

**Los Angeles County
Metropolitan Transportation Authority
Office of the Inspector General**

**Management of Electricity
Usage and Billings**

Metro has been taken action to establish an agency energy and sustainability policy; supplementing this policy with a comprehensive electricity management and conservation plan, and initiating other actions would further help to reduce energy consumption and costs.

Report No. 10-AUD-08

July 6, 2010



Management of Electricity Usage and Billings
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Metro

**Los Angeles County
Metropolitan Transportation Authority**

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DATE: July 6, 2010

TO: Board of Directors
Chief Executive Officer

FROM: *Jack Shigetomi*
Jack Shigetomi
Deputy Inspector General - Audits

SUBJECT: Management of Electricity Usage and Billings (Report No. 10-AUD-08)

Introduction

The Office of the Inspector General conducted An audit of Metro’s electricity usage and billings. This audit was conducted as part of our ongoing program to assist Metro in improving the economy and effectiveness of operations, ensuring the adequacy of internal controls and procedures, and deterring fraud, waste, and abuse.

At the direction of the Board of Directors, Metro developed an agency energy and sustainability policy, which included electricity. Metro has taken steps to implement actions in several areas to conserve electricity and reduce costs such as installing solar energy and conducting energy audits at some facilities. We believe that supplementing this policy with a comprehensive electricity conservation and management plan would further help to focus efforts to reduce energy consumption and costs.

The audit also found other opportunities that would help to reduce and better manage electricity usage:

- Performing energy assessments at all Metro facilities.
- Completing open issues in consultant’s report on electricity usage, meters, and rates.
- Evaluating the cost effectiveness of installing sub-meters at facilities to better track and manage electricity consumption.
- Designating an individual or department responsible for monitoring and evaluating electricity usage and rates, and coordinating with utility providers.
- Developing policies and programs to involve all employees to work towards Metro’s energy reduction goals.

- Resolving erroneous city utility user tax charges and late payment fees on utility bills.
- Consolidating utility bills to facilitate processing of the bills.

Objectives, Scope, and Methodology

The objectives of the audit were to (1) evaluate the policies and procedures for monitoring and evaluating electricity usage to promote economy and conservation by the user departments, and (2) determine whether electricity billings were reviewed and processed timely.

To accomplish the audit objectives, we performed the following:

- Obtained an understanding of responsibilities, procedures, and internal controls for processing the electricity bills for payment.
- Reviewed Metro's Towards a Sustainable Future: 2009 Baseline Sustainability Report,¹ and the Metro Energy and Sustainability Policy.²
- Reviewed Metro's Sustainability Implementation Plan issued on June 17, 2008.
- Reviewed electricity bills for July 2009.
- Reviewed energy assessments of Metro bus divisions performed by the Los Angeles Department of Water and Power (LADWP)³ and a rail division by a consultant.
- Interviewed and obtained data from Metro staff in Accounting, Environmental Services and Compliance, Facilities Engineering Operations, Countywide Planning and Development, Bus Operations, and Rail Operations.
- Reviewed energy management and conservation plans of other government agencies.

The audit was performed in accordance with Government Auditing Standards. Those standards require that the audit be planned to obtain sufficient, appropriate evidence to

¹ Towards a Sustainable Future: 2009 Baseline Sustainability Report, issued in June 2009 by Metro's Environmental Services and Compliance Department. This report is available on the following Metro website: http://www.metro.net/about_us/sustainability/images/sustainability_report_2009_0617.pdf.

² Metro Energy and Sustainability Policy was adopted by the Board in June 2007.

³ The Los Angeles Department of Water and Power completed on-site utility audits and energy assessments at Divisions 1, 2, 3, 8, 10, and 15.

provide a reasonable basis for the findings and conclusions based on the audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on the audit objectives.

Background

Electricity Usage

Metro purchases electricity from the Los Angeles Department of Water and Power (LADWP), Southern California Edison (SCE), and Pasadena Water and Power (PWP). According to Metro's 2009 Baseline Sustainability Report, in calendar year 2008, the agency consumed 243 million kilowatt hours (kWh) of electricity at a cost of \$27 million (\$20 million for rail operations and \$7 million for facilities).

- A comparison of electricity usage and costs for rail propulsion during calendar years 2005 through 2008 showed that electricity usage increased 7.66% and the related costs increased 5.02% from 2005 to 2008.
- A comparison of electricity usage and costs for Metro facilities during calendar years 2005 through 2008 showed that electricity usage increased 10.71% and the related costs increased 23.34%.

The significant relative usage and cost growth of facility electrical usage compared to that of rail electricity usage suggests that this is an area to focus efforts to promote the efficient use and conservation of electricity.

Metro Energy and Sustainability Policy

In June 2007, the Board of Directors adopted the Metro Energy and Sustainability Policy to control energy consumption and embrace energy efficiency, energy conservation. In June 2008, the Board approved the Metro Sustainability Implementation Plan. The plan calls for energy conservation initiatives; planning, feasibility studies, and installation of additional solar panels at various bus and rail divisions; exploration of other renewal resources; performing energy audits, implementing energy efficiency methods and developing a comprehensive and energy security strategy.

Additional background information is provided in Attachment A to the report.

Results of Audit

A. Opportunities to Reduce Energy Consumption and Costs

1. Electricity Conservation and Management Plan

Metro has established a sustainability policy and plan that covers various areas such as fuel, energy, and water. Metro could reduce energy consumption and costs further by supplementing this policy with a comprehensive electricity management and conservation plan.⁴ This would provide centralized management, tracking, and monitoring of electricity usage and rates to assess whether electricity is being used in the most economical and efficient manner by Metro departments. The agency-wide electricity conservation plan should establish specific agency conservation policies, goals, targets, strategies, responsibilities, and accomplishments to ensure all departments and employees are working towards the agency's goal of reducing energy consumption. The plan should also incorporate policy to require that managers at each Metro facility be responsible for energy conservation and reduction.

We reviewed energy conservation plans developed by several government agencies and identified the following key elements of a comprehensive plan:

- Overall strategy and goals for reducing energy consumption.
- Preliminary energy audits/utility assessment reports with detailed recommendations for cost effective resource efficiency measures that could be implemented to reduce utility consumption and/or utility costs.
- Implementation schedule that describes how the agency plans to achieve the agency goals and the recommendations from the utility assessments reports.
- Finance strategy that describes how the agency plans to obtain funding to implement the recommended cost effective efficiency measures.
- Utility awareness plan through which the agency will educate its personnel on utility conservation methods and practices.
- Asset management inventory that describes the buildings and facilities.
- History of utility use and expenditures for the buildings and facilities.

⁴ This plan could incorporate some of the recommendations made in the 2009 Baseline Sustainability Report.

- Savings monitoring and evaluation plan that describes plans for monitoring and evaluating efficiency savings as a result of implementing the recommendations in the utility assessment reports.
- Project implementation update that outlines the progress over prior periods and a summary of the results of projects in terms of utility efficiency and cost savings.
- A designated official at the agency who is responsible for implementation of the energy conservation plan.

2. Energy Assessments

We found that the LADWP performed on-site utility energy assessments at 6 bus divisions since 2004, and Metro's Environmental Compliance and Services Department hired a consultant to complete an energy efficiency assessment at the Red Line maintenance facility. These assessments made recommendations in many areas to reduce energy consumption. The Facilities Engineering Operations Supervising Engineer stated that all of the recommendations in the LADWP reports are feasible and would reduce usage and costs if implemented, but implementing them is contingent on the availability of funds:

LADWP Energy Assessments of Bus Divisions: From 2004 to 2008, LADWP completed energy assessments at six Metro bus divisions (1, 2, 3, 8, 10, and 15). These assessments made 366 recommendations to reduce electricity consumption in the following areas: lighting, heating, ventilation, and air conditioning (HVAC), refrigeration, fans and pumps, motors, compressed air, office equipment, building structure, and rates and billings. Many of the recommendations were common between the divisions (see Attachment B for list of recommendations).

The LADWP energy assessment reports were sent to Facilities Engineering. A Supervising Engineer in Facilities Engineering Operations told us that his department identified capital projects recommended in the energy assessments that could be implemented. He stated that lighting upgrades have been completed at three of the six bus divisions, which consisted of replacing the lights in the maintenance bays with energy efficient pulsed start metal halide lights. However, the lighting in the office areas at these divisions has not been upgraded with the recommended T8 lighting due to budget constraints. The HVAC units at one of the six bus divisions have been replaced with energy efficient units, and HVAC upgrades for three other divisions are in the approval process.

The Supervising Engineer said that he discussed non-capital projects recommendations with the Division Maintenance Managers. He neither asked for nor received feedback from the divisions on what recommendations were implemented.

Consultant Assessment of Red Line Maintenance Facility: In June 2009, a consultant hired by the Environmental Compliance and Services Department issued a report on Renewable and Energy Efficiency Feasibility Study of the Red Line Maintenance Facility. The report proposed a number of recommendations in areas where energy might be reduced:

- Most of the fluorescent lighting systems are inefficient T12 systems. Less than 20 percent of the older, inefficient T12 fluorescent lighting in interior office and shop areas have been upgraded to more efficient T8 lighting.
- Replace incandescent lamps with compact fluorescent fixtures and lamps.
- Install occupancy motion or infrared sensors.
- Some 20 plus year old HVAC systems remain, and should be replaced with high efficiency HVAC systems.

Metro plans to have energy assessments performed at the remaining bus and rail divisions served by LADWP. The timeframe for the completion of these assessments is not known and is contingent on availability of LADWP and/or Metro resources.⁵ Metro staff told us that to their knowledge, SCE has not been requested to perform energy assessments of Metro facilities.

We believe that energy assessments should be completed for all metro facilities because they are useful tools to identify potential ways to reduce consumption. This is consistent with the 2007 Energy and Sustainability Policy goal of completing energy audits of all bus and rail facilities and Union Station Gateway within 3 years.

Some recommendations in the energy assessment reports could require capital funding such as replacing lighting or HVAC systems. However, other recommendations require no or modest funding such as turning off computers and electrical equipment or installing occupancy sensors.⁶ In addition, the results and recommendations from the energy assessments should be incorporated into an overall agency electricity management and conservation plan, which would facilitate tracking and implementing the recommendations. Also, copies of the assessments should be provided to facility managers who should provide feedback of the actions taken to the Environmental Compliance and Services Department (ECSD). This feedback could be used to make a list of best practices to send to other facility managers.

⁵ A Metro Transportation Sustainability Energy Manager assigned to the Environment Compliance Services Department has obtained training for conducting energy assessments and is currently working on his first energy assessment review for Metro. The Manager has completed an energy assessment at Division 10, and assessments are being conducted at Divisions 3 and 18. Also, an electricity usage review is underway at Union Station Gateway building as part of the LEED-Existing Buildings Operations and Maintenance certification.

⁶ Motion sensors have been installed at the Union Station Gateway building; but have not been implemented throughout the agency.

ECSD officials stated that the actions recommended above assume that they are the coordinator of these activities. They stated that everyone believes that ECSD is the responsible department, but ECSD has not been officially designated the responsibility.

3. Completing Open Issues in Consultant Report

Metro contracted with a consulting firm (TriStem) to identify potential billing, rate, and metering errors. In a report dated December 31, 2008, TriStem stated that it reviewed 125 Metro electric service accounts and identified billing errors on several accounts totaling \$5,671. Accounting has resolved the overcharges that were identified in the TriStem audit with the utility companies. However, the report identified several areas that warrant further in-field investigation or review that are not completed. In this regard, TriStem identified:

- 6 PWP, 9 SCE, and 44 LADWP accounts where metering and/or billing parameters warrant in-field investigation and/or additional rate research.
- 32 accounts where fieldwork is needed. For these accounts, TriStem could not verify the accuracy of the billings until they conduct on-site inspections of the connected facilities, electric meters, and transformers. The report stated that after field work is completed, there may be additional refunds to Metro.
- 35 accounts that needed further research of the applicable rates available through the respective utility providers. In many cases, accounts are averaging costs per kWh that are greater than accounts using like levels of electricity on other rates. Specifically, Time of Use Rates appear to be more economical than their General Service counterparts.
- 12 LADWP accounts that possibly could receive a rate discount. There are provisions in the Large General Service (A3) and General Service (A2) rate schedules that call for a discount to accounts that take service at a subtransmission level. Metro has five A3 accounts, all of which are subtransmission service and seven A2 accounts billed as subtransmission service. None of these accounts appear to be receiving any discount.

Since issuing the report in December 2008, TriStem has not performed additional work although other potential cost reduction items discussed in the report are not completed. Metro staff informed us that they have contacted TriStem; however, a timeframe has not been established to resume work. Metro staff needs to pursue the issues identified in the report with the contractor.

4. Evaluating Installation of Facility Sub-Meters

We were informed by three Metro officials that electricity usage could be more effectively tracked and managed if sub-meters are installed at facilities where presently only one meter is connected to monitor multiple buildings and/or functions. For example, there may be some meters at rail stations that also connect to the traction sub-stations (propulsion power), and at bus divisions multiple uses, such as maintenance activities, fuel, vacuum, and washing are generally connected to a single meter.

The 2009 Baseline Sustainability Report also cited the lack of sub-meters: *“Because a few of our current utility meters monitor several buildings within a Division (for example), it is difficult to accurately identify the source of increasing or decreasing energy usage within a specific division.”* The report recommended the need to (a) develop electricity reduction targets for Board approval; (b) provide sub-meters at each facility so electricity usage can be more accurately tracked; and (c) partner with LADWP and SCE to create a cost-effective Agency wide energy reduction plan.

On March 31, 2010, the Environmental Compliance and Service Manager stated that Metro is installing 11 sub-meters in the Gateway building for a total cost of about \$10,100. Also, Metro is in the process of developing a sub-metering plan for Division 10.

5. Centralized Management

The review disclosed that no one individual or department within Metro is currently responsible for monitoring and evaluating electricity usage and rates to ensure that the agency is using electricity efficiently and paying the lowest rates. Appointing overall responsibility would facilitate the implementation of an electricity conservation plan, performance of energy assessments, and improve coordination with utility companies.

A Metro staff informed us that the utilities do not attempt to contact Metro because they do not know who to contact. Utilities have corporate account managers who are dedicated to service and coordinate with major accounts such as Metro on any problem or issue. However, at Metro there is no single office or person who can coordinate with the utility companies on all electricity matters such as potential billing errors, rates, and discounts.

We found that Metro staff contacts different utility personnel. One Metro staff stated that she calls the regular customer service number that appears on the utility bill for billing matters. Another Metro staff has identified a specific individual to contact at each of the utility companies. They both agreed that it would be better to have a single Metro person or department with the responsibility to coordinate with the utility company account manager on all billing matters.

6. Agency-Wide Conservation Effort

Employee Involvement

Developing energy conservation policies and programs that involve all employees to work towards Metro's energy reduction goals would supplement facilities management efforts and help ensure program success and maximize savings. All Metro employees can help to realize energy savings if conservation best practices are embedded into policies and long term operational and institutional culture. Employees can help reduce energy consumption in ways such as:

- Turning off overhead lights and lamps when leaving their offices or work area.
- Turning off coffee makers, radios, fans, and other appliances when they are not needed or at the end of the work day.
- Turning off personal computers, monitors, and printers at the end of the work day.
- Turning off equipment that shows a glowing LED light.
- Submitting energy savings ideas.

Embedding energy conservation into the agency's culture could result in significant savings. For example, a recent report,⁷ stated:

“According to a...survey in October 2008, 50% of employed adults in the US who use a PC [personal computer] at work don't typically shut down their PCs at the end of the work day. Based on these findings, we can assume that companies across the US are wasting \$2.8 billion and emitting 20 million tons of carbon dioxide to power PCs that aren't shut down...a single US company with 10,000 PCs wastes more than \$260,000 annually...”

Reducing Lighting

ECSD officials stated that reducing the amount of lighting in office and other work areas is another area of potential savings. For example, the overhead lighting levels in the Gateway Building are approximately 53.2 foot candles in interior cubicles and 84.2 in cubicles along the exterior walls with windows (on a sunny day). According to an illuminance guideline prepared by the New York Energy Smart Commercial Lighting Program⁸ the target light level for an office space is between 30 to 50 foot candles. To reduce energy consumption in

⁷ “PC Energy Report 2009,” Alliance to Save Energy.

⁸ <http://www.nyserda.org/sclp2/technicalGuide/design/targets.asp>

the Gateway building, one lamp can be removed from each ceiling mounted, three lamp fixture (which will reduce lighting levels in interior cubicles to approximately 45.0 foot candles) and lights in spaces along the windows can be turned off (the light level in one of the south facing conference rooms was 72.0 foot candles with the lights off). These changes are estimated to save \$50,000 annually in energy costs for the Gateway Building. Similar changes can be implemented in over-lighted spaces at other Metro locations.

B. Processing Electric Utility Bills

1. City Utility User Tax and Late Payment Fees

As of July 2009, SCE billings reflected a total unpaid balance of \$147,393. Of this amount, \$57,574 was for a city utility user tax (UUT) that Metro is exempt from paying and \$89,819 was for late fees.

- **City Utility User Tax:** An August 2008 consultant report contracted by Accounts Payable found that Metro had paid SCE and PWP \$343,507 for city utility user taxes, which Metro was exempt from paying. Although this tax is collected by the utility companies, it is collected on behalf of each city. The consultant identified 10 cities in which utility user taxes were being charged. Metro's Accounts Payable Department has worked with the utility companies to reverse the tax and the associated late payment penalties. Accounts Payable staff told us that the erroneous taxes on all the PWP bills and some of the SCE have been reversed. However, there are 50 accounts totaling \$57,574 in UUT that still remain to be settled. Since Metro is exempt from city utility user taxes, Accounts Payable should continue to work with SCE to resolve the UUT that was erroneously billed to Metro to get the overpayment credited to Metro.
- **Late Fees:** The \$89,819 of late payment fees were caused by two factors:
 - Late payment fees on unpaid UUT. As stated above, Metro is exempt from city utility user taxes; therefore late fees on UUT should be reversed.
 - Late payments fees assessed because SCE received payment after the due date.

We found that most electricity bills were being processed timely. We examined 52 SCE bills generated in July 2009, and found that for 5 of the bills, SCE charged Metro late payment fees. The subsequent month bill showed that SCE had received the payment after the due date.⁹ Our review of the Financial Information System for the checks to pay the 5 bills showed that one check was prepared after the 19-day due date, another check was prepared

⁹ The SCE payment terms on the bill states: "Your bill is due when you receive it and becomes past due 19 days from the date the bill was prepared."

on the due date, and three checks were prepared a few days prior to the due date. Evidentially, SCE is counting mailing and their in-house processing time as part of the 19-day period. Accounts Payable did not pay the late payment fees for these five July bills on subsequent bills. Thus, additional late payment fees were charged to Metro on the subsequent bills.

Metro pays LADWP, SCE, and PWP by paper check. The Director of Accounting informed us that they are currently working with SCE to set up electronic fund transfer payments. This will ensure that utility payments are made timely and eliminate the late payment fees in the future.

2. Consolidating Utility Bills

Accounting Department and cost center staff are required to process over 70 electricity bills each month. Bus operations staff stated that having fewer bills to review and approve would streamline and expedite the process. The Accounts Payable Department has made efforts to consolidate utility bills since the early 2000's. LADWP and PWP service meter accounts have been consolidated into a summary statement billing. Accounts Payable should continue its efforts to consolidate SCE utility bills. This would significantly reduce the time to process electricity bills. Also, having fewer bills to process would help to avoid incurring late payment fees such as those discussed earlier.

Accounting staff informed us that the consolidation of SCE bills will be on the agenda in a future meeting. SCE wants to analyze the pass due balances related to the UUT that still need to be resolved on many accounts before holding a meeting.

Recommendations

1. Electricity Conservation and Management Plan

Develop a comprehensive electricity conservation and management plan that includes overall strategies, goals, targets, policies, procedures, responsibilities, and implementation plan. Incorporate applicable recommendations made in the Metro 2009 Baseline Sustainability Report into this plan.

2. Energy Assessments

Metro should designate ECSD or another department responsible for coordinating energy assessments and implementation of recommendations made by the assessments. Metro should ask LADWP, SCE, and PWP to perform utility audits or energy assessments at all Metro facilities that had not had such reviews. If the utility company does not have the resources to perform these reviews in a reasonable timeframe,

consider doing these reviews with in-house staff. For facilities where these reviews have been completed:

- a. Ensure that the facility manager is provided a copy of the report.
- b. Obtain feedback from each facility as to what actions were taken.
- c. Use feedback from facilities to prepare energy conservation best practices and provide the list to other facilities.
- d. Consider follow-up energy audits/assessments on a cycle such as every 5 to 10 years, and incorporate these into the electricity conservation and management plan.

3. Completing Open Issues in Consultant Report

Metro should coordinate a target completion date with TriStem regarding the following review areas that have been open since December 2008:

- a. In-field investigation and/or additional rate research on 6 PWP, 9 SCE, and 44 LADWP accounts,
- b. On-site inspections of the connected facilities, electric meters, and transformers on 32 accounts to verify the accuracy of the billing.
- c. Further research and rate comparison on 35 accounts.
- d. Research the possibility of a rate discount for certain LADWP accounts (Large General Service A3 and General Service A2 rate schedules) that take service at a sub-transmission level.

4. Installing Sub-Meters

Metro should identify electricity meters that serve multiple buildings or functions (e.g., traction power and station/parking lot lighting) and should evaluate the cost effectiveness of installing sub-meters at facilities to better track and manage electric consumption.

5. Centralized Management

Designate an individual or department within Metro to be responsible for (a) monitoring and evaluating electricity usage and rates to ensure that the agency is using electricity efficiently and paying the lowest rates, (b) coordinating with the utility companies on all

billing matters, and (c) distributing monthly electricity usage information to facility managers.

6. Agency-Wide Conservation Effort

- a. Develop policies and programs that involve all Metro employees in the goal to reduce energy usage and costs. Work with the Information Technology Department to develop policies for turning off personal computers, monitors, and printers at the end of the work day.
- b. Consider developing a program that requires facility managers to be responsible for energy usage and conservation, provide billing information to these managers, and provide an incentive for facility managers to lower utility bills and/or employees to submit energy saving ideas.

7. City Utility User Tax and Late Payment Fees

- a. The Accounts Payable Department should continue to work with SCE to resolve the erroneous city utility user taxes and the associated late payment fees on Metro utility bills.
- b. The Accounts Payables Department should continue to review the late payment fees on current bills that are not related to unpaid city utility user taxes; and either (a) resolve these fees with the utility company, or (b) pay the late payment fees if they are valid. This will avoid additional late payments fees on future bills.
- c. The Accounting Department should continue to work with the utility providers to implement electronic payments.

8. Consolidating Utility Bills

Metro should continue to coordinate with SCE to consolidate bills into a single billing statement, which will streamline the billing review and payment process.

Management Comments

On June 25, 2010, Metro management provided a response to our draft report. Management agreed with all the recommendations in the report, except for recommendation 6b. For this recommendation, management proposed an alternative action, which we concur with. Management provided the following actions to implement the audit recommendations:

- **Recommendation 1.** The Energy Conservation and Management Plan will be used as a tool to provide short and long term strategies for energy conservation and management. Facilitation of the development of this plan can be folded into Metro's overall Sustainability Program. The estimated implementation date is March 31, 2011.
- **Recommendation 2.** Environmental Compliance and Services Department (ECSD) staff and consultants have begun and are continuing energy assessments of bus and rail divisions and the Gateway Headquarters Building. Energy efficiency project development and discussions with LADWP and other utilities are on-going.
- **Recommendation 3.** TriStem provided their final report on outstanding account issues on June 1, 2010. Staff will consider the information in the report during the development of the Energy Conservation and Management Plan.
- **Recommendation 4.** ECSD and General Services staff are completing the installation of sub-meters in the Gateway Building. A sub-metering plan is being developed for other locations.
- **Recommendation 5.** There is a general consensus among agency stakeholders to have an individual or department that will be responsible for (a) monitoring and evaluating electricity usage and rates to ensure that the agency is using electricity efficiently and paying the lowest prices, and (b) coordinating with utility companies on all billing matters.
- **Recommendation 6a.** ECSD staff has already been coordinating with various stakeholders in the general area of resource conservation. ECSD has developed the following awareness tools: Sustainability Awareness Training Program, EMS marketing Materials and Awareness Video, and EMS Awareness Training.
- **Recommendation 6b.** Management did not implement the recommendation, but instead proposed an alternate action. Management determined that the best approach to increase energy efficiency in facility operations is through education and awareness.

- **Recommendation 7.** The Accounting Department continues to work with and meets regularly with the utility companies to resolve the erroneous city user taxes and the associated late payment fees, as well as late fees on current Metro utility bills. The Accounting Department is also working with the utility providers to implement electronic payments.
- **Recommendation 8.** Metro Accounting staff is currently working with SCE to consolidate bills into a single billing statement. Accounting staff is coordinating with Operations staff on the types of information that should be part of the consolidated bill.

See Attachment C for the full text of management comments

Evaluation of Management Comments

Metro's proposed corrective action plan is responsive to the findings and recommendations in the report. For Recommendation 6b, management proposed an alternative action, which we believe is adequate. Therefore, we consider all issues related to the recommendations in the report resolved based on the corrective action plan. Although the recommendations are resolved, staff must follow up on the recommendation that is still open until all corrective action is completed. This requirement is set forth in Management Audit Services Audit Report Follow-up & Resolution Policy (MAS 1).

Additional Background Information

Electricity Usage

Metro consumes large quantities of electricity for rail propulsion power, bus and rail maintenance facilities, and other support facilities. According to Metro's 2009 Baseline Sustainability Report, in calendar year 2008, the agency consumed 243 million kilowatt hours (kWh) of electricity at a cost of \$27 million. This report indicated that, in 2008, Metro's rail operations (Red, Blue, Green and Gold lines) consumed 72 percent (175 million kWh) of the total electricity used by Metro. The cost of electricity in 2008 to power the rail lines amounted to \$20.2 million. Metro spent \$7 million in 2008 on electricity for its other facilities.

Metro purchases electricity from the Los Angeles Department of Water and Power (LADWP), Southern California Edison (SCE), and Pasadena Water and Power (PWP). The table below summarizes the kWh and costs to Metro in 2008 by the three major utility companies:

Total 2008 Electricity Usage

| Utility | kWh | Cost |
|----------------|--------------------|----------------------|
| LADWP | 165,895,203 | \$ 16,469,683 |
| SCE | 71,127,505 | \$ 9,793,775 |
| PWP | <u>5,914,466</u> | <u>\$ 949,453</u> |
| Total | <u>242,937,174</u> | <u>\$ 27,212,911</u> |

A comparison of electricity usage and costs for rail propulsion during calendar years 2005 through 2008 showed that electricity usage increased by 12,469,581 kWh (7.66%) and the related costs increased by \$965,978 (5.02%) from 2005 to 2008.

Rail Electricity Usage 2005 to 2008

| Year | kWh | Cost |
|-------------|-------------|--------------|
| 2005 | 162,832,175 | \$19,261,660 |
| 2006 | 162,414,686 | \$19,258,416 |
| 2007 | 176,188,455 | \$19,702,908 |
| 2008 | 175,301,756 | \$20,227,638 |

Additional Background Information

A comparison of electricity usage and costs for Metro facilities during calendar years 2005 through 2008 showed that electricity usage increased by 6,540,466 kWh (10.71%) and the related costs increased by \$1,322,005 (23.34%).

Facility Electricity Usage 2005 to 2008

| Year | kWh | Cost |
|-------------|------------|-------------|
| 2005 | 61,094,952 | \$5,663,268 |
| 2006 | 65,108,219 | \$6,477,081 |
| 2007 | 66,333,804 | \$7,291,561 |
| 2008 | 67,635,418 | \$6,985,273 |

The significant relative usage and cost growth of facility electrical usage compared to that of rail electricity usage suggests that this is an area to focus efforts to promote the efficient use and conservation of electricity.

Metro's demand for electricity usage will increase with the opening of the light rail Gold Line Eastside Extension in November 2009, and the conversion from using gas engines to electric motors for compressing natural gas needed to fuel Metro buses. Recent conservation efforts such as installation of solar panels at four Metro facilities will reduce energy purchases from the electricity providers.

Processing Utility Bills

Metro's Accounts Payable Department receives and date stamps all electricity bills. The bills are batched and given to the data entry staff who verify information and input the current amount for payment. Late payment fees are not paid, and city utility user taxes if included in the bill are not paid. Accounts Payable Resolution staff research any bill that has a past due balance or credit balance. The bill is sent to the cost center approver for approval. Payments of all electricity bills are processed by the Financial Information System.

Metro Energy and Sustainability Policy

In June 2007, the Board of Directors adopted the Metro Energy and Sustainability Policy "*to control energy consumption and embrace energy efficiency, energy conservation, and sustainability to:*

- *Avoid unnecessary expenditure*
- *Help in protecting the environment*
- *Improve cost effectiveness, productivity, and working conditions*
- *Prolong the useful life of fossil fuels by using resources more efficiently."*

Additional Background Information

The long-term objectives of the policy are to reduce, whenever possible, Metro's usage of fossil fuels through the use of ambient and renewable energy sources, and to use required fuels and electricity as efficiently as possible.

The immediate objectives are to: (a) gain more control over our energy consumption by aggressively pursuing renewable energy sources, take advantage of rebates and subsidies for energy and water conservation wherever feasible, conduct energy audits of Metro divisions and facilities, and implement energy conservation measures where they are feasible and fiscally prudent; and (b) construct all new facilities and projects, including new transit corridor projects, using energy efficient and conservation strategies. All buildings or structures over 10,000 square feet must be constructed to achieve the Leadership in Energy and Environmental Design (LEED) Silver certification, at a minimum.

The following tasks were identified to comply with the policy:

- Complete audits of all bus and rail maintenance facilities and Union Station Gateway headquarters within 3 years of adoption of the policy.
- Incorporate energy efficiency and conservation strategies on all future Metro construction projects.

In June 2008, the Board approved the Metro Sustainability Implementation Plan. It was recognized that there was a need to be able to coordinate all of the sustainability initiative and projects, and to identify, measure and report the cost benefits of these efforts. The Board approved \$250,000 to supplement Metro's sustainability program and to implement this plan.

The plan calls for energy conservation initiatives; planning, feasibility studies, and installation of additional solar panels at various bus and rail divisions; exploration of other renewal resources; performing energy audits, implementing energy efficiency methods and developing a comprehensive and energy security strategy.

Metro's June 2009 Baseline Sustainability Report cited that sustainability efforts were reducing electricity use in the targeted areas. Solar installations at two bus divisions provided an estimated 20 percent of the electricity, and generated a total of 1,498 kilowatts at two other locations. The report states that the lack of consolidated records of other energy upgrades and the lack of meters on individual buildings made it impossible to accurately estimate the energy cost savings and the success of the efficiency programs.

Additional Background Information

Some of the recommendations that were made in the 2009 Baseline Sustainability Report were:

- Staff will develop electricity reduction targets.
- Provide sub-meters at each facility.
- Invest in energy management systems to properly track energy usage.
- Provide division managers with monthly utility bills so they can monitor performance and prevent billing mistakes.
- Track energy efficiency upgrades and measure their success.
- Create an Agency-wide energy reduction plan.
- Partner with LADWP and SCE to create a cost effective Agency-wide energy reduction plan.

Energy Assessment Recommendations

- Convert older T12 fluorescent fixtures to T8 lamps with electronic ballasts.
- Replace existing incandescent or fluorescent exit signs with LED lamps.
- Remove unnecessary light fixtures.
- Install occupancy sensors in hallways, restrooms, offices, and other areas that are vacant for several hours per day.
- Replace older inefficient HVAC equipment with newer more efficient system.
- Locate and repair damage ducts, joints, and cabinets of HVAC equipment.
- Shut off the conditioned air shipped to vacant or unused spaces.
- Replace worn fan and pump belts with toothed (synchronous) Vee belts, which are 10% to 30% more efficient.
- Turn off electric motors when not in use. Control large blowers to prevent operation during peak hours.
- Turn off air-operated equipment when not in use.
- Turn off computers, monitors, printers, and copiers when not being used. If the computer cannot be shut off, turning off the monitor and printers can reduce energy use by 15 – 50 percent.
- Consider switching to the Time-of-Use Rate, which saves money when energy is used mostly at night and on weekends. Example, a meter located in the Transport Building should be changed to the Time-of-Use Rate. This is done at no cost and could save as much as 15% of the billing on that meter.
- Consider tracking electricity usage to spot problems early, budget for use based on seasons, and show the effects of the conservation/efficiency efforts.
- The best way to have a working conservation program is to put a knowledgeable person in charge of saving energy. This individual should be responsible for the energy budget and costs and have access to the energy bills, which will provide an incentive to lower the bills. Involve all employees by offering incentive for energy saving ideas.

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Interoffice Memo

| | |
|---------|--|
| Date | June 25, 2010 |
| To | Karen Gorman Acting Inspector General |
| Through | Arthur T. Leahy <i>by PCT</i> Chief Executive Officer |
| From | K.N. Murthy <i>K.N.M.</i> Deputy Chief Capital Management Officer |
| Subject | Response to OIG Draft Report on Management of Electricity Usage and Billing (Report No. 10-AUD-08) |

OVERVIEW

We have reviewed the recommendations in the subject OIG report and have discussed the findings with our internal stakeholders in Bus and Rail Operations, Construction, Planning, General Services, Accounting, and Information Technology Systems. We also solicited a response from the Los Angeles Department Water and Power [LADWP] regarding the issues applicable to them that were raised in the OIG report. We agree with and have already implemented corrective actions for recommendations 2, 3, 4, 6a, 7, and 8. We do not agree with recommendation 6b.

For recommendations 1 and 5, we determined that staff concurs with the recommendation to designate an individual or department to centrally manage and be responsible for energy monitoring and development of solutions to energy issues (Recommendation #5). As there is significant synergy between electricity and other forms of energy (e.g., different forms of renewable energy and natural gas), staff also determined that it would of more value to develop an Energy Conservation and Management Plan instead of an Electricity Conservation and Management Plan (Recommendation#1). A mechanism similar to an Environmental Management System [EMS] tailored to energy management is needed to ensure that the centralized management is effective. Details of the proposed corrective actions are outlined below.

Through ongoing efforts, Metro staff has already implemented or is in the process of resolving the other recommendations in the report. Specific details of responses to each OIG recommendation are outlined below.

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PROPOSED CORRECTIVE ACTIONS

- In response to *Recommendation # 1, Electricity Conservation and Management Plan*, we agree that there is a need to develop an overall Energy Conservation and Management Plan to consolidate these efforts already underway. The Energy Conservation and Management Plan will be used as a tool to provide short-term and long-term strategies for energy conservation and management, especially in light of Measure R projects acceleration. Facilitation of the development of this plan can be folded into Metro's overall Sustainability Program. This plan can be completed and approved by the Board for implementation by March 31, 2011.
- In response to *Recommendation # 2, Energy Assessments*, Metro's Energy and Sustainability Policy mandates that staff conduct energy assessments of Metro divisions and facilities, and implement energy conservation measures where they are feasible and fiscally prudent. Utility companies currently do not have the resources to conduct energy assessments. However, Environmental Compliance and Services Department [ECSD] staff and their consultants have begun and are continuing the energy assessments of Bus and Rail Divisions, including the Gateway Headquarters. ECSD has been conducting these assessments as part of its overall Sustainability Program. Other assessments performed by other entities [as mentioned in the OIG Report] have already been completed. Energy efficiency project development and discussions with LADWP and other utilities are on-going. This recommendation has been implemented.
- In response to *Recommendation # 3, Completing Open Issues in Consultant Report*, TriStem provided their final report on the outstanding account issues on June 1, 2010. Staff will consider the information in the report during the development of the Energy Conservation and Management Plan. This recommendation has been implemented.
- In response to *Recommendation # 4, Installing Sub-Meters*, ECSD and General Services staffs are completing the installation of sub-meters in the Gateway Building as part of the LEED[®]-EBOM effort. A sub-metering plan is being developed for other locations. Staff will discuss with executive management the availability of funds to implement agency-wide sub-metering efforts. This recommendation has been implemented.
- In response to *Recommendation # 5, Centralized Management*, there is a general consensus among agency stakeholders for Metro to have an individual or department that will be responsible for (a) monitoring and evaluating electricity usage and rates to ensure that the agency is using electricity efficiently and paying the lowest rates; and (b) coordinating with the utility companies on all billing matters groups will also act as an implementation arm for any identified energy solutions. Further, there is also a general consensus from Operations staff that facility managers should have information about energy usage at their facilities available to them when it will

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be useful. However, reports will only be provided in instances where it will add value to facility operations.

Designations of responsible individual or department, as well as specifics on how centralized management will function will be addressed in the Energy Conservation and Management Plan. Implementation of this recommendation will be completed by March 31, 2011.

- In response to *Recommendation # 6a, Agency-Wide Conservation Effort, Develop policies and programs that involve all Metro employees in the goal to reduce energy*, ECSD staff [through the Sustainability Program and using our Board-approved Environmental Policy and Energy and Sustainability Policy] has already been coordinating with our various stakeholders in the general area of resource conservation, including that of electricity. ECSD has developed the following awareness tools: Sustainability Awareness Training Program; EMS Marketing Materials and Awareness Video; and EMS Awareness Training. This recommendation has been implemented.

In response to *Recommendation # 6b, Agency-Wide Conservation Effort, consider developing a program requiring facility managers to be responsible for energy usage and conservation*, management does not agree that this should be a requirement for facility management. We have determined at this time that the best approach to effecting more efficient energy use in facility operations is through education and awareness. Taking this into consideration, the recommendation will not be implemented.

- In response to *Recommendation # 7a, b & c, City Utility User Tax and Late Payment Fees*, the Accounting Department continues to work with and meets regularly with the utility companies to resolve the erroneous city utility user taxes and the associated late payment fees, as well as late fees on current Metro utility bills. The Accounting Department is also working with utility providers to implement electronic payments. This recommendation has been implemented.
- In response to *Recommendation #8, Consolidating Utility Bills*, bill consolidation efforts are completed for LADWP and Pasadena Water and Power. Metro Accounting staff is currently working with Southern California Edison (SCE) to consolidate bills into a single billing statement. Accounting staff is coordinating with Operations staff on the types of information that should be part of the consolidated bill. This recommendation has been implemented.

Should you have any questions, please feel free to call me at (213) 922-3084.

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