

Energy Management Plan



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Section 1 -- Introduction

West Basin Municipal Water District (WEST BASIN) is highlighting and recognizing its current and future activities related to energy management in an Energy Management Plan (EMP). This EMP will guide WEST BASIN in utilizing energy management as a framework in which to responsibly manage its resources while providing cost-effective service to its customers. WEST BASIN needs a reliable source of energy to support its operational processes; assure the integrity of key data; and ensure a reliable supply of water to its customers. In addition, WEST BASIN is seeking to optimize energy efficiency to reduce use, costs, and environmental impacts. This EMP will consider energy management in the short and long-term.

In order to prepare for the future, WEST BASIN is committed to continuously explore innovative ways to further incorporate energy management into its decision-making process. WEST BASIN will seek energy efficient opportunities at its facilities as well as in managing its water supply portfolio.

Section 2 -- Background

WEST BASIN was established in 1947 by a vote of the people and is committed to providing a reliable supply of water to its customers and communities. WEST BASIN serves water to a semi-arid region that is subject to reoccurring droughts. The water that WEST BASIN supplies to its service area includes both potable and recycled water. The recycled water uses includes water for irrigation, water for cooling towers and boiler feed, and replenishment of groundwater basins.

WEST BASIN owns and operates¹ the following major facilities to support its customers:

- C. Marvin Brewer Desalter;
- Hyperion Secondary Effluent Pump Station;
- Donald L. Dear Headquarters Building;
- Edward C. Little Water Recycling Facility;
- Juanita Millender-McDonald Carson Regional Water Recycling Treatment Plant;
- Exxon-Mobil Nitrification and Boiler Feed Plant;
- Chevron Nitrification Plant; and
- Approximately 100 miles of conveyance pipeline.

Section 3 -- Approach to Energy Management

Because energy represents a significant cost of providing water to WEST BASIN's customers, it is essential that a systematic approach to minimize energy usage and cost, without sacrificing performance, be implemented. WEST BASIN is taking a phased approach to energy management – Planning, Implementation, and Reporting with specific steps embedded within each phase. The specific steps are as follows:

Planning Phase

- Step 1: Establish energy-related objectives/goals
- Step 2: Assess current energy baseline status
- Step 3: Identify energy improvement measures and targets
- Step 4: Identify energy improvement projects/activities and priorities

Implementation Phase

- Step 5: Develop an action plan
- Step 6: Apply improvements

Reporting Phase

- Step 7: Monitor, measure, and report results

¹ WEST BASIN contracts out the operations of its treatment plants to United Water Service (UWS) and the C. Marvin Brewer Desalter and distribution system to California Water Service Company (CWSC). For the purpose of this EMP, UWS and CWSC are also included as they operate WEST BASIN's facilities.

Section 4 -- Planning Phase

Establish energy-related objectives / goals

WEST BASIN's EMP is guided by two main objectives – **To Optimize Energy Use** and **To Reduce WEST BASIN's Regional Carbon Footprint**. Because WEST BASIN owns and operates several facilities, there may be opportunities to optimize energy use. These opportunities may be at the treatment plants, ranging from office building improvements to operational process improvements; at the headquarters building, ranging from employee business practices to installing energy efficient fixtures; and lastly specifically identifying energy efficient equipment or fixtures during the procurement process of a construction project.

In addition to managing WEST BASIN's assets, WEST BASIN is focused on ensuring that it is fully compliant with existing and future regulations. For instance, WEST BASIN has a Water Reliability 2020 initiative with a goal of reducing its current dependence on imported water by fifty percent and likewise doubling its dependence on local supplies. This initiative will assist WEST BASIN in working towards reducing its carbon footprint. Furthermore, WEST BASIN is seeking renewable energy opportunities at its facilities to further reduce its carbon footprint.

These objectives are further defined below:

Optimizing Energy Use

- Operational Efficiency Incorporate energy efficiency technologies, policies, and practices into all WEST BASIN projects, programs, and facilities to the greatest extent practicable.
- Building Standards Evaluate the feasibility of designing new and retrofit facilities to incorporate energy efficiency measures consistent with green building standards.
- Employees Encourage employees to adopt energy saving practices.

Reducing WEST BASIN's Regional "Carbon Footprint"

- Renewable Energy Evaluate the cost vs. benefit of renewable energy and energy recovery projects.
- Water and Energy Promote energy conservation through water conservation programs and partnerships, and energy-efficient local water supply development (i.e. water recycling, brackish groundwater desalination, etc).
- Regulations Ensure that WEST BASIN is fully compliant with AB 32 (Global Warming Solutions Act of 2006), and other relevant existing and future regulations.

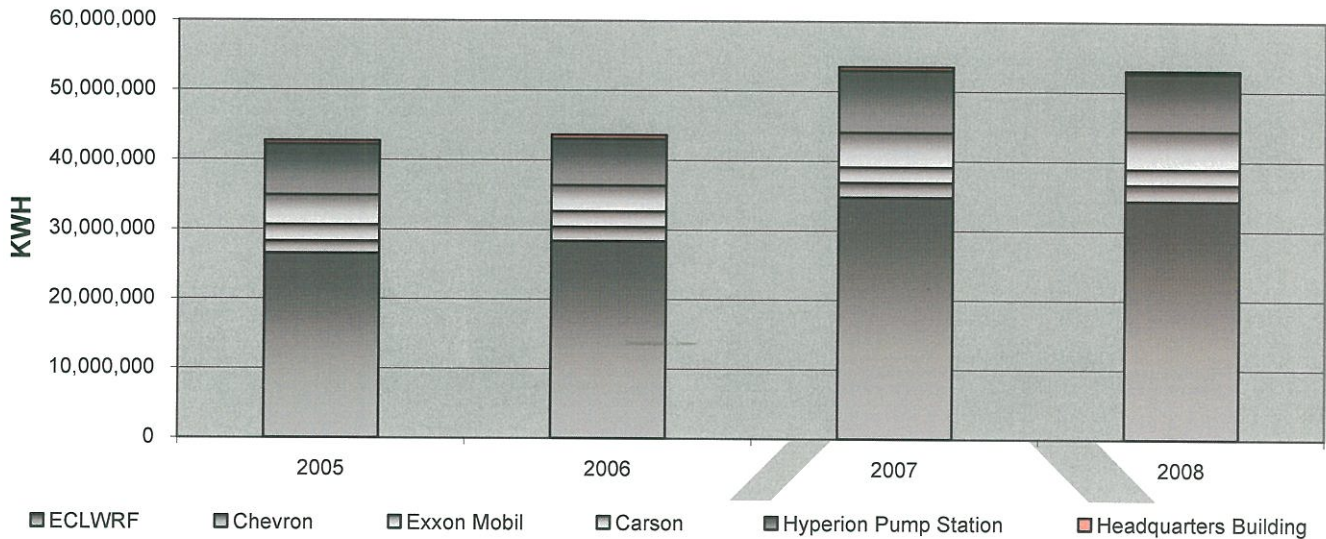
These objectives align with and build upon WEST BASIN's commitment statements, its Mission Statement, and Strategic Plan.

Assess current energy baseline status

Before identifying areas for improvement, WEST BASIN needs to understand its current energy consumption and its compliance with relevant regulations. A baseline energy evaluation needs to be conducted which includes collecting baseline data and tracking annual energy use as well as peak power use.

WEST BASIN has taken inventory of its major facilities and associated peak and total annual energy use over the past several years. The detailed inventory is in **Appendix A**. A graphical depiction of this inventory is below:

WBMWD's Energy Usage (2005 - 2008)



In addition, WEST BASIN has identified its current water supply portfolio and its associated energy consumption to provide both potable and recycled water to its service area.

2008 Water Supply Energy Requirements

Water Source Type	Water Supply Source	Total kWh/af*	Percentage of Total Water Supply	Acre-Feet per Year	Total kWh/yr	Tons of CO2 Emissions/yr**
Groundwater (16%)	Natural Recharge	350	6%	13,624	4,768,243	1,740
	Import Replenishment CRA	2,394	4%	8,174	19,568,870	7,141
	Import Replenishment SWP	3,394	3%	6,471	21,963,209	8,015
	Recycled Replenishment	1,565	3%	5,790	9,061,365	3,307
Imported Deliveries (64%)	Colorado River Aqueduct	2,044	36%	77,654	158,725,280	57,924
	State Water Project	3,044	28%	58,581	178,321,397	65,075
Recycled (12%)	West Basin RWP, Title 22	490	7%	15,326	7,509,983	2,741
	West Basin RWP, RO	1,280	5%	10,218	13,078,610	4,773
Other (8%)	Conservation	-	8%	17,029	-	-
Total			100%	212,868	412,996,957	150,716

*Wilkinson, Robert C. *Analysis of the Energy Intensity of Water Supplies for the West and Central Basin Municipal Water Districts*. April 2005, p. 5.

**The value of 804.54 lbs CO2/MWh was obtained from the California Climate Action Registry General Reporting Protocol Version 2.1 (June 2006, p. 5).

Energy Management Efforts to Date:

Operational Efficiency

At the treatment plants and distribution system, WEST BASIN's normal mode of operation is to minimize energy use as well as manage peak loads within plant design without sacrificing water production. In the spirit of continuously seeking improvement, WEST BASIN has initiated a programmatic energy efficiency evaluation of its pump equipment throughout its water recycling system by Southern California Edison. This evaluation has been completed. WEST BASIN will review the evaluation and determine, based on a cost/benefit analysis, if replacing the pumps is cost-effective. In addition, WEST BASIN is also conducting pilot studies of microfiltration units that use less energy to determine if these units are effective at treating the water at a lower energy usage.

Building Standards

WEST BASIN has conducted audits of some of its facilities to determine if there are opportunities for energy improvements and/or cost savings. To date, WEST BASIN has conducted an energy audit of its headquarters building. The headquarters building audit conducted by the Southern California Edison has shown that the greatest energy savings, given the current building condition, include installation of occupancy sensors and upgrading the thermostats.