote and encourage water conservation. In addition, the City has several drought-specific programs that can be implemented if water supplies become limited and the need for more intensive water conservation becomes necessary.

PLAN ADOPTION, SUBMITTAL, AND IMPLEMENTATION

The City of West Sacramento (City) prepared this Draft 2015 Urban Water Management Plan (UWMP) during the spring and summer of 2016. A completed UWMP checklist is included in Appendix J.

10.1 INCLUSION OF ALL 2015 DATA

The 2015 UWMPs must include the water use and planning data for the entire year of 2015. The City is reporting on a calendar year basis and therefore, 2015 data includes the months of January to December 2015.

10.2 NOTICE OF PUBLIC HEARING

A public hearing was held on September 21, 2016, prior to adoption of the UWMP at council chambers at the Civic Center, 1110 West Capitol Ave., West Sacramento. Notices were provided to the agencies and organizations as listed in Section 2.4.2, Yolo County (County), and the public. The public hearing provided an opportunity for the public to provide input on the plan before it was adopted. Additionally, the public hearing provided an opportunity for the City's customers, residents, and employees to learn and ask questions about the current and future water supply of the City.

10.2.1 Notice to Cities and Counties

The City does not provide treated water supplies to other cities or counties. The County, as shown in Table 10-1, was provided 60 day notification (prior to the public hearing) that the City is in process of preparing the 2015 UWMP. The 60 Day Notification letter to the County is included in Appendix A. The County was provided a notice of public hearing, including the time and location. The notice of public hearing to the County is included in Appendix A.

Table 10-1 Retail: Notification to Cities and Counties		
City Name	60 Day Notice	Notice of Public Hearing
West Sacramento	<input type="checkbox"/>	<input checked="" type="checkbox"/>
County Name <i>Drop Down List</i>	60 Day Notice	Notice of Public Hearing
Yolo County	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

10.2.2 Notice to the Public

The Urban Water Management Planning Act (UWMPA) requires that the UWMP show the water agency solicited public participation. The notice to the public is to be included in a

local newspaper as prescribed in Government Code 6066. This notice will include the time and location of the public hearing, in addition to the location of where the UWMP is available for public inspection. The notice of public hearing to the public is included in Appendix A.

On September 7, 2016 and September 14, 2016, the City placed a notice in The News-Ledger (local newspaper). The City posted this notice at City Hall stating that its UWMP is being updated and that a public hearing will be conducted to address comments and concerns from members of the community. The notice stated that a public review period would be scheduled through September 21, 2016. A copy of this notification is included in Appendix A. The Draft 2015 UWMP was available for public inspection at the City Clerk's Office (1110 West Capitol Avenue, 3rd Floor), the Public Works Department (1110 West Capitol Avenue, 1st Floor), and the Arthur F. Turner Community Library (1212 Merkley Ave), during regular business hours. A copy of the Draft 2015 UWMP was also posted on the City's Website (<https://www.cityofwestsacramento.org/>) to facilitate the public review of the document.

10.2.3 Notice to Agencies and Organizations

The following agencies and organizations were provided notice that the City is in the process of preparing the 2015 UWMP:

- Dunnigan Water District (District)
- California Department of Water Resources (DWR)
- North Delta Water Agency (NDWA)
- Regional Water Authority (RWA)
- United States Bureau of Reclamation (USBR)

These agencies and organizations were provided 60 day notification (prior to the public hearing) and a notice of public hearing, including the time and location. The 60 Day Notification letters and the notice of public hearing are included in Appendix A.

10.3 PUBLIC HEARING AND ADOPTION

The plan adoption by City Council occurred at the public hearing on September 21, 2016. The City Resolution 16-49 is included in Appendix K. The hearing provided an opportunity for the City's customers, residents, and employees to learn and ask questions about the current and future water supply of the City. At the hearing, the UWMP, water use targets, and conservation implementation plan were discussed.

10.3.1 Adoption

After the public hearing, the 2015 UWMP was adopted as prepared.

10.4 PLAN SUBMITTAL

The Final UWMP will be submitted to DWR, the California State Library, and Sacramento County (see Commitment to Distribute in Appendix A).

10.4.1 Submission to DWR

The 2015 UWMP will be submitted to DWR within 30 days of adoption.

10.4.2 Electronic Data Submission

The 2015 UWMP, in addition to tabular data, will be submitted using WUEdata submittal tool.

10.4.3 Submission to the California State Library

The 2015 UWMP will be submitted in CD or hardcopy format to the California State Library within 30 days of adoption.

10.4.4 Submission to Cities and Counties

The 2015 UWMP, which includes the City's Water Shortage Contingency Plan, will be submitted in electronic format to Sacramento County within 30 days of adoption.

10.5 PUBLIC AVAILABILITY

Within 30 days of submitting the Final UWMP to DWR, the adopted UWMP will be available for public review during normal business hours at the locations specified herein.

10.6 AMENDING AN ADOPTED UWMP

The plan may be updated at any time when the urban water supplier believes significant changes have occurred in population, land use, and/or water sources that may affect the contents of the plan. Copies of amendments or changes to the plan shall be submitted electronically to DWR, the California State Library, and any cities or counties which the City provides water supplies within 30 days of adoption.

OUTREACH DOCUMENTS



March 8, 2016

CITY HALL

1110 West Capitol Avenue
West Sacramento, CA 95691

City Council

(916) 617-4500

City Manager's Office

City Clerk

Early Learning Services

Information Technology

(916) 617-4500

Economic Development

(916) 617-4535

Community Development

Planning/Development Engineering

(916) 617-4645

Housing/Community Investment

(916) 617-4555

Building

(916) 617-4683

Code Enforcement

(916) 617-4925

Public Works

Administration

Transportation

Engineering

Flood Protection

(916) 617-4850

Environmental Services

(916) 617-4590

Utility Billing

(916) 617-4589

Administrative Services

Finance

(916) 617-4575

Human Resources

(916) 617-4567

Parks & Recreation

Administration

(916) 617-4620

Recreation Center

2801 Jefferson Blvd.

West Sacramento, CA 95691

(916) 617-4770

Community Center

1075 West Capitol Ave.

West Sacramento, CA 95691

(916) 617-5320

FIRE

2040 Lake Washington Blvd.

West Sacramento, CA 95691

(916) 617-4600

POLICE

550 Jefferson Boulevard

West Sacramento, CA 95605

(916) 617-4900

PUBLIC WORKS

Operations

1951 South River Road

West Sacramento, CA 95691

(916) 617-4850

USBR

Mid Pacific Regional Office

2800 Cottage Way

Sacramento, CA 95825-1898

Attention: David Murillo, Regional Director

Subject: **Notice of Preparation of the 2015 City of West Sacramento UWMP**

Dear Mr. Murillo:

Pursuant to the requirements of the California Water Code, Division 6, Part 2.6 Urban Water Management Planning, Section 10621 (b), every urban water supplier required to prepare a plan pursuant to this part shall, at least 60 days prior to the public hearing on the plan required by Section 10642, notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan.

This letter is intended to notify your agency that the City of West Sacramento (City) is in process of preparing the 2015 Urban Water Management Plan (UWMP). Based on the City's current schedule, we expect to have a public review draft of the 2015 UWMP available for review in May 2016, at which point your agency will receive a notification letter that the draft UWMP is available for public review.

If your agency would like to submit comments or provide input to the City in anticipation of the development of the 2015 UWMP, please submit written copies to:

Dereck Goodwin
City of West Sacramento
Senior Civil Engineer
1110 West Capitol Avenue, 2nd floor
West Sacramento, CA 95691

Sincerely,

CITY OF WEST SACRAMENTO

Dereck Goodwin, P.E.
Senior Civil Engineer

cc: Nicola Fontaine, Carollo Engineers, Inc





CITY HALL
1110 West Capitol Avenue
West Sacramento, CA 95691

City Council
(916) 617-4500

City Manager's Office
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Early Learning Services
Information Technology
(916) 617-4500
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(916) 617-4535

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(916) 617-4645
Housing/Community Investment
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Code Enforcement
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POLICE
550 Jefferson Boulevard
West Sacramento, CA 95605
(916) 617-4900

PUBLIC WORKS
Operations
1951 South River Road
West Sacramento, CA 95691
(916) 617-4850

March 8, 2016

Department of Water Resources
North Central Region
PO Box 942836
Sacramento, CA 94236

Attention: Kim Rosmaier, Senior Scientist

Subject: **Notice of Preparation of the 2015 City of West Sacramento UWMP**

Dear Ms. Rosmaier:

Pursuant to the requirements of the California Water Code, Division 6, Part 2.6 Urban Water Management Planning, Section 10621 (b), every urban water supplier required to prepare a plan pursuant to this part shall, at least 60 days prior to the public hearing on the plan required by Section 10642, notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan.


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If your agency would like to submit comments or provide input to the City in anticipation of the development of the 2015 UWMP, please submit written copies to:

Dereck Goodwin
City of West Sacramento
Senior Civil Engineer
1110 West Capitol Avenue, 2nd floor
West Sacramento, CA 95691

Sincerely,

CITY OF WEST SACRAMENTO


Dereck Goodwin, P.E.
Senior Civil Engineer

cc: Nicola Fontaine, Carollo Engineers, Inc.





March 8, 2016

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Regional Water Authority
5620 Birdcage St, Suite 180
Citrus Heights, CA 95610

Attention: Amy Talbot, Regional Water Efficiency Manager

Subject: **Notice of Preparation of the 2015 City of West Sacramento UWMP**

Dear Ms. Talbot:

Pursuant to the requirements of the California Water Code, Division 6, Part 2.6 Urban Water Management Planning, Section 10621 (b), every urban water supplier required to prepare a plan pursuant to this part shall, at least 60 days prior to the public hearing on the plan required by Section 10642, notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan.

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Sincerely,

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Dereck Goodwin, P.E.
Senior Civil Engineer

cc: Nicola Fontaine, Carollo Engineers, Inc.





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March 8, 2016

North Delta Water Agency
910 K Street, Suite 310
Sacramento, CA 95814

Attention: Melinda Terry, Manager

Subject: **Notice of Preparation of the 2015 City of West Sacramento UWMP**

Dear Ms. Terry:

Pursuant to the requirements of the California Water Code, Division 6, Part 2.6 Urban Water Management Planning, Section 10621 (b), every urban water supplier required to prepare a plan pursuant to this part shall, at least 60 days prior to the public hearing on the plan required by Section 10642, notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan.

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City of West Sacramento
Senior Civil Engineer
1110 West Capitol Avenue, 2nd floor
West Sacramento, CA 95691

Sincerely,

CITY OF WEST SACRAMENTO

Dereck Goodwin, P.E.
Senior Civil Engineer

cc: Nicola Fontaine, Carollo Engineers, Inc.





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(916) 617-4850

March 8, 2016

Dunnigan Water District

3817 1st Street

Dunnigan, CA 95937

Attention: Donita Hendrix, Manager

Subject: **Notice of Preparation of the 2015 City of West Sacramento UWMP**

Dear Ms. Hendrix:

Pursuant to the requirements of the California Water Code, Division 6, Part 2.6 Urban Water Management Planning, Section 10621 (b), every urban water supplier required to prepare a plan pursuant to this part shall, at least 60 days prior to the public hearing on the plan required by Section 10642, notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan.

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Dereck Goodwin
City of West Sacramento
Senior Civil Engineer
1110 West Capitol Avenue, 2nd floor
West Sacramento, CA 95691

Sincerely,

CITY OF WEST SACRAMENTO

Dereck Goodwin, P.E.
Senior Civil Engineer

cc: Nicola Fontaine, Carollo Engineers, Inc.





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(916) 617-4850

March 8, 2016

Yolo County
625 Court Street, Room 202
Woodland, CA 95695

Attention: Patrick S. Blacklock, County Administrator

Subject: **Notice of Preparation of the 2015 City of West Sacramento UWMP**

Dear Mr. Blacklock:

Pursuant to the requirements of the California Water Code, Division 6, Part 2.6 Urban Water Management Planning, Section 10621 (b), every urban water supplier required to prepare a plan pursuant to this part shall, at least 60 days prior to the public hearing on the plan required by Section 10642, notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan.

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Dereck Goodwin
City of West Sacramento
Senior Civil Engineer
1110 West Capitol Avenue, 2nd floor
West Sacramento, CA 95691

Sincerely,

CITY OF WEST SACRAMENTO

Dereck Goodwin, P.E.
Senior Civil Engineer

cc: Nicola Fontaine, Carollo Engineers, Inc





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(916) 617-4900

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Operations
1951 South River Road
West Sacramento, CA 95691
(916) 617-4850

August 30, 2016

Dunnigan Water District
3817 1st Street
Dunnigan, CA 95937

Attention: Donita Hendrix, Manager

Subject: **Public Hearing Notice**

Dear Ms. Hendrix:

The West Sacramento City Council will conduct a public hearing on September 21, 2016 at 7:30 PM or as soon thereafter as possible on the following. The hearing will be held in the council chambers at the Civic Center, 1110 West Capitol Ave., West Sacramento. Interested persons are invited to attend. In compliance with the ADA, if you need assistance to participate in this meeting, you should contact the City Clerk at 617-4500. Notification 72 hours prior to the meeting will enable the City to make reasonable arrangements to assure accessibility to this meeting. City hall is handicapped accessible.

1. Presentation of the 2015 Urban Water Management Plan.

A copy of the Urban Water Management Plan can be reviewed by visiting the City's website at <http://www.cityofwestsacramento.org/>.

For questions concerning the document, please contact:


Dereck Goodwin
City of West Sacramento
Senior Civil Engineer
Phone: (916) 617-4645

Written comments are requested by the close of business on September 21, 2016.

Send written comments to:
Urban Water Management Plan
c/o Dereck Goodwin
City of West Sacramento
Senior Civil Engineer
1110 West Capitol Avenue, 2nd floor
West Sacramento, CA 95691

Sincerely,

CITY OF WEST SACRAMENTO


Dereck Goodwin, P.E.
Senior Civil Engineer

cc: Nicola Fontaine, Carollo Engineers, Inc.





August 30, 2016

Department of Water Resources
North Central Region
PO Box 942836
Sacramento, CA 94236

CITY HALL
1110 West Capitol Avenue
West Sacramento, CA 95691

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PUBLIC WORKS
Operations
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Attention: Kim Rosmaier, Senior Scientist

Subject: **Public Hearing Notice**

Dear Ms. Rosmaier:

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c/o Dereck Goodwin
City of West Sacramento
Senior Civil Engineer
1110 West Capitol Avenue, 2nd floor
West Sacramento, CA 95691

Sincerely,

CITY OF WEST SACRAMENTO

Dereck Goodwin, P.E.
Senior Civil Engineer

cc: Nicola Fontaine, Carollo Engineers, Inc.





August 30, 2016

North Delta Water Agency
910 K Street, Suite 310
Sacramento, CA 95814

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(916) 617-4850

Attention: Melinda Terry, Manager

Subject: **Public Hearing Notice**

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For questions concerning the document, please contact:

Dereck Goodwin
City of West Sacramento
Senior Civil Engineer
Phone: (916) 617-4645

Written comments are requested by the close of business on September 21, 2016.

Send written comments to:
Urban Water Management Plan
c/o Dereck Goodwin
City of West Sacramento
Senior Civil Engineer
1110 West Capitol Avenue, 2nd floor
West Sacramento, CA 95691

Sincerely,

CITY OF WEST SACRAMENTO

Dereck Goodwin, P.E.
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cc: Nicola Fontaine, Carollo Engineers, Inc.





August 30, 2016

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Attention: Amy Talbot, Regional Water Efficiency Manager

Subject: **Public Hearing Notice**

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Send written comments to:
Urban Water Management Plan
c/o Dereck Goodwin
City of West Sacramento
Senior Civil Engineer
1110 West Capitol Avenue, 2nd floor
West Sacramento, CA 95691

Sincerely,

CITY OF WEST SACRAMENTO

Dereck Goodwin, P.E.
Senior Civil Engineer

cc: Nicola Fontaine, Carollo Engineers, Inc.





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(916) 617-4850

August 30, 2016

USBR
Mid Pacific Regional Office
2800 Cottage Way
Sacramento, CA 95825-1898

Attention: David Murillo, Regional Director

Subject: **Public Hearing Notice**

Dear Mr. Murillo:

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For questions concerning the document, please contact:
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City of West Sacramento
Senior Civil Engineer
Phone: (916) 617-4645

Written comments are requested by the close of business on September 21, 2016. Send written comments to:
Urban Water Management Plan
c/o Dereck Goodwin
City of West Sacramento
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1110 West Capitol Avenue, 2nd floor
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Sincerely,

CITY OF WEST SACRAMENTO

Dereck Goodwin, P.E.
Senior Civil Engineer

cc: Nicola Fontaine, Carollo Engineers, Inc.



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(916) 617-4850
Environmental Services
(916) 617-4590
Utility Billing
(916) 617-4589

Administrative Services
Finance
(916) 617-4575
Human Resources
(916) 617-4567

Parks & Recreation
Administration
(916) 617-4620
Recreation Center
2801 Jefferson Blvd.
West Sacramento, CA 95691
(916) 617-4770
Community Center
1075 West Capitol Ave.
West Sacramento, CA 95691
(916) 617-5320

FIRE
2040 Lake Washington Blvd.
West Sacramento, CA 95691
(916) 617-4600

POLICE
550 Jefferson Boulevard
West Sacramento, CA 95605
(916) 617-4900

PUBLIC WORKS
Operations
1951 South River Road
West Sacramento, CA 95691
(916) 617-4850

August 30, 2016

Yolo County
625 Court Street, Room 202
Woodland, CA 95695

Attention: Patrick S. Blacklock, County Administrator

Subject: **Public Hearing Notice**

Dear Mr. Blacklock:

The West Sacramento City Council will conduct a public hearing on September 21, 2016 at 7:30 PM or as soon thereafter as possible on the following. The hearing will be held in the council chambers at the Civic Center, 1110 West Capitol Ave., West Sacramento. Interested persons are invited to attend. In compliance with the ADA, if you need assistance to participate in this meeting, you should contact the City Clerk at 617-4500. Notification 72 hours prior to the meeting will enable the City to make reasonable arrangements to assure accessibility to this meeting. City hall is handicapped accessible.

1. Presentation of the 2015 Urban Water Management Plan.

A copy of the Urban Water Management Plan can be reviewed by visiting the City's website at <http://www.cityofwestsacramento.org/>.

For questions concerning the document, please contact:

Dereck Goodwin
City of West Sacramento
Senior Civil Engineer
Phone: (916) 617-4645

Written comments are requested by the close of business on September 21, 2016.

Send written comments to:
Urban Water Management Plan
c/o Dereck Goodwin
City of West Sacramento
Senior Civil Engineer
1110 West Capitol Avenue, 2nd floor
West Sacramento, CA 95691

Sincerely,

CITY OF WEST SACRAMENTO

Dereck Goodwin, P.E.
Senior Civil Engineer

cc: Nicola Fontaine, Carollo Engineers, Inc.





September 2, 2016

News-Ledger
Attn: George Macko
1050 W. Capitol Ave.
West Sacramento, CA 95691

Reference No: 9022-616

Dear Editor:

Please publish the enclosed notice on the date(s) noted below.

Public Hearing Notice – 2015 Urban Water Management Plan September 7 & 14, 2016
Request For Proposal – SCBA September 7 & 14, 2016

Additionally, please forward a Proof of Publication, together with your invoice, upon completion of the ad. Please direct your invoice to: City Manager's Office, Attn.: Kryss Rankin.

The text of the notice is also being provided via e-mail.

Sincerely,

/s/

Kryss Rankin, City Clerk

Enclosure(s)

Commitment to Distribute the 2015 Urban Water Management Plan (UWMP)

The documentation currently included in these appendices satisfies California Water Code (CWC) parts 10621(b) and 10642.

Two other sections of the CWC specify UWMP documentation that must take place after the submission of the supplier's UWMP to the California Department of Water Resources (DWR). These parts are as follows:

- Part 10644(a), requiring documentation that within 30 days of submitting the UWMP to DWR, the adopted UWMP has been or will be submitted to the California State Library and any city or county to which the supplier provides water.
- Part 10645, requiring documentation that the supplier will make the UWMP available for public review no later than 30 days after submission to DWR.

In order to satisfy these requirements, the City will perform the following actions:

- The City will submit its 2015 UWMP to DWR.
- The City will send a printed or electronic copy of its 2015 UWMP to the California State Library and to the cities and counties within which it provides water. The City will do this within 30 days from filing with DWR.
- The City will make their 2015 UWMP available for public review within 30 days from filing with DWR.

CLIMATE ACTION PLAN

CLIMATE

ACTION

PLAN

CITY OF WEST SACRAMENTO

Draft

AUGUST 2010

From Mayor Christopher Cabaldon

The City of West Sacramento has joined with other Cities around the world to make a commitment to reducing greenhouse gas emissions which threaten to bring devastating impacts to our world.

Some aspects of the Climate Change battle will need to be done on a National or State level such as vehicle fleet efficiency standards or the development of new renewable energy sources. The cities can play a role in this effort by encouraging our legislators to take these actions. However, much can also be done at the local level. In fact, in the last analysis, this battle will only be won at the personal level with the commitment of individuals to change the way we do things in our homes and businesses to reduce the use of greenhouse gas producing fuels.

The municipal organization of the City of West Sacramento can, should and has committed to lead by example in reducing greenhouse gases. From energy use management at the water treatment plant to minimize energy use during those peak usage hours where oil and gas fired electrical generation is at its peak, to the purchase of hybrid vehicles for pool cars, use of recycled materials in parks, more efficient management of public landscape watering, the adoption of a Green Purchasing Policy, a Transportation Management Plan for City Hall employees, and the construction of high energy efficiency buildings with its new Fire Stations and Community Center, and many other actions across departments, the City organization has begun to systematically reduce its carbon footprint.

West Sacramento plays a critical role in the regions efforts to reduce greenhouse gases. The City's location near the regional core makes it a special location for transit oriented, urban development which can be significantly superior in terms of the carbon footprint of new development. The City's long standing planning commitment to this kind of neighborhood development along the northeast riverfront in the Bridge District, Washington and Pioneer Bluffs and West Capitol Avenue makes it a leader in the region.

The City Council has for years recognized the creation of a Green and Sustainable Strategy as a high priority. This Climate Action Plan quantifies organizational and community emissions, sets targets for reductions and pulls together the measures which will allow us to reach our goals.

Success will require commitments from residents and businesses to change the way we do things. In some cases this may require hard choices; however in many cases simple changes may actually save money on energy expenses and improve our life styles and health.

It will take many years to reverse the climate course we have placed ourselves on. We must start now if we are going to keep our area a viable place to live for future generations.

Christopher Cabaldon

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DRAFT

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Executive Summary

The debate is over. The overwhelming scientific consensus is that human-induced climate change is among the most pressing environmental and social problems facing this generation and those to come.

The time to act is now. Never in the past 1000 years has the planet warmed at a faster rate than during the 20th century, and the most recent decade has been the warmest ever on record. Allowing this trend to continue could result in decreased agricultural output, increased catastrophic weather events such as forest fires, drought and floods and displacement of entire populations due to rising sea levels.

West Sacramento must do its part. Although the United States accounts for a mere 4% of the world's population, it produces 20.4% according to Table No. 1 on page 6 of the world's greenhouse gases. West Sacramento released 410,682 tons of carbon dioxide equivalent (CO₂e) in 2007 and, if steps are not taken to achieve reductions, is projected to emit 30% more in 2020. However, on July 11, 2007, City of West Sacramento pledged to take action against this destructive trend by passing a resolution to join more than 230 U.S. local governments and 770 local governments worldwide in ICLEI's Cities for Climate Protection[®] (CCP) campaign. In so doing, West Sacramento committed to ICLEI's 5-Milestone methodology for combating global warming:

Milestone 1: Conduct a baseline emissions inventory and forecast

Milestone 2: Adopt an emissions reduction target

Milestone 3: Develop a Climate Action Plan for reducing emissions

Milestone 4: Implement policies and measures

Milestone 5: Monitor and verify results

Purpose of the Plan

The purpose of the Climate Action Plan is to place in one document the program which the community will follow to reduce Greenhouse Gas Emissions as well as the background of the existing emissions, future targets and the Goal and Policy framework leading to the actions to be implemented. The Plan will be implemented over a long period of time. Some of the actions identified may not be economically feasible in the near term but changes in technology, economics and public support may make them feasible in the future.

Emissions Inventory

Municipal: To calculate the GHG emissions from City operations, staff gleaned information about electricity and gas used in City facilities; water production and refuse and recycling generated within City

operations. In addition the amount of fuel used in City vehicles as well as commute habits of City employees was inventoried. To establish a uniform baseline a twelve month period was used and any data available for less than a twelve month period was extrapolated to construct time-line comparisons.

Our preliminary findings, depicted in the following chart(s), show both the CO₂e metric tonnes by major categories followed by the relationship by percentage of those categories to the total City CO₂ use.

Figure 0-1

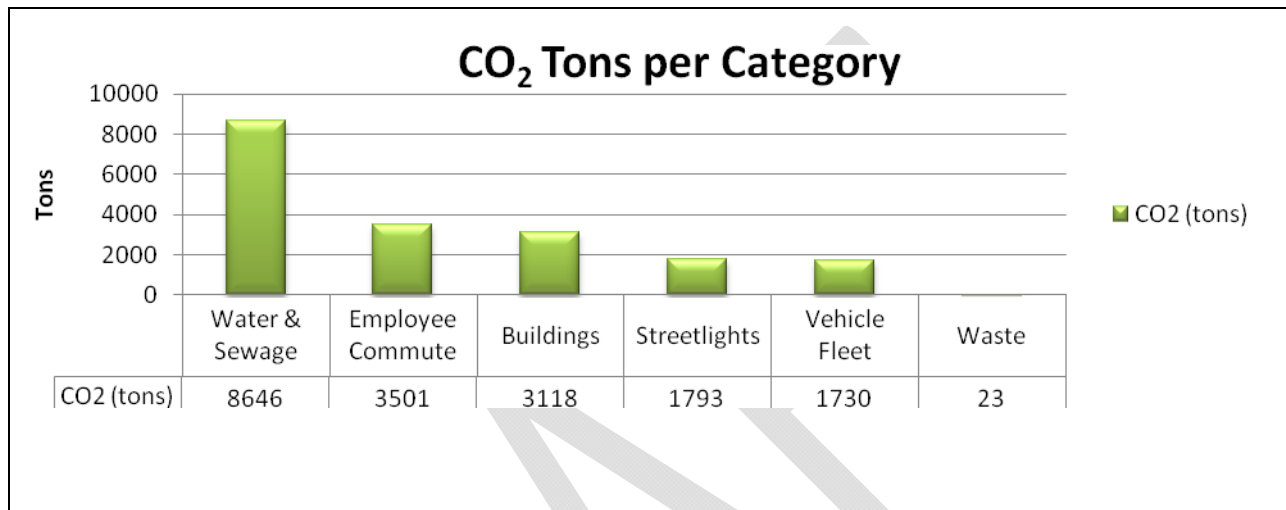
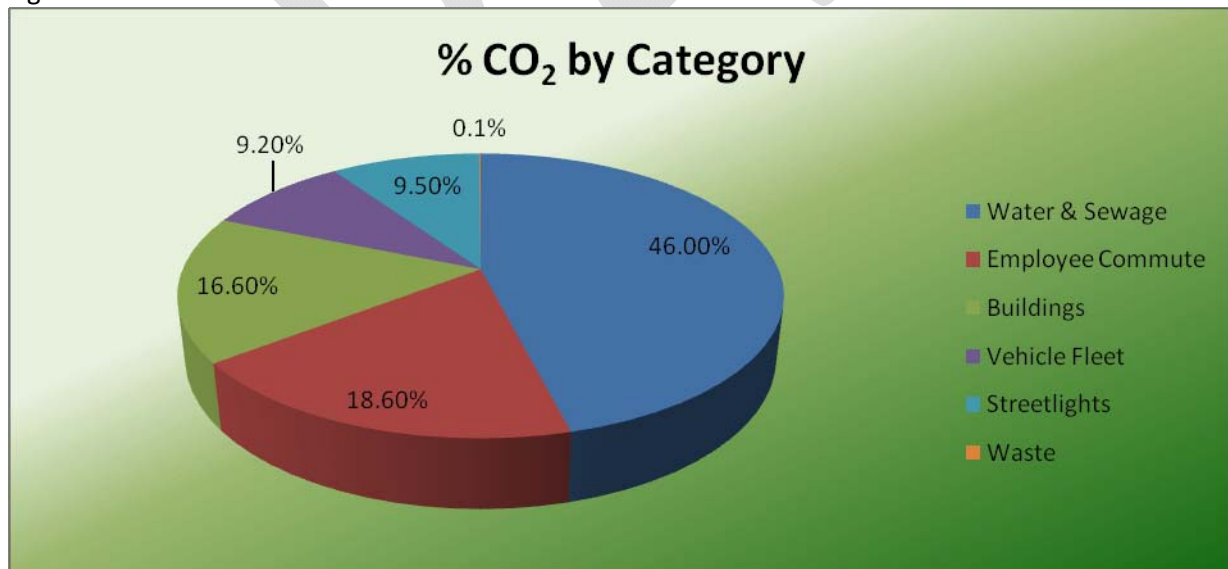


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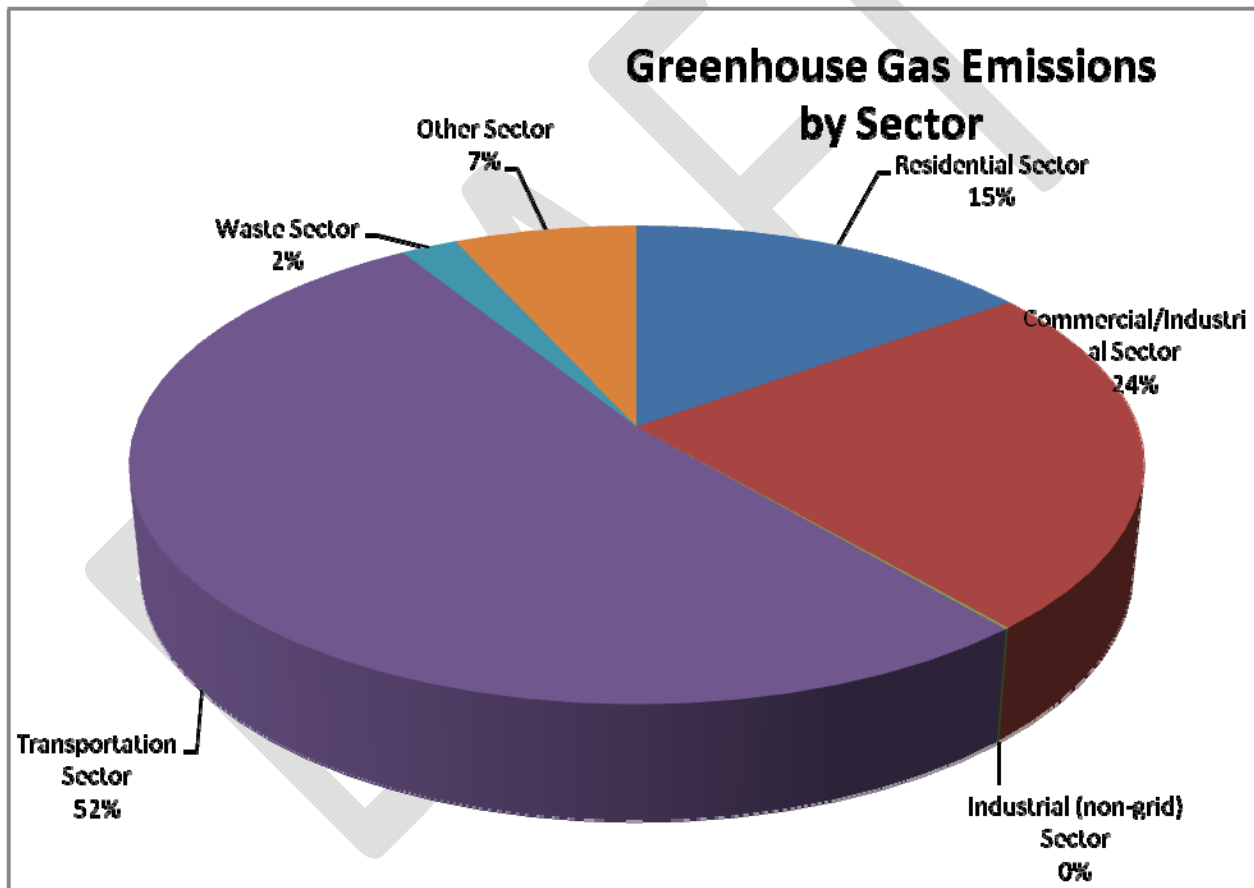


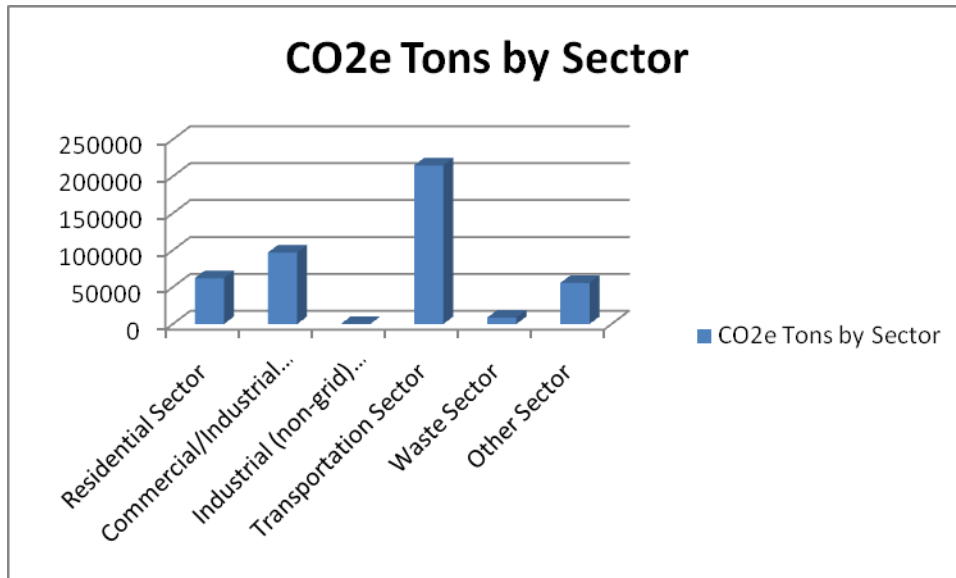
The Water and Sewage category is by far the largest generator of CO₂. This is due to the vary energy intensive processes needed to treat and pump potable water and sewerage. The sewer treatment numbers in this table represent the South River Road Treatment Plant which, shortly after this

information was gathered, was shut down as the City connected to the Sacramento Regional Plant. Future analysis will need to compare the ongoing electrical demands of the local sewer collection system, and a pro-rata share of the Regional Plants' GHG emissions.

Community: The Community Sectors are broken out by Residential Energy Use, Commercial/Industrial Energy Use, Industrial (non-grid energy), Transportation, Waste and Other. The following chart(s) show both the CO₂e tonnes by major categories followed by the relationship by percentage of those categories to the total West Sacramento CO₂e generation. Total West Sacramento Community Greenhouse Gas Emissions for 2007 was 410,682 tonnes CO₂e.

Figure 0-3





On a per capita basis, West Sacramento’s residential emissions level is slightly lower than any jurisdiction in Sacramento County. West Sacramento’s Commercial-Industrial Sector is relatively higher than typical cities around the region. In most local cities, Commercial-Industrial is about the same as Residential. West Sacramento has an unusually large employment base compared to its residential populations, so this is not unexpected. When evaluated on a per employee basis, West Sacramento is well within the range of cities in Sacramento County. The Transportation Sector is also unusually large. The presence of two significant, busy freeway segments in the community may be a contributing factor.

Emissions Targets

Municipal: The Municipal Goal is to reduce emissions 15% from current levels by 2020. As indicated by the municipal inventory, current emissions are 18,811 CO2 tons per year. The target for City organization emissions in 2020 is therefore 15,990 CO2 tons per year or less.

Community: West Sacramento is committed to reducing community-wide greenhouse gas emissions by 30% below a “Business as Usual” level based on a 2007 base year by 2020. Business as Usual assumes that emissions per resident and per employee continue at the same rate as today as the City grows. This approach for a target is due to the expected rapid growth of West Sacramento in population and employment relative to the State as a whole. That growth is critical to the regions ability to reach its targets given West Sacramento’s location adjacent to the Sacramento urban core and the high density, transit oriented development planned along West Sacramento’s riverfront and West Capitol Avenue.

Existing Measures

Municipal: The City operates its water treatment plant at non-peak hours in order to reduce the use of non-renewable energy sources. The City Council has adopted a Transportation Management Plan for the Civic Center Complex which encourages the use of alternative transportation for City employees. A “Green” purchasing policy has been approved to encourage the use of environmentally superior materials and services by City departments, even if they are not in the short term the lowest cost alternative. The City has an active Tree Preservation and Planting program and has planted over 3,300 trees in the last four years from its Tree Mitigation Fund. The City’s land use planning policies have encouraged climate change supportive development along the north eastern riverfront area of the community. Much of the future growth of the City will be in urban, transit oriented neighborhoods. Energy saving designs and materials has been incorporated into all new City buildings in the last few years, including City Hall, two Fire Stations and a new Community Center. Recycled materials and climate friendly design have been incorporated into new parks and in the renovation of existing parks. As part of its connection to the Sacramento County Regional Sewer Treatment Plant, the City renovated all of its sewer pump stations with more energy efficient pumps and controls.

Community:

The existing residents and businesses of West Sacramento are doing much to conserve energy and fight climate change. The community is currently diverting 60% of its solid waste stream from the land fill to recycling, in excess of the State goal of 50%. Numerous homes and businesses have installed photo voltaic systems on their properties. People are buying hybrid cars and replacing incandescent light bulbs with compact florescent bulbs. The most recent office building built in the City will qualify for LEED Platinum. The Community Inventory indicates that West Sacramento has a lower per capita residential Greenhouse Gas Emission level than any jurisdiction in Sacramento County.

Proposed Measures

A number of specific measures have been identified which can be accomplished by the City of West Sacramento to meet its Greenhouse Gas goals. Some measures are fairly general and others very specific. In many cases, a general measure leads to the implementation of a specific measure. An example of this would be an alternative transportation educational effort by the City leading to a greater use of hybrid cars in the community. Every effort has been made to avoid duplicative counting of emission benefits. In most cases the emission benefits have been recognized in the more general measure.

Municipal and Community Measures which have been recognized as providing emission benefits are listed below.

Municipal:

- Program Idling and RPM limits in City Vehicles
- Buy low GHG vehicles when replacing existing

- Use of alternative fuels in heavy vehicles.
- Encourage use of alternative transportation by City employees
- Replacement of existing street lights with LED.
- Energy Retrofits of some existing City Buildings.
- Development of future new City buildings as LEED Silver.
- Purchase Renewable Energy Certificates to provide municipal power.
- Install Solar installations at City facilities

Community:

- Implementation of an alternative transportation education program.
- Construction of the Riverfront Street Car System
- Develop high density, transit oriented housing
- Expanding transit as the City grows.
- Green Building Ordinance
- Energy Efficiency Educational program.
- Energy Efficiency Loan Program.
- Energy Efficiency Conservation Ordinances.
- Water Conservation through metered billing.
- Tree Planting
- Replacement of older appliances with energy star rated appliances

Conclusions and Summary

The City of West Sacramento will have to reduce 160,117 tons of CO₂e emissions in the community, including at least 2,820 tons of CO₂e emissions from municipal operations, in order to achieve our emissions reduction target.

Implementation of measures by the City of West Sacramento as identified in this document, together with measures being implemented by the State and Federal government do give the City of West Sacramento the potential for reaching its greenhouse gas reduction goals for 2020 at both the Municipal

and Community Level. As shown in the table below, the measures identified reduce emissions to 30% below Business as Usual for the Community and 134% below the 2007 baseline for the Municipal organization.

Table (4.13): City of West Sacramento Emissions Summary

City of West Sacramento Emissions Summary		
	Community Analysis	Municipal Operations Analysis
Base year	2007	2007
Quantity of CO ₂ e emissions in base year (tonnes)	410,682	18,801
Target year	2020	2020
Business-as-usual projection of CO ₂ e emissions in 2020 (tonnes)	533,726	21,245
Percent CO ₂ e reduction targeted by target year relative to base year (%)	30%	15%
Quantity of CO ₂ e reduction targeted relative to base year (tonnes)	160,117	2,820
Quantity of CO ₂ e reduction to be achieved through proposed City of West Sacramento measures (tonnes)	52,554	543
Quantity of CO ₂ e reduction to be achieved through measure external to West Sacramento	108,035	3,571
Percent of CO ₂ e reduction to be achieved through all existing and proposed measures (%)	100%	130%

The measures identified reduce the per capita emissions in West Sacramento from 8.7 metric tonnes CO₂e in 2007 to 6.3 metric tonnes CO₂e in 2020, a 27% reduction.

Next steps

Implement Plan: After adoption of this Plan, much on-going work will be needed to implement the Plan. Education, coordination and collaboration will be needed with City Departments, Residents and the Business Community to move towards the goals of the Plan. The California Environmental Quality Act will be used to implement many measures dealing with new development. The Draft Climate Action Plan meets all the requirements of CEQA Guidelines Section 15183.5.

Monitor results: Key indicators which are easily available should be reported to the Council and Community on an annual basis. Examples of key indicators include: total community electrical and natural gas use, Municipal energy and natural gas use for utility sectors (water treatment, water distribution, sewer collection, building use, etc.), Caltrans estimates of community vehicle miles travelled, and gallons of gas used in City vehicles.

The Municipal and Community Greenhouse Gas Inventories should be updated every five years to monitor the progress of the community in achieving the goals of the plan.

Revise: The Plan should be reviewed and revised regularly based on the areas which have been successfully implemented, new technology and new information in the area of climate change, measures which have been found to be unsuccessful and new standards or legislation.

Background

About International Council for Local Environmental Initiatives (ICLEI) and the Cities for Climate Protection Campaign

ICLEI's mission is to improve the global environment through local action. The Cities for Climate Protection® (CCP) campaign is ICLEI's flagship campaign designed to educate and empower local governments worldwide to take action on climate change. ICLEI provides resources, tools, and technical assistance to help local governments measure and reduce greenhouse gas emissions in their communities and their internal municipal operations.

ICLEI's CCP campaign was launched in 1993 when municipal leaders, invited by ICLEI, met at the United Nations in New York and adopted a declaration that called for the establishment of a worldwide movement of local governments to reduce greenhouse gas emissions, improve air quality, and enhance urban sustainability. The CCP campaign achieves these results by linking climate change mitigation with actions that improve local air quality, reduce local government operating costs, and improve quality of life by addressing other local concerns. The CCP campaign seeks to achieve significant reductions in U.S. greenhouse gas emissions by assisting local governments in taking action to reduce emissions and realize multiple benefits for their communities.

ICLEI uses the performance-oriented framework and methodology of the CCP campaign's 5- Milestones to assist U.S. local governments in developing and implementing harmonized local approaches for reducing global warming and air pollution emissions, with the additional benefit of improving community livability. The milestone process consists of:

- Milestone 1: Conduct a baseline emissions inventory and forecast
- Milestone 2: Adopt an emissions reduction target
- Milestone 3: Develop a Climate Action Plan for reducing emissions
- Milestone 4: Implement policies and measures
- Milestone 5: Monitor and verify results

City of West Sacramento's Climate Action Plan

- Provides background on the science and impacts of climate change
- Presents *City of West Sacramento's* baseline greenhouse gas emissions inventory and emissions reduction target
- Outlines the policies and measures in the transportation, energy efficiency, renewable energy, and solid waste management sectors that *City of West Sacramento* will implement and/or is already implementing to achieve its target
- Presents next steps required to implement the plan

10 Steps to Reduce your Carbon Footprint and Save Money

From CoolClimate.org

1. Change your commute!

Did you know that one third of the CO₂ produced in the US is from the transportation of people or goods? Pick one day a week to walk, bike, take public transportation or carpool to work or when you're running errands. If possible, live close to your workplace. When driving, remember to combine several car trips into one trip and avoid idling. Additionally, you can get better fuel efficiency by following the speed limit. Exceeding the speed limit by just 5 mph during highway travel results in an average fuel economy loss of 6%.

2. Be a better consumer!

Did you know that the average American generates about 4.4 lbs of trash each day? To reduce the amount of trash you generate, follow these few easy steps. Use re-usable coffee mugs and shopping bags. If you forget your mug or bag at the store, buy a new reusable mug or bag and keep the extra one in your purse or car for use the next time you're out. Alternatively, set aside \$1 each time you forget your mug or bag; depending on your memory, you'll have enough funds to purchase a reusable item sooner or later. Also, reuse as many things as possible and recycle at home, work, and school.

3. Shop local!

The shorter the distance your food travels to your plate or that product travels to your home, the fewer Greenhouse gases are produced. Declare one day a week "Local Day" and eat foods produced within 50 miles of your house.

4. Dry-up Household Water Consumption!

Did you know that water-related energy use consumes 19% of California's electricity, 30% of its natural gas, and 88 billion gallons of diesel fuel every year? To reduce your water consumption at home, turn off your water when it's not being used, take shorter showers, stop unseen leaks by reading your meter, install low-flow shower heads and aerators on your faucet, install and use water efficient landscaping and irrigation methods (for example, plant drought tolerant plants and/or install permeable surfaces and drip irrigation systems), and use EnergyStar appliances.

5. Unplug it!

Did you know that appliances, chargers, home theater equipment, stereos and televisions use electricity even when their power is "off"? Eliminating this "leaking" electricity could save you 6–26% on your average monthly electricity bill. Take a walking tour of your home and unplug seldom-used appliances and install power strips so that the power to frequently used items can be easily turned off.

6. Change the lights!

Replace any incandescent light bulbs that remain in your home with compact fluorescent lights (CFLs). Replacing one incandescent light bulb with a CFL can save \$30 or more in electricity costs over the bulb's lifespan.

7. Set your Thermostat for the Season!

Set your thermostat in winter to 68° or less during the daytime, and 55° before going to sleep (or when you're away for the day), to save 5-20% of your space heating costs. During the summer, set thermostats to 78° degrees or more to save 5-20% of your cooling costs. For an easy fix, purchase an inexpensive programmable thermostat that makes these changes for you.

8. Increase Energy Efficiency at home!

Did you know that you can save up to 350 lbs of CO₂ and \$150 per year at home by simply keeping air filters clean? To determine more ways to increase energy efficiency, take advantage of free home energy audits offered by many utility companies. When you are ready to purchase an appliance, ensure that you purchase an EnergyStar appliance. To reduce carbon emissions associated with energy use, install or purchase alternative energy for your electricity needs.

9. Stop Unwanted Services!

Did you know that junk mail production in the US consumes as much energy as 2.8 million cars? Stop your junk mail at www.directmail.com/junk_mail. Stop unwanted catalogs at www.catalogchoice.org.

10. Get your friends and families to reduce their carbon emissions!

DRAFT

Acknowledgements

This plan was created by City of West Sacramento staff. The primary drafter was Stephen Patek, retired Director of Public Works and Community Development. Many other staff contributed. The City's multi-departmental Green Strategy Team prepared portions of the text and reviewed and commented on the drafts. The Green Team is managed by Denise Kotko of the Finance Department. Major contributors include Steve Rikala, City Planner, Paul Dirksen, Community Investment, Amy Cameron, Economic Development, Joe Escobar, Police Department, Paulina Rosenthal, Resources/Recycling, Randy Goodwin, City Architect, Belinda Arthurs, Water Conservation, and Greta Vohlers, Transportation.

While the area of Climate Action Plans is a rapidly evolving one, much good work has been done by other Cities, Counties and organizations. It would be neither cost effective nor wise for the City of West Sacramento to re-invent the wheel in the format, language or content of its Climate Action Plan. Much of this plan is taken from the Alameda County/ICLEI template project, where the International Council for Local Environmental Initiatives was funded by the Air Resources Board to prepare a Climate Action Plan for Alameda County which would then be available as a template for other California jurisdictions. Much information regarding Greenhouse Gas Inventory Methodology was learned from the Sacramento County Greenhouse Gas Inventory prepared by ICF Jones and Stokes. Other Climate Action Plans reviewed and used as source material include that of the City of Hayward, prepared by HDR, Inc., the City of Berkeley, the County of Sonoma and the City of Davis. The City's General Plan environmental consultant (PBS&J) provided a useful peer review of the draft document as well as examples of Climate Action Plans and examples of inventory calculations.

Much helpful information is available from the State of California Agencies. The Air Resources Board is the leading agent of change at the State level and provides much guidance and resources in the preparation of Climate Action Plans. The Attorney General's office has also played an active role in providing policy direction to Cities. The Office of Planning and Research of the Governor's office is also much involved.

The City of West Sacramento's Climate Action Plan effort is a direct outcome of the City Council's direction to make a Green and Sustainable Strategy a top policy priority for the City beginning in 2007.

Acronyms and Abbreviations

AB 32	Assembly Bill 32
ALAPCO	Association of Local Air Pollution Control Officers
Btu	British Thermal Unit
CACP2009	Clean Air and Climate Protection Software
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CCAR	California Climate Action Registry
CEC	California Energy Commission
CFC	chlorofluorocarbon
CH ₄	methane
CIWMB	California Integrated Waste Management Board
CO ₂	carbon dioxide
CO ₂ e	CO ₂ equivalents
DERA	Sacramento County Department of Environmental Review and Assessment
FAA	Federal Aviation Administration
FMMP	California Division of Land Resources Protection Farmland Mapping and Monitoring Program
GHG	greenhouse gas
GWP	Global Warming Potential
HFC	hydroflouorocarbon
HPMS	Highway Performance Monitoring System
IC	internal combustion

ICLIE	International Council for Local Environmental Initiatives
IPCC	Intergovernmental Council on Climate Change
Lbs/MWh	pounds per megawatt hours
LMOP	Landfill Methane Outreach Program
LPG	liquefied petroleum gas
MTCO _{2e}	metric tons of carbon dioxide equivalent
N ₂ O	nitrous oxide
NAICS	North American Industrial Classification System
PFC	perfluorocarbon
PG&E	Pacific Gas and Electric Company
SF ₆	sulfur hexafluoride
SMAQMD	Sacramento Metropolitan Air Quality Management District
TAC	toxic air contaminant
VMT	Vehicle Miles Traveled
YSAQMD	Yolo/Solano Air Quality Management District

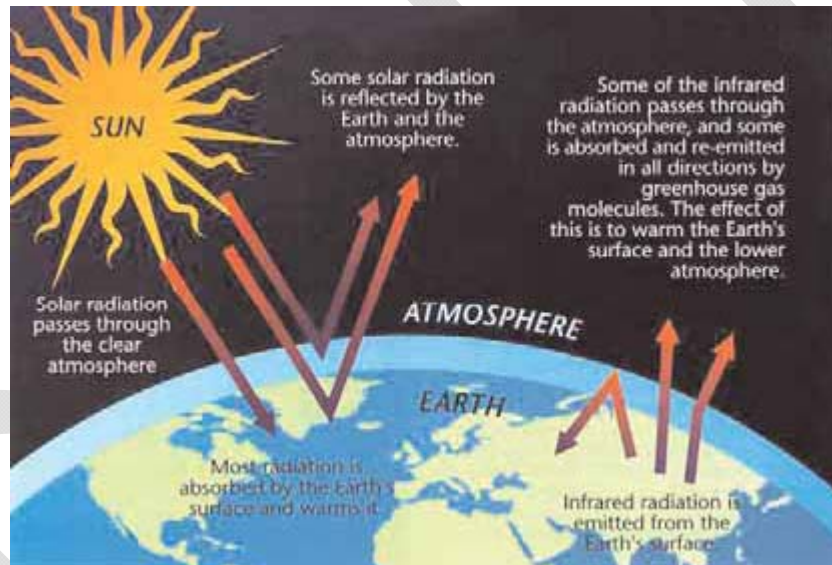
Chapter 1 – Introduction

I. Introduction

A. Introduction to Climate Change Science

The Earth's atmosphere is naturally composed of a number of gases that act like the glass panes of a greenhouse, retaining heat to keep the temperature of the Earth stable and hospitable for life at an average temperature of 60°F. Carbon dioxide (CO₂) is the most prolific of these gases. Other contributing gases include methane (CH₄), nitrous oxide (NO₂), ozone (O₃) and halocarbons. Without the natural warming effect of these gases the average surface temperature of the Earth would be around 14°F. These gases have been defined as greenhouse gases (GHG) because of the warming effect they have on the earth. Figure (1-1) illustrates how GHG emissions are able to warm the Earth.¹

Figure (1-1) The Greenhouse Gas Phenomenon



Source: US Environmental Protection Agency

However, recently elevated concentrations of these gases in the atmosphere have had a de-stabilizing effect on the global climate, fueling the phenomenon commonly referred to as global warming. The global average surface temperature increased during the 20th century by about 1°F. According to NASA scientists, the 1990s were the warmest decade of that century, and the first decade of the 21st century was another record-breaker. The years 2004, 2005, 2006, 2007 and 2008, were the warmest five years since the 1890s, with 2008 being the warmest year in over a century¹.

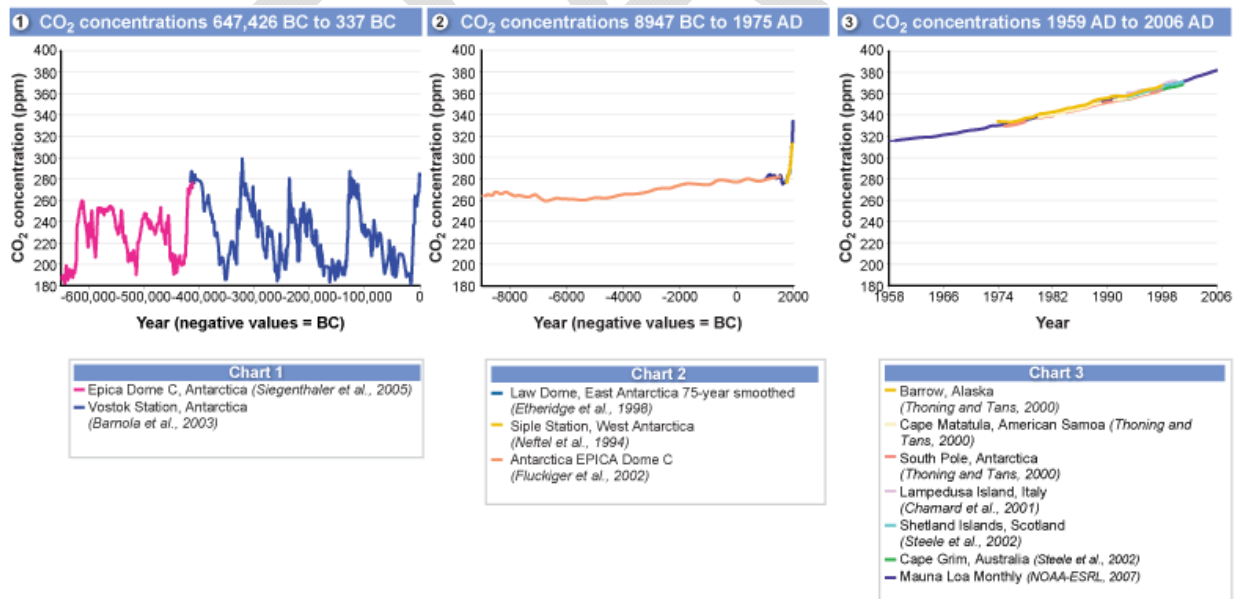
¹ 1 “Working Group 1, The Physical Science Basis of Climate Change” Intergovernmental Panel on Climate Change (IPCC) 2007”

Natural exchanges of CO₂ were in balance for many thousands of years – with living creatures, growing plants and natural events releasing CO₂, and carbon “sinks” such as the oceans absorbing carbon dioxide – leading to a relatively steady concentration of CO₂ in the atmosphere. The concentration of CO₂ in the atmosphere is now known accurately for the past 650,000 years. During this period, the concentration of CO₂ in the atmosphere varied between a low of about 180 parts per million (ppm) during ice ages, and a high of about 300 ppm during warm periods. In the past, before human industrialization, the so-called “carbon budget” was balanced.

Human-caused emissions of GHGs, primarily from the burning of fossil fuels, have busted the carbon budget. Since the beginning of the industrial era, atmospheric concentrations of CO₂ have climbed to their highest point in the last half-million years, rising from a bit under 300 p.p.m. in 1900 to over 380 p.p.m. today, and rising at about 2 p.p.m. per year. The increases in global average temperature we’re seeing today are the result of human-caused increases in atmospheric greenhouse gases, coming on top of a natural trend of peaking CO₂, which have heightened the greenhouse effect well beyond its natural level. We’re moving off the charts, performing a one-shot, uncontrolled experiment with the only Earth we have. The graphs shown in Figure (1-2) show the variation in CO₂ concentrations over time.

Figure 1-2

Atmospheric Concentrations of Greenhouse Gases in Geologic Time



Source: EPA Climate Change Website

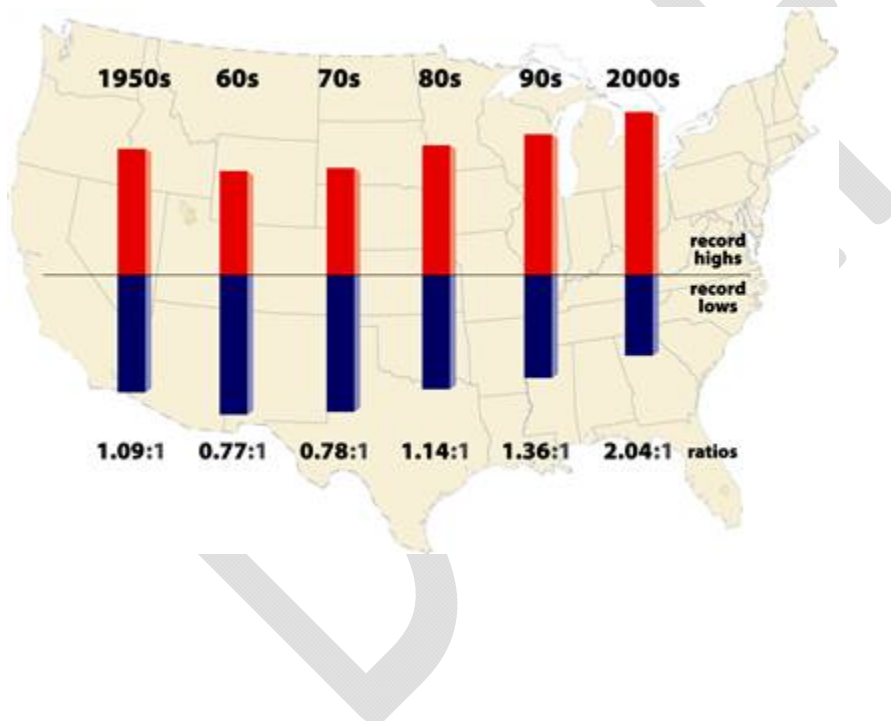
Scientific Facts and Projections:

- The atmospheric concentration of carbon dioxide (CO₂) during the last two decades has increased at the rate of 0.4% every year.
- Current CO₂ concentrations are higher than they have been in the last 420,000 years, and according to some research, the last 20 million years.
- About three-quarters of the CO₂ emissions produced by human activity during the past 20 years are due to the burning of fossil fuels.

Source: The Intergovernmental Panel on Climate Change

Figure (1-3) demonstrates the record rise in temperature that has occurred in the later half of the 20th century.

Figure 1-3 Record Highs Compared to Record Lows



The climate and the atmosphere do not react in a linear fashion to increased greenhouse gases. That is to say that you cannot simply predict the specific degree of warming that each ton of CO₂ emitted from a power plant or a vehicle’s tailpipe will cause. The Earth’s climate has a number of feedback loops and tipping points that scientists fear will accelerate global warming beyond the rate at which it is currently occurring. For example, as CO₂ emissions have increased in recent human history, the oceans have been absorbing a significant portion of these gases, but as the oceans become more permeated with CO₂, scientists anticipate they will reach a saturation point, after which each ton of anthropogenically

emitted CO₂ will have a more substantial impact.² Another example of this compounding can be found in the polar ice caps. Ice is highly reflective and acts effectively like a giant mirror, reflecting the sun's rays back into space. As the planet warms and some of this ice melts away, a darker land or ocean surface is revealed. This darker surface tends to absorb more heat, accelerating the speed at which the planet warms with each ton of greenhouse gas emitted. As these examples illustrate, the stakes are high, and there is no time to lose in the fight against global warming.

B. Effects & Impacts of Climate Change

Global Impacts

In addition to causing an increase in average global surface temperature, rising levels of GHG Emissions have a destabilizing effect on a number of different micro-climates, conditions and systems. According to the Intergovernmental Panel on Climate Change, surface temperatures are on course to increase by between 2.5 and 10.5°F by the year 2100, with regions in the northern parts of North America and Asia heating by 40% above the mean increase.³ The increase in the temperature of the oceans is projected to accelerate the water cycle, thereby increasing the severity and rate of both storms and drought, which, along with decreased snow pack, could disrupt ecosystems, agricultural systems and water supplies.

Snow cover has decreased by 10% in the last forty years. Average sea levels have raised between 1/3 and 2/3 of a foot over the course of the 20th century and are projected to rise by at least another 1/3 of a foot and up to almost three feet by the year 2100. These coastal infringements on such a large scale could lead to not only significant environmental and ecosystem disturbances, but also major population displacement and economic upheaval.⁴

Local Impacts:

While climate change is a global problem influenced by an array of interrelated factors, climate change is also a local problem with serious impacts foreseen for California, the Central Valley and nearby areas such as Bay Area and the Sierras and City of West Sacramento itself.

Sea level rise: According to the Union of Concerned Scientists, the sea level in the State of California is expected to rise up to 12 inches of the next hundred years. The Pew Center on Climate Change has reported that this would result in the erosion of beaches, bay shores and river deltas, marshes and

² Intergovernmental Panel on Climate Change (IPCC) Third Assessment Report: "Climate Change 2001: The Scientific Basis."

³ Intergovernmental Panel on Climate Change (IPCC) Third Assessment Report: "Climate Change 2001: The Scientific Basis."

⁴ Intergovernmental Panel on Climate Change (IPCC) Third Assessment Report: "Climate Change 2001: The Scientific Basis."

wetlands and increased salinity of estuaries, marshes, rivers and aquifers.⁵ This increased salinity has the potential to damage or destroy crops in low-lying farmlands. Infrastructure at or near sea level, such as harbors, bridges, roads and even the San Francisco International and Oakland International Airports are at risk of damage and destruction.

The San Francisco Bay Area Conservation Commission has modeled the impact of a sea level rise of 3 feet (approx 1 meter) on the San Francisco Bay Area. As shown in Figure (2), areas such as the Oakland Airport would be under water as well parts of Alameda, San Leandro, Hayward, Union City, Fremont and Newark, including sections of Interstate 880.

Figure (1-4) San Francisco Bay Area Land areas Affected by a 1-meter Sea Level Rise



Source: San Francisco Bay Area Conservation Commission

Natural disasters: Climate models predict a 4°F temperature increase in the next 20 to 40 years, with an increase in the number of long dry spells, as well as a 20-30% increase in precipitation in the spring and fall. More frequent and heavier precipitation will cause flooding and mudslides, which would incur considerable costs in damages to property, infrastructure and even human life. Heavy rains during the winter of 2005 offer a glimpse of the potential costly and disruptive effects of such precipitation.

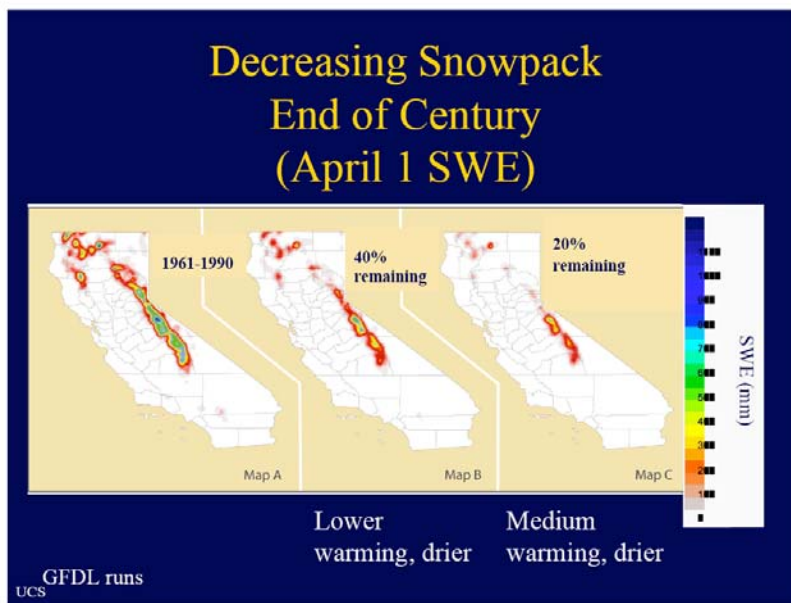
⁵ Neumann, James E. for the Pew Center on Global Climate Change. "Sea Level Rise & Global Climate Change: A Review of Impacts to the US Coasts." February 2000.

In addition, the increase of wildfires due to continued dry periods and high temperatures is another expected impact of continued climate change. In these conditions, fires burn hotter and spread faster. During 2003, there were 14 reported fires in California which were enhanced due to Santa Ana winds and very low levels of humidity. The estimated damage costs were over \$2 Million.

Impacts on water: Water quality and quantity are also at risk as a result of changing temperatures. With warmer average temperatures, more winter precipitation will fall in the form of rain instead of snow, shortening the winter snowfall season and accelerating the rate at which the snowpack melts in the spring. Not only does such snow melt increase the threat for spring flooding, it will decrease the Sierras' capacity as a natural water tower, resulting in decreased water availability for agricultural irrigation, hydro-electric generation and the general needs of a growing population.

The decrease in snow-pack is particularly relevant in the State of California and the Sacramento, as the Sierra snow-pack provides approximately 80% of California's annual water supply, and it is the origin of the American River, the primary source of water for the Sacramento regional water system. Figure (3) was provided by the Union of Concern Scientists for the California Climate Action Team Report (2006).

Figure (1-5) Decreasing Snowpack in California



Source: Union of Concern Scientists

Impacts on plants and vegetation: Native plants and animals are also at risk as temperatures rise. Scientists are reporting more species moving to higher elevations or more northerly latitudes in response. Increased temperatures also provide a foothold for invasive species of weeds, insects and

other threats to native species. The increased flow and salinity of water resources could also seriously affect the food web and mating conditions for fish that are of both of economic and recreational interest to residents. In addition, the natural cycle of plant’s flowering and pollination, as well as the temperature conditions necessary for a thriving locally adapted agriculture could be affected, with perennial crops such as grapes taking years to recover.

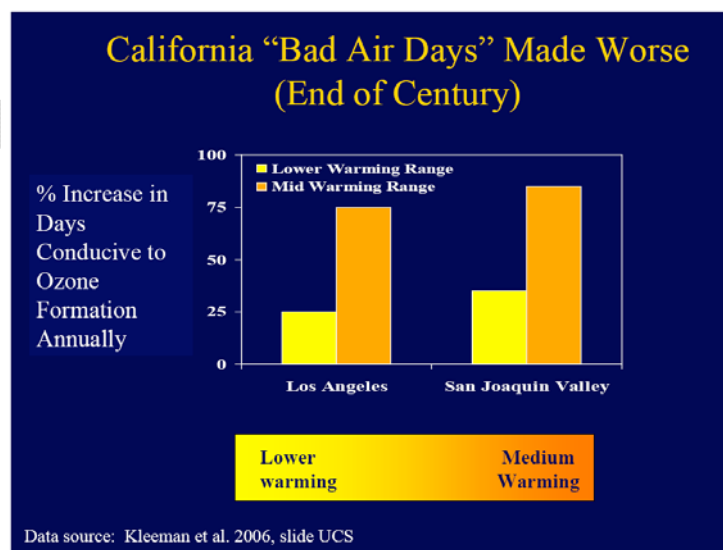
In California, the impacts of climate change on agriculture are estimated to be \$30 billion by the Farm Bureau, mostly due to changes in chill hours required per year for cash crops.

Public health impact: Warming temperatures and increased precipitation can also encourage mosquito-breeding, thus engendering diseases that come with mosquitoes, such as the West Nile Virus, a disease of growing concern in our region. Heat waves are also expected to have a major impact on public health and be a determinant factor of mortality. According to the IPCC (2004), the summer mortality rates will double by half by 2050 due to hot weather episodes.

Increased temperatures also pose a risk to human health when coupled with high concentrations of ground-level ozone and other air pollutants, which may lead to increased rates of asthma and other pulmonary diseases. Furthermore, anticipated increases in the number and severity of hot days place significant portions of the population, particularly the elderly, young, those already sick, and people who work outdoors, at risk for heat-stroke.

The incidence of bad air days in California’s urban areas has increased, mostly in hot summer days (see Figure (1-6)) (Source: Union of Concern Scientists). On long, hot, stagnant days, ground level ozone can build up to levels that violate federal and state health-based standards. In the summer of 2006, the Sacramento Air Quality Management District (SAQMD) registered 15 Spare the Air days and exceeded the California 1-hour standard for ozone (set at 90 ppb) 43 times.

Figure (1-6) California Bad Air days



Given that climate change has local repercussions and effects on weather, water resources, ecosystems, public health, infrastructural stability and economic vitality, local governments have a vested interest in mitigating the amount of greenhouse gases being produced by their communities.

C. Action Being Taken on Climate Change

International Action

As evidence of climate change has mounted, groups at the international, federal, state and local level have responded with ways to confront the impending threat. The United Nations Framework Convention on Climate Change (UNFCCC) leads international efforts to investigate and combat climate change. Recognizing the problem of potential global climate change, the World Meteorological Organization (WMO) and the United Nations Environment Programme (UNEP) established the Intergovernmental Panel on Climate Change (IPCC) in 1988 to assess on a comprehensive, objective, open and transparent basis the scientific, technical and socio-economic information relevant to understanding the scientific basis of risk associated with human-induced climate change, its potential impacts and options for adaptation and mitigation, releasing its most recent assessment in 2007.⁶

In 1997, 10,000 international delegates, observers and journalists gathered in Kyoto, Japan to participate in the drafting and adoption of the Kyoto Protocol, requiring industrialized nations to reduce their collective greenhouse gas emissions 5.2% below 1990 levels. As of January 2007, 162 countries have ratified the Protocol, with the United States and Australia most notably absent from the list. Additionally, since 1995 the annual Conference of the Parties (COP) has met to discuss action and implementation to combat climate change, with the most recent COP, COP-12, being held in Nairobi in 2006.

State and Federal Action

Though adequate attention and action related to combating climate change has been lacking at the federal level, California has taken significant steps at the state level. California has been leading the charge on combating climate change through legislation:

Senate Bill 1078 Sher, 2002 – Established a Renewable Portfolio Standard requiring electricity providers to increase purchases of renewable energy resources by 1% per year until they have attained a portfolio of 20% renewable resources.

⁶ Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report: “Climate Change 2007”
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Assembly Bill 1493 Pavley, 2002 – Requires the State Air Resources Board to develop and adopt regulations that achieve the maximum feasible reduction of greenhouse gases from vehicles primarily used for non-commercial transportation by January 2005.

Senate Bill 1771 Sher, 2000 – Requires the California Energy Commission (CEC) to prepare an inventory of the state’s greenhouse gas emissions, to study data on global climate change, and to provide government agencies and businesses with information on the costs and methods for reducing greenhouse gases. It also established the California Climate Action Registry to serve as a certifying agency for companies and local governments to quantify and register their greenhouse gas emissions for possible future trading systems.

AB 32 Núñez & Pavley, 2006 – Institutes a mandatory limit on greenhouse gas emissions -- reducing emissions in California to 1990 levels by the year 2020, or 25% below forecasted levels. The bill also directs the California Air Resources Board (CARB) to establish a mandatory reporting system to track and monitor emission levels and requires CARB to develop various compliance options and enforcement mechanisms.

Senate Bill B 97 Dutton, 2007 – Requires the Governor’s Office of Planning and Research (OPR) to develop guidelines for the analysis and mitigation of GHG emissions in CEQA documents. Local governments will be required to comply with those guidelines in the preparation of locally required CEQA documents.

On June 1, 2005, Governor Schwarzenegger signed Executive Order #S-3-05 establishing a greenhouse gas reduction target of reducing emissions to 2000 levels by 2010, to 1990 levels by 2020 and 80 percent below 1990 levels by 2050. In April 2006, the California Climate Action Team released its Report to Governor Schwarzenegger and the State Legislature, outlining recommendations and strategies to achieve those reductions.

Local Action

A great deal of work is being done at the local level on climate change as well. ICLEI—Local Governments for Sustainability has been a leader both internationally and domestically for more than ten years, representing over 770 local governments around the world. ICLEI was launched in the United States in 1995 and has grown to more than 230 cities and counties providing national leadership on climate protection and sustainable development. In June 2006, ICLEI launched the California Local Government Climate Task Force as a formal mechanism to provide ongoing input and collaboration into the State of California’s climate action process. ICLEI also works in conjunction with the U.S. Conference of Mayors to track progress and implementation of the U.S. Mayors Climate Protection Agreement, launched in 2005, which more than 376 mayors have signed to date pledging to meet or beat the Kyoto Protocol emissions reduction target in their own communities. By the end of 2008, Sacramento area mayors from Sacramento, Rancho Cordoba, and West Sacramento have signed the U.S. Mayors Climate Protection Agreement.

As pointed out from the paragraphs above, there are ongoing actions to address climate change at the local, statewide, national and international levels. Figure (1-7) summarizes the resources that local jurisdictions can use to address and analyze climate change and GHG emissions.

Figure (1-7) Climate Change and GHG Analysis Resources.

Climate Change Resources	
International	
ICLEI	www.iclei.org
Intergovernmental Panel on Climate Change	www.ipcc.ch
Pew Center on Global Climate Change	www.pewclimate.org
United Nations Framework Convention on Climate Change	unfccc.int
World Research Institute	www.wri.org
Federal	
U.S. EPA Climate Change	www.climatechange.ca.gov
Department of Energy, Energy Information Administration	www.eia.gov
Regional	
Western Climate Initiative	www.westernclimateinitiative.org
State	
California Air Resources Board	www.arb.ca.gov
California Climate Action Registry	www.climateregistry.org
California Climate Change Portal	www.climatechange.ca.gov
California Energy Commission	www.energy.ca.gov
California Integrated Waste Management Board	www.ciwmb.ca.gov
Local	
Association of Bay Area Governments	www.abag.ca.gov
Bay Area Air Quality Management District	www.baaqmd.gov
City of Hayward	www.ci.hayward.ca.us
Metropolitan Transit Commission	www.mtc.ca.gov
Stopwate.org	stopwaste.org

Climate Protection Efforts by the City of West Sacramento

Beginning in 2007, the City Council of West Sacramento has identified a Green and Sustainable Community Strategy as a high priority on the City's Policy Agenda. The Policy Agenda identifies the top dozen or so priority issues where the Council wishes to see progress. The City staff has formed a multi-departmental Green and Sustainability Team which is working on sustainability efforts. The City has completed both municipal and community inventories which are presented in this document. In November of 2008, the Green Team presented to the City Council a list of existing, near term proposed and longer term proposed activities and actions to implement a Sustainability Strategy. Those actions cover the full range of departments from avoiding operation of the water treatment plant at peak

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electricity demand hours, preparation of a Transportation Management Plan with incentives for City Hall, development of a green preference purchasing policy, purchase of hybrid pool cars at City Hall, drought tolerant landscaping at City Parks and development of a computerized central controller, development of a bike barn at City Hall with pool bikes for use by City Employees while at work, construction of a new community center to a LEED Silver standards, and other efforts which will be discussed in more depth later in this document. The philosophy blessed by the Council was that the City organization should lead by example in sustainability efforts, and then work with the community to bring it along.

The City of West Sacramento will use the CEQA review process in compliance with State CEQA Guidelines to analyze and mitigate GHG emissions in new development projects. This draft Climate Action Plan complies with the criteria listed in CEQA Guidelines Section 15183.5 which provides guidance on what should be included in a qualified Climate Action Plan. Adoption of this Climate Action Plan will allow streamlining of CEQA review of development projects in regards to GHG emission impacts.

The following Chapter will present Greenhouse Gas Inventories for the West Sacramento City Organization and Community and discuss reduction targets for both.

Chapter 2- West Sacramento Contribution to Climate Change

2.1. Emissions Inventory

A. Reasoning, Methodology & Model

The City of West Sacramento inventory was conducted by City staff. The purpose of the baseline emissions inventory is to determine the levels of greenhouse gas emissions that West Sacramento emitted in its base year, 2007.

ICLEI's Cities for Climate Protection inventory methodology allows local governments to systematically estimate and track greenhouse gas emissions from energy and waste related activities at the community-wide scale and those resulting directly from municipal operations. The municipal operations inventory is a subset of and included in the community-scale inventory. The municipal inventory generally followed the ICLIE Local Government Operations Protocol. While the Protocol was formally published and approved by the Air Resources Board in September 2008 and the inventory was already completed, draft descriptions of the Protocol were available and were followed.

Once completed, these inventories provide the basis for creating an emissions forecast and reduction target, and enable the quantification of emissions reductions associated with implemented and proposed measures.

1. ICLEI's Emissions Analysis Software

To facilitate local government efforts to identify and reduce greenhouse gas emissions, ICLEI developed the Clean Air and Climate Protection (CACP) software package with Torrie Smith Associates. This software estimates emissions derived from energy consumption and waste generation within a community. The CACP software determines emissions using specific factors (or coefficients) according to the type of fuel used. Emissions are aggregated and reported in terms of carbon dioxide equivalent units, or CO₂e. Converting all emissions to carbon dioxide equivalent units allows for the consideration of different greenhouse gases in comparable terms. For example, methane is twenty-one times more powerful than carbon dioxide in its capacity to trap heat, so the model converts one ton of methane emissions to 21 tons of CO₂e.

The emissions coefficients and methodology employed by the software are consistent with national and international inventory standards established by the Intergovernmental Panel on Climate Change (1996 Revised IPCC Guidelines for the Preparation of National GHG Emissions Inventories), the U.S. Voluntary Greenhouse Gas Reporting Guidelines (EIA form 1605), and, for emissions generated from solid waste, the U.S. EPA's Waste Reduction Model (WARM).

The CACP software has been and continues to be used by over 250 U.S. local governments to reduce their greenhouse gas emissions. However, it is worth noting that, although the software provides West Sacramento with a sophisticated and useful tool, calculating emissions from energy use with precision is

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difficult. The model depends upon numerous assumptions, and it is limited by the quantity and quality of available data. With this in mind, it is useful to think of any specific number generated by the model as an approximation rather than an exact value.

2. Inventory Data Sources and Creation Process

An inventory of greenhouse gas emissions requires the collection of information from a variety of sectors and sources. For community electricity and natural gas data, staff consulted with Pacific Gas & Electric Company (PG&E). The City of West Sacramento's Traffic Model served as the source of transportation data. Solid waste data was gathered from Waste Management, Inc., City of West Sacramento staff from many departments was instrumental in providing data on municipal operations.

These data were entered into the software to create a community emissions inventory and a municipal emissions inventory. The community inventory represents all the energy used and waste produced within West Sacramento and its contribution to greenhouse gas emissions. The municipal inventory is a subset of the community inventory, and includes emissions derived from internal government operations.

There are two main reasons for completing separate emissions inventories for community and municipal operations. First, the government is committed to action on climate change, and has a higher degree of control to achieve reductions in its own municipal emissions than those created by the community at large. Second, by proactively reducing emissions generated by its own activities, the City of West Sacramento government takes a visible leadership role in the effort to address climate change. This is important for inspiring local action in City of West Sacramento, as well as for inspiring other communities.

City of West Sacramento's inventory is based on the year 2007. When calculating City of West Sacramento's emissions inventory, all energy consumed in City of West Sacramento was included. This means that, even though the electricity used by City of West Sacramento residents is produced elsewhere, this energy and emissions associated with it appears in City of West Sacramento's inventory. The decision to calculate emissions in this manner reflects the general philosophy that a community should take full ownership of the impacts associated with its energy consumption, regardless of whether the generation occurs within the geographical limits of the community.

B City Organization GHG Inventory results

Baseline Inventory Methodology

To calculate the GHG emissions from City operations, staff gleaned information about electricity and gas used in City facilities; water production and refuse and recycling generated within City operations. In addition the amount of fuel used in City vehicles as well as commute habits of City employees was inventoried. To establish a uniform baseline a twelve month period was used and any data available for less than a twelve month period was extrapolated to construct time-line comparisons.

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The Local Government Protocol discusses the inventory of Scope 1 emissions (direct emissions for City facilities such as City vehicles), Scope 2 emissions (emissions from electricity use by City facilities even though the emissions occur at the power plant), and Scope 3 emissions (emissions not under direct City control but related to the City operations such as employee commute emissions and the emissions from the manufacture of supplies used by the City). All Scope 1 and 2 emissions have been calculated and included in the municipal inventory. Of Scope 3 emissions, only employee commute emissions have been included.

Emissions from the Port of West Sacramento are not included in the Municipal Inventory. Technically the Port emissions should be included because the City Council of the City of West Sacramento has a controlling majority of the Board of the Port District. The Port is its own distinct operation with a very specialized and complicated emissions profile. As of Summer of 2010, the Port is in the process of preparing its own GHG inventory and eventually will prepare a distinct Climate Action Plan. In future iterations of this plan, the two may be combined.

Our preliminary findings, depicted in the following chart(s), show both the CO₂e tonnes by major categories followed by the relationship by percentage of those categories to the total City CO₂e use. Total Municipal CO₂e emissions were 18,801 tonnes.

Figure (2-1) CO₂e metric tonnes per Category.

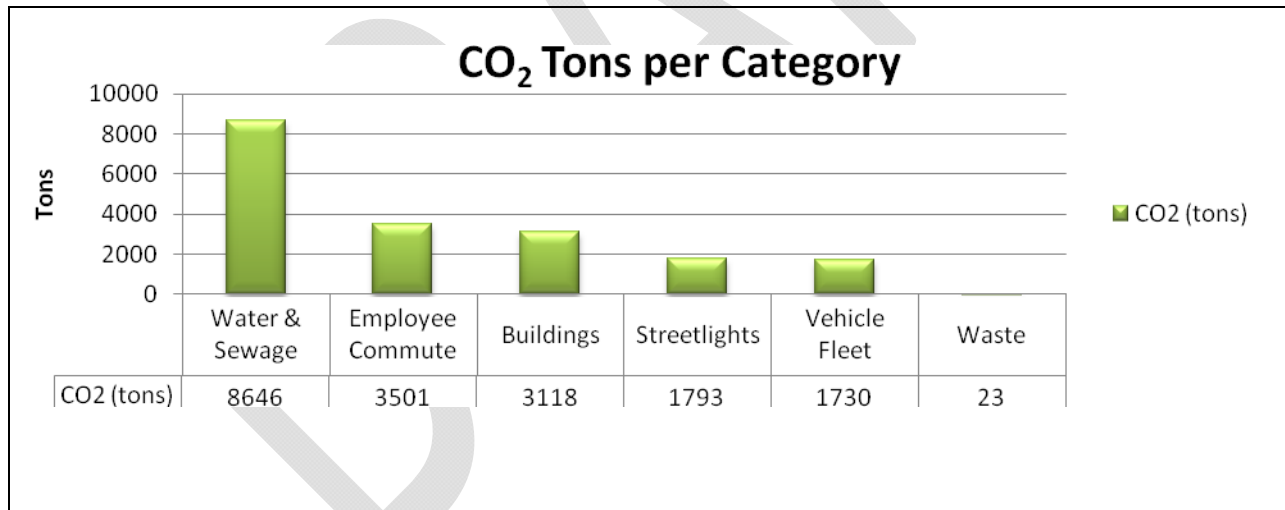
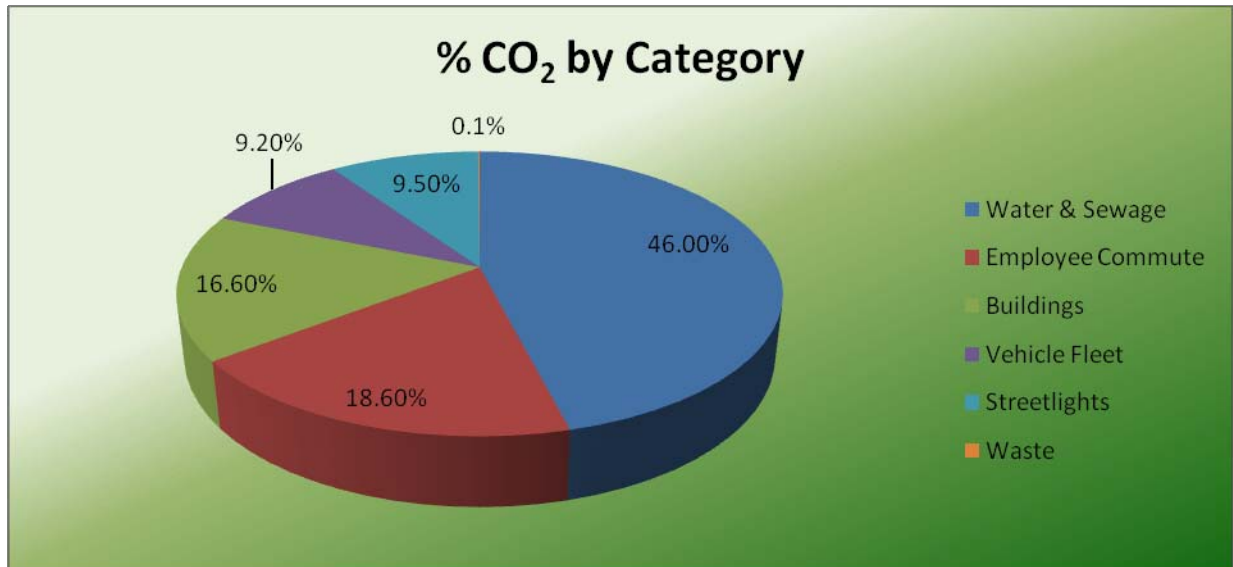


Figure 2-2



Water/Sewage

Energy used in the delivery of water to the community and the treatment of wastewater is by far the City’s largest operational contributor to CO₂e emissions. While this operation could also be considered as part of the community inventory, it is included in this category as a major operation of city service. Water and sewage operations directly relate to the needs of the community and are a necessary operation in which service; therefore, emissions have the potential to increase with the population and/or habits of the population. The calculations for the water and sewage category were obtained using information from the PG& E bills for the same time period. The building at the water treatment plant itself is not included in the building inventory and is instead included in this category. A significant change in City operations is also the waste water treatment plant which was converted to the Lower Northwest Interceptor in October 2007 and therefore comparisons for future years will show a marked reduction as that facility goes off-line. Below is a breakdown of some common water/sewage utilities for the one year period reviewed:

Table (2-1) Water/Sewer Utilities

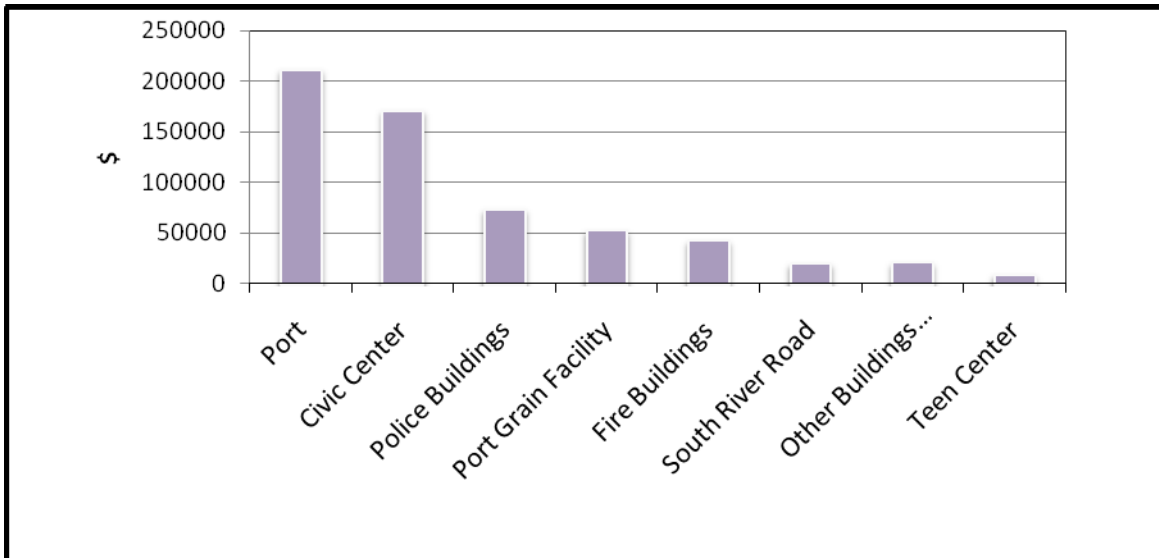
FACILITY	kWh	Cost	CO ₂ (tons)
Bryte Ave Sewer Pump Station	296,800	\$40,614	223
Bryte Bend Water Treatment Plant	5,458,658	\$574,062	4112
Iron Triangle Sewer Pump	4014	\$718	3
Pump Station-Stone Blvd	125,560	\$17,250	94
Field Irrigation Pump	6465	\$ 1290	5

Buildings

Information in this category came from PG&E bills that were aggregated per meter for one year September 1, 2006-August, 31, 2007. The ICLEI database allows entries for electricity, gas and costs associated. The total cost for this time period was well over \$588,000. Below is a chart of the costs

associated with our current buildings for utilities through PG & E. The significant contributors were called out, while the *Other Buildings*, category is a grouping of smaller, limited electrical or gas users. The South River Road facility does not include the wastewater treatment facility.

Figure (2-3) Energy Costs per Building



Employee Commute

Staff surveyed employees and their commute patterns in December 2007. The response rate for this survey was over 95%. Employees that drive City issued vehicles were calculated in the Vehicle Fleet Category. The survey information was collected from a representative in each department and employees were asked:

- Weekly average commute (to/from work and typical meetings resulting from work if a personal vehicle was used)
- Type of Vehicle Driven (compact, SUV, heavy truck, compact, etc)

The information was then aggregated by vehicle type and entered into the ICLEI Database which calculated that an 18.6% contribution to overall CO₂ is from employee commute - our second largest category.

The information below is based upon the answers of 346 employees:

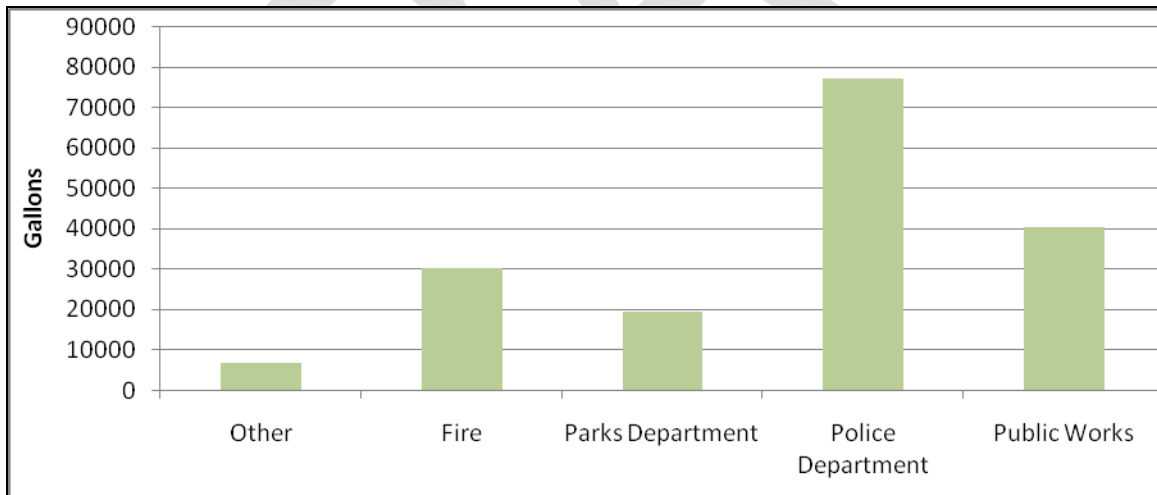
- 3,491,640 annual miles are driven by employees in their personal vehicles
- Average of 10,091 miles per employee annually or 201 miles/week
- Vehicle Type
 - 57 Compact Cars (16%)
 - 12 Full Size Cars (3%)
 - 82 Midsize Vehicles (24%)
 - 42 Heavy Trucks (12%)
 - 4 Passenger Vehicles (1%)

- 7 Motorcycles/Other (2%)
- 132 SUV/Light truck/Pick-up (38%)
- 10 use alternative transportation as sole source (3%)
- Mileage Driven Weekly
 - < 100 miles 156 employees
 - 101-200 miles 74 employees
 - 201-300 miles 40 employees
 - 301-400 miles 30 employees
 - 401-500 miles 10 employees
 - 501-600 miles 8 employees
 - 601-700 miles 9 employees
 - 701-800 miles 7 employees
 - 800 + miles 12 employees

Vehicle Fleet

Vehicle Fleet information was gleaned from fuel used through City-issued fuel cards allocated to registered vehicles.

Figure (2-4) Gasoline Use By Department



Streetlights

The CO₂e produced from streetlights in West Sacramento for a one year period of time is 1,793 tons. The category for streetlights contains streetlights, street signals, and flashing beacons. Staff is working on an inventory of number of streetlights in West Sacramento, type of bulb utilized, typical wattage, hours of operations, etc.

Waste

The amount of waste that is derived from City operations was determined based on the annual volume of waster collected at all facilities. That data was then used to convert the volume of tons based on industry standards and as established in baselines reported to the California Integrated Waste Management Board. An estimate of the type of waste: paper products, food, organic materials, etc was determined using the standards supported in required annual reports. Hazardous waste was excluded from calculations.

Total

The total City of West Sacramento Municipal Organization GHG emissions for 2007 was 18,801 metric tonnes of CO₂e.

DRAFT

C Community GHG Inventory results

This section discusses the methodology and results of the City of West Sacramento Community Greenhouse Gas Emissions Inventory. In most cases, the methodology followed is identical to the methodology used by ICF Jones and Stokes in the preparation of the “Greenhouse Gas Emissions Inventory for Incorporated and Unincorporated Sacramento County”, February 2009. This appears to be a fine and scholarly, albeit, lengthy, document. As it is an inventory for the unincorporated County as well as each of the Cities in Sacramento County, it is by necessity more complicated. For a full and detailed explanation of greenhouse gas inventory methodology, this document is recommended. The approach of this methodology write up is to be more focused, concise and will assume somewhat more knowledge by the reader of the GHG Emissions inventory process.

SUMMARY

The Greenhouse Gas Inventory is based on the Clean Air and Climate Protection Software (CACP2009), made available by the International Council for Local Environmental Initiatives (ICLIE – Local Government for Sustainability). The City of West Sacramento is member of ICLIE. The software calculates Greenhouse Gas Emissions both for organizations, such as the City operations, and that of communities as a whole based on a checklist of data inputs.

The Community Sectors are broken out by Residential Energy Use, Commercial Industrial Energy Use, Industrial (non-grid energy), Transportation, Waste and Other. The information and methodology for each specific sector is shown below, followed by chart(s), showing both the CO₂ tons by major categories followed by the relationship by percentage of those categories to the total West Sacramento CO₂ generation.

RESIDENTIAL EMISSIONS

The CACP software calculates emissions from residential uses based on Electrical and Natural Gas use at residences on an annual basis. The relationship between electrical use and GHG emissions is unique to the sources used to generate the electricity. It is specific to each utility provider and can change from year to year and alternate power sources are used. A utility receiving much of its supply from windmill farms or hydroelectric will have a much lower carbon foot print from a utility receiving most of its power from coal or oil based generation. The CACP2009 software comes loaded with the specific parameters of most major utilities by year, including PG&E for 2007.

Electricity and Natural Gas

All domestic Electricity and Natural Gas is supplied in the City of West Sacramento by the Pacific Gas and Electric Company (PG&E). PG&E was contacted and supplied gross annual usage numbers for West Sacramento residential customers for 2003 through 2007 for both Electricity and Natural Gas. The 2007 year was used as the base year for this inventory.

Non-governmental, residential electrical use for 2007 was 118,000,000 Kilowatt Hours (KWH). County, residential electrical use (Yolo County Housing Authority units located in West Sacramento) was 86,760 KWH.

Non-governmental, residential natural gas use for 2007 was 6,762,573 Therms. County residential natural gas use was 7,846 Therms.

PG&E also provided calculated GHG emissions for each category. These numbers, happily, were identical to the emissions calculated by CACP from the usage data.

Total metric tonnes of CO₂e from residential electrically use was 24,388 metric tonnes. Total metric tonnes of CO₂e from residential natural gas use were 35,939.

Wood and Other Solid Fuel Burning

Wood burning whether cord wood or pellets generates CH₄ and NO_x. There is not a direct measure of the number of fire places, wood burning stoves or pellet stoves in West Sacramento. The assumption is therefore made that West Sacramento's levels are similar to Sacramento County's. The Sacramento County Metropolitan Air Quality Management District did a study in 2007 on the number of fire places, wood burning stoves, wood burning inserts and pellet stoves in Sacramento County. Table B-4 of the Sacramento Greenhouse Gas Emissions Inventory shows that all of Sacramento County generated 6,572,060 million Btu. from wood burning. The population of all of Sacramento County was 1,387,257 (Department of Finance E-4 Report). This would indicate a per capita factor of 4.73 million Btu. The 2005 population of West Sacramento was 40,303 (D of F). Using the Sacramento factor, West Sacramento's energy from wood burning would be 190,933 million Btu.

Wood burning heat generation is included in the West Sacramento GHG Inventory numbers for the sake of being conservative. The EPA considers biofuels such as wood, carbon neutral. In theory, the carbon release by burning the wood is carbon that was sequestered as the tree grew. If replacement trees are planted, the carbon from the wood burning would be again taken out of the air.

COMMERCIAL AND INDUSTRIAL EMISSIONS

As with Residential, all Electricity and Natural Gas is supplied in the City of West Sacramento by the Pacific Gas and Electric Company (PG&E). PG&E supplied gross annual usage numbers for West Sacramento Industrial and Commercial customers for 2003 though 2007 for both Electricity and Natural Gas. PG&E does not collect separate data for commercial verses industrial customers. The 2007 year was used as the base year for this inventory.

Industrial and Commercial electrical use in the City of West Sacramento for 2007 was 307,000,000 Kilowatt Hours (KWH). County non-residential electrical use in West Sacramento, (primarily the County Social Services Building on Jefferson) was 1,681,263 KWH. City of West Sacramento electrical use was 11,323,777 KWH. District electrical use (Washington Unified School District and Reclamation District 900 and 811) was 612,693 KWH.

Industrial Commercial natural gas use in the City of West Sacramento for 2007 was 5,054,439 Therms. County non-residential natural gas use was 29,049 Therms. The City's natural gas use was 223,318 Therms. District gas use was 114,468

PG&E also provided calculated GHG emissions for each category. These numbers, again, were identical to the emissions calculated by CACP from the usage data.

Total metric tonnes of CO₂e from non-residential electrically use was 67,781. Total metric tonnes of CO₂e from non-residential natural gas use were 28,770.

Industrial Specific Emissions (non-grid)

In addition to electrical and natural gas use from the grid and pipelines, some industrial operations have emissions from other sources. Information was obtained from the Yolo Solano Air Quality Management District regarding permitted fixed sources in West Sacramento. After a review of all permitted sources, it was determined that the only GHG emission source regulated was diesel powered emergency generators. A total of 26,020 gallons of diesel used produced 265 metric tonnes of CO₂ and 15,913 lbs of NOX.

It is entirely possible that there are other sources of GHG production from industrial processes in West Sacramento. At this time they are not regulated, nor measured by any governmental agency. Better data may be obtained in future years as cap and trade measure encourage more documentation.

TRANSPORTATION EMISSIONS

On-Road Emissions

On road emissions is one area where this inventory followed a different methodology than the Sacramento County Inventory. The Sacramento County Inventory based its calculation of Vehicle Miles Traveled (VMT) on data from Caltrans provided in the Highway Performance Monitoring System California Public Road Data. This is information which Caltrans reports to the Federal Highway Administration on an annual basis. The information is generated from road miles within each City as reported by the Cities to Caltrans, plus projections based on a limited number of traffic counts at key locations. The Vehicle Miles traveled on freeways within each jurisdiction was prorated from County wide data based on total VMT on freeways in the County and the number of miles of freeway in each jurisdiction. Even ICF Jones and Stokes noted in their methodology discussion that this was not likely to be accurate at the jurisdiction level.

After discussion with City staff and traffic consultants, it was determined that a better number could be obtained from the City's Traffic Model. Part of the output of the model is estimates of Vehicle Miles Travelled. This number is available but not commonly reported during the preparation of a traffic analysis for an Environmental Impact Report. A subroutine was written to report total Annual Vehicle Miles Travelled within the City limits broken done by freeway traffic, arterial, and collector and local road traffic. An Existing Conditions traffic run from a 2007 EIR provided the VMT input to the CACP 2009 software.

A significant advantage of the Traffic Model approach compared to the HPMS source is that the traffic model provides the potential for land use based scenario comparisons in the future.

The traffic model reported an Annual Vehicle Miles Travelled on freeways within West Sacramento City Limits of 238,725,300. The model reported an Annual Vehicle Miles Travelled on arterial and collector streets within West Sacramento of arterial streets of 92,070,000. The model reported an Annual Vehicle Miles Travelled on local and collector roads of 20,989,320.

The CACP software indicates that these trips generated a total of 208,601 tonnes of CO₂e.

Off-Road Emissions

Information on Off-Road Vehicle emissions is available by County from the Air Resources Board Offroad2009 software. The software was obtained, installed and run for Yolo County in 2007. Data is provided for a number of classes of vehicles including agricultural, oil drilling, construction, light commercial, industrial and pleasure.

Total emissions from agricultural vehicles for Yolo County were 121.2 tonnes/day CO₂e. West Sacramento had 843 acres of farmed land in 2007, .2 percent of Yolo County's total of 460,540 acres. Based on that percentage, West Sacramento's agricultural vehicle emissions were .2,424. Tonnes/day CO₂e or 88.23 tonnes annually.

There is no oil drilling in West Sacramento.

Total emissions in Yolo County from construction, light commercial, industrial and pleasure off-road vehicles were 70.62 tonnes/day CO₂e.

These emissions were then apportioned by population. West Sacramento's 46,885 population represented 23.6 % of the total Yolo County 2007 population of 198,326.

West Sacramento's apportioned share of non-agricultural off-road emissions was 16.66 tonnes/day CO₂e, or 6,066.54 tonnes annually.

AGRICULTURAL EMISSIONS

Cattle, Swine and Dairy Cows

Cattle, Swine and dairies have the potential to be significant GHG producers. The northern half of West Sacramento is essentially developed and has no remaining agricultural land. The southern half of West Sacramento has high ground water and clay soils which do not lend themselves to animal production. There are no cattle ranches, pig farms or dairies in West Sacramento.

N₂O Emissions from Fertilizers

BY 2007, most of West Sacramento's farmland had been converted to suburban or rural residential uses. Limited farming remains on properties which have been assembled for future suburban development. Crops include grapes, wheat, safflower, tomato, and squash seed. The Yolo County Agriculture City of West Sacramento Climate Action Plan Draft– August 2010

Department does not tract farmed acres by jurisdiction. The Department does, however regulate and track the application of pesticides and herbicides in preparation for crop planting. In 2007, permits were issued for pesticide and herbicide applications on 843.5 acres of land in Southport.

The Sacramento County GHG Inventory identified a conservative approach of assuming all farmed lands would receive a maximum application of synthetic fertilizer. This fertilizer produces .308 metric tonnes of N₂O per acre of application. The total N₂O estimated from West Sacramento's 843 acres of agriculture for 2007 is 259.64 metric tonnes.

WASTE EMISSIONS

Land Fill Emissions from Waste Generation in 2007

The GHG emissions from solid waste disposal for the City was provided by Waste Management, USA Waste of California, Inc., the City of West Sacramento's refuse contractor in a document "Carbon Footprint Estimate for the City of West Sacramento's Refuse Collection and Disposal Services, August 20, 2009". The report followed generally accepted procedures outlined by the California Climate Action Registry and U.S. Environmental Protection Agency.

Both emissions from waste placed in landfills and the emissions from the operation of the landfill and the Waste Management collection operation were calculated. The final result was an emission of 8,707 tonnes of CO₂e per year. The Waste Management Report also indicates that some aspects of the landfill operation, the sequestration of carbon sources within the landfill preventing carbon emissions and the use of methane as an alternative fuel to replace oil are potential sinks which could show negative emissions. Per discussions with ICLIE, these negative emissions are excluded from the emissions estimate.

HIGH GWP GHG EMISSIONS

Certain kinds of gas emissions have a much higher Global Warming Potential per quantity of gas than CO₂. These gases include hydro fluorocarbons and chlorofluorocarbons. These gases are used in refrigeration equipment and are also produced by electrical transmission and distribution equipment. There is no site, County or City specific data available on these gases, only statewide estimates.

The California Energy Commission has estimated that total High GWP GHG emissions were equivalent to 15.1 million metric tons in 2005 (California Energy Commission 2006a). California's population in 2005 was 30,504,640 (California Department of Finance E-4 Report), indicating a per capita level of .495 metric tons. It is assumed for this analysis that the per capita figure would not have changed significantly from 2005 to 2007.

Based on West Sacramento's 2007 population of 46,885 persons, the West Sacramento contribution of High GWP GHG emissions was equivalent to 23,280 metric tons of CO₂e.

DOMESTIC WASTEWATER TREATMENT AND DISCHARGE EMISSIONS

The treatment and discharge of wastewater can produce emissions of CH₄ and N₂O, both Greenhouse Gases. CH₄ is generated when microorganisms biodegrade soluble organic material in wastewater
City of West Sacramento Climate Action Plan Draft– August 2010

under anaerobic conditions. N₂O is generated during both nitrification and de-nitrification of the nitrogen present in wastewater, usually in the form of urea, ammonia and proteins (US Environmental Protection Agency 2007b)

On October 30, 2007, the City of West Sacramento connected to the Lower Northwest Sewer Interceptor pipe and all of its wastewater treatment was shifted to the Sacramento County Regional Plant in Elk Grove.

Due to a lack of site specific data, the Sacramento County Greenhouse Gas Emissions Inventory used a statewide average emissions figure developed by the Air Resources Board. These emission factors are 3.21 kg CH₄ and 0.0953 kg N₂O per person (California Air Resources Board 2008d, 2008e). Based on an end of 2007 population of 46,885 (California Dept. of Finance, E-4 Population estimates 1/1/2008), West Sacramento’s emissions were 150,500 kg CH₄ and 4465.28 kg N₂O. These numbers equate to 5,282 metric tonnes of CO₂e

TOTAL WEST SACRAMENTO EMISSIONS

The Community Sectors are broken out by Residential Energy Use, Commercial Industrial Energy Use, Industrial (non-grid energy), Transportation, Waste and Other. The following chart(s), show both the CO₂ tons by major categories followed by the relationship by percentage of those categories to the total West Sacramento CO₂ generation. Total West Sacramento Community Greenhouse Gas Emissions for 2007 was 410,682 tonnes CO₂e.

Figure 2-5 Community CO₂e tons by Sector

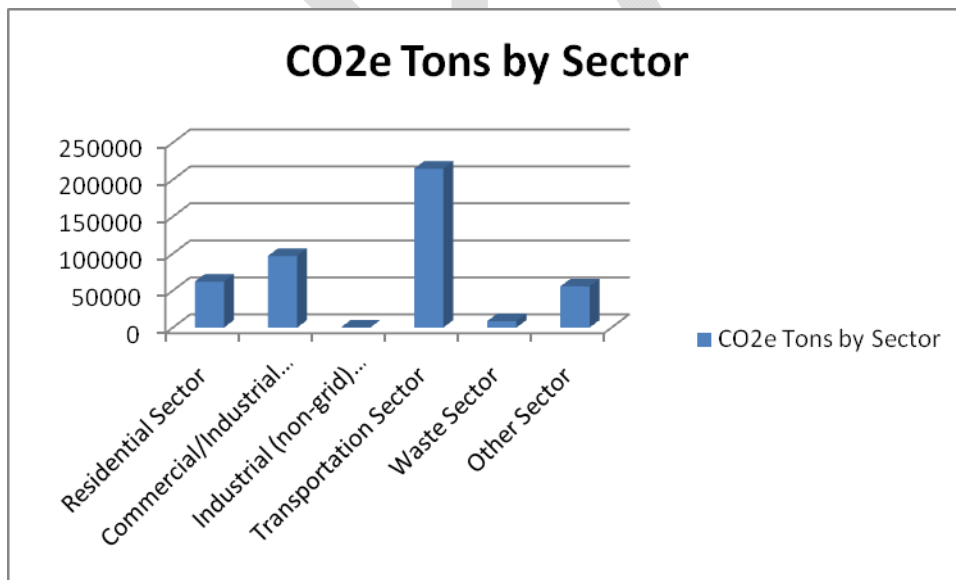
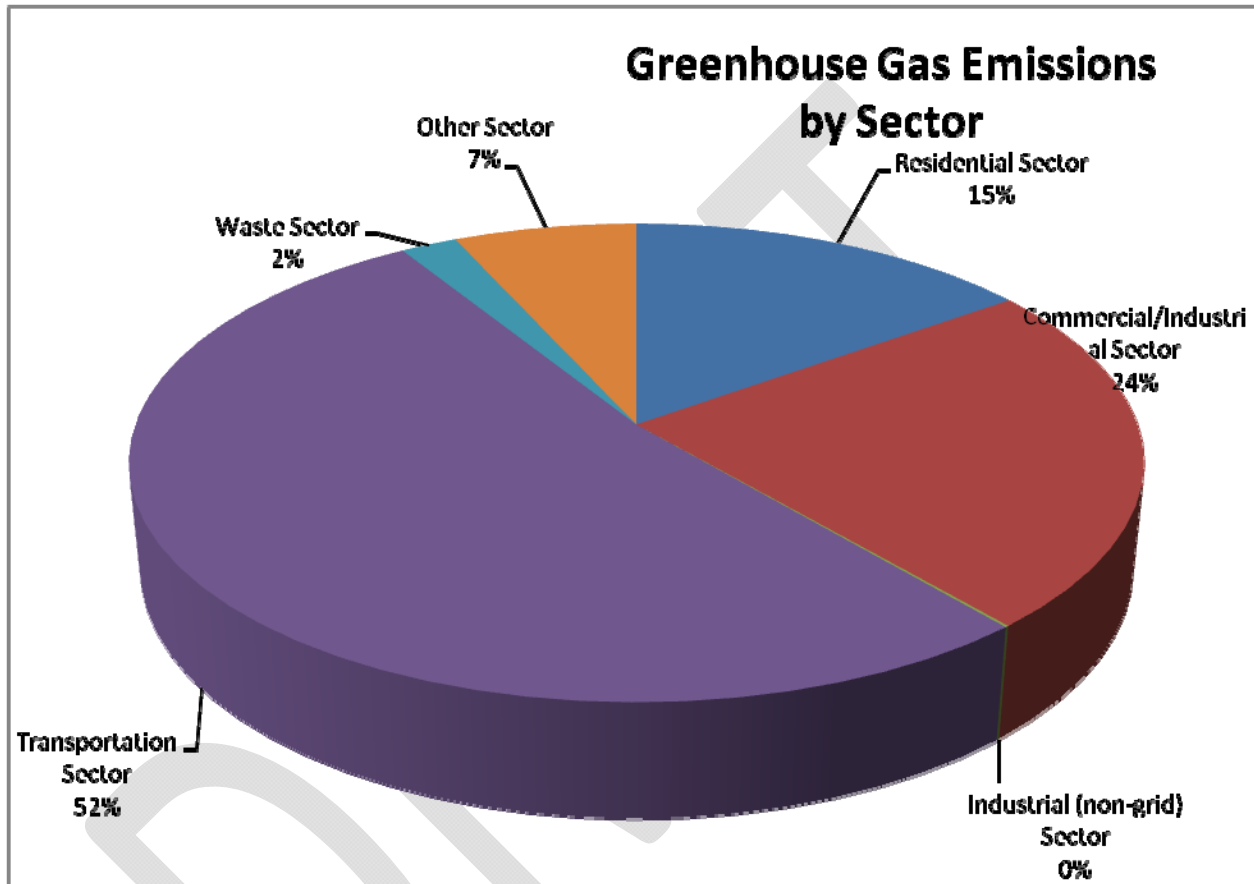


Figure 2-6
Community Greenhouse Gas Emissions by Sector



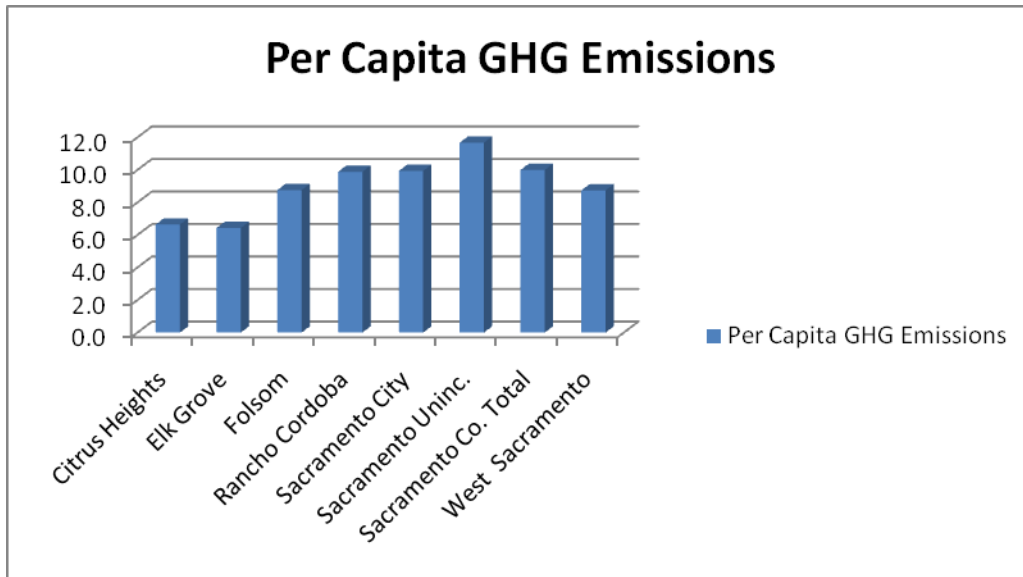
West Sacramento’s Commercial-Industrial Sector is higher than typical cities around the region. In most local cities, Commercial-Industrial is about the same as Residential. West Sacramento has an unusually large employment base compared to its residential populations, so this is not unexpected.

PER CAPITA EMISSIONS

West Sacramento is well within the range compared to other Sacramento area cities. West Sacramento per capita emissions are 8.7 tonnes of CO₂e per resident per year. The City of Sacramento per capita emissions are 9.9 tonnes per year. Cities in the region such as Citrus Heights and Elk Grove, which have City of West Sacramento Climate Action Plan Draft– August 2010

relatively smaller employment bases compared to their population, have the lowest per capita emissions at about 6.5 tonnes per year. The total incorporated and unincorporated area of Sacramento County has per capita emissions at 10 tonnes per year.

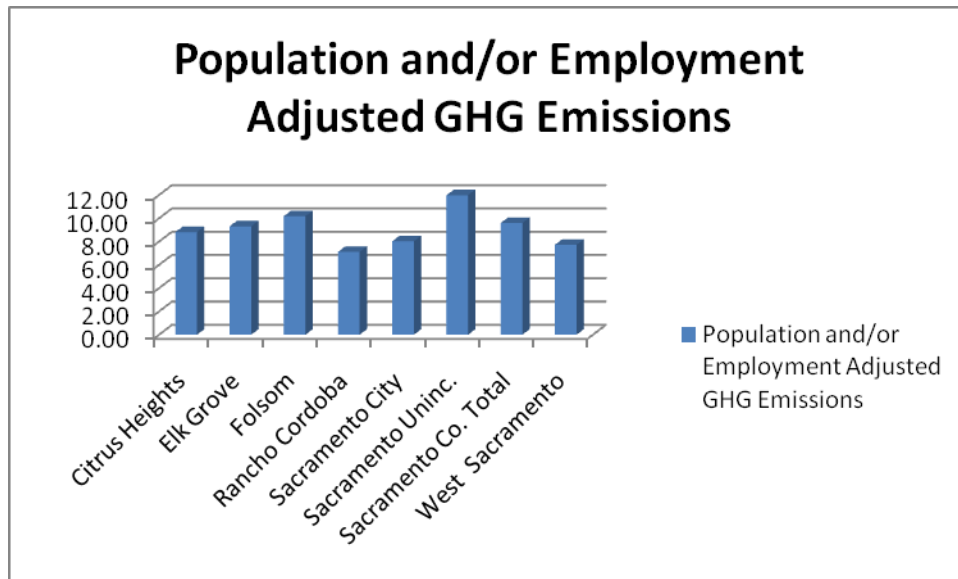
Figure (2-7) Per Capita GHG Emissions



POPULATION AND EMPLOYMENT ADJUSTED EMISSIONS

An additional analysis of emissions was prepared which divides the residential emissions by the residential population, Commercial/Industrial emissions by employment in each City and other sectors by a combination of population and employment. Taking population and employment into account, West Sacramento’s emissions drop to 7.6 metric tonnes CO²e (mt) per year compared to the City of Sacramento at 8.03 and the total incorporated and unincorporated area of Sacramento County at 9.59 per year. Using the population and employment approach, West Sacramento is actually the second lowest GHG emission city in the region, just behind Rancho Cordoba. Looking at residential emissions, West Sacramento is actually the lowest in the region at 1.32 mt per person compared to 1.76 mt for all of Sacramento County. West Sacramento is the third lowest looking at the Commercial/Industrial sector at 3.16 mt per employee. All of Sacramento County averages 3.38 mt per employee.

Figure 2-8

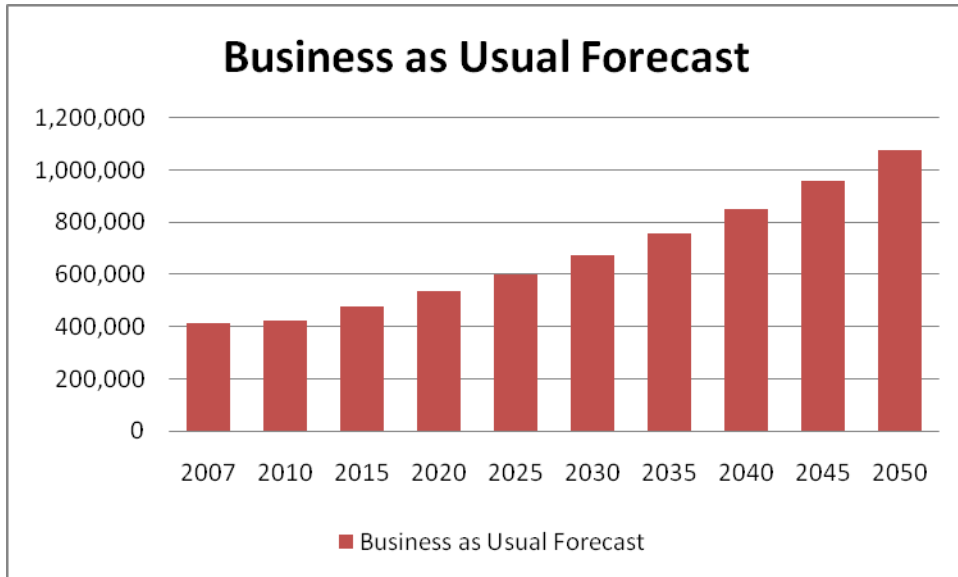


2.2 Business as Usual Forecasts

The record of the 19th and 20th Centuries has been a story of steadily increasing Greenhouse Gas emissions as populations and technologies increased. The result has been the climate change we are already seeing and accelerating change in the future. A Business as usual (BAU) approach would see continuing increases in greenhouse gas emissions as West Sacramento grows to maturity. Per capita greenhouse gas emissions in the 2007 base year for the Community of West Sacramento were 8.7 tons with a population of 47,000 and employment of 32,000. The current General Plan build out estimate is 85,000 residents and 75,000 employees. If greenhouse gas emissions continue at the current per capita rate, the build out emissions will be 739,500 tons CO₂e.

The State has set the year 2020 as the first checkpoint target year for showing reduced greenhouse gas emissions. Current population projects show West Sacramento as having a population of just over 59,000 persons by 2020. Without reductions in per capita emissions a business as usual level of greenhouse gas emissions for West Sacramento in 2020 would be 513,300 mt per year. West Sacramento expects to see a more rapid growth in employment in the City than growth in population. A forecast using a Population and/or Employment growth methodology similar to the emissions analysis above, leads to a projection of 533,726 mt CO₂e in 2020 and 851,129 mt at build out (2050).

Figure (2-9) Business as Usual Forecast



2.3 Emission targets

2.3.1. Community Targets

Greenhouse Gas emissions increased by 15% in the State from 1990 to 2005 according to the Air Resources Board.. The State of California has established a goal of returning to 1990 GHG emissions levels by 2020. In the Scoping Plan prepared by the Air Resources Board, a goal for local governments was set as a 15% reduction from current levels by 2020. Both of these goals are based on an assumed level of growth for the State of California as a whole and that most local jurisdictions will grow at that same rate.

The target level for Greenhouse Gas Emissions based on that goal is shown below:

Table (2-2) Straight Percentage Target

Target Year	Base 2007 Emissions	Reduction %	Target Level
2020	410682 t	15%	349,079 t
2050	410682 t	83%*	69,816 t

*Equivalent to 80% reduction from 1990 level.

Development in West Sacramento plays a unique role in the accomplishment of the Sacramento Regional Blue Print. West Sacramento is directly adjacent to the regions Downtown and primary jobs center. The most southern and distant portion of West Sacramento is still less than ten miles from Downtown. The West Sacramento Riverfront along the Sacramento River from the confluence with the American River to just south of the Barge Canal has the potential and is planned to accommodate 10,000 housing units of exactly the kind of high density, mixed use, transit oriented, “smart growth” development that is part of the solution to the global warming problem. A Street Car line from West Sacramento to mid-town Sacramento is currently in planning. Extensions of that starter line north and south along the riverfront would be very easily accomplished. Residents in this area could literally live car free and still have access to the most concentrated employment, retail, services and entertainment areas of the region.

Since 2000, West Sacramento has been a rapidly growing City. In 2000 the population of West Sacramento was just over 30,000. By 2007 it had reached 47,000. The Sacramento Council of Governments projects that by 2035, the population of West Sacramento will reach 81,000. Achieving that growth in West Sacramento’s central location and of the type of development described above rather than in more outlying areas at lower density is critical to the goals of the SACOG Blue Print for reducing vehicle trips and reducing the resulting GHG emissions. Clearly, the City of West Sacramento is expected to grow much faster than the State or the Sacramento Region as a whole, this level of rapid growth makes achievement of a 15% reduction from current levels much more challenging.

Recognizing that not all Cities are in exactly the same circumstance, the California Air Pollution Control Officers Association, in their “Model Policies for GHGs in General Plans” suggested an alternative goal. The alternative goal is to achieve a 30% reduction from “business as usual”. “Business as usual” is the GHG emissions which would result from growth occurring with the same emissions levels per capita as the base year. The thirty percent reduction from “Business as Usual” seems the most appropriate for West Sacramento, given its expected population growth leading up to 2020. This approach would imply a 2050 target of a 91.5 % reduction from the base year.

Table (2-3) Business as Usual Target

Target Year	Projected BAU Emissions	Reduction %	Target Level	Reductions Needed
2020	533,726 t	30%	373,609 t	160,117 t
2050	1,075,462 t	91.5%	91,414 t	984,047 t

Impact of Vehicle Fleet Fuel Economy and Renewable Energy Generation Legislation

The above Business As Usual projection is based on the assumption that per capita and per employee emission rates will be unchanged over the projection period. Existing recently approved legislation at the Federal and State level make it likely that transportation and energy generation carbon emission rates will in fact decline over the period.

The Energy Independence, Clean Air and Climate Security Act of 2007, passed on June 2007, increased corporate average fuel economy standards for automobiles and light trucks. Starting in model year City of West Sacramento Climate Action Plan Draft– August 2010

2019, the combined average fuel economy of all vehicles sold by auto-makers must be at least 35 miles per gallon. By 2030, the average must be at least 45 miles per gallon.

In 2005, the California Air Resources Board (CARB), applied to the Environmental Protection Administration for a waiver of the Federal Pre-emption of emission standards in order to enforce an even more strict standards. CARB proposes to enforce regulations that call for carbon dioxide and other pollutants to be reduced by 22 percent by the 2012 model year and 30 percent by the 2016 model year. In 2009, that exemption request was finally approved.

Senate Bill 1078 established a renewable portfolio standard requiring California's three major utilities – Pacific Gas and Electric, Southern California Edison and San Diego Gas and Electric to produce at least 33% of their electricity using renewable sources by 2020. Current legislation has not set a longer term goal for 2050, but based on California's recent trend of increasing the renewable energy goal, it is reasonable to assume that in 2050 the goal will be at minimum 45 percent renewable generation.

The effect of these legislative mandates will be reflected at the end of Chapter 4 as Measures Implemented External to the City of West Sacramento and accounted for in analysis of how successful the City expects to be in reaching its targets.

2.3.2. Municipal Organization Targets

The Air Resources Board Scoping Plan sets as a goal for local governments a reduction of 15% in greenhouse gas emissions from "current" levels. The Scoping Plan was approved in 2007 but was based on 2005 data. On a State wide basis, a 15% reduction from 2005 levels is the same as returning to 1990 levels. As discussed above, the West Sacramento community population and employment is expected to increase at a rate higher than the State average over the next 40 years. A 30% reduction from Business as Usual was therefore established as the goal at the community level.

While the municipal organization can be expected to grow as the community increases in size, it would not necessarily be in the same proportions. The City of West Sacramento increased in population from 30,000 in the year 2000 to 48,000 in the year 2010, a 60% increase. In the same time period, the City's number of authorized positions went from 306 in 2000 to 355 in 2010, an increase of only 16%. While the closing of the sewer plant and the economic problems of the last three years play a role in the small amount of growth, it still seems likely that the size of the organization will not grow proportional to growth in population and employment.

The target proposed for the municipal organization is therefore the 15% reduction suggested in the Scoping Plan.

The municipal targets for Greenhouse Gas Emissions based on that goal is shown below:

Table (2-2) Straight Percentage Target

<u>Target Year</u>	<u>Base 2007 Emissions</u>	<u>Reduction %</u>	<u>Target Level</u>
2020	18,801 t	15%	15,980 t
2050	18,801 t	83%*	3,196 t

Even taking into account legislated reductions on transportation and energy carbon generation, the challenge for West Sacramento to meet these targets is substantial. Chapter 4 will lay out the specific mitigation measures the City of West Sacramento organization and community can implement to move towards that goal.

Chapter 3 – General Plan Greenhouse Gas Goals and Policies

CITY OF WEST SACRAMENTO GENERAL PLAN GREENHOUSE GAS GOALS AND POLICIES.

The General Plan is the base document for development related policies for Cities in California. The City of West Sacramento General Plan was originally adopted in 1990 after incorporation. A significant update was done in 2000. The City of West Sacramento is currently in the process of updating its General Plan with the intent to complete that update in late 2010. A major part of the revisions being proposed in the 2010 General Plan are additional policies recognizing and addressing the Greenhouse Gas and Climate Change issue. New policies are proposed under Natural Resources, Public Health and Safety, Public Facilities, Land Use and Transportation. A number of existing policies already address issues which would impact Greenhouse Gases. All of the existing or proposed General Plan policies which would affect greenhouse gases are included in this Chapter. New, proposed language is underlined. They form the legislative base for regulatory measures and actions to be undertaken by the City.

3.1 EMISSION TARGETS

Natural Resources Goal F. COMMUNITY GREEN HOUSE GAS EMISSIONS - To combat global warming, The City of West Sacramento will, by 2020, reduce Green House Gas emissions from within its boundaries to a level 30% less than the level that would otherwise occur if all activities continued under a “business as usual” scenario. (GHG)

Policies

Inventories NR 6.F.1. The City will establish Green House Gas emissions inventories, using methods approved by or consistent with guidance from the Air Resources Board, including emissions from municipal emission, and emissions from all business sectors and the community. The City will update those inventories every 3 years to incorporate improved methods, better data, and more accurate tools and methods, and to assess progress.

Forecast NR 6.F.2. The City will define a “business as usual” scenario of municipal, economic and community activities and prepare a projected inventory for 2020 based on that scenario.

Climate Action Plan NR 6.F.3. The City will, in collaboration with the stakeholders from the community at large, establish a Climate Action Plan which will include measures to reduce Green House Gas emissions from community, business and municipal activities by at least 30% by 2020 compared to the “business as usual” emissions.

Blueprint Participation NR 6.F.4. The City will continue to participate in the Sacramento Regional Blueprint effort and will ensure that local plans are consistent with the Blueprint.

Public Facilities and Services Goal J: MUNICIPAL GREENHOUSE GASES - To reduce Greenhouse Gas emissions by 15% from current levels from municipal facilities and operations, and by purchasing goods and services that embody or create fewer GHG emissions. (GHG)

Policies:

Energy Efficiency Plan PFS 4.J.1. The City will prepare and implement a comprehensive plan to improve energy efficiency of municipal facilities including City buildings, vehicles, parks, utilities and treatment facilities.

City Building Efficiency PFS 4.J.2. The City will require that any newly constructed, purchased, or leased non-residential municipal space will meet LEED Silver criteria and will retrofit existing buildings as feasible to meet standards under Title 24 of the California Building Energy Code.

GHG Training PFS 4.J.3. The City will ensure that staff receives appropriate training and support to implement objectives and policies to reduce GHG emission.

City Vehicle Efficiency PFS 4.J.4. The City will improve efficiency at municipal systems and reduce GHG emissions from City vehicle and equipment engines.

Employee Travel PFS 4.J.5. The City will implement measures to reduce employee vehicle trips and to mitigate emissions impacts of municipal travel.

Green Purchasing Policy PFS 4.J.6. The City will adopt and implement a purchasing policy which allows consideration of long term energy efficiency, recycled content and other factors which minimize a products impact on the environment in addition to normal considerations of purchase price, suitability and quality in the purchase of goods and supplies.

3.2 TRANSPORTATION AND LAND USE

Land Use Goal A: ORDERLY AND PLANNED LAND USE: - **To** provide for orderly, well planned, and balanced sustainable growth that meets the needs of residents and businesses alike and allows for the efficient use of the land and provision of City infrastructure. ~~consistent with the limits imposed by the city's infrastructure and the city's ability to assimilate growth.~~ (GHG)

Policies

Land Use Diagram. LU 1.A.1. The City shall utilize and maintain the Land Use Diagram to designate the location and extent of each land use designation within the Planning Area.

Rate and Pattern of New Growth LU 1.A.2. The City shall link the phase the rate and pattern of new growth in West Sacramento based on the provision of adequate services and infrastructure, including schools. The City shall, through specific plans and planned development plans for major projects, ensure that growth occurs in an orderly fashion and in pace with the expansion of public facilities and services.

Sustainable Development LU 1.A.3. The City shall promote compact development patterns, mixed use, in-fill and higher-development intensities that use land efficiently; reduce pollution and automobile dependence and the expenditure of energy and other resources; and facilitate walking, bicycling, and transit use.

Encouraging Infill LU 1.A.4. The City shall actively encourage infill development that is architecturally and environmentally sensitive, embodies principles of sustainable planning and construction through incentives (e.g. planned development standards, provision of infrastructure) that is compatible with existing neighborhood land uses.

Overcoming Barriers to Accessibility LU 1.A.5. The City shall strive to remove and minimize the effect of natural and manmade barriers such as the Sacramento River and the Deep Water Ship Channel to accessibility between and within existing neighborhoods corridors, and centers.

Annexations Within the Planning Area LU 1.A.6. Future urban development within the Planning Area should occur under the jurisdiction of the City. To this end, the City shall require that vacant unincorporated properties be annexed into the City prior to the provision of any City services, or that a conditional service agreement be executed agreeing to annex when deemed appropriate by the City. In order to minimize the disruption and protect of agricultural land, development which is adjacent to the city boundaries or which has convenient freeway access shall be preferred.

Proposals for development of land not adjacent to the city or without convenient freeway access shall be discouraged.

Joint Use of Public and Quasi Public Uses LU A.1.7. (Formerly LU F-2)

The City shall promote the clustering of public and quasi-public uses such as schools, parks, libraries, child care facilities and community activity centers. Joint use of public facilities shall be promoted, and agreements for sharing costs and operational responsibilities among public service providers shall be encouraged.

Monitor the Availability of Land LU A.1.8. The City shall monitor the availability of land in each general plan designation on an annual basis and make adjustments as necessary to promote a reasonable citywide balance between new employment generating development and housing development.

Land Use Conflicts LU A.1.9 The City shall continue to apply the regulations and procedures of the Zoning Ordinance and shall use the CEQA environmental process to prevent or mitigate land use conflicts.

Annual General Plan Review LU A.1.10 The City shall annually review the General Plan in order to monitor its implementation.

Major General Plan Review LU A.11 The City shall conduct a major review of the General Plan, including the General Plan Policy Document and Background Report, every seven years from the date of final approval of this General Plan and shall revise it as deemed necessary.

Fair Share LU A.12. The City shall ensure that all new development pays its fair share in financing public facilities and services.

Land Use Goal C: COMMERCIAL/MIXED USE - ~~To designate adequate land and provide support for the development of commercial uses providing goods and services to West Sacramento residents and West Sacramento's market area.~~ **To encourage new commercial, office and mixed use (commercial/housing/office development at locations that provide convenient neighborhood retail and services to existing and new housing areas, and to maximize new community commercial and regional shopping opportunities where their economic viability can be sustained. (GHG)**

Policies

Commercial Expansion. LU 1.C.1. The City shall promote and assist with the maintenance and expansion of West Sacramento's commercial sector to meet the needs of West Sacramento residents, employees, and visitors.

Office Expansion. LU 1.C.2. The City shall seek to selectively expand its share of the region-serving retail ~~commercial~~ /office development.

Sales Tax Contributors. LU 1.C.3. The City shall promote the establishment, maintenance, and expansion of businesses in West Sacramento that generate high retail sales taxes as important contributors to the local economy.

CBD and Riverfront. LU 1.C.4. The City shall promote the Central Business District and areas along the Sacramento River between the I Street Bridge and the Barge Canal as pedestrian oriented commercial mixed use centers of West Sacramento with mid to high rise regional office.

Visitor Destination. LU 1.C.5. The City shall promote development of West Sacramento as a visitor destination, capitalizing on its riverfront location.

Hotels/Motels. LU 1.C.6. The City shall promote the development of hotels, motels, and related convention facilities, with an emphasis on high-quality development.

Arterial Locations. LU 1.C.7. New major commercial development shall be located along major arterials and at the intersections of major arterials and freeways.

Quality Mixed Use. LU 1.C.8. In approving new ~~commercial~~ mixed use projects, the City shall seek to ensure that such projects reflect the City's concern for achieving and maintaining high quality development.

Avoid Strip Development. LU 1.C.9. New commercial development at the intersections of primary arterials and near freeway on ramps shall be designed to avoid the appearance of strip development.

Promote West Sacramento. LU 1.C.10. The City shall work with local business groups and associations, such as the West Sacramento Chamber of Commerce, to promote West Sacramento businesses.

~~The City shall ensure that new commercial development pays its fair share in financing public facilities and services.~~

Neighborhood Serving Commercial Development. LU 1.C.11 The City shall encourage small neighborhood serving commercial and mixed uses adjacent to and within residential areas where such uses are compatible with the surrounding area and mitigate any significant impacts (i.e., traffic, noise, lighting).

Parcel Assembly. LU 1.C.12 The City shall support the assembly of land for commercial growth where the fragmentation of parcels and/or the limited size of existing parcels acts as a deterrent to new commercial/ mixed use development.

Grouping Commercial Development. LU 1.C.13. The City shall avoid continuous "strip commercial" in new development areas by encouraging the clustering of commercial land uses in appropriate locations

Land Use Goal E: GREEN AND SUSTAINABLE WEST SACRAMENTO - To develop local and support regional and statewide plans and ordinances to reduce greenhouse gas emissions and fund sustainable transportation improvements while meeting local housing needs. (GHG)

Policies

Blueprint Strategy LU 1.E.1. Actively implement the principles of the SACOG Blueprint Strategy and seek funding and incentives to implement local projects consistent with the strategy

SACOG Coordination. LU 1.E.2. The City shall work with SACOG to develop and periodically update the Sustainable Communities Strategy or Alternative Planning Strategy as part of the Regional Transportation Planning process.

Sustainable West Sacramento Strategy. LU 1.E.3. The City shall review SACOG's Regional Transportation Plan, including the Sustainable Communities Strategy or Alternative Planning Strategy, each time it reviews and updates the General Plan, major general plan element, planned development amendment, s, and/or zoning amendment , to ensure overall consistency among all of these plans and allow for CEQA streamlining and eligibility for State transportation funding.

Expedited CEQA Processing. LU 1.E.4. The City shall work with SACOG to ensure that cumulative impacts for any Regional Transportation Plan are analyzed pursuant

to CEQA so that applicable projects may benefit from CEQA streamlining (e.g., full exemption, Sustainable Communities Environmental Assessment, or traffic mitigation) as provided by State.

Transportation Goal A: COMPREHENSIVE MULTI MODAL CIRCULATION SYSTEM ~~To create and maintain~~ **Develop a multi-modal roadway transportation network which will ensure the safe and efficient movement of people and goods throughout the City **that supports vibrant neighborhoods and reduces air pollution and green house gases.(GHG)****

Policies:

Multimodal Access. TC 3.A.1. The City shall promote the provision of multimodal access to activity centers such as civic and commercial centers and corridors, employment centers, transit stops/stations, schools, parks, recreation areas, and tourist attractions

Complete Streets TC 3.A.2. The City shall ensure that all new roadway projects and major reconstruction projects provide appropriate and adequate rights-of-way for all users including bicyclists, pedestrians, transit riders, and motorists except where pedestrians and bicyclists are prohibited by law from using a given facility.

Eliminate Gaps in Facilities and Amenities TC 3.A.3. The City shall eliminate gaps in providing connections between roadways, bike ways, pedestrian access, trails and open space areas to provide for completely connected development.

Transportation Goal C: TRANSIT ~~To promote and maintain public and private transit systems that are responsive to the needs of all West Sacramento residents.~~ **To develop and maintain a range of transportation choices that allow residents to travel efficiently and safely throughout the City and the region. (GHG)**

Policies:

Light Rail. TC 3.C.1. The City shall cooperate with Sacramento Regional Transit District (RT), Yolo Transit, and the City of Sacramento to actively pursue extension of light rail/street cars into West Sacramento to serve existing and proposed urban residential, business, and employment centers, starting with West Capitol Avenue and the Riverfront. ~~Particular consideration shall be given to use of railroad rights-of-way, including the Yolo Short Line Railroad right-of-way in the Southport area. Transit station sites shall be identified along potential routes for extension of the light rail system.~~

Feeder-Bus TC 3.C.2. Should extension of the light rail system into West Sacramento prove infeasible, the City shall seek development of a feeder-bus system to facilitate use by West Sacramento residents of the Sacramento light rail system.

YOLOBUS TC 3.C.3. The City shall work to assure that YOLOBUS service is responsive to local needs.

RT TC 3.C.4. The City shall explore the possibility of ultimately contracting with RT for provision of bus service in West Sacramento and between West Sacramento and Sacramento.

Intercity Rail TC 3.C.4. The City shall support the establishment of high-speed intercity rail service connecting the Bay Area with the Sacramento area.

Private Transit TC 3.C.5. The City shall encourage privately-owned transit systems, such as taxicabs and private bus companies, to provide convenient transfers to and from public transit systems.

Land Uses TC 3.C.6. Special consideration shall be given to proposed land uses adjacent to transit routes to ensure compatible and supportive relationships.

ParaTransit TC 3.C.7. The City shall support the provision of paratransit services for elderly and disabled residents of West Sacramento.

Park and Ride TC 3.C.8. The City shall cooperate with Caltrans in the development of park-and-ride facilities near major transportation corridors.

Transportation Goal F: INTEGRATED BICYCLE SYSTEM Develop and maintain a safe, comprehensive, and integrated bicycle system with support facilities throughout the city that encourage bicycling that is accessible to all.

Policies:

Bike and Pedestrian TC Plan 3.F.1. The City shall maintain and implement a Bike and Pedestrian Plan that provides that new development be consistent with the applicable portions of the Plan as well as the goals and policies of the General Plan.(GHG)

Pathway System TC 3.F.2. The City shall create and maintain a safe and convenient system of pedestrian and bicycle pathways which encourages walking or bicycling as an alternative to driving. New development shall be required to pay its fair share of the costs for development of this pathway system.

Bicycle Routes TC 3.F.3. The City shall establish a safe and convenient network of identified bicycle routes connecting residential areas with recreation, shopping, and employment areas within the city. The City shall cooperate with surrounding jurisdictions in designing and implementing an area-wide bikeway system.

Connections between New Development and Bikeways TC 3.F.4. The City shall ensure that new commercial and residential development projects provide frequent and direct connections to the nearest bikeways.

Separated Paths Preferred TC 3.F.5. Bicycle routes shall emphasize paths separated from vehicle traffic to the maximum extent possible, but shall also include bicycle lanes within public arterial and collector streets; ~~bikeways may, however, be combined with pedestrian and vehicle routes, where appropriate.~~

Coexistence TC 3.F.6. The City shall limit on-street bicycle routes to those streets where the available roadway width and traffic volumes permit safe coexistence of bicycle and motor vehicle traffic.

Bicycle Safety TC 3.F.7. Bicycle safety shall be considered when implementing improvements for automobile traffic operations, including setting speed limits.

Class II Bike Lane Requirements. TC 3.F.8. The City shall require Class II bike lanes on all new arterial and collector streets.

~~**NEW POLICY: Safe Speed Management Policies.** The City shall develop and implement safety and speed management policies that support driving speeds on all city streets that are safe for bicyclists. —?~~

~~The City shall attempt to establish bicycle parking facilities at all new major public facilities, business and employment sites, and shopping centers.~~

Bike Facilities in New Developments. TC 3.F.9. The City shall require that larger new development projects (e.g., employment centers, educational institutions, recreational and retail destinations, and commercial centers) provide bicycle parking (i.e., short-term bicycle parking for visitors and long-term bicycle parking for residents or employees), personal lockers, showers, and other bicycle-support facilities.

Open Space and Waterways TC 3.F.10. To the extent practicable, bicycle and pedestrian pathways shall be included within open space areas and adjacent to waterways.

Bridge Crossings TC 3.F.11. All new bridge crossings shall include bicycle and pedestrian pathways.

Motorists, Bicyclists, and Pedestrian Conflicts. TC 3.F.13. The City shall develop safe and convenient bikeways that reduce conflicts between bicyclists and motor vehicles on streets, and bicyclists and pedestrians on multi-use trails.

Conversion of Underused Facilities. TC 3.F.14. The City shall convert underused rights-of-way along travel lanes, drainage canals, and railroad corridors to bikeways wherever possible and desirable.

Bike Safety for Children. TC 3.F.15. The City shall support infrastructure and programs and develop partnerships with the WUSD that encourage children to bike safely to school.

Phasing TC 3.F.16. Bike lanes connecting to the existing bike lane system shall be provided in the first phase of all major phased developments.

Transportation Goal G: WALKABILITY - Develop and maintain a safe, accessible and integrated pedestrian system that promotes walking. (GHG)

Policies

Complete Streets. TC 3.G.1. Develop streets that balance walking, bicycling and public transit with other modes of travel.

Cohesive Network.TC 3.G.2. The City shall develop a cohesive pedestrian network of public sidewalks and street crossings that makes walking a convenient and safe way to travel.

Continuous Network. TC 3.G.3. The City shall provide a continuous pedestrian network in existing and new neighborhoods that facilitates convenient pedestrian travel free of major impediments and obstacles.

Building Design. TC 3.G.4. The City shall ensure that new buildings are designed to engage the street and encourage walking through design features such as placing the building with entrances facing the street and providing connections to sidewalks.

Housing and Destination Connections. TC 3.G.5. The City shall require new subdivisions and large-scale developments to include safe pedestrian walkways that provide direct links between streets and major destinations such as transit stops and stations, schools, parks, and shopping centers.

Safe Pedestrian Crossings. TC 3.G.6. The City shall improve pedestrian safety at intersections and mid-block locations by providing safe, well-marked pedestrian crossings, bulbouts, or median refuges that reduce crossing widths, and/ or audio sound warnings.

Speed Management Policies. TC 3.G.7. The City shall develop and implement speed management policies that support driving speeds on all city streets that are safe for pedestrians.

Safe Sidewalks. TC 3.G.8. The City shall develop safe and convenient pedestrian ways that are universally accessible, adequately illuminated, and properly designed to reduce conflicts between motor vehicles and pedestrians.

Completion of Sidewalk System TC 3.G.9. The City shall attempt over time to fill any gaps in the sidewalk systems of existing neighborhoods, giving priority to streets which serve as pedestrian collectors or arterials.

Sidewalks TC 3.G.10. The City shall require sidewalks, where possible separated sidewalks, on both sides of all new streets and with all new street improvement projects, except industrial streets where sidewalks shall be required on one side of the street.

Transportation Goal G: TRANSPORTATION MANAGEMENT - To utilize transportation demand and system management as a means to improve system efficiency and reduce dependence on single occupancy usage of motor vehicles. (GHG)

Policies:

Ridesharing TC 3.G.1. The City shall encourage and support programs which will increase ridesharing.

Emerging Technology TC 3.G.2. Use emerging transportation technologies and services to increase transportation system efficiency.

Transportation Systems Management TC 3.G.3. The City shall adopt a Transportation Systems Management (TSM) ordinance applicable as an environmental impact mitigation measure to major development projects and employers.

Facilities for Emerging Technologies TC 3.G.4. The City shall assist in the provision of support facilities such as alternative fueling stations (e.g., electric and hydrogen) for emerging technologies.

Use of Public Right-of-Way TC 3.G.5. The City shall provide for the use of public right-of-way, including parking facilities at major transit stations and employment centers, for support facilities such as alternative fueling stations in urban centers and other areas where appropriate.

Natural Resources Goal D: AIR QUALITY - To promote and, insofar as possible, improve air quality in West Sacramento and the Sacramento Region. (GHG)

Policies:

Support and Participate NR 6.D.1. The City shall support and participate in local and regional air quality planning programs to ensure the earliest practicable attainment and subsequent maintenance of federal and state ambient air quality standards.

Use of CEQA Process NR 6.D.2. The City shall utilize the CEQA process to identify and avoid or mitigate potentially significant air quality impacts of development proposals. The CEQA process shall also be utilized to ensure early consultation with the Yolo-Solano Air Quality Maintenance District (AQMD) concerning air quality issues associated with specific development proposals.

Sensitive Land Uses NR 6.D.3. The City shall separate sensitive land uses from significant sources of air pollutants or odor emissions.

Early Coordination with YSAQMD NR 6.D.4. The City shall establish procedures to ensure early notification and coordination with the Yolo-Solano Air Quality Maintenance District when industrial developments are proposed. Such early coordination will assist applicants in complying with applicable air quality regulations and will assist the City in promptly identifying and resolving potential air quality problems.

Promote Mixed-Uses NR 6.D.5. The City shall promote mixed-uses for major development projects to reduce the length and frequency of vehicle trips.

Circulation System NR 6.D.6. The City shall develop a local circulation system that encourages and accommodates the use of transportation modes other than the automobile.

New Development NR 6.D.7. The City shall ensure that new development incorporates the infrastructure, facilities, and design standards necessary to encourage and accommodate transit, ridesharing, and non-automobile travel modes.

Child Care NR 6.D.8. The City shall encourage the establishment of child care facilities at or near worksites and near residential areas as a means of reducing pollutants from automobile travel.

TSM Ordinance NR 6.D.9. The City shall continue to implement a local Transportation System Management (TSM) ordinance as a mitigation measure in accordance with state law. The TSM ordinance was developed in consultation with the Yolo-Solano Air Pollution Control District, Yolo County, the Sacramento Area Council of Governments, and the Sacramento Metropolitan Air Quality Management District. The TSM ordinance distinguishes between the physical facilities to be provided by developers and the trip reduction incentives and programs to be implemented by employers.

Monitoring NR 6.D.10. The City shall verify air quality projections with periodic spot monitoring, especially at identified emission point-sources.

Major Intersections NR 6.D.11. Major intersections shall be designed to minimize long vehicle delays which result in carbon dioxide (CO) "hot spots."

3.3 ENERGY USE AND ALTERNATIVE ENERGY

Natural Resources Goal E. TREES - To protect existing mature trees and encourage the development of a healthy urban forest. (GHG)

Policies

Tree Ordinance NR 6.E.1. The City will maintain an ordinance which regulates the removal of existing trees, attempts to preserve existing trees where possible and requires mitigation where healthy trees must be removed either by planting on site, planting in another location approved by the Tree Administrator, or a combination of planting and a contribution to a Tree Mitigation Fund.

Require Planting NR 6.E.2. The City will require the planting of street trees, parking lot canopy trees, screening trees and other amenity trees and landscaping in all new development.

City Property NR 6.E.3. The City will look for opportunities to add new trees to existing City owned properties.

Property Owner Responsibility NR 6.E.4. The City will require property owners to maintain and protect trees on their property as well as street trees adjacent to their property.

Healthy Pruning NR 6.E.5. The City will provide the capability to prune street trees as necessary to prevent hazards and provide street visibility in a manner which will not endanger the health of the trees.

Education NR 6.E.6. The City will provide educational programs on how to plant and take care of trees in urban areas.

Natural Resources Goal G. REDUCE ELECTRICITY USE - To reduce the emissions from the generation of electricity by reducing electricity use through increased efficiency. (GHG)

Policies

Green Buildings NR 6.G.1. The City will establish Green Building requirements and standards for new development and redevelopment projects, and will work to provide incentives for green building practices and remove barriers that impede their use.

New Development Standards NR 6.G.2. The City will establish standards to increase energy efficiency at new developments through improved building standards, assistance to energy efficiency features at affordable housing project, and efficient outdoor lighting.

Heat Island Reduction NR 6.G.3. The City will establish standards to reduce exterior heat gain and heat island effects through tree planting, reflective paving materials, covered parking and cool roofs.

Existing Buildings NR 6.G.4. The City will pursue policies and programs to improve energy efficiency of existing buildings through energy audits, energy efficiency funding and educational activities.

Natural Resources Goal H. ALTERNATIVE ENERGY - To reduce the emissions from the generation of electricity by promoting and supporting the generation and use of alternative energy. (GHG)

Policies

Siting NR6.H.1. The City will establish policies and programs that facilitate the siting of new renewable energy generation.

Private Development NR 6.H.2. The City will promote and require renewable energy generation and co-generation projects in conjunction with private development where feasible and appropriate.

Solar Energy NR 6.H.3. The City will promote, support and require, as appropriate, the development of solar energy.

Financing NR 6.H.4. The City will pursue and provide economic incentives and creative financing for renewable energy projects, as well as support for community members or developers seeking funding for such projects.

Purchase NR 6.H.5. The City will implement measures to support the purchase and use of renewable and alternative energy.

3.4 WASTE

Public Facilities and Services Goal D: SOLID WASTE - To provide for the collection and disposal of solid waste while minimizing the generation of waste. (GHG)

Policies:

70% Diversion PFS 4.D.1. The City shall study and actively pursue methods of solid waste recycling and reuse, including source separation, with the goal of reducing its solid waste generation by 70 50 percent by the year 20020. Recycling methods that involve the production of energy shall be considered. (GHG)

Mandatory Collection PFS 4.D.2. The City shall continue to require mandatory garbage collection throughout the city.

Adequate Service PFS 4.D.3. The City shall monitor the operations of garbage collection contractors to ensure that service levels are adequate.

Landfill Capacity PFS 4.D.4. The City shall maintain close contact with the Yolo County Public Works Department concerning the City's continuing use of the Yolo County Central Landfill and its capacity projections.

DRAFT

Chapter 4 – Actions to Address Climate Change

4.1. Existing Emissions Reduction Measures & Policies

At both the community-scale and within municipal operations, City of West Sacramento is already undertaking a number of programs, policies and projects that result in reduced greenhouse gas emissions. While the goals of many of the existing actions listed below (e.g., reducing local air pollution, reducing traffic, improving public health, increasing energy efficiency and conservation, improving solid waste management) is not necessarily to reduce greenhouse gas emissions, the policies do serve that function. Ultimately, the goal of City of West Sacramento's Climate Action Plan is to build on existing planning and implementation efforts and integrate them into the broader task of reducing the community's impact on climate.

The emission reduction benefits of each quantified measure were based on the use of the **Climate and Air Pollution Planning Assistant** calculator developed and supplied by **the International Council for Local Environmental Initiatives (ICLEI)**. This spreadsheet contains 70 possible measures which can be used by communities to reduce Greenhouse Gas. Some measures are directed at the municipal organization, some the community and some both. Based on the amount of participation in implementing the measure, the spreadsheet will predict the amount of CO₂e eliminated by each measure. Some measures are very specific (Replace Computer Monitor with EnergyStar rated replacements). Some measures are very general (Educate the public on low carbon transportation options). Every effort has been made to not double count benefits when a general measure would result in the implementation of a specific measure. The amount of benefit potential in each measure is based on the experience of a number of Cities around the country.

City of West Sacramento's existing actions are organized into four categories: transportation, energy efficiency, renewable energy, and solid waste management¹. These categories follow the major sources of emissions found in the GHG emissions inventories and described in Section IIB in addition to the waste sector.

A. Existing Community-Scale Measures

The measures outlined in this section represent an excellent first step towards significant reductions of greenhouse gas emissions in the community. They have been broken down by sector and are outlined below.

¹ Waste Management is used in the broader sense to include, waste reduction, recycling, composting and final disposal activities.

Transportation and Land Use

Community Purchases of hybrid vehicles: A large number of citizens and businesses have already purchased hybrid or other low emission vehicles. The Sacramento region is in fact has among the highest penetration levels for hybrid vehicle purchases in the country.

Participation in Yolo County Transportation Management Association: A number of existing businesses are members of the YCTMA and encourage their employees to ride bikes, transit or carpool.

Bike to work: West Sacramento's closeness to the employment concentration of the Sacramento downtown leads to many residents riding bikes to work. Many West Sacramento residents participate in the May Bike to Work program every year.

Provision of bike facilities at work places: Several larger businesses encourage bicycle use by their employees by providing for storage of bicycles including the California General Services Administration office, Calstrs, and Raley's Corporate Headquarters.

Pedestrian Friendly neighborhoods: Good planning, both recently and in the past have lead to a number of very pedestrian friendly neighborhoods with short blocks, landscaped separated sidewalks, thru block trails and pedestrian connected cul-de sacs. The older traditional neighborhoods such as the States Streets and Washington are classic examples of pedestrian friendly areas. They have been joined by neighborhoods like the Summerfield area with its pedestrian links from cul de sacs to the arterial streets and the Bridgeway Island subdivision with pedestrian connections radiating out from the neighborhood core with the elementary school, park, multi-family and future commercial.

Energy Efficiency

Home Energy Improvements: Many West Sacramento homes have been improved by energy efficiency practices ranging from replacement of light bulbs with Energy Star light bulbs, replacement of single pane with double pane windows, insulation improvements, purchase of Energy Star appliances to motion detector light switches. In recent years the City provided a Home Improvement Holiday program of free building permits for home improvement projects in the summer. Much of the work permitted under that program involved energy improvements.

Business Energy Improvements: West Sacramento businesses have recognized that energy conservation is good business practice. Many commercial buildings have added white roofs, Energy Star light bulbs, Energy Star air conditioners, computers, monitors, improved insulation, motion sensitive light switches, and more energy efficient process equipment.

Tree Planting and Landscaping: For almost 20 years, the City has required extensive tree planting in new development including shade trees along street frontages, screening trees along property lines between different uses and shade trees in commercial parking lots. Thousands of new trees have been planted on private property as a result. West Sacramento matches Sacramento as a "City of Trees". These landscaping requirements have recommendations that encourage low water use planting as well.

Renewable Energy

Solar Voltaic Facilities: Several local businesses have installed solar photovoltaic arrays. The largest, a 1 megawatt facility at Tony's Fine Foods is one of the largest business owned facilities in California. The Port of West Sacramento has also recently put on line a 637 kilowatt facility on the roof of one of its warehouses. Numerous home owners have also installed small photovoltaic arrays to reduce their grid energy use.

Solid Waste

Recycling: The community has consistently beaten the goal of recycling 50% or its waste stream, averaging closer to 60% recycling. This effort has been aided by the provision of curb side recycling bins and recycling education from the City and Waste Management, the City's primary waste collection franchise partner.

B. Existing Municipal Operations Measures

City of West Sacramento has also already undertaken a number of municipal operations measures resulting in reduced greenhouse gas emissions relative to the base year of 2007. These measures are an excellent first step towards significant reductions of greenhouse gas emissions from municipal operations. They have been broken down by sector and are outlined below.

Transportation, Land Use and Development

Employee Commute: According to the ICLEI report of the City, the employee commute comprises 18.6 percent of GHG emissions. As part of the General Plan, the City has placed key municipal sites in a concentrated downtown area adjacent to transit opportunities, which reduces the environmental impact of travel to and between City sites. Some of the transit opportunities in the City stem from the City's membership with the Yolo Transportation Management Association (TMA). This organization provides City employees with access to limited financial incentives for trying alternative modes of transportation and supporting services such as guaranteed emergency rides home for alternative mode commuters. Alternative modes of transportation include any means other than single occupancy vehicles. The City also works cooperatively with the Yolo TMA to coordinate educational events and distribute alternative commute mode information. The City's recent opening of a bicycle facility in the secured area of City Hall's parking lot allows for the safe and convenient storage of commute bicycles and share bikes, thereby increasing the ease of commuting by bicycle. The City's share bike program provides a low-impact mode of midday transportation for employees regardless of commute mode. In February 2010, the City designated the two parking spaces closest to the employee west entrance as reserved for car pool or alternate fuel vehicles.

To help further reduce emissions from employee commute and work travel during the day, employees can take advantage of municipal-wide transit options. Currently, the primary option is public buses. The

City works cooperatively with the Yolo County Transportation District (YCTD) and other area transit operators to ensure proper placement of bus stops and corresponding infrastructure such as poles and signs. The public works division maintains the shelters, benches, and trash and recycling receptacles, where applicable. The City is working to raise money for the Downtown/Riverfront Streetcar Study and is planning an improved Transit Center along West Capitol Avenue to provide a safe and convenient transit hub.

Land Use: The most powerful tool the City is using to minimize Greenhouse Gases is its land use planning. Currently, the City is implementing four development programs to improve the sustainability of the City and the Region. The first is the West Capitol Avenue Streetscape Plan. This is an effort to transform the Avenue into West Sacramento's new downtown and urban core, a new vibrant street that takes advantage of its prime location and provides an attractive location for civic and mixed-use projects that take advantage of multiple modes of transportation. Heavy landscaping of the avenue and reducing the scale of the street to a pedestrian friendly design will also result in GHG reductions. The City was awarded a Grant from the Sacramento Area Council of Governments to help fund Phase 1 of the project. Long-term future phases of the project extend the improvements along West Capitol Avenue out to Harbor Boulevard.

Implementation of the Triangle (Bridge District) Plan is a second effort that furthers both the requirements of SB 375 and the City goals. In June the City was awarded funds to jump start office and residential development in the Bridge District. A vital new transit oriented district that includes five to seven million square feet of office, hotel, and 4,500 residences is planned. The grant will help assure that 731 new affordable and market rate units are constructed in the Triangle by the end of 2012. The West Sacramento Riverfront, Bridge District and West Capitol Avenue all will continue to undergo rapid urban development that will introduce a new mixture of residential, office and civic uses. Work on the Downtown/Riverfront Street Car is a third project that the City commenced in 2006 that will result in implementation of the Regional Transit Plan and smart growth policies. The project is a joint effort between the City, City of Sacramento, Regional Transit and Yolo Bus. The streetcar would generally run between the Sacramento Convention Center and our City Hall. The proposed streetcar service would provide additional capacity for the two cities by supplementing existing transit and bus service. Long-term, the street car service is planned to extend to the Bridge District to provide for transit access for new growth anticipated in the area.

The Southport Framework Plan calls for the development of a series of villages as the form for development. Each village, which ranges from 2,700 to 4,000 housing units, is focus around a central core which includes commercial, an elementary school, a park, lots for civic uses and high and medium density residential. Village pedestrian and bicycle routes are designed to follow to and from the village core and to connect to a regional bike and pedestrian system.

While the planning for these areas has been completed, the greenhouse gas savings will occur as these areas develop. No current emission benefits are assumed.

Energy Efficiency

Reduced Water Related Energy Use: According to the ICLEI report, water and sewer activities comprise 46 percent of the City's GHG emissions. These activities include the water and sewer plants as well as

distribution and collection pump stations. It is not unusual for this category to be the largest user of electricity and as such the largest source of carbon dioxide. The City has taken several steps to decrease these emissions and increase overall efficiency.

One effort is the merger of the City's sewer activities with those of the County of Sacramento. While not a considered outcome, the City will notice a decrease in electricity and an ensuing carbon dioxide emissions reduction from the sewer component. As part of the project to connect to Sacramento Regional Sanitation, the City's sewer pump stations were modernized. In addition to not needed to pump all effluent up a hill to the old plant for treatment, more modern and energy efficient pumps and controls were installed at the pump stations. Calculations in future years will determine if the consolidation with Sacramento Regional Sewer System results in an overall decrease in GHG emissions attributed to the sewer component of the data.

Efforts for water conservation within the City include operating the Bryte Bend Water Treatment Plant (BBWTP) at lower power demand times in cooperation with PG&E, thereby eliminating peak energy requirements. While this does not decrease the need for electricity, it assures that the demand does not interfere with the ability to provide energy during peak load times when gas and oil powered plants are most in use.

Efforts to decrease water use in landscaping have been taken by designing Water Wise Drought Gardens within the City to promote low water use plants at City facilities. Since 1993, the City's Landscape Development Guidelines have encouraged water wise landscaping in new developments by limitations on the amount of turf used in required landscaping. The City has also reduced city irrigation costs from previous years by 20 to 30 percent by installing a centrally controlled, computerized irrigation control system in City Parks.

City Buildings and Parks: Based on the ICLEI report, City buildings comprise 16.6 percent of the City's GHG emissions. As part of the General Plan, the City has placed key municipal sites in a concentrated downtown area adjacent to transit opportunities, which reduces the environmental impact of travel to and between City sites. This arrangement lays the foundation for implementing sustainable policies. As part of this centrally located municipal development, the City is incorporating sustainable design and construction strategies into new construction projects. In particular, the City is implementing techniques to have the Community Center certified under the United States Green Building Council as a Leadership in Energy and Environmental Design (LEED) Silver facility. LEED is the most recognized green building standard in the international and national community. It outlines detailed strategies that architects, owners and contractors can use to encourage water and resource conservation, to reduce waste generated by construction projects, to increase energy efficiency in buildings, to provide durable buildings that are efficient and economical to own and operate, and to promote the health and productivity of residents, workers, and visitors to the City. Based on the number of strategies implemented to be sustainable, building projects are rated at different levels, with the levels ascending in sustainability from Certified, Silver, Gold to Platinum.

The City is also retrofitting existing buildings to incorporate more sustainable features, such as compact florescent light bulbs, low flow toilets and sinks, photovoltaic cells, and motion-activated lighting. Computerized heat and air systems are also being installed to meet state standards for office environments. These systems send alerts if a filter needs to be changed or if a roof-mounted unit is not operating efficiently.

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Designs for City parks and trails utilize low emission materials that are durable in order to minimize long-term operations and maintenance needs. One example of such a sustainable design is the new Patwin-Summerfield Bicyclist and Pedestrian Bridge. The bridge uses a zero-maintenance concrete deck and a steel structure whose weathered surface is easily cleaned. The bridge is strategically located and specifically designed to accommodate park maintenance vehicles, thereby reducing normal maintenance trips for Patwin and Summerfield Parks by up to 50 percent. This connection across the Main Drain Canal also provides a short cut for non-motorized trips between the Bridgeway Island/Lakes areas, Town Center and Westbridge Plaza, and the new high school.

All new municipal parks and landscapes designed and built over the past two years have used the “purple pipe” irrigation pipe standards promulgated by the Sacramento Regional County Sanitation District for use of non-potable water for irrigation. Use of the “purple pipe” standards enables the City to discontinue use of costly treated water when alternative water supplies are available. The first example of non-potable water supply for irrigation will go on-line before the end of 2008, when trees planted around the MC-10 Storm water Detention Ponds will be irrigated by water pumped from the north basin.

Recycled materials are also used to build parks and trails when possible. Recent park projects have specified recycled content in seating fixtures, play structures and fall zone materials. Construction of the Clarksburg Branch Line Trail used recycled, crushed concrete for over 3.2 miles of pathway improvements.



The City has implemented grass cycling with mulching mowers for 130 acres of the city parks and chips tree clippings to use as landscaping mulch. The City has placed all parks on a central irrigation system, which saves 20 to 30 percent of the annual cost of running the irrigation system. The effort also reduces employee hours spent traveling and travel emissions that were previously created when adjusting individual site irrigation systems. Data will be gathered to gauge the efficiencies gained from installing this system by comparing water usage with and without the central irrigation system.

The City has also planted over 5,100 new trees for tree mitigation along city streets, in city parks, and on open space areas. Additionally, travel emissions have been reduced for Park employees by rearranging site cleanup procedures. Now, staff and equipment move congruently as crews from site to site in pre-determined sections of the City. This eliminates excessive travel from sites across the City to obtain tools or equipment as well as requiring fewer commute vehicles.

Streetlights: According to the ICLEI report of the City, streetlights produce 9.5 percent of the City's GHG emissions. Several activities are currently being undertaken to reduce this emission percentage. A majority of streetlights have been converted to high-pressure sodium from metal halide over the past few years. Installing light emitting diodes (LED) in streetlights has been explored, but it remains too costly.

A majority of traffic signals have been converted to LEDs. LEDs have proven for years now to be the most energy efficient means of controlling local traffic.

City Vehicles: According to the ICLEI Report of the City, the vehicle fleet produces 9.2 percent of the City's GHG emissions. Currently, the City owns 231 mobile pieces of equipment, including vehicles, tractors, and emergency response vehicles. Eighteen of those use alternative fuels, including ethanol, compressed natural gas, and hybrid systems. The Police Department, Public Works and multiple departments located at City Hall have purchased alternative fuel or hybrid vehicles. In addition, many of the new Police Department vehicles have flexible fueling systems that allow for use of either gasoline or ethanol fuel.

While the ICLEI Report does not include vehicle fleets of City contractors, the City does conform to stipulations in the California Climate Action Registry that requires the City's waste hauler, Waste Management, to reduce the carbon emissions for its truck fleet by 10 percent by 2011. This 10 percent value is based on fleet emissions produced when servicing the City during the calendar year of 2007. This effort reduces GHG emissions of fleets used to service the City and an offset will be realized because of this requirement in the contract with Waste Management.

Recycling: According to the ICLEI Report of the City, waste practices produce 0.1 percent of the City's GHG emissions. Currently, the City has an employee recycling policy that requires all facilities to accommodate and participate in the recycling program. The current employee recycling policy also addresses waste reduction and encourages employees to make double-sided copies, reuse single-sided paper and use reusable items in the employee break rooms. The City also has a Recycled Content Product Purchasing Policy, which directs departments to buy recycled content products whenever possible. Additionally, the City requires special event recycling for Galleria rentals by including recycling program language in the rental agreement. The City conforms to stipulations in the California Climate Action Registry that requires the City's waste hauler, Waste Management, to reduce carbon emissions by 10 percent for its truck fleet by 2011, based on emission averages from service in 2007. Beginning in 2008, the Contractor will also provide to the City a carbon emissions inventory for the Contractor's waste and recyclables related operations in connection with performance of services to the City, including estimated emissions associated with materials placed in the Yolo Landfill and energy savings associated with the collection and processing of recyclables collected in the City.

Renewable Energy: The Port of West Sacramento has recently brought on line a 675 kilo watt solar panel installation on the roof of two transit sheds. This facility will provide all of the Ports power needs. The project was done in partnership with Pacific Power Management of Auburn. The system will eliminate over 34 million tons of CO₂ emissions over the next 25 years.

Purchasing: In 2009, the City adopted an Environmentally Preferred and a Recycled Content Purchasing Administrative Policy requiring that the potential impacts of products on the environment should be considered in the evaluation of product purchases.

C. Summary of Existing Emissions Reduction Measures

Based on the emissions reductions already achieved since 2007 through the above measures, *City of West Sacramento* will have to reduce X tons of CO₂e emissions in the community, including at least Y tons of CO₂e emissions from municipal operations, in order to achieve our emissions reduction target.

Table (4.3) : City of West Sacramento Emissions Summary

City of West Sacramento Emissions Summary		
	Community Analysis	Municipal Operations Analysis
Base year	2007	2007
Quantity of CO ₂ e emissions in base year (tons)	410,682	18,801
Target year	2020	2020
Business-as-usual projection of CO ₂ e emissions in 2020 (tons)	533,726	NA
Percent CO ₂ e reduction targeted by target year relative to base year (%)	30%	15%
Quantity of CO ₂ e reduction targeted relative to base year (tons)	160,117	2820

Source: CACP Model Output

4.2 Proposed Emissions Reduction Measures & Policies

Based on careful consideration of the emissions reductions needed to achieve our stated targets, the distribution of emissions revealed in our emissions inventory, existing priorities and resources, and the potential costs and benefits of various potential emissions reduction projects, City of West Sacramento has identified a set of emissions reduction measures that should be set into motion immediately. The actions are divided into the following sectors/measure types: transportation, energy efficiency, renewable energy, and solid waste management². Within each of these categories, the measures are further divided into the measures that affect community-wide emissions and measures that affect the emissions that result from municipal operations.

The emissions that result from municipal facilities and operations account for only 4.8% percent of City of West Sacramento's community-wide emissions. That being said, measures taken to reduce municipal emissions show that the city's elected officials and staffers are committed to action on climate change and to inspiring action in both our community and neighboring communities. City of West Sacramento is proud of the emissions reduction efforts implemented to date and is committed to building on those efforts by increasing fleet fuel efficiency, reducing solid waste, and increasing energy efficiency and conservation in municipal buildings.

4.2.1. Transportation and Land Use Measures

Broadly, there are three main ways to reduce GHG emissions from the transportation sector. One way is to implement policies that reduce dependence on personal motor vehicles and encourage alternative modes of transportation, such as public transit, cycling, and walking. Another way is to utilize vehicles that release fewer greenhouse gases, such as hybrids, more fuel efficient vehicles, and vehicles that run on alternative fuels. A final way is to encourage 'smart growth' or policies that promote efficient land use development. Smart growth reduces the need to travel long distances, facilitates transit and other non-automotive travel, increases the availability of affordable housing, employs existing infrastructure capacity, promotes social equity, helps protect natural assets, and maintains and reinforces existing communities.

The emission measures effectiveness was estimated using the Climate and Air Pollution Planning Assistant developed and provided by ICLIE. This spreadsheet calculates the effectiveness of common Greenhouse Gas Emission Reduction measures being used in Cities around the country. Measure effectiveness for 2020 reflects a 35% reduction in the CO₂ per vehicle miles travelled consistent with the mandate to increase the combined average fuel economy of all vehicles sold in California to at least 35 miles per gallon beginning in 2019 and to reach 45 miles per gallon by 2030. While a higher vehicle fuel economy in the future is a major step towards reaching our GHG emission goals, it has the effect of significantly reducing the GHG effectiveness of City measures directed at reducing vehicle miles travelled.

² Waste Management is used in the broader sense to include, waste reduction, recycling, composting and final disposal activities.

No standard has been set for 2050. For the purposes of this analysis, it is assumed that by 2050 average fuel economy will be 60 miles per gallon, conservatively consistent with the trend of a 10 mile per gallon increase every 10 years.

4.2.1.A. Community Measures

Table (4.4): Proposed Community Transportation and Land Use Emissions Reduction Measures

Transportation Emissions Reduction Measures	Year to be Initiated	Annual CO₂e Reduction by 2020 (tons)	Annual CO₂e Reduction by 2050 (tons)
<i>An NQ under Annual CO₂e Reduction means no reduction has been quantified for that measure, reductions related to that measure may be included in a broader measure..</i>			
<i>Vehicle Fuel Efficiency</i>			
▪ Promote community purchases of compact and hybrid vehicles	2010	NQ	NQ
▪ Implement and promote the Clean Air Vehicles Program of the YSAQMD	2010	NQ	NQ
▪ Lobby for increased CAFE standards	2010	NQ	NQ
<i>Alternative Fuels</i>			
▪ Encourage development of alternative fuel capability at existing gas stations.	2010	NQ	NQ
▪ Change zoning ordinance parking section to require provision of prime parking spots for car pool or alternate energy automobiles.	2010	NQ	NQ
<i>Trip Reduction/ Transportation Demand Management</i>			
▪ Support expansion of Yolo County Transportation Management Association effort to encourage alternative commute transportation choices.	2010	NQ	NQ
▪ Continue to develop virtual City Hall services to reduce need for citizens to drive for services.	2010	NQ	NQ
▪ Implement Intelligent Transportation Systems Technology.	2011	NQ	NQ
▪ Partner with City Car Share or a similar car sharing program to disincentivize car ownership	2018	NQ	NQ

<i>Alternative modes of transportation</i>			
▪ Develop Street Car System.	2013	9,617	27,502
▪ Update and implement Bicycle and Pedestrian Master Plan.	2011	NQ	NQ
▪ Support expansion of bus transit services as City grows.	2018	NQ	NQ
▪ Change zoning ordinance to require secure bike storage facilities for significant new private development.	2010	NQ	NQ
▪ Support inter-regional high speed rail.	2010	NQ	NQ
▪ Fill gaps in the sidewalk and bikeway system of the City.	2013	NQ	NQ
▪ Actively use the City's public communication tools (web site, City Lights, cable, utility bills, Commissions) to educate the public and City Staff on low carbon transportation alternatives.	2010	11,017	10,990
<i>Land use related</i>			
▪ Provide Infrastructure and Zoning for High Density, Urban, Mixed Use Riverfront and West Capitol Areas.	2010	8,129	19,306
▪ Integrate rail, bus, bicycle and pedestrian networks	2010	NQ	NQ
▪ Provide low cost passes for street car system to residents and employees to encourage high density development.	2014	NQ	NQ
▪ Participate in SACOG's Smart Growth Strategy	2010	NQ	NQ
▪ Use the CEQA review process to mitigate the GHG emissions impacts of new development	2010	NQ	NQ
▪			

Promote community purchases of compact and hybrid vehicles

Importance/Context

Increased use of high-efficiency, low-carbon vehicles like hybrids, fuel cell, plug in electric, natural gas, Bio-diesel or even high fuel efficiency compact cars has the potential to significantly reduce not just Greenhouse Gas emissions, but at the same time other air pollutants. Transportation makes up 52% of total West Sacramento GHG emissions and generally near half of all Greenhouse Gas Emissions nationally. The City is the proud home of the National Fuel Cell Partnership, a research and

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demonstration facility on Industrial Boulevard which is the home to representatives of all the major auto makers and related support companies at the forefront of the Fuel Cell Vehicle technology.

Implementation Scenario

The City's ability to influence behavior on this item is limited. The City does not regulate fuel efficiency standards, nor does it have the resources to financially incentivize the purchase of low-carbon vehicles. It can lead by example in its own fleet purchases and it can include encouragement to its citizens via its communication channels regarding Green activities.

Emission Reductions

The emission benefits of this measure are captured under the City communication measure below.

Costs and Additional Benefits

Costs would be limited to staff time and marketing resources used to promote the purchase of low-carbon vehicles.

The additional benefits include improved air quality in general with resulting improvements in the respiratory health of the community.

Implement and promote the Clean Air Vehicles Program of the YSAQMD

Importance/Context

The Yolo/Solano Air Quality Management District administers a variety of Clean Air Programs. These include: The Clean Air Grant program, where up to \$400,000 per year is available on a competitive basis for projects which reduce air pollution, a wood stove change out program which provides incentives for removing wood burning stoves and replacing them with high efficiency and low-emission gas, pellet or EPA certified cleaner burning wood appliances, a lawn mower exchange program which provides a discount for the exchange of a battery powered electric lawn mower for and older gasoline fueled lawn mower, a Clean School Bus program, and programs for improvements to on and off road heavy vehicles.

Implementation Scenario

The City role would be a support and marketing one helping members of the community become aware of and participate in the YSAQMD programs as part of its overall communication effort.

Emission Reductions

While replacing gas fuel lawnmowers with electric mowers would have minimal effects on CO₂, the replacement of 250 lawnmowers with electric would reduce VOCs by 4,750 lbs. per year.

Costs and Additional Benefits

The subsidy program costs \$250 per lawnmower purchased.

Electric lawnmowers are quieter than gasoline.

Lobby for increased CAFE standards

Importance/Context

In 2002, AB 1493 known as the “Pavley Bill” was signed into law. This bill directed the Air Resources Board to “develop and adopt regulations that achieve the maximum feasible and cost-effective reduction of greenhouse gas emission from motor vehicles”. CARB established a regulation that mandated auto makers meet a 22% reduction in emissions for vehicles sold in California by the 2012 model year and a 30% reduction for the 2016 model year. Enforcement of the regulation required a waiver of EPA’s pre-emption on Fuel Efficiency Standards. After years of delay and denial, that waiver was granted in 2009. To achieve control over greenhouse gases from automobiles, it is likely that future higher standards will be required and the technology changes what is “feasible and cost-effective.

Because of the high percentage of total Greenhouse Gas Emissions that are a result of the burning of gasoline and diesel for transportation, reaching the 2050 goals is likely to require that the transportation system be largely carbon free.

Implementation Scenario

The City plays no direct role in the setting of fuel efficiency standards, but it can raise its voice in support of future legislation or regulation to increase the standards.

Emission Reductions

The emission benefits of this measure is reflected in the section on measures external to the City.

Costs and Additional Benefits

The requirement that automakers produce more energy efficient cars is likely to result in higher initial purchase prices for automobiles in the future. Costs to the City to lobby are probably minimal and likely to take the form of letters to our Senators and Congressmen.

In addition to the GHG benefits, higher efficiency vehicles will likely also produce less other pollutants which will have health benefits. Less use of petroleum for powering vehicles will save supplies for other uses such as plastics.

Encourage development of alternative fuel capability at existing gas stations

Importance/Context

Several alternative fuels for powering motor vehicles are known which have significantly lower carbon emissions than gasoline. Compressed Natural Gas, Low carbon diesel, ethanol, bio-diesel, propane and fuel cells are all working technologies available today to reduce carbon emissions. One of the major obstacles to the expanded use of alternative, low-carbon fuels is the lack of refueling stations available in sufficient number and location to create a viable system. New stations may be built to supply these fuels but it would seem more efficient and “green” to add this capability to existing stations.

Implementation Scenario

The City could waive its portion of any Building Permit costs required to install additional or modified pumps and storage facilities to supply alternate fuels at the retail level. This would not constitute a significant loss of revenue for the City compared to its normal Building valuation revenues but would show a support and commitment for the effort.

Emission Reductions

Due to the indirect nature of the City’s involvement and unpredictability of results, no emission reduction is estimated from this measure

Costs and Additional Benefits

Adding handling and storage for alternative fuels will have substantial costs for stations. Lost building revenues from a waiver would probably be in the thousands of dollars for the entire program.

Additional benefits would include higher sales volumes for those stations which do carry alternative fuels.

Change zoning ordinance parking section to require provision of prime parking spots for car pool or alternate energy automobiles

Importance/Context

One of the tools Caltrans is using to encourage car pooling and use of alternative energy vehicles is the provision of car pool lanes. In exchange for the additional effort need to car pool or the additional cost of using an alternative energy vehicle, you get to use a less congested, more convenient driving lane. In a similar approach, it is within the authority of the City to condition new developments to provide prime location and or free parking at work sites to encourage people to car pool or use alternative fuel vehicles. In early 2010, the City designated two sites adjacent to the main employee entrance at City Hall for the use of car pool and alternative fuel vehicles.

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Implementation Scenario

For the City, the change would involve a fairly minor amendment to the Parking section of the Zoning Ordinance. The City could include the amendment with one of its regular batches of minor amendments to the Zoning Ordinance that typically takes place once a year.

The implementation at the private work place presents more challenges. Unless the business and the employees are supportive a lack of enforcement would make the designation of prime spaces meaningless. There is some administration involved if the provision is to be enforced. The City's own experience is that employees are respecting the designated spaces and only qualifying cars are using them.

Emission Reductions

Due to the indirect nature of the City's involvement and unpredictability of results, no emission reduction is estimated from this measure. The emission reductions from alternate energy vehicle use as a result of all related measures are shown below under the Yolo County Transportation Management support measure.

Costs and Additional Benefits

The cost to write and adopt a Zoning amendment is probably under \$1,000. The cost to a business to sign a parking space is about \$200.

In addition to the carbon reduction of fewer vehicles because of car pooling, it would reduce traffic.

Support expansion of Yolo Transportation Management Association effort to encourage alternative commute transportation choices.

Importance/Context

The Yolo Transportation Management Association (YTMA) is a non-profit organization dedicated to working with employers to encourage the use of alternative commute choices to the single occupancy motor vehicles. YTMA administers The Rideshare Incentive Program (TRIP). The Rideshare Incentive Program is designed to incentivize and reward commuters who try other means of commuting other than single occupancy vehicles and by changing daily commute habits, TRIP participants earn financial incentives for a two or three month period to use a rideshare alternative, including carpooling, van pooling, mass transit, or bicycling or walking. At the end of a one-year period there are additional incentives for those who stayed with their alternative commute choice.

Administration of the program is funded by dues paid by participating employers who join the YTMA. Incentives are funded by grants from the Yolo-Solano Air Quality Management District.

Implementation Scenario

The City of West Sacramento is a member of YTMA. It can use its communication channels to make West Sacramento residents and businesses aware of the programs of the YTMA. While somewhat limited by State law, the City can require major new developments which are shown to have significant impacts on traffic and transportation via the California Environmental Quality Act review process to, as a mitigation measure, prepare and implement Transportation Systems Management programs. These programs show how an employer can encourage the use of alternative commute transportation choices. One of the common measures in these plans is for the employers to contribute funds to YTMA to provide financial incentives to their employees to bike, carpool, or use mass transit. The Calstrs office building was required to prepare and implement a TSM. That requirement is also in place for all future development in the Bridge District.

Emission Reductions

The emission benefits of this measure are captured under the City communication measure below.

Costs and Additional Benefits

Membership cost in YCTA is on sliding scale based on the number of employees at the primary work site. West Sacramento pays \$1,000 per year to be a member.

Additional benefits of the use of alternative transportation are reduced congestion on the roads, air quality improvement and the health benefits of more physically active transportation modes.

Continue to develop virtual City Hall services to reduce need for citizens to drive for services.

Importance/Context

In addition to the vast amount of information the Internet puts at our fingertips that we might have had no way to find or access before, the internet can and does actually help us reduce trips. Internet shopping is changing the way we buy things, avoiding trips to stores or at least reducing the amount of driving around looking for the best price. City Hall has been for several years, building its web page and electronic presence to better serve its citizens. Much information is available on the City organization and activities that years ago would have required a physical trip to City Hall to get. Bills can be paid electronically, Council agendas reviewed, Council meetings watched, application forms obtained, information on projects and permits readily available. Detailed maps and air photos of the City are available on line with parcel level information. This is another area where the City should be and has been a leader in the community.

Implementation Scenario

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The City is continuing to work in the area of making historical records (Building Permits, Zoning actions, Plans, agenda reports) available on the web. The ability to apply for and pay for minor building permits without coming to City Hall is another area of future potential. The potential for “virtual” attendance at Council and Commission meetings, including two way visual interactions is within the technology and could be implemented.

Emission Reductions

Due to the indirect nature of the City’s involvement and unpredictability of results, no emission reduction is estimated from this measure

Costs and Additional Benefits

In addition to the energy benefits, a robust “virtual City Hall” has the potential to increase citizen involvement with the community.

Implement Intelligent Transportation Systems Technology

Importance/Context

Intelligent Transportation Systems (ITS) Technology involves the ability to manage the traffic control systems in real time to more efficiently guide traffic flow. Through the use of cameras and sensors, transportation staff can remotely monitor traffic flow and remotely control traffic signals or signing to improve traffic flow. Improved traffic flow reduces unnecessary idling and shortens trips, reducing fuel use.

Implementation Scenario

Over the years, the City has been laying the groundwork for an ITS by interconnecting the traffic signals on major arterials. Jefferson Boulevard has been the primary focus of attention. Most of the lights on Jefferson are interconnected. At this point, the signals are controlled by built-in computers which adjust the timing of the signals to provide green time through the Jefferson signals moving with the speed limit to theoretically allow cars to proceed with no stops. The next step would be a central computer which would serve as a traffic management center.

Emission Reductions

Due to the indirect nature of this measure and unpredictability of results, no emission reduction is estimated from this measure

Costs and Additional Benefits

Implementation of a full traffic management center will cost about \$100,000.

Additional benefits include the saving of people time in transit and a potentially happier commuter. A more efficient traffic flow will reduce GHG's and other pollutants.

Partner with City Car Share or a similar car sharing program to incentivize minimizing car ownership.

Importance/Context

In several areas of the country, particularly in urban areas with robust transit systems, businesses are developing which specialize in renting cars by the hour. In urban area, owning a car is particularly expensive, garage space may be very expensive. With much of what a person needs within walking distance or a convenient transit trip, the need for a car is less. When a car is actually needed to go some place not easily reached by alternative modes, it may be easier and cheaper to simply rent a car for the time you need it. This short term rental is the business model for City Car Share and others like it. Rental cars may be parked in parking spaces in many places in a neighborhood, so cars are available within a short walk from residents. Renters are pre-registered with the company, payment secured by a credit card. When a member needs a car, they walk to the Car Share location, pick out a car, have a secure, controlled method for providing a key and the renter drives off. On return, mileage is converted to a charge.

Implementation Scenario

In the current sub-urban environment of West Sacramento and the still not robust transit service in the Sacramento Region, this sort of program may be premature. As the Bridge District, Washington and West Capitol Avenue develop as transit and pedestrian oriented urban centers with convenient street car connection to regional employment and commerce, the model may become very workable.

Emission Reductions

The concentrated urban environment to support programs such as this is not likely to have matured by the 2020 target date.

Costs and Additional Benefits

This is primarily a private business activity. What the City may do is provide parking spaces, on street or in public parking garages as locations for the rental cars.

In an urban environment, this car sharing system has the potential for saving users significant costs by allowing them to not own a car or own fewer cars than they would otherwise need. It means the need for more cars in the world is reduced, saving the carbon footprint associated with building a car.

Develop Street Car System.

Importance/Context

For the last four years, the Cities of Sacramento, West Sacramento along with the transit agencies Regional Transit and the Yolo County Transportation District, have been working on a Streetcar line which would run from the West Sacramento Civic Center to Mid-town Sacramento. It would link the two downtowns and the various parts of Sacramento Downtown. Preliminary engineering and environmental have been completed. Funding is being sought. It is hoped that the line can be operational in two years. Evidence from around the Country is that a streetcar would greatly accelerate the timing and density of development along the route. On the West Sacramento side areas benefited would include West Capitol Avenue, the Bridge District and the Washington neighborhood. These are the near term opportunity areas for building transit-pedestrian oriented, urban mixed use neighborhoods at high density. This type of development, near to the employment center of the region, is critical to achieving the regional goals set in the SACOG Blueprint process.

The Downtown-Riverfront Streetcar line is seen as the initial step is a streetcar system that will eventually cover much of the regional downtown. Future service extensions would add links to the Sacramento River District north of downtown, the R Street corridor, the multi-modal center. On the West Sacramento side the system would extend farther down West Capitol Avenue and north and south along the riverfront. The system would unify a regional downtown which might have a resident population of 35,000 people in addition to 150,000 employees.

This type of development is orders of magnitude more efficient from a Greenhouse Gas Emissions point of view. In addition to eliminating the commute to work from outlying cities, this area would truly allow people the choice of living car free as nearly any service or good desired could be reached on foot or in combination with a streetcar ride. In addition to the transportation GHG savings, higher density housing is inherently more energy use efficient.

Implementation Scenario

Funding is the single most critical question affecting the potential for building the Streetcar line. Initial funding strategies focused on Redevelopment Tax Increment and participation by property owners along the route in an assessment district to fund construction. The ravages of the economy the last three years have made both funding sources problematic. The City of West Sacramento has applied for a \$25 million Urban Circulator Grant to jump start the construction of the West Sacramento side. The success of that application will be known in June of 2010.

Emission Reductions

If the Downtown Streetcar is up and running and serving 5,000 persons per day as expected by 2020, the CAPPAs calculates the elimination of 9,617 metric tons of CO₂e.

The feasibility study indicated a likely mature ridership for the Downtown Streetcar at over 10,000 riders per day. The Streetcar system envisioned for West Sacramento would include extension of the West Capitol Streetcar to Harbor Boulevard, and the construction of lines running through the riverfront urban districts from the Rivers village core to Stone Locks at least. An ultimate ridership of 30,000 persons per day at build out is not unreasonable. CAPP indicates this would result in the elimination of 27,502 metric tons of CO₂e.

Costs and Additional Benefits

The estimated cost of the Downtown/Riverfront Streetcar line is \$70 million.

A streetcar is sometimes described as a pedestrian accelerator. It allows someone, without getting in an automobile, access to a larger field of activities and environment which would otherwise be beyond walking distance. A streetcar could also be described as an urban development accelerator. Experience around the country indicates areas served by streetcar see much faster and denser development than similar areas only served by buses. A streetcar leads to more compact development reducing trips by cars regional by more than just the trips actually taken on the streetcar. Air quality improvements and the related health benefits are another potential outcome.

Update and implement Bicycle and Pedestrian Master Plan.

Importance/Context

The first Bicycle and Pedestrian Master Plan was prepared for the City in October 1991. The first update was completed in 1995. A second update was begun in 2005. Amphion and Alta Planning and Design was contracted to prepare the update. A series of three Working Papers were prepared assessing goals, conditions, needs, opportunities and constraints and standards. Other priorities impacting the critical City staff working with the consultant resulted in delays in providing responses to the consultant and the completion of the draft plan. The economic and budget crisis beginning in 2007 placed the document on continued hold. Having a current Bicycle Master Plan is a necessity to be eligible for Bicycle Transportation Act funds. This State grant provides up to \$500,000 for bicycle projects.

Regardless of the status of the Master Plan, the City has made great strides in improving conditions for bicycles since incorporation. Bike Lanes have been added on West Capitol Avenue, Jefferson Boulevards, Sacramento Avenue, Harbor Boulevard and much of Industrial Boulevard. Initial improvements have been completed on the Clarksburg Branch Line Trail, a rail to trail conversion which travels the length of Southport. Initial work has also been done on a portion of the Main Drain Recreation Corridor.

Implementation Scenario

Staff intends to apply in 2010 for a Caltrans Planning Grant to fund the completion of the Bicycle and Pedestrian Master Plan update.

As time allows, staff has continued to pursue other funding for bike/ped. Improvements. Applications have been submitted to SACOG to fund the paving of the northern section of the Clarksburg Trail, which is currently just compacted, recycled concrete, and to build a bike/ped. bridge connecting the trail to the High School/Rec. Center. Funded infrastructure improvements in the Bridge District include the construction of a paved riverfront trail running from the Tower Bridge to the Pioneer Bridge. Construction of these improvements will begin in 2010. Staff will also continue to pursue funding for the North Utility Corridor Trail. This would be in the old Sycamore Drain, now the right of way for the Sacramento Regional County Sanitation Districts Lower Northwest Interceptor. The right of way runs north/south in the center of the northern half of the City.

Under the City's current Standard Specifications for Public Works, all new roads of collector or arterial status are required to have bike lanes and sidewalks. The approved master plans for new development (Yarbrough, River Park, and The Rivers) include extensive bike and ped. facilities. The Bridge District development plans include bike lanes on the major through streets, along the river and most of the District will have 15 to 20 foot wide sidewalks with pedestrian amenities.

Emission Reductions

Due to the indirect nature of this measure and unpredictability of results, no emission reduction is estimated from this measure

Costs and Additional Benefits

Finishing the update of the 2005 Bicycle and Pedestrian Master Plan will cost about \$30,000. Much has happened in the five years since the draft and it would have to be thoroughly reviewed and updated before proceeding with completing it. The draft did not reach the point of developing cost estimates for the identified improvements. Three long range, big ticket improvements would be a bike/ped overcrossing of US 50 at the North Utility Corridor, widening of the Westacre underpass to provide better bike/ped. access, and an undercrossing at the Mikon Rail Crossing at the north end of the Northern Utility Corridor. All of these projects would have multi-million dollar price tags.

In addition to the GHG benefits of this alternative mode of transportation, increased bicycle use will reduce traffic congestion, reduce other air pollutants which provide health benefits, provide a low cost mode of transportation and provide improved public health from exercise for the people that use bikes.

Support expansion of bus transit services as City grows.

Importance/Context

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West Sacramento is provided with bus transit service by the Yolo County Transportation District. There are 5 routes serving the City. Four of the five routes go into downtown Sacramento. In 2006, YCTD prepared a Short Range Transit Plan for its county wide service. The plan called for an immediate expansion of service to West Sacramento to recognize the significant growth in population the City had experienced from 2000 to 2006. The amount of vehicle hours of service was nearly doubled compared to pre-2006 and new routes added in Southport. The Plan called for another doubling of service by reduced headways on the routes in about 2010 and a final doubling of service and an additional route in southern Southport at some point in the future..

Implementation Scenario

Funding for bus service comes from a variety of sources, some directly from the State, some from the Cities Road Funds, some from the Federal Government. Much of the funding is population formula determined. The rapid growth proposed in West Sacramento was based on the assumption that the rapid growth in population in the early 2000's would continue in the late 2000's. That growth did not happen and it is unclear when it will return. It will eventually return and when it does the plan is in place to expand bus service to match city growth. The current population growth assumption is that West Sacramento will grow from 48,000 in 2010 to about 59,000 in 2020, a roughly 20% increase.

Emission Reductions

Assuming bus ridership expands at least consistent with population growth, an additional 400 bus riders per day would result in a reduction of 222 metric tons of CO₂e. Growth in bus service proportional to population through 2050 would result in a reduction of 400 metric tons of CO₂e.

Costs and Additional Benefits

Sufficient capacity exists in the present system to absorb a 20% growth in ridership without additional cost. An existing route may need to be re-configured to serve the Bridge District.

Additional bus ridership will help reduce congestion on the roads as well as improve air quality.

Change zoning ordinance to require secure bike storage facilities for significant new private development.

Importance/Context

The City's Zoning Ordinance sets standards for the amount of automobile parking required for different land uses. It does not currently set any requirements for bicycle parking or secure storage. A number of Zoning Ordinances have begun to require bike parking or storage, usually as a small percentage of the number of vehicle spaces required (see Pittsburg, PA, Madison, W., Milwaukee, W.). One of the challenges to the riding of a bike to work is having a secure place to park it. The City of West

Sacramento City Hall provides a bike barn to employees to protect their bikes. The Ziggurat and the Calstrs buildings include secure bike storage areas in their parking garages, but this was done voluntarily not required.

Implementation Scenario

A Zoning Ordinance amendment could be incorporated in the next annual Zoning Ordinance review in conjunction with the earlier recommended amendment to provide prime parking spaces for car pool and alternative fuel vehicles.

Emission Reductions

Reductions as a result of bike related measures are summarized under a later measure.

Costs and Additional Benefits

The cost to write and adopt a Zoning amendment is probably under \$1,000. The cost to a business to provide a bike locker is about \$200 per bike.

In addition to the carbon reduction of fewer vehicles because of bicycling, it would reduce traffic and congestion.

Support inter-regional high speed rail.

Importance/Context

A major component of the regional transportation system is the Capitol Corridor passenger trains running from Sacramento to San Jose with one train per day beginning in Auburn. This system is operated by Amtrak and at 1.6 million riders in 2009, is the fourth busiest route in the Amtrak system. The route is served by 16 trains per day in both directions. Capitol Corridor trains are regular speed trains (60-70 mph.).

In 2010, there is much discussion of the development of a high speed rail system for California. The proposed route would go from Sacramento to San Diego with a side route from Stockton to San Francisco. A 10 billion dollar State bond was approved in 2008 and additional funds have been provided from the Federal Government for planning and design.

Implementation Scenario

West Sacramento is not directly involved with decisions regarding this high speed rail system. Support would be political in terms of Council endorsement of the concept and implementation of the project.

Emission Reductions

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The Californian High Speed Rail Authority estimates that a trip by high speed rail from Sacramento to Los Angeles would save 309 lbs of CO₂ compared to that same trip by car.

Costs and Additional Benefits

The estimated cost of the California High Speed Rail system is in the area of \$45 billion.

Fill gaps in the sidewalk and bikeway system of the City.

Importance/Context

In general, West Sacramento's sidewalk and bike lane system is now relatively complete. A few clear gaps exist in both sidewalks and bike lanes that are logical connections within the system. Sidewalks are technically the responsibility of the adjoining property owner to construct. This requirement is generally enforced in conjunction with a building permit on the property. In most cases the gaps in sidewalks are adjacent to undeveloped properties. The most glaring gaps are listed below with discussion of how they might best be filled.

Implementation Scenario

Sidewalks

Linden Road – at Our Lady of Grace. New development has build sidewalks on most of Linden on both sides. There is no sidewalk adjacent to the Our Lady of Grace School. The school has indicated it does not have the funds to construct the sidewalk. – This gap causes a significant American Disabilities Act issue for both the school and the City. A future partnership as part of the ADA program may be needed.

Higgins Road – east and west of Constitution, north side. These are undeveloped parcels surrounded by developed properties with sidewalks. - Pedestrian traffic is rather light in this area. Development of the adjacent parcels will fill the gap.

Michigan – from Pecan to Lower Northwest Interceptor. The Maple Holly neighborhood is one of the few areas in the City where there are no sidewalks. Narrow Right of Way, mature trees and short setbacks make it nearly impossible to build a sidewalk system without major damage to the neighborhood. Michigan serves as a pedestrian collector street leading from the neighborhood to Westfield Elementary and the CBD. – This project would likely be a good grant funded project from Stimulus Safe or CDBG.

Jefferson Blvd from Marshall to Southport Parkway - Pedestrian traffic in this area is currently minimal. Sidewalk would be added when the road is widened to four lanes as a condition of development of the Yarbrough Project.

Southport Parkway across the Seaway Property – Sidewalks would be built with future subdivision improvements. A better short term solution would be completion of the Main Drain Trail from Summerfield Park around the Summerfield subdivision. The Parks Development Team continues to look for grants for this improvement.

West Capitol Avenue – Harbor to Garnett. There is a gap on the south side where West Capitol was built as only two lanes with the idea it would be widened later. It appears it will be many years before that occurs if it ever does. A pedestrian alternative does exist with Evergreen.

The Bridge District Sidewalks are currently non-existent except adjacent to Raley Field. A core sidewalk system will be built with the Prop. 1A grant project beginning summer 2010 and being complete by 2012.

Bicycles

Southport Parkway across the Port's Seaway Property.-This four lane road will ultimately be a six lane road. In its current condition it does not include paved width for a bike lane. This is a connecting road from the Bridgeway Island subdivision to the Town Center and cars generally travel at a high rate of speed. As with pedestrians, a better solution might be improvement of a bike way on the Main Drain Trail.

Bridge District. – This area is currently very unfriendly to bicycle due to narrow roads and poor pavement conditions. Facilities will be provided with the 1A grant project.

Westacre Underpass. The Westacre underpass below US 50 is very narrow and does not provide either bike lanes or sidewalks. This results in a dangerous situation for bicyclists and pedestrians. Widening the underpass would cost several million dollars.

Emission Reductions

Due to the unpredictability of results, no emission reduction is estimated from this measure

Costs and Additional Benefits

None of these projects have cost estimates but standards 5 foot wide sidewalk generally runs about \$40-\$50 per linear foot.

In addition to the carbon reduction benefit of encouraging pedestrian and bicycle use, walking and bicycling have clear health benefits to the West Sacramento population.

Actively use the City's public communication tools (web site, City Lights, cable, utility bills, Commissions) to educate the public and City Staff on Low carbon Transportation Alternatives.

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Importance/Context

The City has a number of tools for communicating information to its citizens. There is a semi-annual newsletter, "City Lights" which goes to every home in the City. The City has control of one cable channel for governmental affairs and another for community affairs shows. The City has rights to a billboard on US 80 for half of each year. Utility billings go out monthly to most addresses and the City has the ability to add language or inserts for very little cost. The City also has a web site which receives fairly solid traffic. As the local jurisdiction the City has the ability to sponsor events and make news. While never as effective as we would like, the City has an ability to reach its citizens in ways the State and Federal Government cannot. The key to reducing greenhouse gas emissions is changing behavior and creating awareness.

Implementation Scenario

The Green Team routinely uses these communication tools to discuss and promote Green activities and practices. It needs to continue to include regular articles in City Lights, maintain the Green City web page on the City web site, and use the utility mailers to encourage Alternative transportation. More effective use could be made of the cable channel and billboard. The City's ability to reach its citizens will be crucial to the effectiveness of efforts like the Yolo Transportation Management Association. As has been mentioned elsewhere, much of the City's role in achieving GHG reduction will come from its ability to communicate and educate its citizens. One of the City's most visible efforts to date has been its support of May as Bike to Work month. The City has actively promoted Bike to Work month for over 5 years. The City Council itself has been an active promoter and participant as Council member's bike to work.

The City needs to continue to use its communication channels, posters at City facilities, City Lights, cable channel, web page, to educate its citizens on low carbon transportation options such as carpooling, hybrid and alternative fuel vehicles, bicycling, and transit.

Emission Reductions

The CAPP estimates that an active educational effort by the City could result in as much as an 8 to 13 percent reduction in car use. The Greenhouse Gas benefit of an 8% reduction in vehicle miles traveled would result in 11,017 metric tons of CO₂e would be eliminated.

The educational program targeted to the 42,000 households which will exist in West Sacramento by 2050 would, according to CAPP result in the elimination of 10,990 metric tons of CO₂e.

Costs and Additional Benefits

The cost of using the City's communication channels for this promotion is probably under \$10,000 a year in staff time and printing.

Bicycling, walking, transit and carpooling are a low cost alternative to driving and reduces congestion on the roads. Bicycling and walking improves the health of the participant..

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Provide Infrastructure and Zoning for High Density, Urban, Mixed Use Riverfront and West Capitol Areas in order to reduce trips by car and make existing public transit more accessible.

Importance/Context

As has been previously discussed in this document (page 4, this Chapter) the City of West Sacramento has plans for high density, transit and pedestrian oriented urban development along its northeastern Riverfront. This area includes: the Washington Neighborhood, the Bridge District, Pioneer Bluffs and Stone Locks. In addition, the City has plans for a medium high density residential and mixed use boulevard along West Capitol Avenue from the Riverfront to Harbor Boulevard. Thirty thousand people might live in these neighborhoods eventually, a streetcar ride away from all of downtown Sacramento.

The successful development of these neighborhoods, along with the River District, Docks and “R” Street corridor on the Sacramento side of the river, is critical to the achievement of the Regional Blueprint developed through the regional planning agency, SACOG. This vision of a more dense, less sprawling future for the region was accepted by almost all of the jurisdictions, with West Sacramento in the forefront.

Implementation Scenario

When Raley Field was built in 2000, it was expected that development would begin to spring up around it immediately. What soon became apparent was that the cost of upgrading the infrastructure of the area from that built to serve fairly low intensity industrial uses to something which would support the 5,000,000 square feet of office and 5,000 housing units was a major obstacle. The core sewer, water, storm drain and road system that existed needed to be completely replaced with a much higher capacity system. The economics of building high density urban development in a region which has very little of such development simply didn't work. One of the major reasons the economics didn't work was the cost of infrastructure.

Over the last three years, the City and the property owners have worked intensively to come up with a financing plan which would work. A fundamental break through occurred in June 2008 when the City was informed it had been approved for a \$25 million dollar Prop. 1 grant from the State of California for the construction of core infrastructure for the Triangle (now Bridge) district. Based on that grant award, the City and the property owners have been able to negotiate a financing and entitlement plan which both parties believe can be made to work in what is hoped to be a better economy in a few years.

Construction of the core infrastructure is scheduled to begin in summer 2010, completing in 2012. Initial private development is scheduled to begin in 2012 or 2013 with up to 700 housing units to be started. Included in the financing plan are funds for extending the Downtown Riverfront Streetcar into the core of the Bridge District.

The Washington neighborhood, with the construction of the Ziggurat, Calstrs, Metro Place and Riverwalk, has shown its readiness to attract and support urban development. Prior to the collapse of City of West Sacramento Climate Action Plan Draft – August 2010

the housing market in 2007, a number of projects were moving forward with the intention of near term development. When the market returns to normal, it is expected that Washington will lead in new urban development. The City has recently been awarded \$4 million dollars to complete the conversion of the once State Route 275 off ramp into a boulevard with intersections at 3rd and 5th. This link was the major circulation improvement needed to serve growth in Washington. Some upgrades to sewer and water capacity may be needed before build out, however the improvements made for the Raley's Landing project make Washington much more ready than the Triangle currently is.

The Pioneer Bluff area south of US 50 will face infrastructure cost challenges at least as difficult as the Bridge District. Sewer and water capacity is minimal, storm drainage non-existent. South River Road was built to handle heavy truck traffic and is structurally good but will need to be widened.

The Stone Locks area will need the construction of the South River Road Bridge crossing of the Barge Canal. The properties which make up the Stone Locks project literally have no water, sewer or storm drainage.

Pioneer Bluff and Stone Locks are many years off from redevelopment beginning. They will need a similar intensive financing plan to move forward when the time comes.

The City is in the process of updating its General Plan. In January 2010 the City Council approved a preferred alternative land use map for analysis in the Environmental Impact Report on the General Plan update. The preferred alternative map includes increased residential density and employment intensity in the Pioneer Bluff, West Capitol Avenue and Stone Locks areas. These new designations are more consistent with the vision of this high density, transit oriented urban environment.

Emission Reductions

If, as expected, the provision of this infrastructure and zoning leads to the development of 2,000 transit oriented housing units in the Washington and Bridge District by 2020, this would lead to a reduction of 8,129 metric tons of CO₂e compared to standard suburban development.

Full development of the Washington neighborhood, Bridge District, Pioneer Bluffs, Stone Locks and West Capitol Avenue would provide an additional 8,000 urban housing units at 1,500 square feet per unit or 12,000,000 square feet of residential and 6,000,000 square feet of commercial. CAPPA indicates that the development of 10,000 transit oriented units would result in the reduction of 19,306 metric tons of CO₂e

Costs and Additional Benefits

The core infrastructure for the Bridge District which is to be constructed in 2010-2011 is approximately \$30 million.

In addition to air emission reductions, the development of these areas will improve housing and transportation choices, and create an environment which has been shown to attract young, creative residents who have had a tendency to leave the Sacramento Region.

Integrate auto, rail, bus, bicycle and pedestrian networks

Importance/Context

In order to maximize the participation in alternative transportation multiple modes must be tied together. It is not possible to run a streetcar or bus to everyone's front door. In order to shorten route times, the number of stops and length of route must be kept to a reasonable minimum. This shortening of routes also minimizes the number of homes which will be in short walking distance to the bus or rail stops. To increase the number of homes which can be served by transit the pedestrian and bicycle networks need to work with the transit network. This increase can be done by designing neighborhoods so that the pedestrian system leads in the shortest possible distance to the bus stops. The Bridgeway Island subdivision is an example of a walkway system which has a pedestrian system which flows to the village core where the bus stops are located. It can also be done by encouraging the use of bicycles to feed into the transit system.

Implementation Scenario

Yolo Bus has added bicycle racks to all of its commute buses to allow people to ride from their home to the bus stop, place the bike on the bus rack and then have the ability to remove the bike and ride it to their ultimate location.

The City has created within its Geographic Information System layers showing the Street Classification system, the current and future bus route system, the primary pedestrian and bicycle routes, existing and future, and a potential streetcar system. This information allows an easy comparison and overlay of the different transportation modes.

The bus transit center for the City is to be built in 2010 within the Civic Center at West Capitol and Merkeley. Nearly every bus route will stop at this location. This location is also the current West Sacramento end point for the Downtown/Riverfront Streetcar project. There will be 26 public bike rack slots available in the Civic Center/Transit Center area.

One future point of integration is the requirement within the Yarbrough and River Park developments to provide park and ride lots for both autos and bicycles within the village cores of those projects. These lots would be the primary stops within the village for a future commuter bus to downtown. The Liberty project currently under review north of the River Park project should have similar requirements. The provision of bike lockers at these park and ride locations might encourage bike riders who do not need to use the bike at the end of the bus trips.

Emission Reductions

City of West Sacramento Climate Action Plan Draft – August 2010

Due to the indirect nature of the City's involvement and unpredictability of results, no emission reduction is estimated from this measure

Costs and Additional Benefits

Bike racks will cost between \$200 and \$500 per slot.

In addition to less air pollution and congestion, additional use of bicycles will have direct health benefits to the riders.

Provide low cost passes for street car system to residents and employees to encourage high density development.

Importance/Context

It is anticipated that up to 30,000 residents and 30,000 employees will be within a three block walk of the Street car system. The ability to use that system for as a pedestrian accelerator giving the residents and employees quick, convenient and inexpensive access to all of the amenities of the greater downtown will be a major attraction to those locations. More rapid and higher density development would be expected along the street car line as a result of its construction and operation.

Implementation Scenario

The operator of the street car system would be likely to offer Monthly and Annual passes for sale by regular users of the system. The passes would generally be of low enough cost that the per trip cost for regular users such as residents and employees along the system would be much less than on an individual ticket basis. Employers and residential building owners might include subsidies for purchases of passes as a marketing tool for attracting employees or renting or selling residential units.

Emission Reductions

Emission benefits have been included in the Street Car development measure above.

Costs and Additional Benefits

If properly priced, the revenues from a pass will be close to the revenues which the user might have paid in that period on a per trip basis, but the user is likely to choose to ride the system more than they would have otherwise instead of using other transportation.

Regular use of the system by local residents and employees will help create a more vibrant and successful area in the vicinity of the street car system.

Participate in SACOG's Smart Growth Strategy

Importance/Context

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The Sacramento Area Council of Governments is the metropolitan transportation planning agency for the Sacramento Region and is made up of elected representatives from all of the area Cities and Counties. SACOG is charged with preparing the regional transportation plan that is a requirement of receiving any State or Federal funds for transportation. In 2002-2004, realizing that lane use drives transportation needs; SACOG prepared the “Blueprint for the Future” land use plan for the Sacramento region. That plan emphasized infill development to meet the needs for the region’s growth rather than continuing expansion on the periphery of the region.

West Sacramento staff and elected officials were major participants in the development of the Blueprint. As addressed earlier, West Sacramento’s plans for dense, urban, mixed use development along the northeast riverfront and along West Capitol Avenue are totally consistent with and necessary for the accomplishment of the Blueprint objectives.

Implementation Scenario

The City is in the process of updating its General Plan. In January 2010 the City Council approved a preferred alternative land use map for analysis in the Environmental Impact Report on the General Plan update. The preferred alternative map includes increased residential density and employment intensity in the Pioneer Bluff, West Capitol Avenue and Stone Locks areas. These new designations are more consistent with the vision of this high density, transit oriented urban environment.

West Sacramento will continue to engage in future updates to the Blueprint and Metropolitan Transportation Planning efforts.

Emission Reductions

Due to the indirect nature of the City’s involvement and unpredictability of results, no emission reduction is estimated from this measure

Costs and Additional Benefits

Costs for participating in SACOG’s planning efforts have been limited to a few thousand dollars per year of staff costs.

As a result of the City’s participation in the regional strategy, the City has received a \$4 million grant for the Tower Bridge Gateway-Garden Street Intersection, a \$500,000 grant for a street car feasibility study, a \$7 million grant for the West Capitol Avenue Streetscape project and a \$4 million grant for the Tower Bridge Gateway- 3rd and 5th Intersections. These grants were directly from SACOG. The City’s participation and the support from SACOG also contributed to the award of a \$24 million grant from the State of California Prop 1A program.

Use the CEQA review process to mitigate the GHG emissions impacts of new development

Importance/Context

Senate Bill 97 (Dutton), enacted in 2007, amends the California Environmental Quality Act (CEQA) to clearly establish that GHG emissions and the effects of GHG emissions are appropriate subjects for CEQA analysis. It directs the Governor's Office of Planning and Research to develop CEQA Guidelines "for the mitigation of greenhouse gas emissions or the effects of greenhouse gas emissions" by July 1, 2009 and directs the Resources Agency to certify and adopt the CEQA Guidelines by January 1, 2010. OPR did draft and submit guidelines and they were approved and became effective in March 2010. The Guidelines spell out how State and local agencies can set standards to determine in a GHG emissions impact is significant, discusses general types of GHG emissions mitigation measures, and under what conditions, one environmental document may "tier" off the GHG analysis of a prior environmental document such as a General Plan or Climate Action Plan environmental review.

The City's implementation of these Guidelines through its CEQA review process provide a mechanism for mitigating the GHG impacts of all new development in the future. The City can impose mitigation measures which will reduce the GHG impacts of specific development projects.

This Climate Action Plan is written with the intent of being consistent with CEQA Guidelines Section § 15183.5 which describes the contents of a "Qualified Plan" for the reduction of GHG emissions that can be used in tiering future CEQA analysis.

Implementation Scenario

Part of the General Plan update being done in 2010 will include new and amended General Plan policies which address GHG emissions and the reduction of those emissions. Those new and amended General Plan policies are included in Chapter 3 of this Climate Action Plan. The environmental review of the General Plan update will include a review of the GHG impacts of the General Plan and the development that would be allowed under that Plan. The Environmental Impact Report for the General Plan will include the setting of standards of significance and the identification of mitigation measures, many of which will come from this Climate Action Plan.

In the future, all major development projects will have their GHG emissions analyzed and mitigation measures proposed to reduce those impacts.

Emission Reductions

Due to the unpredictability of results, no emission reduction is estimated from this measure.

Costs and Additional Benefits

Additional review of projects for GHG emission impacts will add some cost to the process of obtaining entitlements. Mitigation of those impacts may also have impacts on development costs. The costs would be specific to each specific project and cannot be estimated at this time. The availability of this Plan to tier project specific analysis from could significantly reduce analysis costs for most projects.

The additional benefits to health, environmental quality, safety and quality of life identified with many of the measures listed in this document would be translated to the specific projects.

4.2.1.B. Municipal Operations Measures

Table (4.5): Proposed Municipal Transportation Emissions Reduction Measures

Transportation Emissions Reduction Measures	Year to be Initiated	Annual CO ₂ e	
		Reduction by 2020 (tons)	Reduction by 2050 (tons)
<i>Vehicle Fuel Efficiency</i>			
▪ Discourage unnecessary idling of City vehicles	2011	70	20
▪ Retire old and under used vehicles, replace with hybrids and/or smaller, more fuel efficient fleet vehicles	2011	66	20
<i>Alternative Fuels</i>			
▪ Utilize alternative fuels in city fleet and heavy equipment.	2015	90	30
▪ Implement a “cops on bikes” program	2012	NQ	NQ
<i>Alternatives Modes of Transportation</i>			
▪ . Promote carpooling, bicycling and the use of mass transit by municipal employees	2010	32	20
<i>Trip Reduction/Transportation Demand Management</i>			
▪ Allow flex time and telecommuting by municipal employees.		NQ	NQ
<i>Land Use</i>			
▪ Connecting transportation funding directly to smart-growth initiatives	2010	NQ	NQ

Discourage unnecessary idling of City Vehicles (vehicle efficiency):**Importance/Context –**

Idling burns fuel to get you nowhere. Burning gasoline or diesel in vehicles releases greenhouse gas emissions as well as local air pollutants. Idling also causes needless engine wear. But local governments have the power to reduce idling through public education and enforcement of anti-idling ordinances. In

addition to saving fuel costs and reducing emissions, anti-idling policies protect public health. Exhaust from cars and buses can enter buildings and vehicles, contributing to respiratory problems.

Implementation Scenario –

The best ways to reduce idling in the community include public education and implementing a community-wide anti-idling ordinance. Public service announcements on radio, TV, and on local government websites are effective. Targeted outreach to places where buses are most likely to wait while passengers load and unload, such as hotels, tourist destinations and schools, is also effective. More regulatory action can be taken by passing an anti-idling ordinance that restricts idling of all non-emergency vehicles to no more than three minutes.

In terms of City vehicles, all current City trucks and cars include available computer programming in the vehicle which can allow the City to set physical limits on idling time and maximum RPMs and maximum speed permitted on the vehicle. A City Committee is working on vehicles for all departments to reduce the number of vehicles and improve efficiency. This kind of restriction can be implemented by administrative policy.

Emissions Reductions

The emission reductions on idling and RPM restrictions on 30 trucks and 10 passenger vehicles would be 70 tons CO₂ per year in 2020.–

Reducing fuel consumption by reducing idling also reduces emissions. The benefits of not burning 600 gallons of fuel per year include an annual reduction of 6 tons of CO₂e, 193 pounds of nitrogen oxides, and 44 pounds of sulfur oxides.

Costs and Additional Benefits

Reducing idling saves businesses, public institutions and residents in fuel costs.

Retire old and under used vehicles, replace with hybrids and/or smaller, more fuel efficient fleet vehicles

Importance/Context

Currently, the City owns 231 mobile pieces of equipment, including vehicles, tractors, and emergency response vehicles emergency response vehicles. Eighteen of those use alternative fuels, including ethanol, compressed natural gas, and hybrid systems. Vehicles and equipment create 9% of the GHG emissions from the City organization. The Police Department, Public Works and multiple departments located at City Hall have purchased alternative fuel or hybrid vehicles. In addition, many of the new Police Department vehicles have flexible fueling systems that allow for use of either gasoline or ethanol fuel. While most of the vehicles are not standard passenger cars some are and would lend themselves to the use of hybrids. Additional opportunities will probably be added over the next ten years as the hybrid technology expands. Three pickup truck models are now available as hybrids for example.

Currently 4 out of 10 non-patrol vehicles in the Police Department are hybrids. More hybrids are being considered as non-patrol vehicles are replaced. While there is not currently a police patrol hybrid vehicle on the market, the high mileage, in City drive pattern of a Police patrol vehicle is a perfect match for a hybrid drive train. As hybrid costs come down and the technologies reliability becomes more demonstrated, the likelihood of someone producing a hybrid patrol car in the next few years is high. This is particularly true given the Ford Motor Company's decision to stop production on the Crown Victoria police interceptor after 2011.

Most of those vehicles will be replaced over the next ten years. This replacement offers the opportunity to phase in more fuel efficient vehicles.

Implementation Scenario

As vehicles come up for replacement it offers the opportunity to evaluate the feasibility of replacing them with hybrids, alternative fuel or smaller vehicles. Replacement vehicles should be evaluated under the questions; are hybrid or alternative fuel versions of the vehicle type available, if so would the savings in gasoline costs over the expected life of the new vehicle make a hybrid cost competitive

Emission Reductions

If 20 City passenger vehicles are converted from standard to hybrid vehicles there will be a reduction of 66 metric tons of CO₂.

Costs and Additional Benefits

Hybrid vehicles currently cost about \$5,000 more than standard drive trains.

Utilize alternative fuels in city fleet and heavy equipment.

Importance/Context –

B100 is biodiesel derived from 100 percent vegetable oil or animal fats. It can be used to replace conventional diesel fuel and significantly reduces greenhouse gas emissions. Biodiesel is also available in blends such as B20 (20 percent biodiesel). B20 is more common because of the higher cost of biodiesel and engine compatibility issues. Biodiesel can be used in vehicles from cars and light trucks, to fire engines and heavy dump trucks.

Implementation Scenario –

Convert 5 city-owned heavy trucks to B100 biodiesel. Converting the municipal fleet to an alternative fuel such as biodiesel reduces the consumption of fossil fuels. Shifting to B100 achieves significant reductions in local air pollutants such as particulate matter and volatile organic compounds. Biodiesel is also non-toxic and biodegrades four times faster than conventional diesel. However, biodiesel can be up to twice as expensive as conventional diesel. Establishing a local supply will reduce this cost. B100 is not currently supported for use in standards diesel engines. Its use would void all warranties. Advances in the cost, availability and support for the fuel are needed. Therefore, an implementation

date of 2015 is assumed. As circumstances and technology change in the next few years, alternate but equivalent measures may actually be used rather than biodiesel.

Potential sources of funding for this effort include the Yolo Solano Air Quality Management District (YSAQMD), the Sacramento Council of Governments, and the Federal Transportation Administration.

Emissions Reductions –

Converting 5 City-owned heavy trucks to B100 biodiesel would reduce emissions by approximately 95 tons annually.

Implement a “cops on bikes” program

Importance/Context

A number of Cities, including the City of Sacramento have police on bicycles. These programs are typically in urban civic center areas where there are lots of pedestrians and car traffic is slow and congested. In these types of environments, mobility on a bicycle will often be greater than in a car. West Sacramento currently does not have that type of environment but hopes and expects to have such urban environments along the north east riverfront and along West Capitol Avenue.

Implementation Scenario

The City should monitor development along the riverfront to determine when it appears that a sufficient density of urban development exists for bikes to have an advantage over auto patrol cars and judge when such a program should be started. That situation is not likely to occur prior to 2020 but may exist soon after.

The Police Department has indicated an interest in considering a “cops on bikes’ program sooner on a special event basis at the riverfront, around Raley Field and around the Civic Center. The combination of a bicycle on a patrol car to allow more personal contact by officers in the neighborhoods would also be considered.

Emissions Reductions

Emission reductions would be fairly minimal by 2020.

Costs and Additional Benefits

Bicycle patrol would be clearly cheaper than patrol with an automobile. Bicycle patrol also creates a more personal connection to pedestrians in such urban areas. As discussed above, in a true urban environment, a bicycle may have superior mobility than a car.

Promote carpooling, bicycling and the use of mass transit by municipal employees

Importance/Context

The City of West Sacramento is one of the larger employers in the West Sacramento community. City Hall is one of the larger concentrations of employees in the City. Of primary significant is the City’s need to act as a role model for other employers. It must walk the walk if it is going to talk the talk regarding alternative transportation.

Implementation Scenario

The site for City Hall was selected, among other reasons, for its location at one of the most richly served bus transit locations in the City. Most of the bus lines serving the City stop within a block of City Hall. The City has provided a bike barn on site with loaner bikes and repair equipment. The City is a participating member of the Yolo Transportation Management Association (YTMA). The programs of YTMA include financial incentives to member's employees who switch to bike, carpool, van pool, mass transit, or walking. YTMA also facilitates the pairing up of persons for car or van pooling. YTMA also provides a Guaranteed Ride Home for persons using alternative modes.

The City itself promotes employees to use alternative modes of transportation through its internal communication processes, intranet, newsletter (City Circuit) and posters.

Emissions Reductions

If 150 employees are offered incentives to car or van pool and 5 employees switch to mass transit, the CAPP calculator indicates a reduction of 32 metric tons of CO₂ annually.

Costs and Additional Benefits

The City currently budgets \$20,000 for alternative transportation incentives each year. This year's experience indicates a smaller amount may be adequate. There is great pressure in the current fiscal environment to cut back on discretionary funds such as those for alternative transportation. It is vital to the success of the entire Climate Action process that the City continues to show its commitment and leadership in this effort.

Allow flex time and telecommuting by municipal employees.

Importance/Context

Computers, phones, the internet, video conferencing and other technology, and most people's understanding and ability to use those technologies have all advanced dramatically in recent years. Those advances have made the potential for telecommuting more feasible every year. While not every job lends itself to that possibility, an ever increasing portion of employees have jobs which might allow them to telecommute, at least on an occasional basis. Each day spent telecommuting is one less round trip commute which saves time, gas and GHG emissions.

Allowing an employee to work 4 ten hour days rather than 5 eight hour days eliminates 20% of that employee's commute time and GHG generation.

Implementation Scenario

City policy on flex time and telecommuting is fairly limited. Both must be approved by the requesting department and the City Manager's Office. It generally must be shown that the arrangement has direct benefits to the City and department, not just the employee and not just to eliminate a commute day. The arrangement has been used most often in the case of an injured employee who can and wants to work but has temporary mobility restrictions. This policy may need to be examined time to time and more weight placed on the GHG emissions benefits.

Emissions Reductions

The CAPP calculator indicates that if 20 employees are offered telecommute incentives, 3 metric tons of CO₂ can be eliminated.

Costs and Additional Benefits

The primary concern on flex time hours is that many City jobs involve access to the public or close communication with co-workers. Some confusion can develop coordinating who is off what days.

Since most employees now have home computers and internet access there is no direct cost to the City for allowing this work style. The areas of concern are: can people be productive at home or do they more easily get distracted, how much communication is lost without the potential to walk down the hall to talk to co-workers in person, how much supervision is lost when the employee is remote.

If successfully implemented, a telecommute or flex time alternative may result in a happier, more productive employee.

Connecting transportation funding directly to smart-growth initiatives

Importance/Context

On a regional scale, SACOG with its Blue Print project and Metropolitan Transportation Plan have made smart growth initiatives the priority for transportation funding decisions. West Sacramento has benefited more than any other jurisdiction in the region from that focus. West Sacramento has received three of the largest Community Design Grants awarded by SACOG for projects along Tower Bridge Gateway and West Capitol Avenue. The City has also received large State grants for infrastructure in the Bridge District. These grants were received in large measure because the City itself has focused

Implementation Scenario

Beyond the current infrastructure work in and around the Bridge District, which includes both transportation and underground infrastructure, the potential for future funding is unclear. The current economy has dried up Traffic Impact Fee revenues and Redevelopment Tax Increment. When Redevelopment Increment growth returns, it can be expected that the City will continue to prioritize the urban riverfront and West Capitol Avenue. The City's Capital Improvement Program reflects this priority.

Emissions Reductions

Emission reductions have been estimated in the **Provide Infrastructure and Zoning for High Density, Urban, Mixed Use Riverfront and West Capitol Areas** Measure under Land Use and Transportation.

Costs and Additional Benefits

Costs and benefits shown under prior measure.

4.2.2. Energy Efficiency Measures

Increasing energy efficiency throughout the community has immense potential to both reduce greenhouse gas emissions and save people money. A wealth of resources exists to assist municipalities in this regard. ENERGY STAR, for example, offers local government's energy efficient products and tools for improving energy management. Promoting ENERGY STAR resources to both businesses and residents is a good way to achieve increased energy efficiency. Other methods to increase community energy efficiency include subsidizing energy management services such as energy audits for residents and businesses. Ensuring that developers and building contractors are trained on energy conservation and efficiency is also within a city's power to do.

The emission measures effectiveness was estimated using the Climate and Air Pollution Planning Assistant developed and provided by ICLIE. This spreadsheet calculates the effectiveness of common Greenhouse Gas Emission Reduction measures being used in Cities around the country. Measure effectiveness for 2020 reflects a 50% reduction in the CO₂ per kilowatt hour produced by PG&E consistent with the mandate on the major California utilities to increase their power received from Qualified Renewable Energy sources to 33% (SB 1078). PG&E currently generates 46% of its power from hydro and nuclear, which are not classified as Qualified Renewable Energy sources but do not produce greenhouse gases. In the case of PG&E that will result in the reduction of energy generated from natural gas fired plants from 40% of total electricity to 20% with a resulting reduction of 50% in greenhouse gas production per kilowatt.

No standard has been set for renewable energy production for 2050. For the purposes of this analysis, it is assumed that in 2050 PG&E will be generating 10% of its power from natural gas and the remaining 90% from non-GHG producing sources. This will result in a 75% reduction in greenhouse gas production per kilowatt compared to the baseline.

4.2.2.A. Community Measures

Table (4.6): Proposed Community Energy Efficiency Emissions Reduction Measures

Energy Efficiency Emissions Reduction Measures	Year to be Initiated	Annual CO ₂ e Reduction by 2020 (tons)	Annual CO ₂ e Reduction by 2050 (tons)
<i>Energy Star light fixtures and CFL's</i>			
<ul style="list-style-type: none"> Create Energy Efficiency Financing Program under AB 811 for Residential and Commercial/Industrial Buildings. 	2010	1,464	6,132
<ul style="list-style-type: none"> Implement residential and commercial energy conservation ordinances 	2015	602	380
<ul style="list-style-type: none"> Participate in low-income weatherization initiatives with the goal of weatherizing all qualifying low-income homes in West Sacramento. 	2010	NQ	NQ

• Promote the purchase of ENERGY STAR appliances	2010	NQ	NQ
• Promote water conservation through implementation of metered billing for water use, education, water efficient landscaping ordinance.	2013	500	221
• Actively use the City's public communication tools (web site, City Lights, cable, utility bills, Commissions) to educate the public and City Staff on personal efforts which can conserve energy.	2010	8,302	7,665
• Provide incentive program for existing homes and businesses to install "smart" irrigation controllers which automatically react to rain, temperature and moisture.	2011	NQ	NQ
• Adopt and enforce green building ordinance.	2010	12,152	51,358
• Partner with P.G.& E. and local employers to complete energy audits on all local businesses.	2010	NQ	NQ
• Encourage participation in Sacramento Sustainable Business Program.	2010	NQ	NQ
• Promote planting of shade trees on private and public property.	2010	116	408

Source: CAPP Model output

2.3 Community Energy Efficiency Measures Description

Create Energy Efficiency Financing Program under AB 811 for residential and commercial/industrial Buildings

Importance/Context Energy used in existing buildings off the Pacific Gas and Electric electrical and natural gas grid represents 39% of total community Greenhouse Gas creation. West Sacramento has approximately 9,000 housing units which were constructed prior to the adoption of Title 24 energy efficiency requirements in 1978. Most of the industrial buildings on the west side of the City were also built pre-Title 24. West Sacramento's future growth, both residential and commercial, will be in building which meet or exceed the high energy efficiency standards of the current Title 24. Probably the greatest potential for significant GHG emission reductions that are somewhat under local control will be improvements to the energy efficiency of older buildings in the community. While many older buildings may have received energy efficiency improvements such as improved insulation and upgrading to double paned windows, many more have not.

Implementation Scenario

In 2008, Assembly Bill 811 was signed into law. The law provides for Cities to designate areas within which property owners may voluntarily enter into contracts to place tax assessments on their real City of West Sacramento Climate Action Plan Draft – August 2010

property to finance energy efficiency and renewable energy improvements. California Communities is a joint powers agency sponsored by the League of California Cities and the California State Association of Counties. The City of West Sacramento is a member of this JPA. The member agencies of California Communities include all 58 counties and more than 400 other local governments throughout California, including the cities of Davis, Winters and Woodland and the County of Yolo.

The California First Program is being instituted by California Communities to issue bonds that would be available to finance private property improvements for renewable energy generation and conservation. If a property owner chooses to participate, they will be able to borrow funds from a bond pool issued by California First. Repayment is made through assessments on the improved property and paid with the owner's property taxes. The assessment runs with the property rather than with the owner. The program is available for both residential and commercial/industrial properties.

A grant application for \$16.5 million from the California Energy Commission State Energy Program has been approved which will cover the costs that local governments will incur by participating in the California First program. The funding from this grant comes from the American Recovery and Reinvestment Act (ARRA). The County of Sacramento is acting as the lead agency for the grant application on behalf of a collaborative of 14 counties and all of the incorporated cities within those counties, including Yolo County. Approximately \$6 million will be used to buy down interested rates for the loans to property owners; \$1.5 million is for contract administration and \$8.5 million for program administration and marketing. The administration and marketing funding for Sacramento and Yolo Counties is \$1,800,000.

Sacramento County would be responsible for establishing and implementing the program. The City of West Sacramento would participate primarily through using its communication channels (City Lights, cable channel, web site, utility bills) to its citizens and businesses to make people aware of the program

Types of improvements financed would include weatherization (insulation, double pane windows, and seals around doors), installation of Energy Star appliances, and potentially renewable energy sources.

Emission Reductions

If this program can retrofit 2,000 pre-Title 24 homes in West Sacramento by 2020, the CAPP program projects that 1,190 metric tons of CO₂e can be eliminated annually. A commercial program retrofitting 500,000 square feet of conditioned space could save 374 metric tonnes.

Predictions of post 2020 accomplishments from this program or successor programs is difficult. If an additional 3,000 pre-title 24 homes are retrofit by 2050, the CAPP program projects that an additional 3,572 metric tons of CO₂e can be eliminated for a total of 4,762ons.

Costs and Additional Benefits

Thanks to the State Grant, the City's costs will be limited to the staff time and resource costs of using its communication resources to promote the program.

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Private building owners would incur the costs of making energy efficiency improvements which would vary widely depending on the existing state of the building involved.

Additional benefits from more energy efficient existing buildings would include:

- Lower monthly energy bills.
- Improved work place comfort
- Reduced building operations and maintenance costs from longer lived lamps or other equipment.
- Improved Indoor air quality.
- Productivity and health benefits.
- Water savings.

Implement residential and commercial energy conservation ordinances

Importance/Context

As discussed under the energy efficiency financing measure, West Sacramento has many buildings which were built before the implementation of the Title 24 Energy Efficiency requirements of the Building Code. Several Cities have adopted ordinances requiring energy audits of existing buildings and in some cases requiring energy efficiency improvements to buildings. Given the magnitude of the emission reductions needed to reach the GHG targets and the large percentage (39%) contributed by energy use in existing buildings, it may not be possible to reach the goals without a mandatory conservation ordinance.

Implementation Scenario

Given the state of the economy in 2010, a mandatory energy conservation ordinance should be approached cautiously. It may be necessary to phase in a conservation ordinance after first aggressively implementing the voluntary energy efficiency financing measure outlined above. When an ordinance is adopted, its provisions could also be phased beginning with energy audit requirements and later proceeding to mandatory improvements.

Sample ordinances are available (San Francisco, Berkeley, Boulder) to assist in drafting an ordinance for West Sacramento. Members of the Green Team, working with the City Attorney's Office would likely draft such an ordinance when given direction to do so.

At this point in time it is recommended that a mandatory energy conservation ordinance be re-considered in about 2015 to allow for a voluntary effort to be fully tested.

It is entirely possible that a mandatory energy conservation requirement could be imposed at the State or Federal level within the next few years.

Emission Reductions

If a residential and commercial energy conservation ordinance were implemented in 2015 and applied to 500 housing units and 1,000,000 square feet of non-residential by 2020, the CAPP calculator indicates 475 metric tons of CO₂ would be eliminated.

The City has just over 15,000,000 square feet of commercial-industrial space built before the year 2000. Significant portions of that space are un-conditioned warehouse space. A conservative assumption that by 2050 some 5,000,000 square feet of industrial space will be retrofit for energy improvements through this and other programs indicates that 253 metric tons of CO_{2e} would be eliminated.

Costs and Additional Benefits

The City would incur the costs of drafting and enforcing an ordinance. As the ordinance is likely to be implemented in phases, there will likely several rounds of costs. Enforcement will be an ongoing cost.

Private building owners would incur the costs of making energy efficiency improvements which would vary widely depending on the existing state of the building involved.

Additional benefits from more energy efficient existing buildings would include:

- Lower monthly energy bills.
- Improved work place comfort
- Reduced building operations and maintenance costs from longer lived lamps or other equipment.
- Improved Indoor air quality.
- Productivity and health benefits.
- Water savings.

Participate in low-income weatherization initiatives with the goal of weatherizing all qualifying low-income homes in West Sacramento.

Importance/Context

Low-income residents may need assistance beyond the Energy Efficiency Financing Plan presented above. Low-income weatherization programs have been available for many years; however, funding levels have fluctuated from year to year. The American Reinvestment and Recovery Act of 2009 (ARRA) included \$5 billion to the Weatherization Assistance Program. A low-income weatherization non-profit, North Coast Energy Services, Inc. operates in Yolo County and four other counties to the north and west. Weatherization, on average, can reduce heating bills by 32% and an overall energy bills by about \$350 per year. In addition to saving low-income families on energy bills, weatherization reduces energy use which also reduces Greenhouse Gases.

Implementation Scenario

Similar to the financing program, the City's role in low-income weatherization efforts is more of a support and communication of the availability of the programs to its residents.

Emission Reductions

Emission reductions from this measure are included in the AB 811 loan program measure above.

Costs and Additional Benefits

The cost of the program includes the cost of administration and marketing as well as the actual cost of the weatherization improvements. Funding for these costs is available from ARRA and would flow through North Coast Energy Services. City costs would be limited to staff time for coordination and costs related to using City communication resources to promote the program.

Benefits would include: energy cost savings, reductions in necessary generation capacity development, more comfortable homes and improved interior air quality.

Promote the purchase of ENERGY STAR light fixtures and compact fluorescent light bulbs (CFLs)

Importance/Context –

Residents can save significant amounts of money and energy by installing light bulbs and light fixtures that have earned the ENERGY STAR. Such energy efficient lighting requires at least 65 percent less energy than incandescent lighting, generates 70 percent less heat, and last up to 10 times longer. On average, an ENERGY STAR qualified light bulb can save up to \$30 in electricity costs over the lifetime of the bulb.³ When residents install ENERGY STAR lighting they are also reducing greenhouse gas emissions by using less energy at home.

Implementation Scenario –

ENERGY STAR's "Change a Light, Change the World" campaign is a national challenge through which City of West Sacramento will encourage its citizens to take small, simple steps toward increased energy efficiency. Championing the ENERGY STAR "Change a Light, Change the World" campaign would cost the jurisdiction little while serving to save residents money and reducing emissions at the same time. As a jurisdiction, City of West Sacramento will set a pledge goal of getting at least 1,000 community members to pledge to replace at least one incandescent bulb at home with a more energy efficient one. City of West Sacramento can follow its progress toward its pledge goal by encouraging community members to log their pledges online at www.energystar.gov/joinCAL.

³ Source: http://www.energystar.gov/ia/partners/promotions/change_light/downloads/MayorToolkit.pdf
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Additional steps that the jurisdiction will take to encourage its citizens to switch to more energy efficient bulbs include: inviting local schools and universities to make pledges; and posting a link to the ENERGY STAR Change a Light pledge on the jurisdiction's website.

Emissions Reductions – On average, an ENERGY STAR qualified light bulb can reduce emissions by 450 pounds over its lifetime. If City of West Sacramento reaches its goal and at least 1,000 community members commit to changing just one bulb, the emissions reduction achieved will equal approximately 225 CO₂e tons. The emission benefits for this program are incorporated in the use of City communications tools to encourage energy conservation.

Costs and Additional Benefits

The purchase cost of an Energy Star light bulb is roughly 4 times the cost of an incandescent bulb.

In addition to reducing Greenhouse Gases, by using Energy Star rated light bulbs, residents and businesses can save money on electricity use, replacement of light bulbs and reduce materials going to the land fill.\

Promote water conservation through implementation of metered billing for water use, education, water efficient landscaping ordinance.

Importance/Context

The Bryte Bend Water Treatment Plant and related pumps and water distribution infrastructure is the single largest electrical energy consumer in the City of West Sacramento. The cost of electricity at the plant for 2009 was \$618,000. The primary purpose of the system is to provide clean, safe drinking water to residents and businesses, however, particularly in the summer; the majority of the treated water used is for landscaping. Businesses are currently on metered billing for water use. Meters have been installed with new houses for a number of years and the City is moving steadily to have meters installed on all homes. Historically and at this time billing is on a flat rate basis. Per agreements with the State wide water contracts, all users must be billed based on water use by 2012.

Implementation Scenario

New homes have been required to install meters for many years. The City has had an aggressive water main replacement program in the older neighborhoods for over a decade. With each replacement of a water main, the related houses have had water meters installed as well. As of early 2010, about 40% of older homes have been retrofitted with meters. Contracts in 2010 and 2011 will approach 100%. During 2012 the meter installation will be completed and residents will provided information on their bill on how their flat rate compares to the future use base rate. By January 2013, all bills will be based on usage. The City has had one staff person at the water plant for several years whose responsibility has been to promote water conservation through education.

Emission Reductions

A 15% reduction in water treatment and distribution from metered billing and a water efficient landscaping ordinance is estimated by the CAPP program to result in a reduction of 500 metric tons of CO₂ per year by 2020 and 221 by 2050..

Costs and Additional Benefits

Meter installation in new houses has been the responsibility of the contractor constructing the house. Meter retrofits have been funded from the capital portion of water rates. Implementation of the use based billing will be paid from water rates. Total cost of the metering program will be about \$5,000,000 by 2013. A grant for \$900,000 for water meter work was received in 2010 from ARRA.

Metering combined with a water efficient landscaping ordinance is expected to result in a 15 % reduction in water use. The use reduction will likely result in a \$ 100,000 reduction in electric use and costs at the water plant and in the water distribution system. A reduction in use rate will also reduce or postpone the need to eventually build additional treatment capacity at the plant.

Actively use the City's public communication tools (web site, City Lights, cable, utility bills, Commissions) to educate the public and City Staff on personal efforts which can conserve energy.

Importance/Context

The City has a number of tools for communicating information to its citizens. There is a semi-annual newsletter, "City Lights" which goes to every home in the City. The City has control of one cable channel for governmental affairs and another for community affairs shows. The City has rights to a billboard on US 80 for half of each year. Utility billings go out monthly to most addresses and the City has the ability to add language or inserts for very little cost. The City also has a web site which receives fairly solid traffic. As the local jurisdiction the City has the ability to sponsor events and make news. While never as effective as we would like, the City has an ability to reach its citizens in ways the State and Federal Government cannot. The key to reducing greenhouse gas emissions is changing behavior and creating awareness.

Implementation Scenario

The Green Team routinely uses these communication tools to discuss and promote Green activities and practices. It needs to continue to include regular articles in City Lights, maintain the Green City web page on the City web site, and use the utility mailers to encourage conservation. More effective use could be made of the cable channel and billboard. The City's ability to reach its citizens will be crucial to the effectiveness of efforts like the Energy Efficiency Financing Program and Low-Income Weatherization Program.

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Emission Reductions

Experience in other communities indicates that a robust outreach and educational program could result in a 10% decrease in energy use. That energy savings would be a result of a number of actions such as the purchase of Energy Star appliances when replacing old appliances, use of motion detection lighting controls, lowering or raising thermostats, water conservation, building improvements. The outreach program would support some of the other measures for which emission reductions have been calculated. A 10% decrease in energy uses is assigned to this measure. This measure is expected to result in a reduction of 8,312 metric tons of CO₂ annually.

Continuing this program to 2050 with the result of a 10% reduction in energy use would save 7,665 metric tons of CO₂e.

Costs and Additional Benefits

The primary cost is the staff time of employees who have primary responsibilities in areas outside the Green Team. It takes time to write articles, sponsor events, issue press releases, maintain web sites. The commitment of the people on the Green Team and the willingness of their home departments to provide the time necessary are critical. This commitment is particularly difficult in the 2009-2010 fiscal environment. All departments have lost positions and have fewer resources available.

Additional benefits beyond the potential Greenhouse Gas reduction goals to an aggressive communication effort include the better connection the City can achieve with its citizens.

Provide incentive program for existing homes and businesses to install “smart” irrigation controllers which automatically react to rain, temperature and moisture.

Importance/Context

As discussed under the water conservation measure above, significant energy is used to treat to drinking water standards water which is used in irrigation. Most homes and business now rely on timer irrigation controllers. Ideally, property owners would regularly adjust their controllers to match the weather, reducing or eliminating watering in cool and wet weather. Unfortunately, that rarely happens. Often sprinkler timers are reset once or twice a year with the result being irrigation occurring while it is raining. “Smart” irrigation controllers are now available which can sense the weather conditions. Basic rain sensitive override devices are available in local hardware stores for as little as \$20 which simply have a cup which catches rain and so long as there is water in the cup, the device maintains the irrigation controller in an off mode. More sophisticated controllers sensitive to air or ground moisture levels and temperature are available but are much more expensive.

Implementation Scenario

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As part of other water conservation programs, the City could offer coupons redeemable at local stores for the rain sensor devices. The City can also make sure water conservation education efforts include increasing awareness that such devices exist. As time goes on, it is likely that the more sophisticated sensors will get more cost effective and generally available.

Emission Reductions

Emission reductions for this measure are assumed to be covered under the City outreach measure.

Costs and Additional Benefits

Simple smart controllers are as little as \$20 in local hardware stores, more sophisticated versions can be \$1,000.

Over irrigation is a common cause of landscaping being less healthy than it could be.

Adopt and enforce green building ordinance

Importance/Context

The City of West Sacramento is well less than half way built out. Full build out may take fifty years but eventually the amount of space built from now on will exceed the amount of space currently existing. It is far easier and less expensive to build high energy efficient, new Green Buildings than to retrofit existing buildings. The Green Team has been working on drafting a Green Building Ordinance for the last year. A draft was prepared and circulated through the building community, City Commissions and the public. The draft was based on standards established by LEED for commercial/industrial buildings and Build it Green for residential. As the City Green Building Ordinance was being drafted, the State of California began implementing the California Green Building Ordinance. In late 2009, it was learned that the Californian Green Building Ordinance was being considered as the basis for the addition of Green Building provisions to the International Building Codes.

Implementation Scenario

Based on direction received from a City Council workshop, the Green Team is revising the Green Building Ordinance to be based on the State Green Building Ordinance. It is expected that a revised ordinance consistent with the State GBO but making mandatory some of the provisions that are voluntary under the State GBO will be returned to Council for adoption in 2010.

Emission Reductions

To accommodate a growth in population to 59,000 by 2020 as expected will require construction of about 4,000 housing units. These are likely to be predominately smaller, urban units in the Riverfront area. If an additional 4,600,000 square feet of non-residential is built in the decade, total square

footage would be about 13,000,000 square feet of new construction. According to the CAPP calculator, this square footage built under a Green Building Ordinance would result in the elimination of 12,152 metric tons of CO₂.

The General Plan update projects an additional 61,000 persons in population and 55,000 more jobs in West Sacramento at build out, which should occur by 2050. At 2.6 persons per household and an average unit size of 1,800 square feet, residential development will result in the construction of 42,000,000 square feet of residential buildings. Assuming 500 square feet of building per job, employment growth will result in the construction of 27,500,000 square feet of commercial/industrial space. According to CAPP, this combined square footage of 70,000,000 square feet of Green Building will eliminate 51,389 metric tons of CO₂e.

Costs and Additional Benefits

The additional cost of constructing a new building to the higher energy and environmental standards of a Green Building Ordinance will vary depending upon the standard applied and the type of building. Generally estimates are in the 5-10% range for additional cost.

Additional benefits from more energy efficient existing buildings would include:

- Lower monthly energy bills.
- Improved work place comfort
- Reduced building operations and maintenance costs from longer lived lamps or other equipment.
- Improved Indoor air quality.
- Productivity and health benefits.
- Water savings.
- Potential for greater marketability of the building to environmentally conscious tenants.

Partner with P.G.& E. and local employers to complete energy audits on all local businesses.

Importance/Context

Unlike most Cities, West Sacramento's Greenhouse Gas Emissions from its Commercial/Industrial sector are larger (24%) than it's Residential Sector (15%). In most local cities, the two are roughly equal. West Sacramento possesses an employment and business base that is much larger than a typical city of its population. This large business base makes it imperative that a significant amount of the overall Greenhouse Gas Emission reduction must come in the business sector.

Implementation Scenario

The first step to making improvements to business energy efficiency understands how energy is being used in the business. An energy audit looks at how energy is being used by the business and identifies areas where improvement is most available. An energy audit will produce a list of measures for the City of West Sacramento Climate Action Plan Draft – August 2010

business where the greatest energy savings can be obtained for the least cost. In the cost conscious business environment we are experiencing, many businesses have already done energy audits and implemented measures which can create net savings. Saving energy saves money. Pacific Gas and Electric will provide businesses with detailed on-site energy audits.

<http://www.pge.com/mybusiness/energysavingsrebates/analyzer/onsite/>

The City, working with PG&E and the Chamber of Commerce can use their combined communication tools to educate businesses about the need for and availability of energy audits. Some energy efficiency improvements are clear and immediate money savers. Other improvements might make sense in the future as energy prices rise. PG&E rebates combined with Energy Efficiency Financing might make otherwise non-economic improvements cost effective.

Emission Reductions

Energy audits do not of themselves cause emission reductions. The audits provide the basis for energy efficiency improvements covered in other measures.

Costs and Additional Benefits

See costs and additional benefits under Energy Efficiency Financing Program above.

Encourage participation in Sacramento Sustainable Business Program.

Importance/Context

The Business Environmental Resources Center (BERC) was established in 1993 by Sacramento County. It is a Permit Assistance Center to help business navigate, understand and comply with Federal, State and local environmental regulations and processes. One of BERC's programs is the Sacramento Sustainable Business Program. <http://sacramentosustainablebusiness.org/>. This program allows business to assess their environmental practices in areas such as; energy conservation, water conservation, waste management and green buildings. Businesses which meet best practices criteria can be recognized as a certified sustainable business. Certified sustainable businesses are awarded a plaque and stickers which can be displayed in their windows. This certification could provide a marketing edge in dealing with environmentally minded customers. The program is open to Yolo County businesses and there are certified Yolo businesses.

Implementation Scenario

As this is an on-going program, implementation from the City's point of view would be using its contacts and communication tools to make West Sacramento businesses aware of the program.

Emission Reductions

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Due to the indirect nature of the City's involvement and unpredictability of results, no emission reduction is estimated from this measure

Costs and Additional Benefits

The costs of the City providing visibility and support for this program would be minimal.

The program provides additional networking and visibility for participating West Sacramento businesses. It is also an opportunity for the City to make positive contacts with its businesses.

Promote planting of shade trees on private and public property.

Importance/Context

The Sacramento Valley is hot in the summer. As urbanization replaces agriculture, that heat is magnified in the urban area by the increased absorption of sunlight into asphalt and concrete compared to vegetation. The planting of shade trees has long been a standard practice in the Sacramento Region. The City of Sacramento is known as the "City of Trees". Shade trees absorb sunlight and use it to grow and remove carbon dioxide from the air. They interrupt the sunlight from reaching the hard surfaces below. The Sacramento area is several degrees cooler in the summer than it would have been without the extensive tree canopy. Expansion and retention of the shade tree canopy is a vital program within the Climate Action process.

Implementation Scenario

The City of West Sacramento Zoning Ordinance has significant requirements for the planting of new street trees, parking lot shading trees and screening trees in new development projects. Spacing requirements are such that at maturity, much of the ground surface will be shaded.

The City also has a Tree Ordinance which protects existing trees and requires the planting of replacement trees or the payment of a fee into a Tree Mitigation Funds to allow those trees to be replaced elsewhere. The City has a full time person tasked with providing advice on trees, finding locations and implementing tree planting projects around the City. Originally capitalized by a mitigation payment for trees removed during the construction of the Lower North West Sewer Interceptor Line which connects West Sacramento to the Regional Sewer Treatment Plant in Elk Grove, the Tree Mitigation Fund Program has planted over 5,000 new trees in West Sacramento in the last 5 years.

As new development occurs, the first priority is to preserve as many existing trees on site as possible. In some cases the location or density of existing trees makes that impossible. Mitigation funds from the removal of trees will fund the planting of many more trees in the future.

Emission Reductions

Assuming the Tree Program is successful in planting an additional 5,000 trees in the next 10 years, the CAPPA program estimates this will result in a reduction of 116 metric tons of CO₂ per year. Tree planting requirements should result in the planting of an additional 40,000 trees in the community by 2050 with a resulting 408 metric tons of CO₂e eliminated..

Costs and Additional Benefits

The cost of planting a new 15 gallon tree, including the tree, labor, and providing irrigation is about \$400 per tree. Most of that cost is irrigation so trees in areas already served by irrigation are much less.

- The planting of a shade tree in West Sacramento provides many benefits:
- The direct carbon removal from the atmosphere as the tree grows.
- Reduction of the heat island effect from sun shining on concrete and asphalt.
- Reduction of air conditioning costs when trees are planted to provide shade on houses or offices.
- Making the outdoor environment more livable and enjoyable in the summer.
- Providing habitat for birds and small animals.
- They are just nice to look at.

4.2.2.B. Municipal Operations

Table (4.7): Proposed Municipal Energy Efficiency Emissions Reduction Measures

Energy Efficiency Emissions Reduction Measures	Year to be Initiated	Annual CO ₂ e Reduction by 2020 (tons)	Annual CO ₂ e Reduction by 2050 (tons)
<ul style="list-style-type: none"> Conduct energy retrofits in municipal buildings; reduce energy use 20% in older buildings staying in service. 	2011	44	20
<ul style="list-style-type: none"> Build all future City buildings to LEED Silver standards at least. 	2010	36	40
<ul style="list-style-type: none"> Monitor economics of replacing street lights with LED lights, implement when feasible. 	2015	199	87
<ul style="list-style-type: none"> Where feasible, use drainage/irrigation water to water park, retention basin and corridor landscaping. 	2010	NQ	NQ
<ul style="list-style-type: none"> Complete installation of irrigation centralized computer control system. 	2011	NQ	NQ
<ul style="list-style-type: none"> 			

Source: CACP Model output

Proposed Municipal Energy Efficiency Descriptions

Conduct energy retrofits in municipal buildings; reduce energy use 20% in older buildings staying in service.

Importance/Context

Up to one third of the energy used to run typical government buildings goes to waste. This translates into a significant amount of taxpayer money that is wasted due to inefficient energy use. It is for this reason that government buildings are good candidates for energy efficiency retrofits that save the jurisdiction money, reduce maintenance burdens, improve comfort, and reduce greenhouse gas emissions. Cost savings will begin to accrue immediately due to reduced electricity and natural gas consumption. Building retrofits also reduce the emissions of air pollution such as particulate matter, nitrogen oxides and volatile organic compounds.

While retrofitting City building would seem to be an obvious step, it is important that the City be smart about the life cycle status of the buildings.

City Buildings fall generally into three categories.

New, Highly Energy Efficient Buildings

- City Hall, West Capitol Avenue. (Built 2000)
- Recreation Center, Jefferson Blvd. (2008)
- Community Center, West Capitol Avenue (under construction 2010)
- Bryte Bend Water Plant Control/Admin, River Road (2006)
- Fire Station 41, Westacre Road (2006)
- Fire Station 45, Lake Washington (2006)
- Main Drain Pump Station, Marshall Road (2010)

Old Buildings which should be replaced at the soonest available opportunity.

- Public Works and Parks Admin., South River Road
- Club West, Riverbank Rd.
- Fire Station 43, Industrial Blvd.

Old Buildings which are likely to be in service for many more years

- Police Department, Jefferson Blvd.
- Water Plant Lab Building, River Road
- Sam Coombs Park Building, Stone Blvd.
- Fire Station 44, Fremont Blvd.
- Various pump and control stations in the sewer, water and storm drain systems.

Implementation Scenario

Most all City facilities have had energy audits prepared on them. Many energy efficiency improvements have been made at existing buildings as a result. The improvements have been made primarily on a reaction basis, if a light bulb burns out it is replaced with a CF. The next stage would be to develop a pro-active plan for making improvements.

The New Buildings have limited opportunity for improvement. They are at state of the art and should be maintained and managed correctly to maximize the efficiency of the systems they have and upgrade as the systems age in the future.

Old buildings which should be replaced should be evaluated for low cost, high return energy improvements such as appliance replacements, weatherization and energy management.

Priority for action should be Old Buildings which are likely to be in service for many years. The Police Department in particular is the prime candidate for a significant retrofit. This thirty year old converted warehouse needs near complete replacement of HVAC systems and appliances. The Water Plant Lab and Sam Coombs Park building have similar needs. Improvements to Fire Station 44 would need to be tempered by the fact that it too should eventually be replaced, though this is unlikely to happen in the next 20 years.

The City should achieve a 20% reduction in energy use in the old buildings which will remain in service from 2005 by 2015. No additional post 2020 improvements are assumed.

The jurisdiction has the option of selling bonds to finance the retrofits and using the energy savings to pay back the bonds. ENERGY STAR provides valuable information on financing government energy projects at:

www.energystar.gov/index.cfm?c=government.bus_government.

Emission Reductions

The emissions reduction achieved through energy efficiency retrofits will vary, but promise to be significant. A savings of one million kWh reduces emissions by over 245 tons CO₂e. For every 1,000 Therms of natural gas that is saved, the jurisdiction is achieving an emissions reduction of 6 tons CO₂e. Retro fitting the approximately 30,000 square feet of older buildings identified above to achieve a 20% reduction in electrical and natural gas use would result in the elimination of 44 metric tons of CO₂ annually.

Costs and Additional Benefits

Costs to retrofit the buildings identified are likely to be in the vicinity of \$100,000.

Build all future City buildings to at least LEED Silver standards.

Importance/Context

A major part of the City's role in reducing Greenhouse Gases is serving as a leader and example for the community. A Community Center is currently under construction to LEED Silver standards, and may qualify for gold. The city will grow substantially over the next 40 years and will need many new civic facilities.

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Implementation Scenario

The Community Center is likely to be the last city building built for a number of years. In the longer run, probably beyond 2020, an additional Community Center, 3 Fire Stations, a Police station, and a Corporation Yard and Building will be needed.

Emission Reductions

The Community Center's construction as a LEED Silver Building will reduce GHG emissions by 36 metric tons CO₂. Construction of 65,000 square feet of new City buildings after 2020 at LEED Silver levels will result in the elimination of 68 metric tons of CO₂e in 2050.

Costs and Additional Benefits

Construction Costs for a LEED Silver Building are believed to be 5-10 % more than a standard Title 24 compliant building.

There is every reason to believe that a LEED building will pay for its increased construction costs within a few years in energy cost savings. It is vital that the City organization show leadership in its commitment to green buildings. Green Buildings are also believed to be healthier working environments for employees.

Monitor economics of replacing street lights with LED lights, implement when feasible

Importance/Context

LED (light emitting diode) technology is available for street lights. LED Street Lights are estimated to use an average of 70% less power for the same light level compared to conventional street lights (source PG&E). In 2007, the power used to run street lights in West Sacramento generated 1,793 tons of CO₂.

Pacific Gas and Electric owns most of the street lights in the pre-1990 neighborhoods of the City. The City owns most of the street lights in subdivisions built after 1990.

Implementation Scenario

City staff has been monitoring developments in this area for several years. At this time the potential power savings are insufficient to finance a program to replace existing street lights with LED. As more LED street lights are manufactured, costs are coming down. It can also be expected that the cost of power will continue to go up. At some point a replacement program changing existing street lights to LED street lights will be cost feasible. At that time, staff will work with PG&E to initiate that replacement.

Emission Reductions

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If the 3,167 City owned street lights and the 1,436 P.G. &E. owned street lights were replaced with LED street lights, 199 metric tons of CO₂e emissions would be eliminated.

Costs and Additional Benefits

The primary obstacle to this replacement project is the roughly \$3,000 per street light capital cost of installing a LED street light head.

LED street lights are also likely to have a longer useful life than conventional street lights and would need to be replaced less.

Where feasible, use drainage/irrigation water to water park, retention basin and corridor landscaping

Importance/Context

All new municipal parks and landscapes designed and built over the past two years have used the “purple pipe” irrigation pipe standards promulgated by the Sacramento Regional County Sanitation District for use of non-potable water for irrigation. Use of the “purple pipe” standards enables the City to discontinue use of costly treated water when alternative water supplies are available. The first example of non-potable water supply for irrigation went on-line in 2008, when trees planted around the MC-10 Storm water Detention Ponds were irrigated by water pumped from the north basin.

There are several future opportunities for similar solutions as parks, retention basins and corridors are landscaped. The Main Drain Trail and the Clarksburg Line Trail are adjacent to drainage canals. These trails are minimally developed at this time but eventually will be landscaped. A future private golf course is proposed which will be adjacent to several proposed man-made lakes which are part of the drainage system. A future community park and open space corridor is proposed in another village in Southport which will be connected to the drainage system.

Implementation Scenario

The most likely projects to occur in the next 10 years would be the introduction of landscaping along the Main Drain and Clarksburg line. There is also the potential to convert the irrigation of the Summerfield and Patwin Parks from potable to non-potable water. A key to being able to develop this system is the need to replace the Reclamation District 900 water input pump by the Sacramento River near the end of Linden Road. This pump died several years ago and has not been replaced because it was originally to provide water to the canal system in the summer for agricultural irrigation. The amount of agricultural irrigation needed today does not necessitate this pump. In the future, use of canal water for parks and landscaping irrigation will require replacement of the pump to supply water in the summer.

Emission Reductions

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The amount of water which would be diverted from the treatment system for these projects is not currently known.

Costs and Additional Benefits

The primary cost factor for the expansion of this system is the replacement river supply pump. That cost has been estimated at \$10,000.

The use of non-potable water for irrigation purposes frees up capacity in the water treatment system and can help postpone any need to expand the plant in the future.

Complete installation of irrigation centralized computer control system

Importance/Context

In the early days of the City after incorporation, irrigation controller for parks, street landscaping and other irrigation in public areas were manually controlled or mechanically controlled. These systems were highly inefficient in adjusting watering to changing weather conditions. Over the years the City has connected these controllers to a central computer control. Over 92 acres of street landscaping and 140 acres of parks are under central control.

Implementation Scenario

The City will be developing at least an equal acreage of street landscaping and parks in the future. Most of this new development will probably occur after 2020. The City will continue to operate computer controlled irrigation and will evolve and improve its system as technology allows.

Emission Reductions

Due to the small volume of irrigation water involved, GHG reductions are fairly minimal.

Costs and Additional Benefits

Most street landscaping and most existing parks will remain irrigated by the treated potable water system. The treatment requires significant energy which creates Greenhouse Gases. Using just the right amount of water minimizes energy use. Using the right amount of water is also better for the health of the landscaping.

4.2.3. Renewable Energy Measures

Currently available sources of renewable energy include solar, wind, biomass and geothermal. Hydrogen fuel cells and tidal current power are renewable energy sources that hold promise but require further research and innovation before they are as practical and possible to implement as other options.

Renewable energy sources offer the potential for a clean, decentralized energy source that can significantly impact the municipality's greenhouse gas emissions. City of West Sacramento will work to build on current efforts to integrate alternative energy into the community's power scheme.

4.2.3.A Community Measures

Table (4.8): Proposed Community Renewable Energy Emissions Reduction Measures

Renewable Energy Emissions Reduction Measures	Year to be Initiated	Annual CO ₂ e	
		Reduction by 2020 (tons)	Reduction by 2050 (tons)
• Encourage development of local renewable energy projects.	2010	NQ	NQ
• Offer incentives for the installation of solar hot water heaters and solar pool heaters	2011	362	1,068
• Offer incentives for the installation of solar photovoltaic projects.	2011	229	0
• Lobby for the establishment of a goal of a zero carbon electrical grid by 2050	2010	NQ	NQ

Source: CAPP Model output

Encourage development of local renewable energy projects.

Importance/Context

Renewable, non GHG producing energy generation is one of the most powerful and effective methods for reducing Greenhouse Gases. Local renewable energy projects have the advantage of putting electrical energy directly into the grid near where it will be used, minimizing line losses. West Sacramento has already had some success at local renewable energy projects. Toni's Fine Foods, a West Sacramento refrigerated warehouse business has installed the largest solar powered project owned by a business in California. The 1 megawatt facility cost \$7 million and with rebates, tax credits and

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incentives is expected to pay for itself in 7 years. The photovoltaics are most effective in powering the food storage refrigeration units in the heat of the summer days. The Port of Sacramento has also recently activated a 637 Kw photovoltaic facility installed on the roof of two warehouses on the Port which will provide all the electrical power the Port needs for the next 20 years.

Implementation Scenario

A specific project is underway in West Sacramento which demonstrates clearly how the City/Port can encourage local renewable energy projects. A private company Otras Producciones de Energia Fotovoltaica (OPDA) is (as of March 2010) nearing the beginning of construction of a 24 million watt solar array project. The project will be built on Port of West Sacramento owned land on the west levee of the Deep Water Ship Channel just south of the Port of Sacramento Industrial Park. The Port has entered into an Exclusive Negotiating Agreement to draft a land lease for the project. Environmental review is Final engineering is being completed with the hope of a summer 2010 construction start. Power from the solar array would be sold to the P.G. & E grid. The project will produce 48 gigawatt hours of renewable, clean energy annually, enough to power approximately 6,000 homes.

The City can encourage local renewable energy projects through rapid handling of permitting requirements, providing land and public building roofs as sites, financing and education.

Emission Reductions

Emission reductions from the project are estimated at 34,472 metric tonnes of CO2 annually. The project will be a step towards PG&E meeting its requirement to generate 33% of its power from renewable uses. That reduction is reflected in Measures Implemented External to the City of West Sacramento later in this Chapter. . This plant therefore cannot be counted as a West Sacramento specific reduction measure.

Costs and Additional Benefits

The project will provide lease payments to the Port of West Sacramento.

Offer incentives for the installation of solar hot water heaters and solar pool heaters

Importance/Context

Solar hot water heaters for heating tap water in buildings and for warming pools are a proven technology which can reduce the use of natural gas for heating. Solar heaters would reduce the use of natural gas for the heating of water.

Implementation Scenario

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The City should also look to not charging the City portion of the plan check and inspection fee for building permits for solar facilities. The lost revenues would be relatively minor and it would send an important message to the community regarding the City's commitment. Informational handouts should also be made available at the building public counter.

Emission Reductions

If 500 solar water heaters were installed in the community, the result would be a reduction of 362 metric tons of CO₂.

If an additional 1,000 solar water heaters are installed from 2020 to 2050, the result would be a reduction of an additional 724 metric tons of off-set natural gas for a total of 1,068 metric tons.

Costs and Additional Benefits

A solar water heater installed will cost one to two thousand dollars.

Lost plan check revenue would be probably less than a thousand dollars per year.

Offer incentives for the installation of solar photovoltaic projects

Importance/Context

Solar photovoltaic (PV) systems generate energy by harnessing sunlight. Technologies that can convert solar energy into electricity can be installed at the point of use. Solar energy is a clean source of electricity that does not produce greenhouse gas emissions. Installing PV panels on homes can also save residents money by offsetting the need for power from the grid, and increase local energy security and reliability.

Cost savings will begin to accrue after a payback period of 10-15 years. Other benefits include reduced emissions of criteria air pollutants from power plants, development and local demonstration of renewable energy technology, and increased residential energy reliability, security, and cost certainty. Further, while a PV system will not increase a resident's property taxes, it will increase the property value.

Implementation Scenario

Launch a "City of West Sacramento Solar Program" that serves to provide background information on solar PV systems, financing resources, information on rebates and incentives, and information on solar contractors. Work to eliminate barriers to residential and business solar installations, by offering information at building permit counters, expediting or streamlining permitting requirements, and reducing or eliminating permitting fees. Roll out a consumer awareness campaign to demystify the process for installing solar energy on rooftops. Target new home buyers, realtors, lenders, business owners, and current homeowners.

Local and state rebates, incentives, and tax credits will reduce this cost for residents by at least 30 percent. Businesses can benefit even more from tax credits and accelerated depreciation of the PV system cost. The California Solar Initiative (<http://www.gosolarcalifornia.ca.gov/>) provides rebates and information for small and large solar systems. Also see the Database of State Incentives for Renewables and Efficiency (DSIRE) at <http://www.dsireusa.org/>.

Emissions Reductions

For every kW of installed capacity, PV panels can generate approximately 2,000 kWh of electricity per year. For every kW of installed capacity, PV-generated electricity savings translate to an annual emissions reduction of about 0.5 ton CO₂e. If 1000 KWs of solar PV capacity is installed by private installations as a result of the program 229 metric tons of CO₂ emissions would be eliminated.

Any solar Photo Voltaic capacity after 2020 is assumed to be part of PG&E's move to a zero carbon grid by 2050.

Costs and Additional Benefits

PV panel installations cost \$7-10 per Watt, depending on system size and availability of product.

Lost plan check revenue would be probably less than a thousand dollars per year.

Lobby for the goal of a zero carbon electrical grid by 2050.

Importance/Context

The State has established a mandate that the large public power suppliers in the State, including P.G. & E., achieve the goal of generating 33% of their power from "qualified renewable sources". In the case of P.G. & E., this will result in a reduction of the percentage of power generated from natural gas from 40% of the total to 20% of the total. There is currently no goal established beyond the 2020 timeline. To realistically reach the goal of reducing GHG emissions state wide to 80% of 1990 levels a zero carbon electrical grid will need to be in place.

Implementation Scenario

The City has no direct control over the establishment of standards for statewide electrical generation. The State of California has the authority to establish a higher and longer term goal for renewable power generation. What the City can do is add its voice to political support for the establishment of a long range, zero carbon electrical grid and use its lobbying effort to encourage the State.

Emissions Reductions

In the case of West Sacramento, a zero carbon grid would result in the reduction of 260,000 metric tons of CO₂e per year from Business as Usual in 2050. Because this is not an issue under City control, no credit is taken for its accomplishment.

Costs and Additional Benefits

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The costs of achieving a zero carbon grid would be considerable. Establishing a goal for 2050 would mean that many of the natural gas power plants currently in use would be reaching the end of their natural life anyway. Technology improvements over the next 40 years should help reduce the cost.

In addition to the GHG reductions there would be improvements in other regulated emissions and a resulting general improvement in air quality. The society would benefit from the health related improvements which would result.

Establishment of a zero carbon mandate for 2050 would provide utilities and investors with the certainty needed to invest in new technologies to accomplish the goal. Such a goal would put California in a lead role in the development of clean energy technology.

4.2.3.B. Municipal Operations

Table (4.9): Proposed Municipal Renewable Energy Emissions Reduction Measures

Renewable Energy Emissions Reduction Measures	Year to be Initiated	Annual CO ₂ e Reduction by 2020 (tons)	Annual CO ₂ e Reduction by 2050 (tons)
<ul style="list-style-type: none"> Consider alternative energy generation options (e.g., solar PV and heat) in any future municipal buildings 	2011	50	50
<ul style="list-style-type: none"> Purchase green tags/renewable energy certificates 	2015	NQ	NQ

Source: CAPPA Model output

Municipal Renewable Energy Measures

Consider alternative energy generation options (e.g., solar and wind) in any future municipal buildings

Importance/Context – Solar photovoltaic (PV) systems generate energy by harnessing sunlight. Technologies that can convert solar energy into electricity can be installed at the point of use. Solar energy is a clean source of electricity that does not produce greenhouse gas emissions. Installing PV panels on municipal buildings can also save money by offsetting the need for power from the grid, and increase local energy security and reliability. Cost savings will begin to accrue after a payback period of 10-15 years. Other benefits include reduced emissions of criteria air pollutants from nearby power plants, development and local demonstration of renewable energy technology, increased energy reliability, security, and cost certainty.

Implementation Scenario – PV panel installations cost about \$5-10 per Watt in most municipal building settings. Install PV systems on the roof of City Hall and use power generated on-site to meet electricity demand for that facility. The State of California offers a rebate of \$2,800 per kW or \$2.80/Watt, for systems under 30kW, which covers about 30% of the total system cost. PG&E’s Self-Generation Incentive Program offers a rebate of \$2,800 per kW for systems larger than 30kW. For more information: www.pge.com/selfgen. Additionally, the federal government offers tax incentives for installing photovoltaic panels on commercial-zoned buildings. Cities cannot generally take advantage of these tax incentives, but entities exist that can aggregate tax credits for cities. These entities essentially lease the rooftop from the city and pass along the energy savings to the city.

The City should also examine the potential to heat the pools at the high school recreation center using solar water heaters and the potential to heat water for domestic use in City buildings.

Emissions Reductions –

A 100 KW PV installation on the roof of City Hall would result in the reduction of 50 metric tons of CO₂e.

Costs and Additional Benefits

The cost of a 100 KW system for the roof of City Hall would be about \$600,000.

Purchase green tags/renewable energy certificates

Importance/Context

Renewable Energy Certificates (RECs) allow an institution or home to claim ownership of renewable energy sources such as solar, wind, and biomass generation, without having to generate that energy themselves or be directly connected to it. RECs sell the environmental benefits of renewable energy separately from the electricity itself. The renewable energy generation may be in a different part of the country from the energy user, but each REC bought requires that a certain amount of renewable electricity must be produced, avoiding burning fossil fuels and the greenhouse gases they would have produced.

Governments can set an example by purchasing RECs for a percentage of their operation. They can also encourage residential and commercial customers to sign up for RECs

Implementation Scenario

The first focus for reducing municipal emissions should be local to obtain the other air quality benefits that go hand in hand with carbon reductions. The REC might be a mechanism for closing the last gap toward meeting a reduction goal after all feasible local measures have been tried.

Emission Reductions

If the City of West Sacramento purchased an additional 10% of its roughly 16.8 million kWh per year as renewable power, it would reduce emissions by 176 metric tons of CO₂. Because the City appears to be able to meet its goal without this purchase, no credit is taken in the City totals.

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Costs and Additional Benefits

A Renewable Energy Certificate costs about \$.091 per KH. Ten percent additional renewable power would cost approximately \$31,000. Such a commitment would serve as an example for other government entities and the private sector.

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4.2.4. Solid Waste Management Measures

All cities in California, including the City of West Sacramento, have a requirement to reduce waste sent to the landfill by 50% from 1990 levels. The City of West Sacramento is committed to this and strategies to achieve this goal are already set in motion. This section of the action plan illustrates additional measures that should be taken immediately. Such measures include expanding existing commercial and residential recycling, adding composting programs, and expanding community education and outreach initiatives. Further, City of West Sacramento is placing increasing emphasis on achieving emissions reductions through promoting sustainable landscaping practices such as those outlined in River Friendly Landscape Guidelines

As is demonstrated in this document, many of the City of West Sacramento's own solid waste diversion programs dovetail nicely with municipal efforts to reduce greenhouse gas emissions. While the City of West Sacramento's charge to reduce the waste stream may seem external to traditional emission reduction strategies such as energy and transportation, ICLEI has illustrated the emissions benefits of waste reduction, recycling and composting and these are contained within this report.

Recycling and waste prevention programs make a significant contribution to reducing the energy and transportation needed to manufacture and ship virgin products and packaging. Composting makes a significant contribution to reducing methane production in the landfill and reduces the need for energy intensive fertilizers and pesticides. Indeed, the EPA 2000 report states:

Results from research conducted by ICLEI provided in this report, show that practices such as residential and commercial recycling and composting, buying recycled products, green building and water efficient landscaping play an important role in a local government's emission mitigation strategy. In fact, climate change mitigation can be seen as an umbrella under which a jurisdiction's waste diversion programs play a substantial role.

4.2.4.A. Community Measures

Table (4.10): Proposed Community Solid Waste Management Emissions Reduction Measures

Solid Waste Management Emissions Reduction Measures	Year to be Initiated	Annual CO₂e Reduction by 2020 (tons)	Annual CO₂e Reduction by 2050 (tons)
▪ Raise recycling target to 70% diversion from landfill for construction and demolition waste..	2011	442	442
▪ Increase participation in multi-family dwellings in recycling program.	2010	NQ	NQ
▪ Increase participation in commercial recycling/reuse programs for paper, cardboard, and plastics. .	2010	NQ	NQ
▪ Encourage on site composting of food and yard waste.	2010	NQ	NQ
▪ Increase participation in residential curbside recycling programs	2010	NQ	NQ
▪ Reduce Landscape Waste by Adopting a River Friendly Landscaping Ordinance	2011	NQ	NQ
▪			
▪ Encourage backyard composting and grass recycling.	2010	NQ	NQ
▪			

Source: CACP Model output

Raise recycling target to 70% diversion from landfill for construction and demolition waste.**Importance/Context**

The current target of the City's recycling policy is to divert 50% of waste from the landfill. The City has consistently diverted approximately 60% of its waste stream from the land fill in recent years. The 50% target was a minimum established beginning in the year 2000 by the Integrated Waste Management Board (now CalRecycle). Though Climate Action and Sustainability efforts, many Cities are establishing higher targets.

Implementation Scenario

Currently, residential recycling participation is above 50%; however, commercial participation is much less. The first efforts to reach 70% diversion should focus on commercial business participation in

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recycling mainly in the construction and demolition waste category. Demolition and construction waste is regulated as part of the building permit process. The City's current 50% requirement would need to be amended to 70%. This change would require Council action to amend the recycling ordinance.

Emissions Reductions

Achieving an increase in diversion of construction waste from 50% to 70% would result in the reduction of 442 tons CO₂e based on a 2007 level of development.

Costs and Additional Benefit

Enforcing this standard would add costs to a construction environment which is underwater in 2010 to begin with. Enforcement might need to wait for a stronger economy.

Increase participation in multi-family dwellings in recycling program

Importance/Context

There are 3,434 units in 100 multi-family complexes of 5 or more units each. In addition there are 17 mobile home parks containing 1,387 mobile homes in West Sacramento. These represent of the housing stock. Multi-family complexes are eligible to receive free mixed recycling bins for the use of tenants. The current participation rate in the program is 44% of complexes. This low participation rate is in many cases due to a lack of additional space in garbage collection enclosures built before recycling became common. Multi-family and mobile home park units show a 24% diversion rate of recyclables out of total collection. This relatively low participation rate shows significant potential to improve the rate closer to the 50% city wide standard.

Implementation Scenario

Implementation of this measure would involve dual marketing efforts. One program would be oriented to multi-family property owners to allow placement of collection bins and an on-going educational effort to tenants to encourage recycling. The provision of small internal collection bins for units might also encourage participation. These marketing efforts are likely to be included in broader marketing efforts such as the program on energy efficiency education.

Emissions Reductions

Emission reductions for this measure are assumed to be included in the energy efficiency education program.

Costs and Additional Benefits.

Costs would include additional bins provided and additional collection time for Waste Management. Property owners might incur some additional costs to modify garbage collection areas to accommodate recycling bins.

Increase participation in commercial recycling/reuse programs for paper, cardboard, and plastics.

Importance/Context

The commercial sector generates two-thirds of the jurisdiction's total waste. Expanding recycling, waste prevention and composting programs for jurisdiction's businesses will reduce global warming emissions. Recycling and waste reduction saves resources and reduces the emissions that cause global warming. Recycling reduces greenhouse gas emissions because manufacturing products from recovered materials avoids emissions from the energy that would have been used during extraction, transport and processing of virgin raw materials. The reuse and recycling of organic materials (such as paper, cardboard, and food) also keeps waste out of the landfill where it breaks down and releases methane, a powerful greenhouse gas. Such practices also have the potential to reduce the transportation of waste materials to the landfill, thereby conserving fuel.

Implementation Scenario

An initial effort has been made to encourage commercial recycling through the Recycle Rewards Program which was implemented last year. This program will be repeated every year in the future and will focus on either businesses or multi-family dwelling complexes. However, additional outreach needs to occur to get their participation. This could also be coupled with a municipal ordinance requiring commercial recycling as is currently required for construction and demolition waste. In addition to commercial recycling, some form of mandatory recycling should be explored in the industrial community.

Other diversion opportunities could be found through food waste composting at restaurants and in the residential sector

Participate in the regional green business program by recruiting area businesses to sign on.

Provide the necessary facilities and services to make such practices as convenient as possible through participation from the City's waste hauler, Waste Management.

Emissions Reductions

i. Increase the reuse and recycling of cardboard boxes: In West Sacramento, about 1,007 tons of cardboard enter the waste stream every year. If 50 percent of the cardboard was reused and/or recycled, the City would reduce emissions by 1,950 tons CO₂e annually. For every 1 ton of corrugated cardboard boxes that is kept from entering the landfill, about 3.87 tons of CO₂e are avoided.

ii. Increase the recycling of plastic film: Recycling plastic film such as that used to make plastic bags, reduces emissions by avoiding the upstream energy necessary to produce new products. For every ton of plastic film (in the form of Low Density Polyethylene LDPE) that is recycled, about 1.9 tons of CO₂e are avoided annually.

iii. Recycling paper: Recycling paper reduces emissions by avoiding the upstream energy necessary to produce new units of paper, and by avoiding emissions at the landfill since paper is an organic material that decomposes to form methane. For every ton of mixed general paper recycled about 4.3 tons of CO₂e are avoided.

iv. Increase the utilization of reusable transport packaging: Plastic pallets are more durable and last about 50 times longer than wood pallets and therefore produce less waste. For every reusable plastic pallet utilized in place of a wooden one, the community is achieving an emissions reduction of approximately 830 pounds CO₂e. Similar benefits are realized by replacing limited or one-time use cardboard boxes with durable totes and containers.

Cost and Additional Benefits

There could be a small increase in charges to cover additional outreach to get commercial and industrial customers to recycle. If a recycling ordinance was in place, an employee would need to be assigned to enforcement; however, that person could cover other jobs as well.

Increase participation in residential curbside recycling programs

Importance/Context

The residential curbside recycling program is the City's primary recycling effort. Every home is provided a recycling bin in addition to a garbage bin and a yard waste bin. Bins are emptied weekly with no additional charge to the home owner.

Implementation Scenario

The infrastructure is in place for complete recycling from the residential community. Increasing participation will be a result of on-going educational and marketing efforts to increase the amount of potentially recyclable material going into the recycling container rather than the garbage container. Recycling educational efforts are likely to be incorporated and done with the energy efficiency educational efforts.

Emissions Reductions

Emission reductions for this measure are assumed to be included in the energy efficiency education program.

Costs and Additional Benefits.

The only costs for implementing this measure would be the staff time and materials involved in on-going educational efforts.

Reduce Landscape Waste by Adopting a River Friendly Landscaping Ordinance

Importance/Context

River-Friendly landscaping is an integrated solution that fosters soil health, conserves water, reduces waste, and reduces the emissions that cause global warming. Through the River Friendly Landscaping Program, the River Friendly Landscape (RFL) Coalition provides training, landscape design assistance and grant funding to local governments in the Sacramento Region.

. (<http://www.msa.saccounty.net/sactostormwater/RFL/coalition.asp>)

The objective of the resources that RFL provides is to assist local governments to design public landscapes and encourage the design of private landscaping that cost less to maintain, consume fewer resources, send less waste to the landfill and do not negatively impact the River.

River-Friendly Landscaping practices described below not only serve to reduce the emissions that cause global warming, but provide many additional benefits as well. Trees, for example, provide habitat for birds, beautify urban areas, increase property values, and help to control storm water runoff. Shade trees also reduce the need for air conditioning thereby cutting energy costs.

Selecting appropriate plants that require less shearing reduce the need for running various pieces of equipment. This not only reduces greenhouse gas emissions, but reduces local air and noise pollution as well.

Additionally, keeping lawn and plant clippings on site improve soils. Grass-cycling, mulching and using compost creates healthier landscapes without the use of synthetic pesticides and fertilizers, all of which can help reduce water pollution.

Implementation Scenario –

Adopt an integrated River Friendly Landscaping ordinance that requires new landscapes and buildings to be designed and built in a resource-efficient manner. Apply River Friendly Landscaping techniques to all public green spaces. In partnership with the RFL Coalition, encourage residents and landscape professionals to do the same by placing educational resources on the local government website and by giving recognition to River-Friendly Landscapes in the community. Build municipal capacity to use sustainable landscaping techniques by sending public landscape maintenance professionals to River-Friendly Landscaping maintenance training. Modify the Landscape Development Guidelines to emphasis River Friendly principals.

A River-Friendly Landscape can reduce labor and fuel costs as well as waste disposal fees and ongoing maintenance and water costs.

Emissions Reductions –

River-Friendly Landscaping reduces greenhouse gas emissions in the following ways:

- i. By reducing yard trimmings being sent to the landfill.
- ii. By keeping yard trimmings on site, thereby eliminating the need to transport waste to the landfill.
- iii. By avoiding fuel consumption due to running trimming and mowing equipment, which necessitates the burning of gasoline.
- iv. By requiring less irrigation. Reducing water usage reduces that amount of energy it takes to irrigate lawns.
- v. By reducing the need for nitrogen fertilizers and pesticides.
- vi. By strategically using trees to moderate temperatures rather than having to rely on electricity and/or natural gas for cooling and heating.

Encourage backyard composting and grass recycling.

Importance/Context

The City currently provides pickup service for yard waste. The green waste is brought to an area at the Yolo County landfill where it is composted. While avoiding the filling of landfill space and making the compost available as fertilizer, this approach still involves the creation of greenhouse gases from the gasoline used by the yard waste trucks to carry the waste to the landfill site. An alternative is composting and grass recycling on site at each home. Composting bins are available which organize and simplify composting. Also, while food waste and yard waste generally cannot be mixed in a commercial operation, not such restrictions apply to backyard composting. Backyard composting also eliminates the GHG creation involved in producing commercial fertilizer for use in the garden.

Implementation Scenario

The City can encourage backyard composting through its green educational efforts. The City could also consider providing composting bins or vouchers for discounts at local stores for composting bins.

Emissions Reductions

Greenhouse gas reductions from this program are likely to be negligible.

Costs and Additional Benefits.

Costs of bins are less than \$100. The composting does take up some space in what are increasingly small backyards in new development.

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4.2.4.B. Municipal Measures

Table (4.11): Proposed Municipal Solid Waste Management Emissions Reduction Measures

Solid Waste Management Emissions Reduction Measures	Year to be Initiated	Annual CO ₂ e	
		Reduction by 2020 (tons)	Reduction by 2050 (tons)
<ul style="list-style-type: none"> ▪ Reduce Landscape Waste. Include practices such as: <ul style="list-style-type: none"> • Increase on-site composting and mulching of municipal plant debris • Incorporate River-Friendly Landscaping practices into new or renovated medians and parks⁴ 	2010	NQ	NQ
<ul style="list-style-type: none"> ▪ Increase recycling in municipal facilities 	2010	NQ	NQ
<ul style="list-style-type: none"> ▪ Include language in City contracts that maximizes diversion (see StopWaste.Org for best practices) 	2010	NQ	NQ

Source: CAPPA Model output

4.2.4.B. Municipal Solid Waste Management Measures

Reduce Landscape Waste. Include practices such as:

- Increase on-site composting and mulching of municipal plant debris
- Incorporate River-Friendly Landscaping practices into new or renovated medians and parks.

Importance/Context

A significant part of wastes generated by the City organization are plant wastes from the maintenance of parks, medians, and other public landscaping.

Implementation Strategy

The City does now use composting mowers for mowing City Parks. The City also uses tree chippings as mulch on City parks.

The City could extend that practice into contract landscape maintenance on medians and collector landscaping.

Emissions Benefits

Use of grass cycling, composting and mulching on site has some minor reduction in fertilizer use avoided.

Costs and Other Benefits

These methods actually reduce costs compared to removal of the material.

Increase recycling in municipal facilities

Importance/Context

As the leader and champion for greenhouse gas reduction and energy conservation, the City organization needs to set the example in its recycling effort. The City currently recycles 38% of the material that is disposed of via the City contract with Waste Management Inc. At a minimum, the City organization should match the 50% that the community as a whole is achieving.

Implementation Strategy

Implementing this measure is predominately a matter of on-going education and emphasis to City employees.

Information on what and how much is recycled by the City is not detailed. A more complete analysis by facility would help direct recycling efforts.

The City can insure that recycling collection containers are included at all garbage collection bins on City properties. This approach was followed at City Hall but has not been accomplished at all City Parks.

Emissions Benefits

Emission benefits would be small and difficult to predict at this time.

Costs and Other Benefits

Costs would include the staff time and materials spent encouraging City employees to do more recycling, any additional collection bins and additional costs to pick up recycled materials.

Include language in City contracts that maximizes diversion (see StopWaste.Org for best practices)

Importance/Context

The City contracts with third party vendors for many things including garbage pickup, landscape maintenance, capital projects, supplies, and janitorial services. As virtual extensions of the City organization, these contracts are another place to show leadership and commitment.

Implementation Strategy

The City can include language in its requests for services, bids and franchise agreements requiring contractees to use best practices to maximize diversion of waste from the landfill.

Emissions Benefits

Emission benefits would be small and difficult to predict at this time.

Costs and Other Benefits

It is possible that costs for services, goods or projects could be higher as a result of this requirement if other organizations are not requiring these practices. The amount of increased cost is too speculative to predict at this time.

DRAFT

4.2.5. Measures Implemented External to City of West Sacramento

In addition to emissions reduction measures implemented within our community, the effects of measures recently implemented at the state level also deserve consideration in the context of our greenhouse gas emissions inventory. These measures have not been integrated into the estimated emissions reductions for *City of West Sacramento* above because they are imposed from outside of the community and their creation and enforcement is beyond our control. *City of West Sacramento* is committed to meeting our emissions reduction target without relying on externally imposed policies. However, we feel it is appropriate to have a sense for how emissions reductions achieved due to external policies may compare with the work we are engaging in within our community.

In California, numerous policies have been adopted by the state legislature or governor that currently or are projected to significantly reduce greenhouse gas emissions.

Solid Waste

In 1989, AB 939 established the current organization, structure and mission of the California Integrated Waste Management Board (CIWMB). The purpose was to direct attention to the increasing waste stream and decreasing landfill capacity, and to mandate a reduction of waste being disposed. Jurisdictions were required to meet diversion goals of 25% by 1995 and 50% by the year 2000. A disposal reporting system was established with CIWMB oversight, facility and program planning was required, and cities and counties began to address their waste problems.

Renewable Energy Standard

In 2002, the California Senate passed SB1078 requiring public utilities to gradually increase the percentage of their energy supply generated from renewable sources, reaching 20 percent renewable content by 2017. In November 2008, Governor Schwarzenegger signed Executive Order #S-14-08 increasing this target to 33% by 2020. This means that, over time, a larger and larger share of the energy electrifying homes and businesses in City of West Sacramento will be generated with clean power.

Emission Reduction

Based on calculations in other Climate Action Plans in the Pacific Gas & Electric service area, achieving the 33% target will result in a 50% reduction in greenhouse gas emissions from electrical use compared to the 2005 baseline. The impact of achieving this target would be a reduction in West Sacramento's greenhouse gas emissions from electrical use by 50,980 tons. (Residential CO₂e 32,444 tons, Commercial CO₂e 67,517 tons, total 99,961 times .51 = 50,980 tons). Reaching the target for PG & E would be accomplished by reducing the percentage of electricity generated for PG&E using natural gas from 40% of its total to 20% of its total. If this policy is fully enacted, we expect this change to decrease community emissions by approximately 9 percent.

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In 2007, the City organization total electrical use was 16,821,680 kilowatt hours which resulted in the generation of 3,482 metric tons of CO₂e. A 50% reduction of that due to increased use of renewable sources by PG & E would result in a reduction of City emissions of 1,741 tons of CO₂e or 9 percent from baseline levels.

If PG&E can reduce its use of natural gas by half from 2005 to 2020, it should be able to replace the other half with renewable sources by 2050 resulting in a zero carbon electrical grid. Rather than assume complete elimination of natural gas, this report assumes that PG&E retains 10% of its' generation from natural gas. Achieving this level would result in the savings of 181,973 metric tonnes of CO₂e community wide.

Fuel Efficiency Standards

Nationwide, automobile manufacturers are bound by fuel efficiency standards set by the Department of Transportation. These standards, known as the Corporate Average Fuel Economy (or "CAFE") standards, require that the fleet of passenger cars sold by any single manufacturer have an average fuel economy of 27.5 mpg – the same standard that was in place in 1985, despite technical progress and increased understanding of the environmental impacts of fossil fuel combustion. The CAFE standards are adopted at the federal level, and states are prevented from passing laws addressing vehicle fuel economy. In response to these stagnant federal standards, the California Assembly passed AB 1493 (Pavley) , which allows the California Air Resources Board to create carbon dioxide emissions standards for cars sold in California. They argue that a greenhouse gas emissions standard is distinct from a fuel economy standard, despite the fact that it would necessitate improved gas mileage. The Air Resources Board Scoping Plan has identified a number of strategies that it will implement to improve fuel efficiency in California. These include the Pavley bill, Pavley 2, which sets an even higher standard beginning in 2016, a tire inflation service check program, a tire rolling resistance standard, a low friction oil requirement, a solar resistant paint and window tint requirement and a requirement for low carbon fuels.

Emission Reduction

Based on implementation of all of the strategies outlined by the Air Resource Board, by the year 2020 the reduction in fuel consumption will reduce community transportation emissions in City of West Sacramento by 35 percent (57,055 tons) and municipal emissions (employee commute and City vehicles) by 1,830 tons CO₂e or 9 percent compared to the base year.

Achievement of an average fleet fuel efficiency of 60 miles per gallon by 2050 would result in savings of 348,279 metric tonnes of CO₂e.

Other

Executive Order S-20-04 was signed July 27, 2004 and directs the state to commit to aggressive actions to reduce state building electricity usage by implementing cost-effective energy efficiency and green

building strategies. To this end, the Order directs all facilities owned, funded or leased by the state (and encourages cities, counties and schools as well) to take measures to reduce grid-based energy purchases for state-owned buildings by 20% by 2015. This is to be done through cost-effective efficiency measures and distributed generation technologies. These measures include designing, constructing and operating all new and renovated state-owned facilities paid for with state funds as "LEED Silver" or higher certified buildings, seeking out office space leases in buildings with a U.S. EPA ENERGY STAR rating, and purchasing or operating ENERGY STAR electrical equipment whenever cost-effective.

In 2006, Governor Schwarzenegger signed AB 32 – the Global Warming Solutions Act – into law. AB 32 institutes a mandatory limit on greenhouse gas emissions. The limit will be set to achieve the target of reducing statewide emissions to 1990 levels by the year 2020. The bill directs the California Air Resources Board (CARB) to establish a mandatory emissions reporting system to track and monitor emissions levels and to develop a wide range of compliance options and enforcement mechanisms.

Senate Bill 97 (Dutton), enacted in 2007, amends the California Environmental Quality Act (CEQA) to clearly establish that GHG emissions and the effects of GHG emissions are appropriate subjects for CEQA analysis. It directs the Governor's Office of Planning and Research to develop CEQA Guidelines "for the mitigation of greenhouse gas emissions or the effects of greenhouse gas emissions" by July 1, 2009 and directs the Resources Agency to certify and adopt the CEQA Guidelines by January 1, 2010. OPR did draft and submit guidelines and they were approved and became effective in March 2010. The Guidelines spell out how State and local agencies can set standards to determine in a GHG emissions impact is significant, discusses general types of GHG emissions mitigation measures, and under what conditions, one environmental document may "tier" off the GHG analysis of a prior environmental document such as a General Plan or Climate Action Plan environmental review.

4.2.6. Summary of Emissions Reduction Measures

Based on the emissions reductions estimated to be achieved since 2007 through the above proposed measures, and the contribution of the existing measures City of West Sacramento will have to reduce 160,117 tons of CO₂e emissions in the community, including at least 2,820 tons of CO₂e emissions from municipal operations, in order to achieve our emissions reduction target.

Table (4.13) : City of West Sacramento Emissions Summary

City of West Sacramento Emissions Summary		
	Community Analysis	Municipal Operations Analysis
Base year	2007	2007
Quantity of CO ₂ e emissions in base year (tonnes)	410,682	18,801
Target year	2020	2020
Business-as-usual projection of CO ₂ e emissions in 2020 (tonnes)	533,726	21,245
Percent CO ₂ e reduction targeted by target year relative to base year (%)	30%	15%
Quantity of CO ₂ e reduction targeted relative to base year (tonnes)	160,117	2,820
Quantity of CO ₂ e reduction to be achieved through proposed City of West Sacramento measures (tonnes)	52,554	543
Quantity of CO ₂ e reduction to be achieved through measure external to West Sacramento	108,035	3,571
Percent of CO ₂ e reduction to be achieved through all existing and proposed measures (%)	100%	130%

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Conclusions and Summary

2020 Conclusion

Implementation of measures by the City of West Sacramento as identified in this document, together with measures being implemented by the State and Federal government do give the City of West Sacramento the potential for reaching its greenhouse gas reduction goals for 2020 at both the Municipal and Community Level. As shown in the table above, the measures identified reduce emissions to 30% below Business as Usual for the Community and 130% below the 2007 baseline for the Municipal organization.

The measures identified will reduce the per capita emissions in West Sacramento from 8.7 metric tonnes CO₂e in 2007 to 6.3 metric tonnes CO₂e in 2020, a 27% reduction.

2050 Conclusion

The identified Federal, State and local measures show achievement of 66% of the 2050 goal of 91% below Business as Usual. With the growth expected in West Sacramento over the next 40 years (population growing from 48,000 to over 100,000) achievement of the 91% goal will require technology improvements beyond anything we currently know. The level of reduction called for in 2050 will realistically require achievement of a zero carbon electrical grid and a near zero carbon transportation system as well as significant reductions in the use of natural gas for heating. Ironically, these system improvements greatly diminish the effectiveness in terms of GHG reductions of most of the measures which the City has ability to impact. The City's efforts to reduce per capita kilowatt hour use and vehicle miles traveled will be more effective in reducing costs and the need for the construction of more energy generation capacity than in reducing GHG emission.

Chapter 5 – Review and Implementation

5.1. Climate Action Plan Review and Adoption

(Preliminary Draft – This section will be amended to past tense after adoption as a history of the adoption process)

Outreach to Commissions

Early in the drafting of the Climate Action Plan document, presentations were made to the Planning Commission, Economic Development Advisory Commission, Youth Commission, Housing Advisory Commission and Agricultural and Natural Resources Commission. These presentations talked about the science and political background of global warming and Greenhouse Gas emission reduction efforts. The presentations explained what a Climate Action Plan might look like, what topics would be addressed and what some of the most likely major reduction measures would be.

Roughly two months after the initial presentation a follow up presentation was made. At that time, in March and April 2010, an incomplete, preliminary draft of the Climate Action Plan was provided to each Commission for early review. The intent was to give the Commissions a chance to see and provide feedback on the document as it was being drafted and to allow ample time to read and absorb what the document might look like and say.

Upon completion of the first complete preliminary draft a third round of presentations will be made to the Commissions. After a period to encourage and receive public input on the draft, hearings will be scheduled at each of the Commissions to make final recommendations to the City Council for future adoption.

Public Outreach

Early outreach was made to the Chamber of Commerce Governmental Affairs Committee. This group was presented with an early draft of the Executive Summary at a meeting of the committee. The Committee indicated its desire to be involved early in the drafting of the Plan. A sub-committee consisting of John Tallman and Todd Chambers was established to review and comment on the draft. These two members of the Committee have planning and development backgrounds. This sub-committee was provided with the same early draft Climate Action Plan that was shared with the Commissions. The sub-committee provided comments and suggestions on the draft.

With the availability of a complete preliminary draft in June 2010, the broader public outreach program was begun. A press release was issued announcing the availability of the Climate Action Plan document. E-mail notices were sent to all persons in the General Plan update e-mail list. An article in “City Lights”, the City’s newsletter sent to all residents was published summarizing the Plan and inviting comment. Notice was placed on the City web site and copies of the draft were made available via the web site. Notice was run on the City cable channel.

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A similar notice process will be followed with the schedule of Commission hearings leading to recommendations to the City Council.

Hearings and Recommendation from Commissions

Hearings and recommendations will be provided by the Commissions with jurisdiction in the subject matter area (Planning Commission, Agriculture and Natural Resources, Housing Advisory, Economic Development Advisory, and Youth). These hearings are expected in the fall of 2010.

Hearings and Adoption by Council

After the first round of presentations of the completed preliminary draft Climate Action Plan, that draft will be presented to the City Council for workshop and comments. Any Council direction will be incorporated into the document as part of the preparation of a hearing draft.

After receiving recommendations from the Commissions, the City Council will hold initial hearings on the document. Final changes will be made to incorporate Council direction. Formal adoption of the Climate Action Plan will take place with the adoption of the General Plan update, currently expected in early 2011.

Environmental Review

The Climate Action Plan is an integral part of the mitigation measures for the General Plan update Environmental Impact Report. The General Plan update proposes increases in the build out population and employment of West Sacramento over the original 1990 build out levels. Most of that increase is located in urban, transit and pedestrian oriented neighborhoods along the north east riverfront. Those neighborhoods should be extremely Greenhouse Gas friendly compared to standard development. In fact, with the implementation of the measures in the Climate Action Plan and the continuing evolution of technology, those neighborhoods have the potential to be carbon neutral. Regardless of that possibility, comprehensive environmental review of the General Plan update, including the Climate Action Plan which proposes many new policies in the General Plan, must be done and publicly reviewed. The Climate Action Plan cannot be finally adopted until the General Plan/Climate Action Plan EIR is approved.

5.2. Administration and Staffing

Green and Sustainable Strategy Team

In 2008, the City established the Green and Sustainable Strategy Team (Green Team). This team consists of City staff with responsibilities and interests which impact on creating a sustainable community and reducing Greenhouse Gases. This group has and will continue to provide the leadership and effort on a City organization basis for sustainability. The Green Strategy does not clearly fall into one City Department. The measures proposed impact every department in the City. A multi-departmental team is the logical organization for implementing the Plan.

Team Leader

The Team Leader is a department head level executive with primary responsibility for seeing that the Green Team is achieving its goals. The Team Leader is responsible for seeing that annual goals are set and met and that the Climate Action Plan is monitored and updated on schedule. The Team Leader is the contact between the Green Team and the Executive Team of department heads to insure that all departments are participating in implementation of the Plan. A Department Head level manager is preferred to give the Team Leader the ability to contact as an equal the other Department Heads to get support for green activities. The Department Head selected should have a personal interest in and commitment to the goals of the team and the Climate Action Plan.

Team Manager

The Team Manager is responsible for the week to week operation of the Green Team. The manager will schedule meetings, make sure agendas and minutes are prepared, chair the team meeting and follow up on the performance of assigned tasks by team members. The Team Manager will generally be at the Division manager level of the City organization. The Team Manager may bring in clerical support to help with the responsibilities.

Core Members

The core team consists of City staff with responsibilities and interests related to greenhouse gas reduction activities. Areas represented should include such responsibilities as: alternative transportation, purchasing, fleet management, water conservation, planning, green buildings, City building operation and maintenance, funding, business retention, housing rehabilitation, solid waste, and recycling. The core team should meet regularly to update each other on activities, accomplishments and news relevant to climate change issues. Core team members should expect to step in to assist or back up other team members on projects, presentations or activities.

Extended Membership

In addition to the core team which will meet regularly, other staff members will have occasional involvement with the Green Team. The Parks Manager, Tree Coordinator, Development Civil Engineer, Port Manager, Facilities Manager and Development Manager could have specific but limited involvement with the Green Team on specific projects or measures.

City Manager

The City Manager selects the Team Leader for the Green Team. It is critical to the success of the Team that the City Manager is clearly in support of the achievement of the Climate Action Plans goals and emphasizes to all Departments the level of commitment of the City Council and the City organization to implementing the Plan.

5.3. Financing and Budgeting

Budgeting for Plan Administration

The primary cost of plan administration will be the hours of existing City staff. The primary tasks of plan administration will be preparation of the annual report and the 5 year update of the Plan. Most of the staff assigned to the Green Team are budgeted in various funds (General, Water, Port, Community Development). There is no specific budget line item for Green Team activities. Each member of the Green Team has other duties which are their primary focus. The budget for plan administration is more a matter of hours.

The preparation of annually report will involve approximately 15 hours of staff time for one primary author and minor hours for several other contributors.

The preparation of a 5 year update will involve approximately 600 hours of staff time. The municipal inventory will need to be re-done, which is a substantial amount of work for a number of people. The Community inventory will need to be re-done, which is a smaller number of hours. While the current plan is a good starting point, 5 years will see changes in technology and the political environment which will require a full review of each Chapter and measure to re-assess the viability and effectiveness of the effort over the first 5 years of implementation.

Budgeting for Plan Implementation

As with Plan Administration, implementation costs for the Climate Action Plan are not likely to show up as specific budget line items. Much of the cost will be City staff time spent writing or presenting educational materials for placement in City Lights and other communication tools. Staff time is required to coordinate with other agencies on greenhouse gas reduction efforts regionally. As departments prepare their budgets the climate action activities and responsibilities of those departments/divisions should be described in the Work Plan section of the budget with some description of the level of effort.

Budgeting for Plan Implementation should be reflected in a policy for considering the environmental and life cycle aspects of buying Green products. A policy to buy hybrid vehicles when ever appropriate should be shown in a higher cost estimate for the purchase or lease of a replacement vehicle and a lower estimate for the amount of gasoline use which may result. The purchase of high electrically efficiency computers, monitors, appliances, equipment, lights, etc. needs to reflect a slightly higher initial purchase price under capital replacement and a lower estimate for electrical useage.

One area of direct budgeting is for alternative transportation incentives for City employees through the Yolo Transportation Management Association. An annual commitment in the vicinity of \$30,000 per year is likely to be needed.

Significant Cost items which might be budget line items would be replacement of street lights with LED bulbs.

Construction of the Street Car system and the infrastructure for the urban riverfront is and/or will be reflected in the City's Capital Improvement Budget.

5.4. Developing a Timeline

Many of the actions for implementing the Climate Action Plan are the continuation or expansion of efforts which are already being done. Others should be able to be implemented in the next few years. Some efforts may take a number of years to begin to actually show greenhouse gas reductions. Below are listed some of the most significant measures for which quantified estimates of benefits have been projected by immediate, near term and long term time frames. Near term would be something started within the next year, long term within the next five years.

Immediate

Educational efforts

Transportation incentives

Green Purchasing

Near Term

Green Building Ordinance

Energy Efficiency Financing Program

Zoning Ordinance Amendments

Idling and throttle limits on City vehicles

Replace old or under used vehicles with hybrid/alt. Fuel

Long Term

Water Conservation through metered billing

Street Car

Conservation Ordinances

Urban Transit Oriented Development

Car Share Program

LED Street lights

Expansion of bus system

Purchase Renewable Energy Certificates

5.5. Public Involvement in the Implementation Process

To a large degree, it is the employers, employees and residents of West Sacramento who will ultimately implement this plan. Individual decisions on purchases, lifestyle changes and actions added together across the community will create the changes which reduce our greenhouse gas impact. While the City can be one of the leaders in this effort, leaders in the community will also be necessary. Employers and residents will not only need to reduce their own emissions, but they can serve as messengers to the people with whom they live and work, and provide incentives for further emissions reductions. As part of its marketing effort, the City should seek to reach out to, find and work with businesses and residents interested in participating in implementing the plan. A stakeholder task force to compliment the Green Team could be formed to help guide the development, review and implementation of the plan. As part of this process, the City should carefully monitor and document successes and lessons learned as part of the community outreach and education campaign.

5.6. Monitoring/Reporting

Annual Progress Report

The Green Team shall prepare an annual report on Implementation of the Climate Action Plan. The report should summarize prior accomplishments with an emphasis on accomplishments during the last year. The report should lay out the goals and proposed actions in the upcoming year. The City Manager shall determine if the report is to be provided to the City Council only in written form or if it should be presented publically at a Council meeting. An appropriate time for the report might be the end of the year preceding the Council's goal setting process at the beginning of the year.

Residential, Commercial/Industrial, and Municipal building energy use/ greenhouse gas emissions can easily be monitored on an annual basis from information PG&E can provide each year. While there may be a one year lag in reporting energy use, the annual report should include a report on the trend of energy use and related greenhouse gas emissions for the prior years. An identification of key indicators such as square footage of Green Building Ordinance

compliant new construction, or number of participants in the Yolo County Transportation Management Association should be tracked

The vehicle miles travelled data from the Caltrans Highway Performance Monitoring System is also available annually. While this sampling based method might not be the most accurate method for determining or projecting vehicle miles travelled, it could be a reasonable way to monitor vehicle miles travelled and vehicle miles traveled divided by population and employment to see year to year trends with a small amount of effort.

The City should develop methods for including in the annual report easily obtained key indicators for monitoring the success of moving the City organization towards the Climate Action Plan goals. Basic data such as number of gallons of gasoline and diesel used by City Vehicles, amount of electricity used in City Buildings, amount of water use billed to City parks, number of City employees participating in YTMA programs, can provide trend indications on how much success is being achieved.

A summary of the annual report could be included in City Lights after it has been reviewed by the City Council.

5.7. Re-Inventory

Municipal

A full municipal inventory is a time and staff intensive effort. A municipal inventory should be done every five years. As the first was done in 2008 based on 2007 data, the next should be in 2013 based on 2012 data. A re-inventory should include a re-assessment of success in moving towards the 2020 goals and were appropriate re-identification of measures to achieve more success in reducing greenhouse gas goals. Technologies and practices will change over time. A mid course review will help refine progress.

Community

While the Community Inventory is actually less research intensive, major changes and results in the Community are likely to occur slower. A re-inventory and Climate Action Plan update done in 2013 will provide an opportunity to refine specific measures and implement more directive measures if necessary. A re-inventory every five years is sufficient only with the implementation of annual key indicator measures presented and analyzed in the annual report.

5.8. Coordination

The City is but one of many organizations with a role in greenhouse gas emission reduction. As discussed in many of the measures, the City's role in implementing many measures is the use of the City's communication tools with its citizens to promote knowledge and interest in programs run by other organizations.

PG&E

As the energy supplier for this area, Pacific Gas and Electric is perhaps the main force in greenhouse gas emission reductions. PG&E's success in developing renewable sources of electrical energy will be one of the most critical factors in achieving the goals set by the State and the Climate Action Plan.

PG&E has significant programs in terms of incentives, credits and rebates for reducing energy use. The City has communication tools which can inform its citizens and businesses of those programs and encourage their use. The City needs to remain well informed of the status of PG&E programs.

CalFirst

CalFirst will be administering the AB 811 Energy Conservation Loan Program. This program offers loans for energy efficiency and alternative energy to homes and business which can be repaid through the property tax bill. Close coordination with PG & E's incentive programs will strengthen the attractiveness of this program. Combined and coordinated marketing efforts from CalFirst, PG & E and the City will maximize the effectiveness of the program.

Yolo

Yolo County, West Sacramento, and the other cities in Yolo County are members of the Climate Action Compact. Representatives of each of the members meet regularly to coordinate climate action efforts. This group has worked together with other areas to create the CalFirst program.

Sacramento

Sacramento County, Sacramento City and the other cities in Sacramento County commissioned a joint Greenhouse Gas Inventory for all of those agencies. Representatives of all those agencies, plus SMUD, PG&E, special agencies such as the Air District, Sacramento County Sanitation District plus West Sacramento and occasional representatives from Yolo County, meet quarterly as the Sacramento Area Green Partnership. The meeting is an opportunity to have presentations on specific climate action issues by parties such as ICLEI, the Air Resources Board, consultants and others. The meeting is also an opportunity to exchange information and discuss the status of climate action efforts.

SACOG

The Sacramento Area Council of Governments, as the metropolitan transportation planning agency, plays a major role in climate action efforts in the region. SACOG's philosophy of funneling grant funds under its' discretion to higher density, transit and alternative transportation oriented projects will make a major difference in the GHG emissions in the region. West Sacramento in particular has benefited from that philosophy.

SACOG is also active in climate action planning in the region. SACOG serves as a coordinating agency and a supporting resource to its member agencies.

5.9. Implementation through the CEQA Process.

Senate Bill 97 (Dutton), enacted in 2007, amends the California Environmental Quality Act (CEQA) to clearly establish that GHG emissions and the effects of GHG emissions are appropriate subjects for CEQA analysis. It directs the Governor's Office of Planning and Research to develop CEQA Guidelines "for the mitigation of greenhouse gas emissions or the effects of greenhouse gas emissions" by July 1, 2009 and directs the Resources Agency to certify and adopt the CEQA Guidelines by January 1, 2010. OPR did draft and submit guidelines and they were approved and became effective in March 2010. The Guidelines spell out how State and local agencies can set standards to determine if a GHG emissions impact is significant, discusses general types of GHG emissions mitigation measures, and under what conditions, one environmental document may "tier" off the GHG analysis of a prior environmental document such as a General Plan or Climate Action Plan environmental review.

The City's implementation of these Guidelines through its CEQA review process provide a mechanism for mitigating the GHG impacts of all new development in the future. The City can impose mitigation measures which will reduce the GHG impacts of specific development projects.

This Climate Action Plan is written with the intent of being consistent with CEQA Guidelines Section § 15183.5 which describes the contents of a "Qualified Plan" for the reduction of GHG emissions that can be used in tiering future CEQA analysis.

Part of the General Plan update being done in 2010 will include new and amended General Plan policies which address GHG emissions and the reduction of those emissions. Those new and amended General Plan policies are included in Chapter 3 of this Climate Action Plan. The environmental review of the General Plan update will include a review of the GHG impacts of the General Plan and the development that would be allowed under that Plan. The Environmental Impact Report for the General Plan will include the setting of standards of significance and the identification of mitigation measures, many of which will come from this Climate Action Plan.

In the future, all major development projects will have their GHG emissions analyzed and mitigation measures proposed to reduce those impacts.

List of Appendix

A. Inventory Summary Reports,

Data Sources, Assumptions and Notes for the Municipal, Community Inventory and Forecast of your Jurisdiction

B. List of Proposed GHG Emission Reduction Measures

D. Assumptions and Calculations

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CLIMATE CHANGE VULNERABILITY ASSESSMENT

The Climate Change Vulnerability Assessment is taken from the Climate Change Handbook for Regional Water Planning, USEPA and DWR, 2011. The vulnerability assessment highlights those water-related resources that are important to a region and are sensitive to climate change.

I. Water Demand

Are there major industries that require cooling/process water in your planning region?

- As average temperatures increase, cooling water needs may also increase.
- Identify major industrial water users in your region and assess their current and projected needs for cooling and process water.

Does water use vary by more than 50% seasonally in parts of your region?

- Seasonal water use, which is primarily outdoor water use, is expected to increase as average temperatures increase and droughts become more frequent.
- Where water use records are available, look at total monthly water uses averaged over the last five years (if available). If maximum and minimum monthly water uses vary by more than 25%, then the answer to this question is "yes"
- Where no water use records exist, is crop irrigation responsible for a significant (say >50%) percentage of water demand in parts of your region?

Are crops grown in your region climate-sensitive? Would shifts in daily heat patterns, such as how long heat lingers before night-time cooling, be prohibitive for some crops?

- Fruit and nut crops are climate-sensitive and may require additional water as the climate warms.

Do groundwater supplies in your region lack resiliency after drought events?

- Droughts are expected to become more frequent and more severe in the future. Areas with a more hardened demand may be particularly vulnerable to droughts and may become more dependent on groundwater pumping.

Are water use curtailment measures effective in your region?

- Droughts are expected to become more frequent and more severe in the future. Areas with a more hardened demand may be particularly vulnerable to droughts.

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- Are some instream flow requirements in your region either currently insufficient to support aquatic life, or occasionally unmet?*
- Changes in snowmelt patterns in the future may make it difficult to balance water demands. Vulnerabilities for ecosystems and municipal/agricultural water needs may be exacerbated by instream flow requirements that are:
 1. not quantified,
 2. not accurate for ecosystem needs under multiple environmental conditions including droughts, and
 3. not met by regional water managers.

II. Water Supply

- Does a portion of the water supply in your region come from snowmelt?*
- Snowmelt is expected to decrease as the climate warms. Water systems supplied by snowmelt are therefore potentially vulnerable to climate change.
 - Where watershed planning documents are available, refer to these in identifying parts of your region that rely on surface water for supplies; if your region contains surface water supplies originating in watersheds where snowpack accumulates, the answer to this question is "Yes."
 - Where planning documents are not available, identify major rivers in your region with large users. Identify whether the river's headwaters are fed by snowpack.
- Does part of your region rely on water diverted from the Delta, imported from the Colorado River, or imported from other climate-sensitive systems outside your region?*
- Some imported or transferred water supplies are sources from climate-sensitive watersheds, such as water imported from the Delta and the Colorado River.
- Does part of your region rely on coastal aquifers? Has salt intrusion been a problem in the past?*
- Coastal aquifers are susceptible to salt intrusion as sea levels rise, and many have already observed salt intrusion due to over-extraction, such as the West Coast Basin in southern California.
- Would your region have difficulty in storing carryover supply surpluses from year to year?*
- Droughts are expected to become more severe in the future. Systems that can store more water may be more resilient to droughts.
- Has your region faced a drought in the past during which it failed to meet local water demands?*

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- Droughts are expected to become more severe in the future. Systems that have already come close to their supply thresholds may be especially vulnerable to droughts in the future.

Does your region have invasive species management issues at your facilities, along conveyance structures, or in habitat areas?

- As invasive species are expected to become more prevalent with climate change, existing invasive species issues may indicate an ecological vulnerability to climate change.

III. Water Quality

Are increased wildfires a threat in your region? If so, does your region include reservoirs with fire-susceptible vegetation nearby which could pose a water quality concern from increased erosion?

- Some areas are expected to become more vulnerable to wildfires over time. To identify whether this is the case for parts of your region, the California Public Interest Energy Research (PIER) Program has posted wildfire susceptibility projections as a Google Earth application at: <http://cal-adapt.org/fire/>. These projections are only the results of a single study and are not intended for analysis, but can aid in qualitatively answering this question. Read the application's disclaimers carefully to be aware of its limitations.

Does part of your region rely on surface water bodies with current or recurrent water quality issues related to eutrophication, such as low dissolved oxygen or algal blooms? Are there other water quality constituents potentially exacerbated by climate change?

- Warming temperatures will result in lower dissolved oxygen levels in water bodies, which are exacerbated by algal blooms and in turn enhance eutrophication. Changes in streamflows may alter pollutant concentrations in water bodies.

Are seasonal low flows decreasing for some waterbodies in your region? If so, are the reduced low flows limiting the waterbodies' assimilative capacity?

- In the future, low flow conditions are expected to be more extreme and last longer. This may result in higher pollutant concentrations where loadings increase or remain constant.

Are there beneficial uses designated for some water bodies in your region that cannot always be met due to water quality issues?

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- In the future, low flows are expected decrease, and to last longer. This may result in higher pollutant concentrations where loadings increase or remain constant.

Does part of your region currently observe water quality shifts during rain events that impact treatment facility operation?

- While it is unclear how average precipitation will change with temperature, it is generally agreed that storm severity will probably increase. More intense, severe storms may lead to increased erosion, which will increase turbidity in surface waters. Areas that already observe water quality responses to rainstorm intensity may be especially vulnerable.

IV. Sea Level Rise

Has coastal erosion already been observed in your region?

- Coastal erosion is expected to occur over the next century as sea levels rise.

Are there coastal structures, such as levees or breakwaters, in your region?

- Coastal structures designed for a specific mean sea level may be impacted by sea level rise.

Is there significant coastal infrastructure, such as residences, recreation, water and wastewater treatment, tourism, and transportation) at less than six feet above mean sea level in your region?

- Coastal flooding will become more common, and will impact a greater extent of property, as sea levels rise. Critical infrastructure in the coastal floodplain may be at risk.
- Digital elevation maps should be compared with locations of coastal infrastructure.

Are there climate-sensitive low-lying coastal habitats in your region?

- Low-lying coastal habitats that are particularly vulnerable to climate change include estuaries and coastal wetlands that rely on a delicate balance of freshwater and salt water.

Are there areas in your region that currently flood during extreme high tides or storm surges?

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- Areas that are already experiencing flooding during storm surges and very high tides, are more likely to experience increased flooding as sea levels rise.
- Is there land subsidence in the coastal areas of your region?*
 - Land subsidence may compound the impacts of sea level rise.
- Do tidal gauges along the coastal parts of your region show an increase over the past several decades?*
 - Local sea level rise may be higher or lower than state, national, or continental projections.
 - Planners can find information on local tidal gauges at http://tidesandcurrents.noaa.gov/sltrends/sltrends_states.shtml?region=ca

V. Flooding

- Does critical infrastructure in your region lie within the 200-year floodplain? DWR's best available floodplain maps are available at: http://www.water.ca.gov/floodmgmt/lrafrmo/fmb/fes/best_available_maps/*
 - While it is unclear how average precipitation will change with temperature, it is generally agreed that storm severity will probably increase. More intense, severe storms may lead to higher peak flows and more severe floods.
 - Refer to FEMA floodplain maps and any recent FEMA, US Army Corps of Engineers, or DWR studies that might help identify specific local vulnerabilities for your region. Other follow-up questions that might help answer this question:
 1. What public safety issues could be affected by increased flooding events or intensity? For example, evacuation routes, emergency personnel access, hospitals, water treatment and wastewater treatment plants, power generation plants and fire stations should be considered.
 2. Could key regional or economic functions be impacted from more frequent and/or intense flooding?
- Does part of your region lie within the Sacramento-San Joaquin Drainage District?*
 - The SSJDD contains lands that are susceptible to overflows from the Sacramento and San Joaquin Rivers, and are a key focus of the Central Valley Flood Protection Plan. (<http://www.water.ca.gov/cvfmp/program.cfm>).
- Does aging critical flood protection infrastructure exist in your region?*

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- Levees and other flood protection facilities across the state of California are aging and in need of repair. Due to their overall lowered resiliency, these facilities may be particularly vulnerable to climate change impacts.
 - DWR is evaluating more than 300 miles of levees in the San Joaquin and Sacramento Rivers Valleys and the Delta (<http://www.water.ca.gov/levees/>).
- Have flood control facilities (such as impoundment structures) been insufficient in the past?*
- Reservoirs and other facilities with impoundment capacity may be insufficient for severe storms in the future. Facilities that have been insufficient in the past may be particularly vulnerable.
- Are wildfires a concern in parts of your region?*
- Wildfires alter the landscape and soil conditions, increasing the risk of flooding within the burn and downstream areas. Some areas are expected to become more vulnerable to wildfires over time. To identify whether this is the case for parts of your region, the California Public Interest Energy Research Program (PIER) has posted wildfire susceptibility projections as a Google Earth application at: <http://cal-adapt.org/fire/>. These projections are the results of only a single study and are not intended for analysis, but can aid in qualitatively answering this question. Read the application's disclaimers carefully to be aware of its limitations.

VI. Ecosystem and Habitat Vulnerability

- Does your region include inland or coastal aquatic habitats vulnerable to erosion and sedimentation issues?*
- Erosion is expected to increase with climate change, and sedimentation is expected to shift. Habitats sensitive to these events may be particularly vulnerable to climate change.
- Does your region include estuarine habitats which rely on seasonal freshwater flow patterns?*
- Seasonal high and low flows, especially those originating from snowmelt, are already shifting in many locations.
- Do climate-sensitive fauna or flora populations live in your region?*
- Some specific species are more sensitive to climate variations than others.

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- Do endangered or threatened species exist in your region? Are changes in species distribution already being observed in parts of your region?*
- Species that are already threatened or endangered may have a lowered capacity to adapt to climate change.
- Does the region rely on aquatic or water-dependent habitats for recreation or other economic activities?*
- Economic values associated with natural habitat can influence prioritization.
- Are there rivers in your region with quantified environmental flow requirements or known water quality/quantity stressors to aquatic life?*
- Constrained water quality and quantity requirements may be difficult to meet in the future.
- Do estuaries, coastal dunes, wetlands, marshes, or exposed beaches exist in your region? If so, are coastal storms possible/frequent in your region?*
- Storm surges are expected to result in greater damage in the future due to sea level rise. This makes fragile coastal ecosystems vulnerable.
- Does your region include one or more of the habitats described in the Endangered Species Coalition's Top 10 habitats vulnerable to climate change <http://www.endangered.org/its-getting-hot-out-there/> ?*
- These ecosystems are particularly vulnerable to climate change.
- Are there areas of fragmented estuarine, aquatic, or wetland wildlife habitat within your region? Are there movement corridors for species to naturally migrate? Are there infrastructure projects planned that might preclude species movement?*
- These ecosystems are particularly vulnerable to climate change.

VII. Hydropower

- Is hydropower a source of electricity in your region?*
- As seasonal river flows shift, hydropower is expected to become less reliable in the future.

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Are energy needs in your region expected to increase in the future? If so, are there future plans for hydropower generation facilities or conditions for hydropower generation in your region?

- Energy needs are expected to increase in many locations as the climate warms. This increase in electricity demand may compound decreases in hydropower production, increasing its priority for a region.

SB X7-7 VERIFICATION FORM

SB X7-7 Table 0: Units of Measure Used in UWMP*

(select one from the drop down list)

Hundred Cubic Feet

**The unit of measure must be consistent with Table 2-3*

NOTES: Units of measure in this UWMP are hundred cubic feet (CCF).

SB X7-7 Table-1: Baseline Period Ranges

Baseline	Parameter	Value	Units
10- to 15-year baseline period	2008 total water deliveries	6,425,538	Hundred Cubic Feet
	2008 total volume of delivered recycled water	-	Hundred Cubic Feet
	2008 recycled water as a percent of total deliveries	0.00%	Percent
	Number of years in baseline period ^{1,2}	10	Years
	Year beginning baseline period range	2001	
	Year ending baseline period range ³	2010	
5-year baseline period	Number of years in baseline period	5	Years
	Year beginning baseline period range	2006	
	Year ending baseline period range ⁴	2010	

¹ If the 2008 recycled water percent is less than 10 percent, then the first baseline period is a continuous 10-year period. If the amount of recycled water delivered in 2008 is 10 percent or greater, the first baseline period is a continuous 10- to 15-year period. ² The Water Code requires that the baseline period is between 10 and 15 years. However, DWR recognizes that some water suppliers may not have the minimum 10 years of baseline data.

³ The ending year must be between December 31, 2004 and December 31, 2010.

⁴ The ending year must be between December 31, 2007 and December 31, 2010.

NOTES: Units of measure in this UWMP are hundred cubic feet (CCF).

SB X7-7 Table 2: Method for Population Estimates

Method Used to Determine Population (may check more than one)	
<input type="checkbox"/>	1. Department of Finance (DOF) DOF Table E-8 (1990 - 2000) and (2000-2010) and DOF Table E-5 (2011 - 2015) when available
<input checked="" type="checkbox"/>	2. Persons-per-Connection Method
<input type="checkbox"/>	3. DWR Population Tool
<input type="checkbox"/>	4. Other DWR recommends pre-review
NOTES:	

SB X7-7 Table 3: Service Area Population

Year	Population	
10 to 15 Year Baseline Population		
Year 1	2001	29,230
Year 2	2002	32,264
Year 3	2003	35,504
Year 4	2004	38,982
Year 5	2005	42,440
Year 6	2006	45,418
Year 7	2007	46,734
Year 8	2008	47,192
Year 9	2009	47,598
Year 10	2010	47,918
<i>Year 11</i>		
<i>Year 12</i>		
<i>Year 13</i>		
<i>Year 14</i>		
<i>Year 15</i>		
5 Year Baseline Population		
Year 1	2006	45,418
Year 2	2007	46,734
Year 3	2008	47,192
Year 4	2009	47,598
Year 5	2010	47,918
2015 Compliance Year Population		
2015		49,504
NOTES:		

SB X7-7 Table 4: Annual Gross Water Use *

Baseline Year <i>Fm SB X7-7 Table 3</i>	Volume Into Distribution System <i>This column will remain blank until SB X7-7 Table 4-A is completed.</i>	Deductions					Annual Gross Water Use	
		Exported Water	Change in Dist. System Storage (+/-)	Indirect Recycled Water <i>This column will remain blank until SB X7-7 Table 4-B is completed.</i>	Water Delivered for Agricultural Use	Process Water <i>This column will remain blank until SB X7-7 Table 4-D is completed.</i>		
10 to 15 Year Baseline - Gross Water Use								
Year 1	2001	5,158,727			-		-	5,158,727
Year 2	2002	5,103,837			-		-	5,103,837
Year 3	2003	5,191,399			-		-	5,191,399
Year 4	2004	5,933,712			-		-	5,933,712
Year 5	2005	6,124,082			-		-	6,124,082
Year 6	2006	6,340,590			-		-	6,340,590
Year 7	2007	6,766,200			-		-	6,766,200
Year 8	2008	6,425,538			-		-	6,425,538
Year 9	2009	5,369,136			-		-	5,369,136
Year 10	2010	5,709,798			-		-	5,709,798
<i>Year 11</i>	0	-			-		-	-
<i>Year 12</i>	0	-			-		-	-
<i>Year 13</i>	0	-			-		-	-
<i>Year 14</i>	0	-			-		-	-
<i>Year 15</i>	0	-			-		-	-
10 - 15 year baseline average gross water use							5,812,302	
5 Year Baseline - Gross Water Use								
Year 1	2006	6,340,590			-		-	6,340,590
Year 2	2007	6,766,200			-		-	6,766,200
Year 3	2008	6,425,538			-		-	6,425,538
Year 4	2009	5,369,136			-		-	5,369,136
Year 5	2010	5,709,798			-		-	5,709,798
5 year baseline average gross water use							6,122,252	
2015 Compliance Year - Gross Water Use								
2015		4,414,000	-		-		-	4,414,000
* NOTE that the units of measure must remain consistent throughout the UWMP, as reported in Table 2-3								
NOTES: Units of measure in this UWMP are hundred cubic feet (CCF).								

SB X7-7 Table 4-A: Volume Entering the Distribution System(s)

Complete one table for each source.

Name of Source Sacramento River

This water source is:

- The supplier's own water source
- A purchased or imported source

Baseline Year <i>Fm SB X7-7 Table 3</i>	Volume Entering Distribution System	Meter Error Adjustment* <i>Optional (+/-)</i>	Corrected Volume Entering Distribution System
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10 to 15 Year Baseline - Water into Distribution System

Year 1	2001	5,158,727		5,158,727
Year 2	2002	5,103,837		5,103,837
Year 3	2003	5,191,399		5,191,399
Year 4	2004	5,933,712		5,933,712
Year 5	2005	6,124,082		6,124,082
Year 6	2006	6,340,590		6,340,590
Year 7	2007	6,766,200		6,766,200
Year 8	2008	6,425,538		6,425,538
Year 9	2009	5,369,136		5,369,136
Year 10	2010	5,709,798		5,709,798
Year 11	0			-
Year 12	0			-
Year 13	0			-
Year 14	0			-
Year 15	0			-

5 Year Baseline - Water into Distribution System

Year 1	2006	6,340,590		6,340,590
Year 2	2007	6,766,200		6,766,200
Year 3	2008	6,425,538		6,425,538
Year 4	2009	5,369,136		5,369,136
Year 5	2010	5,709,798		5,709,798

2015 Compliance Year - Water into Distribution System

2015	4,414,000		4,414,000
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** Meter Error Adjustment - See guidance in Methodology 1, Step 3 of Methodologies Document*

NOTES: Units of measure in this UWMP are hundred cubic feet (CCF).

SB X7-7 Table 4-B: Indirect Recycled Water Use Deduction (For use only by agencies that are deducting indirect recycled water)

Baseline Year <i>Fm SB X7-7 Table 3</i>	Surface Reservoir Augmentation					Groundwater Recharge			Total Deductible Volume of Indirect Recycled Water Entering the Distribution System
	Volume Discharged from Reservoir for Distribution System Delivery	Percent Recycled Water	Recycled Water Delivered to Treatment Plant	Transmission/Treatment Loss	Recycled Volume Entering Distribution System from Surface Reservoir Augmentation	Recycled Water Pumped by Utility*	Transmission/Treatment Losses	Recycled Volume Entering Distribution System from Groundwater Recharge	
10-15 Year Baseline - Indirect Recycled Water Use									
Year 1	2001			-	-			-	-
Year 2	2002			-	-			-	-
Year 3	2003			-	-			-	-
Year 4	2004			-	-			-	-
Year 5	2005			-	-			-	-
Year 6	2006			-	-			-	-
Year 7	2007			-	-			-	-
Year 8	2008			-	-			-	-
Year 9	2009			-	-			-	-
Year 10	2010			-	-			-	-
Year 11	0			-	-			-	-
Year 12	0			-	-			-	-
Year 13	0			-	-			-	-
Year 14	0			-	-			-	-
Year 15	0			-	-			-	-
5 Year Baseline - Indirect Recycled Water Use									
Year 1	2006			-	-			-	-
Year 2	2007			-	-			-	-
Year 3	2008			-	-			-	-
Year 4	2009			-	-			-	-
Year 5	2010			-	-			-	-
2015 Compliance - Indirect Recycled Water Use									
	2015			-	-			-	-
*Suppliers will provide supplemental sheets to document the calculation for their input into "Recycled Water Pumped by Utility". The volume reported in this cell must be less than total groundwater pumped - See Methodology 1, Step 8, section 2.c.									
NOTES:									

SB X7-7 Table 4-C: Process Water Deduction Eligibility

(For use only by agencies that are deducting process water) Choose Only One

<input type="checkbox"/>	Criteria 1- Industrial water use is equal to or greater than 12% of gross water use. Complete SB X7-7 Table 4-C.1
<input type="checkbox"/>	Criteria 2 - Industrial water use is equal to or greater than 15 GPCD. Complete SB X7-7 Table 4-C.2
<input type="checkbox"/>	Criteria 3 - Non-industrial use is equal to or less than 120 GPCD. Complete SB X7-7 Table 4-C.3
<input type="checkbox"/>	Criteria 4 - Disadvantaged Community. Complete SB x7-7 Table 4-C.4

NOTES:

SB X7-7 Table 4-C.1: Process Water Deduction Eligibility

Criteria 1

Industrial water use is equal to or greater than 12% of gross water use

Baseline Year <i>Fm SB X7-7 Table 3</i>	Gross Water Use Without Process Water Deduction	Industrial Water Use	Percent Industrial Water	Eligible for Exclusion Y/N	
10 to 15 Year Baseline - Process Water Deduction Eligibility					
Year 1	2001	5,158,727		0%	NO
Year 2	2002	5,103,837		0%	NO
Year 3	2003	5,191,399		0%	NO
Year 4	2004	5,933,712		0%	NO
Year 5	2005	6,124,082		0%	NO
Year 6	2006	6,340,590		0%	NO
Year 7	2007	6,766,200		0%	NO
Year 8	2008	6,425,538		0%	NO
Year 9	2009	5,369,136		0%	NO
Year 10	2010	5,709,798		0%	NO
Year 11	0	-			NO
Year 12	0	-			NO
Year 13	0	-			NO
Year 14	0	-			NO
Year 15	0	-			NO
5 Year Baseline - Process Water Deduction Eligibility					
Year 1	2006	6,340,590		0%	NO
Year 2	2007	6,766,200		0%	NO
Year 3	2008	6,425,538		0%	NO
Year 4	2009	5,369,136		0%	NO
Year 5	2010	5,709,798		0%	NO
2015 Compliance Year - Process Water Deduction Eligibility					
2015		4,414,000		0%	NO
NOTES:					

SB X7-7 Table 4-C.2: Process Water Deduction Eligibility

Criteria 2

Industrial water use is equal to or greater than 15 GPCD

Baseline Year <i>Fm SB X7-7 Table 3</i>	Industrial Water Use	Population	Industrial GPCD	Eligible for Exclusion Y/N
10 to 15 Year Baseline - Process Water Deduction Eligibility				
Year 1	2001		29,230	- NO
Year 2	2002		32,264	- NO
Year 3	2003		35,504	- NO
Year 4	2004		38,982	- NO
Year 5	2005		42,440	- NO
Year 6	2006		45,418	- NO
Year 7	2007		46,734	- NO
Year 8	2008		47,192	- NO
Year 9	2009		47,598	- NO
Year 10	2010		47,918	- NO
<i>Year 11</i>	0		-	NO
<i>Year 12</i>	0		-	NO
<i>Year 13</i>	0		-	NO
<i>Year 14</i>	0		-	NO
<i>Year 15</i>	0		-	NO
5 Year Baseline - Process Water Deduction Eligibility				
Year 1	2006		45,418	- NO
Year 2	2007		46,734	- NO
Year 3	2008		47,192	- NO
Year 4	2009		47,598	- NO
Year 5	2010		47,918	- NO
2015 Compliance Year - Process Water Deduction Eligibility				
2015			49,504	- NO
NOTES:				

SB X7-7 Table 4-C.3: Process Water Deduction Eligibility

Criteria 3

Non-industrial use is equal to or less than 120 GPCD

Baseline Year <i>Fm SB X7-7 Table 3</i>	Gross Water Use Without Process Water Deduction <i>Fm SB X7-7 Table 4</i>	Industrial Water Use	Non-industrial Water Use	Population <i>Fm SB X7-7 Table 3</i>	Non-Industrial GPCD	Eligible for Exclusion Y/N
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10 to 15 Year Baseline - Process Water Deduction Eligibility

Year 1	2001	5,158,727		5,158,727	29,230	362	NO
Year 2	2002	5,103,837		5,103,837	32,264	324	NO
Year 3	2003	5,191,399		5,191,399	35,504	300	NO
Year 4	2004	5,933,712		5,933,712	38,982	312	NO
Year 5	2005	6,124,082		6,124,082	42,440	296	NO
Year 6	2006	6,340,590		6,340,590	45,418	286	NO
Year 7	2007	6,766,200		6,766,200	46,734	297	NO
Year 8	2008	6,425,538		6,425,538	47,192	279	NO
Year 9	2009	5,369,136		5,369,136	47,598	231	NO
Year 10	2010	5,709,798		5,709,798	47,918	244	NO
<i>Year 11</i>	0	-		-	-		NO
<i>Year 12</i>	0	-		-	-		NO
<i>Year 13</i>	0	-		-	-		NO
<i>Year 14</i>	0	-		-	-		NO
<i>Year 15</i>	0	-		-	-		NO

5 Year Baseline - Process Water Deduction Eligibility

Year 1	2006	6,340,590		6,340,590	45,418	286	NO
Year 2	2007	6,766,200		6,766,200	46,734	297	NO
Year 3	2008	6,425,538		6,425,538	47,192	279	NO
Year 4	2009	5,369,136		5,369,136	47,598	231	NO
Year 5	2010	5,709,798		5,709,798	47,918	244	NO

2015 Compliance Year - Process Water Deduction Eligibility

2015		4,414,000		4,414,000	49,504	183	NO
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NOTES:

SB X7-7 Table 4-C.4: Process Water Deduction Eligibility

Criteria 4

Disadvantaged Community. A “Disadvantaged Community” (DAC) is a community with a median household income less than 80 percent of the statewide average.

SELECT ONE

"Disadvantaged Community" status was determined using one of the methods listed below:

- 1. IRWM DAC Mapping tool**
http://www.water.ca.gov/irwm/grants/resources_dac.cfm

If using the IRWM DAC Mapping Tool, include a screen shot from the tool showing that the service area is considered a DAC.

- 2. 2010 Median Income**

California Median Household Income	Service Area Median Household Income	Percentage of Statewide Average	Eligible for Exclusion? Y/N
2015 Compliance Year - Process Water Deduction Eligibility			
2010	\$60,883	\$53,559	88% NO

NOTES:

SB X7-7 Table 4-D: Process Water Deduction - Volume

Complete a

separate table for each industrial customer with a process water exclusion

Name of Industrial Customer		Industrial Customer 1				
Baseline Year <i>Fm SB X7-7 Table 3</i>	Industrial Customer's Total Water Use	Total Volume Supplied by Water Agency	% of Water Supplied by Water Agency	Customer's Total Process Water Use	Volume of Process Water Eligible for Exclusion for this Customer	
10 to 15 Year Baseline - Process Water Deduction						
Year 1	2001				-	
Year 2	32264				-	
Year 3	2003				-	
Year 4	2004				-	
Year 5	2005				-	
Year 6	2006				-	
Year 7	2007				-	
Year 8	2008				-	
Year 9	2009				-	
Year 10	2010				-	
<i>Year 11</i>	0				-	
<i>Year 12</i>	0				-	
<i>Year 13</i>	0				-	
<i>Year 14</i>	0				-	
<i>Year 15</i>	0				-	
5 Year Baseline - Process Water Deduction						
Year 1	2006				-	
Year 2	2007				-	
Year 3	2008				-	
Year 4	2009				-	
Year 5	2010				-	
2015 Compliance Year - Process Water Deduction						
	2015				-	
NOTES:						

SB X7-7 Table 5: Gallons Per Capita Per Day (GPCD)

Baseline Year <i>Fm SB X7-7 Table 3</i>		Service Area Population <i>Fm SB X7-7 Table 3</i>	Annual Gross Water Use <i>Fm SB X7-7 Table 4</i>	Daily Per Capita Water Use (GPCD)
10 to 15 Year Baseline GPCD				
Year 1	2001	29,230	5,158,727	362
Year 2	2002	32,264	5,103,837	324
Year 3	2003	35,504	5,191,399	300
Year 4	2004	38,982	5,933,712	312
Year 5	2005	42,440	6,124,082	296
Year 6	2006	45,418	6,340,590	286
Year 7	2007	46,734	6,766,200	297
Year 8	2008	47,192	6,425,538	279
Year 9	2009	47,598	5,369,136	231
Year 10	2010	47,918	5,709,798	244
<i>Year 11</i>	0	-	-	
<i>Year 12</i>	0	-	-	
<i>Year 13</i>	0	-	-	
<i>Year 14</i>	0	-	-	
<i>Year 15</i>	0	-	-	
10-15 Year Average Baseline GPCD				293
5 Year Baseline GPCD				
Baseline Year <i>Fm SB X7-7 Table 3</i>		Service Area Population <i>Fm SB X7-7 Table 3</i>	Gross Water Use <i>Fm SB X7-7 Table 4</i>	Daily Per Capita Water Use
Year 1	2006	45,418	6,340,590	286
Year 2	2007	46,734	6,766,200	297
Year 3	2008	47,192	6,425,538	279
Year 4	2009	47,598	5,369,136	231
Year 5	2010	47,918	5,709,798	244
5 Year Average Baseline GPCD				267
2015 Compliance Year GPCD				
2015		49,504	4,414,000	183

NOTES: 1) Gross water use in Hundred Cubic Feet (CCF)

2) GPCD = gallons per capita per day

SB X7-7 Table 6: Gallons per Capita per Day
Summary From Table SB X7-7 Table 5

10-15 Year Baseline GPCD	293
5 Year Baseline GPCD	267
2015 Compliance Year GPCD	183
NOTES: GPCD = gallons per capita per day	

SB X7-7 Table 7: 2020 Target Method*Select Only One*

Target Method		Supporting Documentation
<input checked="" type="checkbox"/>	Method 1	SB X7-7 Table 7A
<input type="checkbox"/>	Method 2	SB X7-7 Tables 7B, 7C, and 7D <i>Contact DWR for these tables</i>
<input type="checkbox"/>	Method 3	SB X7-7 Table 7-E
<input type="checkbox"/>	Method 4	Method 4 Calculator

NOTES:

SB X7-7 Table 7-A: Target Method 1

20% Reduction

10-15 Year Baseline GPCD	2020 Target GPCD
293	234
NOTES: Targets values are in GPCD = gallons per capita per day	

Tables for Target Method 2 (SB X7-7 Tables 7-B, 7-C, and 7-D) are not included in the SB X7-7 Verification Form, but are still required for water suppliers using Target Method 2. These water suppliers should contact Gwen Huff at (916) 651-9672 or gwen.huff@water.ca.gov

SB X7-7 Table 7-C: Target Method 2

Target CII Water Use

Tables for Target Method 2 (SB X7-7 Tables 7-B, 7-C, and 7-D) are not included in the SB X7-7 Verification Form, but are still required for water suppliers using Target Method 2. These water suppliers should contact Gwen Huff at (916) 651-9672 or gwen.huff@water.ca.gov

SB X7-7 Table 7-D: Target Method 2 Summary

Tables for Target Method 2 (SB X7-7 Tables 7-B, 7-C, and 7-D) are not included in the SB X7-7 Verification Form, but are still required for water suppliers using Target Method 2. These water suppliers should contact Gwen Huff at (916) 651-9672 or gwen.huff@water.ca.gov

SB X7-7 Table 7-E: Target Method 3

Agency May Select More Than One as Applicable	Percentage of Service Area in This Hydrological Region	Hydrologic Region	"2020 Plan" Regional Targets	Method 3 Regional Targets (95%)
<input type="checkbox"/>		North Coast	137	130
<input type="checkbox"/>		North Lahontan	173	164
<input checked="" type="checkbox"/>	100%	Sacramento River	176	167
<input type="checkbox"/>		San Francisco Bay	131	124
<input type="checkbox"/>		San Joaquin River	174	165
<input type="checkbox"/>		Central Coast	123	117
<input type="checkbox"/>		Tulare Lake	188	179
<input type="checkbox"/>		South Lahontan	170	162
<input type="checkbox"/>		South Coast	149	142
<input type="checkbox"/>		Colorado River	211	200
<p align="center">Target <i>(If more than one region is selected, this value is calculated.)</i></p>				<p align="center">167</p>
<p>NOTES: Targets values are in GPCD = gallons per capita per day</p>				

SB X7-7 Table 7-F: Confirm Minimum Reduction for 2020 Target

5 Year Baseline GPCD <i>From SB X7-7 Table 5</i>	Maximum 2020 Target ¹	Calculated 2020 Target ²	Confirmed 2020 Target
267	254	234	234

¹ Maximum 2020 Target is 95% of the 5 Year Baseline GPCD except for suppliers at or below 100 GPCD.

² 2020 Target is calculated based on the selected Target Method, see SB X7-7 Table 7 and corresponding tables for agency's calculated target.

NOTES: Targets values are in GPCD = gallons per capita per day

SB X7-7 Table 8: 2015 Interim Target GPCD

Confirmed 2020 Target <i>Fm SB X7-7 Table 7-F</i>	10-15 year Baseline GPCD <i>Fm SB X7-7 Table 5</i>	2015 Interim Target GPCD
234	293	264

NOTES: Targets values are in GPCD = gallons per capita per day

SB X7-7 Table 9: 2015 Compliance

Actual 2015 GPCD	2015 Interim Target GPCD	Optional Adjustments (in GPCD)					2015 GPCD (Adjusted if applicable)	Did Supplier Achieve Targeted Reduction for 2015?
		Enter "0" if Adjustment Not Used			TOTAL Adjustments	Adjusted 2015 GPCD		
		Extraordinary Events	Weather Normalization	Economic Adjustment				
183	264	<i>From Methodology 8 (Optional)</i>	<i>From Methodology 8 (Optional)</i>	<i>From Methodology 8 (Optional)</i>	-	183	183	YES

NOTES: Targets values are in GPCD = gallons per capita per day

2014 WATER QUALITY REPORT

INTRODUCTION

The City of West Sacramento is dedicated to supplying its customers with a safe and reliable supply of high quality drinking water. We are pleased to present this annual report, which conforms to a federal regulation that requires community water systems to provide customers with detailed information about their drinking water. It includes information about water supply sources, water treatment, water quality, drinking water regulations and source water protection programs. We hope that the information in this report increases your understanding of the water treatment process and your confidence in the quality of the water you drink.

Landlords who receive this report should forward it to tenants residing within the city, for their information. Additional copies are available upon request. Please contact the City of West Sacramento Public Works Department, (916) 617-4850. This report is also available at the city of West Sacramento web site www.cityofwestsacramento.org/city/depts/pw/public_works_operations. Este informe contiene información importante sobre su agua potable. Tradúzcalo, o hable con alguien que pueda entenderlo. Данный рапорт содержит важную информацию о вашей питьевой воде. Переведите его или проконсультируйтесь с тем, кто его понимает.

WATER SUPPLY SOURCES

The City of West Sacramento's main water supply is the Sacramento River. Our intake structure is located at Bryte Bend, upstream of the confluence of the Sacramento and American rivers. To ensure an adequate water supply for West Sacramento's current and future needs, the City maintains water supply contracts with the Federal Bureau of Reclamation, the state Central Valley Project and with the North Delta Water Agency.

In addition to surface water, the City has one ground water well. It is currently on standby status and available to supply additional water during emergencies. The City did not utilize ground water in 2014.

SOURCE WATER PROTECTION

A community's drinking water supply is a valuable resource and needs protection. The quality and reliability of source water can have a significant impact on a community's economy and quality of life. Given the importance of the Sacramento River to West Sacramento's continuing growth and to the health and well-being of our residents, the City actively participates in several source water protection programs.

- ▶ **The Rice Pesticide Workgroup**, in partnership with the City of Sacramento, the County of Sacramento and the East Bay Municipal Utility District, keeps us up to date on this important water quality issue. Our program of frequent monitoring at our raw water intake during rice season has been expanded to include new rice pesticides. In addition, we continually voice our concerns about the impact of rice

growing activities on source water quality in meetings with the California State Department of Pesticide Regulation, the Regional Water Quality Control Board (RWQCB), the California Rice Commission, and Agriculture Commissioners of the major rice growing counties. We have also presented our concerns directly to the RWQCB and to rice growers.

- ▶ **The Keep the Waters Clean Campaign**, in partnership with the City of Sacramento, the County of Sacramento and the East Bay Municipal Utility District, protects water quality by encouraging boaters and other recreational users of the Sacramento River to use pumpouts and public restrooms rather than the river to dispose of wastes.
- ▶ **The Sanitary Survey of the Sacramento River Watershed**, an ongoing project in partnership with the City of Sacramento, the County of Sacramento, the Placer County Water Agency, the City of Roseville and East Bay Municipal Utility District, keeps us up to date on developments in the Sacramento Valley watershed. The Sanitary Survey of 2010 was completed and is available for review at the Public Works Department, 1110 West Capitol Avenue in West Sacramento.
- ▶ **The Drinking Water Source Assessment Program (DWSAP)** allows us to identify sources of contamination and respond to possible contamination near our water treatment plant and throughout the watershed. Our Source Water Assessment was completed in November 2014. The DWSAP survey identified agricultural drainage as the activity to which West Sacramento's surface water source is most vulnerable. A copy of the survey is available for your review at the Public Works Department, 1110 West Capitol Avenue in West Sacramento.
- ▶ **The Regional Water Authority Water Efficiency Program** partners with water agencies throughout the Greater Sacramento Region working to help agencies better meet regulations in water conservation programs. Water conservation programs include education, water efficiency surveys for residents, commercial, industrial, and institutional water users. Wise water use such as landscaping with low water demanding plants and water timers. Recent legislation of regional water management and water supply issues resulted in the implementation of these water conservation programs.

WATER TREATMENT: SURFACE WATER

Water withdrawn from the Sacramento River is treated at the City's George Kristoff Water Treatment Plant (GKWTP), which is operated 24 hours a day by state-certified Water Treatment Plant Operators. Over 4.1 billion gallons of Sacramento River water was treated in 2014.

The City of West Sacramento maintains the high quality of our treatment process through the following:

- ▶ A vigorous preventative maintenance program helps us to

operate equipment at maximum efficiency.

- ▶ Membership in local, regional and national water industry organizations allows us to draw on expertise and experience outside of our own city.
- ▶ Monitoring current research on water treatment, and continuing education and training at our treatment plant assures you of a motivated, professional staff focused on producing the best quality water possible.

For further information about the water treatment process, please contact the GKWTP at (916) 617-4860.

WATER EFFICIENCY

The City of West Sacramento promotes water conservation at all times. Wise water use is foremost in our commitment to the community. Considering the many uses of our drinking water in our day-to-day lives, water efficiency is now a way of life. For more information on this topic visit:

www.cityofwestsacramento.org/water

Your efforts to improve water efficiency will save energy in your home and in the community, and preventing wasteful runoff from our landscapes to storm drains will insure cleaner waters for fish, flora and fauna.

WATER METERS

The City of West Sacramento continues to install water meters as we work towards compliance with California State Law, Assembly Bill No. 514 (AB 514). Water meters will enable the City to quantify customer water use and help increase water conservation by making people aware of their water use. When people are charged for their actual measured use, they tend not to waste it, thereby reducing their overall water consumption.

The City has been installing water meters in phases. The next round of water meter installations will begin this summer, with installation of approximately 900 water meters throughout the City. The second project will start late summer/early fall and will install over 200 meters. Water meter installation program is expected to be complete in 2018. Customers will be transitioned from paying a flat rate for water to paying a metered rate for the actual amount used. Prior to the switch, customers will receive several months of water use data in order to prepare for the change. **For additional information about the water meter program contact the Project Manager Dereck Goodwin, Associate Civil Engineer at (916) 617-4700.**

FOR QUESTIONS ABOUT THIS REPORT:

Dan Mount
Public Works Operations Manager
(916) 617-4860

FOR ADDITIONAL COPIES OF THIS REPORT:

Public Works Department
(916) 617-4850

TO REPORT PROBLEMS AFTER HOURS:

Public Works Department
(916) 372-3375

FOR BILLING QUESTIONS:

Finance Department
(916) 617-4589

FOR WATER METER RETROFIT PROGRAM:

Dereck Goodwin
(916) 617-4700

FOR WATER QUALITY COMPLAINTS:

George Kristoff Water Treatment Plant
(916) 617-4860
EPA Safe Drinking Water Hotline
(800) 426-4791

CITY OF WEST SACRAMENTO WEB SITE:

www.cityofwestsacramento.org

CITY COUNCIL MEETINGS:

Twice monthly - Wednesdays at 7 p.m. in the City Council Chambers, 1110 West Capitol Ave. For specific dates check the "City Calendar" on www.cityofwestsacramento.org or phone (916) 617-4500.

TO REPORT WATER WASTE:

(916) 617-4545



George Kristoff Water Treatment Plant
Sacramento River Intake Pumps

WATER CONSERVATION

Over 4.1 billion gallons of high quality drinking water was produced at the GKWTP in 2014. Most of this water was not used for drinking, but for landscape watering. An easy and effective way to conserve water is to follow the City's water conservation ordinance by using an odd-even watering schedule for outdoor landscaping. For more information, please visit www.cityofwestsacramento.org/water.

QUESTIONS AND COMMENTS

We hope you find this report to be useful and informative. If you have any questions or comments about this report or about your drinking water, please call Dan Mount, Public Works Operations Manager, (916) 617-4862.

OUR COMMITMENT TO YOU

The City of West Sacramento has delivered over 109 billion gallons of high quality, treated water to our residents since the opening of the George Kristoff Water Treatment Plant in 1988. Today, as West Sacramento grows, our commitment to you continues. We are proud of the service we provide and promise to continue to deliver the highest quality drinking water to you and your family.



ANNUAL WATER QUALITY REPORT

George Kristoff Water Treatment Plant
400 North Harbor Blvd.
West Sacramento, CA 95605
June 2015

2014 CONSUMER CONFIDENCE REPORT

WATER QUALITY



**MUNICIPAL CODE - WATER CONSERVATION AND
AMENDED ORDINANCE 14-6**

West Sacramento Municipal Code

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[Title 13 PUBLIC SERVICES](#)

[Chapter 13.04 WATER SERVICE SYSTEM](#)

Article IX. Water Conservation

13.04.750 Purpose and intent.

The purpose of this article is to ensure compliance with all federal, state, and local requirements, including, but not limited to, the city of West Sacramento Urban Water Management Plan and the State of California Water Conservation Act of 2009 (SBX7-7), relating to water conservation and water shortage mitigation for the protection of public health, safety, and welfare by:

Reducing the per capita water consumption throughout the city of West Sacramento;

Protecting and conserving the city's supply of water during specified times of emergency and/or crisis; and

Minimizing and/or eliminating the waste of water through voluntary compliance or punitive action, if necessary. (Ord. 14-6 § 3)

13.04.760 Definitions.

As used in this article, the following terms shall have the specified meanings:

“Rehabilitated landscape” means any re-landscaping project that requires a permit, plan check, or design review, meets the requirements of Section [13.04.1100](#), and the modified landscape area is equal to or greater than two thousand five hundred square feet, is fifty percent of the total landscape area, and the modifications are completed within one year.

“Water waste,” “waste,” or “wasted” water means:

1. Causing or permitting excessive water to discharge, flow, or run to waste into any gutter, sanitary sewer, water course, or storm drain, or to any adjacent property, from any tap, hose faucet, pipe, sprinkler, or nozzle. In the case of irrigation, “discharge,” “flow,” or “run to waste” means that the earth intended to be irrigated has been saturated with water to the point that excess water flows over the earth to waste.

2. Allowing water fixtures or heating or cooling devices to leak or discharge excessively.

3. Backwashing so as to discharge to waste from swimming pools, decorative basins or ponds in excess of the frequency necessary to ensure the healthful condition of the water or in excess of that required by standards for professionally administered maintenance or to address structural considerations.

4. Operation of an irrigation system that applies water to an impervious surface or that is in disrepair.

5. Irrigation of landscaping during rainfall.

6. Any other actions as determined by the city manager and designee. (Ord. 14-6 § 3)

13.04.770 Water waste prohibited.

No person shall cause or permit any water furnished to the person's premises by the city to be wasted or run to waste. In addition to administration of the penalties described in Section [13.04.800](#), the city may, pursuant to the requirements of Article X of this chapter, disconnect the city's service to any premises and/or customer for the customer's failure to comply with this section. The city may inspect or test meters in unmetered service to determine compliance. (Ord. 14-6 § 3)

13.04.780 Swimming and wading pools.

A. All swimming or wading pools installed after the effective date of the ordinance codified in this chapter, which have a capacity of over two thousand gallons of water, and which use water from the city distribution system or which discharge water into the city sewer system, shall be equipped with recirculating systems and filters that meet the performance requirements established by the NSF/ANSI 50-2012 performance standard effective September 2012.

B. Filling or discharging swimming or wading pools shall be limited to the hours between eight p.m. and seven a.m.

C. Pool draining and refilling shall be allowed only to the extent required for health, maintenance, or structural considerations, and must otherwise comply with all applicable federal, state and local laws and stormwater management program requirements. (Ord. 14-6 § 3)

13.04.790 Outdoor water use and conservation.

A. All new construction and rehabilitated landscapes shall be installed in accordance with city of West Sacramento Water Efficient Landscaping Code (Chapter [13.04](#), Article 12).

B. No person shall use, or cause to be used, any city water through a hose for the purpose of washing a vehicle unless the hose is equipped with an automatic shut-off nozzle attachment, and the attachment is being used to shut off flow of water at all times when the hose is not being used to wash the vehicle. (Ord. 14-6 § 3)

13.04.800 Penalties for violation.

A. Penalties shall be imposed for violation of any of the provisions of Sections [13.04.770](#) through [13.04.790](#), inclusive. Any violations occurring on separate calendar days shall be considered separate violations. The penalty for any violation shall be the amount specified in the city's book of fees.

B. Issued written notices must be posted at a conspicuous place on the premises where the violation occurred, or by US mail, first class, postage prepaid addressed to the property billing address.

C. The penalties shall be imposed on the owner of the premises where the violation occurs regardless of whether the violation is committed by the owner of the premises or any other person. (Ord. 14-6 § 3)

13.04.810 Appeals.

Any person may appeal a violation of this chapter in accordance with the provisions of Chapter [1.08](#) of this code. (Ord. 14-6 § 3)

13.04.820 Construction uses.

Water uses for dust control, curing, compacting, cleaning or other construction use may be subject to limitations and shall not interfere with other domestic uses. Use of recycled water is encouraged where available. (Ord. 14-6 § 3)

13.04.830 Declaration of water shortage.

In response to any condition necessitating increased water conservation, such as a water shortage due to drought, natural disaster or other reduction of water supply availability, or as may otherwise be required to protect public health, safety and welfare, the city manager may, in accordance with the city of West

Sacramento's Urban Water Management Plan, declare a water shortage emergency and impose revised and/or additional limitations and time restrictions on outdoor water use while the water shortage remains in effect, and no person shall use, or cause to be used, city water in violation of such limitations or restrictions while the water shortage remains in effect. (Ord. 14-6 § 3)

13.04.840 Access to customer premises—Compliance.

A. A customer receiving city water service shall provide city employees and/or contractors access to and use of the premises where city water service is received as may be required by the city's employees or contractors to determine whether there is any violation of any of the provisions of Sections [13.04.770](#) through [13.04.830](#), inclusive, or to abate any violation thereof. If the customer refuses to allow such access, the city may seek authorization from any court of competent jurisdiction for such access and abatement.

B. Compliance with the provisions of this article shall be a condition of the customer receiving or continuing to receive water service. (Ord. 14-6 § 3)

13.04.850 Fire and other emergencies.

Nothing in this article shall be construed to apply to the use of city water for purposes of extinguishing fire or any other similar emergency. (Ord. 14-6 § 3)

View the [mobile version](#).

WATER WASTE AND EXCESSIVE USE FINES/PENALTIES

CITY OF WEST SACRAMENTO

BOOK OF FEES

Description	Authority	Effective Date
WATER WASTE AND EXCESSIVE USE FINES/PENALTIES	Resolution 14-48	Sept. 3, 2014

Fee Schedule

A. WATER WASTE AND EXCESSIVE USE FINES/PENALTIES

1. Penalties shall be imposed for violation of any of the provisions of Municipal Code Sections 13.04.770 through 13.04.790, inclusive. Any violations occurring on separate calendar days shall be considered separate violations. The penalty for any violation shall be the amount specified below:
 - a. First violation during any 12-month period: No penalty shall be imposed, but a written notice describing the violation and the penalties for subsequent violations shall be issued to the owner and the occupant (if different than the owner) of the premises where the violation occurred.
 - b. Second violation during any 12-month period: No penalty shall be imposed, but a written notice describing the violation and the penalties for subsequent violations shall be issued to the owner and the occupant (if different than the owner) of the premises where the violation occurred.
 - c. Third violation during any 12-month period: A written notice describing the violation and the penalty shall be issued to the owner and the occupant (if different than the owner) of the premises where the violation occurred. A penalty of \$200 shall be imposed.
 - d. Fourth and any successive violations during any 12-month period: A written notice describing the violation and the penalty shall be issued to the owner and the occupant (if different than the owner) of the premises where the violation occurred. A penalty of \$500 shall be imposed.
2. The penalties or charges for excessive use during water shortages, as described in the City's Urban Water Management Plan, are as follows:
 - a. Stage 2 water shortage: For the first and subsequent violations of the water conservation measures in force, customers will receive the following sequence of enforcement actions (over two-week period each):
 - (1) For the first violation, the person that committed the violation shall be issued a written notice stating the type of violation.
 - (2) For the second violation, the person that committed the violation shall be issued a written notice.
 - (3) For the third violation, the person that committed the violation and the property owner shall be issued a written notice. For the third violation, the subject property water rates shall be increased to 5 times the normal

CITY OF WEST SACRAMENTO

BOOK OF FEES

Description	Authority	Effective Date
WATER WASTE AND EXCESSIVE USE FINES/PENALTIES	Resolution 14-48	Sept. 3, 2014

Fee Schedule

monthly rates for the month of the violation, and then said water rates would be returned to their regular schedule.

- (4) For the fourth violation, the person that committed the violation and the property owner shall be issued a written notice. For the fourth violation, the subject property water rates shall be increased to 5 times the normal monthly rates for the duration of the water shortage and then said water rates would return to their regular schedule.

- b. Stages 3 and 4 water shortage: Enforcement/Charges for Excessive Water Use: For the first and subsequent violations of the water conservation measures in force, customers will receive the following sequence of enforcement actions (over two-week period each):
 - (1) For the first violation, the person that committed the violation shall be issued a written notice stating the type of violation.
 - (2) For the second violation, the person that committed the violation shall be issued a written notice.
 - (3) For the third violation, the person that committed the violation and the property owner shall be issued a written notice. For the third violation, the subject property water rates shall be increased to 5 times the normal monthly rates for the month of the violation, and then said water rates would be returned to their regular schedule.
 - (4) For the fourth violation, the person that committed the violation and the property owner shall be issued a written notice. For the fourth violation, the subject property water rates shall be increased to 5 times the normal monthly rates for the duration of the water shortage and then said water rates would return to their regular schedule.
 - (5) For the fifth violation, the person that committed the violation and the property owner shall be issued a shut-off letter warning of termination of service and a possible reconnect fee.
 - (6) For the sixth violation, service shall be shut off, and the property owner shall be subject to a charge for reconnection.

HISTORY:

AUTHORITY	DATE	ACTION
Res. 14-48	9/3/14	Adopt schedule

WATER SERVICE CHARGES

CITY OF WEST SACRAMENTO

BOOK OF FEES

Description	Authority	Effective Date
WATER SERVICE CHARGES	Resolution 11-26	Jul. 1, 2011

Fee Schedule

Water Service Charges are designed to derive the annual revenue requirements necessary to fund the operation of the water system as well as to derive these revenue requirements equitably from each class of user in accordance with their differing demands placed upon the system, as determined by the Water Master Plan dated May 2005.

A. USER CHARGES

User classes and charges within each user class are as follows:

	July 2011	July 2012	July 2013	July 2014	July 2015
Flat Water Rates					
Residential Flat Rates (1, 2, or 3 units) - \$/month					
Up to 3/4" meter	\$ 37.50	\$ 37.95	\$ 38.40	\$ 38.85	\$ 39.30
1" meter	\$ 38.70	\$ 39.15	\$ 39.60	\$ 40.05	\$ 40.50
Additional units	\$ 20.50	\$ 20.95	\$ 21.40	\$ 21.85	\$ 22.30
General Service Flat Rates - \$/month					
5/8" X 3/4" meter	\$ 42.60	\$ 43.05	\$ 43.50	\$ 43.95	\$ 44.40
3/4" meter	\$ 47.35	\$ 47.80	\$ 48.25	\$ 48.70	\$ 49.15
1" meter	\$ 92.00	\$ 92.45	\$ 92.90	\$ 93.35	\$ 93.80
1-1/2" meter	\$ 177.25	\$ 177.70	\$ 178.15	\$ 178.60	\$ 179.05
Metered Water Rates					
Fixed Service charges - All Customers - \$/month					
Up to 3/4" meter	\$ 12.55	\$ 12.70	\$ 12.85	\$ 13.00	\$ 13.15
1" meter	\$ 20.90	\$ 21.15	\$ 21.40	\$ 21.65	\$ 21.90
1-1/2" meter	\$ 41.70	\$ 42.20	\$ 42.70	\$ 43.20	\$ 43.70
2" meter	\$ 66.80	\$ 67.60	\$ 68.40	\$ 69.20	\$ 70.01
3" meter	\$ 133.65	\$ 135.25	\$ 136.86	\$ 138.46	\$ 140.07
4" meter	\$ 208.85	\$ 211.36	\$ 213.86	\$ 216.37	\$ 218.87
6" meter	\$ 417.55	\$ 422.56	\$ 427.57	\$ 432.58	\$ 437.59
8" meter	\$ 668.15	\$ 676.17	\$ 684.19	\$ 692.20	\$ 700.22
	\$	\$	\$	\$	\$ 1,006.5
10" meter	\$ 960.40	\$ 971.92	\$ 983.45	\$ 994.97	\$ 0
12" meter	\$ 1,409.50	\$ 1,426.4	\$ 1,443.3	\$ 1,460.2	\$ 1,477.1
		1	3	4	6
Commodity Rates - \$/CCF (1)					
Residential Rates (2)					
1st Tier 0-10 CCF/mo.	\$ 1.18	\$ 1.19	\$ 1.21	\$ 1.22	\$ 1.24
2nd Tier 11-50 CCF/mo.	\$ 1.30	\$ 1.32	\$ 1.33	\$ 1.35	\$ 1.36
3rd Tier 51+ CCF/mo.	\$ 1.62	\$ 1.64	\$ 1.66	\$ 1.68	\$ 1.70
Non-Residential Rate (all use)	\$ 1.79	\$ 1.84	\$ 1.89	\$ 1.94	\$ 1.99

Notes: (1) One CCF = 100 cubic feet = 748 gallons.

(2) The residential commodity rates shown in "Current" column would become effective with adoption of the proposed rates.

CITY OF WEST SACRAMENTO

BOOK OF FEES

Description	Authority	Effective Date
WATER SERVICE CHARGES	Resolution 11-26	Jul. 1, 2011

Fee Schedule

A. (continued)

Temporary service shall be charged at 1-½ times the appropriate flat charge. Accounts with broken meters will use the account's average water consumption. Temporary service shall include a quantity charge.

B. GENERAL SERVICE, FLAT USER CLASS ELIMINATION

The general service, flat user class shall be eliminated over time. No new applicants shall be accepted into this class and existing users shall be converted to the general service, metered class at the City's convenience in accordance with sections 13.04.260 or 13.04.270 of the Water Code.

C. VACANCY CREDIT

Vacancy credit may be granted only for unmetered residential accounts, and solely on the following terms and conditions:

1. A written request is received from the customer.
2. Payment in full of the current utility bill.
3. Payment of a \$25 turn-off service fee
4. Water service is turned off.
5. The credit amount shall be 100% of the flat charge.
6. A service fee of \$15 is also required for resumption of water service.

D. METER TESTING

No charge if meter tests bad; otherwise, \$40 turn-off/on fee and \$50 testing fee.

E. SECURITY DEPOSITS

1. Since metered accounts are billed in arrears, the service charge for the first month of service will be set aside as a deposit. Since the utility bill includes charges for sewer and refuse collection services, charges for them too will be set aside as a deposit.
2. In addition to 1. above, for protection against delinquent payments in addition to penalties and interest, the City may require a security deposit in an amount, when combined with 1. above, not to exceed the highest monthly charge during the prior 12 months.

HISTORY:

AUTHORITY	DATE	ACTION
Sunset Clause	1/10	Section F deleted
Res. 11-26	6/1/11	Update rates

WATER EFFICIENT LANDSCAPE ORDINANCE

ORDINANCE 15-9

**AN ORDINANCE OF THE CITY COUNCIL OF THE
CITY OF WEST SACRAMENTO
AMENDING ARTICLE XII CHAPTER 13.04 OF THE MUNICIPAL CODE
RELATED TO WATER EFFICIENT LANDSCAPING**

The City Council of the City of West Sacramento does ordain as follows:

Section 1. Purpose and Authority. The California Water Conservation in Landscaping Act of 2006 (AB 1881) mandates that local jurisdictions adopt and enforce the State Model Water Efficient Landscaping ordinance, or adopt and enforce their own Water Efficient Landscaping ordinance as long as it is at least as effective as the State model ordinance.

In response to Executive Order B-29-15, the California Water Commission approved a revised Water Efficient Landscaping Ordinance for the State on July 15, 2015, which is scheduled to go into effect on December 1, 2015. Local jurisdictions may follow this revised ordinance, or enforce their own Water Efficient Landscaping ordinance as long as it meets or exceeds the State model ordinance requirements.

In the best interest of the City of West Sacramento, this amendment will revise the City's existing Water Efficient Landscaping Ordinance to be at least as effective as the State model ordinance by amending Article XII to Chapter 13.04 of the City of West Sacramento Municipal Code.

Section 2. Amendments. The following sections of the West Sacramento Municipal Code are hereby amended to read as follows:

**Title 13. Public Services
Chapter 13.04. Water Service System
Article XII. Water Efficient Landscaping**

13.04.1090 Purpose.

The State Legislature has found:

1. that the waters of the state are of limited supply and are subject to ever increasing demands;
2. that the continuation of California's economic prosperity is dependent on the availability of adequate supplies of water for future uses;
3. that it is the policy of the State to promote the conservation and efficient use of water and to prevent the waste of this valuable resource;
4. that landscapes are essential to the quality of life in California by providing areas for active and passive recreation and as an enhancement to the environment by cleaning air and water, preventing erosion, offering fire protection, and replacing ecosystems lost to development; and
5. that landscape design, installation, maintenance and management can and should be water efficient; and
6. that Section 2 of Article X of the California Constitution specifies that the right to use water is limited to the amount reasonably required for the beneficial use to be served and the right does not and shall not extend to waste or unreasonable method of use.

Consistent with these legislative findings, the purpose of this ordinance is to:

1. promote the values and benefits of landscaping practices that integrate and go beyond the conservation and efficient use of water.

2. establish a structure for planning, designing, installing, maintaining and managing water efficient landscapes in new construction and rehabilitated projects by encouraging the use of a watershed approach that requires cross-sector collaboration of industry, government, and property owners to achieve the many benefits possible
3. establish provisions for water management practices and water waste prevention for existing landscapes;
4. use water efficiently without waste by setting a Maximum Applied Water Allowance as an upper limit for water use and reduce water use to the lowest practical amount;
5. promote the benefits of consistent landscape ordinances with neighboring local and regional agencies;

Landscapes that are planned, designed, installed, managed and maintained with the watershed based approach can improve California's environmental conditions and provide benefits and realize sustainability goals. Such landscapes will make the urban environment resilient in the face of climatic extremes. Consistent with the legislative findings and purpose of the Ordinance, conditions in the urban setting will be improved by:

1. Creating the conditions to support life in the soil by reducing compaction, incorporating organic matter that increases water retention, and promoting productive plant growth that leads to more carbon storage, oxygen production, shade, habitat and esthetic benefits.
2. Minimizing energy use by reducing irrigation water requirements, reducing reliance on petroleum based fertilizers and pesticides, and planting climate appropriate shade trees in urban areas.
3. Conserving water by capturing and reusing graywater wherever possible and selecting climate appropriate plants that need minimal supplemental water after establishment.
4. Protecting air and water quality by reducing power equipment use and landfill disposal trips, selecting recycled and locally sourced materials, and using compost, mulch and efficient irrigation equipment to prevent erosion.
5. Protecting existing habitat and creating new habitat by choosing local native plants, climate adapted non-natives and avoiding invasive plants. Utilizing integrated pest management with least toxic methods as the first course of action.

13.04.1100 Applicability.

A. After December 1, 2015, and consistent with Executive Order No. B-29-15, this ordinance shall apply to all of the following landscape projects:

1. new development projects with an aggregate landscape area equal to or greater than 500 square feet requiring a building or landscape permit, plan check, or design review;
2. rehabilitated landscape projects with an aggregate landscape area equal to or greater than 2,500 square feet requiring a building or landscape permit, plan check, or design review;
3. existing landscapes limited to Sections 13.04.1200, and 13.04.1210; and
4. cemeteries. Recognizing the special landscape management needs of cemeteries, new and rehabilitated cemeteries are limited to Sections 13.04.1120.C, 13.04.1130.C, and 13.04.1200; and existing cemeteries are limited to Sections 13.04.1200, and 13.04.1210.

B. Any project with an aggregate landscape area of 2,500 square feet or less may comply with the performance requirements of this ordinance or conform to the prescriptive measures contained in Section 13.04.1140.

C. For projects using treated or untreated graywater or rainwater captured on site, any lot or parcel within the project that has less than 2500 sq. ft. of landscape and meets the lot's or parcel's landscape water requirement (Estimated Total Water Use) entirely with treated or untreated graywater or through stored rainwater captured on site is subject only to Section 13.04.1140.

D. This ordinance does not apply to:

1. registered local, state or federal historical sites;
2. ecological restoration projects that do not require a permanent irrigation system;
3. mined-land reclamation projects that do not require a permanent irrigation system; or
4. existing plant collections, as part of botanical gardens and arboretums open to the public.

13.04.1110 Definitions.

The terms used in this ordinance have the meaning set forth below:

"applied water" means the portion of water supplied by the irrigation system to the landscape.

"automatic irrigation controller" means a timing device used to remotely control valves that operate an irrigation system. Automatic irrigation controllers are able to self-adjust and schedule irrigation events using either evapotranspiration (weather-based) or soil moisture data.

"backflow prevention device" means a safety device used to prevent pollution or contamination of the water supply due to the reverse flow of water from the irrigation system.

"Certificate of Completion" means the document required under Section 13.04.1130.

"certified irrigation designer" means a person certified to design irrigation systems by an accredited academic institution a professional trade organization or other program such as the US Environmental Protection Agency's WaterSense irrigation designer certification program and Irrigation Association's Certified Irrigation Designer program.

"certified landscape irrigation auditor" means a person certified to perform landscape irrigation audits by an accredited academic institution, a professional trade organization or other program such as the US Environmental Protection Agency's WaterSense irrigation auditor certification program and Irrigation Association's Certified Landscape Irrigation Auditor program.

"check valve" or "anti-drain valve" means a valve located under a sprinkler head, or other location in the irrigation system, to hold water in the system to prevent drainage from sprinkler heads when the sprinkler is off.

"common interest developments" means community apartment projects, condominium projects, planned developments, and stock cooperatives per Civil Code Section 1351.

"compost" means the safe and stable product of controlled biologic decomposition of organic materials that is beneficial to plant growth.

"conversion factor (0.62)" means the number that converts acre-inches per acre per year to gallons per square foot per year

"distribution uniformity" means the measure of the uniformity of irrigation water over a defined area.

"drip irrigation system" means a method of micro-irrigation system (low pressure and low volume) wherein water is applied to the soil surface as drops or small streams through emitters. See also "subsurface drip irrigation system".

"ecological restoration project" means a project where the site is intentionally altered to establish a defined, indigenous, historic ecosystem.

"effective precipitation" or "usable rainfall" (Eppt) means the portion of total precipitation which becomes available for plant growth. The usable rainfall value shall be estimated as 25% of the average annual rainfall. Average annual rainfall amounts shall be determined by the City of West Sacramento Parks Department, and based on a combination of data from the City's weather stations, and regional California Irrigation Management Information Systems (CIMIS) data.

"emitter" means a drip irrigation emission device that delivers water slowly from the system to the soil.

"established landscape" means the point at which plants in the landscape have developed significant root growth into the soil. Typically, most plants are established after one or two years of growth.

"establishment period of the plants" means the first year after installing the plant in the landscape or the first two years if irrigation will be terminated after establishment. Typically, most plants are

established after one or two years of growth. Native habitat mitigation areas and trees may need three to five years for establishment.

"Estimated Total Water Use" (ETWU) means the total water used for the landscape as described in Section 13.04.1120.C.

"ET adjustment factor" (ETAF) means a factor of 0.55 for residential areas and 0.45 for non-residential areas, that, when applied to reference evapotranspiration, adjusts for plant factors and irrigation efficiency, two major influences upon the amount of water that needs to be applied to the landscape. The ETAF for new and existing (non-rehabilitated) Special Landscape Areas shall not exceed 1.0. The ETAF for existing non-rehabilitated landscapes is 0.8.

"evapotranspiration rate" means the quantity of water evaporated from adjacent soil and other surfaces and transpired by plants during a specified time. See also "reference evapotranspiration".

"flow rate" means the rate at which water flows through pipes, valves and emission devices, measured in gallons per minute, gallons per hour, or cubic feet per second.

"flow sensor" means an inline device installed at the supply point of the irrigation system that produces a repeatable signal proportional to flow rate. Flow sensors must be connected to an automatic irrigation controller, or flow monitor capable of receiving flow signals and operating master valves.

"friable" means a soil condition that is easily crumbled or loosely compacted down to a minimum depth per planting material requirements, whereby the root structure of newly planted material will be allowed to spread unimpeded.

"graywater" means untreated wastewater that has not been contaminated by any toilet discharge, has not been affected by infectious, contaminated, or unhealthy bodily wastes, and does not present a threat from contamination by unhealthful processing, manufacturing, or operating wastes. "Graywater" includes, but is not limited to, wastewater from bathtubs, showers, bathroom washbasins, clothes washing machines, and laundry tubs, but does not include wastewater from kitchen sinks or dishwashers. Health and Safety Code Section 17922.12.

"hardscapes" means any durable material (pervious and non-pervious).

"hydrozone" means a portion of the landscaped area having plants with similar water needs and rooting depth. A hydrozone may be irrigated or non-irrigated.

"infiltration rate" means the rate of water entry into the soil expressed as a depth of water per unit of time (e.g., inches per hour).

"invasive plant species" means species of plants not historically found in California that spread outside cultivated areas and can damage environmental or economic resources. Invasive species may be regulated by county agricultural agencies as noxious species. Lists of invasive plants are maintained at the California Invasive Plant Inventory and USDA invasive and noxious weeds database.

"irrigation audit" means an in-depth evaluation of the performance of an irrigation system conducted by a Certified Landscape Irrigation Auditor. An irrigation audit includes, but is not limited to: inspection, system tune-up, system test with distribution uniformity or emission uniformity, reporting overspray or runoff that causes overland flow, and preparation of an irrigation schedule. The audit must be conducted in a manner consistent with the Irrigation Association's Landscape Irrigation Auditor Certification program or other U.S. Environmental Protection Agency "Watersense" labeled auditing program.

"irrigation efficiency" (IE) means the measurement of the amount of water beneficially used divided by the amount of water applied. Irrigation efficiency is derived from measurements and estimates of irrigation system characteristics and management practices. The irrigation efficiencies for purposes of this ordinance are 0.75 for overhead sprinkler irrigation systems and 0.81 for drip or subsurface drip irrigation systems.

- “irrigation survey” means an evaluation of an irrigation system that is less detailed than an irrigation audit. An irrigation survey includes, but is not limited to: inspection, system test, and written recommendations to improve performance of the irrigation system.
- “irrigation water use analysis” means an analysis of water use data based on meter readings and billing data.
- “landscape architect” means a person who holds a license to practice landscape architecture in the state of California Business and Professions Code, Section 5615.
- “landscape area” means all the planting areas, turf areas, and water features in a landscape design plan subject to the Maximum Applied Water Allowance calculation. The landscape area does not include footprints of buildings or structures, sidewalks, driveways, parking lots, decks, patios, gravel or stone walks, other pervious or non-pervious hardscapes, and other non-irrigated areas designated for non-development (e.g., open spaces and existing native vegetation).
- “landscape contractor” means a person licensed by the state of California to construct, maintain, repair, install, or subcontract the development of landscape systems.
- “Landscape Development Guidelines” is a document published by the Community Development Department of the City of West Sacramento, which defines the development requirements for trees, shrubs, and other plantings.
- “Landscape Documentation Package” means the documents required under Section 13.04.1120.
- “landscape project” means total area of landscape in a project as defined in “landscape area” for the purposes of this ordinance, meeting requirements under Section 13.04.1100.
- “landscape water meter” means an inline device installed at the irrigation supply point that measures the flow of water into the irrigation system and is connected to a totalizer to record water use.
- “lateral line” means the water delivery pipeline that supplies water to the emitters or sprinklers from the valve.
- “low volume irrigation” means the application of irrigation water at low pressure through a system of tubing or lateral lines and low-volume emitters such as drip, drip lines, bubblers, and multi-stream, multi-trajectory rotator sprinklers. Low volume irrigation systems are specifically designed to apply small volumes of water not to exceed 0.75 inches per hour precipitation rate.
- “main line” means the pressurized pipeline that delivers water from the water source to the valve or outlet.
- “master shut-off valve” is an automatic valve installed at the irrigation supply point which controls water flow into the irrigation system. When this valve is closed, water will not be supplied to the irrigation system. A master valve will greatly reduce any water loss due to a leaky station valve.
- “Master Tree List” means the most current list of various tree species published regularly by the City’s Parks and Recreation Department. Trees on the list are approved for planting in the City of West Sacramento.
- “Maximum Applied Water Allowance” (MAWA) means the upper limit of annual applied water for the established landscaped area as specified in Section 13.04.1120.C. It is based upon the area’s reference evapotranspiration, the ET Adjustment Factor, and the size of the landscape area. The Estimated Total Water Use shall not exceed the Maximum Applied Water Allowance. Special Landscape Areas, including recreation areas, areas permanently and solely dedicated to edible plants such as orchards and vegetable gardens, and areas irrigated with recycled water are subject to the MAWA with an ETAF not to exceed 1.0. $MAWA = (ET_o) (0.62) [(ETAF \times LA) + ((1-ETAF) \times SLA)]$, where ETAF is 0.55 for residential areas, or 0.45 for non-residential areas.
- “median” is an area between opposing lanes of traffic that may be unplanted or planted with trees, shrubs, perennials, and ornamental grasses.

- "microclimate" means the climate of a small, specific area that may contrast with the climate of the overall landscape area due to factors such as wind, sun exposure, plant density, or proximity to reflective surfaces.
- "mined-land reclamation projects" means any surface mining operation with a reclamation plan approved in accordance with the Surface Mining and Reclamation Act of 1975.
- "mulch" means any organic material such as leaves, bark, straw, compost, or inorganic mineral materials such as rocks, gravel, or decomposed granite left loose and applied to the soil surface for the beneficial purposes of reducing evaporation, suppressing weeds, moderating soil temperature, and preventing soil erosion.
- "new construction" means, for the purposes of this ordinance, a new building with a landscape or other new landscape, such as a park, playground, or greenbelt without an associated building.
- "non-residential landscape" means landscapes in commercial, institutional, industrial, and public settings that may have areas designated for recreation or public assembly. It also includes portions of common areas of common interest developments with designated recreational areas.
- "operating pressure" means the pressure at which the parts of an irrigation system are designed by the manufacturer to operate.
- "overhead sprinkler irrigation systems" means systems that deliver water through the air (e.g., spray heads and rotors).
- "overspray" means the irrigation water which is delivered beyond the target area.
- "permit" means an authorizing document issued by the City of West Sacramento for new construction or rehabilitated landscapes.
- "pervious" means any surface or material that allows the passage of water through the material and into the underlying soil.
- "plant factor" or "plant water use factor" is a factor, when multiplied by ETo, estimates the amount of water needed by plants. For purposes of this ordinance, the plant factor range for very low water use plants is 0 to 0.1, the plant factor range for low water use plants is 0.1 to 0.3, the plant factor range for moderate water use plants is 0.4 to 0.6, and the plant factor range for high water use plants is 0.7 to 1.0. Plant factors cited in this ordinance are derived from the publication "Water Use Classification of Landscape Species" or "WUCOLS". Plant factors may also be obtained from horticultural researchers from academic institutions or professional associations as approved by the California Department of Water Resources (DWR).
- "project applicant" means the individual or entity submitting a Landscape Documentation Package required under Section 13.04.1120, to request a permit, plan check, or design review from the City of West Sacramento. A project applicant may be the property owner or his or her designee.
- "rain sensor" or "rain sensing shutoff device" means a component which automatically suspends an irrigation event when it rains.
- "record drawings" or "as-builts" means a set of reproducible drawings which show significant changes in the work made during construction and which are usually based on drawings marked up in the field and other data furnished by the contractor.
- "recreational area" means areas, excluding private single family residential areas, designated for active play, recreation or public assembly in parks, sports fields, picnic grounds, amphitheaters or golf courses tees, fairways roughs, surrounds and greens.
- "recycled water", "reclaimed water", or "treated sewage effluent water" means treated or recycled waste water of a quality suitable for non-potable uses such as landscape irrigation and water features. This water is not intended for human consumption.
- "reference evapotranspiration" or "ETo" means a standard measurement of environmental parameters which affect the water use of plants, expressed in inches per unit of time. ETo is an estimate of the evapotranspiration of a large field of four- to seven-inch tall, cool-season grass that is well watered. Reference evapotranspiration is used as the basis for

determination of the Maximum Applied Water Allowance to accommodate regional differences in climate. The reference evapotranspiration value is determined by the City of West Sacramento Parks Department as a combination of data from the City's weather stations and regional California Irrigation Management Information Systems (CIMIS) data.

"rehabilitated landscape" means any re-landscaping project that requires a permit, plan check, or design review, meets the requirements of Section 13.04.1100, and where the modified landscape area is equal to or greater than 2,500 square feet.

"residential landscape" means landscapes surrounding single or multifamily homes.

"runoff" means water which is not absorbed by the soil or landscape to which it is applied and flows from the landscape area. For example, runoff may result from water that is applied at too great a rate (application rate exceeds infiltration rate) or when there is a slope.

"soil moisture sensing device" or "soil moisture sensor" means a device that measures the amount of water in the soil. The device may also suspend or initiate an irrigation event.

"soil texture" means the classification of soil based on its percentage of sand, silt, and clay.

"Special Landscape Area" (SLA) means an area of the landscape dedicated solely to edible plants, recreational areas, areas irrigated with recycled water, or water features using recycled water.

"sprinkler head" means a device which delivers water through a nozzle.

"static water pressure" means the pipeline or municipal water supply pressure when water is not flowing.

"station" means an area served by one valve or by a set of valves that operate simultaneously.

"swing joint" means an irrigation component that provides a flexible, leak-free connection between the emission device and lateral pipeline to allow movement in any direction and to prevent equipment damage.

"submeter" means a metering device to measure water applied to the landscape that is installed after the primary utility water meter.

"subsurface drip irrigation system" means a method of micro-irrigation system (low pressure and low volume) wherein water is applied below the soil surface through emitters. See also "drip irrigation system".

"turf" means a ground cover surface of mowed grass.

"valve" means a device used to control the flow of water in the irrigation system.

"water conserving plant species" means a plant species identified as having a very low or low plant factor.

"water feature" means a design element where open water performs an aesthetic or recreational function. Water features include ponds, lakes, waterfalls, fountains, artificial streams, spas, and swimming pools (where water is artificially supplied). The surface area of water features is included in the high water use hydrozone of the landscape area. Constructed wetlands used for on-site wastewater treatment or stormwater best management practices that are not irrigated and used solely for water treatment or stormwater retention are not water features and, therefore, are not subject to the water budget calculation.

"watering window" means the time of day irrigation is allowed.

"WUCOLS" means the latest edition of the publication called "Water Use Classification of Landscape Species" published by the University of California Cooperative Extension and the Department of Water Resources.

13.04.1120 Landscape Documentation Package.

A. Process.

Prior to construction, the project applicant shall submit a Landscape Documentation Package (application) to the City of West Sacramento. Such application may be rejected unless it contains the minimum number of copies requested by City staff, of all required items, as noted in Section 13.04.1120.B.

Such application shall also comply with all other City and State ordinances as appropriate including specifically, but not limited to, the City's Landscape Development Guidelines, and Master Tree List. Where this ordinance conflicts with the City's Landscape Development Guidelines, Master Tree List, or other regulation documents, the most restrictive requirement(s) shall apply.

City staff will review the application (Landscape Documentation) package, and may request additional information from the applicant at any time in order to obtain sufficient information to verify compliance with this ordinance.

If all required components have been submitted, and the package complies with all requirements of this ordinance, the Landscape Documentation package shall be approved by the City, and the applicant will be notified of how to obtain a permit for construction. The applicant shall not commence installation without the proper permit(s).

If City staff determines that the requirements of this ordinance have not been met by the applicant through his/her Landscape Documentation Package and any additional information supplied, the application shall be denied, and the applicant will be notified of the City's determination, as well as the reason for denial. The applicant shall also be informed of re-application and/or appeal procedures, as appropriate.

Upon approval of the Landscape Documentation Package and issuance of the proper permit(s), the project applicant shall:

1. Record the date of such permit in the Certificate of Completion;
2. Submit a copy of the approved Landscape Documentation Package along with the record drawings, and any other information to the property owner or his/her designee.

B. Elements of a Landscape Documentation Package.

The Landscape Documentation Package shall include the following six (6) elements:

1. Project Information
 - a. date
 - b. project applicant
 - c. project address (if available, parcel and/or lot number(s))
 - d. total landscape area (square feet)
 - e. project type (e.g., new, rehabilitated, public, private, cemetery, homeowner-installed)
 - f. water supply type (e.g., potable, recycled, well)
 - g. checklist of all documents in Landscape Documentation Package
 - h. project contacts to include contact information for the project applicant and property owner
 - i. applicant signature and date with the statement, "I agree to comply with the requirements of the City of West Sacramento's Water Efficient Landscape Ordinance and submit a complete Landscape Documentation Package"
2. Water Efficient Landscape Table
 - a. Water budget calculations
 1. Maximum Applied Water Allowance (MAWA)
 2. Estimated Total Water Use (ETWU)
 3. Average Site ETAF for regular (non-SLA) landscape areas
3. Soil Analysis/Report
4. Landscape Plan
5. Irrigation Plan
6. Grading Plan

C. Water Efficient Landscape Table.

A project applicant shall complete the Water Efficient Landscape Table which contains information on the plant factor, irrigation method, irrigation efficiency, and area associated with each hydrozone. Calculations are then made to show that the evapotranspiration adjustment factor (ETAF) for the landscape project does not exceed a factor of 0.55 for residential areas and 0.45 for non-residential areas, exclusive of Special Landscape Areas. The ETAF for a landscape project is based on the plant factors and irrigation methods selected. The Maximum Applied Water Allowance is calculated based on the maximum ETAF allowed (0.55 for residential areas and 0.45 for non-residential areas) and expressed as annual gallons required. The Estimated Total Water Use (ETWU) is calculated based on the plants used and irrigation method selected for the landscape design. ETWU must be below the MAWA.

1. Water Efficient Landscape Table. A water efficient landscape table should contain at least the following information:
 - a. Hydrozone/Planting Area—zone or valve designations, or other designations corresponding to the landscape plan
 - b. Irrigation Method—Micro-spray, spray, rotor, bubbler, drip, subsurface drip, etc.
 - c. Irrigation Efficiency—0.75 for spray, or 0.81 for drip
 - d. Plant Factor. The plant factor used shall be from WUCOLS. The plant factor ranges from 0 to 0.1 for very low water use plants, 0.1 to 0.3 for low water use plants, from 0.4 to 0.6 for moderate water use plants, and from 0.7 to 1.0 for high water use plants.
 - e. ETAF—Plant Factor (PF) divided by the Irrigation Efficiency (IE) for each hydrozone area
 - f. Landscape Area of each Hydrozone Area in square feet
 - g. ETAF multiplied by Landscape Area for each Hydrozone Area

See the example water efficient landscape table below for a residential project:

Hydrozone/ Planting Area Description	Irrigation Method	Irrigation Efficiency (IE)	Plant Factor (PF)	ETAF (PF/IE)	Landscape Area (LA, sq ft)	ETAF x LA (sq ft)
1	Sub Drip	0.81	0.1	0.123	7,000	864
2	Rotor	0.75	0.7	0.933	9,000	8,400
3	Spray	0.75	0.5	0.667	15,000	10,000
4	Drip	0.81	0.3	0.370	7,000	2,590
5	Low Flow	0.75	0.2	0.267	10,000	2,667
				Sum	(A)	(B)
6/SLA	N/A	N/A	N/A	1.0	2,000	2,000
				Sum	(C)	(D)

2. Water Budget Calculations. Water budget calculations for a landscape project compare the Maximum Applied Water Allowance (MAWA) to the Estimated Total Water Use (ETWU). For all landscape projects under this ordinance, ETWU shall be less than MAWA.

For both the ETWU and MAWA calculations, project applicants shall use the Reference Evapotranspiration (ETo) value as determined by the City of West Sacramento Parks Department.

- a. Water budget calculations shall adhere to the following requirements:
 1. The plant factor used shall be from WUCOLS or from horticultural researchers with academic institutions or professional associations as approved by the California Department of Water Resources (DWR). The plant factor ranges from 0 to 0.1 for

- very low water use plants, from 0.1 to 0.3 for low water use plants, from 0.4 to 0.6 for moderate water use plants, and from 0.7 to 1.0 for high water use plants.
2. All water features shall be included in the high water use hydrozone and temporarily irrigated areas shall be included in the low water use hydrozone.
 3. All Special Landscape Areas shall be identified and their water use calculated as described below.
 4. ETAF for new and existing (non-rehabilitated) Special Landscape Areas shall not exceed 1.0.

- b. MAWA Calculation. The Maximum Applied Water Allowance may include an adjustment for Effective Precipitation (Eppt), and be calculated using the equation:

$$\text{MAWA (gallons/yr)} = (\text{ETo} - \text{Eppt}) (0.62) [(\text{ETAF})(\text{LA}) + (1 - \text{ETAF})(\text{SLA})]$$

Where:

- ETo = Reference Evapotranspiration Rate (inches per year)
Eppt = 25% of the average rainfall (inches per year)
0.62 = Conversion factor (to gallons)
ETAF = ET Adjustment Factor = 0.55 residential, 0.45 non-residential
LA = Landscape Area including SLA (square feet)
SLA = Special Landscape Area (square feet)

- c. ETWU Calculation.

1. The Estimated Total Water Use shall be calculated using the equation:

$$\text{ETWU (gallons/yr)} = (\text{ETo} - \text{Eppt}) (0.62) [((\text{ETAF})(\text{LA})) + \text{SLA}]$$

Where:

- ETo = Reference Evapotranspiration (inches per year)
Eppt = 25% of the average rainfall (inches per year)
0.62 = Conversion Factor
ETAF = ET Adjustment Factor = PF / IE
PF = Plant Factor
IE = Irrigation Efficiency
LA = Landscape Area (square feet)
SLA = Special Landscape Area (square feet)

2. Average ETAF for regular (non-SLA) landscape areas (i.e value B divided by value A in the above example table) must be 0.55 or less for residential areas, and 0.45 or less for non-residential areas.

D. Soil Analysis/Report. In order to reduce runoff and encourage healthy plant growth, a soil analysis and report shall be completed by the project applicant, or his/her designee, as follows:

1. Submit soil samples to a laboratory for analysis and recommendations.
 - a. Soil sampling shall be conducted in accordance with laboratory protocol, including protocols regarding adequate sampling depth for the intended plants.
 - b. The soil analysis shall include:
 1. soil texture;
 2. infiltration rate determined by laboratory test or soil texture infiltration rate table;
 3. pH;

4. total soluble salts;
 5. sodium;
 6. percent organic matter; and
 7. recommendations.
- c. In projects with multiple landscape installations (i.e. production home developments) a soil sampling rate of 1 in 7 lots or approximately 15% will satisfy this requirement. Large landscape projects shall sample at a rate equivalent to 1 in 7 lots.
2. The project applicant, or his/her designee, shall comply with one of the following:
 - a. If significant mass grading is not planned, the soil analysis/report shall be submitted to the City of West Sacramento as part of the Landscape Documentation Package; or
 - b. If significant mass grading is planned, the soil analysis/report shall be submitted to the City of West Sacramento as part of the Certificate of Completion.
 3. The soil analysis/report shall be made available, in a timely manner, to the professionals preparing the landscape design plans and irrigation design plans to make any necessary adjustments to the design plans based on information in the soil analysis report.
 4. The project applicant, or his/her designee, shall submit documentation verifying implementation of soil analysis/report recommendations to the City of West Sacramento with the Certificate of Completion.

E. Landscape Design Plan. For the efficient use of water, a landscape shall be carefully designed and planned for the intended function of the project. To that end, a landscape design plan meeting the following design criteria shall be submitted as part of the Landscape Documentation Package.

1. Plant Material

- a. Any plant or tree conforming to the City's Landscape Development Guidelines and the City's Master Tree List may be selected for the landscape, providing the Estimated Total Water Use in the landscape area does not exceed the Maximum Applied Water Allowance. Plants within City rights-of-way or easements will be subject to review and approval by the City. Methods to achieve water efficiency shall include one or more of the following:
 1. protection and preservation of native species and natural vegetation;
 2. selection of plants based on local climate suitability, disease and pest resistance;
 3. selection of water-conserving plant, tree and turf species, especially local native plants;
 4. selection of plants from local and regional landscape program plant lists;
 5. selection of trees based on the City's Master Tree List as appropriate for the planting area.
- b. Each hydrozone shall have plant materials with similar water use, with the exception of hydrozones with plants of mixed water use, as specified in Section 13.04.1120.F.2.d.
- c. Plants shall be selected and planted appropriately based upon their adaptability to the climatic, geologic, and topographical conditions of the project site. Methods to achieve water efficiency shall include one or more of the following:
 1. Use the Sunset Western Climate Zone System which takes into account temperature, humidity, elevation, terrain, latitude, and varying degrees of continental and marine influence on local climate.
 2. Recognize the horticultural attributes of plants (i.e., mature plant size, invasive surface roots) to minimize damage to property or infrastructure [e.g., buildings, sidewalks, power lines]; allow for adequate soil volume for healthy root growth.
 3. Consider the solar orientation for plant placement to maximize summer shade and winter solar gain.
- d. Turf is not allowed on slopes greater than 1:4 where the toe of the slope is adjacent to an impermeable hardscape and where 1:4 means 1 foot of vertical elevation change for every 4 feet of horizontal length.

- e. High water use plants, characterized by a plant factor of 0.7 to 1.0, are prohibited in street medians.
- f. A landscape design plan for projects in fire-prone areas shall address fire safety and prevention. A defensible space or zone around a building or structure is required per Public Resources Code Section 4291(a) and (b). Avoid fire-prone plant materials and flammable mulches, especially in and around parking lots.
- g. The use of invasive plant species, such as those listed by the California Invasive Plant Council, is strongly discouraged. The use of invasive plant species within City right-of-way or easements will not be permitted.
- h. The architectural guidelines of a common interest development, which include community apartment projects, condominiums, planned developments, and stock cooperatives, shall not prohibit or include conditions that have the effect of prohibiting the use of low-water use plants as a group.

2. Water Features.

- a. Recirculating water systems shall be used for water features.
- b. Where available, recycled water shall be used as a source for decorative water features.
- c. Surface area of a water feature shall be included in the high water use hydrozone area of the water budget calculation.
- d. Pool and spa covers are highly recommended.

3. Soil Preparation, Mulch and Amendments.

- a. Prior to the planting of any materials, compacted soils shall be transformed to a friable condition. On engineered slopes, only amended planting holes need meet this requirement.
- b. Soil amendments shall be incorporated according to recommendations of the soil report and what is appropriate for the plants selected (see Section 13.04.1120.D).
- c. For landscape installations, compost at a rate of a minimum of four cubic yards per 1,000 square feet of permeable area shall be incorporated to a depth of six inches into the soil. Soils with greater than 6% organic matter in the top 6 inches of soil are exempt from adding compost and tilling.
- d. A minimum three inch (3") layer of mulch shall be applied on all exposed soil surfaces of planting areas except in turf areas, creeping or rooting groundcovers, or direct seeding applications where mulch is contraindicated. To provide habitat for beneficial insects and other wildlife, up to 5% of the landscape area may be left without mulch. Designated insect habitat must be included in the landscape design plan as such.
- e. Stabilizing mulching products shall be used on slopes that meet current engineering standards.
- f. The mulching portion of the seed/mulch slurry in hydro-seeded applications shall meet the mulching requirement.
- g. Organic mulch made from recycled or post-consumer materials shall take precedence over inorganic materials or virgin forest products unless the recycled post-consumer organic products are not locally available.
- h. The use of flammable mulches shall be avoided as noted in Section 13.04.1120.E.1.f.

4. Design Content.

The landscape design plan shall, at a minimum:

- a. delineate and label each hydrozone by number, letter, or other method;
- b. identify each hydrozone as low, moderate, high water, or mixed water use. Temporarily irrigated areas of the landscape shall be included in the low water use hydrozone for the water budget calculation;
- c. identify recreational areas;

- d. identify areas permanently and solely dedicated to edible plants;
- e. identify areas irrigated with recycled water;
- f. identify type of mulch and application depth;
- g. identify soil amendments, type, and quantity;
- h. identify type and surface area of water features;
- i. identify hardscapes (pervious and non-pervious);
- j. identify location and installation details, and 24-hour retention or infiltration capacity of any applicable stormwater best management practices that encourage on-site retention and infiltration of stormwater. Project applicants shall refer to the City's Municipal Code, Section 13.10 Urban Stormwater Quality Management and Discharge Control, and the Regional Water Quality Control Board for information on any applicable stormwater technical requirements. Stormwater best management practices are encouraged in the landscape design plan and examples are provided in Section 13.04.1180.
- k. identify any applicable rain harvesting or catchment technologies as discussed in Section 13.04.1180 and their 24-hour retention or infiltration capacity;
- l. Identify any applicable graywater discharge piping, system components and area(s) of distribution;
- m. contain the following statement: "I have complied with the criteria of the ordinance and applied them for the efficient use of water in the landscape design plan"; and
- n. bear the signature of a licensed landscape architect, licensed landscape contractor, or any other person authorized to design a landscape. (See Sections 5500.1, 5615, 5641, 5641.1, 5641.2, 5641.3, 5641.4, 5641.5, 5641.6, 6701, 7027.5 of the Business and Professions Code, Section 832.27 of Title 16 of the California Code of Regulations, and Section 6721 of the Food and Agriculture Code.)

F. Irrigation Design Plan.

This section applies to landscaped areas requiring permanent irrigation, not areas that require temporary irrigation solely for the plant establishment period. For the efficient use of water, an irrigation system shall meet all the requirements listed in this section and the manufacturers' recommendations. The irrigation system and its related components shall be planned and designed to allow for proper installation, management, and maintenance.

An irrigation design plan meeting the following design criteria shall be submitted as part of the Landscape Documentation Package.

1. System

- a. Landscape water meters, defined as either a dedicated water service meter or submeter, shall be installed for all non-residential irrigated landscapes of 1,000 sq. ft. but not more than 5,000 sq.ft. (the level at which Water Code 535 applies) and residential irrigated landscapes of 5,000 sq. ft. or greater. A landscape water meter may be either:
 1. a water meter on a water service specifically dedicated to landscape use; or
 2. a submeter on the irrigation leg of a water service which supplies both domestic and irrigation water.
- b. Automatic irrigation controllers utilizing either evapotranspiration, soil moisture sensor data, or other such self-adjusting controllers, utilizing non-volatile memory shall be required for irrigation scheduling in all irrigation systems.
- c. If the water pressure is below or exceeds the recommended pressure of the specified irrigation devices, the installation of a pressure regulating device is required to ensure that the dynamic pressure at each emission device is within the manufacturer's recommended pressure range for optimal performance.
 1. If the static pressure is above or below the required dynamic pressure of the irrigation system, pressure-regulating devices such as inline pressure regulators,

- booster pumps, or other devices shall be installed to meet the required dynamic pressure of the irrigation system.
2. Static water pressure, dynamic or operating pressure and flow reading of the water supply shall be measured at the point of connection. These pressure and flow measurements shall be conducted at the design stage. If the measurements are not available at the design stage, the measurements shall be conducted at installation.
 - d. Rain sensors, either integral or auxiliary, that suspend or alter irrigation operation during unfavorable weather conditions shall be required on all irrigation systems, as appropriate for local climatic conditions. Irrigation should be avoided during windy or freezing weather or during rain.
 - e. Manual shut-off valves (such as a gate valve, ball valve, or butterfly valve) shall be required, as close as possible to the point of connection of the water supply, to minimize water loss in case of an emergency (such as a main line break) or routine repair.
 - f. Backflow prevention devices shall be required to protect the water supply from contamination by the irrigation system. For additional backflow prevention requirements, the project applicant shall refer to the City's Municipal Code, Section 13.04 Water Service System, Title XI Protection of Drinking Water.
 - g. Flow sensors that detect high flow conditions created by system damage or malfunction are required for all non-residential landscapes and residential landscapes of 5000 sq. ft. or larger.
 - h. Master shut-off valves are required on all projects except landscapes that make use of technologies that allow for the individual control of sprinklers that are individually pressurized in a system equipped with low pressure shut down features.
 - i. The irrigation system shall be designed to prevent runoff, low head drainage, overspray, or other similar conditions where irrigation water flows onto non-targeted areas, such as adjacent property, non-irrigated areas, hardscapes, roadways, or structures.
 - j. Relevant information from the Soil Analysis Report, such as soil type and infiltration rate, shall be utilized when designing irrigation systems.
 - k. The design of the irrigation system shall conform to the hydrozones of the landscape design plan.
 - l. The irrigation system must be designed and installed to meet, at a minimum, the irrigation efficiency criteria as described in Section 13.04.1120.C regarding the Maximum Applied Water Allowance.
 - m. All irrigation emission devices must meet the requirements set in the American National Standards Institute (ANSI) standard, American Society of Agricultural and Biological Engineers'/International Code Council's (ASABE/ICC) 802-2014 "Landscape Irrigation Sprinkler and Emitter Standard, All sprinkler heads installed in the landscape must document a distribution uniformity low quarter of 0.65 or higher using the protocol defined in ASABE/ICC 802-2014.
 - n. The project applicant is encouraged to inquire with the City about peak water operating demands (on the water supply system) or water restrictions that may impact the effectiveness of the irrigation system.
 - o. In mulched planting areas, the use of low volume irrigation is recommended to maximize water infiltration into the root zone.
 - p. Sprinkler heads and other emission devices shall have matched precipitation rates, unless otherwise directed by the manufacturer's recommendations.
 - q. Head to head coverage is recommended. However, sprinkler spacing shall be designed to achieve the highest possible distribution uniformity using the manufacturer's recommendations.
 - r. Swing joints or other riser-protection components are required on all risers subject to damage that are adjacent to hardscapes or in high traffic areas of turf.

- s. Check valves or anti-drain valves are required on all sprinkler heads where low point drainage could occur.
- t. Areas less than ten (10) feet in width in any direction shall be irrigated with a drip irrigation system, subsurface drip irrigation system, or other means that produces no runoff or overspray. Such areas that fall within City rights-of-way or easements shall utilize low volume irrigation, specifically multi-stream, multi-trajectory rotator heads, or drip irrigation, if possible.
- u. Overhead irrigation shall not be permitted within 24 inches of any non-permeable surface. Allowable irrigation within the setback from non-permeable surfaces may include drip, subsurface drip, or other low flow technology. The setback area may be planted or unplanted. The surfacing of the setback area may be mulch, gravel, or other porous material, subject to other applicable City regulations based on the setback area location. These restrictions may be modified if:
 - 1. the landscape area is adjacent to permeable surfacing and no runoff occurs; or
 - 2. the adjacent non-permeable surfaces are designed and constructed to drain entirely to landscaping; or
 - 3. the irrigation designer specifies an alternative design or technology (including multi-stream, multi-trajectory rotator sprinklers), as part of the Landscape Documentation Package and clearly demonstrates strict adherence to irrigation system design criteria in Section 13.04.1120.F.1.h. Prevention of overspray and runoff must be confirmed during the irrigation audit.
- v. Slopes greater than 1:4 shall not be irrigated with an irrigation system with an application rate exceeding 0.75 inches per hour. This restriction may be modified if the landscape designer specifies an alternative design or technology, as part of the Landscape Documentation Package, and clearly demonstrates no runoff or erosion will occur. Prevention of runoff and erosion must be confirmed during the irrigation audit.

2. Hydrozones.

- a. Each valve shall irrigate a hydrozone with similar site, slope, sun exposure, soil conditions, and plant materials with similar water use.
- b. Sprinkler heads and other emission devices shall be selected based on what is appropriate for the plant type within that hydrozone.
- c. Where feasible, trees shall be placed on separate valves from shrubs, groundcovers, and turf to facilitate the appropriate irrigation of trees. The mature size and extent of the root zone shall be considered when designing irrigation for the tree.
- d. Individual hydrozones that mix plants of moderate and low water use, or moderate and high water use, may be allowed if:
 - 1. plant factor calculation is based on the proportions of the respective plant water uses and their plant factor; or
 - 2. the plant factor of the higher water using plant is used for calculations.
- e. Individual hydrozones that mix high and low water use plants shall not be permitted.
- f. On the landscape design plan and irrigation design plan, hydrozone areas shall be designated by number, letter, or other designation. On the irrigation design plan, designate the areas irrigated by each valve, and assign a number to each valve. Use this valve number in the Hydrozone Information Table (see Section 13.04.1120.C.1). This table can also assist with the irrigation audit and programming the controller.

3. Design Content.

The irrigation design plan, at a minimum, shall contain:

- a. location and size of separate water meters for landscape—delineate whether the landscape water supply is connected to, or separate from the domestic supply;

- b. location, type and size of all components of the irrigation system, including controllers, main and lateral lines, valves, sprinkler heads, moisture sensing devices, rain switches, quick couplers, pressure regulators, and backflow prevention devices;
- c. static water pressure at the point of connection to the public water supply;
- d. flow rate (gallons per minute), application rate (inches per hour), and design operating pressure (pressure per square inch) for each station;
- e. recycled water irrigation systems as specified in Section 13.04.1150;
- f. the following statement: "I have complied with the criteria of the City of West Sacramento's Water Efficient Landscape Ordinance and applied them accordingly for the efficient use of water in this irrigation design plan" ; and
- g. the signature of a licensed landscape architect, certified irrigation designer, licensed landscape contractor, or any other person authorized to design an irrigation system. (See Sections 5500.1, 5615, 5641, 5641.1, 5641.2, 5641.3, 5641.4, 5641.5, 5641.6, 6701, 7027.5 of the Business and Professions Code, Section 832.27 of Title 16 of the California Code of Regulations, and Section 6721 of the Food and Agricultural Code.)

G. Grading Plan.

For the efficient use of water, grading of a project site shall be designed to minimize soil erosion, runoff, and water waste. A grading plan shall be submitted as part of the Landscape Documentation Package. A comprehensive grading plan prepared by a civil engineer for other City permits may satisfy this requirement.

1. The project applicant shall submit a landscape grading plan that indicates finished configurations and elevations of the landscape area including:
 - a. height of graded slopes
 - b. drainage patterns
 - c. pad elevations
 - d. finish grade
 - e. stormwater retention improvements, if applicable
2. To prevent excessive erosion and runoff, it is highly recommended that project applicants:
 - a. grade so that all irrigation and normal rainfall remains within property lines and does not drain onto non-permeable hardscapes
 - b. avoid disruption of natural drainage patterns and undisturbed soil
 - c. avoid soil compaction in landscape areas
3. The grading design plan shall contain the following statement: "I have complied with the criteria of the City of West Sacramento's Water Efficient Landscaping Ordinance and applied them accordingly for the efficient use of water in the grading plan" and shall bear the signature of a licensed professional as authorized by law.

13.04.1130 Certificate of Completion.

A. General.

The Certificate of Completion shall include the following six (6) elements:

1. project information sheet that contains:
 - a. date
 - b. project name
 - c. project applicant name, telephone, and mailing address
 - d. project address and location
 - e. property owner name, telephone, and mailing address
2. mylar and digital "as-built" record drawings in a format acceptable to the City shall be included with the Certificate of Completion unless this requirement is waived in writing by the City.
3. certification by either the signer of the landscape plan, the signer of the irrigation plan, or the licensed landscape contractor that the landscape project has been installed per the approved Landscape Documentation Package;

- a. where there have been significant changes made in the field during construction, these "as-built" or record drawings shall be included with the certification;
 - b. A diagram of the irrigation plan showing hydrozones shall be kept with the irrigation controller for subsequent management purposes.
4. irrigation scheduling parameters used to set the controller (see subsection B)
 5. landscape and irrigation maintenance schedule (see subsection C)
 6. irrigation audit report (see subsection D)
 7. soil analysis/report, if not submitted with the Landscape Documentation Package, and documentation verifying implementation of soil report recommendations (see Section 13.04.1120.D)

The project applicant shall submit the signed Certificate of Completion to the City of West Sacramento for review, and ensure that copies of the approved Certificate of Completion are submitted to the property owner or his or her designee.

Upon receipt of the signed Certificate of Completion from the project applicant, the City of West Sacramento shall approve or deny the Certificate of Completion. If the Certificate of Completion is denied, the City of West Sacramento shall provide information to the project applicant regarding reapplication, appeal, or other assistance.

B. Irrigation Scheduling.

For the efficient use of water, all irrigation schedules shall be developed, managed, and evaluated to utilize the minimum amount of water required to maintain plant health. Irrigation schedules shall meet the following criteria:

1. Irrigation scheduling shall be regulated by automatic irrigation controllers.
2. Overhead irrigation shall be scheduled as defined by the City's Urban Water Management Plan, unless weather conditions prevent it. Operation of the irrigation system outside the normal watering window is allowed for auditing and system maintenance.
3. For implementation of the irrigation schedule, particular attention must be paid to irrigation run times, emission device, flow rate, and current reference evapotranspiration, so that applied water meets the Estimated Total Water Use. Total annual applied water shall be less than or equal to Maximum Applied Water Allowance (MAWA). Actual irrigation schedules shall be regulated by automatic irrigation controllers using current reference evapotranspiration data (e.g., CIMIS) or soil moisture sensor data.
4. Parameters used to set the automatic controller shall be developed and submitted for each of the following:
 - a. the plant establishment period
 - b. the established landscape
 - c. temporarily irrigated areas
5. Each irrigation schedule shall consider for each station all of the following that apply:
 - a. irrigation interval (days between irrigation)
 - b. irrigation run times (hours or minutes per irrigation event to avoid runoff)
 - c. number of cycle starts required for each irrigation event to avoid runoff
 - d. amount of applied water scheduled to be applied on a monthly basis
 - e. application rate setting
 - f. root depth setting
 - g. plant type setting
 - h. soil type
 - i. slope factor setting
 - j. shade factor setting
 - k. irrigation uniformity or efficiency setting

C. Landscape and Irrigation Maintenance Schedule.

Landscapes shall be maintained to ensure water use efficiency. A regular maintenance schedule shall be submitted with the Certificate of Completion.

1. A regular maintenance schedule shall include, but not be limited to:
 - a. routine inspection
 - b. auditing
 - c. adjustment and repair of the irrigation system and its components
 - d. aerating and dethatching turf areas
 - e. topdressing with compost
 - f. replenishing mulch
 - g. fertilizing
 - h. pruning
 - i. weeding in all landscape areas
 - j. removing obstructions to emission devices

Operation of the irrigation system outside the normal watering window is allowed for auditing and system maintenance.

Repair of all irrigation equipment shall be done with the originally installed components or their equivalents or with components with greater efficiency.

Project applicants are encouraged to implement established landscape industry sustainable Best Practices for all landscape maintenance activities.

D. Irrigation Audit, Irrigation Survey, and Irrigation Water Use Analysis.

1. All landscape irrigation audits shall be conducted by the City landscape irrigation auditor or a third party certified landscape irrigation auditor. Landscape audits shall not be conducted by the person who designed the landscape or installed the landscape.
2. In large projects or projects with multiple landscape installations (i.e. production home developments) an auditing rate of 1 in 7 lots or approximately 15% will satisfy this requirement.
3. For new construction and rehabilitated landscape projects installed after December 1, 2015, as described in Section 13.04.1100:
 - a. the project applicant shall submit an irrigation audit report with the Certificate of Completion to the City of West Sacramento that may include, but is not limited to:
 1. inspection,
 2. system tune-up,
 3. system test with distribution uniformity, reporting overspray or run off that causes overland flow, and
 4. preparation of an irrigation schedule, including configuring irrigation controllers with application rate, soil types, plant factors, slope, exposure and any other factors necessary for accurate programming;
 - b. the City may administer programs that include, but are not limited to, irrigation water use analysis, irrigation audits, and irrigation surveys for compliance with the Maximum Applied Water Allowance.

13.04.1140 Prescriptive Compliance Option.

For projects with an aggregate landscape area of 2,500 square feet or less, this section contains prescriptive requirements which may be used as an alternative compliance option to sections 13.05.1120 and 13.04.1130 of this Ordinance. Compliance with the following items is mandatory and must be documented on a landscape plan in order to use this prescriptive compliance option.

1. Submit a Landscape Documentation Package which includes the following elements:

- a. date
 - b. project applicant
 - c. project address (if available, parcel and/or lot number(s))
 - d. total landscape area (square feet), including a breakdown of turf and plant material
 - e. project type (e.g., new rehabilitated, public, private, cemetery, homeowner-installed)
 - f. water supply type (e.g., potable, recycled, well) and identify the local retail water purveyor if the applicant is not served by a private well
 - g. contact information for the project applicant and property owner
 - h. applicant signature and date with statement, "I agree to comply with the requirements of the prescriptive compliance option to the City WELO".
2. Incorporate compost at a rate of at least four cubic yards per 1,000 square feet to a depth of six inches into landscape area (unless contra-indicated by a soil test);
 3. Plant material shall comply with all of the following;
 - a. For residential areas, install climate adapted plants that require occasional, little or no summer water (average WUCOLS plant factor 0.3) for 75% of the plant area excluding edibles and areas using recycled water; for non-residential areas, install climate adapted plants that require occasional, little or no summer water average WUCOLS plant factor 0.3 for 100% of the plant area excluding edibles and areas using recycled water;
 - b. A minimum three inch (3") layer of mulch shall be applied on all exposed soil surfaces of planting areas except in turf areas, creeping or rooting groundcovers, or direct seeding applications where mulch is contraindicated.
 4. Turf shall comply with all of the following:
 - a. Turf shall not exceed 25% of the landscape area in residential areas, and there shall be no turf in non-residential areas;
 - b. Turf shall not be planted on sloped areas which exceed a slope of 1 foot vertical elevation change for every 4 feet of horizontal length;
 - c. Turf is prohibited in parkways less than 10 feet wide, unless the parkway is adjacent to a parking strip and used to enter and exit vehicles. Any turf in parkways must be irrigated by sub-surface irrigation or by other technology that creates no overspray or runoff.
 5. Irrigation systems shall comply with the following:
 - a. Automatic irrigation controllers are required and must use evapotranspiration or soil moisture sensor data.
 - b. Irrigation controllers shall be of a type which does not lose programming data in the event the primary power source is interrupted.
 - c. Pressure regulators shall be installed on the irrigation system to ensure the dynamic pressure of the system is within the manufacturer's recommended pressure range.
 - d. Manual shut-off valves (such as gate valves, ball valves, or butterfly valves) shall be installed as close as possible to the point of connection of the water supply.
 - e. All irrigation emission devices must meet the requirements set in the ANSI standard, ASABE/ICC 802-2014, "Landscape Irrigation Sprinkler and Emitter Standard". All sprinkler heads installed in the landscape must document a distribution uniformity low quarter of 0.65 or higher using the protocol defined in ASABE/ICC 802-2014.

At the time of final inspection, the permit applicant must provide the owner of the property with a certificate of completion, certificate of installation, irrigation schedule and a schedule of landscape and irrigation maintenance.

13.04.1150 Irrigation Efficiency.

For the purpose of determining Estimated total Water Use, average irrigation efficiency is assumed to be 0.75 for overhead spray devices and 0.81 for drip system devices.

13.04.1160 Recycled Water.

The installation of recycled water irrigation systems shall allow for the current and future use of recycled water.

All recycled water irrigation systems shall be designed and operated in accordance with all applicable local and State laws.

For public projects, irrigated areas within the City rights-of-way and easements, and any other cases the City deems appropriate, the City may require the use of purple irrigation piping to signify recycled water usage, although recycled water may not be available at the time. In these cases, above-ground notifications regarding purple piping (such as purple valve boxes, tags, and signage) need not be installed until recycled water is actually run through the system.

Landscapes using recycled water are considered Special Landscape Areas. The ET Adjustment Factor (ETAF) for new and existing (non-rehabilitated) Special Landscape Areas shall not exceed 1.0.

13.04.1170 Graywater Systems.

Graywater systems promote the efficient use of water and are encouraged to assist in on-site landscape irrigation. All graywater systems shall conform to the California Plumbing Code (Title 24, Part 5, Chapter 16) and any applicable local ordinance standards. Refer to Section 13.04.1100 for the applicability of this ordinance to landscape areas less than 2,500 square feet with the Estimated Total Water Use met entirely by graywater.

13.04.1180 Stormwater Management and Rainwater Retention

Stormwater management practices minimize runoff and increase infiltration which recharges groundwater and improves water quality. Implementing stormwater best management practices into the landscape and grading plans to minimize runoff and to increase on-site rainwater retention and infiltration are encouraged.

Applicants shall refer to the City's Municipal Code, Section 13.10 Urban Stormwater Quality Management and Discharge Control, for information on the City's stormwater technical requirements.

All planted landscape areas are required to have friable soil to maximize water retention and infiltration. Refer to Section 13.04.1130.E.3.

It is strongly recommended that landscape areas be designed for capture and infiltration capacity that is sufficient to prevent runoff from impervious surfaces (i.e. roof and paved areas) from either: the one inch, 24-hour rain event; the 85th percentile, 24-hour rain event; and/or additional capacity as required by any applicable local, regional, state or federal regulation.

It is recommended that storm water projects incorporate any of the following elements to improve on-site storm water and dry weather runoff capture:

1. Grade impervious surfaces, such as driveways, during construction to drain to vegetated areas.
2. Minimize the area of impervious surfaces such as paved areas, roof, and concrete driveways.
3. Incorporate pervious or porous surfaces (e.g., gravel, permeable pavers or blocks, pervious or porous concrete) that minimize runoff.
4. Direct runoff from paved surfaces and roof areas into planting beds or landscaped areas to maximize site water capture and reuse.
5. Incorporate rain gardens, cisterns, and other rain harvesting or catchment systems.
6. Incorporate infiltration beds, swales, basins, and drywells to capture storm water and dry weather runoff and increase percolation into the soil.

7. Consider constructed wetlands and ponds that retain water, equalize excess flow, and filter pollutants.

13.04.1190 Public Education.

Education is a critical component to promote the efficient use of water in landscapes. The use of appropriate principles of design, installation, management and maintenance that save water is encouraged in the community.

The City of West Sacramento will provide information to property owners and managers regarding the design, installation, management, and maintenance of water efficient landscapes via the City's website, occasional neighborhood meetings, and other formats as the City deems appropriate.

A. Model Homes.

1. All model homes shall be landscaped and use signs and written information to demonstrate the principles of water efficient landscapes described in this ordinance.
2. Signs shall be used to identify the model as an example of a water efficient landscape featuring elements such as hydrozones, irrigation equipment, and others that contribute to the overall water efficient theme. Signage shall include information about the site water use as designed per the local ordinance; specify who designed and installed the water efficient landscape; and demonstrate low water use approaches to landscaping, such as using native plants, graywater systems, and rainwater catchment systems.
3. Information shall be provided about designing, installing, managing, and maintaining water efficient landscapes.

13.04.1200 Irrigation Audit, Irrigation Survey, and Irrigation Water Use Analysis.

This section shall apply to all existing landscapes that were installed before December 1, 2015 and are over one acre in size.

The Maximum Applied Water Allowance for existing landscapes shall be calculated as:

$$\text{MAWA} = (\text{ET}_o)(0.62)(0.8)(\text{LA}).$$

A. Existing landscapes with a water meter

In order to evaluate water use and provide recommendations as necessary to reduce landscape water use to a level that does not exceed the Maximum Applied Water Allowance for existing landscapes, the City of West Sacramento may administer programs that include, but need not be limited to:

1. irrigation water use analyses
2. irrigation surveys
3. irrigation audits

B. Existing landscapes without a water meter

In order to evaluate water use and prevent and minimize water waste, the City of West Sacramento may administer programs that include, but need not be limited to:

1. irrigation surveys
2. irrigation audits

All landscape irrigation audits shall be conducted by a certified landscape irrigation auditor.

13.04.1210 Water Waste Prevention.

No person shall cause or permit any water furnished to the person's property by the City to run to waste due to inefficient landscape irrigation, runoff due to low head drainage, overspray, or other similar conditions where water flows onto adjacent property, non-irrigated areas, walks, roadways, parking lots, or structures.

Restrictions regarding overspray and runoff may be modified if:

1. the landscape area is adjacent to permeable surfacing and no runoff occurs; or
2. the adjacent non-permeable surfaces are designed and constructed to drain entirely to landscaping.

13.04.1220 Penalties.

The requirements of this Article may be enforced per the provisions of Articles IX and X of this Chapter; Chapter 1.12; and any other applicable method to the extent permitted by law.

Section 3. Reporting.

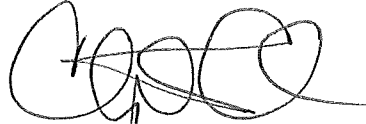
- A. The City shall report to the State on implementation and enforcement of this ordinance by December 31, 2015. Subsequent reporting will be due by January 31st of each year.
- B. Submitted reports should address the following:
 1. State that this is a single agency ordinance and the date of adoption or anticipated date of adoption.
 2. Define the reporting period. The initial reporting period shall commence on December 1, 2015 and end on December 28, 2015. In subsequent years, all reporting will be for the calendar year.
 3. State that the City has adopted its own WELO, that it is at least as restrictive as the State's MWELo, how it is different, and whether there are any exemptions specified.
 4. State the entity responsible for implementing the ordinance.
 5. State number and types of projects subject to the ordinance during the specified reporting period.
 6. State the total area (in square feet or acres) subject to the ordinance over the reporting period, if available.
 7. Provide the number of new housing starts, new commercial projects, and landscape retrofits during the reporting period.
 8. Describe the procedure for review of projects subject to the ordinance.
 9. Describe actions taken to verify compliance. Is a plan check performed; if so, by what entity? Is a site inspection performed; if so, by what entity? Is a post-installation audit required; if so, by whom?
 10. Describe enforcement measures.
 11. Explain challenges to implementing and enforcing the ordinance.
 12. Describe educational and other needs to properly apply the ordinance.

Section 4. Severability. If any provision of this chapter, or the application of any such provision to any person or circumstance shall be held invalid, the remainder of this chapter, to the extent it can be given effect, or the application of those provisions to persons or circumstances other than those as to which it is held invalid, shall not be affected thereby, and to this end the provisions of this chapter are severable.

Section 5. Effective Date and Publication. This ordinance shall take effect 30 days after its adoption, and pursuant to Resolution 99-46 was published in summary format prior to adoption, and a summary will be published within 15 days after adoption in a paper of general circulation published and circulated within the City of West Sacramento.

PASSED AND ADOPTED by the City Council of the City of West Sacramento this 16th day of December, 2015, by the following vote:

AYES: Johannessen, Kristoff, Ledesma, Sandeen, Cabaldon.
NOES: None.
ABSENT: None.
ABSTAIN: None.



Christopher L. Cabaldon, Mayor

ATTEST:



Kryss Rankin, City Clerk

Approved as to form:




Jeffrey Mitchell, City Attorney

CODIFY X UNCODIFY _____

I, Kryss Rankin, City Clerk of the City of West Sacramento, do hereby certify that the foregoing ordinance was introduced at a meeting of the City Council held on November 18, 2015, and was adopted at a meeting held on December 16, 2015, by the vote noted below. This ordinance has been published in accordance with the Government Code requirement.

AYES: Johannessen, Kristoff, Ledesma, Sandeen, Cabaldon.
NOES: None.
ABSENT: None.
ABSTAIN: None.



Kryss Rankin, City Clerk

COMPLETED UWMP CHECKLIST

Checklist Arranged by Subject

CWC Section	UWMP Requirement	Subject	Guidebook Location	UWMP Location <i>(Optional Column for Agency Use)</i>
10620(b)	Every person that becomes an urban water supplier shall adopt an urban water management plan within one year after it has become an urban water supplier.	Plan Preparation	Section 2.1	Section 2.1
10620(d)(2)	Coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.	Plan Preparation	Section 2.5.2	Section 2.4.2
10642	Provide supporting documentation that the water supplier has encouraged active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan.	Plan Preparation	Section 2.5.2	Section 2.4.2
10631(a)	Describe the water supplier service area.	System Description	Section 3.1	Section 3.1
10631(a)	Describe the climate of the service area of the supplier.	System Description	Section 3.3	Section 3.3
10631(a)	Provide population projections for 2020, 2025, 2030, and 2035.	System Description	Section 3.4	Section 3.4
10631(a)	Describe other demographic factors affecting the supplier's water management planning.	System Description	Section 3.4	Section 3.4.1
10631(a)	Indicate the current population of the service area.	System Description and Baselines and Targets	Sections 3.4 and 5.4	Section 3.4 and 5.2
10631(e)(1)	Quantify past, current, and projected water use, identifying the uses among water use sectors.	System Water Use	Section 4.2	Section 4.2
10631(e)(3)(A)	Report the distribution system water loss for the most recent 12-month period available.	System Water Use	Section 4.3	Section 4.3
10631.1(a)	Include projected water use needed for lower income housing projected in the service area of the supplier.	System Water Use	Section 4.5	Section 4.5
10608.20(b)	Retail suppliers shall adopt a 2020 water use target using one of four methods.	Baselines and Targets	Section 5.7 and App E	Section 5.5
10608.20(e)	Retail suppliers shall provide baseline daily per capita water use, urban water use target, interim urban water use target, and	Baselines and Targets	Chapter 5 and App E	Chapter 5

	compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data.			
10608.22	Retail suppliers' per capita daily water use reduction shall be no less than 5 percent of base daily per capita water use of the 5 year baseline. This does not apply if the suppliers base GPCD is at or below 100.	Baselines and Targets	Section 5.7.2	Section 5.5.2
10608.24(a)	Retail suppliers shall meet their interim target by December 31, 2015.	Baselines and Targets	Section 5.8 and App E	Section 5.6
10608.24(d)(2)	If the retail supplier adjusts its compliance GPCD using weather normalization, economic adjustment, or extraordinary events, it shall provide the basis for, and data supporting the adjustment.	Baselines and Targets	Section 5.8.2	N/A (Section 5.6)
10608.36	Wholesale suppliers shall include an assessment of present and proposed future measures, programs, and policies to help their retail water suppliers achieve targeted water use reductions.	Baselines and Targets	Section 5.1	N/A
10608.40	Retail suppliers shall report on their progress in meeting their water use targets. The data shall be reported using a standardized form.	Baselines and Targets	Section 5.8 and App E	Section 5.6
10631(b)	Identify and quantify the existing and planned sources of water available for 2015, 2020, 2025, 2030, and 2035.	System Supplies	Chapter 6	Chapter 6
10631(b)	Indicate whether groundwater is an existing or planned source of water available to the supplier.	System Supplies	Section 6.2	Section 6.3
10631(b)(1)	Indicate whether a groundwater management plan has been adopted by the water supplier or if there is any other specific authorization for groundwater management. Include a copy of the plan or authorization.	System Supplies	Section 6.2.2	Section 6.3
10631(b)(2)	Describe the groundwater basin.	System Supplies	Section 6.2.1	Section 6.3
10631(b)(2)	Indicate if the basin has been adjudicated and include a copy of the court order or decree and a description of the amount of water the supplier has the legal right to pump.	System Supplies	Section 6.2.2	N/A (Section 6.3)
10631(b)(2)	For unadjudicated basins, indicate whether or not the department has identified the basin as overdrafted, or projected to become overdrafted. Describe efforts by the supplier to eliminate the long-term overdraft condition.	System Supplies	Section 6.2.3	Section 6.3
10631(b)(3)	Provide a detailed description and analysis of the location, amount, and sufficiency of	System Supplies	Section 6.2.4	N/A (Section 6.3)

	groundwater pumped by the urban water supplier for the past five years			
10631(b)(4)	Provide a detailed description and analysis of the amount and location of groundwater that is projected to be pumped.	System Supplies	Sections 6.2 and 6.9	N/A (Section 6.9)
10631(d)	Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.	System Supplies	Section 6.7	Section 6.7
10631(g)	Describe the expected future water supply projects and programs that may be undertaken by the water supplier to address water supply reliability in average, single-dry, and multiple-dry years.	System Supplies	Section 6.8	Section 6.8
10631(h)	Describe desalinated water project opportunities for long-term supply.	System Supplies	Section 6.6	Section 6.6
10631(j)	Retail suppliers will include documentation that they have provided their wholesale supplier(s) – if any - with water use projections from that source.	System Supplies	Section 2.5.1	N/A (Section 2.4.1)
10631(j)	Wholesale suppliers will include documentation that they have provided their urban water suppliers with identification and quantification of the existing and planned sources of water available from the wholesale to the urban supplier during various water year types.	System Supplies	Section 2.5.1	N/A
10633	For wastewater and recycled water, coordinate with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area.	System Supplies (Recycled Water)	Section 6.5.1	Section 6.5.1
10633(a)	Describe the wastewater collection and treatment systems in the supplier's service area. Include quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.	System Supplies (Recycled Water)	Section 6.5.2	Section 6.5.2
10633(b)	Describe the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.	System Supplies (Recycled Water)	Section 6.5.2.2	Section 6.5.2.2
10633(c)	Describe the recycled water currently being used in the supplier's service area.	System Supplies (Recycled Water)	Section 6.5.3 and 6.5.4	Section 6.5.3
10633(d)	Describe and quantify the potential uses of recycled water and provide a determination of the technical and economic feasibility of those uses.	System Supplies (Recycled Water)	Section 6.5.4	Section 6.5.3, Section 6.5.4
10633(e)	Describe the projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description	System Supplies (Recycled Water)	Section 6.5.4	Section 6.5.4, Section 6.9

	of the actual use of recycled water in comparison to uses previously projected.			
10633(f)	Describe the actions which may be taken to encourage the use of recycled water and the projected results of these actions in terms of acre-feet of recycled water used per year.	System Supplies (Recycled Water)	Section 6.5.5	Section 6.5.4
10633(g)	Provide a plan for optimizing the use of recycled water in the supplier's service area.	System Supplies (Recycled Water)	Section 6.5.5	Section 6.5.1 and 6.5.4
10620(f)	Describe water management tools and options to maximize resources and minimize the need to import water from other regions.	Water Supply Reliability Assessment	Section 7.4	Section 7.4
10631(c)(1)	Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage.	Water Supply Reliability Assessment	Section 7.1	Section 7.1
10631(c)(1)	Provide data for an average water year, a single dry water year, and multiple dry water years.	Water Supply Reliability Assessment	Section 7.2	Section 7.2
10631(c)(2)	For any water source that may not be available at a consistent level of use, describe plans to supplement or replace that source.	Water Supply Reliability Assessment	Section 7.1	Section 7.1
10634	Provide information on the quality of existing sources of water available to the supplier and the manner in which water quality affects water management strategies and supply reliability.	Water Supply Reliability Assessment	Section 7.1	Section 7.1
10635(a)	Assess the water supply reliability during normal, dry, and multiple dry water years by comparing the total water supply sources available to the water supplier with the total projected water use over the next 20 years.	Water Supply Reliability Assessment	Section 7.3	Section 7.3
10632(a) and 10632(a)(1)	Provide an urban water shortage contingency analysis that specifies stages of action and an outline of specific water supply conditions at each stage.	Water Shortage Contingency Planning	Section 8.1	Section 8.1
10632(a)(2)	Provide an estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency.	Water Shortage Contingency Planning	Section 8.9	Section 8.9
10632(a)(3)	Identify actions to be undertaken by the urban water supplier in case of a catastrophic interruption of water supplies.	Water Shortage Contingency Planning	Section 8.8	Section 8.8
10632(a)(4)	Identify mandatory prohibitions against specific water use practices during water shortages.	Water Shortage Contingency Planning	Section 8.2	Section 8.2
10632(a)(5)	Specify consumption reduction methods in the most restrictive stages.	Water Shortage Contingency Planning	Section 8.4	Section 8.4

10632(a)(6)	Indicated penalties or charges for excessive use, where applicable.	Water Shortage Contingency Planning	Section 8.3	Section 8.3
10632(a)(7)	Provide an analysis of the impacts of each of the actions and conditions in the water shortage contingency analysis on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts.	Water Shortage Contingency Planning	Section 8.6	Section 8.6
10632(a)(8)	Provide a draft water shortage contingency resolution or ordinance.	Water Shortage Contingency Planning	Section 8.7	Section 8.7
10632(a)(9)	Indicate a mechanism for determining actual reductions in water use pursuant to the water shortage contingency analysis.	Water Shortage Contingency Planning	Section 8.5	Section 8.5
10631(f)(1)	Retail suppliers shall provide a description of the nature and extent of each demand management measure implemented over the past five years. The description will address specific measures listed in code.	Demand Management Measures	Sections 9.2 and 9.3	Chapter 9
10631(f)(2)	Wholesale suppliers shall describe specific demand management measures listed in code, their distribution system asset management program, and supplier assistance program.	Demand Management Measures	Sections 9.1 and 9.3	N/A
10631(i)	CUWCC members may submit their 2013-2014 CUWCC BMP annual reports in lieu of, or in addition to, describing the DMM implementation in their UWMPs. This option is only allowable if the supplier has been found to be in full compliance with the CUWCC MOU.	Demand Management Measures	Section 9.5	N/A
10608.26(a)	Retail suppliers shall conduct a public hearing to discuss adoption, implementation, and economic impact of water use targets.	Plan Adoption, Submittal, and Implementation	Section 10.3	Section 10.3
10621(b)	Notify, at least 60 days prior to the public hearing, any city or county within which the supplier provides water that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan.	Plan Adoption, Submittal, and Implementation	Section 10.2.1	Section 10.2.1
10621(d)	Each urban water supplier shall update and submit its 2015 plan to the department by July 1, 2016.	Plan Adoption, Submittal, and Implementation	Sections 10.3.1 and 10.4	Section 10.4.1. (See Commitment to Distribute in Appendix A)
10635(b)	Provide supporting documentation that Water Shortage Contingency Plan has been, or will be, provided to any city or county within which it provides water, no later than 60 days after the submission of the plan to DWR.	Plan Adoption, Submittal, and Implementation	Section 10.4.4	Section 10.4.4

10642	Provide supporting documentation that the urban water supplier made the plan available for public inspection, published notice of the public hearing, and held a public hearing about the plan.	Plan Adoption, Submittal, and Implementation	Sections 10.2.2, 10.3, and 10.5	Sections 10.2.2, 10.3, and 10.5
10642	The water supplier is to provide the time and place of the hearing to any city or county within which the supplier provides water.	Plan Adoption, Submittal, and Implementation	Sections 10.2.1	Section 10.2.1.
10642	Provide supporting documentation that the plan has been adopted as prepared or modified.	Plan Adoption, Submittal, and Implementation	Section 10.3.1	Section 10.3.1
10644(a)	Provide supporting documentation that the urban water supplier has submitted this UWMP to the California State Library.	Plan Adoption, Submittal, and Implementation	Section 10.4.3	Section 10.4.3. (See Commitment to Distribute in Appendix A)
10644(a)(1)	Provide supporting documentation that the urban water supplier has submitted this UWMP to any city or county within which the supplier provides water no later than 30 days after adoption.	Plan Adoption, Submittal, and Implementation	Section 10.4.4	Section 10.4.4. (See Commitment to Distribute in Appendix A)
10644(a)(2)	The plan, or amendments to the plan, submitted to the department shall be submitted electronically.	Plan Adoption, Submittal, and Implementation	Sections 10.4.1 and 10.4.2	Section 10.4.2 and 10.6
10645	Provide supporting documentation that, not later than 30 days after filing a copy of its plan with the department, the supplier has or will make the plan available for public review during normal business hours.	Plan Adoption, Submittal, and Implementation	Section 10.5	Section 10.5

ADOPTION RESOLUTION

RESOLUTION 16-49

**A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF WEST SACRAMENTO
ADOPTING THE 2015 URBAN WATER MANAGEMENT PLAN AND AMENDING
THE BOOK OF CITY FEES**

WHEREAS, the City of West Sacramento (City) has prepared and made available to the public for review, an Urban Water Management Plan, dated September 2016, in compliance with the requirements contained in Part 2.6 of Division 6 of the Water Code of the State of California; and

WHEREAS, the aforementioned plan is entitled "City of West Sacramento 2015 Urban Water management Plan; and

WHEREAS, the City held a public hearing to receive comments from the public on the plan prior to adoption; and

WHEREAS, the City coordinated closely with the California Department of Water Resources and the United States Bureau of Reclamation on the completion of this document.

NOW, THEREFORE, BE IT RESOLVED that the City Council of the City of West Sacramento approves the following:

1. The 2015 Urban Water Management Plan is hereby adopted; and
2. The preparation and adoption of the 2015 Urban Water Management Plan is exempt from the California Environmental Quality Act pursuant to Water Code Section 10652 and CEQA Guidelines Section 15282(v); and
3. The City Manager or his designee is hereby authorized and directed to file this Plan with the California Department of Water Resources; and
4. Amendments to the City of West Sacramento Water Waste and Excessive Use Fines/Penalties Book of Fees to allow enforcement of Stage 1 of the Water Shortage Contingency Plan are hereby adopted.

PASSED AND ADOPTED by the City Council of the City of West Sacramento on this 21st day of September, 2016 by the following vote:

AYES: Johannessen, Kristoff, Ledesma, Sandeen, Cabaldon

NOES: None

ABSENT: None



Christopher L. Cabaldon, Mayor

ATTEST:

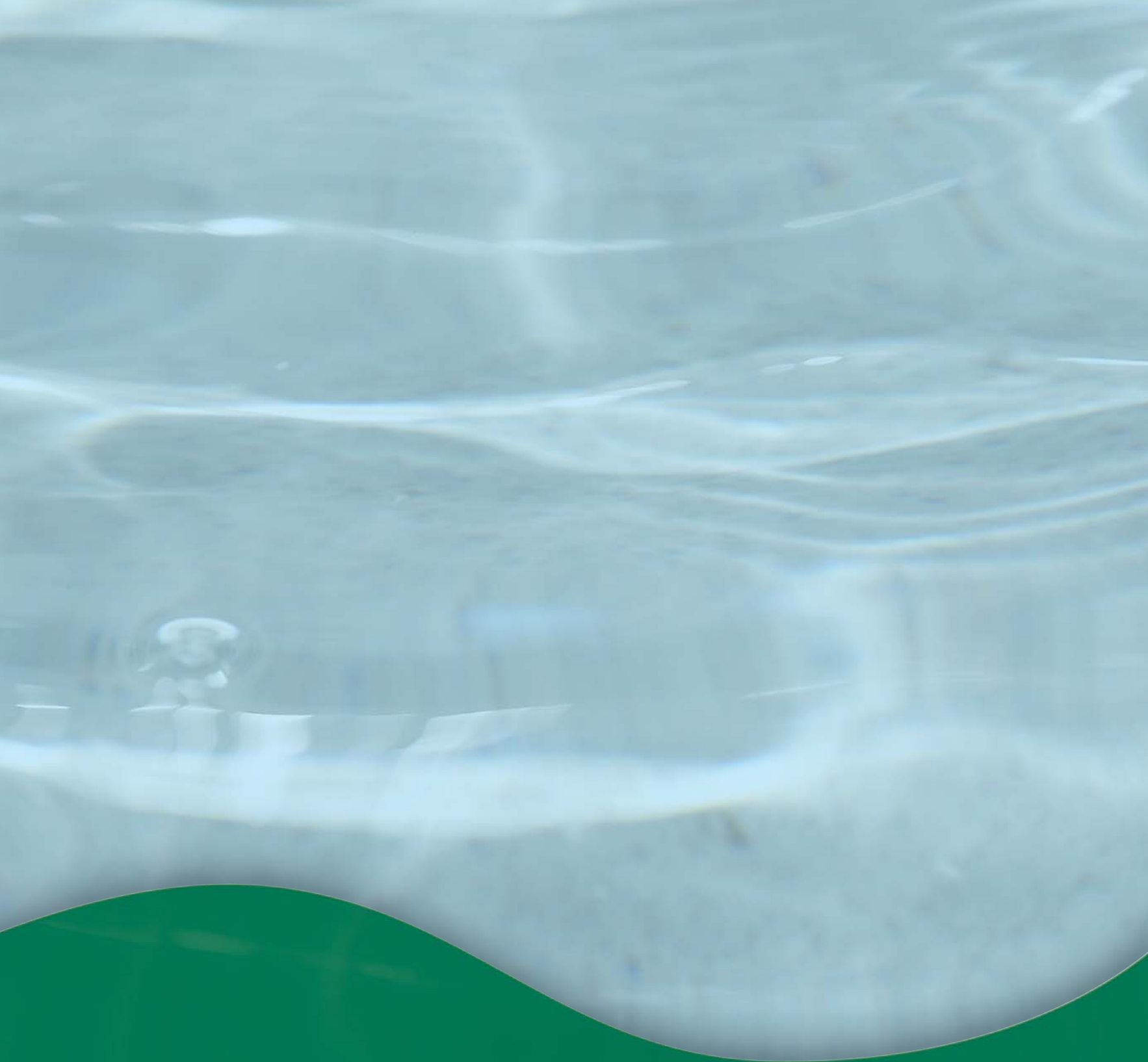


Kryss Rankin, City Clerk

I hereby certify that, if bearing the seal of the City of West Sacramento (or Redevelopment Agency), this document is a full, true and correct copy of the original on file in this office.

ATTEST: 

City Clerk



 **carollo**
Engineers...Working Wonders With Water®