This document is released for the purpose of information exchange review and planning only under the authority of Hugh Steve McDonald, December 2015, State of California, PE No. 44074 and Tracy Anne Clinton, December 2015, State of California, PE No. 48199

City of Oxnard

Public Works Integrated Master Plan

OVERALL

PROJECT MEMORANDUM 1.1
MASTER PLANNING PROCESS OVERVIEW

FINAL DRAFT
December 2015

Engineers...Working Wonders With Water™

2700 YGNACIO VALLEY ROAD • SUITE 300 • WALNUT CREEK, CALIFORNIA 94598 • (925) 932-1710 • FAX (925) 930-0208

City of Oxnard

Public Works Integrated Master Plan

OVERALL

PROJECT MEMORANDUM 1.1
MASTER PLANNING PROCESS OVERVIEW

TABLE OF CONTENTS

Page

LIST OF TABLES

LIST OF FIGURES

MASTER PLANNING PROCESS OVERVIEW

1.0 INTRODUCTION

The City of Oxnard, CA (City) has embarked on a Public Works Integrated Master Planning (PWIMP) effort, which will address future planning needs for all major water utilities within the City's jurisdiction: water, wastewater, stormwater, and recycled water. This PWIMP builds upon previous planning efforts using a coordinated methodology, which will allow the City to take full advantage of potential linkages and synergies between their four water utility systems. This PWIMP will also be coordinated with a Streets MP effort in an attempt to line up timing of potential future streets and utility upgrades.

1.1 Master Plan Purpose

The purpose of the PWIMP is to provide a central planning document to guide improvements to the City's water infrastructure through the planning horizon. The PWIMP is a comprehensive planning document that includes:

- An overall vision for the future, and the goals and objectives to achieve that vision.
- Estimated costs and an explanation of the need for and timing of the following projects:
  - Repair/replacement of aging infrastructure.
  - New facilities to accommodate planned growth.
  - New facilities to meet existing and future regulatory requirements.
  - Improvements to accommodate the vision and direction of the management team (i.e., economic benefits, performance benefits, and to meet policy objectives).
- An Implementation Plan, including a Capital Improvement Plan (CIP), schedule, and cash flow analysis.

1.2 Master Plan Process

The master planning process generally consists of five phases; each phase consisting of a variety of tasks:

- Defining the initial project, including identification of the major goals and objectives, and master planning requirements including existing background summary and anticipated future needs.
- Identifying linkages among the major infrastructure plans: wastewater, water, recycled water, and stormwater.

- Brainstorming a wide range of solutions, and identifying conceptual alternatives, with screening to select viable alternatives.
- Developing viable alternatives.
- Evaluating viable alternatives as to their ability to meet the overall goals and needs.
- Developing the recommended program.

1.3 Master Plan Use

The PWIMP will identify, screen, select, and evaluate recommended alternatives to be combined to develop a set of recommended projects. A suggested phasing schedule will be outlined for implementation of the recommended capital improvement projects as well as ongoing programs and policies to achieve the City's vision and goals. The PWIMP is a high level study that will be used as the basis for future documentation and implementation steps, such as the environmental impact review, more detailed facilities planning, design, and implementation of planned projects, and financial planning.

2.0 ORGANIZATION OF THIS MASTER PLAN

This PWIMP consists of planning documents related to all of the City's major water utilities. The documents and their contents are arranged in the following manner:

- Section 1 - General Overview – outlines the planning framework that will be common to all included master plans, such as land use, population, climate, and cost data. This section also includes the Public Works Maintenance and Optimization Plan and a facility security analysis.
- Section 2 - Water System Master Plan – highlights planning of the drinking water system, including historic and future water demands, source water quantity and quality, description of treatment and conveyance facilities, assessment of condition of existing facilities, water system modeling and alternatives analysis.
- Section 3 - Wastewater System Master Plan – highlights planning of the wastewater treatment and collection system, including historic and future wastewater flows and loads, wastewater quality, description of treatment and conveyance facilities, assessment of condition of existing facilities, wastewater hydraulic and process modeling and alternatives analysis.
- Section 4 - Recycled Water System – highlights planning of the recycled water system and GREAT program, including current and future recycled water demands, indirect and direct potable reuse options, description of treatment and conveyance facilities, recycled water system modeling and alternatives analysis.
- Section 5 - Stormwater System – highlights planning of the stormwater system, including quality and quantity of stormwater, description of existing stormwater facilities, stormwater modeling and alternatives analysis.

In addition to these technical sections outlining the existing system condition and recommendations for future projects, this PWIMP also includes the following summary chapters:

- PWIMP Executive Summary Report – This high-level report summarizes the PWIMP findings and recommendations for easy reference.
- PWIMP Summary Report – This more detailed report summarizes the reasoning behind the recommendations in this PWIMP and highlights the linkages among the different PWIMP technical sections. This report provides an implementation plan for putting all of the recommended CIP projects into place.
- Integrated PWIMP Capital Improvements Plan – This report summarizes the recommended CIP projects and recommended timing for each of the major utilities evaluated in this PWIMP.

3.0 MASTER PLANNING DRIVERS FOR CAPITAL PROJECTS

In general, the need for and timing of capital projects and programs can be attributed to certain drivers, or triggers. The triggers for the recommended master planning projects and programs are as follows:

- **Rehabilitation/Replacement (Condition)** - A condition trigger is assigned if the process or facility has reached the end of its economic useful life. This trigger is established based on the need to maintain that facility as operationally sufficient to meet mission critical reliability and performance requirements related to existing NPDES permit compliance, worker, and public safety, and other existing requirements.
- **Regulatory Requirement** - A regulatory trigger is assigned when the need is driven by local, state, or national regulatory requirements. The date of implementation is based upon providing adequate time to meet the new regulatory requirements.
- **Economic Benefit** - An economic benefit trigger is assigned when a positive reduction in life-cycle costs (considering capital and operations and maintenance) can be achieved. Typically, these kinds of projects trade-off an increase in initial capital investment to achieve a reduction in labor, energy, or chemical usage.
- **Improved Performance Benefit** - An improved performance benefit trigger is assigned when there is a benefit in improved operations and maintenance performance related to reliability and/or to reduced operational and safety-related risks. These kinds of projects typically involve improved process control, automation or addressing an operational concern (i.e., flexibility, reliability, less complexity).
- **Growth Leading to Increased Demands/Flows/Loads** - An increased demand or flow and load trigger is assigned when the need is based on an increase in capacity to accommodate increases in demand or influent flows or loads to a facility. This

could be the result of population growth, changes in wet weather operation, annexation, regionalization, or industrial discharges.

- **Resource Sustainability** - The resource sustainability trigger is driven by the desire to meet energy initiatives, include resource recovery opportunities, and /or consider sustainable design alternatives.
- **Policy Decision** - The policy trigger is assigned when the reason is based on a management and/or political decision from the policy-makers.

4.0 MASTER PLAN GOALS AND OBJECTIVES

Taking the broad master plan drivers into account, further developing specific goals and objectives for the PWIMP is important to provide a framework and set of boundaries for the City's planning process.

4.1 2030 General Plan Goals and Policies

The City's Water Resources must fit within the recently adopted 2030 General Plan (GP) Goals and Policies document. Within the 2030 GP Goals and Policies, there are a number of GP goals and actions that are relevant to this PWIMP. Those key goals are summarized in Appendix A along with relevant GP actions for each goal. The key GP actions that are relevant to this PWIMP are as follows:

- Consider and plan for potential climate change impacts at all City facilities.
- Improvements shall fall within the City's Energy Action Plan provisions.
- Project considerations in include CA Green Building Code elements.
- Continued monitoring of all water systems' performance.
- Sustain groundwater supply and respect groundwater extraction recommendations.
- Continue promotion of Recycled Water Program through 1) implementation of GREAT Program, 2) required use of non-potable water supplies for irrigation and 3) upgrade potable and recycled water distribution systems.
- Provide adequate capacity for storm drainage and strive to meet NPDES water quality targets.
- Incorporate low impact development techniques where practical.

4.2 Master Plan Objectives and Goals

Considering the GP goals and actions highlighted, the overarching goals used to influence the development of projects and guide the overall planning effort include the following:

- Provide compliant, reliable, resilient, and flexible systems that respond to future changes in regulations, policies and nature.

- Integrate grey and green infrastructure with an emphasis on energy efficiency, where feasible.
- Provide economic and social benefits within the community.
- Modify systems to adapt to potential impacts related to climate change.
- Achieve economic and environmental sustainability.

Table 1 further develops objectives for each of the five (5) goals listed above.

Table 1 PWIMP Goals and Objectives
Public Works Integrated Master Plan
City of Oxnard

Goal No	Specific Goals	PWIMP Objectives
1	Provide compliant, reliable resilient and flexible systems	• Improve system reliability consistent with industry standards. • Implement redundancy/backup systems for routine maintenance and repairs and to address security threats. • Implement innovative technology.
2	Integrate grey and green infrastructure with an emphasis on energy efficiency	• Optimize energy efficiency of systems.(1) • Investigate green and grey infrastructure options such as LID techniques for stormwater, alternative energy sources?
3	Manage assets effectively (economic sustainability)	• Maximize cost / benefit ratio. • Spend public money wisely.
	Integrate community interests and maximize public acceptance (social sustainability)	• Develop sustainable ongoing communication processes. • Minimize impacts to the public.
4	Mitigate and adapt to potential impacts of climate change	• Minimize impacts to system due to potential climate change related events (i.e., sea level rise, changing rainfall patterns, etc.).
5	Protect environmental resources	• Maintain permit / regulatory compliance. • Position City for future regulatory changes.
	Enhance environmental sustainability	• Maximize water conservation. • Maximize wastewater reclamation and reuse. • Maintain groundwater extraction levels. • Maximize beneficial reuse of biosolids.

Notes:
(1) The City's Energy Action Plan (included in Appendix B) sets a community-wide reduction in energy use of 10% by 2020, measured against a 2005 baseline.

5.0 PLANNING HORIZON

The general planning horizon for this PWIMP will be through the time period of the City's General Plan (2030). However, needs through 2040 were also considered for certain processes that have slightly different needs based on specific systems. These systems will be noted in the individual project memoranda (PMs).

6.0 SERVICE AREA

The City of Oxnard is located about 60 miles northwest of Los Angeles along a beautiful stretch of the Pacific Ocean coastline. Bordered by mountains and the Pacific Ocean, West Ventura County provides a seaside environment with expansive mountain views. Oxnard incorporates both of these attributes through its pattern of relatively compact urban development focused on the downtown, coastline and harbor, and the Highway 101 corridor. The moderate Mediterranean climate, fertile topsoil, and generally adequate groundwater supply lead to year-round agricultural production in the surrounding Oxnard Plain.

6.1 Service Areas

6.1.1 Water

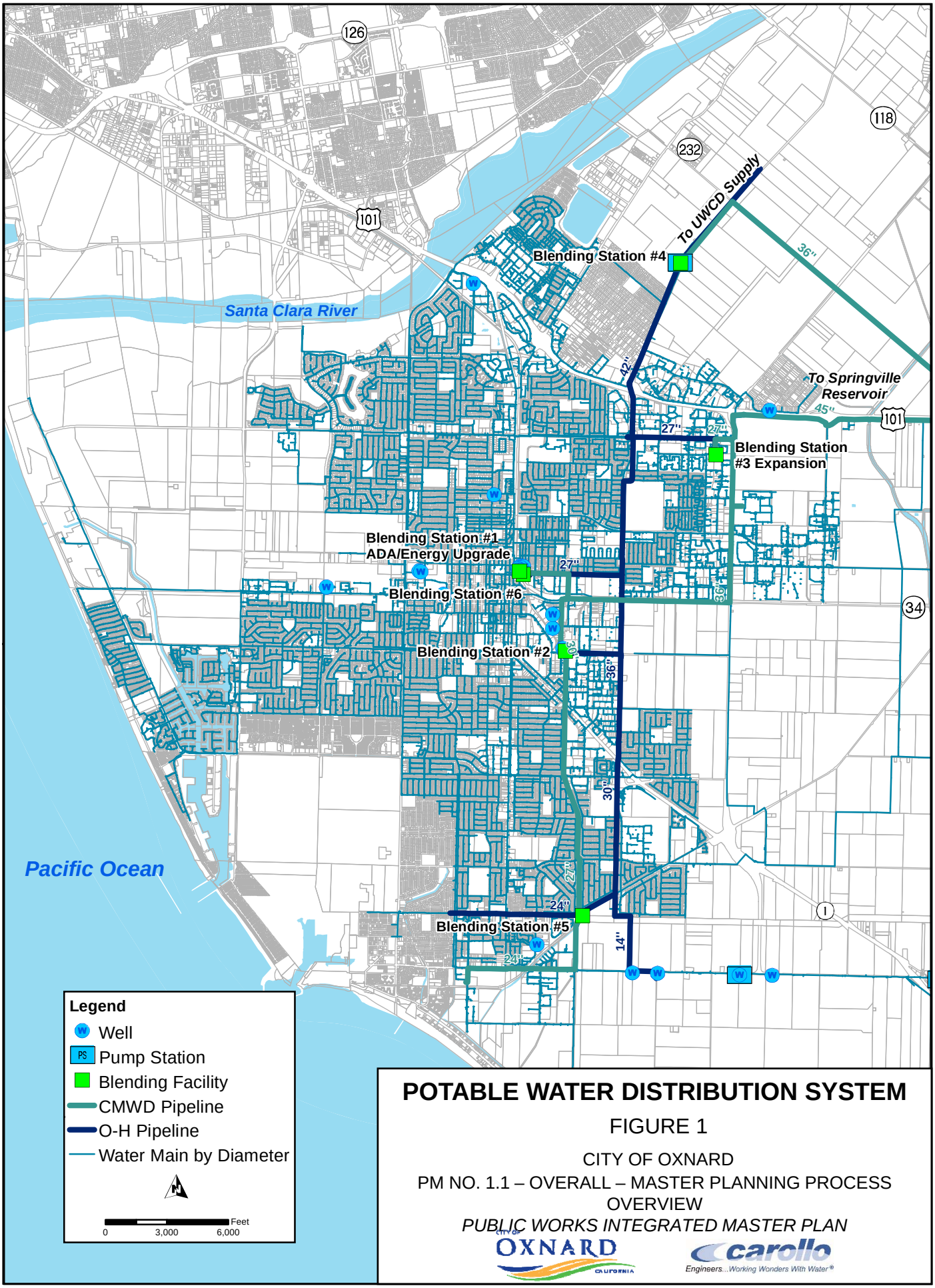
For water service, the PWIMP focuses on the incorporated areas of the City, and specifically excludes those unincorporated areas within the City that are currently served by independent mutual water companies. This study also excludes the City of Port Hueneme, the U.S. Navy Construction Battalion Station, and the Point Mugu Naval Air Station, to which the City provides wastewater collection and treatment services. Water service for these entities is provided by the Port Hueneme Water Agency.

Figure 1 shows the water system service area.

6.1.2 Wastewater

The existing wastewater service area includes most of the City of Oxnard as well as areas with institutional agreements with the City. These areas include the City of Port Hueneme, the Naval Base Ventura County facilities of the Naval Construction Battalion Center and Point Mugu, Ventura Regional Sanitation District, Crestview Mutual Water Company, Santa Clara Wastewater Company, Nyeland Acres, and Los Posas Estates.

Figure 2 shows the wastewater system service area.



POTABLE WATER DISTRIBUTION SYSTEM

FIGURE 1

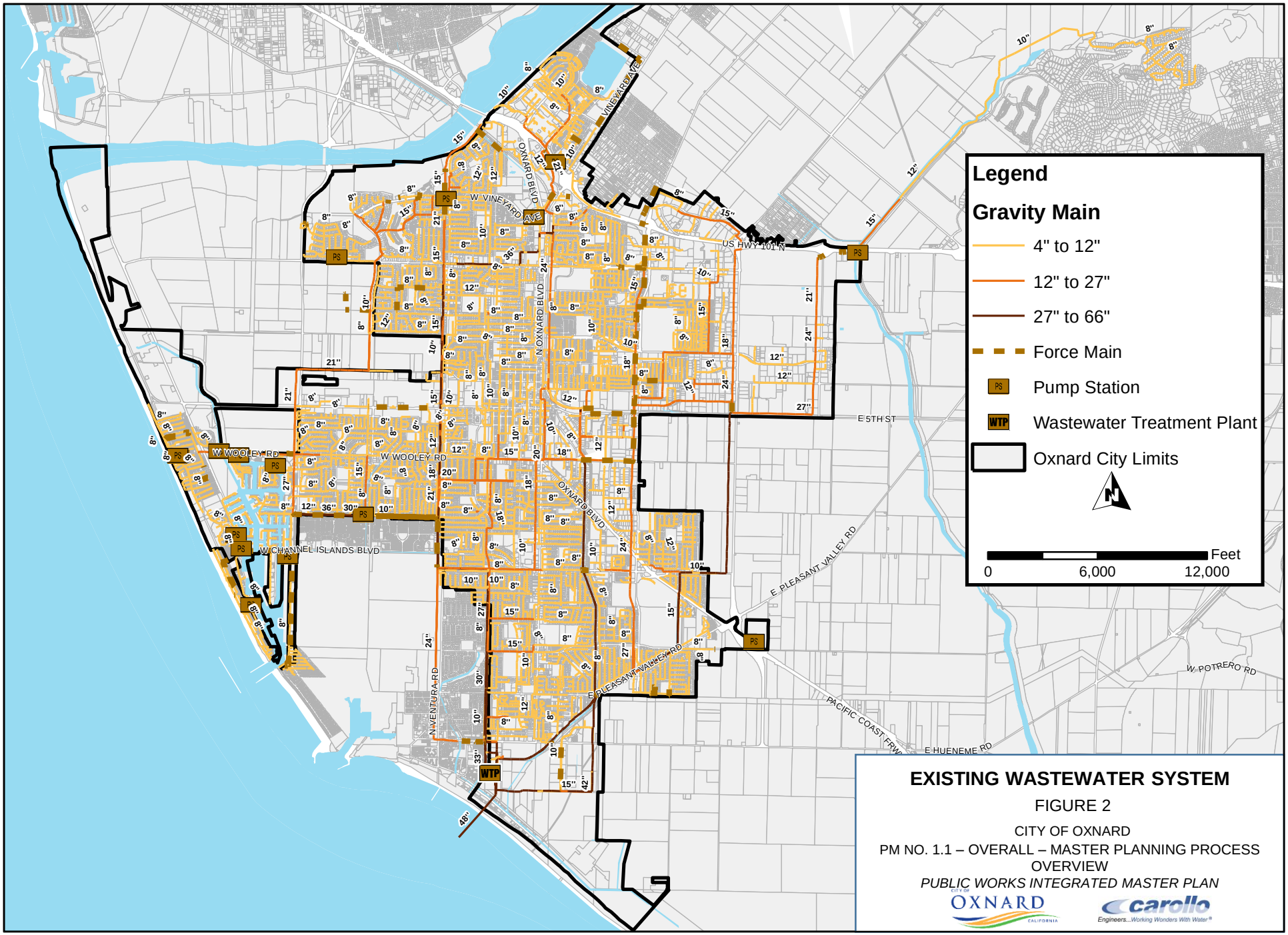
CITY OF OXNARD

PM NO. 1.1 – OVERALL – MASTER PLANNING PROCESS OVERVIEW

PUBLIC WORKS INTEGRATED MASTER PLAN

OXNARD California

carollo Engineers...Working Wonders With Water®



EXISTING WASTEWATER SYSTEM

FIGURE 2

CITY OF OXNARD

PM NO. 1.1 – OVERALL – MASTER PLANNING PROCESS OVERVIEW

PUBLIC WORKS INTEGRATED MASTER PLAN

CITY OF OXNARD CALIFORNIA

carollo Engineers...Working Wonders With Water®

6.2 Geography and Watershed

The City of Oxnard is located on a relatively flat coastal plain between the Pacific Ocean and Santa Monica Mountains. The topography drains southwesterly with a 0.2 percent slope. The Santa Clara River flows along the northwestern border of the City. Channel Islands Harbor is located within with the city limits. More detailed information regarding topography is included in PM 5.1, *Stormwater System – Background Summary*.

6.3 Soils Classification

Characteristics of the soils in the study area are another factor affecting the volume and rate of runoff and subsequent planning of storm drain facilities. The hydrologic classification of soils is based on the infiltration or percolation capacity of the soil profile – specifically, the greater the absorptive capacity of the soil, the less runoff that is generated. When, in any given location, the rainfall rate exceeds the absorption rate of the soil, excess surface water is generated which ponds if ground slopes are flat, or flows as surface runoff.

Soils classifications used in this study were extracted from the Soil Survey of the Ventura Area (Soil conservation Service – April 1970, Maps 34-36). The maps indicate that the majority of soils in the study area are classified in Hydrologic Soil Groups B and C. These soils are described as having moderate to slow infiltration and water transmission rates when thoroughly wetted (Drainage System Master Plan, Hawks & Associates 2003).

6.4 Impacts of a Changing Climate

The chemistry and dynamics of atmospheric greenhouse gases (GHG, including water vapor, carbon dioxide, and other gases) act to hold heat in the atmosphere and create a natural greenhouse effect for the planet. Without these gases in the atmosphere, the earth's average temperature would be much lower and life could not sustain itself. Since the onset of the industrial revolution, however, data show that human-generated emissions of GHGs (including carbon dioxide, methane, nitrous oxide, chlorofluorocarbons, and other gases) have been accumulating in the atmosphere and are intensifying the earth's natural greenhouse effect more rapidly than expected (Rahmstorf, *et al.* 2007).

The Intergovernmental Panel on Climate Change's (IPCC) Fourth Assessment Report (AR4) of 2007 presented six scenarios of varying ranges in projected increases of carbon dioxide levels (dating from the pre-industrial level of about 260-280 parts per million by volume) and the subsequent increase in global mean atmospheric surface temperatures. The entire range of increased temperature is 1.1 to 6.4 degrees Celsius (2.0 to 11.5 degrees Fahrenheit) by the year 2100 with an average increase of 2.8 degrees Celsius (5.1 degrees Fahrenheit). Although there is large uncertainty about future emissions of GHGs, and how and when the earth's climate will respond to the enhanced concentrations of GHGs, various studies report that detectable changes are already underway. The most likely outcomes are increases in atmospheric temperature and changes in precipitation, soil

moisture, and sea level, which could have adverse effects on many ecological systems, as well as on human health, infrastructure, and the economy. In this PWIMP, we are focused on the subsequent effects on wastewater system vulnerability to sea level rise, as well as water supply and stormwater collection system capacity vulnerability to changes in precipitation patterns.

The scientific literature referenced in this PWIMP includes key studies analyzing global climate change impacts, which generally or specifically affect Oxnard in terms of changes in atmospheric temperature, sea (tide) level, and precipitation patterns. The literature is identified as being the most relevant or, in the case of the IPCC, internationally recognized analyses with implications for California.

6.4.1 Background

Historically, much of California (including Oxnard) has warm, dry summers and cool, wet winters, close to that of a Mediterranean-type climate. The proximity of the Pacific Ocean moderates Oxnard's climate resulting in temperatures that range from a mean low of 56 degrees Fahrenheit in the winter months to a mean high of 74 degrees Fahrenheit in August and September. As in most of Southern California, annual precipitation rates in the City of Oxnard tend to vary widely from year to year. Although rainfall is uneven among the seasons, the majority of the City's precipitation falls during the winter and early spring months. Scant levels of rainfall are generally recorded from April to October. The average annual rainfall over the last 100 years is approximately 16 inches.

Table 2 shows the monthly and annual average temperature, precipitation, and evapotranspiration (ETo) for the City.

Table 2 Climate Data for the City of Oxnard
Public Works Integrated Master Plan
City of Oxnard

	Jan	Feb	Mar	Apr	May	Jun	Jul
Standard Average ETo[(1)] (inches)	1.83	2.2	3.42	4.49	5.25	5.67	5.86
Average Rainfall (inches)	3.41	3.9+	3.04	0.72	0.21	0.05	0.02
Average Max Temperature (deg F)[(2)]	66	66	65	68	68	70	73
	Aug	**Sep**	**Oct**	**Nov**	**Dec**	**Annual**	
Standard Average ETo (inches)[(1)]	5.61	4.49	3.42	2.36	1.86	46.43	
Average Rainfall (inches)	0.07	0.36	0.36	1.37	2.11	15.62	
Average Max Temperature (deg F)[(2)]	74	74	73	70	66	69.40	

Notes:
Source: 2008 Wastewater System Master Plan (Kennedy Jenks).
(1) ETo data provided for Oxnard region, http://wwwcimis.water.ca.gov/cimis/welcome.jsp.
(2) Average weather for Oxnard, CA, http://countrystudies.us/united-states/weather/California/oxnard.htm.

The following is a summary of current trends and projected climate change impacts on the City of Oxnard in terms of: 1) sea level rise and 2) annual rainfall, rainfall intensity, duration, and frequency. Further detail and discussion is provided in Sections 2, 3, and 5, related to water supply, the wastewater system, and stormwater system, respectively.

6.4.2 Summary and Recommendations

To accommodate increased variability brought by climate change, flexibility must be a fundamental tactic. The following are highlights of and recommendations related to projected impacts due to global warming in terms of sea level rise and annual rainfall, as well as event intensity, duration, and frequency.

6.4.2.1 Sea Level Rise

With regard to sea level rise, it is recommended the City use the new DWR estimate of sea level rise of 1.40 meters (55 inches) by 2100 and other IPCC conservative estimates as minima for future climate change adaptation planning.

6.4.2.2 Rainfall

No single weather event can be blamed on global warming. However, increasing trends in extreme precipitation events occurring in the Oxnard area are consistent with scientists' projections of changes in a warming climate.

In terms of annual rainfall, data show that the slight increase in recent years is not significant enough to indicate a trend for the Oxnard area. Unless future data shows otherwise, current average annual precipitation assumptions should be used. However, seasonal intensity and distribution pattern changes may already be occurring. It is recommended that long term planning be based on an analysis of historical trends of changes to the distribution of monthly precipitation.

In terms of rainfall intensity, duration, and frequency, as well as distribution, until more accurate projections are generated from regional climate models for the Oxnard area, it is recommended that long term planning consider the current trend of an increase in the frequency and change in distribution of extreme levels of precipitation - an average increase in frequency of between 58 and 69 percent since 1948 (Madsen and Figdor, 2007).

As part of the California Water Plan Update process, every 5 years DWR will provide revised estimates of changes to sea level, droughts, and flooding that can be expected over the following 25 years (DWR 2008h).

7.0 ALTERNATIVES DEVELOPMENT AND EVALUATION CRITERIA

A major part of any planning update is to identify and evaluate alternatives that will help the utility meet their objectives. Based on the objectives presented earlier within this PM, several criteria have been developed that will be used to evaluate PWIMP alternatives. These are common to all alternatives but may be adjusted or added to depending upon the individual system.

7.1 Alternatives Identification

The identification of alternatives will follow the identification of future facilities needs as driven by repair and replacement, future regulations, planned growth, and management vision and directions.

The process of identifying alternatives is designed to foster innovation and the widest range of potential solutions. This will include brainstorm workshops that will integrate the various technical, institutional, and business discipline experts with City staff in order to fully explore the range of potential solutions.

It is important to recognize that while the drivers and rationale for the PWIMP remain constant, the assumptions as to sizing and timing of projects and programs are likely to require periodic updating. This may be as frequently as the annual budget cycle. In order to allow for easy update and optimization of the many recommended projects and programs, the master planning team will develop a CIP that will allow changes to be made to the underlying assumptions related to needs, costs, and timing.

7.2 Screening Criteria

The 2030 General Plan lays out a vision for how the City will understand and address “the cutting edge environmental and energy issues of climate change mitigation and adaptation, sea level rise, and energy conservation and generation (“green” buildings). The City has also shown its commitment to supporting implementation of Senate Bill 375 (Sustainable Communities Strategy Bill), the State’s primary legislation related to local planning that implements Assembly Bill 32 (“California Global Warming Solutions Act”).

In addition, the City has directed Carollo to use the Envision Rating tool as a guide for developing and informing alternatives development as well as identifying screening criteria. Further details on how Envision was used to develop the overarching principles and the measured criteria can be found in PM 4.5, *Envision Documentation & Certification Summary Assessment.* Table 3 shows the evaluation criteria established for this PWIMP.

Table 3 Evaluation Criteria Established for PWIMP
Public Works Integrated Master Plan
City of Oxnard

Goal	Objective	Type of Criteria	Metric	Unit of Measure	Associated Envision™ Credit
#1	**Provide Compliant, Reliable, Resilient and Flexible Systems**				
	Improve system reliability consistent with industry standard	OP	--	--	
	Implement redundancy/backup for routine maintenance and repairs and to address threats to security	OP	--	--	
	Provide flexibility to respond to changes in regulatory requirements, reuse water demand or technological advances	MC	Project cost differential	Incremental cost to change from current conditions	CR2.2 Avoid traps and vulnerabilities CR2.3 Prepare for long-term hazards
	Ability to implement in a timely manner for a given need	MC	Implementation Time	Years	
#2	**Investigate Grey and Green Infrastructure with an Emphasis on Energy Efficiency**				
	Investigate grey and green infrastructure	OP	Net non-renewable Energy Use (Energy use – Energy production – Renewable energy use/ purchase)	kWh / year	NW2.1 Manage Stormwater (through LID)
	Maximize energy efficiency / sustainable energy use	MC			RA2.1 Reduce energy consumption RA2.2 Use renewable energy
#3	**Manage Assets Effectively (Economic Sustainability)**				
	Maximize cost / benefit ratio	MC	Capital Costs O&M Costs Life-cycle Costs	Total Project Cost ($) Total O&M Cost ($ / year) Annual Costs ($ / year)	LD3.3 Extend Useful Life

Table 3 Evaluation Criteria Established for PWIMP
Public Works Integrated Master Plan
City of Oxnard

Goal	Objective	Type of Criteria	Metric	Unit of Measure	Associated Envision™ Credit
#4	**Mitigate and Adapt to Potential Impacts of Climate Change**				
	Minimize impacts to system due to climate change related events	OP			CR2.1 Assess climate threat CR2.2 Avoid traps and vulnerabilities CR2.3 Prepare for long-term adaptability
	Minimize contribution to climate change factors through reduction/minimization of GHG emissions	MC	Greenhouse gas emissions	Metric tons of CO2 equivalent emissions per year	RA1.1 Reduce net embodied energy CR1.1 Reduce greenhouse gas emissions
#5	**Protect / Enhance Environmental/Resource Sustainability**				
	Maintain regulatory/permit compliance	OP			QL2.1 Protect public health
	Maximize sustainable water use	MC	Potable water offset	MG per year	RA3.1 Protect fresh water availability RA3.2 Reduce potable water consumption
		MC	Groundwater Replenishment	MG per year	RA3.1 Protect fresh water availability
	Maximize beneficial reuse of solids	MC	Solids reused	Tons per year	RA1.5 Divert waste from landfills

Notes:
OP = Overarching Principle
MC = Measured Criteria

APPENDIX A – SUMMARY OF THE KEY GOALS AND ACTIONS FOR THE 2030 GENERAL PLAN

APPENDIX A – SUMMARY OF THE KEY GOALS AND ACTIONS FOR THE 2030 GENERAL PLAN

Table A1 2030 General Plan Key Goals and Policies Summary (Most Related to PWIMP)[(1)]
Public Works Integrated Master Plan
City of Oxnard

Goal Ref.	Goal Name	Definition	Relevant Actions
SC-1	Climate Change and Global Warming Awareness	Supporting and Participating in Global Warming and Climate Change Adaptation analysis and programs.	Inventory and Monitor GHG Emissions Support Statewide Global Warming and Climate Change Mitigation Develop Climate Action and Adaptation Plan (CAAP) that Supports Regional SB 375 Sustainable Communities Strategies
SC-2	Sea Level Rise Awareness and Planning	Sea level rise is routinely considered relative to coastal areas and other City decisions, as relevant.	Consider Sea Level Rise in Decision-Making
SC-3	Energy Generation and Increased Efficiency	Energy efficiency performance standards and generation from renewable sources.	Develop a City Energy Action Plan Explore Alternative Energy for Public Buildings Use Load Shifting Devices
SC-4	Green Building Code	Implementation of the California Green Building Code.	Implement Green Building Code
CD-8	Growth Management	Sensible urban development and redevelopment based on the City's ability to provide necessary governmental services and municipal utilities.	Limit Development
ICS-1	Adequate Infrastructure Facilities	Provision of adequate facilities and services that maintain service levels, with adequate funding.	Maintain Existing Service Levels Consider Development Impacts to Existing Infrastructure

Table A1	2030 General Plan Key Goals and Policies Summary (Most Related to PWIMP)[1] Public Works Integrated Master Plan City of Oxnard		
Goal Ref.	**Goal Name**	**Definition**	**Relevant Actions**
ICS-11	Water Supply and Water Quality	Water supply, quality, distribution, and storage adequate for existing and future development.	Support Regional Water Quality Management Plans Maintain Water Capital Master Plans Continue to Implement GREAT Program Upgrade Potable and Recycled Water Distribution Systems Sustain Groundwater Supply Require Water Conservation and/or Recycling Connection Promote Waterwise Landscapes Adhere to Groundwater Extraction Recommendations Monitor Water Quality Require use of Non-Potable Water Supplies for Irrigation Incorporate Water Neutral Policy and Urban Water Management Plans
ICS-12	Wastewater Collection, Treatment and Disposal	Adequate capacity at the City Waste Water Treatment Plant to accommodate existing and future development.	Require Water Recycling and Resource Recovery, where possible Monitor Plant Performance and Discharge Minimize silt/sediment from construction Time future development to ensure adequate wastewater capacity

Table A1 2030 General Plan Key Goals and Policies Summary (Most Related to PWIMP)[1] Public Works Integrated Master Plan City of Oxnard			
Goal Ref.	**Goal Name**	**Definition**	**Relevant Actions**
ICS-13	Stormwater Drainage	Adequately sized storm drain systems and discharge treatment, certified levees, and implementation of appropriate National Pollutant Discharge Elimination System (NPDES) permits and regulations.	Discourage development in 100-year floodplain Provide adequate capacity for storm drainage and strive to meet NPDES water quality targets Design stormwater detention basins to ensure public safety Incorporate Low Impact Development (LID) alternatives, where practical
ER-5	Water Resources	Well managed water supply and wastewater treatment programs that together meet expected demand, prevent groundwater overdraft, and ensure water quality.	Treat all wastewater in compliance with permits Reduce dependence on groundwater Monitor wastewater discharges Minimize paved surfaces or use permeable paving where feasible
Notes: (1) Source: 2030 General Plan, Goals, and Policies.			

APPENDIX B – OXNARD ENERGY ACTION PLAN RECOMMENDATIONS APPLICABLE TO THE PWIMP

1.0 ENERGY ACTION PLAN

Oxnard completed an Energy Action Plan (EAP) in April 2013. As part of this plan, Oxnard has committed to pursuing the "Gold Level" as defined in Southern California Edison's Energy Leadership Partnership Program. This goal targets a 10 percent reduction in energy use for City Government facilities. Furthermore, Oxnard's EAP expands this 10 percent reduction to the community at large, calling for a 10 percent City-wide reduction in electricity and natural gas use. To achieve this target, the EAP looked at programs already underway since 2005, new EAP recommended programs, and updates to the State's Title 24 regulations for new construction. Combined, these programs and changes would produce only a 5 percent decrease in electricity use and a 3 percent decrease in natural gas use. Reductions would also be seen for greenhouse gas (GHG) emissions. With the implementation of all recommended EAP programs, State programs, and programs already implemented since 2005, Oxnard is expected to decrease their GHG emissions by 114,000 Million Tons (MT) of CO_2e, or 8 percent.

As part of this PWIMP effort, the recommendations of the EAP were taken into consideration when developing the recommended Capital Improvement Plan. There are four main recommendations that are directly applicable to this PWIMP. These recommendations are listed in Table 1.

Table 1 Oxnard Energy Action Plan Recommendations Applicable to the PWIMP
Public Works Integrated Master Plan
City of Oxnard

Program[1]	Description	Implementation Timeframe	Energy Savings		
			Electricity (kWh)	Natural Gas (therms)	Green House Gases (MT CO_2e)
G-8: Incorporate Greening Guidelines	In constructing new facilities the City will incorporate green strategies that reduce energy consumption	2015	43,900	200	10
G-10: Upgrade Street Lights	Convert existing street lights to LED lighting	2020	229,000	0	50
G-14: Increase On-site Electricity Generation at City Wastewater Treatment and Materials Recovery Facility	Investigate increasing the FOG collected for bio-gas electricity generation at the wastewater treatment plant	2020	656,400	0	140
C-5: Recycled Water Outreach and Education Program	Expand use of the AWPF facility and educate the public on the energy savings associated with the AWPF[2]	2015	Supporting Program	Supporting Program	Supporting Program

Notes:
(1) The program numbering corresponds to the number given to these programs in the EAP.
(2) The EAP compared the energy required to treat water from secondary to tertiary levels with the energy required to pump water through the California State Water Project.