Quality and Productivity Commission

28th Annual Productivity and Quality Awards Program

"Los Angeles County: Ahead of the Curve"

2014 APPLICATION

Title of Project (Limited to 50 characters, including spaces, using Arial 12 point font):

NAME OF PROJECT: LA COUNTY WATERWORKS DISTRICT SOLAR POWER SYSTEM

DATE OF IMPLEMENTATION/ADOPTION: 12/1/2012
(Must have been implemented at least one year - on or before June 30, 2013)

PROJECT STATUS: X Ongoing _____ One-time only

HAS YOUR DEPARTMENT PREVIOUSLY SUBMITTED THIS PROJECT? _____ Yes X No

EXECUTIVE SUMMARY: Describe the project in 15 lines or less using Arial 12 point font. Summarize the problem, solution, and benefits of the project in a clear and direct manner.

The Los Angeles County Waterworks District No. 40, Antelope Valley (District), completed construction and installation of a $2 million Solar Power System at a groundwater well field in Lancaster. Of the $2 million construction cost, $650,000 is expected to be reimbursed to the District by the California Solar Initiative Program. The system is a unique application of 350-kilowatt, ground mounted single-axis tracker solar photovoltaic system, capable of producing 840,000 kilowatt-hours (kWh) per year pumping groundwater. The solar photovoltaic panels are installed at a 2.5-acre Waterworks facility on 5th Street West at Avenue K-8 in Lancaster. The panels will power two of the three groundwater wells on that site, pumping about 1,500 acre-feet of water per year. Chevron Energy Solutions designed and constructed the system. The project's life expectancy is estimated to be 25 years with an estimated 13-year payback period for the District's share of the project cost. After 13 years, the District will be generating power for the two wells at no cost to the District. Additionally, the project is expected to have a positive environmental impact by reducing greenhouse gas (GHG) emissions by 1.2 million pounds per year.

(1) ACTUAL/ESTIMATED **ANNUAL** COST AVOIDANCE	(2) ACTUAL/ESTIMATED **ANNUAL** COST SAVINGS	(3) ACTUAL/ESTIMATED **ANNUAL** REVENUE	(1) + (2) + (3) = TOTAL **ANNUAL** ACTUAL/ESTIMATED BENEFIT	SERVICE ENHANCEMENT PROJECT
$	**$ 209,310.53**	**$ 25,034.44**	**$ 234,344.97**	☐

ANNUAL = 12 MONTHS ONLY

SUBMITTING DEPARTMENT NAME AND COMPLETE ADDRESS
County of Los Angeles
Department of Public Works
P.O. Box 1460
Alhambra, CA 91802-1460

TELEPHONE NUMBER

PROGRAM MANAGER'S NAME
Ahmet Tatililoglu

TELEPHONE NUMBER
626-300-3354
EMAIL
atatililoglu@dpw.lacounty.gov

PRODUCTIVITY MANAGER'S NAME AND SIGNATURE
(PLEASE CALL (213) 893-0322 IF YOU DO NOT KNOW YOUR PRODUCTIVITY MANAGER'S NAME)
Kathy Salama Kathy Salama **DATE** 7/3/14

TELEPHONE NUMBER
626-458-2521
EMAIL
ksalama@dpw.lacounty.gov

DEPARTMENT HEAD'S NAME AND SIGNATURE
Gail Farber Gail Farber **DATE** 7-7-14

TELEPHONE NUMBER
(626)458-4002

We Support Plain Language

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1st FACT SHEET – LIMITED TO 3 PAGES ONLY: Describe the **Challenge, Solution, and Benefits** of the project.

Challenge

The Los Angeles County Waterworks Districts, a division of the Los Angeles County Department of Public Works (Public Works), provides customers of five districts with water from local groundwater and purchased imported water. The largest district, District No. 40 in the Antelope Valley, serves approximately 170,000 people through 55,000 connections.

The District uses a large amount of energy primarily for pumping water, spending over $2 million annually on electricity. The number of wells, vast distribution network, and elevation changes within the Antelope Valley create the need for an immense amount of energy to pump water throughout the distribution system. As a public agency, the District is entrusted by its customers to provide a safe and reliable supply of water at the lowest possible cost. The District strives for efficient and responsive operations by reducing its operating costs and carbon footprint. With nearly 300 days of sunshine in the Antelope Valley, renewable solar photovoltaic electric generation was a strong option for the District to meet these mandates.

Solution

Solar power is an increasingly cost effective means to secure competitive, stable, long term electricity prices, reduce carbon footprint, and improve the sustainability of California's public water agencies. It is also a source of renewable energy, which is incredibly sustainable, reliable, and efficient.

In early 2012, the District identified a Waterworks District facility located in Lancaster, California as a site for a solar-power system to offset the power loads associated with operating two groundwater wells. The site's average power consumption and available open land space at the site determined the proposed system size. The District then completed a rough cost estimate to determine financial feasibility through comparing payback period to system life expectancy.

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The District partnered with the Los Angeles County Internal Services Department's Energy Management Division (County Office of Sustainability) and Contracting Division (Purchasing & Contracting Service) for their expertise in renewable energy project development, management, and contracting. The District, Energy Management, and Contracting Divisions brought their resources together to develop the Scope of Work and solicited competitive fixed-price bids from pre-qualified vendors under Energy Efficient Projects Master Agreement. The project was awarded to Chevron Energy Solutions. The project relied heavily on interdepartmental collaboration across many divisions. There was extensive technical coordination among Public Works' Building & Safety's Electrical, Geotechnical, and Structural sections and other County Departments, such as Regional Planning and Fire Departments during the plan check process. On the Chevron Energy Solutions side, there were extensive engineering and equipment services provided by their subcontractors such as Blue Oak Energy Engineers, IE Systems installers, DuraTrack trackers and Solaron inverter. Final inspection and approval of the system was performed by Southern California Edison to grid-tie the solar system.

The District completed a negative declaration per the California Environmental Quality Act with the assistance of Chevron and their environmental consultant. The findings proved that the project resulted in a less than significant environmental impact. The design was completed in mid-2012 and construction was completed in November 2012. The main components of the solar system comprised of more than 1,300 solar PV panels mounted on trackers, combiner and re-comber boxes, an inverter to convert power from DC power AC, a data acquisition system, and a revenue grade meter interconnected with utility at the switchgear. The final design was plan checked and approved by the Public Works' Building & Safety Division and Fire Department. The completed system installation was inspected and approved by Building & Safety; the Fire Department; and the local energy utility, Southern California Edison. After installation of the solar power system, the District worked with the Public Works' Information Technology Division to provide a broadband router and Verizon Wireless 4G Internet connection at the site for the monitoring and reporting of solar power production. The solar power production data is collected every 15 minutes and sent to a third party monitoring consultant to report to the California Solar Initiative (CSI) for incentive reimbursement expected to be paid over 5 years.

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LINKAGE TO THE COUNTY STRATEGIC PLAN (DETAIL IS REQUIRED FOR COUNTY DEPARTMENTS):
The District's solar power system is in alignment with Los Angeles County's Strategic Plan (Goal 2: Fiscal Sustainability; Strategic Initiative 4: Long-Term Investments- "Energy efficiencies/global climate change and environmental sustainability"). This program is expected to reduce energy consumption and GHG emissions by approximately 50 percent, resulting in 30 million pounds of CO2e removed from the environment.

Benefits

The project was completed on budget and on schedule, resulting in an approved rebate from CSI of $650,000. The 350-kilowatt, ground mounted single-axis tracker solar photovoltaic system produces approximately 840,000 kilowatt-hours per year, which is equivalent to providing annual power to 53 single-family California homes. The solar power provides energy for two groundwater wells on-site to deliver 1,500 acre-feet of water per year, equivalent to supplying a year's worth of water to 1,800 homes in Lancaster. This system will reduce the amount of harmful emissions that would otherwise be created from fossil fuel generated energy. This system is expected to reduce 1.2 million pounds of GHG per year.

Currently, the site is offsetting approximately 51 percent of its electrical consumption with solar power. The total energy produced since December 2012 to April 2014 is 1,125,146 kilowatt-hours. This generated energy has saved The District approximately $157,000 in electrical costs, made $155,944 from the CSI rebate program, and 1.7 million pounds of GHG emissions have been avoided.

After approximately 13 years of operating the solar power system, the District will have offset enough cost savings and rebates to pay back the cost of the project. During the remaining 12 years, the District will make an estimated $3.3 million from electrical savings. For all these achievements and the successful delivery of the project, on budget, the Solar Power project is worthy of an award.

The solar power system is noteworthy for the following accomplishments: innovative, sustainable, efficient, environmentally beneficial, encouraged collaboration, and cost-effective. This project was innovative for being the first-of-its-kind solar power system within Public Works. In addition, the project utilized a sun-tracking mechanism to achieve the most efficient production possible within the given space.

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COST AVOIDANCE, COST SAVINGS, AND REVENUE GENERATED (ESTIMATED BENEFIT): If you are claiming cost benefits, include a calculation on this page. You must include an explanation of the County cost savings, cost avoidance or new revenue that matches the numbers in the box. Remember to keep your supporting documentation.

Cost Avoidance: Costs that are eliminated or not incurred as a result of program outcomes.

Cost Savings: A reduction or lessening of expenditures as a result of program outcomes.

Revenue: Increases in existing revenue streams or new revenue sources to the County as a result of program outcomes.

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Note: Annual cost savings and revenue are determined taking a yearly average of project total reduced load savings and total project revenue, given an expected 25 year project lifespan.

Total Reduced Energy Costs (Cost Savings)	$5,232,763.14	Annual Savings	$209,310.53
Total CSI Rebate (Project Revenue)	$625,861.02	Annual Revenue	$25,034.44
Running Total Savings	$5,858,624.16		
Project Cost with 25 years of O&M	-$2,542,541.50		
Total Profit	$3,316,082.66		

Part of the engineering design process was to create a table to forecast the project electrical generation, revenue and savings over an expected 25-year lifespan to determine payback time, electrical savings, and electrical generation. The values in the chart summarize total cost savings and profit that span over the estimated lifespan of the project. Cost savings are determined using cost per kilowatt hour, which changes year to year due to inflation in the economy and deprecation of the equipment. Project revenue comes from the CSI in a form of rebate based on power generation during the first five years of operation. To determine an average savings and revenue, the final estimated values are averaged over the 25 year lifespan to yield a yearly savings and revenue value. Finally, total profit is calculated by subtracting the cost of the project design and installation with 25 years of operation and maintenance from the sum total of cost savings and project revenue.

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FOR COLLABORATING DEPARTMENTS ONLY

(For single department submissions, do not include this page)

DEPARTMENT NO. 2 NAME AND COMPLETE ADDRESS LOS ANGELES COUNTY INTERNAL SERVICES DEPARTMENT	
PRODUCTIVITY MANAGER'S NAME AND SIGNATURE CELINA ORTIZ	**DEPARTMENT HEAD'S NAME AND SIGNATURE** JIM JONES
DEPARTMENT NO. 3 NAME AND COMPLETE ADDRESS	
PRODUCTIVITY MANAGER'S NAME AND SIGNATURE	**DEPARTMENT HEAD'S NAME AND SIGNATURE**
DEPARTMENT NO. 4 NAME AND COMPLETE ADDRESS	
PRODUCTIVITY MANAGER'S NAME AND SIGNATURE	**DEPARTMENT HEAD'S NAME AND SIGNATURE**
DEPARTMENT NO. 5 NAME AND COMPLETE ADDRESS	
PRODUCTIVITY MANAGER'S NAME AND SIGNATURE	**DEPARTMENT HEAD'S NAME AND SIGNATURE**
DEPARTMENT NO. 6 NAME AND COMPLETE ADDRESS	
PRODUCTIVITY MANAGER'S NAME AND SIGNATURE	**DEPARTMENT HEAD'S NAME AND SIGNATURE**