LOS ANGELES DEPARTMENT OF WATER & POWER

Proposition 50
2004 Water Use Efficiency Grant Application

LARGE LANDSCAPE

Smart Irrigation Program

January 2005

Submitted to:
California Department of Water Resources
Office of Water Use Efficiency

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Project Information Form

Applying for:	☑ Urban	❑ Agricultural
1. (Section A) **Urban or Agricultural Water Use Efficiency Implementation Project**	☑ (a) implementation of Urban Best Management Practice, #9, Commercial and Industrial Water Conservation ❑ (b) implementation of Agricultural Efficient Water Management Practice, #7, Construct and operate water supplier spill and tailwater recovery systems ❑ (c) implementation of other projects to meet California Bay-Delta Program objectives, Targeted Benefit # or Quantifiable Objective #, if applicable _____ ❑ (d) Specify other: _____	
2. Section B) **Urban or Agricultural Research and Development; Feasibility Studies, Pilot, or Demonstration Projects; Training, Education or Public Information; Technical Assistance**	❑ (e) research and development, feasibility studies, pilot, or demonstration projects ❑ (f) training, education or public information programs with statewide application ❑ (g) technical assistance ❑ (h) other	
3. Principal applicant:	Los Angeles Dept. of Water and Power	
4. Project Title:	Large Landscape "Smart Irrigation" Program	
5. Person authorized to sign and submit proposal and contract:	Name, Title	James McDaniel, Acting Asst. Gen. Mgr., Water Services
	Mailing Address	Los Angeles Dept. of Water and Power 111 N. Hope St., Rm. 1455 Los Angeles CA 90012
	Telephone	213-367-1050
	Fax	213-367-0038
	E-mail	James.Mcdaniel@ladwp.com
6. Contact person (if different):	Name, Title	Thomas L. Gackstetter, Water Conservation Mgr.
	Mailing Address	Same
	Telephone	213-367-0936
	Fax	213-367-1055
	E-mail	Thomas.Gackstetter @ladwp.com
7. Grant funds requested (dollar amount): *(from Table C-1, column VI)*		$367,500

8. Applicant funds pledged (dollar amount): $374,840

9. Total project costs (dollar amount): $742,340
(from Table C-1, column IV, row n)

10. Is your project locally cost-effective?
Locally cost-effective means that the benefits to an entity (in dollar terms) of implementing a program exceed the costs of that program within the boundaries of that entity.
(If yes, provide information that the project in addition to Bay-Delta benefit meets one of the following conditions: broad transferable benefits, overcome implementation barriers, or accelerate implementation.)

❑ (a) yes
☑ (b) no

11. Explain why this project is not locally cost-effective:

The maximum annual local monetary benefit of the program can be computed by multiplying the expected volume of water saved (150 acre-feet) by the price LADWP pays for MWD water ($443 per acre-foot). This yields a potential annual savings of $66,450, which is exceeded by the total annualized program cost of $99,414. Reductions in demand for MWD water also constitute a Bay-Delta benefit because two-thirds of the MWD supply is exported from the Delta, while the remaining one-third is a relatively constant diversion from the Colorado River. Please refer to Tables C-1 through C-8 for additional documentation.

12. Duration of project (month/year to month/year): 1/06–12/08

13. Assembly District where the project is to be conducted: 37-48, 51-55

14. State Senate District where the project is to be conducted. 17, 20-30

15. Congressional district(s) where the project is to be conducted 24, 26, 29, 30, 33, and 35

16. County where the project is to be conducted Los Angeles

17. Location of project (longitude and latitude) Lat 34.0656 N Long -118.2388 W

18. How many service connections in your service area (urban)? 675,000

19. How many acre-feet of water per year does your agency serve? 690,000

20. Type of applicant (select one):

☑ (a) City
❑ (b) County
❑ (c) City and County
❑ (d) Joint Powers Authority
❑ (e) Public Water District
❑ (f) Tribe
❑ (g) Non Profit Organization
❑ (h) University, College
❑ (i) State Agency
❑ (j) Federal Agency
❑ (k) Other
- ❑ (i) Investor-Owned Utility
- ❑ (ii) Incorporated Mutual Water Co.
- ❑ (iii) Specify _____

21. Is applicant a disadvantaged community? If 'yes' include annual median household income.
(Provide supporting documentation.)

❑ (a) yes, _____ median household income
☑ (b) no

Signature Page

A-2 Application Signature Page

Appendix A contains a copy of the resolution to be adopted at the January 11, 2005 meeting of the Board of Water and Power Commissioners. While the Los Angeles City Attorney has approved the resolution for consideration and the Board has adopted the resolution, no resolution is official until five meetings of the Los Angeles City Council have passed without action on the resolution. When this period has passed, all resolutions are official.

A-3 Application Checklist

PART A
Project Description, Organizational, Financial, and Legal Information

- ✓Project Information Form
- ✓Application Signature Page
- ✓Application Checklist
- ✓Statement of Work – Section 1: Relevance and Importance
- ✓Statement of Work – Section 2: Technical/Scientific Merit, Feasibility
- ✓Statement of Work – Section 3: Monitoring and Assessment
- ✓Qualifications of the Applicant and Cooperators
- ✓Outreach, Community Involvement, and Acceptance
- ✓Innovation
- ✓Benefits and Costs
- ✓Appendices

Project Certification Statement

Water savings projected for the Large Landscape "Smart Irrigation" Program have been based on savings observed on similar projects in Southern California. Similarly, project costs that have been developed for the Large Landscape Program are based on the actual costs of similar projects.

These conservation projections, cost estimates and prior LADWP experience with similar projects demonstrate the technical feasibility of the Large Landscape "Smart Irrigation" Program.

Certified by:

REGISTERED PROFESSIONAL ENGINEER
ALVIN Z. BAUTISTA
No. 050018
Exp. 6/30/05
CIVIL
STATE OF CALIFORNIA

Statement of Work: Section 1, Relevance and Importance

The Los Angeles Department of Water and Power's (LADWP) proposed project would replace manually-adjusted irrigation controllers with weather-sensitive controllers at 150 large landscape customer sites (including homeowners associations and commercial, institutional, and other public facilities). The project will target landscapes with a minimum size of one acre of irrigated landscape per controller. Therefore, a conservative estimate of the water conservation impact of the project is that it will reduce demand by 150 acre-feet.

It is expected that the conserved water will be reduced water purchases by LADWP from the Metropolitan Water District of Southern California (MWD) (the most expensive water in LADWP's water supply portfolio), approximately two-thirds of which is exported from the Delta and one-third is conveyed from the Colorado River. Because the diversion from the Colorado River is relatively stable, the full reduction in demand resulting from this project is likely to translate into a reduction on export requirements from the Bay-Delta.

The project offers the ancillary benefit of reducing dry weather runoff, as was shown in the Municipal Water District of Orange County's July 2004 report "Residential Runoff Reduction Study" (its executive summary is provided in Appendix B). In that study, the use of smart irrigation technology in residential and large landscape applications decreased dry weather runoff to storm drains by 50 to 70 percent.

Project Goals and Objectives

The goals of this project include:

- To conserve 150 acre-feet of purchased water per year for the next ten years.
- To eliminate 50 to 70 percent of the dry weather runoff to storm drains.
- To gain an understanding of the most effective means to market these types of water saving projects in order to maximize future participation.

The following primary objectives of this project address local, regional, Bay-Delta, state, and federal concerns:

- Provide water conservation incentives for an industry that has historically overwatered.
- Reduce stress on the Bay-Delta.
- Reduce stress on the Colorado River.
- Improve water supply reliability.

- Reduce dry weather runoff.
- Meet the objectives of the Memorandum of Understanding regarding urban water conservation in California, of which the City of Los Angeles is an original signatory.
- Meet the goals and objectives of local and regional water management plans.
- In a semiarid region prone to drought, use water efficiently and increase the reliability of local water resources to help protect Southern California's vibrant economy and ensure a safe, reliable water supply for the future.

Large landscape accounts for 40 to 70 percent of all water use at a given site. Historically, these sites are maintained by an outside landscape contractor, who does not pay the water bill; his main focus is to keep the landscape green with no regard to water consumption. For this reason, it has been found that with the installation of a weather-sensitive controller, an average of at least 1 acre-foot per acre of irrigated landscape can be saved each year.

The project will include, for each site, a comprehensive landscape audit performed by a Certified Landscape Irrigation Auditor and the replacement of the current controller with a weather-sensitive controller that uses real time evapotranspiration (ET) data to adjust irrigation schedules in accordance with the local weather. Each of the "ET controllers" will also be capable of unlimited cycle repeatability to irrigate slopes with less runoff. The ET data are typically transmitted to the irrigation controller via a paging signal or a telephone line.

Landscape water savings are best achieved by using sound technology that reduces the human element. This technology has been proven effective and will deliver reliable and consistent water savings.

Project Need

Demand management, or water conservation, is considered the lowest-cost resource available to water agencies that seek to improve the reliability of their water supply. Water conservation is a well-established component of the integrated resource planning process and is an effective means to ensure a reliable water supply for the increasing population and commerce of the Los Angeles area. Over the long term, conservation measures serve to save agencies and rate payers money by reducing the region's need for an additional, more expensive supply.

Consistency with Local or Regional Water Management Plans

This project is consistent with the LADWP's Urban Water Management Plan, published in 2000 (see www.ladwp.com/water). As discussed in Chapter 4 of that plan, LADWP has emphasized the importance of water conservation and committed nearly $10 million per year to conservation measures. Water conservation will be used to meet a substantial portion of the projected increases in Los Angeles' water demands. The successful implementation of

projects such as this one will enable the City of Los Angeles to support its projected growth, while minimizing the need to import water from the Bay-Delta or the Colorado River Basin.

Implementation of Water Demand Management Activities Identified in Urban or Agricultural Water Management Plans

LADWP is committed to conservation as a means of providing a sustainable source of water for the City of Los Angeles. Measures such as tiered water pricing, financial incentives for the installation of ultra-low-flush toilets or water-efficient washing machines, and technical assistance programs for business and industry are among the ways LADWP has designed and managed successful conservation projects.

When the State Water Resources Control Board identified urban water conservation as a major means of resolving problems in the Bay-Delta, LADWP became an active participant in the process. The Memorandum of Understanding that followed established the California Urban Water Conservation Council, which monitors the implementation of Best Management Practices (BMP) to more efficiently use and conserve water. LADWP has fully implemented all of its BMP commitments.

Importance of Project Implementation on Current Water Management Activities or Initiation of New Activities

This particular conservation program will become part of a larger group of projects being implemented by the LADWP Conservation Program. Projects such as the Commercial Ultra-Low-Flush Toilet Program, Commercial/Industrial Conservation Guidebook, Cooling Tower Manual and Workshops, and Technical Assistance Program have all met BMP requirements over the last 15 years.

Statement of Work: Section 2, Technical/Scientific Merit, Feasibility

Achievable water savings from the installation of this technology in large landscapes has been substantiated in the recently published study conducted for LADWP's Weather-Based Irrigation Control Pilot Study (Appendix C). This program installed ET controllers at 25 sites encompassing an irrigated area of 83 acres. This study documented annual water savings of 1.0 acre-feet per acre per year, attributable to the installation of ET controllers. Additional savings are expected to be realized through actions recommended by the landscape audit. Because these expected additional savings have not been quantified in previous studies, they have not been used to estimate the benefits resulting from the Large Landscape "Smart Irrigation" Program.

Each site will be evaluated through a landscape audit performed by a Certified Landscape Irrigation Auditor, in accordance with the guidelines set forth by the Irrigation Association. This audit will be used to ensure site suitability, to develop the necessary data to accurately program the controller, and to identify opportunities to improve the efficiency of the irrigation system. Irrigation controller manufacturer(s) will be selected on the basis of product availability, reliability and warranty, and customer service and support. On-site landscape maintenance staff will be trained in the operation and routine maintenance of the controller.

Based on the savings of 1.0 acre-feet per acre documented in the Weather-Based Landscape Irrigation Control Pilot Study and the intent to install controllers at 150 landscaped sites with each site encompassing a minimum of 1 acre of irrigated landscaping, the project is expected to conserve a substantially greater volume of water, depending on the size of the landscaped areas actually enrolled.

Preliminary Plans and Specifications and Certification Statements

The Large Landscape "Smart Irrigation" Program is based upon earlier programs that have supported the installation of ET controllers in a limited number of communities in Southern California and in Colorado. Because of continuing advances in this technology, the ET controllers used in the Large Landscape "Smart Irrigation" Program are expected to be more advanced than those used in earlier programs. The methodologies for selection and enrollment of participating sites, contracting, installation supervision, monitoring and reporting, and contract and financial management are based on previous experience within the LADWP service area and elsewhere.

Project engineering requirements will concentrate on developing specifications for controller procurement and installation and reviewing and selecting suppliers and contractors.

Certification of project feasibility and certification that the project approach, presented below, has been reviewed by a California registered civil engineer are found on page 4.

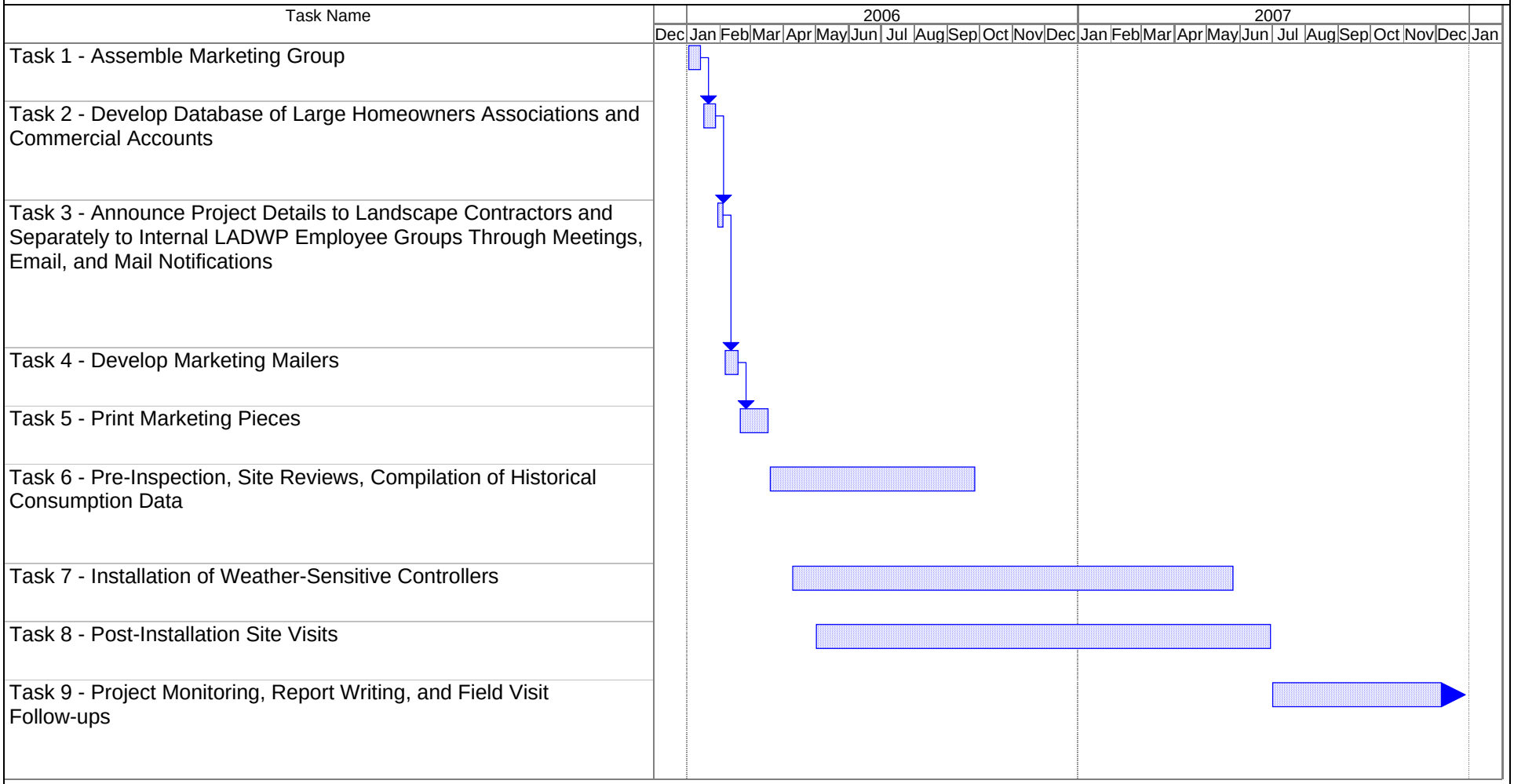
Task List and Schedule

Table 1 is a task list and schedule showing the distribution of costs between state and local funding sources. Information from Table 1 is used in Table C-1. Tasks 1 through 5 are categorized as administrative costs for program development and marketing. Task 6 is designated as Planning/Design/Engineering; funds from Tasks 7, 8, and 9 are categorized as costs for installation, monitoring, and reporting. Figure 1 shows the project schedule.

Table 1 - Program Costs and Schedule by Task and Funding Source

Task #	Type	Task	Prop 50 Funds		LADWP Funds	
1	Preparation	Assemble marketing group	$0		$5,435	In-kind Program Manager's - $1,635; graphics support - $2,000; Public Relations Specialist - $1,800
2	Preparation	Develop database of large homeowners associations and commercial accounts	$0	Marketing hours	$3,200	in-kind Program Manager
3	Marketing	Announce project details to landscape contractors and separately to internal LADWP employee groups through meetings, e-mail, and mail notification	$0	Classroom instructor, testing materials, irrigation catch-can kits	$1,711	in-kind Program Manager - $811; Public Relations Specialist - $900
4	Marketing	Develop marketing mailers	$0	Technical Consultant	$10,840	in-kind Program Manager - $3,240; graphics support - $4,000; Public Relations Specialist - $3,600
5	Marketing	Print marketing pieces	$0		$30,000	in-kind services
6	Implementation	Pre-inspection/site reviews/compilation of historical consumption data	$0	Technical Consultant	$24,300	in-kind Program Manager' salary
7	Implementation	Installation of weather-sensitive controllers	$352,500	Technical Consultant	$12,150	in-kind Program Manager's salary
8	Implementation	Post-inspection site visits	$0		$12,500	in-kind Program Manager's salary
9	Monitoring	Project monitoring, report writing and field visit follow-ups	$15,000	Technical Consultant	$274,704	in-kind Program Manager - $121,500; LADWP & MWD incentive monies - $153,204
Total			**$367,500**		**$374,840**	

Los Angeles Department of Water and Power
Large Landscape "Smart Irrigation" Program Schedule
Figure 1



Task

Continues for five years

Project: SmartIrrigation_Schedule
Project Number: 042360
Date: Mon 1/10/05

Bookman-Edmonston
A Division of GEI Consultants

Statement of Work: Section 3, Monitoring and Assessment

Historical water consumption information (1998–2004) will be analyzed and compared to actual consumption on a forward-looking basis. The industry standard "Landscape Water Manager" software, which uses various landscape data (plant coefficient, root depth, soil type, distribution uniformity, effective rainfall, and size of landscape), will be used to generate a theoretical yearly budget. This budget will serve as the optimal benchmark against which post-installation consumption for each individual site will be compared. LADWP's monthly meter data will allow actual consumption to be monitored. Anomalies in meter readings will trigger a site visit to evaluate the system and correct any problems or deficiencies. All consumption data will be weather-normalized to compute actual project savings. Complete project results will be captured and recorded by LADWP personnel and readily available.

Installation Reporting

An ongoing photographic record of ET controller installation will be maintained and each installation will be certified when completed. Quarterly program budgets and status reports submitted to the Department of Water Resources will include a summary of installation progress, including the number of units installed and area of landscaping served.

Pre-Project Monitoring

- Historical water consumption data (1998–2004) will be analyzed to develop the average monthly use across five years of varying local weather conditions. Site audits will determine landscape size, current irrigation system efficiency level, and opportunities to improve the irrigation system.

- Landscape Water Manager software will be used to determine the appropriate water usage for the square footage of each site.

- The condition of the irrigation system at each site will be evaluated. Recommendations will be provided to the landscaper, the homeowners association's board, and the property manager.

- Historical consumption data (1998–2004) will be compiled to determine yearly average use for the individual site and compared to the Landscape Water Manager data to assess the potential water savings.

- LADWP personnel and contractor will evaluate the data to determine if the site meets the criteria for the installation of ET controllers.

Post-Project Monitoring

- LADWP personnel will visit the site to ensure that the ET controller is receiving the proper signal for the ET of the week.
- LADWP will read the meter and track consumption on a going-forward basis.
- LADWP will solicit feedback from the customer regarding the installation and operation of the controller.

Evaluation of Success in Relation to Project Goals and Objectives

The most clearly measurable objective of the Large Landscape "Smart Irrigation" Program will be its impact on irrigation water use. This impact will be assessed and reported as follows:

- Site audits will be conducted to develop the site information needed for proper irrigation controller operation.
- All post-project consumption data will be captured via LADWP's monthly meter readings and weather-normalized to measure actual project savings (as compared to the average pre-project consumption data [1998–2004] and Landscape Water Manager ET estimates for the site.
- Any anomalies (e.g., increased consumption, no consumption) will require a site visit with a report generated as to the reason.

Consideration of External Factors

External factors are not expected to significantly affect project performance or the monitoring and assessment of performance. Land uses are not expected to change during the life of the project. Accurate water measurements will be available for both pre-project and post-project conditions. Climatological factors will be the major external variable and will be accounted for by the normalization of water use data to be compared to the average pre-project use across five years of varying weather conditions.

Information About How Data and Other Information Will Be Handled, Stored, Reported, and Made Accessible to DWR and Others

LADWP personnel will capture and record complete project results in an acceptable data format. These data will be made readily available to the Department of Water Resources and others, as requested. LADWP will generate monthly consumption reports, monitoring site usage and comparing that consumption with historical (1998–2004) consumption and the theoretical irrigation budget for the site. Data on historical water use at program sites, on theoretical baseline water use and on post-project water use will be managed using a database that LADWP will develop for the program. Data on historical and post-project water use will

be imported from LADWP's meter records, while theoretical baseline data will be computed using the Landscape Water Manager software. Reporting and analysis of these data will be the foundation for the reports on project performance. Any anomalies (e.g., increased consumption, no consumption) will require a site visit with a report generated as to the reasons and the actions taken.

Estimated Costs Associated with the Implementation of the Monitoring and Evaluation Plan

The monitoring and evaluation plan will generate five years of post-project data at an estimated implementation cost of $233 per site. These costs will be divided between local and state funds.

Environmental Documentation

In compliance with applicable environmental guidelines under the California Environmental Quality Act (CEQA), LADWP has reviewed the proposed project and its potential adverse effects under CEQA. The proposed project has been deemed Categorically Exempt from CEQA under the CEQA Guidelines, Section 15061 (b)(3). The proposed project is exempt based upon Section 15303 (Class 3, New Construction or Conversion of Small Structures) and Section 15304 (Class 4, Minor Alterations to Land):

- Section 15303 – Categorical exemption for new construction of limited small new facilities; installation of small new equipment and facilities in small structures; and conversion of the use of small existing structures.

- Section 15304 – Categorical exemption for minor disturbances in the condition of land, such as grading, gardening, and landscaping, which applies to public and private lands and does not involve the removal of healthy, mature, or scenic trees. Section 15304 (b) includes replacement of existing conventional landscaping with water efficient or fire resistant landscaping.

Qualifications of the Applicants and Cooperators

The LADWP Project Manager will be Thomas L. Gackstetter, Water Conservation Manager. Mr. Gackstetter has been with the City of Los Angeles for 27 years (including 16 years with LADWP) and in his current position of Water Conservation Manager for ten years. Mr. Gackstetter is responsible for managing all LADWP water conservation staff who design and implement conservation programs. He is also responsible for the management and oversight of LADWP's $16 million annual water conservation budget, contract negotiation and management, and overall contractor oversight. Mr. Gackstetter also acts as liaison to other water agencies and water agencies within the state and federal governments and is a member of the California Urban Water Conservation Council's Steering Committee. His resume is included in Appendix D.

External Cooperators

Metropolitan, an important cooperator in this project, will fund incentive rebates. Qualified consultants will support LADWP in implementing the program. These consultants will be knowledgeable about landscape irrigation, irrigation audits, and the installation and operation of ET controllers. The consultants will also have a demonstrated capacity to complete grant-funded projects in a timely manner.

Previous Water Use Efficiency Grant Projects

LADWP has successfully participated in a number of water use efficiency grant projects in the last five years including the following (with funding source):

- Rebates for Commercial/Industrial/Institutional (CII) Ultra-Low-Flush Toilets and High-Efficiency Washers (Proposition 13–Urban Water Conservation Grant)
- CII Program: Hospital X-Ray Film Processor Recirculating System (Proposition 13)
- CII Program: Ultra-Low-Flush Toilet Rebates (U.S. Bureau of Reclamation)
- Free Pre-Rinse Sprayheads for Restaurants (California Public Utilities Commission [CPUC])
- Rebates for CII and Common Area High-Efficiency Washers (CPUC)
- Residential ET Controllers (Proposition 13)
- Rebates for Residential High-Efficiency Washers (Proposition 13)
- Incentives for industrial projects (Proposition 13)

Disadvantaged Community Status

The service area of LADWP does not qualify as a disadvantaged community.

Outreach, Community Involvement, and Acceptance

LADWP has worked extensively with landscape maintenance companies and homeowners associations in past projects. Candidate sites will be solicited through these venues, as well as through targeted solicitation by LADWP. Projects using smart irrigation controllers are broadly supported by the Los Angeles Department of Public Works because this technology minimizes dry weather runoff and also reduces landscape waste (e.g., turf and shrub clippings). Public outreach will include project information distributed to those at the affected sites. The following process will be used to market this program:

- The LADWP Graphics and Public Affairs departments will assist in developing targeted marketing materials to homeowners associations and commercial customers with large turf (1 acre or more). This could be in the form of brochures, bill inserts, and/or direct mailers. Developing these materials is estimated to take two weeks.
- A database will be developed utilizing the LADWP GIS that will include all homeowners associations and commercial large turf customers, including appropriate phone numbers for direct marketing. Developing this database is estimated to take two weeks.
- Printing the brochure is estimated to take two weeks.

The community at large will benefit from the project in that the site landscape will be improved, enhancing neighborhood aesthetics and property values. There are no known organizations opposed to the project.

This project includes training for landscape maintenance staff responsible for each of the affected sites.

Letters of support for this project (included in Appendix E) have been received from:

- Mono Lake Committee
- Flex Your Power
- Adro Environmental, Inc.
- Asian American Drug Abuse Program
- Calvary Baptist Homes, Inc.

Innovation

The installation of smart irrigation control equipment is proving to generate persistent, reliable water savings for both small and large landscapes. Recent projects and studies undertaken by the LADWP and by the Municipal Water District of Orange County and Irvine Ranch Water District have demonstrated that the use of smart irrigation control equipment not only reduces landscape water use but also significantly reduces dry weather runoff. This project targets larger landscapes in Los Angeles, sites offering appreciable savings from ongoing irrigation schedule changes. Irrigation scheduling is typically the responsibility of the landscape maintenance company, whose primary concern is the lush appearance of the landscape rather than the efficient use of water. This project helps landscape maintenance staff by lessening their irrigation scheduling responsibility, while applying just the right amount of water needed by the plants. Experience has shown that this technology improves the health of the landscape.

Additionally, this project identifies inherent irrigation system deficiencies at each site, maximizing the savings potential of the smart irrigation controller. Couple these factors with the landscape contractor training element, and this project takes an innovative holistic approach to improving landscape irrigation.

Benefits and Costs

The total project cost is estimated to be $742,340 ($4,950 per site, 150 sites). The local cost share is comprised of financial incentives from LADWP's Technical Assistance Program and MWD, along with in-kind services including but not limited to: administration, data analysis and assessment, programmatic customer service, marketing, fieldwork costs, technical consultants, installation review, and training. The $4,950 cost per site will be in the form of a rebate, paying for performance of a landscape audit, the installation cost of the controller, controller training, a maximum of three follow-up visits, a five-year program of monitoring and assessment and 10 years of weather signal to support the controller hardware.

Table C-1: Project Implementation Costs (Budget)

Table C-1 is based on the project budget (Table 1), which includes the estimated costs for program outreach, administration, and monitoring and assessment for the target of 150 ET controller installations. The distribution of state and local costs is based on a 50-50 cost-sharing formula. Administrative costs are confined to the salaries and benefits for LADWP staff and constitute less than 7 percent of the overall project cost.

Table C-2: Annual Operations and Maintenance Costs

Annual operations and maintenance costs will be supported by the owners of the landscape irrigation systems (both private and public) and will not be supported by either state or local funds. An exception to this is the 10-year subscription to climatological data that is downloaded to each controller to drive its irrigation scheduling algorithms.

Table C-3: Total Annual Project Costs

Sums from Tables C-1 and C-2 are presented in Table C-3, Total Annual Project Costs.

Table C-4: Capital Recovery Factors

A program life of 10 years is assumed, based on the program's commitment to support the subscription to weather data required to operate the ET controllers for ten years. Program hardware is expected to have a 15- to 20-year service life. Therefore, a value of 15 years has been assumed for the hardware elements.

Table C-5: Project Annual Physical Benefits

See attached table.

Bay-Delta Benefits

Reduced water demand on the Bay-Delta through an augmented participation in a regional demand-reduction program can improve future water supply reliability, generating real water savings, reducing diversions, and providing secondary benefits to the environment.

Applicant: Los Angeles Department of Water and Power - Large Landscape "Smart Irrigation" Program

Table C-1: Project Costs (Budget) in Dollars)

	Category (I)	Project Costs $ (II)	Contingency % (ex. 5 or 10) (III)	Project Cost + Contingency $ (IV)	Applicant Share $ (V)	State Share Grant $ (VI)	Life of investment (years) (VII	Capital Recovery Factor (VIII)	Annualized Costs $ (IX)
	Administration[1]								
	Salaries, wages	$27,915	10	$30,707	$30,707	$0	10	0.1359	$4,173
	Fringe benefits	$18,610	10	$20,471	$20,471	$0	10	0.1359	$2,782
	Supplies	$0	0	$0	$0	$0	0	0.0000	$0
	Equipment	$0	0	$0	$0	$0	0	0.0000	$0
	Consulting services	$0	10	$0	$0	$0	0	0.0000	$0
	Travel	$0	0	$0	$0	$0	0	0.0000	$0
	Other	$0	0	$0	$0	$0	0	0.0000	$0
(a)	Total Administration Costs	$46,525		$51,178	$51,178	$0			$6,955
(b)	Planning/Design/Engineering	$22,100	10	$24,310	$24,310	$0	10	0.1359	$3,304
(c)	Equipment Purchases/Rentals/Rebates/Vouchers	$0	0	$0	$0	$0	0	0.0000	$0
(d)	Materials/Installation/Implementation	$538,000	10	$591,800	$239,312	$352,488	15	0.1030	$60,955
(e)	Implementation Verification	$0	10	$0	$0	$0	0	0.0000	$0
(f)	Project Legal/License Fees	$0	0	$0	$0	$0	0	0.0000	$0
(g)	Structures	$0	0	$0	$0	$0	0	0.0000	$0
(h)	Land Purchase/Easement	$0	0	$0	$0	$0	0	0.0000	$0
(i)	Environmental Compliance/Mitigation/Enhancement	$0	0	$0	$0	$0	0	0.0000	$0
(j)	Construction	$0	0	$0	$0	$0	0	0.0000	$0
(k)	Other (Specify)	$0	0	$0	$0	$0	0	0.0000	$0
(l)	Monitoring and Assessment	$31,829	10	$35,012	$20,000	$15,012	10	0.1359	$4,758
(m)	Report Preparation	$36,400	10	$40,040	$40,040	$0	10	0.1359	$5,441
(n)	**TOTAL**	$674,854		$742,340	$374,840	$367,500			$81,414
(o)	Cost Share -Percentage				50	50			

1- excludes administration O&M.

Applicant: **Los Angeles Department of Water and Power - Large Landscape "Smart Irrigation" Program**

Table C-2: Annual Operations and Maintenance Costs

Operations (1) (I)	Maintenance (II)	Other (III)	Total (IV) (I + II + II)
$15,000	$3,000		$18,000

(1) Include annual O & M administration costs here.

Table C-3: Total Annual Project Costs

Annual Project Costs (1) (I)	Annual O&M Costs (2) (II)	Total Annual Project Costs (III) (I + II)
$81,414	$18,000	$99,414

(1) From Table C-1, row (n) column (IX)
(2) From Table C-2, column (IV)

Table C- 4: Capital Recovery Table (1)

Life of Project (in years)	Capital Recovery Factor
1	1.0600
2	0.5454
3	0.3741
4	0.2886
5	0.2374
6	0.2034
7	0.1791
8	0.1610
9	0.1470
10	0.1359
11	0.1268
12	0.1193
13	0.1130
14	0.1076
15	0.1030
16	0.0990
17	0.0954
18	0.0924
19	0.0896
20	0.0872
21	0.0850
22	0.0830
23	0.0813
24	0.0797
25	0.0782
26	0.0769
27	0.0757
28	0.0746
29	0.0736
30	0.0726
31	0.0718
32	0.0710
33	0.0703
34	0.0696
35	0.0690
36	0.0684
37	0.0679
38	0.0674
39	0.0669
40	0.0665
41	0.0661
42	0.0657
43	0.0653
44	0.0650
45	0.0647
46	0.0644
47	0.0641
48	0.0639
49	0.0637
50	0.0634

(1) Based on 6% discount rate.

Applicant: **Los Angeles Department of Water and Power - Large Landscape "Smart Irrigation" Program**

Table C-5 Project Annual Physical Benefits (Quantitative and Qualitative Description of Benefits)

	Qualitative Description - Required of all applicants[1]				**Quantitative Benefits - where data are available[2]**
	Description of physical benefits (in stream flow and timing, water quantity and water quality) for:	Time pattern and Location of Benefit	Project Life: Duration of Benefits	State Why Project Bay Delta benefit is Direct[3] Indirect [4] or Both	Quantified Benefits (in-stream flow and timing, water quantity and water quality)
Bay Delta	This project will result in a reduction in demand for water exported from the Delta irrigating commerical and public landscapes in the LADWP service area. This will leave the water in the Delta system for other uses/benefits.	This project will result in a reduction in year round export demand from the Delta.	10 years - length of ET controller service contract. System hardware is expect to last 15 to 20 years	Direct benefit - reduced use of SWP water	The total estimated water savings is 150 ac-feet per year. This project will reduce the exports from the Delta, so the water may be used to meet other agricultural, urban, Delta water quality, or other envinonmental water demands.
Local	This project will reduce LADWP's demands on MWDSC, allowing MWDSC more operational flexibility and LADWP more water supply reliability.	The local water savings will be year around, and will be distributed through the LADWP service area.	10 years - length of ET controller service contract. System hardware is expect to last 15 to 20 years	**Not applicable.**	This project will reduce the amount of water purchased by LADWP from MWDSC by 150 acre-feet per year. This is a cost savings to LADWP, and allows greater operational flexibility to MWDSC.

[1] The qualitative benefits should be provided in a narrative description. Use additional sheet.

[2] Direct benefits are project outcomes that contribute to a CALFED objective within the Bay-Delta system during the life of the project.

[3] Indirect benefits are project outcomes that help to reduce dependency on the Bay-Delta system. Indirect benefits may be realized over time.

[4] The project benefits that can be quantified (i.e. volume of water saved or mass of constituents reduced) should be provided.

Reducing demand will contribute to the CALFED objective of a solution to Bay-Delta issues, including water quality, supplies matched to beneficial uses, and improved habitats and ecological functions.

Meeting Objectives of Water Management Plans

Local, regional and statewide water management plans create a framework to meet an overriding goal of water conservation in California. LADWP has established objectives to reduce demand through a variety of conservation programs, including incentive programs. Regional and statewide water management plans also include programmatic goals to reduce water demand throughout the south coast region. The proposed Program will contribute to the water demand reduction goal of these plans.

Table C-6: Project Annual Local Monetary Benefits

In recent years, LADWP has lost one-third of its Los Angeles Aqueduct water supplies as the result of efforts to restore the environments of the Mono Basin and Owens Valley. The reduction of Los Angeles' Eastern Sierra Nevada water supply resulted in LADWP's increased reliance on water supplies imported from Metropolitan. During an average year, LADWP's water sources are as follows:

- Local groundwater 15%
- Eastside Sierra Nevada 50%
- Colorado River supply - Metropolitan 12%
- Sacramento-San Joaquin River Delta - Metropolitan 23%

LADWP's supplies from the Eastern Sierra and from local groundwater are the first supplies it uses. Because water supplies from Metropolitan are used to meet any remaining demand, any variations in annual water demands (caused by variable hydrologic conditions or increasing or decreasing water demands) are reflected in the amount of water purchased each year from Metropolitan. Furthermore, Metropolitan's supplies from the Colorado River are relatively consistent; therefore, any changes in LADWP's water demands impact Metropolitan's supplies from the Sacramento-San Joaquin Delta.

Any water savings associated with this Program will reduce LADWP's demand for Metropolitan's water supplies and reducing the demand on MWDSC supplies could reduce water demands from the Delta. The financial benefit from the Program is determined based on reducing LADWP's use of Metropolitan water at a rate of $443 per acre-foot.

The annual value (local monetary benefit) of this Program has been determined by multiplying the annual water savings (150 acre-feet) by the cost of the water ($443 per acre-foot). The annual local monetary benefit totals $66,450, as shown on Table C-6.

Table C-7: Project Local Monetary Benefits and Costs

Table C-7 shows that the total annual benefit is $66,450, while the total Program costs total $99,414. This Program is not economically feasible without grant funding. With a 50 percent cost-share from this grant, the Program becomes economically feasible.

Applicant:

Los Angeles Department of Water and Power
Large Landscape "Smart Irrigation" Program

Table C-6 Project Annual Local Monetary Benefits

ANNUAL LOCAL BENEFITS	ANNUAL QUANTITY	UNIT OF MEASUREMENT	ANNUAL MONETARY BENEFITS
(a) Avoided Water Supply Costs (Current or Future Source)	150	acre-feet	$66,450
(b) Avoided Energy Costs	0		$0
(c) Avoided Waste Water Treatment Costs	0		$0
(d) Avoided Labor Costs	0		$0
(e) Other (describe)	0		$0
(f) Total [(a) + (b) + (c) + (d) + (e)]			$66,450

Table C-7 Project Local Monetary Benefits and Project Costs

(a) Total Annual Monetary Benefits [(Table C-6, row (f)]		$66,450
(b) Total Annual Project Costs (Table C-3, column III)		$99,414

Table C-8 Applicant's Cost Share and Description

Applicant's cost share %: (from Table C-1, row o, column V)	**50**
Describe how the cost share (based on relative balance between Bay-Delta and Local Benefits) is derived. (See Section A-7 for description.)	
Provide Description in a narrative form.	

Table C-8: Applicants Cost Share and Description

LADWP will provide a 50.5 percent cost-share. Without the grant funding (49.5 percent of the total project costs), this project is not economically feasible, as shown in Table C-7, where the annualized project costs total $99,414 compared to the project benefits of $66,450. With the grant funding, this Program becomes feasible at the local level and would provide an annual 150 acre-foot reduction in the export demands from the Delta (as described above).

Appendix A

LADWP Board Resolution

RESOLUTION NO. _____

WHEREAS, the California Department of Water Resources (DWR) has funding under Proposition 50 in the amount of $34 million available to agricultural and urban water use efficiency projects in the current funding cycle; and

WHEREAS, the Los Angeles Department of Water and Power (LADWP) is committed to three Water Use Efficiency projects including a Cooling Tower Conductivity Controller Replacement Program, a Los Angeles City Park Irrigation Efficiency Program, and a Large Landscape Smart Irrigation Program, and desires to apply for Proposition 50 grant funding; and

WHEREAS, the California DWR requires approval of an agency's governing body for each grant funding application; and

WHEREAS, the LADWP will comply with all terms and conditions identified in the California Department of Water Resources 2004 Water Use Efficiency Grant Proposal Solicitation Package if selected for funding.

NOW, THEREFORE, BE IT RESOLVED, that the filing of applications for the three referenced projects for the 2004 Water Use Efficiency Program Grants is approved.

BE IT FURTHER RESOLVED that the President or Vice President of the Board, or the General Manager of LADWP, or such person as the General Manager shall designate in writing, and the Secretary, Assistant Secretary, or the Acting Secretary of the Board, be and they are hereby authorized and directed to prepare the necessary data, make investigations, and file such applications for and on behalf of the LADWP with the California Department of Water Resources.

I HEREBY CERTIFY that the foregoing is a full, true, and correct copy of a resolution adopted by the Board of Water and Power Commissioners of the City of Los Angeles at its meeting held

APPROVED AS TO FORM AND LEGALITY
ROCKARD [illegible] ILLO, CITY ATTORNEY

DEC 2 1 2004

BY_____
JOSEPH A. BRAJEVICH
Deputy City Attorney

_____
Secretary

Appendix B

Executive Summary of The Residential Runoff Reduction Study

The Residential Runoff Reduction Study

Municipal Water District of Orange County

Irvine Ranch Water District

July 2004

Executive Summary

Study Background and Rationale

In 2001, the Irvine Ranch Water District (IRWD), the Municipal Water District of Orange County (MWDOC), and the Metropolitan Water District of Southern California (MWD) completed a small-scale study of weather-based evapotranspiration (ET) irrigation controllers. This study, known as the "Westpark Study," tested the effectiveness of ET controller technology in residential applications. After 40 such controllers were installed in the Westpark neighborhood of Irvine, California, water demand and runoff in the study area were measured. The resulting average water savings for this study were 37 gallons per day, or 7 percent of total household water use and 18 percent of irrigation water use.

Based upon the findings of the Westpark Study, IRWD and MWDOC partnered on new research, the Residential Runoff Reduction (R3) Study, in which the number of sites studied was increased, a baseline area where no changes were made was included, and an "education only" area where printed educational materials were distributed was also included. This made the R3 Study one of the first studies to attempt to quantify the effectiveness of public education alone versus a technology-based plus education approach to reducing residential irrigation water usage. Figure ES-1 presents the study participants and their respective roles within the R3 Study.

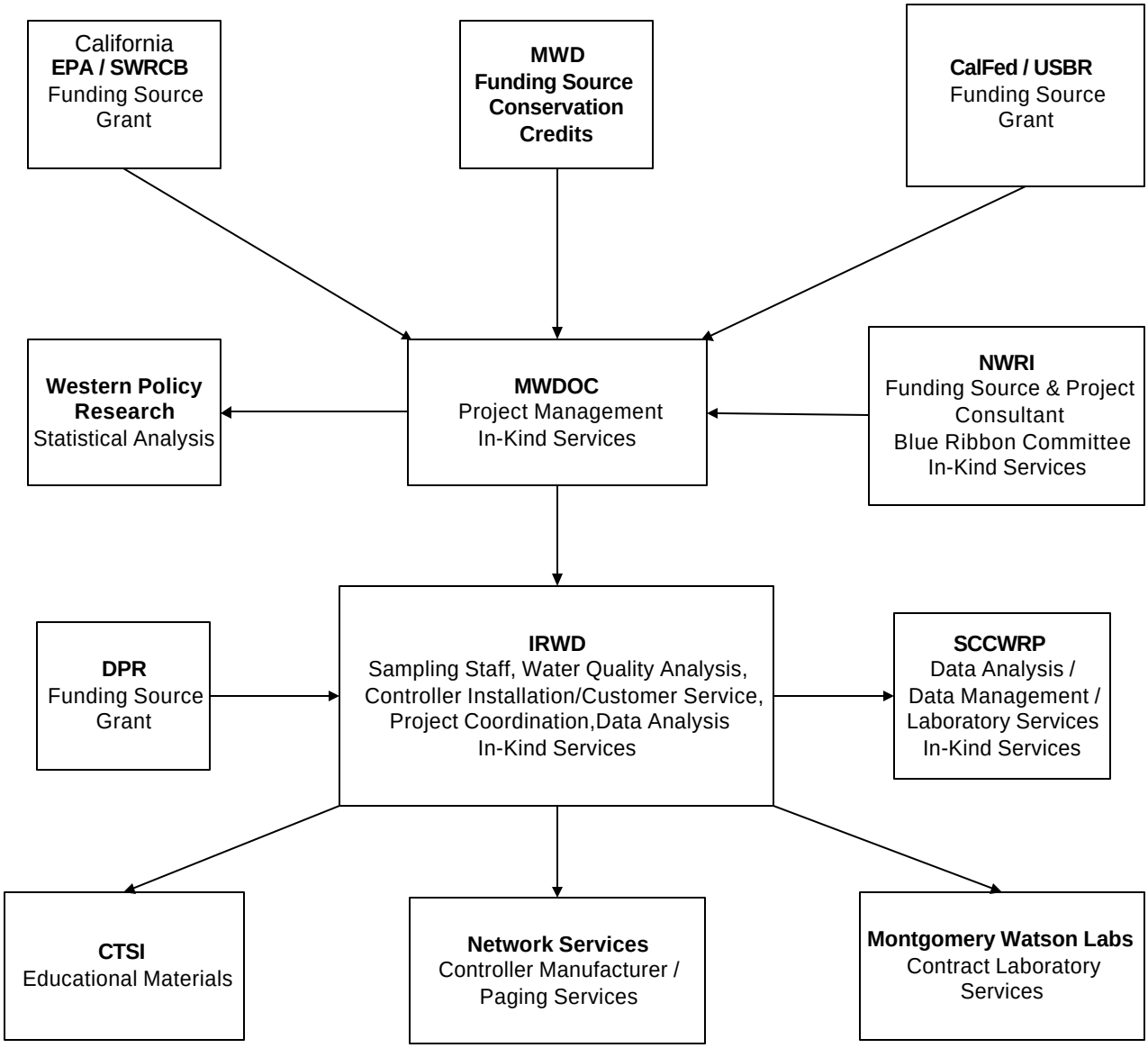
The R3 Study had four primary purposes:

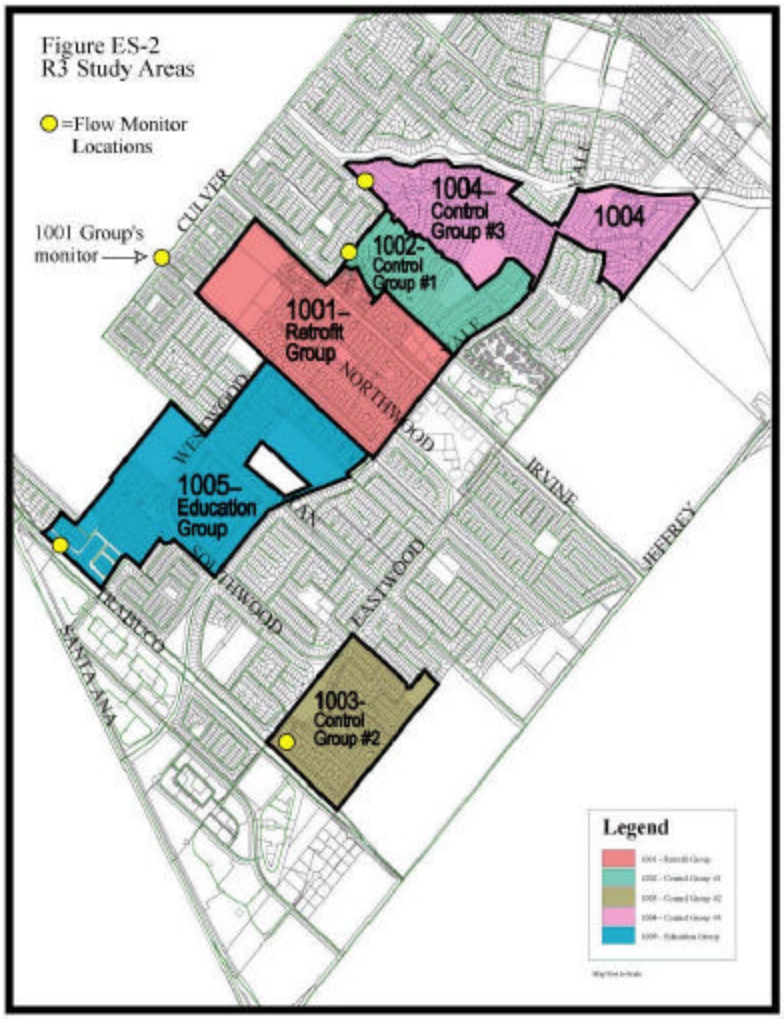
1) To test the use of weather-based irrigation technology, also known as ET controllers, to manage irrigation water for residential homes and large landscape areas;
2) To evaluate the effectiveness of a targeted education program on residential homeowners;
3) To determine the correlation between proper water application in landscape irrigation and the quantity and quality of urban dry-season runoff; and
4) To gauge the acceptance of water management via the controller technology.

Study Methodology

The R3 Study area included five similar neighborhoods (Sites 1001 through 1005) in Irvine, California, each with its own single point of discharge into the urban storm drain system. The five sites are shown on Figure ES-2. At these points of discharge from each study area, the runoff volume was monitored and water quality samples were taken. The five sites were divided into three separate areas. The first area, Site 1001 (retrofit group), used ET controller technology and public education. The second area, Site 1005 (education group), received educational materials, but did not receive controllers. The third area (control group) consisted of three separate neighborhoods (Sites 1002, 1003, and 1004), which received neither ET controllers nor educational materials.

Figure ES -1
R3 Study Participants





Evaluation Results

After the initial 18-month study period was completed, the data was compiled and evaluated for water conservation savings, dry season runoff changes, and changes in the quality of the dry season runoff water. The following summarizes the results:

a) Water Conservation Savings

Water conservation savings from the typical participant in the retrofit group were 41 gpd, or approximately 10 percent of total household water use. The bulk of the savings occurred in the summer and fall (Figure ES-3. Residential Water Savings: Technology + Education). The education group residential customers saved 26 gpd, or about 6 percent of total water use. The savings from this group were more uniform throughout the year (Figure ES-4, Residential Water Savings, Education Only). The retrofit group also included 15 dedicated landscape accounts (ranging in size from 0.14 acres to 1.92 acres), which showed average water savings of 545 gpd. The net result was eight times more water savings than with the single-family residential controller, strongly indicating that the larger the landscape, the better the savings per controller.

Figure ES -3
Residential Water Savings: Technology + Education

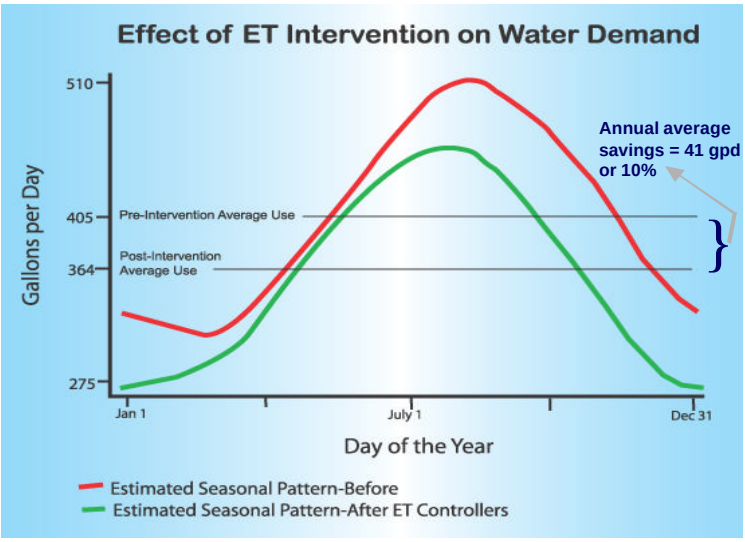


Figure ES -4
Residential Water Savings: Education Only

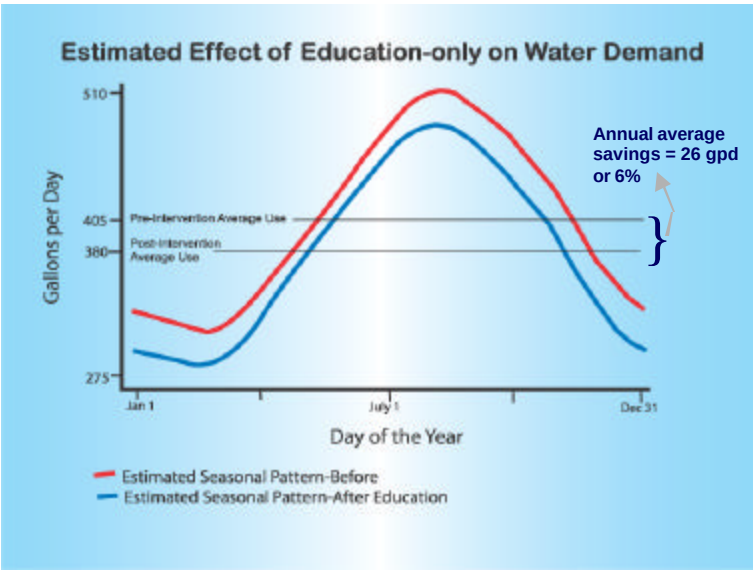


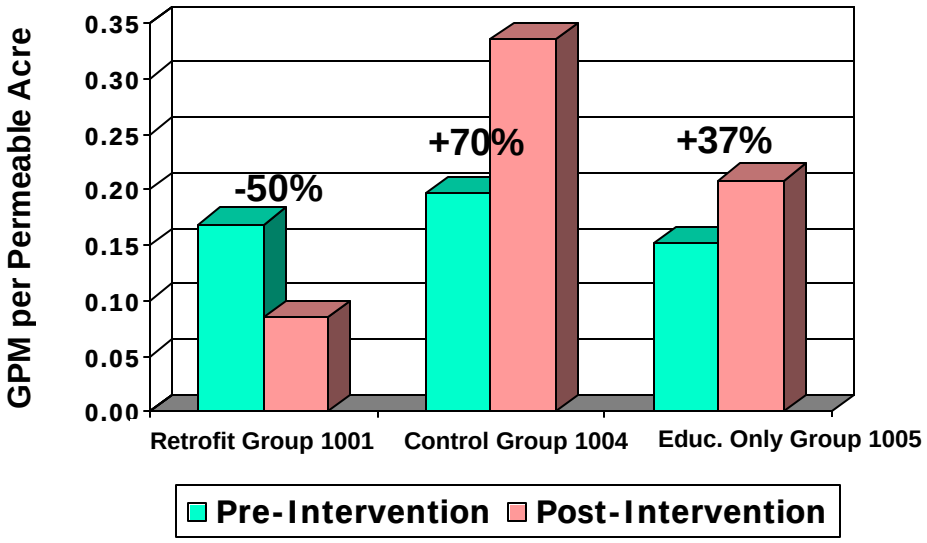
Figure ES -5
Changes in Runoff Within Each Site

b) Dry Season Runoff Changes

The retrofit group experienced a 50 percent direct reduction in water runoff (pre-intervention runoff compared to post-intervention runoff) during dry season periods. When the retrofit group is compared to the control group, the dry season runoff shows a statistical reduction of approximately 71 percent. In contrast, a comparison of direct pre-intervention and post-intervention runoff from the education group increased 37 percent, while runoff increased 70 percent within the control group. Other than the presence of an

ET controller, the primary difference between these groups is the participation of the 15 landscape accounts in the retrofit group. These accounts irrigated approximately 12 acres of landscape versus between 4 to 5 acres of total irrigated area for the 112 residential homes. Figure ES-5 presents R3 Study changes in runoff within sites.

Figure ES -5
Changes is Runoff Within Each Site



Note: It is also possible to compare post-intervention runoff *between* the study sites. These comparisons suggest a higher reduction in runoff for Site 1001 (between 64 and 71 percent) than was observed for the "within site" pre and post comparison, and a reduction in runoff of 21 percent for Site 1005. However, as described more fully in the text, these comparisons are less reliable than the "within site" pre and post comparisons shown here.

c) Changes in Runoff Water Quality

The study gathered a great deal of information on the water quality constituents present in urban runoff. In almost all cases, the data showed no changes in the concentration of these constituents in the runoff. The most significant fact to come out of the urban runoff water quality data is that the decrease in runoff volume from the retrofit group did not appear to result in an increase in the concentration of pollutants in the runoff. Thus, it is probable that a reduction in total pollutant migration could be achieved by reducing total dry season urban runoff.

d) Public Acceptance of Water Management

While there were some customer service-related issues, the retrofit group had a generally positive response to the ET controller, with 72 percent of participants indicating that they liked the controllers. The retrofit group also found that the controller irrigation either maintained or improved the appearance of the landscape. This has very positive implications. The water district customers receive a desired benefit of a healthy landscape, and the community receives several important environmental benefits from

the conservation of valuable and limited water resources and the reduction in dry season urban runoff.

Findings, Conclusions, and Recommendations

The R3 Study showed that weather-based irrigation controllers, which provide proper landscape water management, resulted in water savings of 41 gpd in typical residential settings and 545 gpd for larger dedicated landscape irrigation accounts. The observed reduction in runoff from the retrofit test area was 50 percent when comparing pre-intervention and post-intervention periods and 71 percent in comparison to the control group. The education group saw reductions in water use of 28 gpd, and a reduction in runoff of 21 percent in comparison to the control group. Water quality parameters in both study areas were highly variable, and very few differences in the level of monitored constituents were detected. In terms of water savings per controller (and cost-effectiveness), the study clearly indicated that larger landscape areas (parks and street medians) should provide the initial targets for the expansion of similar programs.

Appendix C

Weather-Based Irrigation Control Pilot Study

Policy

Planning

LADWP Weather-Based Irrigation Controller Pilot Study

Research

Evaluation

August 3, 2004

A Report Submitted to the Los Angeles Department of Water and Power

By

Anil Bamezai, Ph.D.

WESTERN POLICY RESEARCH

171 Pier Avenue
Suite 256
Santa Monica
California 90405

Executive Summary

To date several studies have examined the effectiveness of weather-based irrigation controllers in single-family residential settings, but virtually none to our knowledge have systematically examined how these controllers perform in other types of settings with medium to large landscapes (for example, homeowner associations, schools, parks, and so on). Los Angeles Department of Water and Power (LADWP) undertook this study to fill this knowledge gap. Weather-based controllers attempt to match irrigation to plant evapotranspiration (ET) needs, hence they are also referred to as ET controllers.

Two types of weather-based irrigation scheduling technologies were evaluated under the auspices of LADWP's program; (1) Hydropoint Inc.'s ET controller marketed under the trade name WeatherTrak; and (2) Water2save LLC's weather-based irrigation scheduler. The former replaces the existing controller, while the latter piggybacks on the existing controller. Both technologies rely upon broadcast signals. Budgetary limitations did not allow additional products to be included in the study.

WeatherTrak is an irrigation controller that utilizes paging technology to receive weather-related data signals, which are then processed internally to generate an irrigation schedule. This schedule is followed until new weather data are signaled. Rain interrupts can also be transmitted. Hydropoint collects weather data from a national network of weather-sensing stations, which are then processed to determine reference ET at any given locale. Hydropoint's business model thus requires the purchase of both the controller and a fee-based subscription to the signal service.

The Water2save LLC weather-based irrigation scheduler, an interrupt and control device, is installed between an existing controller and its valve wires. The device is equipped with wireless PCS technology that allows two-way communication between Water2save and the device. Local weather-related data including rain interrupts can be transmitted to the device, and Water2save personnel can also remotely request data about actual water applied. Water2save handles all communication with the device. Since the original controller remains in place, the user does not have to learn the operation of a new piece of hardware. Water2save clients do not purchase the control device. Instead, they share a negotiated portion of savings observed in the customer's water bills. Water2save thus follows a pay-for-performance type of business model. The profitability of this business model depends to a greater extent upon careful site selection, and Water2save generally examines billing histories of potential participants to assess likely savings before retrofitting a site.

It should be noted that in all our study sites, professionals installed the hardware, and set up the baseline schedule.

This study from the beginning was seen as a technology demonstrator. Its goal was primarily to assess the performance of weather-based irrigation technologies, and secondarily customer acceptance of these technologies in predominantly non-single family residential and small commercial settings. In such settings since the site owner is usually divorced from routine landscape maintenance, success requires the cooperation of both the owner and the landscaper. Since demonstration of the technology was a key goal, it was decided early on to include both dedicated irrigation and mixed-use accounts in the study. Dedicated irrigation accounts offer a direct and powerful way of gauging how well irrigation tracks ET.

A total of 25 sites with roughly 83 acres of landscape (35 acres planted with turf, the rest with shrubs) were recruited for this study. Selected sites included homeowner associations, schools, commercial sites, public parks, and so on. Dedicated irrigation meters supplied water to roughly 60 of the total 83 acres. These were retrofitted with weather-based irrigation technologies from the two vendors participating in the study. The retrofits occurred on a first-come first served basis, in a staggered manner over time as sites were recruited and screened for suitability. To avoid implementation delays, the study did not randomize the assignment of sites to the vendors.

Water use was tracked for at least a year after the retrofits, and water savings were determined through statistical models that compared two years of pre-retrofit to one year of post-retrofit consumption accounting for weather.

These analyses were conducted separately for dedicated irrigation and mixed-use accounts. Since no separation of indoor and outdoor consumption is required among the former accounts, it was relatively straightforward to evaluate how well applied irrigation tracked ET before and after the retrofits. We found that both technologies were very successful in changing irrigation patterns to accord with weather, with Water2save's and Hydropoint's technologies reducing irrigation by 28.3% and 17.4%, respectively. But, Water2save's sites also exhibited greater levels of wasteful irrigation prior to the retrofits, and therefore had a higher level of conservation potential to begin with. The percentage of the pre-retrofit conservation potential converted into actual savings was higher in the case of Hydropoint's dedicated landscapes (95%) than Water2save's (71%). These percentages being unequal do not necessarily imply that one technology is superior to the other because many factors could account for the inequality, such as distribution uniformity being especially poor, or cooperation from the on-site landscapers being

especially poor, in one set of sites compared to the other. What they do imply, however, is that by paying greater attention to these additional factors, water savings perhaps could be improved even more, although such steps would also tend to drive up program costs.

Among the mixed-use accounts, most of the acreage being under Hydropoint's control made it difficult to detect any significant difference in savings achieved by the two different technologies. Combined though, we estimate that weather based irrigation technologies reduced outdoor consumption by 27%, which in turn represents roughly 78% of the total pre-retrofit conservation potential.

Overall, it appears that landscapes supplied by dedicated irrigation meters are saving roughly 56 acre-feet per year, while landscapes supplied by mixed-use meters are saving 26 acre-feet per year, for a total program savings of 82 acre-feet per year. During the evaluation phase, we telephoned several individuals intimately involved with irrigation management at the study sites, to solicit feedback about their experience with the retrofitted controllers. We heard no strong negative comment about either technology.

To facilitate comparison of our results with those of other studies, we also converted estimated savings into inches per turf-equivalent area so as to remove the effect of landscape size and plant composition (turf vs. shrubs). We estimate that across all the test sites included here, weather-based controllers reduced outdoor consumption by roughly 17 inches per year for pure turf landscapes (and by assumption half of this for pure shrub landscapes since shrubs normally need only half as much water as turf). Our savings estimate in inches is very close to what at least two previous studies have found in Irvine, California.

We then used our savings estimate to project dollar benefits likely to accrue to LADWP and its customers under differing assumptions. For example, a customer with a quarter acre of (turf-equivalent) landscape, supplied by a dedicated irrigation meter, can expect to save roughly between $1,124 and $1,527 over a ten year period (assumed device life) depending upon whether a 6% or 0% discount rate is assumed. Were the site connected to a mixed-use meter, dollar benefits to the customer from water savings alone would rise to between $2,062 and $2,801 over a ten-year period because LADWP charges such meters significantly higher water rates. And for mixed-use accounts, were one to also take sewer surcharges into consideration, the above-mentioned dollar benefits would roughly double. Avoided (water) costs to LADWP over a ten-year period would range between $1,153 and $1,566. Obviously, these estimates are highly dependent upon landscape size, rising proportionally with size.

Total avoided costs provide an indication of the maximum subsidy LADWP can provide per customer to promote the dissemination of weather-based controllers. This is not the same as saying that LADWP should automatically offer a rebate equal to its avoided costs. How a program is marketed and how customer perceptions about these new technologies are modified through market transformation strategies can significantly affect the level of financial incentives that are necessary to tip private decisions in favor of weather-based irrigation technologies.

Although savings reported here are quite significant, it should be noted that we expect the cost of promoting weather-based irrigation technologies among non-single family and small commercial customers to also be relatively high. Marketing this pilot study was not easy and took a lot of effort by LADWP staff. Ensuring compliance by the on-site landscapers also required outreach, education, and monitoring, all of which would have to be made part and parcel of any real-world program. Overall program success thus greatly depends upon landscaper participation and support, crucial for maximizing water savings, and upon convincing customers of the dollar benefits likely to accrue to them, a key driver of the adoption rate.

Appendix D

Project Manager Resume

Los Angeles LADWP Department of Water and Power

Thomas Gackstetter

111 N. Hope Street, Room 1463
Los Angeles, CA 90012
Voice: (213) 367-0936
Fax: (213) 367-1055
Email: thomas.gackstetter@ladwp.com

Professional Experience

Los Angeles Department of Water and Power (September 1994 to Present)

Current Position: Water Conservation Manager

Los Angeles, CA

- Water conservation program design, development and implementation for the City of Los Angeles, including a current pilot program installing ET-based irrigation controllers in large multifamily residential/small commercial sites, high efficiency clothes washer rebate program, ultra-low-flush toilet replacement programs, water use survey programs for all customer sectors.
- Management of staff and resources in the implementation of comprehensive conservation programs and overall customer service. Management and oversight of $16 million annual budget.
- Development and implementation of the Los Angeles Department of Water and Power Supplemental Purchase Specification for ultra-low-flush toilets. The SPS exceeds current national standards to ensure long-term water savings.
- Contract work bid solicitations, contract negotiation and management, contractor oversight.
- Liaison to other California water agencies and state/federal agencies.
- Member of California Urban Water Conservation Council's Steering Committee

Los Angeles Department of Water and Power (January 1989 to September 1994)

Los Angeles, CA

Position: Demand-Side Management Planner

- Energy efficiency program design and development, including customer market research (surveys, interviews, focus groups), program policy and guideline development, consensus building, and program implementation.
- Liaison to other City departments, State regulatory agencies, and other electric utilities.
- Account Executive for large energy customers (March, 1989 to July, 1989)

Los Angeles Department of Transportation (July 1981 to January 1989)

Los Angeles, CA

- Installation, maintenance and repair of traffic signal systems and equipment.
- Maintenance and enhancement of traffic signal equipment database.

Position: Electrical Equipment Tester

Los Angeles Department of Building and Safety (August 1977 to July 1981)

Los Angeles, CA

- Ensure electrical equipment conformance to applicable Underwriters Laboratories Standards, Los Angeles Electrical Code, and other City requirements.

Education

California State University, Fullerton (1982 to 1986)

Fullerton, CA

Bachelor of Arts – Business Administration [Finance]

Appendix E

Letters of Support

AADAP
People Need People

AADAP, Inc.

(Asian American Drug Abuse Program)
www.aadapinc.org

5318 S. Crenshaw Blvd
Los Angeles, CA 90043
Tel : (323) 293-6284
Tel : (323) 295-4075

January 6, 2005

SUBJECT: SUPPORT FOR THE LOS ANGELES DEPARTMENT OF WATER & POWER (LADWP)
"LARGE-SCALE LANDSCAPE IRRIGATION IMPROVEMENT PROJECT FOR GRANT FUNDING CONSIDERATION"

To Whom It May Concern:

I, Evelyne Kim, TC Director support the LADWP as it strives to improve the many components of its water delivery services system. As the Department focuses its attention on water conversation projects, and performs these needed improvements, I wish to communicate my support for LADWP efforts in the planning and implementation of conservation projects.

I understand that LADWP is planning to seek grant funding for a Large Landscape "Smart Irrigation" Program designed to improve water use on up to 150 large, over-irrigated landscapes within the City of Los Angeles. The project will replace old irrigation system timers with "smart" ET controllers that time irrigations to respond to actual plant water needs. Installation will include a full landscape pre-audit that will enable accurate programming of the new controllers and will identify other deficiencies in the existing irrigation systems.

I appreciate LADWP's efforts to promote a full understanding of the project and to engage the community early on in the decision-making process. I encourage the Water Use Efficiency Program to fund this LADWP conservation project because of its benefits to Los Angeles and its contribution to improving water supply reliability for communities in Southern California while reducing our reliance on the Delta and the Colorado River.

Sincerely,

Evelyne Kim
TC Director
AADAP, Inc

Outpatient Unit
3838 W. Martin Luther King Bl
Los Angeles, CA 90008
(323) 294-4932
Fax (323) 294-2533

Employment Access
3850 W. Martin Luther King Bl
Los Angeles, CA 90008
(323) 295-0262
Fax (323) 295-2375

Youth & Family Programs
3210 W. Jefferson Bl.
Los Angeles, CA 90018
(323) 766-5541
Fax (323) 766-5546

Indochinese Youth
Community Center
14112 S. Kingsley Drive
Gardena, CA 90247
(310) 768-8064
Fax (310) 768-2779

Youth Outpatient Treatment
13931 S. Van Ness Ave #202
Gardena, CA 90249
(310) 768-8018
Fax (310) 768-4170

Olympic Academy
(323) 933-9022
Fax (323) 933-4029

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January 5, 2005

SUBJECT: SUPPORT FOR THE LOS ANGELES DEPARTMENT OF WATER & POWER (LADWP)
"LARGE-SCALE LANDSCAPE IRRIGATION IMPROVEMENT PROJECT FOR GRANT FUNDING CONSIDERATION"

Salutations:

I, Dan Wasserman, support the LADWP as it strives to improve the many components of its water delivery services system. As the Department focuses its attention on water conversation projects, and performs these needed improvements, I wish to communicate my support for LADWP efforts in the planning and implementation of conservation projects.

I understand that LADWP is planning to seek grant funding for a Large Landscape "Smart Irrigation" Program designed to improve water use on up to 150 large, over-irrigated landscapes within the City of Los Angeles. The project will replace old irrigation system timers with "smart" ET controllers that time irrigations to respond to actual plant water needs. Installation will include a full landscape pre-audit that will enable accurate programming of the new controllers and will identify other deficiencies in the existing irrigation systems.

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Sincerely,

Dan Wasserman
Project Manager
Flex Your Power

Flex Your Power
2183 Union Street
San Francisco, CA 94123
Phone: (415) 771-7571
Fax: (415) 775-4159
Email: info@fypower.com
Web: www.fypower.com

MONO LAKE
COMMITTEE
P.O. Box 29
Hwy 395 and Third Street
Lee Vining, CA 93541
Phone (760) 647-6595
Fax (760) 647-6377

January 4, 2005

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Playa Del Rey, CA 90293
(310) 316-0041
On the Internet
www.monolake.org
www.monobasinresearch.org

Department of Water Resources
Office of Conservation
Sacramento, California

RE: Support for the Los Angeles Department of Water and Power (LADWP) "Large-Scale Landscape Irrigation Improvement Project for Grant Funding Consideration"

Dear Grant Evaluators:

On behalf of the 15,000 members of the Mono Lake Committee, I am pleased to support the LADWP's grant request for its Large Landscape "Smart Irrigation" Program, designed to improve water use for up to 150 large, over-irrigated landscapes within the City of Los Angeles.

With a very small staff, LADWP has done an excellent job in saving water through toilet retrofits and other in-home water-saving devices, and we are thrilled that they will be shift their energy and expertise to outdoor landscapes, where equal or greater savings can be found.

These savings will improve supply reliability locally, but increased water conservation will benefit the region and the state even more by giving LADWP greater flexibility in making choices about imports from the Delta and the Colorado River.

Thank you for considering this grant proposal.

Sincerely,

Frances Spivy-Weber

Frances Spivy-Weber
Executive Director, Policy

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ADRO ADRO ENVIRONMENTAL, INC.

Phone: (310) 514-1400 Fax: (310) 514-1316

ADROInc@aol.com
www.adro-environmental.com

January 4, 2005

SUBJECT: SUPPORT FOR THE LOS ANGELES DEPARTMENT OF WATER & POWER (LADWP)
"LARGE-SCALE LANDSCAPE IRRIGATION IMPROVEMENT PROJECT FOR GRANT FUNDING CONSIDERATION"

Salutations:

I, Ade Adeniji support the LADWP as it strives to improve the many components of its water delivery services system. As the Department focuses its attention on water conversation projects, and performs these needed improvements, I wish to communicate my support for LADWP's efforts in the planning and implementation of conservation projects.

I understand that LADWP is planning to seek grant funding for a Large Landscape "Smart Irrigation" Program designed to improve water use on up to 150 large, over-irrigated landscapes within the City of Los Angeles. The project will replace old irrigation system timers with "smart" ET controllers that time irrigations to respond to actual plant water needs. Installation will include a full landscape pre-audit that will enable accurate programming of the new controllers and will identify other deficiencies in the existing irrigation systems.

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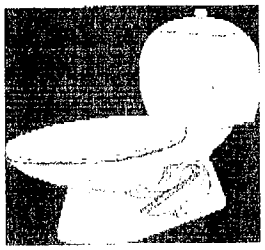
Sincerely,

ADE ADENIJI



818-785-5860
FAX 818-785-5890

Calvary Baptist Homes, Inc.

Low Flush Toilet Distribution & Installation
15424 Cabrito Road #4
Van Nuys, CA 91406

SUBJECT: SUPPORT FOR THE LOS ANGELES DEPARTMENT OF WATER & POWER (LADWP) "LARGE-SCALE LANDSCAPE IRRIGATION IMPROVEMENT PROJECT FOR GRANT FUNDING CONSIDERATION"

Dear Sir:

I , James Dennis, support the LADWP as it strives to improve the many components of its water delivery services system. As the Department focuses its attention on water conversation projects, and performs these needed improvements, I wish to communicate my support for LADWP efforts in the planning and implementation of conservation projects.

I understand that LADWP is planning to seek grant funding for a Large Landscape "Smart Irrigation" Program designed to improve water use on up to 150 large, over-irrigated landscapes within the City of Los Angeles. The project will replace old irrigation system timers with "smart" ET controllers that time irrigations to respond to actual plant water needs. Installation will include a full landscape pre-audit that will enable accurate programming of the new controllers and will identify other deficiencies in the existing irrigation systems.

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Sincerely,

James E. Dennis

James E. Dennis, President
Calvary Baptist Homes, Inc.