



AUDIT REPORT



DATE July 24, 2018

NO. 2018-003

EMERGENCY GENERATORS

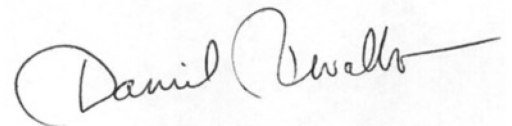
INTERNAL AUDIT DIVISION
ROGER D. EATON
CLERK OF THE CIRCUIT COURT AND COUNTY COMPTROLLER
CHARLOTTE COUNTY FLORIDA

Honorable Roger D. Eaton
Charlotte County Clerk of the Circuit Court and Comptroller
350 East Marion Avenue
Punta Gorda, Florida 33950

We have completed an audit of Emergency Generators. The purpose of this audit was to verify that adequate controls exist and are operating effectively over the testing, inspection and maintenance of Emergency Power Supply Systems.

The report details the current control environment and includes our comments and recommendations. Management responses have been included and immediately follow the audit report in Appendix A.

Respectfully submitted,

A handwritten signature in black ink that reads "Daniel Revallo". The signature is written in a cursive style with a long horizontal line extending to the right.

Daniel Revallo
Internal Audit Director

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EXECUTIVE SUMMARY

Internal Audit has completed a review of the Testing, Inspection, and Maintenance (TIM) of the Emergency Power Supply Systems (EPSS) owned and operated by Charlotte County Government. Our review determined opportunities to improve and enhance the County's generator maintenance procedures.

Our review disclosed the following:

1. Generator procedures in the contract do not comply with National Fire Protection Association (NFPA) Level 2 Standards.
2. We identified instances of noncompliance NFPA Level 2 Standards.
3. The County as a whole does not use the Facilities system in place to monitor the life cycle of its EPSSs.
4. We identified noncompliance with the Charlotte County Generators, LLC maintenance contract.

Based upon the findings of our review, we offer a summary of recommendations. These recommendations are discussed in detail later in this report:

1. **We recommend** including the appropriate NFPA standards in the contract and communicating these requirements with departments.
2. **We recommend** the County ensures compliance with the appropriate level of NFPA Standards.
3. **We recommend** the County implement a system to monitor the life cycle of its EPSSs.
4. **We recommend** the County review the Charlotte County Generators contract to comply with responsibilities and review documentation related to maintenance and repair charges.

We would like to thank the Facilities Department, various County Departments with EPSSs, and the Clerk's Comptroller Office for their assistance in the completion of this audit.

BACKGROUND

Charlotte County owns and operates several emergency generators. The emergency generator, or Emergency Power System (EPS), is an integral part of the Emergency Power Supply System (EPSS), which is a complex subsystem where all components are required to deliver electricity in an emergency.

EPSSs backup utilities to critical building systems during emergencies. System reliability is critical. Testing, inspection, and frequent maintenance (TIM) practices ensure the system will perform as intended in an emergency. The installation and performance requirements are outlined in the National Fire Protection Association (NFPA) Standards. These cover installation, operation, maintenance, and testing.

The County has contracted with Charlotte County Generators, LLC, to perform repairs and preventative maintenance at six-month intervals. The contract does not cover everything required by NFPA standards, as there is monthly maintenance and testing needed to comply with standards. Additional work is included in the contract at an hourly rate, with a 7% mark-up on materials, special equipment and

subcontracting. The contract states Facilities, Construction and Maintenance Departments manage the contract and schedule maintenance.

AUDIT OBJECTIVES

1. Ensure the County's EPSSs are properly tested, inspected, and maintained, and that records of such are prepared and kept according to standards.
2. Verify procedures are in place and effective to ensure scheduled maintenance is performed.
3. Verify the vendor's performance of maintenance and repairs are performed in compliance with the contract, and properly monitored by management.

AUDIT SCOPE

The scope of this audit included documentation for semi-annual and annual maintenance and repair performed in the sample period January 1, 2016 through December 31, 2017, including an evaluation of internal controls.

COMMENTS AND RECOMMENDATIONS

- 1. Generator operating policies and procedures should be revised to comply with NFPA Standards and communicated with departments.**

Generator procedures in the contract do not comply with NFPA Level 2 Standards.

NFPA Level 1 Service Frequency Standards apply when human lives are at stake. NFPA Level 2 Service Frequency Standards were tested in this audit, which apply when they are less critical to human life and safety. It is up to the department to determine what level of standards are appropriate for the service frequency of generators.

We found that Facilities relies on the contract for written policies and procedures to ensure consistency in the testing, inspection, and maintenance of its EPSSs.

Uniform policies and procedures are needed to ensure consistency in the application of processes for the operations, maintenance, and testing of generators and to comply with NFPA standards. These policies and procedures should also include instructions regarding the retention of operating and testing logs. The implementation of this recommendation would improve operational efficiency, staff accountability, and internal control over the testing, inspection, and maintenance of EPSSs.

We recommend including the appropriate NFPA standards in the contract and communicating these requirements with departments.

2. Noncompliance with NFPA Level 2 Standards.

Preventative maintenance is not being performed timely and individuals in different departments are not performing the same tasks with the same frequency when testing and inspecting units. The analysis of “Generator Inspection Reports” for maintenance performed during the sample period for the 90 generators revealed that:

- 1 inspection report was not signed by the technician.
- 1 inspection report was not dated by the technician.
- In 2017 maintenance was performed only once and consequently, all units were late for preventative maintenance.
- Between the annual and semi-annual maintenances performed in 2016, 52 units were maintained more than 30 days earlier than scheduled, some as early as 145 days or 35 days apart.
- Between the semi-annual maintenance performed in 2016 and the annual in 2017, 64 units were maintained more than 30 days after scheduled, some as late as 165 days or 345 days apart.
- Inspections are performed in the middle of the hurricane season, rather than before the season to minimize the risk of a failed system.
- 21 units were late for maintenance when hurricane Irma hit the County on 09/10/2017 and none of the units had been maintained as of the start of this review in January 2018.
- At the start of this review in January 2018, 67 out of the 90 units were late for maintenance more than 30 days, some as late as 384 days.
- Not all tasks required by NFPA standards are performed consistently when units are tested, inspected, or maintained. It should be noted that no payment is made when tasks or activities are not performed.

Maintenance and testing is critical to the continued reliability of the EPSSs and must be performed in accordance with manufacturer’s recommendations, instruction manuals, and NFPA requirements.

We recommend the County ensures compliance with the appropriate level of NFPA Standards.

3. The County does not have a system in place to monitor the life cycle of its Emergency Power Supply Systems.

Internal Audit found that the County does not keep records related to the acquisition, maintenance, and repair costs of the EPSS units, which is critical in performing an accurate assessment of the systems’ needs for replacement analysis purposes.

The audit’s contact person in Facilities indicated that at the end of the County’s fiscal year 2017 his department implemented a program within the Facilities Optimization Software (FOS) that shows condition assessed, life cycle of equipment, and remaining life cycles for replacements. Facilities asserted that the program does not include all EPSSs currently under contract with Charlotte County Generators.

Identification and monitoring life cycles can highlight older EPSSs with higher rates of repair or greater risks of failure. In the absence of such monitoring, replacement of EPSSs may not be based on the needs demonstrated by monitoring their life cycles.

We recommend the County implement a system to monitor the life cycle of its EPSSs.

4. Noncompliance with the Generator Maintenance Contract by Charlotte County Generators, LLC.

The contractor is not fulfilling contract requirements as follows:

- Fuel analysis tests are not incorporated into the Annual Inspection test report and submitted to the County for evaluation as required by Technical Specification TS-05 of the contract.
- Oil sample results to ID internal issues are not being provided to the designated departments as required by Technical Specification TS-05 of the contract. The oil is changed as part of annual services.
- Invoices for subcontracted labor lack documentation/justification for labor invoiced by the contractor.
- One EPSS is not included in the contract, resulting in higher labor and maintenance costs for that generator.

The analysis of the documentation reviewed in the audit did not show compliance by the contractor with these specific terms of the contract, which are part of the Technical Specifications and Conditions outlined on Bid 2016000028.

We recommend the County review the Charlotte County Generators contract to comply with responsibilities and review documentation related to maintenance and repair charges.

CONCLUSION

Our review determined opportunities to improve and enhance the County's generator maintenance procedures.

ACKNOWLEDGEMENT

We would like to thank the Facilities Department, various County Departments with EPSSs, and the Clerk's Comptroller Office for their assistance in the completion of this audit.

Audit performed by:
Orlando Solarte
Senior Internal Auditor

APPENDIX A – FACILITIES CONSTRUCTION AND MAINTENANCE DEPARTMENT RESPONSE

From: Cole, Randy <Randy.Cole@charlottecountyfl.gov>
Sent: Friday, June 29, 2018 7:30 AM
To: Milligan, David; Dan Revallo
Subject: RE: Draft Report for Response - Emergency Generators Audit Report
Attachments: Audit Response 6-28-18 RC rev.docx

Please see attached Department's Generator Audit Response.

Thank you

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"To Exceed Expectations in the Delivery of Public Services"

6/28/18

Generator Audit Report: Department Response

Facilities Construction and Maintenance Department was the lead department of the Charlotte County BCC for a Generator Audit and fully cooperated with the Charlotte County Clerk's Office performing the audit. Facilities agrees with overall findings within the audit and is committed to implementing the four recommendations given within the report. In summary, this will include developing a new generator contract with all required NFPA Level 2 Standards identified in the scope of work for proper performance provided by the contractor. A listing of these standards will be provided in the technical scope portion of the contract along with an overall statement that the contractor will be responsible to comply with all NFPA Level 2 standards and requirements set forth within the NFPA Code. The contract documents will include a check list as an attachment to document and ensure compliance with the inspections and performance of these standards for the required inspections and preventative maintenance. Contracted generator inspection, testing and maintenance may be supplemented by County staff.

The following comments offer additional detail to Facilities' actions or responses to audit recommendations that will be set going forward to better improve these processes.

1. Establishing Generator Contract and County Policies and Procedures

- Facilities will provide and rewrite the standards within the generator contract making sure all generators will comply with all National Fire Protection Association (NFPA) Level 2 Standards and any other applicable standards set forth by NFPA. Current standards within contract date back to 2009 and may not have been based on NFPA.

- Facilities will implement a County wide uniform Standard Operating Procedure (SOP), for consistency and accountability.
 - i. Identify and list responsible employees for specific departments and how they will need to follow and understand the expectations of standards within the contract to make sure their generators are being maintained and records are being kept properly. Appropriate staff will be required to spot check their generators for exercising and condition.
 - ii. Include any procedures that are above and beyond the NFPA standard that might apply to specific generators that are mandated by other applicable entities like Department of Environmental Protection (FDEP), and Charlotte County Sheriff Office (CCSO) Accreditation requirement program.

2. Ensuring Compliance with NFPA Level 2 Standards

- All generators will comply with NFPA Level 2 Standards through a Preventative Maintenance Schedule which will be implemented and given to the contractor to keep the inspections on track and maintain accountability for compliance. See attached example of an Annual Preventative Maintenance Schedule. (Auditor note:example not attached.)
- Contracted semi annual inspections due in September 2017 were postponed because of Hurricane Irma. The County did not pay for any of those inspections so no subsequent cost or undue payments were given for those non-inspections. Facilities will also change the new contract term

from a Calendar Year Contract term to a Fiscal Year contract term to make sure all generators are inspected and ready before Hurricane Season beginning in June of each year.

3. Emergency Power Supply Systems Life Cycle Monitoring

- Facilities implemented an asset management software program which captures life cycles and provides timeframes to which these generators are to be replaced. Facilities will add any missing generators within the current FOS Asset Management System. Life Cycle will be evaluated on BOMA and other standards set in years of life expectancy for each system which vary from 20 to 30 years.
- The County is in process of acquiring a computerized maintenance management system (CMMS) work order system that will enable more accurate tracking of repair costs and coordinate with the FOS system to trigger the need for detailed evaluation to be performed and assessment for replacement versus any further repairs.

4. Ensuring Compliance with the Generator Maintenance Contract

- Fuel and Oil Samples
 - i. Oil Sampling is not cost effective as oil in all generators is being changed as part of the annual services provided.
 - ii. Fuel Samples are not taken on diesel tanks 500 gallons or more. “Fuel Analysis Test (if Required)” has been the past practice only if an issue presented itself in a form of a clogged filter, a repair, an inspection or generator failure thought to be a fuel issue. At that

time, a sample would be taken and an analysis report created.

Any required corrective action would be identified and action

taken. Within 9 years of Charlotte County Generators LLC

having this contract, approximately 4 to 5 diesel fuel systems

needed to be cleaned or “polished”. It is not cost effective since

the fuel filters are being changed as part of annual services.

During the annual service the fuel, fuel filters and fuel tanks are

inspected to determine if there are any anomalies, algae or

sediments indicating a need to clean or polish the fuel. (The

approximate cost to clean the 100 gallons of fuel is about

\$200.00.)

- Load testing is performed within the scope of the contract. House loads are provided during Semi-Annual inspection and Load Bank Testing is provided for portables during the Annual Inspections. Facilities will more clearly define the requirements for load testing and add to the annual check list.
- The subcontracted work under the generator contract is consistent with and a widespread practice within purchasing procedures and in compliance with contract terms. Facilities will request more detailed invoices to show what the labor was charged for both generator contractor and any subcontractor so there is more transparency of the invoiced costs.
- One EPSS generator not on contract cost county more than if it was included on contract. Facilities will add all County-owned generators for

designed use for connected or connecting to buildings or lift stations,
10KW and above to the contract.

Acknowledgement

Facilities would also like to thank the Clerk's Office and their professional staff for a thorough audit and giving us the opportunity to work with them to identify improvements that can and will be made to enhance and improve our policies, procedures and the annual generator contracted services.

