

Los Angeles



Department of Water & Power

ERIC GARCETTI  
Mayor

Commission  
MEL LEVINE, *President*  
WILLIAM W. FUNDERBURK JR., *Vice President*  
JILL BANKS BARAD  
MICHAEL F. FLEMING  
CHRISTINA E. NOONAN  
BARBARA E. MOSCHOS, *Secretary*

MARCIE L. EDWARDS  
*General Manager*

April 23, 2014

The Honorable City Council  
Office of the City Clerk  
Room 395, City Hall  
Mail Stop 160

Attention: Councilmember Felipe Fuentes  
Chair, Energy and Environmental Committee

Honorable Members:

Subject: Council File #14-0350 – Los Angeles Department of Water and Power report to the Council regarding membership in the Environmental Protection Agency *SF6 Emission Reduction Partnership for Electric Power Systems* and the Department's efforts to reduce Sulfur Hexafluoride (SF6) emissions

This is in response to the motion (Koretz – Huizar) that asked the Department of Water and Power to report to the Council on its membership in the United States Environmental Protection Agency (EPA) *SF6 Emission Reduction Partnership for Electric Power Systems*; and the Department's efforts to reduce SF6 emissions.

### **Background Information**

SF6 is an inert gas that is used as an insulating medium in electrical circuit breakers and switchgear. SF6 gas insulated circuit breakers and switchgear are widely used in the electric utility industry because they are state-of-the-art technology that is more effective at quenching electrical arcs than oil filled circuit breakers, has a smaller equipment footprint which enables electric utilities to serve increasing electrical demand in densely populated areas without needing additional real estate, and reduces safety and environmental hazards associated with oil filled breakers. In addition, SF6 is currently the only technology available for high and medium voltage, larger capacity circuit breakers.

Recently, SF6 has become regulated because it is a greenhouse gas (GHG) with a high global warming potential.

**Los Angeles Aqueduct Centennial Celebrating 100 Years of Water 1913-2013**

111 N. Hope Street, Los Angeles, California 90012-2607 Mailing address: Box 51111, Los Angeles, CA 90051-5700  
Telephone: (213) 367-4211 www.LADWP.com

### **Current Federal and State Regulatory Requirements**

As a California electric utility, the Los Angeles Department of Water and Power (LADWP) is highly regulated and must comply with both federal and state mandatory GHG reporting requirements, including reporting of SF6 emissions.

At the federal level, LADWP is subject to the EPA *Mandatory Reporting of Greenhouse Gases* rule (40 CFR Part 98). Under Subpart DD of the EPA mandatory reporting rule, LADWP as the operator of an electric power system is responsible for reporting emissions from SF6 gas insulated electrical transmission and distribution equipment within LADWP's operational control, including some equipment that is co-owned or owned by other entities.

LADWP operates and maintains 5,314 electrical substations and hundreds of field switches scattered throughout LADWP's service territory. LADWP is also responsible for maintaining over 11,000 miles of distribution lines and 3,655 miles of transmission lines stretching from Los Angeles to the Owens Valley, the Nevada-Oregon border, as well as into Utah, Nevada, and Arizona. LADWP maintains transmission and distribution equipment and facilities belonging to LADWP as well as other entities including Intermountain Power Agency, Southern California Edison, Burbank Water & Power, Glendale Water & Power, and Pasadena Water & Power.

As part of the EPA reporting requirements, LADWP entered into a Greenhouse Gas Reporting Program Designated Representative Agreement with the other entities that co-own or own equipment within LADWP's operational control, which is included in the scope of LADWP's annual electric power system SF6 emissions report to EPA. This agreement was reviewed and approved by the Council earlier this year.

At the state level, LADWP is subject to the California Air Resources Board (ARB) *Regulation for Reducing Sulfur Hexafluoride Emissions from Gas Insulated Switchgear* (ARB SF6 Regulation). Under the ARB SF6 Regulation, LADWP is required to report the following to ARB for active SF6 gas insulated equipment owned by LADWP within California: 1) annual SF6 emissions, 2) annual average SF6 emission rate, 3) detailed inventory of SF6 gas insulated equipment, 4) detailed inventory of SF6 gas storage containers, and 5) detailed inventory of SF6 gas transfers into or out of equipment.

In addition to the reporting requirements, the ARB SF6 Regulation establishes a Maximum Annual SF6 Emission Rate limit starting at 10 percent in 2011 and declining 1 percent per year to 1 percent in 2020. While a 1 percent annual emission rate should be achievable under normal operating conditions, sometimes there are extraordinary circumstances beyond a utility's ability to control which could result in exceeding the annual average emission rate limit. To make allowances for extraordinary circumstances, the ARB SF6 Regulation includes an exemption provision (subject to

ARB approval) whereby a regulated entity can request that SF6 emissions resulting from an emergency event such as an earthquake, fire, flood, or other extraordinary situation that could not have been prevented, to be excluded from the annual emission rate calculation.

### **LADWP's Efforts to Comply with the Mandatory Reporting Requirements**

Summarized below are the actions and additional workload LADWP has undertaken to comply with the federal and state SF6 reporting requirements:

- In FY 12-13, LADWP electrical station maintenance staff conducted a physical inventory of all SF6 gas insulated electrical equipment within LADWP's operational control and updated our asset management database. This comprehensive system-wide inventory of over 1,500 pieces of equipment involved close to 200 staff and consumed almost 11,000 labor hours at a cost of approximately \$780,000.
- There is no off-the-shelf software available to record and manage the type of information required for mandatory reporting. Therefore, LADWP designed and built a custom SF6 recordkeeping database to track our SF6 gas cylinder inventory and record transfers of SF6 gas between cylinders and gas insulated equipment. This has been an ongoing effort over the past 6 years at a cost of approximately \$250,000, with additional work still needed to improve functionality and add reporting features.
- At the beginning of each year LADWP staff must inventory the SF6 gas stored in each of our 460+ SF6 gas cylinders and 20 gas processing carts/trailers. This comprehensive annual inventory requires approximately 250 labor hours. In addition, LADWP performs quarterly inventories of the in-use SF6 cylinders throughout the year.
- Whenever SF6 gas is transferred into or out of SF6 gas insulated electrical equipment, the SF6 cylinder must be weighed before and after the transfer and the pounds of SF6 transferred recorded in the SF6 recordkeeping database.
- The SF6 gas insulated electrical equipment and SF6 gas cylinder inventories must be updated whenever new electrical equipment or SF6 gas cylinders are received, or equipment or cylinders are moved from one facility to another.
- Preparing the federal and state annual SF6 reports is a manual process that involves gathering and analyzing data from multiple sources, determining what equipment was filled/added/removed during the year, calculating SF6 emissions using a mass balance method, calculating the daily average nameplate capacity

and emission rate, and preparing detailed inventories of the SF6 gas insulated electrical equipment, SF6 cylinders, and SF6 gas transferred into or out of electrical equipment during the year.

In addition to the above efforts, LADWP conducts annual training for staff that works with SF6 gas and SF6 gas insulated electrical equipment, and has implemented new procedures for receiving and inventorying new SF6 gas and SF6 gas insulated electrical equipment. Other efforts underway include development of a department-wide SF6 policy, improvements to our SF6 recordkeeping databases, and developing various reports to extract data from our recordkeeping databases for internal audits and for preparing the federal and state annual SF6 reports.

### **LADWP's Efforts to Reduce SF6 Emissions**

Over the past fifteen years, LADWP has been proactive in reducing SF6 emissions by implementing its own internal program to minimize SF6 emissions from gas insulated electrical equipment in its transmission and distribution system. LADWP has already invested significant effort and resources to replace, repair and upgrade our SF6 gas insulated electrical equipment, and implemented a number of process improvements including the purchase of SF6 gas processing carts and self-sealing hoses (used to reclaim gas and fill equipment) and special cameras used to detect SF6 gas leaks.

LADWP's internal SF6 emission reduction program has resulted in a low system-wide SF6 leak rate of approximately one to two percent per year under normal operating conditions. This voluntary effort to reduce SF6 emissions demonstrates LADWP's commitment to environmental stewardship and places LADWP in a good position to comply with California's SF6 emission standard under the ARB SF6 Regulation.

### **EPA's SF6 Emission Reduction Partnership for Electric Power Systems**

The EPA *SF6 Emission Reduction Partnership for Electric Power Systems* (EPA SF6 Partnership) is a nationwide program established in 1999 for the purpose of reducing electric utility SF6 emissions through voluntary efforts and sharing technical information about the handling and management of SF6 gas and strategies for reducing SF6 emissions.

This voluntary program preceded EPA's mandatory SF6 reporting requirements that went into effect on January 1, 2011. Participating in the voluntary EPA SF6 Partnership would entail establishing a SF6 emission base year and SF6 emissions reduction goal, submitting annual SF6 emissions reports and describing technologies and practices implemented to reduce emissions, developing and distributing a company-wide policy for the proper handling of SF6, and communicating with employees about the partnership. For entities subject to the federal mandatory reporting requirements, the

EPA SF6 Partnership accepts the annual SF6 emissions report submitted to EPA under the mandatory reporting rule.

LADWP is currently subject to both federal and state mandatory GHG emission reporting requirements, which are equivalent to or more stringent than the reporting requirements under the voluntary EPA SF6 Partnership program. Prior to becoming subject to the federal and state mandatory GHG reporting requirements, LADWP participated in several voluntary GHG reporting programs including the United States Department of Energy, Energy Information Administration's Voluntary Reporting of Greenhouse Gases program (1605(b) program) from 1995 to 2005, and the California Climate Action Registry from 2002 to 2008 (LADWP was a charter member). From 2008 onward, LADWP has been subject to mandatory GHG emission reporting requirements which include reporting of SF6 emissions. Currently, LADWP is not participating in any voluntary GHG reporting programs due to the heavy burden to comply with the mandatory reporting requirements.

### **Recommendation**

Our recommendation is to not join the EPA voluntary SF6 Partnership program. With limited staff resources, it is very challenging to comply with the multitude of regulations LADWP is subject to, including California's GHG Cap-and-Trade program. LADWP's regulatory compliance workload would limit our ability to fully participate in the EPA voluntary program.

We believe that participating in the EPA voluntary SF6 Partnership would not benefit our ratepayers at this time, and that putting energy into an additional program would dilute the energy spent on compliance with the mandatory reporting requirements. Instead, LADWP will focus its limited staff resources on compliance, completing our internal SF6 policy, and improving our inventory, recordkeeping, and reporting procedures. Significant effort is still needed to automate and streamline our processes to reduce the manual labor hours needed to comply with the mandatory reporting requirements, decrease the possibility of errors, and limit the potential for violations and financial penalties due to recordkeeping and reporting errors.

LADWP will continue to participate in the EPA SF6 Partnership technical workshops, and work with other California electric utilities to share information and implement best management practices for handling SF6 and complying with the mandatory reporting requirements.

The Honorable City Council  
Page 6  
April 23, 2014

If you have any questions or require further information, please contact me at (213) 367-1338, or have a member of your staff contact Ms. Winifred J. Yancy, Director of Intergovernmental Affairs and Community Relations, at (213) 367-0025.

Sincerely,

A handwritten signature in black ink, appearing to read 'MLE', with a long horizontal flourish extending to the right.

Marcie L. Edwards  
General Manager

MS/CP:lcb

c: Councilmember Bob Blumenfield, Vice-Chair, Energy and Environment Committee  
Councilmember Jose Huizar, Member  
Councilmember Paul Koretz, Member  
Councilmember Tom LaBonge, Member  
Ms. Winifred J. Yancy