LOS ANGELES DEPARTMENT OF WATER & POWER

Proposition 50
2004 Water Use Efficiency Grant Application

COOLING TOWER CONDUCTIVITY

Controller Replacement 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 Department of Water and Power
4. Project Title:	Cooling Tower Conductivity Controller Replacement Program
5. Person authorized to sign and submit proposal and contract:	Name, Title: James McDaniel, Acting Asst. General Manager - Water System 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: 111 N. Hope St., Rm. 1463 Los Angeles CA 90012 Telephone: 213-367-0936 Fax: 213-367-1055 E-mail: Thomas.Gackstetter @ladwp.com

7. Grant funds requested (dollar amount): $350,000
   (from Table C-1, column VI)
8. Applicant funds pledged (dollar amount): $675,000
9. Total project costs (dollar amount): $1,025,000
   (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: Tables C1-C8
12. Estimated Bay-Delta annual net water savings: (reduced irrecoverable losses only, in acre-feet)
13. Cost/AF of water saved to Bay-Delta:
14. Cost/AF of water saved with applicant contribution:
15. Duration of project (month/year to month/year): 1/06–12/08
16. Assembly District where the project is to be conducted: 37-48, 51-55
17. State Senate District where the project is to be conducted. 17, 20-30
18. Congressional district(s) where the project is to be conducted: 24, 26, 29, 30, 33, & 35
19. County where the project is to be conducted: Los Angeles
20. Location of project (longitude and latitude): Lat 38° 3' 56” Long 118°14’19”
21. How many service connections in your service area (urban)? 650,000
22. How many acre-feet of water per year does your agency serve? 660,000
23. 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 _____
24. Is applicant a disadvantaged community? If ‘yes’ include annual median household income.
    (Provide supporting documentation.)
    ❑ (a) yes, _____ median household income
    ☑ (b) no

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 Cooling Tower Conductivity Controller Replacement Program have been based on savings observed on previous project completed by LADWP. Similarly, project costs that have been developed for the 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 Cooling Tower Conductivity Controller Replacement Program.

Certified by:

Statement of Work: Section 1, Relevance and Importance

LADWP proposes to implement a project to improve the water efficiency of 100 cooling towers in Los Angeles. The project will upgrade the conductivity controllers into integrated pH/conductivity controllers for 100 commercial, industrial, or institutional sites. These sites must have at least one 250-ton (or larger) capacity chiller that serves a 250-ton (or larger) cooling tower running with a minimum load factor of 50 percent.

By using the new controllers, each customer's cooling tower water treatment company will be able to administer a pH control program, which will result in water savings. Based on the average water savings achieved by previous cooling tower water efficiency projects, each site is expected to save an average of 3.14 acre-feet per year for a projected total of 314 acre-feet per year and a total savings of 2, 198 acre-feet over the Program's seven-year life. The previous project results are summarized in Appendix B.

Project Goals and Objectives

The primary goal of this project is to achieve a minimum savings of 2,198 acre-feet during the next seven years through the installation of cooling tower conductivity controllers. Additional project goals include:

- Conserving 314 acre-feet of purchased water per year in the commercial, industrial, and institutional sector for the next seven years.
- Reducing an equal amount of wastewater from entering the sanitation system.
- Gaining an understanding of the most effective means to market these types of water-saving projects in order to maximize future program participation.

Primary objectives that address local, regional, Bay-Delta, state and federal issues include:

- Reducing demand for water imported from the Bay-Delta.
- Reducing stress on the Colorado River.
- Improving water supply reliability.
- Reducing wastewater flow to the sanitation system.
- Satisfying the objectives of the Memorandum of Understanding regarding urban water conservation in California, of which the City of Los Angeles is an original signatory.
- Meeting the goals and objectives of local and regional water management plans.

- In a semiarid region prone to prolonged droughts, protecting Southern California's vibrant economy by improving the efficiency of water use and increasing the reliability of local water supplies.

Project Need

Demand management, or water conservation, is most often considered the lowest-cost resource available to water agencies. Water conservation is a well-established component of the integrated resource planning process and is an effective means to ensure a reliable water supply in the future for the increasing population and commerce of our region. Over the long term, conservation measures save agencies and rate payers money by reducing the region's need for an additional, more expensive supply. To assist in achieving this goal, this project will:

- Help the LADWP meet the objectives of the Memorandum of Understanding with the California Urban Water Conservation Council regarding Best Management Practice (BMP) Number 9.
- Provide water conservation incentives for cost-saving equipment to a financially challenged industry.
- Accelerate the acceptance of pH water treatment in the cooling tower industry, which will result in water-efficient cooling tower processes.
- Improve water supply reliability.
- Help LADWP increase the reliability of its local water resources.

Cooling towers represent a significant opportunity for water use efficiency gains throughout California. Cooling towers are typically maintained by service companies who also sell the water treatment chemicals required for their proper operation. Increasing the water use efficiency lessens the need for such chemicals and is therefore not often promoted by such service companies. This project will replace existing conductivity controllers with integrated state-of-the-art pH/conductivity controllers for 100 cooling towers at commercial, industrial, and institutional sites that meet Program criteria to be eligible. To be eligible, each participant must have a 250-ton (or larger) capacity chiller serving a 250-ton or larger cooling tower running at a minimum load factor of 50 percent. In addition, each participant will be required to implement, either in-house or via a water treatment service, a pH control program which will allow increased water efficiency through higher cycles of concentration (COC) (recirculation of cooling water). These eligibility requirements will ensure a significant return on investment. Each of the 100 sites is expected to save an average of 3.14 acre-feet per year for a project total of 314 acre-feet per year.

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 heavily emphasized the importance of water conservation and committed nearly $10 million

per year to conservation measures. Water conservation will be relied upon 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 to provide 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 in which LADWP has designed and managed successful conservation programs.

Urban water conservation has been identified as a major means of resolving problems in the Bay-Delta. LADWP actively participates in urban water conservation. The Memorandum of Understanding that established the California Urban Water Conservation Council monitors the implementation of BMPs to more efficiently use and conserve water. LADWP has fully met all of its BMP commitments.

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

This particular commercial/industrial/governmental 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

Estimate of Conserved Water

Created in 1992, the LADWP Technical Assistance Program (TAP) provides financial incentives to retrofit water-intensive equipment. TAP offers commercial, industrial, institutional, and multifamily residential customers in Los Angeles up to $50,000 to install preapproved equipment and products that demonstrate water savings. These incentives are available through TAP for almost any type of project, provided the future savings can be verified. TAP has provided funds for recycling projects, recirculation projects, landscape upgrade projects, and cooling tower projects.

The first cooling tower project was completed in 1999, funded partially by LADWP's TAP rebates. Twenty-one projects have been funded through 2004. The water savings for the proposed pH-control cooling tower projects was quantified through the 21 completed projects. TAP rebates are based on a project's site-specific water savings, calculated at the rate of $1.25 per 1,000 gallons of water saved over two years (Appendix C).

As mentioned, the water savings from previous cooling tower water efficiency projects averaged 3.14 acre-feet per year per site. If this average savings is repeated for the 100 new customers, the projected water savings would total 314 acre-feet per year and 2,198 acre-feet for the expected seven-year project life.

Project Description for TAP Cooling Tower Project

This section describes how the TAP Cooling Tower project was completed for one of the customers participating in the program and demonstrates the practical feasibility of completing the proposed projects.

Sample Project

Because the managers of the Van Nuys State Building were interested in saving water, their water treatment technician told them about LADWP's TAP and called the LADWP program manager to set-up a pre-inspection.

Pre-Inspection

The LADWP program manager, a technician from the water treatment company, and the customer's facilities manager and director met to discuss the details of the potential project. The building has two 200-ton cooling towers that run 14 hours per weekday and six hours on Saturday. They used standard water treatment and were maintaining approximately 2.8 COC. They already had a conductivity controller and coupon rack. If the project were implemented, the conductivity controller would be replaced with a state-of-the-art integrated pH/conductivity controller with data-logging capabilities, a new double-walled sulfuric acid

tank, a pump, and a tap into the return condenser water pipe to inject the acid would be added. LADWP would give the customer one 1½-inch water meter and one 5/8-inch water meter to measure the make-up and bleed (blow-down) water. The water treatment technician agreed to install the meters, read them each month, and visit the customer twice per month. During the first of these visits, the technician would check the controller's operation, the levels of the chemicals, and the status of the cooling tower. During the second visit, the technician would conduct a complete water treatment test, as detailed in the sample water treatment report in Appendix D. The customer received some training in reading a completed water treatment report. The coupon rack testing was discussed and agreed to. The tri-monthly coupon testing would give a milli-inch reading for both copper and steel. Finally, the LADWP program manager committed to calculating an incentive for the customer within one week.

Rebate

The rebate was calculated at $1,379. The customer agreed to participate in the project. The new controller and the LADWP water meters were installed.

Post-Inspection

Two weeks after the installation, the LADWP project manager met with the customer and water treatment vendor to survey the project. The controller was operating properly and was set at approximately 5.7 COC. The readings on the first water treatment report were all in their proper ranges. The meters were read and the COC was confirmed to be 5.5. The LADWP program manager agreed that if the COC were still 5.5 or above after two weeks, a rebate check would be requested.

Rebate Check

After two weeks, the COC was still 5.5. A rebate check was later hand-delivered to the customer.

Monitoring

The LADWP project manager receives faxed copies of the water treatment reports and meter readings every month. These are entered into a spreadsheet that automatically calculates the COC and determines the exact amount of water saved to date.

Technical Specifications

Cooling Tower Water Treatment

The cooling tower schematic shown in Figure 1 includes the cooling water loop (with conductivity controller) where the water savings occur. Cooling tower water is treated to prevent scaling, corrosion, and bio-film fouling in the cooling tower, the condenser pipes, and copper chiller tubes. A typical cooling tower water treatment system is composed of a conductivity controller, corrosion and scaling inhibitor chemicals, and a biocide. The city water make-up for the cooling tower typically would have a dissolved mineral content of

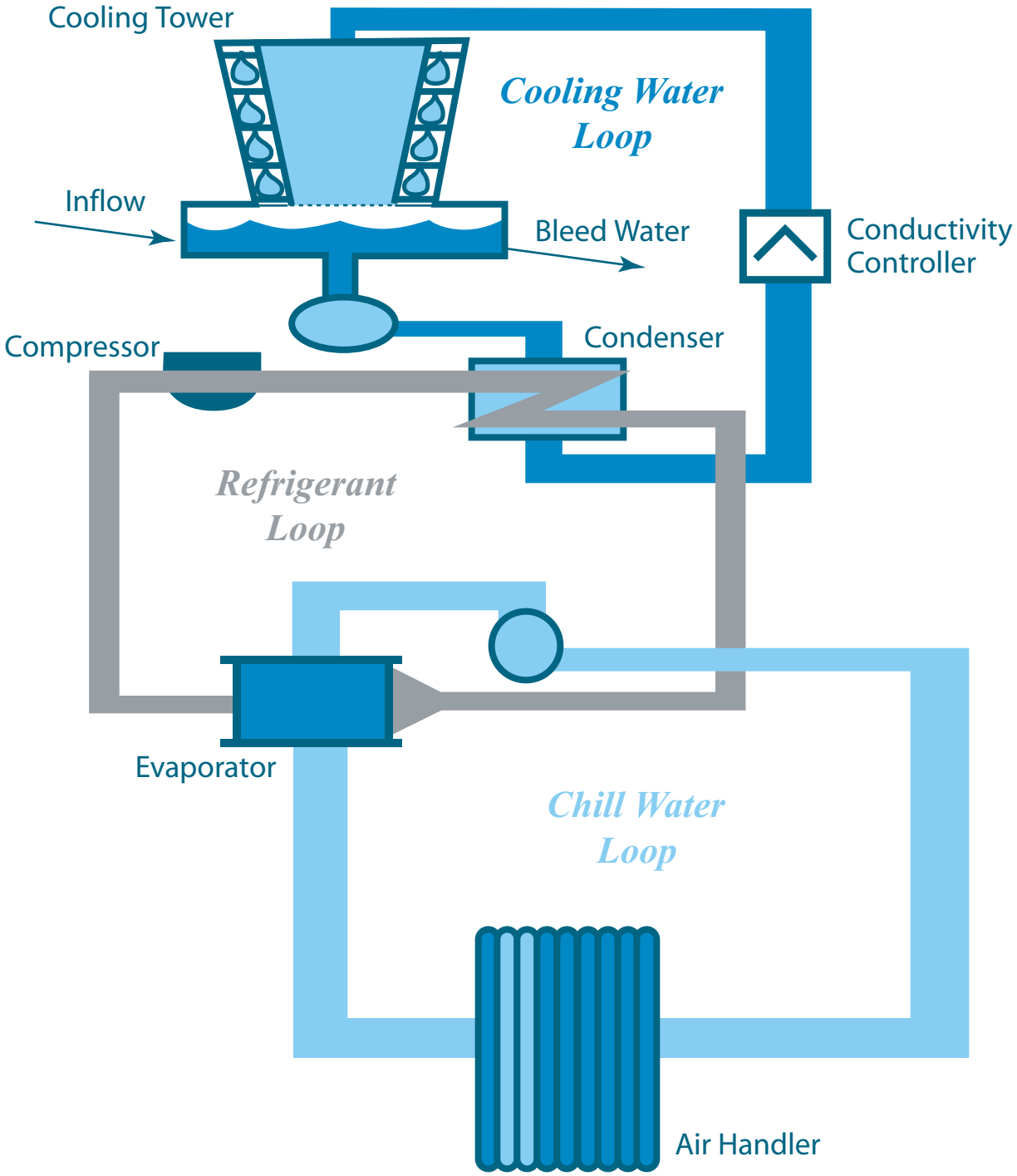

Cooling Tower
Cooling Water Loop
Inflow
Bleed Water
Conductivity Controller
Compressor
Condenser
Refrigerant Loop
Evaporator
Chill Water Loop
Air Handler

Figure 1

400 micromoles (µM). With standard water treatment, the conductivity controller would be set at 1,200 µM. At 1,200 µM, the cooling tower would bleed water from its reservoir to the sewer until the conductivity controller reads 1,190 µM. Therefore, the cooling tower controller intermittently bleeds throughout the day. With the conductivity controller set at 1,200 µM, this would mean a COC of 3.0 (1,200 µM ÷ 400 µM = 3.0). This type of standard water treatment is known by several names (for example, feed and bleed, crystal distortion, and organic treatment). Standard water treatment is normally at 3 COC, as described previously. Standard water treatment has been in use with the majority of cooling towers for the past 40 years.

With pH control water treatment, the upgraded pH/conductivity controller would be set at 2,200 µM, leading to a COC of 5.5 (2,200 µM ÷ 400 µM = 5.5). Therefore, water would circulate through the condenser pipes for a longer period before it is bled. This reduction in the bleed rate leads to a significant water savings. A sample calculation of the water savings for a 400-ton cooling tower operating 24 hours per day at an average load factor of 50 percent, the water savings would be 3.14 acre-feet per year is shown in Appendix E.

The COCs for both treatment types are limited by a water treatment concentration level called "total alkalinity of M alkalinity." When the M alkalinity reaches a certain parts per million (ppm) level, calcium carbonate ($CaCO_3$, "scale") forms. In LADWP water, the M alkalinity ranges from 80 to 140 ppm. The limit of M alkalinity ranges from 250 to 400 ppm. If, for instance, the M alkalinity in the water were 120 ppm, then at 3 COC, it would be 360 ppm, which is close to the maximum. Therefore, the water treatment vendor would likely keep the COC at 2.5, as a margin of safety.

With pH control, the M alkalinity is controlled by adding sulfuric acid to the water treatment program. Adding sulfuric acid in the proper amounts will keep the M alkalinity below 200 ppm and inhibit scaling. This lower-level M alkalinity can be maintained at the 5.5 COC level, resulting in longer recirculation times and significant water savings.

Corrosion Prevention

Corrosion prevention is achieved with corrosion inhibitor chemicals in both the crystal distortion and pH control water treatments. Sufficient levels of the corrosion inhibitors must be maintained to permit normal corrosion (for copper, this level is a maximum of 0.2 milli-inches per year; for steel, it is 3.0 milli-inches per year). These corrosion levels are monitored by using corrosion coupons placed in the condenser water stream for three months. Biofouling in each water treatment program is controlled by using a biocide such as sodium hypochloride (bleach) or bromine. Upgrading a crystal distortion water treatment program system to a pH control program allows the system to operate at a higher COC level and would, therefore, reduce the required amounts of these corrosion inhibitors and biocide chemicals because of the reduced bleed rate and subsequent need for make-up water.

Task List and Schedule

Task 1 – Customer Identification and Outreach

The purpose of this task is to inform water customers about the Cooling Tower Conductivity Controller Replacement Project and identify 100 customers to participate in the project. As part of this task, the LADWP Corporate Communications office will develop materials to inform water users about this program. Brochures or fact sheets describing the project and how customers can participate will be mailed to prospective customers, using SIC codes to identify them. This program will also be advertised to water treatment vendors, cooling tower manufacturers, and LADWP customer-contact employees through announcements and meetings.

Task 2 – Pre-Inspection Site Visits

The purpose of this task is to visit potential project participants to determine if they qualify for participation. It is anticipated that about 120 pre-inspection visits will be required to qualify 100 customers. These pre-inspections will likely be conducted as customers are identified. Some of the specific actions associated with this task are listed below:

- The cooling tower controller will be examined to confirm that it is not an integrated pH/conductivity controller and to note its conductivity setting.
- The cooling tower water will be examined for pH, conductivity, and temperature with a hand-held meter.
- Each cooling tower will be examined to determine the condition of the overflow pipe; the presence of sand filters, and if present, the frequency of backwashing; the tonnage of the cooling tower; the general condition of the cooling tower fill; the condition of the reservoir (if visible); and the presence of water meters for the potable make-up water and/or the bleed water.
- Each chiller will be examined to determine its tonnage, operating hours, current load and historic load profile (if available), and temperature differential between incoming and exiting condenser water.
- LADWP will meet with the customer to discuss the results of the pre-inspection. If the customer's water treatment company can provide pH control water treatment, LADWP will discuss with the customer the elements of required water treatment service (i.e., twice monthly water treatment visits; full chemical testing of a variety of constituents such as P alkalinity and M alkalinity which, when measured in milligrams per liter, can determine the amount of calcium carbonate and calcium bicarbonate, respectively). (See the sample water treatment report in Appendix D.) LADWP will discuss the importance of using water meters to measure the incoming or make-up water to the cooling tower(s) and the bleed water leaving the cooling tower. Readings from each water meter over time will provide the actual cycles of the cooling tower. The customer must request a quote for the installed costs of the

upgraded controller, copper and steel coupons (if they are not already in use), and the LADWP meters.

- LADWP will meet with the cooling tower water treatment technician and discuss the same topics discussed previously with the customer.

After the site visit has been completed, LADWP will evaluate the benefit for each qualifying customer. The actions associated with this part of the task will be ongoing as pre-inspections are completed and include:

- Developing a water savings estimate based on pre-inspection results and customer intent to retrofit.
- Determining the amount of the rebate the customer will receive through the TAP.
- Determining the amount of funding Proposition 50 will provide after receiving the estimate for the work the water treatment technician will be performing.
- Generating a letter showing the rebate amount LADWP will provide the customer.
- Generating a letter for the customer to sign explaining that the higher COC may increase corrosion or scaling in the condenser water system and that this possibility can be eliminated with the proper water treatment program and corresponding cooling tower controller.
- Ordering the meters needed for each project.
- Mailing the letters and have customer notify LADWP when the project is complete.

Task 3 – Site Instrumentation

As part of this task, the individual customers will contact the appropriate water treatment technical staff to install the integrated pH/conductivity meters. Before installation begins, LADWP staff will meet with the customer and water treatment technicians to ensure a common understanding of the project's end result. It will be expected that the controller will be installed in a suitable location where it can easily be read and programmed. Furthermore, the samples from the controller must be taken directly from the return condenser water pipe immediately before it enters the top of the cooling tower. The coupon rack must be located upstream of any chemical pumping pipe connections. This collaboration can be done as part of the pre-inspection by the LADWP program manager or as a separate visit after the pre-inspection. The budget reflects the minimal hours required by the LADWP project manager to assist 100 customers with this process.

Task 4 – Post-Installation Site Visits

The purpose of this task is to visit the customers after the meters and conductivity controllers have been installed. Some of the specific actions associated with this task are listed below:

- Read the LADWP meters for the make-up and bleed. Because the meters would have been installed at the same time, the make-up cooling flow should be divided by the bleed cooling flow. Confirm that the COC is at least 5.5.
- Check the pH to ensure that it is less than 8.0.
- Review the water treatment report and confirm that the levels are in the correct ranges.
- Ask customers for their opinions on the pH control water treatment and any other feedback.
- Give customers an estimate of the time until they receive a rebate check.

Task 5 – Project Monitoring and Analysis

Data collected from the post-installation site visit will be analyzed to determine the water savings and to aid in the evaluation of the Program's overall effectiveness. It is expected that the monitoring period will last 27 months. A significant portion of this task will be completed concurrently with the pre- and post-inspections. Some of the specific actions associated with this task are listed below:

- The LADWP meter readings will be entered into a spreadsheet that calculates the COC, the average evaporation per day, gallons per day of make-up and bleed, and the savings per day (Appendix F includes the spreadsheet for the North Plant Cooling Towers). Using these numbers, the theoretical savings will be validated.
- Every month, the water treatment technician will fax the treatment report and the meter readings.
- Every three months, the water treatment technician will fax the coupon reports.
- Site visits will be needed to monitor the vendor testing and verify meter readings.

Task 6 – Project Reporting

The purpose of this task is to document the work completed as part of this project. Eleven quarterly reports and one final report will be prepared with due dates as shown on the project schedule discussed below. The final report will summarize the results of the project and include a reevaluation of the cost-benefit analysis for the project.

The proposal solicitation package requires that annual project reporting continue for five years following completion of the project. LADWP is committed to meeting this criterion and plans to produce annual reports documenting any continued activity and the results of this project. The project budget for this task includes project reporting for the required period.

Task 7 – Project Management

This task includes general project communication and coordination activities with project team members, stakeholders, and the general public. It also includes the overall project management for the LADWP project manager, including preparing quarterly progress reports and invoices and submitting them to the Department of Water Resources. Project management activities will continue throughout the duration of the project.

Project Budget and Schedule

Project Budget

The project budget, summarized by task on Table 1, identifies the costs associated for the LADWP technical staff, marketing materials, and equipment installation. The level of effort and the costs for monitoring equipment required to complete the project are based on LADWP's experience with its TAP Cooling Tower Water Efficiency Projects completed between 1999 and 2003.

Table 1
Cooling Tower Conductivity Controller Replacement Program
City of Los Angeles Department of Water and Power

Task	LADWP Staff	Materials	Equipment Installation	Total Cost	LADWP In-Kind Funded	DWR Funded
1 Customer Identification and Outreach	$58,000	$25,000	$0	$83,000	$83,000	$0
2 Pre-Inspection Site Visits	$52,000	$0	$0	$52,000	$52,000	$0
3 Site Instrumentation	$10,000	$0	$680,000	$690,000	$340,000	$350,000
4 Post Installation Site Visits	$42,000	$0	$0	$42,000	$42,000	$0
5 Project Monitoring and Analysis	$86,000	$0	$0	$86,000	$86,000	$0
6 Project Reporting	$52,000	$0	$0	$52,000	$52,000	$0
7 Project Management	$20,000	$0	$0	$20,000	$20,000	$0
Total Project	$320,000	$25,000	$680,000	$1,025,000	$675,000	$350,000

Note: The $340,000 of LADWP In-kind funding for Task 3 includes $290,000 from LADWP ($280,000 for rebates and $10,000 for labor) and $50,000 from Metropolitan Water District.

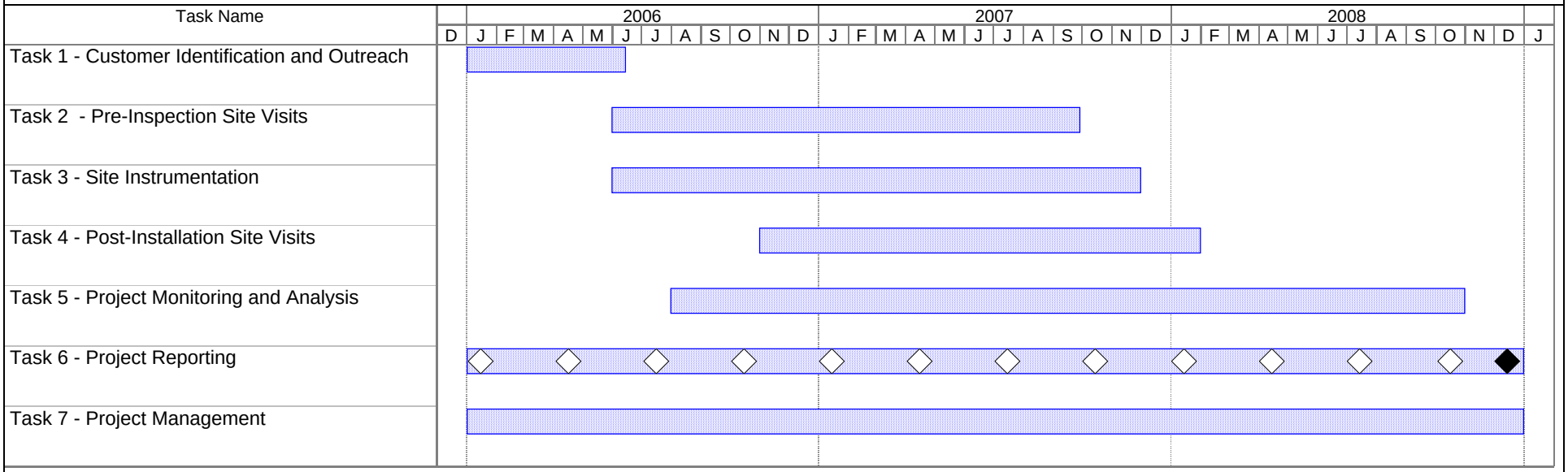
Project Schedule

The Program is scheduled to be completed in three years, as shown on the project schedule in Figure 2. It is anticipated to start in January 2006 and end in December 2008. The project schedule is based on LADWP's experience with its TAP Cooling Water Tower Efficiency Projects completed between 1999 and 2003. Estimated starting and stopping dates for each task are shown on the project schedule.

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 15301 (Class 1, Existing Facilities) and Section 15306 (Class 6, Basic Data Collection):

Figure 2
Cooling Tower Conductivity Controller Replacement Program
Project Schedule



Task Quarterly Report Final Report

Project: Schedule_CoolingTowers
Date: Mon 1/10/05

Bookman-Edmonston
A Division of GEI Consultants

- Section 15301 – Categorical exemption for operation, repair, maintenance, or minor alteration of existing structures or facilities not expanding existing uses.
- Section 15306 – Categorical exemption for basic data collection, research, experimental management, and resource evaluation activities that do not result in major disturbances to an environmental resource.

Statement of Work: Section 3, Monitoring and Assessment

Description of Pre-Project Conditions and Data Baselines

The historical water consumption for each of the qualified customers (2000 to present) will be analyzed and compared to actual consumption on a forward-looking basis. This will serve as the benchmark against which post-installation consumption for each individual site will be compared.

Monitoring Methodologies and Project Monitoring Data Collected to Assess Project Results

Installation Reporting

An ongoing record of pre- and post-inspection site visits, and equipment installation will be maintained monthly. Quarterly budget and project status reports submitted to the Department of Water Resources will discuss these inspections and installations.

Post-Project Monitoring

LADWP's monthly meter data will be used to monitor actual consumption. Any anomalies will generate a site visit to evaluate the system and correct any problems or deficiencies. Complete project results will be captured and recorded by LADWP personnel and readily available. The following tasks will be performed during post-project monitoring:

- LADWP personnel will visit all sites to ensure that the conductivity controller is working properly.
- LADWP will read the meter and track consumption on a forward-looking basis.
- LADWP will solicit feedback from the customers regarding the installation and operation of the controllers, including changes in the amount of chemicals used for their cooling towers.

Evaluation of Success in Relation to Project Goals and Objectives

The most clearly measurable objective of the Program will be its impact on cooling tower water use. The Program's impact will be assessed and reported as follows:

- LADWP will generate monthly consumption reports that monitor customers' usage and compare it to their historical (1998–2004) consumption data.
- Any anomalies (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. Changes in land use or annual climatological conditions are not expected to impact the potential water savings for the individual customers included in this project.

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

Data on historical water use for each customer will be managed using a database that LADWP will develop for the project. Data on historical and post-project water use will be imported from LADWP's meter records. Reporting and analysis of this data will be the foundation for the reports on project performance. All data from the database will be available to the Department of Water Resources and others upon request.

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

The estimated cost to implement the monitoring and evaluation plan is $2,500 per year, with post-project monitoring extending over a five-year period. The costs are included in the LADWP costs for Project Reporting (Task 6 in Table 1).

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 G.

External Cooperators

The Metropolitan Water District of Southern California (MWDSC) is contributing $50,000 to the rebate program, as listed on Table 1. There are no other external cooperators other than the 100 commercial, industrial, and institutional sites with 250-ton (or larger) capacity chillers that serve 250-ton (or larger) cooling towers running with a minimum load factory of 50 percent.

LADWP customer participation in the TAP for cooling tower water-efficiency projects has been low, considering the water savings and costs savings potential. Research in this area reveals the following:

- Customers such as hospitals and governmental facilities are unable to budget for water use efficiency improvements.
- Property managers and owners are unaware of these types of projects.
- Cooling tower water treatment companies are not promoting these types of projects.

Effective advertising to water treatment companies and customers about the water savings potential of pH control, coupled with enhanced incentive levels, will spur the market to use this water treatment.

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 cooling tower water treatment service providers in its marketing of its TAP. LADWP staff have also made numerous presentations to building operators, including City of Los Angeles officials, regarding this technology and its potential for significant water savings. Due to the technical nature of this project, community-based organizations have not been included in the implementation model. Public outreach will include information distributed through qualified cooling tower water treatment service providers, professional trade organizations, as well as directly through LADWP account executives.

There are no known organizations or entities opposed to the project. Possible third-party impacts include consideration of water treatment service providers who do not offer the advanced service comprising this project and, therefore, are replaced by the project participant.

Letters of support for this project (included in Appendix H) 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 a cooling tower pH control system represents a water savings solution for an often overlooked or ignored aspect of commercial building operation. This technology has been proven to generate persistent, reliable water savings via projects promoted through LADWP's TAP; however, participation has been limited due to equipment first-cost challenges. The Program overcomes this first-cost hurdle by paying the installed cost of the technology. Improved water use efficiency and reduced wastewater flow (past projects have shown savings of 3.14 acre-feet of potable water per year) will generate utility cost savings that will ensure the ongoing operation of these systems. Although this technology can be used with almost any evaporative cooling tower, the Program's target of larger cooling towers will deliver significant water savings.

Benefits and Costs

The total project cost is estimated to be $1,025,000 ($10,250 per site for 100 sites). The required minimum 50 percent cost-share will be composed of financial incentives from LADWP's TAP and the MWDSC, as well as in-kind services provided by LADWP that include project management, plan and installation review, pre- and post-inspection site visits (including labor and equipment), and training.

Table C-1: Project Implementation Costs (Budget)

All labor costs included in this application are for LADWP staff, primarily for the project manager (about 90 percent of labor costs). These costs are included in Table C-1 in items (a), (b), (d), (l), and (m). Project rebates to the customers total $670,000 of the costs in item (c). Overall project administration costs total $20,000, less than 6 percent of the non-rebate project costs.

Table C-2: Annual Operations and Maintenance Costs

General administrative costs for the 100 sites are estimated to total about $10,000 per year, as shown on Table C-2. These costs are not included in the grant application and will be funded by LADWP to assist customers with ongoing questions and issues about the program.

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 Table

Table C-4 was used to annualize the project costs. Because the estimated project life is seven years, 0.1791 was used to annualize the project costs.

Table C-5: Total Annual Physical Benefits

The annual physical benefits are presented in Table C-5.

Bay-Delta Benefits

Reduced water demand on the Bay-Delta through the implementation of the proposed regional demand-reduction program can improve future water supply reliability, generating water savings, reducing diversions, and providing secondary benefits to the environment. Reducing demand will contribute to the CALFED objective of a solution to the Bay-Delta issues, including water quality, supplies matched to beneficial uses, improved habitats and ecological functions.

Applicant: Los Angeles Department of Water and Power - Cooling Tower Conductivity Controller Replacement 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								
	Salaries, wages	$11,000	10	$12,100	$12,100	$0	7	0.1791	$2,167
	Fringe benefits	$7,182	10	$7,900	$7,900	$0	7	0.1791	$1,415
	Supplies	$0	0	$0	$0	$0	0	0.0000	$0
	Equipment	$0	0	$0	$0	$0	0	0.0000	$0
	Consulting services	$0	0	$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	$18,182		$20,000	$20,000	$0			$3,582
(b)	Planning/Design/Engineering	$84,545	10	$93,000	$93,000	$0	7	0.1791	$16,656
(c)	Equipment Purchases/Rentals/Rebates/Vouchers	$680,000	0	$680,000	$330,000	$350,000	7	0.1791	$121,788
(d)	Materials/Installation/Implementation	$85,454	10	$93,999	$93,999	$0	7	0.1791	$16,835
(e)	Implementation Verification	$0	0	$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	$78,182	10	$86,000	$86,000	$0	7	0.1791	$15,403
(m)	Report Preparation	$47,273	10	$52,000	$52,000	$0	7	0.1791	$9,313
(n)	**TOTAL**	$993,636		$1,025,000	$675,000	$350,000			$183,577
(o)	Cost Share -Percentage				66	34			

Applicant: **Los Angeles Department of Water and Power - Cooling Tower Conductivity Controller Replacement Program**

Table C-2: Annual Operations and Maintenance Costs

Operations (1) (I)	Maintenance (II)	Other (III)	Total (IV) (I + II + II)
$10,000	$0	$0	$10,000

(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)
$183,577	$10,000	$193,577

(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 - Cooling Tower Conductivity Controller Replacement 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[4]**
	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[2] Indirect [3] 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 for cooling towers 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.	7 years - length of expected controller life.	Direct benefit - reduced use of SWP water	The total estimated water savings is 314 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.	7 years - length of expected controller life.	**Not applicable.**	This project will reduce the amount of water purchased by LADWP from MWDSC by 314 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.

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 (314 acre-feet) by the cost of the water ($443 per acre-foot). The annual local monetary benefit totals $139,102, 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 $139,102, while the total Program costs total $193,577. This Program is not economically feasible without grant funding. With a 34 percent cost-share from this grant, the Program becomes economically feasible.

Applicant: **Los Angeles Department of Water and Power - Cooling Tower Conductivity Controller Replacement 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)	314	acre-feet	$139,102
(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)]			$139,102

Table C-7 Project Local Monetary Benefits and Project Costs

(a) Total Annual Monetary Benefits [(Table C-6, row (f)]		$139,102
(b) Total Annual Project Costs (Table C-3, column III)		$193,577

Table C-8 Applicant's Cost Share and Description

Applicant's cost share %: (from Table C-1, row o, column V)	**66**
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 66 percent cost-share. Without the grant funding (34 percent of the total project costs), this project is not economically feasible, as shown in Table C-7, where the annualized project costs total $193,577 compared to the project benefits of $139,102. With the grant funding, this Program becomes feasible at the local level and would provide an annual 314 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

TAP Cooling Tower Water Efficiency Projects

LADWP TAP Cooling Tower Water Efficiency Projects

Project Name	Cooling Tower Tonnage	App Rec'd	Ch1 Rec'd	Rebate Ch1 Amt	Cost of Project	Annual Savings (millions of gallons)	Savings/ Ton CT	Annual Savings (Acre-feet/year)	Project Savings per day (gallons)	Pre-Inspection Date	Install Date	Post-Inspection Date	Incentive based water savings	Potential Rebate
Customer 1	150	1/19/1999	3/2/2000	$903	$1,167	0.36	2,409	1.11	990.0	01/19/99	03/31/99	11/16/99	$903	$759.00
Customer 2	350	4/11/2000	10/30/2000	$2,108	$6,495	0.84	2,409	2.59	2,310	04/11/00	09/19/00	09/20/00	$2,108	$1,771.00
Customer 3	1,300	3/28/2000	12/4/2000	$3,588	$6,000	1.44	1,104	4.40	3,933	04/03/00	08/28/00	09/28/00	$3,588	$3,014.00
Customer 4	400	5/11/2001	10/31/2001	$2,409	$5,500	0.96	2,409	2.96	2,640	05/11/01	09/25/01	8/29/2001	$2,409	$2,361.00
Customer 5	800	5/10/2001	10/25/2001	$4,818	$7,020	1.93	2,409	5.91	5,280	05/10/01	08/20/01	8/29/2001	$4,818	$4,722.00
Customer 6	1,200	5/29/2001	10/31/2001	$7,227	$8,100	2.89	2,409	8.87	7,920	05/29/01	08/26/01	8/29/2001	$7,227	$7,082.00
Customer 7	330	7/19/2001	5/21/2002	$1,261	$4,500	0.50	1,529	1.55	1,382	07/31/01	03/14/02	01/03/02	$1,261	$1,124.00
Customer 8	2,370	11/28/2001	7/2/2002	$8,267	$11,537	3.31	1,395	10.15	9,060	11/28/01	05/01/02	05/29/02	$8,267	$10,796.00
Customer 9	2,350	2/20/2001	10/18/2001	$6,153	$6,500	2.46	1,047	7.55	6,743	02/20/01	07/29/01	08/29/01	$6,153	$6,030.00
Customer 10	500	7/23/2003	9/13/2004	$3,011	$3,649	1.20	2,409	3.70	3,300	04/05/01	05/01/04	06/01/04	$3,011	$3,011.00
Customer 11	1,000	7/23/2003	9/13/2004	$1,643	$5,097	0.66	657	2.02	1,800	04/05/01	05/01/04	06/01/04	$1,643	$1,643.00
Customer 12	1,250	9/16/2002	7/8/2003	$2,970	$7,848	1.19	950	3.65	3,255	09/16/02	01/10/03	01/15/03	$2,970	$3,742.00
Customer 13	700	4/5/2002	12/23/2004	$4,216	$3,100	1.69	2,409	5.18	4,620	04/05/01	01/08/03	01/15/04	$4,216	$3,100.00
Customer 14	400	1/30/2003	8/2/2004	$1,404	$4,800	0.56	1,404	1.72	1,539	01/30/03	01/15/03	04/15/04	$1,404	$1,769.00
Customer 15	400	1/14/2003	Pending	$1,092	$4,800	0.44	1,092	1.34	1,197	01/14/03	02/01/04	04/15/04	$1,092	$1,376.00
Customer 16	300	2/27/2003	4/1/2004	$442	$2,700	0.18	589	0.54	484	04/01/03	10/01/03	12/04/03	$442	$501.00
Customer 17	300	2/27/2003	4/1/2004	$442	$2,700	0.18	589	0.54	484	04/01/03	10/01/03	12/04/03	$442	$501.00
Customer 18	800	6/30/2003	11/20/2003	$4,818	$6,821	1.93	2,409	5.91	5,280	03/11/03	07/29/03	07/31/03	$4,818	$6,071.00
Customer 19	280	9/17/2003	7/15/2004	$1,686	$4,606	0.67	2,409	2.07	1,848	09/25/03	05/24/04	05/26/04	$1,686	$1,967.00
Customer 20	400	8/21/2003	Pending	$1,379	$4,617	0.55	1,379	1.69	1,511	08/21/03	05/01/04	07/15/04	$1,379	$1,609.00
Customer 21	650	7/8/2003	Pending	$1,544	$2,302	0.62	950	1.90	1,692	07/08/03	03/23/04	08/10/04	$1,544	$1,802.00

TOTALS	Total CT ton	Total rebates	Total Cost	Total savings: in millions of gals/yr	Gals/ton	Total Gallons saved/yr	
21	16,230	$61,381	$109,858	24.553	1,512.80	24,552,723.8	

# Projects	Avg Tons/project	Avg $ rebate per project	Avg Cost/project	Avg annual gals saved per Project	Avg annual AF/Proj	AF savings/ 5 years	AF/5 yrs/ 100 projects
21	773	$2,923	$5,231	1,169,177	3.59	17.9	$ 1,794.04

# Projects	Avg Tons/project	Avg $ rebate per project	Avg Cost/project	Avg annual gals saved per Project	Avg gals saved/ton	AF savings/ 5 years	AF/5 yrs/ 100 projects
19	722	$2,748	$5,113	1,099,192	1,608.59	16.9	$ 1,686.65

# Projects (dropped 2 highest tonnages and 1 lowest)	Avg Tons/project	Avg $ rebate per project	Avg Cost/project	Avg annual gals saved per Project	Avg annual AF/Proj	AF savings project/ 5 years	AF/5 yrs/ 100 projects
18	631	$2,559	$5,036	1,023,518	3.14	15.7	$ 1,570.53

Avg COC
2.6-2.9

Avg Cst not rebated
$2,478

Appendix C

Technical Assistance Program Brochure

Los Angeles DWP Department of Water and Power

WATER CONSERVATION

Technical Assistance Program

FOR

Los Angeles'
Commercial
Industrial
Institutional

AND

Multifamily Residential
Customers

INTRODUCING: A financial incentive program offering commercial, industrial, institutional and multifamily residential customers in Los Angeles up to $50,000 for the installation of pre-approved equipment and products which demonstrate water savings.

This joint effort between the Los Angeles Department of Water and Power and you, our customer, will help modernize your facility with the latest water-efficient equipment, save you money, and conserve our most precious natural resource.

TAP INTO SAVINGS

HOW MUCH IS THE INCENTIVE?

The incentive amount is based on the water savings accomplished by the project. The incentive is calculated at $1.25 per 1,000 gallons of water saved over two years, not to exceed the installed cost of the project. The maximum incentive amount per customer facility is $50,000. Incentives are paid upon verified installation and operation of pre-approved projects.

Any manufacturer rebate received, or to be received, must be subtracted from the purchase price before the submission of the application.

The program is subject to available funds.

WHAT PROJECTS QUALIFY?

The installation of water conservation measures including equipment, devices, products, treatments, fixtures, and technologies of a permanent nature. Eligible projects must save a minimum of 400,000 gallons over a two-year period.

HOW TO APPLY:

Fill out and return the attached application, along with supporting documentation to:

Los Angeles Department of Water and Power
Technical Assistance Program
P. O. Box 51111, Room 1463
Los Angeles, CA 90051-0100

The application form contains specific information on filing and installation deadlines and requirements.

PROJECT QUALIFICATION

- Commercial, industrial, institutional and multi-family residential water users, served by the Los Angeles Department of Water and Power, are eligible.
- Eligible water conservation measures or projects shall include equipment, devices, products, treatments, fixtures, modifications, and technologies. Such measures will be limited to permanent physical changes, additions or deletions to your facility resulting in water use reductions. Measure sub-metering may be required. Maintenance projects do not qualify.
- Project must reduce potable water use by a minimum of 400,000 gallons over two years (this minimum savings would result in a $500 incentive).
- All applications and measures must be pre-approved by the Los Angeles Department of Water and Power before projects begin. Once a completed application has been received, the pre-approval process will require a minimum of two weeks.
- Projects must be installed and operated as proposed on the application and supporting documentation. Changes to project design and/or operation must be pre-approved by the Los Angeles Department of Water and Power. Such changes may affect incentive amounts.
- Measures must be installed and operating prior to incentive payment. Amount and payment of the incentive is subject to final inspection of the completed project.
- Projects undertaken without written pre-approval are ineligible for incentives.
- Projects must operate as designed for a minimum of five years.
- The Los Angeles Department of Water and Power will make the final determination of cost and savings estimates submitted by the applicant.
- Projects must meet all Federal, State and City code, regulatory, and permit requirements.

FOR FURTHER INFORMATION CONTACT:

Telephone (800) 544-4498
Fax (213) 367-1055

City of Los Angeles Department of Water and Power
Water Conservation Technical Assistance Program
Application Form

(Use separate form if submitting for more than one project.)

Customer Name

Sic Code

Contact Person

Area Code ( )

Telephone of Contact —

Address where project is to be installed

Contact Person

City

CA

Zip

Fed. Tax I.D. —

Customer's Mailing Address for Incentive Check

C/O or Attn:

City

State

Zip

Brief Project Description

Water Benefits

1. Estimated Annual Water Savings in Gallons

2. Life (Years) of Project

3. $ Estimated Project Cost

PROVISIONS AND CONDITIONS OF THE TECHNICAL ASSISTANCE PROGRAM

Qualification: To qualify for an incentive, the project must permanently reduce potable water use. The project should not be started (no purchases made nor lease entered into) until a written letter of project acceptance is received from the Los Angeles Department of Water and Power. Sufficient project documentation must be submitted with the completed application for proper evaluation and verification of project water savings and costs. The Los Angeles Department of Water and Power reserves the right to reject any Technical Assistance Program application. All costs incurred in the preparation of the application and supporting documentation are the sole responsibility of the applicant.

Tax Liability and Tax Credits: All incentive payments must be reported as income. You are urged to consult your tax advisor concerning taxability of the incentive and the availability of tax credits.

AGREEMENT

I agree that my participation in the TECHNICAL ASSISTANCE PROGRAM is voluntary and of my choosing. I certify that I have read and understand the program requirements as set forth by the Los Angeles Department of Water and Power. I certify that the proposed project meets said program eligibility requirements, and that the project information I have supplied is true and correct. I understand that participation in the program is conditional upon acceptance of my application by the Los Angeles Department of Water and Power, and that specific incentive commitments are made only through a written letter of acceptance from the Los Angeles Department of Water and Power. I understand that said letter of acceptance will specify the potential incentive amount, project completion deadline and other terms, and will become a part of this agreement. Any changes to this agreement must be made in writing and approved by the Los Angeles Department of Water and Power.

I agree that the project for which a Technical Assistance Program incentive is paid will remain in operation as designed for a period of not less than five (5) years from the date of incentive payment. I agree to refund to the Los Angeles Department of Water and Power a prorated amount of the incentive, as determined by the Los Angeles Department of Water and Power, if the project is not operated as designed for the entire five-year period.

Print Name of Authorizing Official | Signature of Authorizing Official | Title | Date

FOR CITY USE ONLY

Customer of Record

Date Received — —

Actual HCF Reduced

Pre-Installation Inspection

Completion Date — —

Accept, Reject or Withdrawn ("A", "R" or "W")

Signature of Incentive Coordinator | Date

Post-Installation Inspection

Completion Date — —

Accept, Reject or Withdrawn ("A", "R" or "W")

Incentive Amount

$

Signature of Incentive Coordinator | Date

Authorizing Signature | Date

Please make sure you include the following before mailing:

Signed and dated application

- ☐ Backup documentation to support your water savings calculations
- ☐ Specification sheets for any water-conserving equipment to be installed
- ☐ Breakdown of installed equipment costs

FOR FURTHER INFORMATION CONTACT:

Los Angeles Department of Water and Power
Technical Assistance Program
P.O. Box 51111, Room 1463
Los Angeles, CA 90051-0100
Telephone (800) 544-4498
Fax (213) 367-1055

This publication is printed on recycled paper

Appendix D

Sample Service Report

SERVICE REPORT (fill-in highlighted boxes)

Company _____ **Date** _____

Contact _____

Address _____

_____

Phone _____

Fax _____

SAMPLE	P alkalinity	M alkalinity	Chlorides	H (Total Hardness)	Ca (Calcium Hardness)	% Calcium	TDS or µmhos	pH	PO4/MO_4 or MO_6	LSI or RSI	MU mtr rd	BL mt rd
City												
Cooling Towers	0	< 160			< 900			< 8.0		0.0 >L.S.I.< 1.0; 4.5 >R.S.I.< 7.0		
Cycles-->>			< 5.8	< 5.8	< 5.8	<10%	≥5.8					

CR Cu < 0.2 mpy
CR Steel <3.0 MPY

RECOMMENDATIONS	

Accepted by _____ Field Engineer _____

Appendix E

Cooling Tower Water Savings

Generic 400 ton Cooling Tower operating 24 hrs/day, 365 days/year - COC increased from 3.0 to 5.5 cycles

COOLING TOWER WATER SAVINGS

Chiller Capacity - Nominal	400	Tons
Average Equiv. Cooling Load (All Year)	50%	
Average Equiv. Cooling Load (All Year)	200	Tons (@12,000 Btu/Ton)
Average Equiv. Cooling Load (All Year)	2,400,000	Btuh
Required Cooling Tower Capacity	250.0	C.T. Tons (15,000 Btu/Chiller Ton)

DWP CALCULATIONS

Basis of Calculation	Operating Season	Cycles of Concentration	Cooling Tower Delta T (^{o} F)	Evaporation (% / Deg. F)	Cooling Tower Flow Based on Full Load (GPM)	Cooling Tower Evaporation (GPM)	Make-Up Water (GPD)	Total Make-Up Water 1st Year
Theoretical	All Year	3.0	10.0	0.1%	1,400	7.00	15,120	5,518,800
Theoretical	All Year	5.5	10.0	0.1%	1,400	7.00	12,320	4,496,800
Savings in gals/yr.								**1,022,000**
Savings in AF/Yr								**3.14**

Appendix F

North Plant Cooling Tower Bleed and Make-Up Data

NORTH PLANT - (2) 650-Ton Cooling Towers - (3.0 - 5.5 or greater COC)

Bleed is Meter #90030674

Make-up is Meter #90034070

Read	Meter Type	Date Read	Reading HCF	COC (cycles of concentration)	Evap in Gals/Day	Bleed at Current Cycle	MU at Current Cycle	MU at 3.0 Cycle	Bleed at 3.0 Cycle	Gals/Day Saved Compared to 3.0 Cycle	% of Make-Up Saved	Running Total Water Savings to Year
1	Bleed	5/1/2002	16,800	**5.0**								
	Make-Up	5/1/2002	84,700									
2	Bleed	5/15/2002	21,420	**6.7**	13,956	2,468	16,424	20,933	6,978	4,509	27.5%	63,131 gallons/14 days
	Make-Up	5/15/2002	115,440									
3	Bleed	6/19/2002	34,987	**6.1**	14,810	2,899	17,710	22,215	7,405	4,506	25.4%	220,828 gallons/49 days
	Make-Up	6/19/2002	198,306									
4	Bleed	7/11/2002	46,740	**6.1**	20,485	3,996	24,481	30,728	10,243	6,247	25.5%	358,255 gallons/71 days
	Make-Up	7/11/2002	270,310									
5	Bleed	8/5/2002	62,620	**5.7**	22,503	4,751	27,254	33,754	11,251	6,500	23.9%	520,758 gallons/96 days
	Make-Up	8/5/2002	361,400									
6	Bleed	9/9/2002	85,380	**5.7**	23,060	4,864	27,924	34,590	11,530	6,666	23.9%	754,059 gallons/131 days
	Make-Up	9/9/2002	492,060									
7	Bleed	10/3/2002	99,240	**6.0**	21,577	4,320	25,896	32,365	10,788	6,469	25.0%	909,306 gallons/155 days
	Make-Up	10/3/2002	575,150									
8	Bleed	11/13/2002	117,280	**5.6**	15,204	3,291	18,496	22,807	7,602	4,311	23.3%	1,086,059 gallons/196 days
	Make-Up	11/13/2002	676,530									
9	Bleed	12/11/2002	129,080	**5.8**	15,016	3,152	18,168	22,524	7,508	4,356	24.0%	1,208,020 gallons/224 days
	Make-Up	12/11/2002	744,540									
10	Bleed	1/9/2003	139,820	**5.3**	11,873	2,770	14,643	17,809	5,936	3,166	21.6%	1,299,837 gallons/253 days
	Make-Up	1/9/2003	801,310									
11	Bleed	2/6/2003	150,100	**6.3**	14,559	2,746	17,306	21,839	7,280	4,533	26.2%	1,426,773 gallons/281 days
	Make-Up	2/6/2003	866,090									
12	Bleed	3/27/2003	165,650	**5.7**	11,107	2,374	13,481	16,661	5,554	3,180	23.6%	1,582,581 gallons/330 days
	Make-Up	3/27/2003	954,400									
13	Bleed	4/16/2003	172,860	**8.1**	19,250	2,697	21,946	28,875	9,625	6,928	31.6%	1,721,148 gallons/350 days
	Make-Up	4/16/2003	1,013,080									
14	Bleed	6/4/2003	192,200	**6.1**	15,110	2,952	18,062	22,664	7,555	4,602	25.5%	1,946,670 gallons/399 days
	Make-Up	6/4/2003	1,131,400									

NORTH PLANT - (2) 650-Ton Cooling Towers - (3.0 - 5.5 or greater COC)

Bleed is Meter #90030674

Make-up is Meter #90034070

Read	Meter Type	Date Read	Reading HCF	COC (cycles of concentration)	Evap in Gals/Day	Bleed at Current Cycle	MU at Current Cycle	MU at 3.0 Cycle	Bleed at 3.0 Cycle	Gals/Day Saved Compared to 3.0 Cycle	% of Make-Up Saved	Running Total Water Savings to Year
15	Bleed	6/26/2003	202,650	**6.0**	17,598	3,553	21,151	26,398	8,799	5,246	24.8%	2,062,086 gallons/421 days
	Make-Up	6/26/2003	1,193,610									
16	Bleed	8/28/2003	249,080	**5.8**	26,530	5,513	32,043	39,795	13,265	7,752	24.2%	2,550,493 gallons/484 days
	Make-Up	8/28/2003	1,463,490									
17	Bleed	9/6/2003	254,860	**5.4**	21,127	4,804	25,931	31,690	10,563	5,760	22.2%	2,602,329 gallons/493 days
	Make-Up	9/6/2003	1,494,690									
18	Bleed	10/16/2003	280,660	**5.2**	20,278	4,825	25,103	30,417	10,139	5,315	21.2%	2,814,911 gallons/533 days
	Make-Up	10/16/2003	1,628,930									
19	Bleed	11/6/2003	293,800	**5.3**	20,004	4,680	24,684	30,005	10,002	5,321	21.6%	2,926,662 gallons/554 days
	Make-Up	11/6/2003	1,698,230									
20	Bleed	4/8/2004	355,390	**4.9**	11,568	2,992	14,560	17,352	5,784	2,793	19.2%	3,356,725 gallons/708 days
	Make-Up	4/8/2004	1,997,990									
21	Bleed	5/7/2004	365,640	**7.4**	16,815	2,644	19,458	25,222	8,407	5,763	29.6%	3,523,865 gallons/737 days
	Make-Up	5/7/2004	2,073,430									
22	Bleed	6/10/2004	377,440	**7.1**	15,950	2,596	18,546	23,925	7,975	5,379	29.0%	3,706,751 gallons saved in 771 days
	Make-Up	6/10/2004	2,157,730									
23	Bleed	7/7/2004	390,980	**5.3**	15,985	3,751	19,736	23,978	7,993	4,241	21.5%	3,821,270 gallons saved in 798 days
	Make-Up	7/7/2004	2,228,970									
24	Bleed	8/11/2004	411,460	**5.6**	20,190	4,377	24,566	30,284	10,095	5,718	23.3%	4,021,398 gallons saved in 833 days
	Make-Up	8/11/2004	2,343,920									
25	Bleed	9/9/2004	430,370	**5.1**	19,794	4,877	24,671	29,690	9,897	5,019	20.3%	4,166,958 gallons saved in 862 days
	Make-Up	9/9/2004	2,439,570									
26	Bleed	10/6/2004	446,070	**5.3**	18,514	4,349	22,864	27,772	9,257	4,908	21.5%	4,299,467 gallons saved in 889 days
	Make-Up	10/6/2004	2,522,100									
27	Bleed	11/11/2004	458,220	**5.9**	12,375	2,525	14,900	18,563	6,188	3,663	24.6%	4,431,339 gallons saved in 925 days
	Make-Up	11/11/2004	2,593,810									
28	Bleed	12/23/2004	467,200	**7.3**	10,029	1,599	11,628	15,043	5,014	3,415	29.4%	4,574,768 gallons saved in 967 days
	Make-Up	12/23/2004	2,659,100									

Appendix G

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 H

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)
"COOLING TOWER CONDUCTIVITY CONTROLLER REPLACEMENT PROGRAM 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 conservation 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 initiating a program to replace existing cooling tower conductivity controllers at 100 commercial, industrial and institutional sites within Los Angeles with programmable water treatment automation systems. By continuously monitoring cooling tower performance, these new systems will substantially reduce water consumption at each of these installations

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 project because of 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	Employment Access	Youth & Family Programs	Indochinese Youth	Youth Outpatient Treatment	Olympic Academy
3838 W. Martin Luther King Bl	3850 W. Martin Luther King Bl	3210 W. Jefferson Bl.	Community Center	13931 S. Van Ness Ave #202	(323) 933-9022
Los Angeles, CA 90008	Los Angeles, CA 90008	Los Angeles, CA 90018	14112 S. Kingsley Drive	Gardena, CA 90249	Fax (323) 933-4029
(323) 294-4932	(323) 295-0262	(323) 766-5941	Gardena, CA 90247	(310) 768-8018	
Fax (323) 294-2533	Fax (323) 295-2375	Fax (323) 766-5546	(310) 768-8064	Fax (310) 768-4170	
			Fax (310) 768-2779		

Flex your POWER℠

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Saving Energy.
It's a way of life.

January 5, 2005

SUBJECT: SUPPORT FOR THE LOS ANGELES DEPARTMENT OF WATER & POWER (LADWP)
"COOLING TOWER CONDUCTIVITY CONTROLLER REPLACEMENT PROGRAM 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 conservation 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 initiating a program to replace existing cooling tower conductivity controllers at 100 commercial, industrial and institutional sites within Los Angeles with programmable water treatment automation systems. By continuously monitoring cooling tower performance, these new systems will substantially reduce water consumption at each of these installations

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 project because of its contribution to improving water supply reliability for communities in Southern California while reducing our reliance on the Delta and the Colorado River.

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

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Directors Emeriti
Helen Green
Ed Grosswiler
Grace de Laet
Genny Smith
Executive Directors
Geoffrey McQuilkin, Operations
Frances Spivy-Weber, Policy
Southern California Office
322 Culver Blvd.
Playa Del Rey, CA 90293
(310) 316-0041
On the Internet
www.monolake.org
www.monobasinresearch.org

January 4, 2005

Department of Water Resources
Water Use Efficiency Program
Sacramento, California

RE: Support for the Los Angeles Department of Water and Power (LADWP) "Cooling Tower Conductivity Controller Replacement Program 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 program to replace existing cooling tower conductivity controllers at one hundred commercial, industrial, and institutional sites within Los Angeles with programmable water treatment automation systems. By continuously monitoring cooling tower performance, these new systems will substantially reduce water consumption at each of these installations.

I accompanied LADWP staff to one of the sites early in the testing phase for cooling tower systems, and the building managers were extremely pleased with their water savings. The staff was even more impressed at the volume of savings that could be had in just one building.

The savings from this program 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)
"COOLING TOWER CONDUCTIVITY CONTROLLER REPLACEMENT PROGRAM FOR GRANT FUNDING CONSIDERATION"

Salutations:

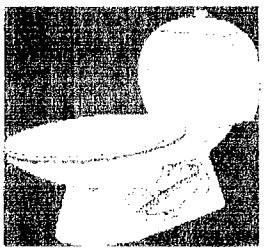
I, Ade Adeniji support the LADWP as it strives to improve the many components of its water delivery services system. As the Department focuses its attention on water conservation projects, and performs these needed improvements, I wish to communicate my support for LADWP's efforts in the planning and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

I understand that LADWP is initiating a program to replace existing cooling tower conductivity controllers at 100 commercial, industrial and institutional sites within Los Angeles with programmable water treatment automation systems. By continuously monitoring cooling tower performance, these new systems will substantially reduce water consumption at each of these installations.

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 project because of its contribution to improving water supply reliability for communities in Southern California while reducing our reliance on the Delta and the Colorado River.

Sincerely,

ADE ADENIJI



818-785-5860
FAX 818-785-5890

Calvary Baptist Homes, Inc.

Low Flush Toilet Distribution & Installation
15421 Cabrito Road #1
Van Nuys, CA 91406

SUBJECT: SUPPORT FOR THE LOS ANGELES DEPARTMENT OF WATER & POWER (LADWP) "COOLING TOWER CONDUCTIVITY CONTROLLER REPLACEMENT PROGRAM 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 conservation 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 initiating a program to replace existing cooling tower conductivity controllers at 100 commercial, industrial and institutional sites within Los Angeles with programmable water treatment automation systems. By continuously monitoring cooling tower performance, these new systems will substantially reduce water consumption at each of these installations.

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 project because of its contribution to improving water supply reliability for communities in Southern California while reducing our reliance on the Delta and the Colorado River.

Sincerely,

James E. Dennis

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