

Central Plant  
And  
Utilities Management Audit



Audit Report # 12-12  
October 29, 2012

Office of Auditing and Consulting Services

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THE UNIVERSITY OF TEXAS AT ELPASO



Office of Auditing and  
Consulting Services

October 29, 2012

Dr. Diana Natalicio  
President, University of Texas at El Paso  
Administration Building, Suite 500  
El Paso, Texas 79968

Dear Dr. Natalicio:

The Office of Auditing and Consulting Services has completed a limited-scope audit of the University's Central Plant with an emphasis on utilities management. The audit scope was limited to the functions and operations of the Central Plant and the monitoring of utilities expenditures.

During the audit, we identified some opportunities for improvement and offered the corresponding recommendations in the audit report. The recommendations are intended to assist the department in strengthening controls and help ensure that the University's mission, goals and objectives are achieved.

We appreciate the cooperation and assistance provided by the Facilities management team during our audit.

Sincerely,

A handwritten signature in black ink that reads "William A. Peters". The signature is written in a cursive, flowing style.

William A. Peters, CPA, CIA

Director

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The University of Texas at El Paso  
Office of Auditing and Consulting Services  
Central Plant and Utilities Management Audit  
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## **EXECUTIVE SUMMARY**

The Office of Auditing and Consulting Services has completed a limited scope audit of the University's Central Plant and utilities management. The audit scope was limited to operations of the Central Plant from September 1, 2011 to February 1, 2012. The objectives of this audit were to determine whether the Central Plant's future plans are aligned with the University's vision and goals and to assess the utilities expenditures monitoring process.

During the audit we noted the following:

- While the Central Plant has idle capacity to mitigate the risk of interruption of operations due to machine failure, the department's business continuity plan for the resumption of plant operations after a plant emergency such as fire, flood or the occurrence of other adverse events is not fully documented. Additionally, the Central Plant does not have an updated risk assessment.
- The most current Utility Master Planning document is dated 2006. In light of the University's expansion over the past several years, and its planned future growth, the Facilities Management should reassess the plan and update it if needed.
- The Central Plant has regularly monitored and tracked certain incoming utility bills and related utilities consumption; however, during the course of our examination, we noted that the University's system for processing incoming utility bills as well as the monitoring of utilities consumption and expenditures is not centralized and does not provide for effective and efficient monitoring and tracking of energy usage and expenditures.

## BACKGROUND

The Central Plant is a unit under Facilities Operations which operates on a 24/7 basis. The Central Plant provides the majority of hot water used for building heat, steam generation and hot water usage on the University's campus. The Central Plant also operates a satellite plant which manages a 3.6 million gallon cold water tank to meet the majority of the campus cooling requirements. The Central Plant went into operations in June 1969 and has undergone numerous upgrades to accommodate increased demand.

The Central Plant is critical to continuing campus operations. The department is responsible for overseeing:

- the development and administration of a master plan aligned with the University's vision for future growth,
- the maintenance, repair and upgrade of the utility production plants, including utility tunnels and distribution infrastructure, and
- the monitoring of the utility expenditures.

## AUDIT OBJECTIVES

The objective of this audit was to review the operations of the Central Plant. The focal points of this audit were to:

- A. determine whether the Central Plant has a documented risk assessment and business continuity plan,
- B. determine whether the Central Plant maintains a master plan for preventive maintenance and upgrades which aligns with the University's vision for future expansion, and
- C. evaluate the effectiveness and efficiency of the processes for monitoring utilities expenditures and usage.

## SCOPE AND METHODOLOGY

The audit scope was limited to the operations of the Central Plant and the processes for monitoring utilities expenditures and usage. The audit scope was limited to operations from September 1, 2011 to February 1, 2012.

Audit procedures included performing a risk analysis, reviewing the department's policies and procedures, interviewing personnel and facilitating process mapping of the utilities payment cycle. We also performed limited testing to determine the effectiveness of internal controls. The audit was conducted in accordance with the *International Standards for the Professional Practice of Internal Auditing* issued by the Institute of Internal Auditors.

## AUDIT RESULTS

### **A. Risk Assessment and Business Continuity Plan**

The Central Plant does not have an updated risk assessment and fully documented business continuity plan; consequently, the plant may not be able to reasonably assure that essential business functions can continue soon after an emergency or the occurrence of adverse events.

Performing a risk assessment and fully documenting the business continuity plan provides a number of advantages, including:

- exposure of previously overlooked vulnerabilities which should be addressed,
- identification of preventive measures which are weak or lacking, and
- assistance in documenting interdependencies between departments and increasing communication between internal groups.

According to Texas Administrative Code Title 1, Part 10, Chapter 202, “*Elements of the plan for information resources shall include a business impact analysis to systematically assess the potential impacts of a loss of business functionality due to the interruption of computing and/or infrastructure support services resulting from various events or incidents. The analysis shall address maximum tolerable down time for time-critical support services and resources.*”

#### ***Recommendation:***

*The Central Plant should perform a departmental risk assessment, and update and document its business continuity plan based on the risk assessment. The analysis should address support services and resources, to include:*

- *Personnel*
- *Facilities*
- *Technology requirements (all computer systems and networks)*
- *Information and data resources*
- *Emergency response procedures.*

#### ***Management’s Response:***

*The plant has built-in redundancy to manage operational vulnerabilities that may occur if a piece of equipment fails with the power and/or chill/hot water hydronic system. A comprehensive plan for a catastrophic failure, such as a fire, is not documented. In order to comply with this finding, a catastrophic risk assessment and mitigation plan will be developed to include the possible failure modes, a plan to mitigate each of the modes and a listing of contractors and equipment suppliers that must assist in a recovery effort.*

***Responsible Party:*** Carlo Vazquez, Facilities Services

***Implementation Date:*** Sept 30, 2013

## **B. Plan for Preventive Maintenance and Upgrades**

The most current Utility Master Planning document includes upgrades to the Central Plant infrastructure and scheduled large-scale utility and infrastructure improvements which may be necessary to enhance plant reliability, reduce maintenance costs and accommodate anticipated institutional growth; however, the plan is dated 2006.

### ***Recommendation:***

*In light of the University's expansion over the past several years, and its planned future growth, the Facilities Management should reassess the plan and update it as needed. In the reassessment of the plan, management should determine whether it still aligns with the overall vision of the University and incorporates a proactive rather than reactive approach to maintenance and upgrades. The plan reassessment should include:*

- an assessment the current conditions of the University and Central Plant infrastructure,*
- an evaluation of historical trends and consideration of the University's vision for short and long-term growth, and*
- consideration of required preventive maintenance, renovation and repairs of the plant infrastructure.*

### ***Management's Response:***

*The existing master plan is the foundation for the planning of future upgrades. Earlier this year, the university invested in a comprehensive utility survey of all utilities including water, natural gas, electricity, hydronic lines, IT, sewer systems and other auxiliary equipment. The survey is underway and it to be complete by March 2013. Upon the completion of the survey, an additional Utility Master Plan study will be performed to supplement the 2006 plan. This plan will include required upgrades considering the campus master plan that was completed in 2011.*

*The maintenance plans for the central plant already exist, but are being currently being enhanced.*

***Responsible Party:*** *Master Plan: Nestor Infanzon, Facilities Services*  
*Maintenance Plan: Carlo Vazquez, Facilities Services*

***Implementation Date:*** *Master Plan: 1/31/2014*  
*Maintenance Plan: 7/30/2013*

## **C. Monitoring Utilities Expenditures**

The Central Plant has regularly monitored and tracked certain incoming utility bills and related utilities consumption; however, during the course of our examination, we noted that the University's system for processing incoming utility bills as well as the monitoring of utilities consumption and expenditures is not centralized. As a result, a comprehensive breakdown of



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expenditures is not readily available for analysis, and exceptions such as overpayments and late fees may not be identified and corrected on a timely basis.

On a monthly basis, the University processes over 150 utility invoices totaling nearly \$350,000. A centralized system for the processing, monitoring and controlling energy and utilities expenditures can improve the efficiency and effectiveness of the utilities management activities.

***Recommendation:***

*Centralize the system for the receiving, processing, monitoring and tracking of utility bills and energy usage and expenditures.*

***Management's Response:***

*The utilities for the Central Plant have historically been monitored by the central plant personnel. There is a central process to manage this aspect of the utility expenditures.*

*The campus utilities bill and energy usage management has historically been distributed among various users on campus. The Facilities Operations Team, Accounts Payable, Purchasing and other groups have already created a centralized process to manage the billing in a centralized manner. The implementation is in progress.*

***Responsible Party:*** Carlo Vazquez, Facilities Services

***Implementation Date:*** July 31, 2013

## CONCLUSION

During the audit, we noted weaknesses in processes. The above recommendations will contribute to the overall improvement in the Central Plant operations and to the effective and efficient monitoring of utility expenditures.

The Central Plant provides critical support services to the University and should be engaged proactively by other University entities/departments in the planning of new infrastructure such as buildings, research facilities and equipment which may result in increased heating and cooling demand.

We wish to thank the management and staff of the Central Plant and Facilities Services for their assistance and cooperation provided throughout the audit.