

**State of California
The California Natural Resources Agency
DEPARTMENT OF WATER RESOURCES**



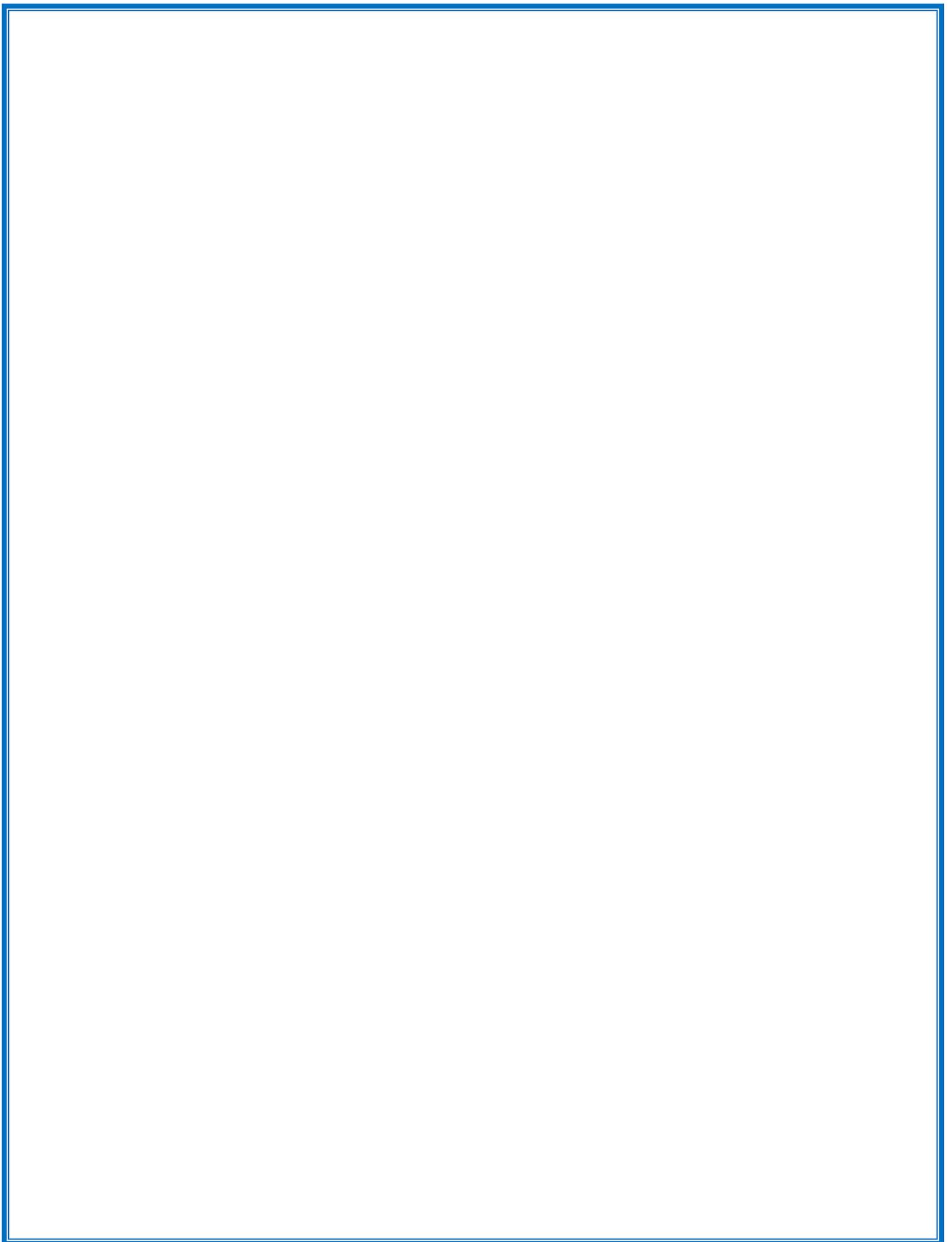
2012 Annual Sustainability Report

August 2013

Edmund G. Brown Jr.
Governor
State of California

John Laird
Secretary for Natural Resources
Natural Resources Agency

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Foreword

The Department of Water Resources (DWR) is pleased to present its third annual Sustainability Report. This report continues DWR's reporting begun in 2011, and adds new sections as DWR continues to expand its Sustainability efforts. DWR's Sustainability effort recognizes the importance of sustainability concepts in its own daily operations and in fulfilling its mission to the people of the state of California. In recognition of the importance of sustainability, the Director issued the department's first sustainability policy on April 22, 2010, in conjunction with DWR's recognition of Earth Day. The two-page policy memo (Appendix A) declared DWR's resolve to become a sustainability leader, stating that *"sustainability must be integrated into every aspect of DWR's work."* In response to this directive, DWR has begun instituting a series of key steps to implement sustainable practices and will continue to contribute to a more sustainable future for California. DWR invites all employees to become engaged in learning about sustainability concepts and how to apply these concepts in the workplace and in daily life. This report is part of the on-going effort of helping DWR employees and the public understand sustainability and helps document the sustainability efforts at DWR.

The following goals are being integrated and coordinated as part of the current sustainability efforts for DWR:

1. Climate protection practices,
2. Ecosystem stewardship,
3. Sustainable business operations,
 - a. Greening facilities,
 - b. Greening fleets,
 - c. Recycling and waste management and
 - d. Environmentally preferable procurement.

Additionally, six specific objectives have been established:

1. Reduce water use by 20% by 2020.
2. Reduce grid based retail energy demand by 20% by 2015.
3. Reduce carbon by 50% of 1990 levels by 2020 and 80% of 1990 levels by 2050.
4. Achieve waste diversion of 50% by 2020.
5. Reuse waste water wherever feasible.
6. Achieve renewable energy of 360 GWh by 2020.

These goals and objectives are helping guide DWR efforts toward sustainability. The goals and objectives will continue to change and grow over time as DWR continually refines its operations and recognizes new opportunities to promote sustainable activities.

This report captures both the statutory and policy aspects of DWR sustainability activities as well as DWR's other significant efforts toward sustainability in 2012.



Dale Hoffman-Floerke

Chief Deputy Director

Contents

Foreword.....	iii
Executive Summary.....	ix
2012 Annual Sustainability Report.....	1
Goal – Sustainable Business Practices	1
Greening Facilities	1
LEED Standards - Green Building Initiative (Executive Order S-20-04).....	1
Pearblossom Operations and Maintenance Center, Southern Field Division	1
Greening Fleets-Transportation	2
DWR’s Fleet.....	2
Fuel Management Replacement Project	2
2012 Alternative Fuel Use/ Electric Vehicles	3
2012 Travel Reduction, Executive Order B-06-11 (4-26-2012).....	4
2012 Fleet Reduction	5
Other Sustainable Transportation Efforts	6
Sacramento Area Vehicle Pool.....	6
Bike Committee	7
Energy Efficiency	8
Printer Consolidation Effort.....	8
Energy and Water Efficiency Special Unit Established.....	9
State Water Project Energy Efficiencies.....	10
The Lodi Energy Center and the State Water Project CO ₂ Emission Reduction	11
Environmentally Preferred Procurement (EPP)	11
Recycling and Waste Reduction	12
Statutory and DWR Policy Requirement Activities	12
DWR’s Waste Reduction and Recycling Efforts	12
Waste Diversion and Recycling Coordinators.....	12
2010 Waste Diversion and Recycling Report	12
State Agency Buy Recycled Campaign	14
2010 State Agency Buy Recycled Campaign (SABRC) Report	14
Glass Products.....	15
Lubricating Oil Products, Antifreeze, and Tires.	16
Tire-derived Products.	16
Metal Products.....	16
Plastic Products.....	16
Recycled Paint Products.....	17
Water Use Efficiency	17
Waste Water Reuse.....	17

2012 Annual Sustainability Report

Goal - Climate Protection.....	19
Reduce Greenhouse Gases.....	19
Climate Action Plan.....	19
Procure Renewable Energy.....	19
Sustainability and Lodi Energy Center (LEC).....	21
LEC has More Sustainable Water Use Practices	21
LEC uses Integrated Fast-Start Technology.....	22
Additional Climate Protection Practices.....	22
Regional Climate Planning and Management.....	22
Climate Change Analyses	26
Greenhouse Gas Offsets.	26
Goal - Environmental Stewardship	27
DWR Green Priorities Pilot Project	28
Payroll Deduction—Monthly Transit Pass Pilot Program.....	28
Other Sustainability Efforts.....	29
Paper Reduction Efforts - Documentum Project.....	29
Life Cycle Analysis Committee.....	30
Sustainability Indicators California Water Plan	31
Sustainability Education and Awareness Efforts	31
Sustainability Collaboration Portal	31
Sustainability Awareness Campaign	32
Climate Change Class 201	34
DWR Grant Programs for Sustainability	34
Local Groundwater Assistance Program.....	34
Integrated Regional Water Management (IRWM) Program.....	34
Urban Streams Restoration Program (USRP).....	35
Agricultural Water Conservation Program	35
DWR Outreach Efforts for Sustainability.....	35
Collaboration on Recycling and Environmentally Preferred Purchasing Programs.....	35
Collaboration on Climate Change Efforts	36
Presentations	36
Workgroup Participation	36
Committees.....	36
Collaboration on Water Conservation Programs.....	36
Appendix A DWR’s Sustainability Policy Memos	38
Appendix B Statutory Requirements for Waste Reduction and Recycling	40
Appendix C Statutory Requirements for Environmentally Preferable Purchasing	42
Appendix D Statutory Requirements for the State Agency Buy Recycled Campaign	44

2012 Annual Sustainability Report

Appendix E Water Resources Engineering Bulletin 58 B 46
Appendix F California Statutory Requirements on Climate Change 50

Complete List of Tables

Table 1. Alternative Fuel Stations in California and the Sacramento Area..... 3
Table 2. DWR 2012 Alternative Fuel Use 4
Table 3. DWR Work Miles Traveled, 2008-2012 5
Table 4. DWR's Sacramento 2012 Vehicle Pool Miles Traveled 7
Table 5. State Water Project Annual Energy Portfolio of CO2 Emissions from 2008-2012..... 10
Table 6. State Water Project Energy Efficiency and Emissions Reductions Plan; 2003-2020..... 11
Table 7. Waste Reduction Amounts by Diversion Program and Activities 12
Table 8. 2009-2011 Per Capita Disposal Rates and the Waste Diversion Percentage..... 14
Table 9. 2009-2011 State Agency Buy Recycled Campaign Amounts..... 14
Table 10. DWR Water Sources and Number of Facilities..... 17
Table 11. 2007-2012 State Water Project Total CO2 Emissions 20
Table 12. DWR's Renewable Energy Procurement Plan 21
Table 13. Central Valley Flood Protection 2012-2013 Funding Proposals..... 25
Table 14. DWR's 2012 Sustainability Education and Awareness Campaign 32

Complete List of Figures

Figure 1. DWR Work Miles Traveled, 2008-2012, All Categories 5
Figure 2. DWR's Sacramento 2012 Vehicle Pool Miles by Location 7
Figure 3. Lodi Energy Center 11
Figure 4. 2009-2011 Graph of State Agency Buy Recycled Campaign Amount 15
Figure 5. Sustainability is built into the Lodi Energy Center *Photo Courtesy: Siemens Energy* 21
Figure 6. Central Valley Flood Protection Planning Areas 23
Figure 7. Electric Car Demonstration, Earth Day 2012 34

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Executive Summary

In 2012, the Department of Water Resources (DWR) continued its efforts to further its sustainability goals. Using the initial sustainability goals and objectives, DWR made continued progress in as shown in the table below.

<u>Sustainability Goals</u>	<u>Sustainability Objectives</u>	<u>2012 Sustainability Achievements</u>
<u>Sustainable Business Practices</u> <ul style="list-style-type: none"> • <u>Greening facilities</u> <ul style="list-style-type: none"> • LEED Standards 	<u>Greening facilities</u> <ul style="list-style-type: none"> • Pursue LEED Silver Certification as a minimum requirement. Pursue higher LEED Standards when feasible. 	<ol style="list-style-type: none"> 1. Pearblossom Facility- A LEED Gold facility which includes a 30 kW solar system to power the facility was opened in 2012. 2. Developed plans for LEED Gold certification for the Rio Vista Estuarine Research Station (RVERS) complex, located in Solano County, which includes three buildings occupying 105,527 square feet. 3. Developed plans for a new Joint Operations Center (JOC), will include three to four buildings, occupying approximately 200,000 square feet in Sacramento County. Status is ongoing as a result of public comments.
<ul style="list-style-type: none"> • Energy Efficiency 	<ul style="list-style-type: none"> • Reduce grid based retail energy demand 20 percent by 2015. 	<ol style="list-style-type: none"> 1. Energy Efficiency Unit formed to collect energy efficiency data, determine priority energy efficiency projects.
	<ul style="list-style-type: none"> • Ensure Energy Star purchasing. 	All electrical purchases for 2012 met Energy Star requirements.
<ul style="list-style-type: none"> • <u>Greening Fleets</u> 	<u>To be Determined in Future Policies</u>	Initial Data gathering and Benchmarking Efforts Vehicle Pool Program

2012 Annual Sustainability Report

		<p>Fuel Management and Integration into SAP database</p> <p>Alternative transportation Modes and Options</p> <p>Fleet Reduction</p> <p>Travel Reduction</p>
<p><u>Environmentally Preferable Purchasing</u></p>	<ul style="list-style-type: none"> • <u>Environmentally Preferable Purchasing</u> • Purchase products that are part of DGS's Environmentally Preferred Purchasing program whenever feasible. 	<p>New DGS enhancements to the EPP contracts have made it easier to purchase EPP items.</p>
<ul style="list-style-type: none"> • <u>Recycling and Waste Reduction</u> 	<ul style="list-style-type: none"> • <u>Recycling and Waste Reduction</u> • Each employee engages in recycling and waste reduction practices in performing their duties and responsibilities 	<p>Recycling and Waste Reduction are on-going activities which culminate in the Waste Diversion statistics.</p>
<ul style="list-style-type: none"> • <u>Waste Diversion</u> 	<ul style="list-style-type: none"> • <u>Waste Diversion</u> • Achieve 50% waste diversion by 2020. 	<p>2011 Waste Reduction 59%.</p>
<ul style="list-style-type: none"> • <u>Water Efficiency</u> 	<p><u>Water Efficiency</u> Achieve 20% reduction by 2020</p>	<p>Ongoing efforts to capture water use data for all DWR facilities continued in 2012.</p>
<ul style="list-style-type: none"> • <u>Waste Water Reuse</u> 	<p><u>Waste Water Reuse</u> Reuse recycled waste water wherever feasible.</p>	<p>Waste water reuse efforts were not a focus in 2012.</p>
<ul style="list-style-type: none"> • <u>Climate Protection</u> • <u>Reduce Greenhouse gas emissions</u> 	<p><u>Reduce Greenhouse gas emissions</u></p> <ul style="list-style-type: none"> • 50% below 1990 levels by 2020 • 80% below 1990 levels by 2050 	<p>Contracting was completed for lower GHG energy. The new Lodi Energy Center will release 68 % less emissions than the same amount of energy supplied through DWR's current coal contract, which ends in July 2013. DWR is the largest of 13 project participants and has contract rights to almost 100 megawatts, or 33.5 percent of the plant's capacity</p> <p>On-going. Current estimates show that DWR will meet its 2020 objective by 2013.</p> <p>Ongoing. Current efforts will allow DWR to meet its objective in 2050.</p>

2012 Annual Sustainability Report

<ul style="list-style-type: none"> • <u>Procure renewable energy</u> 	<p><u>Procure renewable energy</u></p> <ul style="list-style-type: none"> • Purchase 360 gigawatts (Gw[*]) of renewable energy by 2020 • * A gigawatt is equal to one billion (10⁹) watts or 1 gigawatt = 1000 megawatts. 	<p>DWR has entered into a four years, from October 15, 2012 through December 31, 2016 renewable power purchase agreement with Alameda Municipal Power.</p> <p>The new contract will provide 33 megawatts (MW) of certified renewable energy:</p> <ul style="list-style-type: none"> • 28.3 MW from an existing geothermal project • 5.3 MW from landfill gas energy. • Under this agreement, DWR will receive an estimated 183,000 megawatt-hours of annual generation.
<p><u>Environmental Stewardship</u></p>	<p><u>Environmental Stewardship</u></p> <ul style="list-style-type: none"> • To include environmental benefits as an objective and outcome in the planning and development of operations or projects. • To build in environmental benefits at a meaningful scale that can address sustainability from economic, social and environmental perspectives 	<p>Final approval of Water Resources Engineering Memorandum 58B detailing how Environmental Stewardship will be implemented into all DWR projects.</p>

DWR has also begun other sustainability efforts which, although not identified in the initial targets, complement and enhance current efforts. These areas are described below.

Other 2012 Sustainability Accomplishments

Sustainable Community Development and Outreach

DWR’s on-going grant programs provide millions of dollars to local communities to help them become more sustainable. Some DWR programs that directly promote sustainability include the Integrated Regional Water Management (IRWM) Program and DWR’s Local Groundwater Assistance Program.

Intra-Agency Sustainability Coordination Efforts

1. Developed intra agency Collaboration Portal for Sustainability.
2. Formed External Group of Agency Sustainability Coordinators.

2012 Annual Sustainability Report

3. Participation in a State agencies' recycling group of more than 50 California State agencies that offers suggestions on environmental issues, develops recycling workshops for employees, and raises awareness of waste and recycling issues.
4. Assisting in the development of Sustainability Indicators for the California Water Plan.
5. Reviewed and commented on the Delta Economic Sustainability Plan.

Inter-Agency Sustainability Coordination Efforts

Coordination of DWR's Sustainability Efforts

1. Added key Sustainability criteria to DWR Grant approval process
2. Reviewed various Department Documents for inclusion of Sustainability principles

Formation of New Committees

1. Established Bike Committee to advance commuter biking at DWR.
2. Established Life Cycle Assessment Committee.

Sustainability Education and Awareness Efforts

1. Developed a Sustainability Awareness Campaign.
2. Established Earth Day Activities.
3. Created a Sustainability Section in DWR's new Climate Change Class 201.
4. Developed article on sustainable transportation- DWR People News.

Additional Energy Efficiency Efforts

1. Development of new unit personnel job descriptions and duty statements to help DWR achieve Energy Efficiency directives.
2. Ongoing benchmarking of current energy use through the identification and location of all DWR retail energy sources and meters.
3. Energy efficiency efforts by DWR's Department of Technology Services (DTS) have resulted in significant energy savings as well as achieving associated business process improvements.

Foundation Policy Development

- Continued development of Sustainable Business Services Policy.

Paper Reduction Project

Launched in 2010, Documentum is an enterprise system for managing all record types including video, podcast, images and other digital records as well as traditional media storage such as paper and microfilm. Full implementation of Documentum will result in reduced paper usage and paper record storage. Implementation efforts are on-going.

Pilot Projects

1. Completed the payroll deduction effort for transit passes, enabling DWR employees to have their transit pass deducted directly from their paycheck.
2. Continued collection of information on water use by DWR employees.

Reporting Sustainability Efforts

DWR produced its second Annual Report which covered 2011 efforts in August 2012.

"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

Our Common Future
The Brundtland Commission report
United Nations conference, 1983

2012 Annual Sustainability Report

Following are the Department of Water Resources (DWR) sustainability activities during 2012. This report transmits both the statutory and policy aspects of DWR's activities as well as DWR's significant efforts toward sustainability. The report begins with an overview of activities that have statutory and policy requirements and closes with DWR's pilot projects and outreach efforts.

Goal – Sustainable Business Practices

Greening Facilities

LEED Standards - Green Building Initiative (Executive Order S-20-04)

DWR has responded to the initiative through its benchmarking efforts, new construction practices, and energy conservation projects. DWR has worked with the Department of General Services to benchmark facilities in the Energy Star Data Base utilized by the State of California for collecting energy use for State buildings as outlined in Executive Order S-20-04 and further defined in the Green Building Action Plan. DWR's newest building was designed and is presently under construction to exceed the minimum State Standard for Leadership in Energy and Environmental Design (LEED).

Pearblossom Operations and Maintenance Center, Southern Field Division

DWR is currently designing its first LEED-NC (Leadership in Energy and Environmental Design- New Construction) project at the Pearblossom Operations and Maintenance Center, Southern Field Division. DWR is pursuing a LEED-NC Gold Level Certification for this new administrative office building. In order to achieve LEED certification, the Operations and Maintenance Center will be built using strategies aimed at improving performance across all the metrics that matter most: energy savings, water efficiency, improved indoor environmental quality, stewardship of resources, and sensitivity to impacts.

The proposed facility is a joint use facility for DWR between the Division of Operations and Maintenance (O&M), and the Division of Engineering (DOE). The objective is to design and construct a building that will address the shortage of available space for O&M's Southern Field Division staff and provide a more centralized and permanent location for DOE's Lancaster Project Headquarter (LPH) staff. Space will also be included in the building for staff participating in the FERC relicensing effort.

The building will accommodate approximately 30 staff from Southern Field Division, 10 staff that will participate in the FERC relicensing, and 15 staff from DOE's LPH: a total of 55 persons. Part of the building design and construction will include site facilities and improvements, including parking, landscaping, and new

or upgraded utilities for power, telecommunications, water, septic, and uninterrupted emergency power supply systems. Features included in the design to meet the planned LEED Gold certification include a ground source heat pump system for heating and cooling, photovoltaic panels, and mechanical wastewater system that will allow wastewater to be recycled and used for landscape irrigation. In addition, many recycled products have been included in the design along with waste reduction measures during and after construction.

Greening Fleets-Transportation

This category could be placed either under Sustainable Business Practices or under Climate Protection as greening fleets falls into both areas. More effective fleet management is both a good business practice and a climate protection strategy. Due to the multi faceted aspect of transportation at DWR, this report treats it as a Sustainable Business Practice, but recognizes the implications for both of these Sustainability goals.

DWR's Fleet

To perform its mission, DWR requires an array of mobile equipment, heavy machinery, trucks, trailers, fleet vehicles, and other wheeled vehicles. DWR's fleet averages approximately 899 vehicles such as light trucks, vans, and SUVs; as well as 240 pieces of heavy machinery such as backhoes, crawlers, and dozers. Of the 899 light duty vehicles, almost 89 percent are pickups and vans. These vehicles are the workhorse of DWR's fleet, transporting both people and equipment to the far reaches of the state to maintain the complex number of canals, levees, dams, flood control structures, and irrigation structures that supports California's water delivery systems. In addition, DWR personnel reconstruct wetlands, restore wildlife habitat, perform ongoing assessment of California's water supply infrastructure, perform compliance monitoring and conduct original field research to support DWR's mission. In support of this ongoing effort, DWR personnel travel approximately 13 million miles per year, consuming approximately 1.6 million gallons of gasoline, diesel, and bio-fuels.

Fuel Management Replacement Project

The purpose of the Fuel Management Replacement Project (FRMP) is to replace the current fuel management system to provide better management of the Department's fuel inventory. When fully installed in 2012, the system will allow for the use of non-proprietary commercial grade hardware with pay-point functions (using the Voyager card), which will provide site administrators with access to system functionality from a personal computer. The system integrates the fuel management system with DWR's main data management system, SAP, with the following critical SAP administrative modules; Materials Management

(MM), Financial, and Plant Maintenance (PM). This project also integrates DWR’s Voyager credit card information into SAP. This information is used to identify fuel dispensed at Department fuel sites as well as fuel amounts and types that are purchased at commercial sites. Additionally, automated odometer readers at Department vehicle sites will provide correct and timely information on vehicle usage for maintenance and reporting requirements.

Although initially proposed as a fuel management system, the information from FRMP will be critical in helping DWR to meet its GHG emission reduction goals. FRMP allows for the tracking of fuel types and fuel blends which vary between fuel brands and allow a more accurate calculation of travel related GHGs.

2012 Alternative Fuel Use/ Electric Vehicles

Alternative fuels are an important way to reduce the use of fossil fuels and the corresponding GHGs. Some alternative fuels include compressed natural gas (CNG) oxygenated fuels such as ethanol and biofuels.

CNG vehicles may be either dedicated natural gas vehicles that are designed to run on natural gas only, or they may have a dual-fuel or bi-fuel system that can also run on gasoline or diesel. Dual-fuel vehicles allow users to take advantage of the wide-spread availability of gasoline or diesel but use a cleaner, more economical alternative when natural gas is available. Since natural gas is stored in high-pressure fuel tanks, dual-fuel vehicles require two separate fueling systems. DWR has 9 vehicles that are dedicated CNG fuel and 43 vehicles that are dual fuel. However, due to the difficulty of finding appropriate fueling stations, the CNG alternative is not used very frequently by DWR employees.

Flexible fuel vehicles (FFVs) are designed to run on gasoline or a blend of up to 85% ethanol (E85). Except for a few engine and fuel system modifications, they are identical to gasoline-only models. However, since ethanol contains less energy per volume than gasoline, FFVs typically get about 25-30% fewer miles per gallon when fueled with E85. FFVs comprise nearly 31% of DWR’s fleet with 276 vehicles being capable of utilizing E85 fuel.

According to the US Department of Energy, California has 1140 alternative fuel stations. Table 1 shows the number of alternative fuel stations by type.

Table 1. Alternative Fuel Stations in California and the Sacramento Area

Alternative Fuel	State-wide	Sacramento Area
Bio Diesel	30	2
CNG	135	1
E85	49	8
Electric	682	31

2012 Annual Sustainability Report

Hydrogen	5	0
Liquid Natural Gas (LNG)	15	0
Liquefied Petroleum Gas (LPG) or Propane	224	7

Despite what appears to be a large number of alternative fuel stations state-wide, the distribution of these stations is centered around four main population centers; San Francisco, Sacramento, Los Angeles and San Diego. Most of the alternative fuel stations follow either the US 101 coastal highway or US 99, with only 3 alternative fuel stations located on Interstate 5 between Los Angeles and Sacramento. Unfortunately, the concentration of alternative fuel stations around a few population centers makes it difficult for DWR employees to effectively utilize alternative fuels. This difficulty is reflected in the following table of alternative fuel use. The amount of alternative fuel used by DWR is minimal and all of it is purchased in the Sacramento area.

Table 2. DWR 2012 Alternative Fuel Use

Alternative Fuel Used	Amount statewide	Sacramento Area
CNG	912 Gallons	912 Gallons
All Others	0	0

Historically, DWR had nine electric vehicles. However, when the leases on the vehicles expired, the vehicles reverted to the dealerships. Since that time, DWR has not had any electric passenger vehicles.

2012 Travel Reduction, Executive Order B-06-11 (4-26-2012)

On April 26, 2012, Governor Brown issued an Executive Order reducing state employee travel. The order prohibited all discretionary travel. Further, all in-state non-discretionary travel had to be approved by Agency Secretaries or Department Directors who did not report to an Agency Secretary. All out-of-state travel also had to be approved by the Governor’s Office. The travel restrictions did not apply to functions that were mission critical such as enforcement responsibilities, auditing, revenue collection, a function required by statute, contract or executive directive or job-required training necessary to maintain licensure or similar standards required for holding a position.

Overall, despite the travel reduction order, DWR employees, using state vehicles, traveled approximately 1% more in 2012 than in 2011. DWR’s travel miles have shown a steady increase since 2008 as additional mandates continue to flow from the legislature. Two major pieces of legislation that have

2012 Annual Sustainability Report

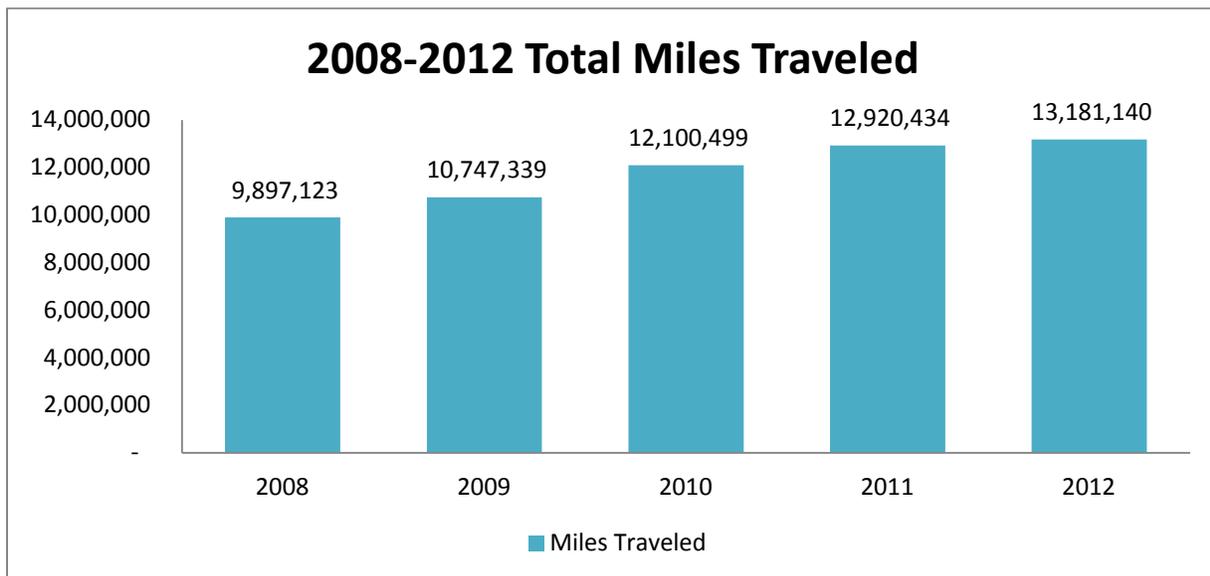
dramatically impacted DWR's field work are the FloodSAFE legislation passed in 2008, and the Bay Delta legislation passed in the special legislative session of 2009.

Table 3 shows DWR on the job travel mileage from 2008-2012. The table shows fleet gasoline mileage, (that mileage traveled with state owned vehicles); reimbursed mileage, (miles traveled by DWR employees in their personal vehicles) and diesel fuel mileage, (miles traveled in heavy duty, state owned vehicles). All three categories show a steady increase from 2008.

Table 3. DWR Work Miles Traveled, 2008-2012

Year	2008 Work Miles Traveled	2009 Work Miles Traveled	2010 Work Miles Traveled	2011 Work Miles Traveled	2012 Work Miles Traveled
Total Passenger Miles State Vehicles	8,152,207	9,233,445	10,533,166	11,073,040	11,118,798
Total Reimbursed Passenger Miles, Personal Vehicles	688,422	731,975	723,805	802,737	1,127,925
Total DWR Diesel Engine Miles	528,247	781,919	843,528	1,044,657	934,417
Total for all categories:	9,368,876	10,747,339	12,100,499	12,920,434	13,181,140

Figure 1. DWR Work Miles Traveled, 2008-2012, All Categories



2012 Fleet Reduction

On January 28, 2012, Executive Order B2-11 required all state agencies to inventory their mobile equipment and eliminate underutilized vehicles or conduct an analysis to determine the purpose of, the

necessity for, and the cost-effectiveness of, the vehicles and equipment in their fleet. The purpose of the analysis was to develop a plan to relinquish non-essential and cost-inefficient vehicles and equipment. The plan was to be approved by the Director of the Department of General Services and the Department of Finance and the vehicles and equipment were to be relinquished within 120 days of plan approval. Vehicles and equipment were to be relinquished by selling them in a manner to maximize returns or by transferring them to other departments where there is a demonstrated need. Additionally the Department of Finance was to evaluate the total savings achieved and adjust departmental budgets to reflect those savings as appropriate.

State agencies and departments were also prohibited from purchasing any vehicles for non-emergency use except when:

- The agency or department has fully relinquished its vehicles and equipment pursuant to its analysis and
- The plan is approved by Department of General Services;
- The purchase is necessary to protect the health and safety or security of the public;
- The purchase is necessary to provide critical services and functions; or
- The purchase will result in significant cost savings.

DWR submitted its reduction plan to the Department of General Services and the plan review is ongoing. The final plan is anticipated to be approved early in 2012.

Other Sustainable Transportation Efforts

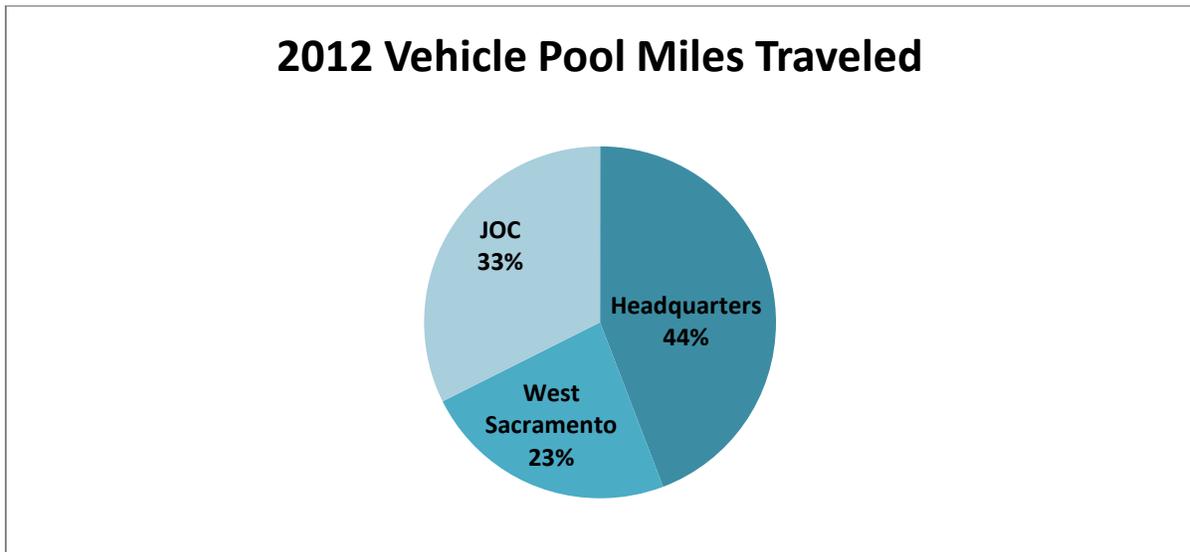
Sacramento Area Vehicle Pool

In 2010, DWR began a vehicle pool of 9 state vehicles. These vehicles were assigned to three Sacramento locations, the Joint Operations Command Center (JOC), DWR's West Sacramento location and DWR headquarters. The intent of the vehicle pool is to more effectively utilize state vehicles for travel between these three locations instead of using rental cars or taxis. Employees are able to reserve the vehicles electronically via their calendar, which simplifies the reservation process. In June 2012, the program was highlighted by a Department wide memo, explaining the reservation process and vehicle availability. In 2012, DWR employees logged 65,411 miles through the vehicle pool, an increase of 7,411 miles over 2011's 58,000 miles. Table 4 and Figure 2 below shows these numbers.

Table 4. DWR's Sacramento 2012 Vehicle Pool Miles Traveled

Sacramento Location	Vehicle Pool Miles Traveled
JOC	21,205
West Sacramento	15,313
Headquarters	28,893
Total Miles	65,411

Figure 2. DWR's Sacramento 2012 Vehicle Pool Miles by Location



Bike Committee

Formed in 2011, DWR’s bike committee is pursuing a variety of issues relating to commuter bicycling. DWR considers commuter cycling a valid alternative transportation that increases employee health, reduces greenhouse gases, reduces air pollution and reduces the need for employee parking. In recognition of these benefits, DWR encourages commuter cycling. Further, DWR has an active commuter bicycling community, with a majority of the commuter cyclists being located in the Sacramento area. This means that there is a high usage of biking facilities at DWR. Although DWR initially had 30 bike lockers at headquarters, there was a strong demand for more lockers. In 2011, DWR added an additional 50 lockers to meet the need for more storage space. The new lockers ensured that everyone who wanted a locker had access to one.

Ongoing issues for the bike committee include:

1. Adopting a mission statement for commuter cycling.

2012 Annual Sustainability Report

2. Developing a list of necessary cycling facilities including showers, lockers, bike storage, and bike repair stations for each DWR facility.
3. Developing cycling safety classes.
4. Developing bike to work buddies for new commuter cyclists.
5. Raising awareness of the benefits of commuter cycling.
6. Making commuter cycling part of DWR's Climate Action Plan, DWR's Sustainability Policy and Environmental Stewardship Policy.

Energy Efficiency

Printer Consolidation Effort

In March of 2012, the Department of Water Resources (DWR) Division of Technology Services (DTS) Customer Services Branch completed a departmental printer assessment. In this assessment it was identified that DWR had a significant amount of redundancy of printers and copiers. Additionally, it was identified that DWR printers are aging. Not only does this aging increase maintenance costs, it also impacts employee productivity and print efficiencies. Printer technology has improved tremendously in the last five years with increased multi-functionality, energy efficiencies, print security and encoding, as well as improved inks and toners which result in reduced resource use of these supplies.

In terms of actual number of printers, it was determined that approximately 3,488 employees used 1,787 print devices resulting in a 1.95 print device to 1 employee ratio. This is in considerable excess of the industry standard of 10:1, which is considered a reasonable employee to printer ratio in the office environment. The assessment also identified that many of the existing print devices at DWR are non-standard and non-networked models that result in a high monthly electricity cost, as well as increasing maintenance costs to keep the existing fleet operational. Total printer fleet management of the department's devices continues to be difficult and costly due to the following reasons:

- Significant redundancy of print devices; in excess of 1000 total.
- 65% of DWR's printers are non-networked printers.
- Equipment acquisition creep negatively impacting device user ratio and overspending budget.
- 77% of devices aged beyond five years; older devices are expensive to operate and have higher power consumption.

2012 Annual Sustainability Report

- Lack of multi-function device (MFD) utilization across the department resulting in overspending and inefficient processes.

In line with the state's mandate of Assembly Bill 2408, to consolidate IT infrastructure services, the DWR's Office of Sustainability in the Executive Division has made a business decision to optimize its existing printing environment and engage in a managed print services (MPS) approach which will include printers and MFDs.

The purpose of the "DWR Printer Fleet Management Project" is to move forward with:

- Maximizing resources and efficiencies.
- Updating and improving printer resources department-wide.
- Inventorying and tracking printer resources (i.e., paper, toner, printer supplies, and maintenance contracts).
- Achieving true cost accountability for printer and paper supplies.
- Reducing printer maintenance and support costs.
- Reducing one-time and on-going costs associated with printer fleet management.

DWR convened a work team and developed specifications for printer reduction and consolidation. At this time, the printer consolidation project is moving forward with an anticipated implementation date of late 2013. Current cost savings are estimated to be approximately 1.4 million dollars per year.

Energy and Water Efficiency Special Unit Established

With its Sustainability Policy, DWR has committed to reduce its retail water and power usage and GHG emissions. Further, both state law and Executive Orders add additional reduction requirements for both water and energy. For example, Executive Order S-20-04 requires that California state agencies reduce its retail energy usage by 20% by 2015. Senate Bill SB X7-7 requires that water suppliers reduce retail water usage by 10% by 2015, and by 20% by 2020.

In order to meet both its own goals and the above mandates, DWR must take several steps from preparing baseline documentation, determining energy and water efficiency opportunities and priorities, implementing efficiency measures, and ultimately, maintaining ongoing compliance. This means that DWR must collect data before, during, and after it makes efficiency gains to demonstrate increased efficiencies as

well as compliance. DWR must plan and successfully execute projects to improve retail water and power efficiency throughout all leased and DWR owned buildings. DWR’s commitment to sustainability and environmental leadership as a leading steward of retail water and power resources, and by inference, bulk water and power resources, requires an ongoing effort.

To achieve its energy and water efficiency goals, DWR has established a new Retail Water and Power Efficiency. The new unit became operational in the summer of 2012.

State Water Project Energy Efficiencies

In addition to DWR’s retail energy use, DWR is also responsible for the State Water Project’s emissions from the energy used to transport water throughout the state. Following is Table 5, which details the amount of emissions produced by both by DWR owned energy sources and the amount of emissions produced from purchased energy.

Table 5. State Water Project Annual Energy Portfolio of CO2 Emissions from 2008-2012.

State Water Project Co ₂ Emissions (Million Metric Tons of Carbon Dioxide)					
Source	2008	2009	2010	2011	2012
Reid Gardner Unit 4	1.0	1.0	.8	.9	1.2
Lodi Energy Center Online 2012	N/A	N/A	N/A	N/A	.01
Purchased Energy	1.4	1	1.1	1	.9
Gross Emissions	2.4	2.0	1.9	1.9	2.1
Surplus Sales	.8	.4	.4	0	0
Net Emissions	1.6	1.6	1.5	1.9	2.1

The Department of Water Resources Report on Reducing Dependency on Fossil Fuels and Changes to the Power Contracts Portfolio, 2013, pg. 10.

Additionally, the Edmonston Pumping Plant and Edward Hyatt Power Plant are two State Water Project-owned hydroelectric facilities where major energy efficiency projects have been undertaken. These projects have resulted in a reduction of GHG emissions by 48,000 metric tons of CO2 annually. DWR is evaluating the feasibility of additional energy efficiency upgrades at Edmonston, which would start in 2013 and extend through 2020.

Table 6 illustrates the cumulative energy savings and fossil fuel emissions equivalents associated with the energy efficiency improvements at these two facilities from 2003 through 2020. This table reflects the weighted average of the emissions rates from the SWP’s energy portfolio from 2007 through 2012.

Table 6. State Water Project Energy Efficiency and Emissions Reductions Plan; 2003-2020

Energy Efficiency Program	Cumulative Energy Savings (MWH)	Emissions Reductions (Metric Tons CO ₂)	Emissions Avoided		Equivalents
			Hyatt Generation	Edmonston Pumping	
Years	Hyatt Generation	Edmonston Pumping	Hyatt Generation	Edmonston Pumping	Automobile Equivalents
2003-2007	306,949	5,951	84,108	1,631	15,703
2008-2020	1,721,443	773,202	471,698	211,867	125,195
Total (2003-2020)	2,028,392	779,153	555,806	213,498	140,898
CUMULATIVE TOTAL	2,807 Gigawatt Hours	0.77 Million Metric Tons			140,898 Automobiles

The Lodi Energy Center and the State Water Project CO₂ Emission Reduction

In 2009, DWR finalized its participation in the construction of a new, state-of-the-art combined-cycle natural gas plant. The new facility uses advanced emission control technology, is highly efficient, and replaces a portion of the SWP power needs now served by coal fired generation. The 280-MW Lodi Energy Center is the first “fast-start” combined cycle power plant in the U.S. The advantages of the gas turbine’s shorter startup capabilities are reduced fuel costs, lower emissions, and the versatility to effectively partner with intermittent renewable energy sources. The new power plant is located next to the city of Lodi’s municipal wastewater treatment plant and uses its treated wastewater for cooling purposes. DWR has contract rights for approximately one-third of the output from LEC (the DWR will receive approximately 100 MW of the plant's output). Groundbreaking for construction of the plant occurred in July 2010. Construction of the LEC natural gas power plant was completed and the plant started operation in late November 2012.



Figure 3. Lodi Energy Center

Environmentally Preferred Procurement (EPP)

The Department of General Services (DGS) is the California lead agency for EPP and is tasked with ensuring that state agencies have sufficient information to purchase environmentally friendly products. DWR’s own efforts in waste reduction and recycling begin with its purchasing policy. DWR is also subject to the Environmentally Preferred Purchasing statutes (Appendix C). By buying environmentally friendly items that also contain post-consumer recycled content,

DWR helps reduce waste and encourages recycling throughout its business processes.

Recycling and Waste Reduction

Statutory and DWR Policy Requirement Activities

DWR’s waste and recycling efforts are the result of both DWR’s own recycling policy and the State of California’s statutes (Appendix B). California requires the diversion of solid waste from landfills and mandates the recycling of certain materials. DWR is subject to Public Resources Code sections 42920–42982, which require that State agencies comply with a 50 percent diversion rate from landfills by 2004 and submit an annual report. The first report was due September 1, 2010, with an annual report due on or before September 1 each year thereafter. Currently DWR’s objective of 50% diversion of waste is concurrent with State law.

DWR’s Waste Reduction and Recycling Efforts

In 2008, the Per Capita Disposal Measurement System Act (SB 1016, Wiggins, and Public Resources Code Section 42920–42927, 2008) was passed. This changed the way State agencies and local governments measure their progress toward meeting the statutory waste diversion mandates. Under this Act, State agencies are still required to maintain the 50 percent waste diversion requirement as mandated by California’s Integrated Waste Management Act of 1989. However, with the passage of the Per Capita Disposal Measurement System Act, State agencies and large State facilities also must use per capita disposal as an indicator of their progress toward meeting the mandate.

Waste Diversion and Recycling Coordinators

DWR has a waste diversion and recycling coordinator who collects waste disposal and recycling information from 33 offices/facilities around the state. This information is then compiled into the Waste Management Annual Report.

2010 Waste Diversion and Recycling Report

Table 5 compares DWR’s 2009 and 2010 waste reduction in reportable categories. (Actual waste reports lag by one year, with the 2010 Sustainability Reports reporting 2009, 2011 reporting 2010 and 2012 reporting 2011.)

Table 7. Waste Reduction Amounts by Diversion Program and Activities

Category	Amount Reported (in tons) 2009	Amount Reported (in tons) 2010	Amount Reported (in tons) 2011
Total Business Source Reduction	10.60	16.51	16.7

2012 Annual Sustainability Report

Category	Amount Reported (in tons) 2009	Amount Reported (in tons) 2010	Amount Reported (in tons) 2011
Material Exchange	6.30	7.1	78.21
Salvage Yards	0.00	0	66.11
Totals	16.9	23.61	161.02
Recycling Activities			
Batteries Reclaimed	1.70	0	0.0
Beverage containers	192.10	11.05	6.69
Cardboard	81.00	178.77	162.94
Construction and Demolition	57.40	97.06	185.67
Glass	0.10	5.49	2.29
Mixed office paper	1,443.50	1408.24	1492.44
Newspaper	1.20	1.03	1.21
Other Materials	2,035.20	n/a	0.0
Other Plastic	0.60	3.42	.73
Phone Books	0.29	.5	.47
Plastic Pallets	2.29	2.00	.45
Sandblast Media recycled	2,061.20	0.0	0.0
Scrap Metal	291.70	170.42	301.39
Special Collection Events	51.00	10.0	0.0
Textiles, Rags	0.00	.6	0.0
White office paper	34.50	76.12	42.38
Totals	6,253.78	263.06	2,196.66
Composting			
On-site composting	128.00	24	30.0
Commercial Pickup of Compostables	0.00	193.41	311.04
Self-Haul Green-waste	0.00	22.94	140.35
Xeriscaping, grass cycling	1.70	8,806	17.0
Totals	129.7	9,046.35	498.39
Special Waste			
Concrete/Asphalt/Rubber	876.20	781	800.95
Rendering	12,255.30	202	204.75
Scrap Metal	98.20	11.74	493.61
Sludge	16.20	0	8.35
Tire Recycling	19.80	28.55	53.01
Wood Waste Recycling	0.00	188.06	177.87
Totals	13,265.7	1,211.35	1,738.54
Hazardous Waste			
Batteries	5.10	25	
Electronic Waste (Computers, TVs, Cell Phones, etc.)	41.10	2.64	2.99
Other (Stripping Products, Oil Filters, Paint Thinner, etc.)	11.70	16.30	29.90
Paint	0.30	2.09	3.42
Universal Waste	3.80	12.94	6.50
Used Oil/Antifreeze	165.51	192.02	275.07

2012 Annual Sustainability Report

Category	Amount Reported (in tons) 2009	Amount Reported (in tons) 2010	Amount Reported (in tons) 2011
Totals	227.51	250.99	317.88
Total Tons of Waste Diverted	19,666.60	12,246.08	4,597.3
Total Tonnage of Waste Landfilled	2,367.82	3,955.83	3,152.0
Total Tonnage of All Waste Produced	22,034.42	16,201.91	7,749.3

The following table shows the actual diversion rates for 2009, 2010 and 2011. Note that although the 2010 numbers for Landfilled waste is higher than in 2009, the total amount of waste produced is nearly 6000 tons less than 2009 and that 2011 is 9,000 tons less than 2010. When looking at waste reduction, recycling and buying of recycled products statistics, it is important to focus on the overall goal. In this case, not producing waste in the first place is far more important than waste diversion.

Table 8. 2009-2011 Per Capita Disposal Rates and the Waste Diversion Percentage

Waste Diversion	2009	2010	2011
Total Tonnage Actual Disposed in Landfill	2,842.0	3,175.0	3,152.0
Total Number Employees	2912	2899	3,273
Per Capita Disposal (lbs/emp/day)	5.3	6.0	5.3
Diversion Rate	89%	76%	59%

State Agency Buy Recycled Campaign

DWR is part of the State Agency Buy Recycled Campaign (SABRC). This campaign focuses on buying products that contain some percentage of previously used material or, as it is called, post-consumer content. The SABRC campaign requires all State agencies to follow the Public Contracts Code, which mandates that all agencies purchase recycled materials, sets the amount of the post-consumer content recycle percentage in these materials, and mandates the percentage of purchasing dollars spent on each category (Appendix D). Further, each State agency is required to report its progress annually in meeting recycled-content product purchasing requirements (Public Contracts Code section 12211(a)) to the California Department of Resources Recycling and Recovery (CalRecycle). The following section discusses DWR's latest information on SABRC from 2010 with a detailed explanation of DWR's efforts.

2010 State Agency Buy Recycled Campaign (SABRC) Report

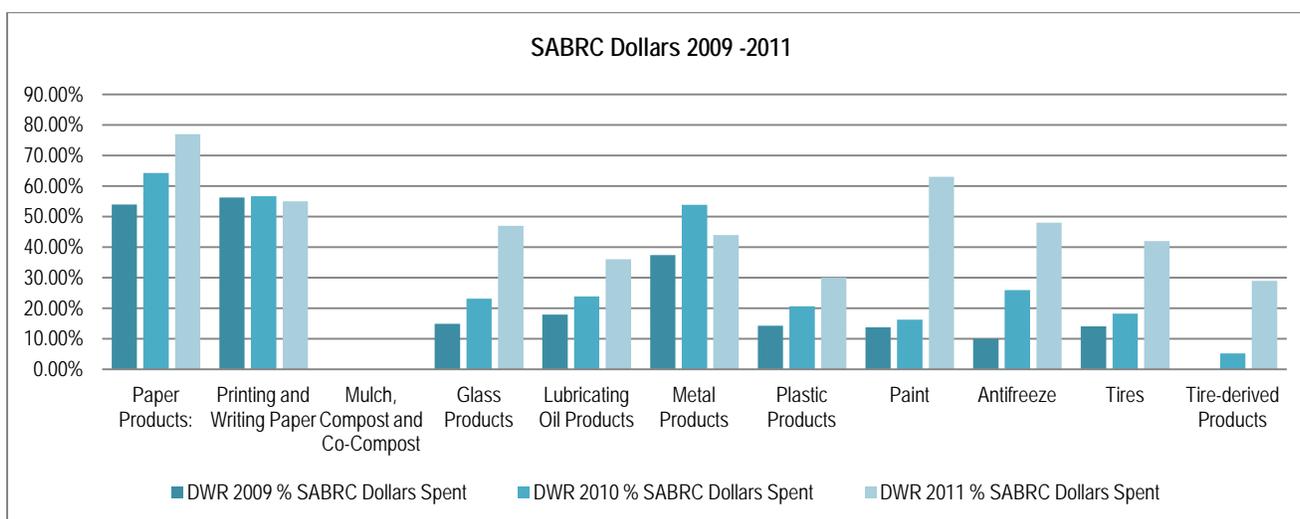
DWR follows State requirements and its own environmentally preferred purchasing policy. Table 2 details DWR's purchasing percentages in all 11 categories for years 2009, 2010 and 2011.

Table 9. 2009-2011 State Agency Buy Recycled Campaign Amounts

2012 Annual Sustainability Report

Required Category	% of SABRC Dollars Required	DWR 2009 % SABRC Dollars Spent	DWR 2010 % SABRC Dollars Spent	DWR 2011 % SABRC Dollars Spent
Paper Products:	At least 50 %	54.00%	64.34%	77%
Printing and Writing Paper	At least 50 %	56.30%	56.65%	55%
Mulch, Compost and Co-Compost	At least 50 %	N/A	N/A	N/A
Glass Products	At least 50 %	14.90%	23.12%	47%
Lubricating Oil Products	At least 50 %	17.90%	23.84%	36%
Metal Products	At least 50 %	37.40%	53.83%	44%
Plastic Products	At least 50 %	14.30%	20.63%	30%
Paint	At least 50 %	13.70%	16.25%	63%
Antifreeze	At least 50 %	10.00%	25.89%	48%
Tires	At least 50 %	14.10%	18.24%	42%
Tire-derived Products	At least 50 %	0%	5.21%	29%

Figure 4. 2009-2011 Graph of State Agency Buy Recycled Campaign Amount



In 2011, DWR continued to increase its percentage of SABRC compliance in all categories; most notable in paint, antifreeze and glass products. However, only three categories exceeded the mandated purchasing percentages shown in Table 2: paper products and printing and writing materials and paint. DWR spends no purchasing dollars on mulch, compost, and co-compost. However, in the remaining eight categories DWR falls short of its goals by 2 to 21 percent.

Glass Products. DWR improved its glass product purchases over 2010, nearly doubling the amount in 2011 coming to within 3 percent of its goal.

Lubricating Oil Products, Antifreeze, and Tires. In 2010, DWR increased its used oil products almost 7% over 2009 and in 2011 increased another 12%. However, DWR is having difficulty meeting the mandate to use 50 percent recycled products in these three categories. Despite the fact that the Department of General Services (DGS) contract for lubricating oil stipulates that all re-refined lubricating oil be at least 70 percent recycled oil, and that SABRC requires that least 50 percent of oil-purchasing dollars must be used to buy recycled oil, barriers to compliance with these mandates exist. Currently, most of DWR's oil servicing is now outsourced, and tracking the type of oil used is difficult. Further, most vendors that provide oil changing services are reluctant to suggest re-refined oil to the customer in order to avoid the appearance of "steering the customer" to a specific brand (Foundation, 2005).

A similar situation exists for recycled antifreeze, where the actual servicing is done by third-party vendors. Although recycling the antifreeze that is drained from its vehicles, DWR finds it difficult to track whether vendors are putting re-refined antifreeze into the vehicle. Even with these difficulties, DWR increased its use of recycled antifreeze to 48% in 2011, an increase of 23 percent from 2010.

Currently, DWR recycles all of its used tires. However, DWR is required to spend at least 50 percent of its tire-purchasing dollars on SABRC retreaded tires. DWR achieved 42 percent in 2011, an increase of 26 percent over 2010.

Tire-derived Products. In 2010, this area had a minimal increase over 2009. However, in 2011, DWR was able to increase its percentage by 24 percent. One barrier to achieving this goal is difficulty in obtaining information on products that contain tire-derived products.

Metal Products. Much of DWR's purchasing is of items for which new metal is seldom used (such as paper clips, staples, scissors, shelving, file cabinets, etc.) and for which used metal certification is nearly impossible to obtain. In 2010, metal products increased nearly 16% over 2009 but decreased to 44 percent in 2011. Under the difficulties in determining the metal certification, the percentage of recycled metal may vary considerably from year to year.

Plastic Products. Plastic products improved from 2009 to 2010 by an increase of 6% and by another 10 percent in 2011 for a total of 30 percent. However, DWR has little information on the recycled content of its plastic products. Most plastic products lack sufficient documentation to determine their post consumer content.

Recycled Paint Products. In 2010, the use of recycled paint inched up slightly by 3%. In 2011, that percentage had jumped to 63%, well over the 50% requirement. Historically, DWR staff has been reluctant to use recycled paint due to concerns that the paint might peel sooner, might not cover as well, might not spread easily or that the paint may not be available in the correct color. However, those concerns have been overcome as recycled paints have become much more reliable in performance.

Water Use Efficiency

The Director's Sustainability Policy has targeted water use at DWR to be reduced by 20 percent per employee by 2020. Key to fulfilling that directive is to determine what the current water use at DWR is per employee. DWR has 67 facilities throughout the state, ranging in size from approximately 1,200 employees at its main office to facilities that have only 1 to 5 employees. Some facilities are used only for emergencies. To accurately determine water use per employee, all facilities must report their water use, which means gathering all of the utility water meters' readings for the year. Due to the nature of some of the facilities, frequently these readings are combined with electricity meter readings and lumped under one billing code as utility expenses. These readings must be separated prior to determining water usage. In 2011, DWR began the necessary work to begin to determine its current water use.

By 2012, DWR had located 74 separate facilities with its own source of water. Table 9 details the water sources for the 74 facilities.

Table 10. DWR Water Sources and Number of Facilities

Water Source	Number of Facilities
State Water Project Aqueduct	18
State Water Project Aqueduct and DWR Water Treatment Plant	2
Wells on Site	4
DWR Treatment Plants	8
Municipal Water Source	24
Non Potable Water on Site	2
State Water Project Reservoir	1
Unknown	15
Total Facilities	74

Waste Water Reuse

2012 Annual Sustainability Report

Although not a target in the original 2009 Sustainability Policy, waste water reuse is a logical fit with the Sustainability Policy, the LEED building standards and DWR's mission. Waste water reuse will also help DWR meet its commitment to increasing its water use efficiency. Currently, no data is available on the amount and types of DWR's waste water. Waste water will be a focus in future data gathering efforts.

Goal - Climate Protection

Reduce Greenhouse Gases

Greenhouse gases from the burning of fossil fuels are driving climate change that is already affecting California's water resources. Assembly Bill AB32 requires California to reduce its greenhouse gas emissions to 1990 levels by 2020. Warmer temperatures, different patterns of precipitation and runoff, and rising sea levels will increasingly affect DWR's ability to manage water supplies and other natural resources. Adapting California's water management systems in response to climate change is one of DWR's most significant challenges. California has begun to respond to this challenge through executive orders and significant legislation to reduce greenhouse gas (GHG) emissions. For a list of State laws and executive orders, see Appendix E. For further information on DWR's climate change efforts, go to the Web site <http://www.water.ca.gov/climatechange>.

Climate Action Plan

During 2012, the CEQA Climate Change Committee began developing a programmatic approach—in the form of a Climate Action Plan and GHG Emissions Reduction Plan—to address climate change across all DWR programs and projects to comply with the new CEQA Guideline Amendments recently adopted by the California Natural Resources Agency. The Climate Action Plan will also help document DWR's compliance with AB32; set GHG reduction targets and reduction strategies; streamline environmental review; and demonstrate DWR's commitment to environmental stewardship, sustainability, and climate change mitigation and adaptation.

Procure Renewable Energy

DWR is charged with management of the State Water Project, the largest state-built, multi-purpose water project in the country. The State Water Project was designed and built to deliver water, control floods, generate power, provide recreational opportunities, and enhance habitats for fish and wildlife. DWR has contracts with 29 local water agencies for delivery of up to 4.2 million acre-feet of water per year. Water deliveries serve 24 million people and provide irrigation for 750,000 acres of farmland. The State Water Project is the third largest generator of hydropower in California producing over 1,900 MW and accounting for 2 percent of California's total generating capacity. Hydropower is classified as renewable energy under California law.

Although DWR produces 1,900 MW of renewable hydropower annually as a result of the moving of water, it is not enough to offset the amount of energy needed. DWR needs to purchase additional power. As

2012 Annual Sustainability Report

a result, DWR is both a consumer and producer of electricity. Currently, the majority of energy purchased by DWR is produced by the use of fossil fuel (See table 3). In 2012, the SWP consumed 8.5 million MWh to deliver 3.6 million acre-feet of water, representing 3 percent of total electricity usage in California. This energy was derived from SWP and off-Aqueduct hydrogeneration resources (63 percent), purchases from CAISO market (27 percent), and from DWR's contract to receive electricity from the Reid Gardner coal-fueled power plant in Nevada (10 percent). Table 9 shows the emissions from 2007 to 2012.

Table 11. 2007-2012 State Water Project Total CO2 Emissions

State Water Project CO2 Emissions (Million Metric Tonnes Carbon Dioxide)					
Source	2007	2008	2009	2010	2012
Reid Gardner Unit 4	1.4	1.0	1.0	0.8	0.9
Purchases (Unspecified Energy)	1.7	1.4	1	1.1	1
Gross Emissions	3.1	2.4	2.0	1.9	1.9
Surplus Sales	0.7	0.8	0.4	0.4	0
Net Emissions	2.3	1.6	1.6	1.5	1.9

DWR's greenhouse gases reduction plan includes discontinuing the purchase of electricity from the Reid Gardner Unit 4 in 2013 when the current contract expires. Discontinuing the Reid Gardner contract will allow DWR to meet its 2020 goal of 50% reduction in GHG emissions. However, DWR will continue to reduce its GHG emissions ahead of schedule. Part of the continuing reduction will occur in the procuring of renewable energy for State Water Project operations.

Table 12 below shows DWR's plan for reducing GHG emissions by increasing the annual amount of renewable energy that it will purchase in future years. In each year, additional renewable energy is purchased, adding to the previous year's total, i.e., Year 1 = 36 GWh, Year 2 = 36 GWh + 36 GWh from year 1, Year 3 = 36 GWh + 72 GWh from prior years. The Renewable Energy Procurement Plan is based on achievement of DWR's Long-Term Goal and used a long-term average of emissions over a 20-year period since 1990 and forecasted power requirements to develop the schedule of renewable resource procurements. The Renewable Energy Procurement Plan is designed to incrementally reduce GHG emissions from operation of the SWP so that total operational emissions fall to 80% below 1990 levels by 2050. DWR structured the Renewable Energy Procurement Plan to be more than adequate to meet its Near-Term Goal for 2020. The reason for this approach is that it will enable DWR to initiate renewable procurement in the short-term and expand that procurement as the renewable energy market matures. This approach will also provide the

smoothest ramp up of renewable power procurement as a base to build on in order to meet its projected Long-Term Goal for 2050. DWR will monitor emissions trends and modify the schedule for procurement of renewable energy, as necessary, to meet its Near Term and Long-Term Goals.

It should be noted that the renewable energy purchased through the Renewable Energy Procurement Plan will, for the most part, offset energy that is currently purchased from unspecified sources or other sources of power that have disproportionally high rates of emissions per MWh of energy supplied.

Table 12. DWR's Renewable Energy Procurement Plan

OP-3 Renewable Energy Procurement Plan	Annual Increase in Renewable Energy Procurement Rate	End of Period Portfolio Target	Annual Emissions Reduction at End of Period
2010-2020	36 GWh/yr	360 GWh	157,320 mtCO2e/yr
2021-2030	72 GWh/yr	1,080 GWh	471,960 mtCO2e/yr
2031-2040	108 GWh/yr	2,160 GWh	943,920 mtCO2e/yr
2041-2050	144 GWh/yr	3,600 GWh	1,573,200 mtCO2e/yr

Sustainability and Lodi Energy Center (LEC)



Figure 5. Sustainability is built into the Lodi Energy Center

Photo Courtesy: Siemens Energy

The LEC is more than just a state of the art energy plant. In building and design the facility utilized many sustainability concepts including using available resources more efficiently. Located on a 4.4-acre site adjacent to one of NCPA's existing combustion turbine projects (CT#2), allowed the new power plant to take advantage of existing infrastructure, easements, and corridors for gas and power lines. A new 2.7-mile gas pipeline was placed parallel to the one serving CT#2.

Furthermore, the LEC was able to tie directly into the power grid through the existing switchyard. This means that the LEC did not need to construct new transmission lines to the project participants.

LEC has More Sustainable Water Use Practices

The LEC is located adjacent to the White Slough Water Pollution Control Facility (WPCF), which treats wastewater from the Lodi. The LEC uses WPCF's treated wastewater in its cooling towers. This is consistent

with a new trend benefiting public power—cities across the country are finding that wastewater treatment and electricity production make good neighbors

LEC uses Integrated Fast-Start Technology

The LEC uses “Flex-Plant 30” technology which enables a high level of operating flexibility. The Flex-Plant 30 technology allows for frequent starting or cycling of the power plant. Its startup time of 30 minutes or less can result in a CO reduction of over 200 tons per year when compared to standard F-class combined cycle plants. The SCC6-5000F Flex-Plant 30 is a highly efficient combined cycle plant designed for intermediate to continuous duty that is capable of daily cycling at efficiencies of more than 57%. Using the Siemens SGT6-5000F gas turbine as the prime mover, the plant supplies high power density while requiring a relatively small plant footprint.

Plant startup times are reduced by up to 50% due to integration of the following fast-start features that promote more rapid heating of the HRSG by bypassing the traditional startup hold points and allowing faster ramping of the combustion turbine: the three-pressure reheat HRSG with Benson once-through technology, the high-capacity steam attemperation, and full-capacity steam bypass systems. In addition, the innovative piping warm-up strategies, the Siemens steam turbine stress controller, the modern water treatment system, and the optimized plant standby that uses auxiliary boiler steam to maintain vacuum all help to promote faster startups. The plant is also equipped with a small auxiliary boiler that is used to produce sparging steam and to maintain steam seals during startup and condenser vacuum during overnight shutdowns.

Reduced Environmental Compliance Issues

The plant’s projected annual emissions are 28 pounds of nitrogen oxides and 369 pounds of carbon monoxide (CO) for a start. The reduced amount of CO means that the annual emissions produced will be less than 100 tons, eliminating the need for a [Prevention of Significant Deterioration] permit from the U.S. Environmental Protection Agency [EPA].

Additional Climate Protection Practices

DWR has begun a series of efforts that both adapt to climate change as well as mitigate certain climate changing activities. Following are the key steps that form DWR’s climate protection practices.

Regional Climate Planning and Management. California lies within multiple climate zones, and each region of the state will experience climate change differently. Some climate impacts will be unique to a region as will be the economic and environmental effects. This means that adaptation strategies must also be regionally appropriate. Here is where IRWM provides a critical framework for actions to address the

uncertainties presented by climate change, as well as other risks to California's water future. Further, for every IRWM plan, water use efficiency must be a foundational action and a key part of every water agency's portfolio. In many instances, water conservation achieves not only water demand reduction but energy demand reduction as well. By reducing energy demand, reductions in GHG emissions are achieved as well.

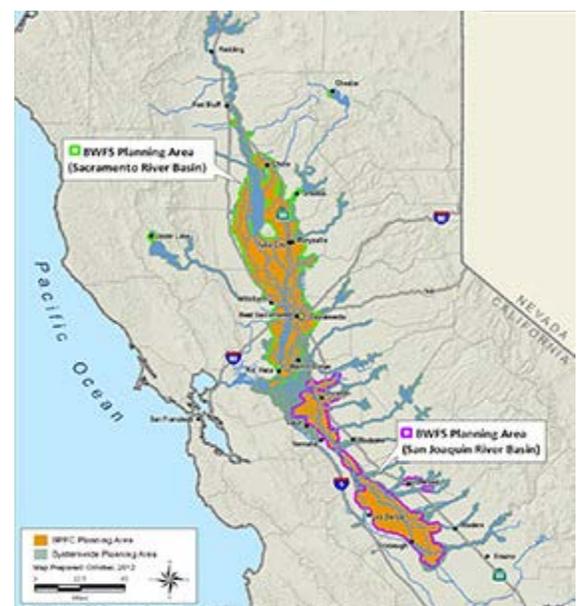
Flood Protection. DWR completed its Central Valley Flood Protection Plan (CVFPP) that considered climate change impacts to flood management, due in 2012. Three major flood management planning efforts are underway to refine the State Systemwide Investment Approach and inform the CVFPP 2017 Update and are described below.

State-Led Basin-Wide Feasibility Studies

The 2012 Central Valley Flood Protection Plan (CVFPP) recommends a State Systemwide Investment Approach for flood risk management in the Central Valley. The California Department of Water Resources has initiated Basin-Wide Feasibility Studies (BWFS), along with associated Regional Flood Management Planning and the Central Valley Flood System Conservation Strategy (Conservation Strategy), to advance both ongoing and long-term implementation of the State Systemwide Investment Approach. Scheduled to be completed by mid-2016, DWR anticipates accomplishing the following through the BWFS:

- Refine the scale and location of major system improvements for flood management
- Assess State interest in regional flood management improvements identified through locally-led Regional Flood Management Planning
- Integrate systemwide environmental conservation with flood system improvements
- Inform the 2017 update to the CVFPP and FloodSAFE financing plan by:
 - Establishing a framework for evaluating multi-objective project benefits, identifying beneficiaries, and allocating costs on a systemwide scale
 - Refining the magnitude and types of State

Figure 6. Central Valley Flood Protection Planning Areas



2012 Annual Sustainability Report

investments needed in each basin

- Identifying implementation considerations for system improvements, including project sequencing and State priorities
- Identify key plan elements that can be further developed, in an efficient and timely manner, in (1) ongoing federal cost-share feasibility studies, or (2) new federal cost-share feasibility studies.

Central Valley Flood System 2012 Conservation Framework and 2017 Conservation Strategy

Central Valley Flood System Conservation Strategy (CS) is outlined in the Conservation Strategy Framework. The goals addressed within the Framework include: contributing to the recovery and stability of native species populations and overall biotic community diversity; improving and enhancing natural dynamic and geomorphic processes; increasing and improving the quantity, diversity, quality, and connectivity of riverine habitats, including agricultural and ecological values; and integrating wildlife friendly farming practices into conventional agricultural farming operations.

Central Valley Flood System Conservation Framework and Strategy 2012-2013 Funding Cycle

In accordance with approved Funding Guidelines, a multi-agency Project Evaluation Team (PET) met in February 2013 to evaluate eleven proposals submitted in response to the first Proposal Solicitation Package (PSP) issued in September 2012. The PET was comprised of personnel from DWR's FloodSAFE Environmental Stewardship and Statewide Resources Office and Division of Flood Management, California Department of Fish and Wildlife, the U.S. Fish and Wildlife Service, and the NOAA National Marine Fisheries Service. The PET review of the PSP projects in February 2013 culminated in the recommendation that eight of the eleven proposals be recommended for funding; this recommendation was conditionally approved by the Director.

Recently, DWR determined that due to restrictions with the Proposition 1E bond funds, with the exception of acquisitions, only those proposals from public agencies could proceed with funding agreements at this time. Agreements with private entities will be pursued as service contracts; private entities will have to submit proposals in response to specific Requests for Proposals (RFPs) during a competitive bid process that meets the Department of General Services' requirements.

DWR has therefore issued its final funding recommendations for the 2012-2013 Funding Cycle. The following five (5) proposals are being conditionally awarded funding.

2012 Annual Sustainability Report

Table 13. Central Valley Flood Protection 2012-2013 Funding Proposals

Project Title	Applicant	Total Project Cost	Grant Amount Requested	Recommended Grant Amount
TRLIA Feather River Floodway Corridor Restoration Project	Three Rivers Levee Improvement Authority (TRLIA)	\$9,130,289	\$4,958,000	\$4,440,000
American River Urrutia Property Habitat Enhancement	Sacramento Area Flood Control Agency (SAFCA)	\$5,153,813	\$4,999,213	\$4,999,213
State of California West Sacramento Floodplain Mitigation Bank	West Sacramento Area Flood Control Agency (WSAFCA)	\$4,996,957	\$4,996,957	\$4,996,957
Riparian Brush Rabbit Refugia, Census, and Reintroduction	U.S. Fish and Wildlife Service (USFWS)	\$5,031,798	\$4,784,798	\$3,929,798
1,000-Acre Ranch Property Transfer	The Nature Conservancy	\$404,376	\$401,415	\$401,415

Regional Flood Management Planning.

The 2012 CVFPP identifies nine regions (Upper Sacramento, Mid-Sacramento, Feather River, Lower Sacramento, Delta-North, Delta-South, Lower San Joaquin, Mid-San Joaquin, and Upper San Joaquin), although some regions have partnered together, resulting in six planning regions. These six regions are the Upper/Mid-Sacramento River, Feather River, Lower Sacramento River/Delta North, Lower San Joaquin River/Delta South, Mid-San Joaquin River, and Upper San Joaquin River.

Each of the six planning regions has formed a working group that is led by a local agency and consists of representatives from flood management agencies, land use agencies, flood emergency responders, permitting agencies, and environmental and agricultural interests. The regional plans will present local agencies' perspectives of flood management with a prioritized list of projects that need to be implemented to reduce flood risks in each region. Each plan will also present an assessment of the proposed project costs and benefits, considering the projects' potential contributions to an integrated multi-benefit and basin-wide solution.

Improve Management and Decision-Making Capacity.

Determining the impacts of climate change on the varying regions of the state requires that data about our environment be collected and analyzed in a consistent and comprehensive way. Improved data collection and a robust monitoring network will help identify trends, provide for better real-time system management, and evaluate and, if necessary, correct adaptation strategies. In addition, sea level rise presents a particular dilemma for water planners because of the great uncertainty around ice sheet dynamics, as well as the

potentially large impacts. Developing more focused research on sea level rise and other topics can help narrow the range of uncertainty in climate changes.

Climate Change Analyses. All climate change analyses in DWR environmental documents are now reviewed by DWR's CEQA Climate Change Committee, which was formalized in June 2010. Through these reviews the committee has developed environmental analysis methodologies and reference materials for use by DWR staff and consultants. These guidance documents provide a consistent approach to conducting project-specific environmental analyses for CEQA compliance documents, biological assessments, permit applications, and other environmental needs. Because of the evolutionary nature of climate change analysis, these documents will be updated periodically to include the most current legal rulings and state-of-the-science on the subject.

Greenhouse Gas Offsets. On Earth Day in 2010, DWR and Sacramento Municipal Utility District (SMUD) jointly announced a new partnership in which SMUD would provide 33 percent renewable energy and 33 percent carbon offsets for DWR's retail electrical and natural gas use, respectively, based on its 2008 retail consumption data. DWR now participates in SMUD's Commercial "Greenergy" Program whereby SMUD matches 33 percent of DWR's estimated retail electricity needs with Greenergy purchases from renewable resources such as landfill gas, wind, solar, and small hydroelectric plants. In addition, SMUD matches an additional 40 percent to the amount DWR pays under the agreement to build new, cleaner energy resources, reducing the need to build future polluting power plants. Through SMUD's Carbon Offset program, DWR reduces the effects of its GHG emissions related to its natural gas use.

Goal - Environmental Stewardship

DWR has been engaged in developing and adopting environmental stewardship as a business strategy since 2006/2007, including the establishment of the new FloodSAFE Environmental Stewardship and Statewide Resources Office; identifying environmental stewardship as a foundational action in the California Water Plan; and as an objective and outcome of the Central Valley Flood Protection Plan development. DWR has made Environmental Stewardship an integral part of its daily work as the following quote from DWR's Environmental Stewardship Policy, makes clear:

DWR managers will embrace environmental stewardship as part of their responsibilities. As managers develop and deliver reliable water supplies and provide for flood protection for the State's residents, they can incorporate environmental stewardship in several ways:

- *Integrate ecosystem protection and restoration into water storage and conveyance and flood control/management planning*
- *Include environmental stewardship and ecosystem protection and restoration as a criteria in project funding decisions for all DWR programs*
- *Plan for conservation, restoration and maintenance of the biological diversity and natural physical processes of aquatic and related terrestrial ecosystems*

DWR has updated its Water Resources Engineering Memorandum (WREM) 58A, now known as WREM58B. This WREM provides guidance and direction to Department of Water Resources (DWR) staff and management by implementing DWR's Environmental Stewardship Policy ([DAM 2140](#)), as well as meeting DWR's continuing obligation to comply with all environmental laws and other regulatory requirements.

DWR Green Priorities Pilot Project

Payroll Deduction—Monthly Transit Pass Pilot Program

State employees may participate in a program aimed at reducing the number of single occupant vehicles on urban freeways at peak commute hours. As an incentive, the program provides a 75 percent reduction up to \$65 toward the cost of monthly transit passes and tickets. Currently, the mass transit reduction pass program has approximately from 250 to 500 employees a month who buy passes. At an estimated commute of 20 miles per employee per day, total employee travel is potentially reduced from 1.25 million to 2.50 million miles per year with a commensurate reduction in GHG emissions and air pollution. By easing purchase of the transit pass, it is anticipated that ridership will increase and a corresponding reduction in GHG and air pollution will result. The payroll deduction pilot program was implemented in 2012.

Other Sustainability Efforts

Paper Reduction Efforts - Documentum Project

Paper management and the vital information it represents, is a critical task for DWR. In 2008, in meeting its 5 year inventory requirement to the Department of General Services (DGS), DWR reported a total of 33,743 cubic feet of files. The cubic footage included:

- 4,804 file cabinets and desk drawers of paper.
- 402,014 boxes of paper files (both office storage and offsite long-term storage).
- 32 boxes of microfiche.
- 156 boxes of microfilm.

Additionally, the inventory included a total of 199 terabytes of unstructured electronic files.

That storage included:

- 18 terabytes of electronic files on DWR servers.
- 1 terabyte of files on compact discs.
- 180 terabytes of files on desktop personal computers which includes 7,971 Word, Excel & PowerPoint Documents

What these numbers do not reveal are the various types of vital information contained in these records. Examples include: DWR's various licenses, including federal licenses to operate hydropower plants; various permits necessary to carry out DWR's mission; legal records including critical court decisions, administrative records of decision and memorandums of understanding with other governmental agencies; historical information on myriad water resources, such as watershed information and data, rainfall records, and evapotranspiration records. Additional information that must be maintained includes project documentation and blueprints of the numerous State Water Project facilities throughout the state, records of environmental restoration efforts and endangered species information and protection efforts. The above enumeration is just a sample of the vast quantity of vital information and public records maintained by DWR.

The sheer quantity of this information does not reduce easily; it can only be stored differently. That storage, regardless of format, comes at a cost. Although digital storage has many advantages, it still has its own storage requirements that involve significant amounts of time, effort, expertise and equipment. Additionally, all archival, current and future paper information still needs to be translated to the new medium and the information must be able to be retrieved. With the amount of information being generated by new DWR projects and programs each year, as well as the need to translate over 50 years of information into a new medium, the task of paper reduction takes on a daunting perspective.

2012 Annual Sustainability Report

DWR originally thought to take an incremental approach in its effort to design, develop, and implement Documentum. The implementation focused on two (2) business areas: the Imaging and Records Management Unit (IRMU) (an organization within the Division of Management Services) and the Division of Engineering (DOE), with an "Enterprise" foundation to be established for the future. However, the ever increasing amount of electronic information being generated over the last 2 years forced DWR to consider implementing Documentum Department wide. Work on the Enterprise side was slowed and the focus of the effort shifted from the Enterprise side of Documentum to what is known as the "Organizational" side. Electronic space, known as "cabinets", was set up department wide and the Organizational side of Documentum was opened for the storage of the daily work from all DWR employees. This had the benefit of slowing the production of paper records while forcing the individual personal computer electronic files generated by the daily work process into centrally located electronic files that may be accessed by all DWR employees. This effort has been paying off, with DWR employees becoming accustomed to the new electronic storage system while gaining experience with using DWR's electronic information retrieval systems.

However, that does not mean that DWR has yet made the transition to all digital storage. It is anticipated that paper reduction efforts at all levels will continue years into the future, while historical records are converted into digital media and existing and new forms of digital media being brought into order through new library methods and library science. The next 5 year record inventory is due in 2013. The results of that inventory will help determine the next Documentum implementation steps.

Life Cycle Analysis Committee

Life cycle analysis is a tool that reviews all of the manufacturing steps involved in making a product or service. Its purpose is to determine between comparably priced goods, whether or not one product or service is more environmentally friendly than the other. Computer based lifecycle analysis tools vary in scope and price. DWR has established a small committee to explore the usefulness of life cycle analysis for purchasing needed goods and services. The committee will study various computer tools and apply life cycle analysis principles to commonly purchased products to see if DWR could make better overall sustainable choices.

The committee reviewed several products used by DWR including concrete and batteries. However, the ability to do a life cycle analysis at DWR is hampered by the lack of appropriate life cycle analysis tools as well as the inability to devote resources to this time intensive process. The committee agreed that this was an effort better handled through the Environmentally Preferred Purchasing Program at this time and to disband the committee.

Sustainability Indicators California Water Plan

The *California Water Plan* provides a collaborative planning framework for elected officials, agencies, tribes, water and resource managers, businesses, academia, stakeholders, and the public to develop findings and recommendations and make informed decisions for California's water future. The plan, updated every five years, presents the status and trends of California's water-dependent natural resources; water supplies; and agricultural, urban, and environmental water demands for a range of plausible future scenarios. The *California Water Plan* also evaluates different combinations of regional and statewide resource management strategies to reduce water demand, increase water supply, reduce flood risk, improve water quality, and enhance environmental and resource stewardship. The evaluations and assessments performed for the plan help identify effective actions and policies for meeting California's resource management objectives in the near term and for several decades to come.

The California Water Sustainability Indicator Framework is a part of the *California Water Plan Update 2013*. As currently envisioned, the Framework is composed of a cycle of process steps that build upon each other. The cycle begins with defining what is meant by sustainability and other terms and completes one cycle by informing policy and decision-making. The process is intended to be part of a cycle of adaptive learning and action. The indicators and the process of developing, analyzing, and interpreting them are not intended to stand alone, so links are described with regional planning, ecosystem services, and the idea of a water footprint.

The Framework is currently in development until the Water Plan Update 2013 is finalized. Until then, it will undergo periodic review by the Water Plan Sustainability Indicators Workgroup with interagency participation, the Public and Tribal Advisory Committees, and other bodies and individuals.

Sustainability Education and Awareness Efforts

Sustainability Collaboration Portal

The Sustainability Collaboration Portal is a web based tool that serves a variety of functions. More flexible than a web site, it allows interactive learning through the sharing of documents, the ability to have online discussions as well as being able to develop "wikis" on various Sustainability topics. The portal's functions include the ability to calendar events, host other Web linked resources and handle e-mail servers, host forums, etc. Further, the Sustainability portal has the ability to contain multiple groups and organizations by maintaining a viewer privacy protocol. Dedicated passwords determine the content that a particular viewer may see. This feature allows numerous topics to be hosted on the portal as needed but keeping the content relevant to the respective viewers.

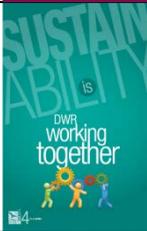
2012 Annual Sustainability Report

Currently, DWR is engaged in several activities designed to connect with other California state agencies in sustainability efforts. The collaboration portal serves as an important connection for sharing information, ideas and links with one another. The flexibility of this Web-based tool allows significant savings of travel time and facilitates communication between agencies.

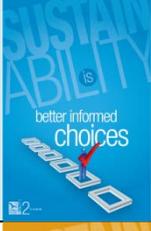
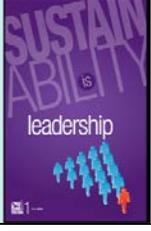
Sustainability Awareness Campaign

DWR is a large agency with numerous field offices throughout the state. For sustainability efforts to be effective, awareness as well as education of sustainability principles and practices is important. In 2012, an awareness and education campaign was developed on various aspects of sustainability as it relates to DWR and DWR employees. The program consists of seven videos featuring Resources’ Secretary John Laird, and DWR’s Director Mark Cowin as well as various DWR management staff. The videos and corresponding messages were designed to help DWR employees understand how sustainability relates to their daily work. Filming and presenting of the videos and development of educational materials was completed in 2012. The following table shows the popularity of each video with the actual number of views for each message. Although the message “Sustainability is resources for future generations” was the sixth message, it clearly resonated with DWR employees.

Table 14. DWR's 2012 Sustainability Education and Awareness Campaign

Order Shown	Popularity Ranking	Message Poster	Video and Portal Page	Pageviews
6	1.		/resources-for-future-generations	842
4	2.		/DWR-employees-working-together	771
7	3.		/sustainability-is-ongoing	654

2012 Annual Sustainability Report

5	4.		/sustainability-is-environmental-stewardship	641
2	5.		/better-choices	531
3	6.		/keeping-good-company	475
1	7.		/leadership	412

All videos may be viewed at <https://sustainability.water.ca.gov/sustainability-awareness>.



Figure 7. Electric Car Demonstration, Earth Day 2012

Earth Day Activities

Earth Day activities for 2012 featured an electric car demonstration which generated considerable interest. Over 200 DWR employees were able to ask questions, sit in the vehicles and generally had a convenient opportunity to see the latest in electric vehicles.

Climate Change Class 201

DWR began developing classes for employees on climate change. Climate Change 201 is a more advanced class and contains a section on Sustainability and how it is related to Climate Change efforts. The first Climate Change 201 class was offered in January 2012, with the class being offered on a quarterly basis. Over 80 DWR employees took the class in 2012.

DWR Grant Programs for Sustainability

Following is a detailed summary of the various grant programs funded by DWR. The funding provided by DWR promotes more water conservation and water use efficiency programs and helps local and regional entities become more sustainable.

Local Groundwater Assistance Program

The Local Groundwater Assistance Program supports agricultural and urban water use efficiency implementation projects or studies that carry out the goals of the California Bay Delta Program's Water Use Efficiency Program. This program provides grants of up to \$250,000 for groundwater data collection, modeling, monitoring, and management studies; monitoring programs and installation of equipment; basin management; development of information systems; and other groundwater related work.

Integrated Regional Water Management (IRWM) Program

The IRWM Program is intended to promote and practice integrated regional water management to ensure sustainable water uses, reliable water supplies, better water quality, environmental stewardship, efficient urban development, protection of agriculture, and a strong economy.

The Department of Water Resources (DWR) has supported IRWM with grants and technical services to regional water management groups (RWMGs) statewide. Forty-eight RWMGs now cover 87% of the state's geographic area and 99% of the population. The names and locations of individual IRWM regions and

RWMGs, along with other information, can be found at
<http://www.water.ca.gov/irwm/grants/fundingarea.cfm>.

Urban Streams Restoration Program (USRP)

The USRP funds grants to local communities for projects to reduce flooding and erosion and associated property damages; restore, enhance, or protect the natural ecological values of streams; and promote community involvement, education, and stewardship. Since 1985, the program has provided over 240 grants ranging from \$1,000 to \$1 million to communities throughout California. The projects have included stream cleanups, bank stabilization projects, revegetation efforts, recontouring of channels to improve floodplain function and occasional acquisition of strategic floodplain properties or easements.

Agricultural Water Conservation Program

The Agricultural Water Conservation Program makes loans to local public agencies and incorporated mutual water companies to finance feasible, cost-effective agricultural water conservation projects or agricultural programs to improve water use efficiency. A total of \$28 million is available for the Agricultural Water Conservation Program with up to \$5 million for each project.

Under this 2012 funding cycle, approximately \$15 million in grant funding is available. Eligible projects include:

- Agricultural Water Use Efficiency Implementation Projects that result in water savings, increased in-stream flow, increased water quality, and increased energy efficiency
- Agricultural Water Use Efficiency Technical Assistance, Planning, Feasibility Studies, Research and Development, Training, Education, Public Outreach, and Pilot projects.

DWR Outreach Efforts for Sustainability

DWR recognizes the value of sharing information and forming partnerships in developing and achieving sustainability throughout the department. These outreach efforts are discussed below.

Collaboration on Recycling and Environmentally Preferred Purchasing Programs

Other activities include meeting with other California agencies regarding recycling and environmentally preferred purchasing via monthly meetings, participating in sustainability conferences and workshops, and meeting with other outside agencies' sustainability coordinators to discuss implementation of sustainability activities.

Collaboration on Climate Change Efforts

DWR has several efforts under way that reach out to local communities and nongovernmental organizations. One such effort is the “Climate Change Handbook for Regional Water Management,” which became available in the summer of 2012. Jointly developed by DWR, U.S. Environmental Protection Agency Region 9, U.S. Army Corps of Engineers, and Resources Legacy Fund, this handbook provides a framework for integrating climate change analysis into regional water management planning. The handbook provides several case studies highlighting successful analyses performed by large and small water management agencies throughout the western United States.

Presentations

DWR staff made approximately 51 presentations on climate change, including several keynote addresses, including at interstate and international venues (a list is provided as Appendix G).

Workgroup Participation

Regional DWR staff participated in the following workgroups: the California Department of Fish and Game Stakeholder Workgroups; the Climate Action Team (CAT) Biodiversity Working Group; the CAT Climate Change, Land Use, and Infrastructure (CCLU-In) Working Group; Delta Conservancy; California Landscape Conservation Cooperative (CA-LCC); the Bay Area Ecosystem Climate Change Consortium; and the California Water-Energy Coalition (CalWEC), which was formed in 2011 by the Water Research Foundation to bring together water and electricity providers to share information and increase reliability of these resources.

Committees

Staff was also an active participant in the Communications Committee of CalWEC. As an Interim Steering Committee member of the CA-LCC, staff helped launch the CA-LCC in southern California in January and develop the CA-LCC charter. Staff will continue to represent DWR on the full Steering Committee of the CA-LCC, which convened for the first time in September and held an in-person meeting in December.

Collaboration on Water Conservation Programs

DWR has an urban planning assistance program to assist urban water suppliers with preparing comprehensive plans, implementing water conservation programs, and understanding the requirements of the Water Conservation Act. DWR conducted a series of ten workshops throughout the state to assist urban water suppliers, consultants, planners, and other interested parties in preparing Urban Water Management Plans. Each workshop was well attended and provided step-by-step guidance and information on the following subjects:

2012 Annual Sustainability Report

- Overview of Urban Water Management Plans
- SB X7-7 Water Conservation
- 2010 UWMP Requirements
- 2010 UWMP Guidebook
- Online Data Submittal

Additionally, DWR held two webinars to provide information on setting baselines and urban water use targets.

Appendix A DWR's Sustainability Policy Memos

State of California

California Natural Resources Agency

Memorandum

Date: April 22, 2009

To: All DWR Employees

From: Department of Water Resources

Subject: Sustainability Workgroup

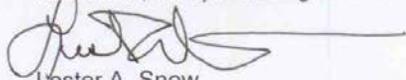
As we celebrate Earth Day this year, the Department of Water Resources (DWR) must resolve to carry out its mission in a more sustainable manner, by minimizing its impact on the environment and reducing its greenhouse gas (GHG) emissions. DWR is already responding to the Governor's Climate Change Initiative (Executive Order S-03-05), Green Building Initiative (Executive Order S-20-04), the Global Warming Solutions Act (AB 32), and State Agency Recycling and Waste Diversion (AB 75) requirements by making changes to the Department's business operations and the State Water Project.

We must now build upon these existing efforts to become a sustainability leader within State government and the California water community. These changes will not only make us better stewards of the environment, but should also yield long-term cost savings to State taxpayers through reduced operations and maintenance costs, as well as provide healthier and more productive work environments for staff and visitors. Overall, sustainability must be integrated into every aspect of DWR's work.

DWR's goals and measures for ecosystem stewardship and sustainability will be achieved through implementation of DWR's new Sustainability Policy (attached). Implementation of the policy will explicitly consider technical feasibility and cost-effectiveness of changes, utilize environmental management systems, and focus on the following business areas:

- Climate Protection Practices;
- Ecosystem Stewardship;
- Sustainable Business Operations;
- Greening Facilities;
- Greening Fleet;
- Recycling and Waste Management; and
- Environmentally Preferable Procurement.

With this memo, I am creating a Sustainability Workgroup, under the leadership of John Engstrom and Dale Hoffman-Floerke, to collaboratively develop the guidelines for implementing the new Sustainability Policy, informed by industry best practices, by no later than April 2010. Please join me in supporting John and Dale in this exciting new effort, and promoting a more sustainable future for DWR.



Lester A. Snow
Director

DWR 9045 (Rev. 1/09)

Memorandum

Date: **SEP 20 2010**

To: All DWR Employees

From: Department of Water Resources

Subject: Sustainability Targets

Over the past two years, the Department of Water Resources (DWR) has made notable progress in carrying out its mission in a more sustainable manner, by minimizing its impacts on the environment and reducing its greenhouse gas (GHG) emissions. DWR's goals and measures for ecosystem stewardship and sustainability will be achieved through implementation of DWR's Sustainability Policy signed in April, 2009.

As we build on this effort to be a sustainable leader within State government and the California water community, we must now establish clear and measurable targets to accomplish these goals. As part of that implementation, I am establishing the following initial sustainability targets for DWR, specifically for the environmental aspects of water, wastewater, energy, carbon, and waste:

- *Water* - 20 percent reduction in per employee water use by 2020;
- *Wastewater* - Incorporate recycled wastewater into facilities when technically feasible and cost-effective;
- *Energy* - Progressive acquisition of 360 GWh of renewable energy resources by 2020; reduce grid-based retail energy demand 20 percent by 2015; ensure Energy Star purchasing;
- *Carbon* - 50 percent reduction below 1990 levels by 2020; 80 percent reduction below 1990 levels by 2050; and
- *Waste* - 50 percent diversion from waste stream by 2020.

The Department's Sustainability Workgroup will work with individual DWR organizations to assist in meeting these targets. The Workgroup will also annually review these targets and issue a report card on our progress towards meeting these targets every April.



Mark W. Cowin
Director

Appendix B

Statutory Requirements for Waste Reduction and Recycling

DWR is subject to Public Resources Code sections 42920–42982 requiring State agencies to comply with a 50 percent diversion rate from landfills by 2004 and the submission of an annual report. The first report was due September 1, 2010, with an annual report due on or before September 1 each year thereafter. The annual report to the board must, at a minimum, include all of the following:

1. Calculations of annual disposal reduction.
2. Information on the changes in waste generation or disposal due to increases or decreases in employees, economics, or other factors.
3. A summary of progress made in implementing the integrated waste management plan.
4. The extent to which the state agency intends to utilize programs or facilities established by the local agency for the handling, diversion, and disposal of solid waste. If the State agency does not intend to utilize those established programs or facilities, the State agency shall identify sufficient disposal capacity for solid waste that is not source reduced, recycled, or composted.
5. Other information relevant to compliance with Section 42921.

In 2008, the Per Capita Disposal Measurement System Act (SB 1016, Wiggins, Public Resources Code Section 42920–42927, 2008) was passed. This changed the way State agencies and local governments measure their progress toward meeting the statutory waste diversion mandates. Under this Act, State agencies are still required to maintain the 50 percent waste diversion requirement as mandated by California’s Integrated Waste Management Act of 1989. However, with the passage of the Per Capita Disposal Measurement System Act, State agencies and large State facilities use per capita disposal as an indicator of their progress toward meeting the mandate. As a result of this statutory change, DWR now calculates waste reduction both as a percentage of total waste generated and as a per capita total.

DWR Waste Reduction and Recycling Policy. In addition to the statutory requirements, DWR has its own policy on waste reduction and recycling. This policy requires employees to engage in waste reduction as they carry out their daily duties. Although many of these efforts are not quantified, the daily efforts of DWR’s employee are instrumental in reducing waste.

Policy on Waste Reduction and Recycling (Rev. Apr 2012). DWR is committed to good stewardship of the environment by managing and conserving California's resources through recycling and the reuse of materials to the extent possible. A key element of that stewardship is the reduction of the amount of solid waste going from our work locations into landfills.

In accordance with Public Resources Code Sections 42920–42928, to effectively implement DWR's Waste Reduction and Recycling program, employees will engage in waste reduction practices as they apply to their duties and responsibilities. Specifically, employees shall participate in recycling programs and be mindful of opportunities to reduce waste in their own job, office, Division, Region, or Field Division.

Recyclable materials include but are not limited to paper, glass, cardboard, plastic, used motor oil, ferrous metal, or aluminum, as well as wood or pallets. (SAM 1920, SAM 1960) DAM section 8005

Waste Reduction and Recycling Coordinator Responsibilities (New Oct 2008). DWR's Waste Reduction and Recycling Coordinator within the Division of Management Services' Departmental Services Office is responsible for coordinating the Waste Reduction Program and Recycling Program efforts department-wide. The coordinator collects DWR organization's waste diversion rates from Recycling Coordinators for inclusion in the annual Waste Reduction Report. DAM section 8005.11

Recycling Coordinator (New Oct 2008, Rev. Apr 2012). Recycling Coordinators shall be designated at each Division, Region, Office, and/or Field Division to assist in the development and implementation of the Waste Reduction and Recycling program. Recycling Coordinators are also responsible for tracking and reporting their organization's waste diversion rates to DWR's Waste Reduction and Recycling Coordinator.

DAM section 8005.12

Disposition of Recycled Materials (Current Dec 2012). Any materials created, purchased, or obtained by DWR during the course of business operations is the property of the State. No person, other than the authorized recycling agent shall remove paper, glass, cardboard, plastic, used motor oil, ferrous metal, aluminum, or other recyclable materials which have been segregated from other waste materials and placed in a designated collection location for the purposes of collection and recycling.

Appendix C

Statutory Requirements for Environmentally Preferable Purchasing

Environmentally Preferable Purchasing Law: Public Contract Code sections 12400-12404 [AB 498 (Chan), Statutes of 2002, Chapter 575]

The EPP law, enacted in September 2002, directs the Department of General Services (DGS), in consultation with the California Environmental Protection Agency (Cal/EPA), members of the public, industry, and public health and environmental organizations, to provide State agencies with information and assistance regarding EPP including, but not limited to, the following:

- The promotion of EPP.
- The development and implementation of a strategy to increase EPP. This may include the development of statewide policies, guidelines, programs, and regulations.
- The coordination with other State and federal agencies, task forces, workgroups, regulatory efforts, research and data collection efforts, and other programs and services relating to EPP.
- The development and implementation, to the extent fiscally feasible, of training programs designed to instill the importance and value of EPP.
- The development, to the extent fiscally feasible, of an EPP best practices manual for state purchasing employees.

Environmentally Preferred Purchasing Best Practices Manual. Following Public Contract Code sections 12400–12404, a best practices manual has been developed as a template for state agencies to follow. The manual defines environmentally preferable products as “those products that have a lesser or reduced effect on human health and the environment when compared with other products that serve the same purpose.” The guiding principles are listed below. Not all questions are pertinent to each buyer, but the principles help guide and educate the buyer to become proficient in choosing more environmentally safe products.

Guiding Principles: Questions to ask before purchasing a product include:

- Is the product less hazardous?
- Is it reusable or more durable?
- Is it made from recycled materials? Do we really need to buy a virgin product when the recycled version is just as good?
- What happens to the product at the end of its life? Can it be recycled? Will the manufacturer take the product back? Will it need special disposal?
- Does it conserve energy or water?
- What is needed to properly maintain and/or operate this product?
- Have its environmental attributes been certified by a non-biased, widely accepted source?

The manual encompasses a large variety of issues from batteries and building supplies to medical equipment and vehicles. The manual describes issues associated with various supply categories, lists statutory requirements, and provides guidance on how to purchase environmentally preferred products.

DWR'S Policy for Environmentally Preferred Purchasing. DWR is committed to buying recycled-content products rather than non-recycled-content products, whenever price, quality, and availability are comparable. In addition, DWR's purchasing agents will consider other environmental factors such as manufacturing and production practices, maintenance, and end-of-life disposal methods during the purchasing process. The purchase of products that cannot be reused and/or recycled is discouraged.

DWR will also encourage contractors/subcontractors, service providers, building maintenance, and project partners, where appropriate and feasible, to use recycled content, recyclable or reusable products, and practice other waste reduction measures.

Appendix D

Statutory Requirements for the State Agency Buy Recycled Campaign

State agencies shall ensure each of the following to accomplish the mandate:

1. At least 50 percent of reportable purchases are recycled products (Public Contract Code section 12201(c)).
2. The requirements apply to all 11 reportable purchases for product categories. (Public Contract Code section 12209).
3. The reportable purchases shall meet each requirement and be applied to the total dollar amount of each specified product category. The purchase of a recycled product from one category may not be applied toward the requirements or the total dollar amount of any other category. (Public Contract Code section 12203(d)).

Note: Reused or refurbished products should be considered 100 percent recycled, and no minimum content is required.

Table D-1. Reportable Product Categories, Descriptions, Minimum Content Requirement, and Percentage of Mandated Purchasing Dollars

Required Category	Description	Minimum content requirement	% of Mandated Purchasing Dollars (SABRC)
Paper Products	Paper janitorial supplies, cartons, wrapping, packaging, file folders and hanging files, building insulation and panels, corrugated boxes, tissue, and toweling	30% postconsumer (PCC section 12209(a)).	At least 50% of the total dollars spent within this category must be used to procure product(s) meeting the 30% postconsumer requirement.
Printing and Writing Paper	Including, but not limited to, copy, xerographic watermark, cotton fiber, offset, forms, computer printout paper, white wove envelopes, manila envelopes, book paper, note pads, writing tablets, newsprint, and other uncoated writing papers, posters, index cards, calendars, brochures, reports, magazines, and publications	30% postconsumer (PCC section 12209(a)).	At least 50% of the total dollars spent within this category must be used to procure product(s) meeting the 30% postconsumer requirement.
Mulch Compost and Co-Compost	Including soil amendments, erosion controls, soil toppings, ground covers, weed suppressants, and organic materials used for water conservation.	80% postconsumer (PCC section 12209(c)).	At least 50% of the total dollars spent within this category must be used to procure products(s) meeting the 80% postconsumer requirement.
Glass Products	Including, but not limited to, windows, test tubes, beakers, laboratory or hospital supplies, fiberglass (insulation), reflective beads, tiles, construction blocks, desktop accessories, flat glass sheets, loose-grain	10% postconsumer (PCC section 12209(d)).	At least 50% of the total dollars spent within this category must be used to procure products(s) meeting the 10% postconsumer requirement.

2012 Annual Sustainability Report

	abrasives, deburring media, liquid filter media, and containers.		
Lubricating Oil Products	Including, but not limited to, any oil intended for use in a crankcase, transmission, engine, power steering, gearbox, differential chainsaw, transformer dielectric fluid, cutting, hydraulic, industrial, or automobile, bus, truck, vessel, plane, train, heavy equipment, or machinery powered by an internal combustion engine.	70% re-refined oil (PCC section 12209(e)).	At least 50% of the total dollars spent within this category must be used to procure products(s) meeting the 70% postconsumer requirement.
Plastic Products	Including, but not limited to, printer or duplication cartridges, diskette, carpet, office products, plastic lumber, buckets, waste baskets, containers, benches, tables, fencing, clothing, mats, packaging, signs, posts, binders, sheet, building products, garden hose, and trays.	10% postconsumer (PCC section 12209(f)).	At least 50% of the total dollars spent within this category must be used to procure products(s) meeting the 10% postconsumer requirement.
Paint	Including, but not limited to, water-based paint, graffiti abatement, interior and exterior, and maintenance.	50% postconsumer (PCC section 12209(g)).	At least 50% of the total dollars spent within this category must be used to procure products(s) meeting the 50% postconsumer requirement.
Antifreeze	Including recycled antifreeze, and antifreeze containing a bittering agent or made from polypropylene or other similar nontoxic substance.	70% postconsumer (PCC section 12209(h)).	At least 50% of the total dollars spent within this category must be used to procure products(s) meeting the 70% postconsumer requirement.
Tires	Including, but not limited to, truck and bus tires, and those used on fleet vehicles and passenger cars.	Retreaded tires must use an existing casing that has undergone an approved or accepted recapping or retreading process (PCC section 12209(i)).	At least 50% of the total dollars spent within this category must be used to procure tire(s) meeting the approved or accepted recapping or retreading process.
Tire Derived Products	Including, but not limited to, flooring, mats, wheelchair ramps, playground cover, parking bumpers, bullet traps, hoses, bumpers, truck bed liners, pads, walkways, tree ties, road surfacing, wheel chocks, rollers, traffic control products, mud flaps, and posts.	50% recycled used tires (PCC section 12209(j)).	At least 50% of the total dollars spent within this category must be used to procure tire(s) meeting the 50% recycled used tires.
Metal Products	Including, but not limited to, staplers, paper clips, steel furniture, desks, pedestals, scissors, jacks, rebar, pipe, plumbing fixtures, chairs, ladders, file cabinets, shelving, containers, lockers, sheet metal, girders, building and construction products, bridges, braces, nails, and screws.	10% postconsumer (PCC section 12209(k)).	At least 50% of the total dollars spent within this category must be used to procure product(s) meeting the 10% postconsumer requirement.

PCC = Public Contract Code

Appendix E

Water Resources Engineering Bulletin 58 B

State of California

California Natural Resources Agency

DEPARTMENT OF WATER RESOURCES

WATER RESOURCES ENGINEERING MEMORANDUM NO. 58b

TO: Managers and Supervisors

DATE:

March 28, 2012

Carl A. Torgersen

and Compliance

Gary B. Bardini

This Memorandum supersedes Water Resources Engineering Memorandum (WREM) No. 58a, dated October 7, 1997, which superseded WREM No. 58.

PURPOSE

This WREM is intended to provide guidance and direction to Department of Water Resources (DWR) staff and management in implementing DWR's Environmental Stewardship Policy ([DAM 2140](#)), as well as meeting DWR's continuing obligation to comply with all environmental laws and other regulatory requirements. Specifically, this WREM provides the following:

- Guidance for implementing DWR's Environmental Stewardship Policy through consideration and application of Environmental Stewardship Principles for developing more sustainable, economical, and environmentally beneficial programs and projects.
- Project-level guidelines to improve DWR's ability to meet or exceed environmental compliance requirements.

POLICY

Consistent with DWR's mission and Environmental Stewardship Policy, DWR is responsible for managing the water resources of California in cooperation with other agencies to create human systems that are compatible with natural systems, where each is ultimately sustainable. This means environmental benefits are incorporated into programs and projects at appropriate scales that consider the environmental context and regional setting, and can improve economic, social and environmental sustainability.

2012 Annual Sustainability Report

DWR staff must also comply with all applicable federal, State and local environmental laws and other regulatory requirements. Environmental compliance means implementing and meeting all terms, conditions, or other restrictions that apply to DWR, that are adopted by DWR or that are imposed on DWR by regulatory agencies, including any requirements set forth in environmental documents, mitigation plans, permits, licenses (e.g. Federal Energy Regulatory Commission [FERC]), authorizations, and/or contracts or agreements.

ENVIRONMENTAL STEWARDSHIP PRINCIPLES

DWR supports Environmental Stewardship, which includes, but is not limited to the following principles:

- Sustainability objectives
- Early and integrated environmental planning
- Multiple ecological benefits
- Multiple geographic scales and time frames
- Variety of approaches
- Inclusive cost-benefit analyses
- Science-based solutions, ecological monitoring, and adaptive management

When used to guide planning and implementation decisions, such principles are expected to improve DWR's ability to meet DWR sustainability objectives, reduce long-term program and project costs, protect and enhance public trust resources, provide multiple ecological and societal benefits, meet or exceed environmental compliance requirements, improve regulatory agency and stakeholder support, reduce delays and inefficiencies, and reduce DWR's exposure to adverse regulatory review or civil and criminal penalties.

DWR has specifically identified Environmental Stewardship Principles ([DAM Section 2140](#)) that are intended to help integrate the Environmental Stewardship Policy in DWR's planning and implementation decisions.

RESPONSIBILITY

The Division/Office Chief is responsible to ensure all staff in his or her organization are familiar with DWR's Environmental Stewardship Policy and Principles (environmental stewardship), and this WREM, and that these are considered and appropriately applied in the organization's programs. The Division/Office Chief is also responsible for ensuring compliance with environmental laws and other regulatory requirements (environmental compliance). The Division/Office Chief may delegate implementation of these responsibilities to Program Managers, Project Sponsors, Project Managers or other management designees with the decision-making authority to plan, organize, budget, and/or direct funding and staffing resources.

PROJECT LEVEL GUIDELINES

2012 Annual Sustainability Report

The guidelines provided below are specific actions that will help coordinate successful application and integration of environmental stewardship and compliance at the project level.

1. Incorporate Environmental Stewardship and Compliance in Project Management (PM) Documents:

As part of standard DWR Project Management procedures, the Project Manager will develop appropriate PM documents for approval by the Project Sponsor. Each PM document should identify how environmental stewardship and compliance are addressed in the project objectives and deliverables. DWR's project management procedures, tools and templates are posted on the Project Services Office website, <https://ps0.water.ca.gov/>. The Project Manager is expected to plan and implement projects following the guidelines provided by this WREM consistent with delegated authority and is responsible for ensuring environmental compliance, and consideration and application of environmental stewardship within the constraints of the program/project scope, budget, funding source, and schedule. It is also the responsibility of all DWR staff to implement DWR's mission and policies.

2. Identify an Environmental Coordinator: At the initiation of a project (including feasibility studies), the Project Manager should designate an Environmental Coordinator who is familiar with the program/project's mission and objectives and who is knowledgeable with regard to environmental compliance and DWR's Environmental Stewardship Policy and Principles. The Environmental Coordinator will play a key role in supporting the Project Manager in delivering a project that complies with environmental laws and other regulatory requirements and is consistent with environmental stewardship.

3. Create a Project Team: In accordance with DWR's Project Management framework, the Project Manager shall create a Project Team to address all aspects of project implementation. At a minimum, all DWR divisions or other Departmental units that will participate in the planning, environmental stewardship, environmental compliance, land and right of way acquisition, site assessment, historic and cultural resource preservation, exploratory surveys and studies, design, construction, and operations and maintenance will be invited to be members of the Project Team. The Project Team should consist of multi-disciplinary technical personnel and environmental staff that will be responsible for considering and applying environmental stewardship and ensuring environmental compliance. DWR's FERC Coordinator should be a member of the Project Team for those projects involving activities of the State Water Project subject to FERC licensing.

4. Apply Environmental Stewardship Principles: The Project Manager and the Environmental Coordinator assigned to the project should consider all opportunities to apply environmental stewardship

2012 Annual Sustainability Report

and educate all members of the Project Team about the associated project benefits. Applying environmental stewardship will also ensure improved and facilitated environmental compliance.

EDUCATION AND TRAINING

Additional resources developed by the Environmental Coordination Committee for implementing this WREM and DWR's Environmental Stewardship Policy are available at <http://dwr-ecc.water.ca.gov/>, along with the full text of the Environmental Stewardship Policy and Principles.

In addition, the [Environmental Coordination Committee](#), the [Training Office](#), and the [Project Services Office](#) provide training opportunities and resources to DWR personnel to provide further education on Environmental Stewardship and environmental compliance. DWR staff should make use of these resources as necessary to successfully implement DWR's Environmental Stewardship Policy and to meet or exceed environmental compliance requirements.

Appendix F

California Statutory Requirements on Climate Change

Table E-3. Summary of State Laws and Executive Orders on Climate Change

Legislation Name	Signed into Law/ Ordered	Description
SB 1771	September 2000	Establishes the California Climate Registry to develop protocols for voluntary accounting and tracking of GHG emissions.
AB 1473	July 2002	Directs ARB to establish fuel standards for noncommercial vehicles that would provide the maximum feasible reduction of GHGs.
SB 1078, 107, EO S-14-08	September 2002, September 2006, November 2008	Establishes renewable energy goals as a percentage of total energy supplied in the state.
EO S-3-05, AB 32*	June 2005, September 2006	Establishes statewide GHG reduction targets and biennial science assessment reporting on climate change impacts and adaptation and progress toward meeting GHG reduction goals.
SB 1368	September 2006	Establishes GHG emission performance standards for base load electrical power generation.
EO S-1-07	January 2007	Establishes of Low Carbon Fuel Standard.
SB 97*	August 2007	Directs OPR to develop guideline amendments for the analysis of climate change in CEQA documents.
SB 375	September 2008	Requires metropolitan planning organizations to include sustainable communities' strategies in their regional transportation plans.
EO S-13-08*	November 2008	Directs the Natural Resources Agency to work with the National Academy of Sciences to produce a California Sea Level Rise Assessment Report. And directs CAT to develop a California Climate Adaptation Strategy.
GHG = greenhouse gas		

Appendix G

Climate Change Outreach Efforts

Presentations and Posters

Jamie Anderson

—Climate Change Information for Ecological Modeling , annual meeting of the California Water and Environmental Modeling Forum, April 18, Folsom.

—Practical Approaches to Including Climate Change Science and Uncertainty in the Management of CA's Water Resources , workshop on Climate Change and California's Water Supply, May 15, University of California at Davis.

—Climate Change Information for Lake Management in California , annual meeting of the California Lake Management Society, October 4, San Diego.

Michael Anderson

Climate, Climate Change, and CoCoRaHS, Grass Valley Master Gardeners, February 8, Grass Valley.

Climate Change and Water Resources of Sierras, EWRI, February 15, Sacramento.

Climate Change and Flooding, Floodplain Management Association, May 17, Sacramento.

Climate Change and Flood Management, Delegation from Japan Ministry of Construction, February 24, Sacramento.

John Andrew

Water Law Symposium, January 28, Berkeley.

College of Environmental Design Symposium, February 8, UC Berkeley.

Environmental Science, Policy, and Management 102D, March 6, UC Berkeley.

Wise Use of Floodplains: Adaptation in America and Europe (Moderator), March 9, UC Berkeley.

Civil Engineering 251, April 24, CSU Sacramento.

Behrs Environmental Leadership Program, July 10, UC Berkeley.

GHG Emissions Law Seminar, July 27, San Francisco.

California Environmental Dialogue Plenary, September 21, Sacramento.

Bay Delta Science Conference (Moderator), October 16, Sacramento.

Water Boards Delta Tour, October 30, Ryde.

California Water Law and Policy Class, November 6, UC Santa Cruz.

California Environmental Law and Policy Class, November 20, UC Davis, King School of Law, Davis.

Board Meeting, California Utilities Emergency Association, December 12, Rancho Cordova.

Erin Chappell

—Climate Change and Water Resources in California , delegation from Africa, March, Sacramento.

2012 Annual Sustainability Report

—Climate Change Adaptation at the Department of Water Resources , delegation from Singapore, April, Sacramento. (Organized by Natural Resources Agency)

Climate Change in Water Planning panel member, Sierra Water Workgroup Summit, July, Lake Tahoe.

Pete Coombe

—A Rain Gauge at Every School, CoCoRaHS for the Whiskeytown Environmental School, with representatives from Project WET, October 27, Whiskeytown.

Elissa Lynn

—Adaptation and Mitigation Strategies, for Climate Change, Water and Society Graduate Hydrology class, November 7, UC Davis.

Lauma M. Jurkevics

—Climate Change at DWR: What We're Doing to Mitigate and Adapt, Santa Ana River Watershed Climate Change

Workshop, Santa Ana Watershed Project Authority, February, Fountain Valley.

—California, Water, and Climate Change: Overview of Climate Change and IRWM Planning Processes, Central and Southern California: IRWMP Planning and Climate Change Workshop, Watersheds Coalition of Ventura County, Santa Barbara County, and Upper Santa Clara River Watershed, March, Ventura.

Poster presentation; 2012 Environmental Scientist Workshop Planning Committee and the Green

Team

—Doing Our Part to Be Sustainable, DWR 20th Annual Environmental Scientist Workshop, September, Folsom.

Poster Presentation with Andrew Schwarz; —Using DWR's Greenhouse Gas Emissions Reduction Plan (GGERP), DWR 20th Annual Environmental Scientist Workshop, September, Folsom.

Maury Roos

—Contrasting Trends in the Sierra Snowpack, Western Snow Conference, May, Anchorage, AK.

Poster presentation, —Contrasting Trends in the Sierra Snowpack, Bay-Delta Conference, October, Sacramento.

Andrew Schwarz

"California Water Management: The Future Ain't What it Used to Be", EBMUD Water Conservation Showcase, March 20, San Francisco.

"Climate Change Handbook for Regional Water Planning," OPR Conference on Confronting Climate Change: A Focus on Local Government Impacts, Actions and Resources, April 9, Los Angeles.

2012 Annual Sustainability Report

"Development of the Climate Change Handbook for Regional Water Planning", Association of Clean Water Administrators' Climate Adaptation Committee, May 15 (Conference Call).

"Climate Change Analyses: Looking Back and Looking Ahead", Southern California Groundwater & Climate Change Workshop February 24, Riverside.

"Multi-level governance and adaptation: Emerging lessons from Integrated Regional Water Management in California", International Adaptation Futures Conference, May 29-31, Tucson, Arizona.

"Climate Change Impacts on California's Water Resources", Mediterranean Cities Conference, June 25-27, Los Angeles.

"DWR's Climate Action Plan" California Climate Action Team- Water Energy Subgroup (WET-CAT), August 13 Sacramento.

Testimony to the State Water Resources Control Board at Bay-Delta Plan Workshop 2, September 5, Sacramento.

"California Department of Water Resources Climate Change Water Management", presentation to visiting Delegation from The Netherlands, September 11, Sacramento.

"DWR's Greenhouse Gas Emissions Reduction Plan: What you need to know for your next CEQA document" DWR ES Workshop, September 19, Sacramento.

"DWR Greenhouse Gas Emissions Reduction Plan", All-Staff GHG Emissions Reduction Plan Workshop, October 1, Sacramento.

"Climate Change Impacts on California's Water Resources", Guest Lecture at California State University-Sacramento, Environmental Management Class, November 6, Sacramento.

"Climate Change and Greenhouse Gases Two Sides of the Same Coin: Heads its Complicated, Tails its really Complicated". CEQA Continuing Legal Education Conference. December 13-14 San Francisco.

Michelle Selmon

"Climate Change at the Department of Water Resources", California Planning Roundtable, February, UC Davis

"San Joaquin Valley Ecosystems in a Changing Climate", San Joaquin Valley Natural Communities Conference, March, Bakersfield

"Climate Change Adaptation", UC Davis Extension course co-lecturer, March, Sacramento

"Protecting and Sharing our Planet", Dailey Elementary 2nd grade students, November, Fresno

"Using Vulnerability Assessments to Inform Agency Decisions", USFWS-National Conservation Training Center Vulnerability Assessment Training speaker, November, Sacramento