



**A Report to the
Audit Committee**

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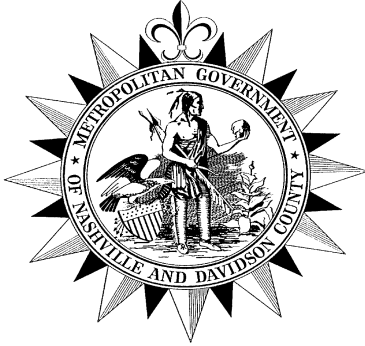
Audit of the Metropolitan Nashville District Energy System

April 23, 2014

Metropolitan
Nashville
Office of
Internal Audit

EXECUTIVE SUMMARY

April 23, 2014



Why We Did This Audit

The audit was initiated to evaluate the operational, financial, and management controls and procedures established for operating and maintaining the District Energy System energy generation facility and energy distribution system.

What We Recommend

An application for exemption from Tennessee sales tax should be submitted.

Change authorizations for additional work outside the original Contract Administrator's scope should be prepared.

For more information on this or any of our reports, email
Mark.Swann@nashville.gov

AUDIT OF THE METROPOLITAN NASHVILLE DISTRICT ENERGY SYSTEM

BACKGROUND

The mission of the Metro Nashville District Energy System facility is to use natural gas and electricity to produce steam and chilled water. The steam and chilled water is then distributed to over 40 individual buildings in the downtown area.

OBJECTIVES AND SCOPE

The objectives of the audit were to:

- Determine if contract performance requirements were monitored by Thermal Energy Group, Inc., the Contract Administrator.
- Determine if transactions for energy purchases, capital projects, engineering services, metering, billing, and collection, and District Energy System marketing were in accordance with contract terms.

The audit scope included the two fiscal years ended June 30, 2012, and June 30, 2013. The propriety fund's Statements of Revenue and Expenses for these periods are shown below:

Financial Statement Item	Fiscal Year 2012	Fiscal Year 2013
Operating Revenue	\$15,752,135	\$16,713,174
Operating Expenses	15,086,960	16,273,937
Operating Income	665,175	439,237
Non-operating Expense	(2,781,944)	(1,359,762)
Loss Before Capital Grants and Contributions and Transfers	(2,116,769)	(920,525)
Capital Grants and Contributions:		
Transfers In	2,386,138	2,372,635
Transfers Out	(475,614)	(495,057)
Change in Net Position	\$ (206,245)	\$ 957,053

Source: Metropolitan Nashville Comprehensive Financial Report

WHAT WE FOUND

We found the Contract Administrator, Thermal Engineering Group, Inc., was providing oversight on behalf of Metro Nashville for the District Energy System. Constellation NewEnergy, Inc., was operating, maintaining, and managing the facility within the terms of the contract for daily operations. Reviewing sales tax exemption status with the Tennessee Department of Revenue, and documenting review of invoices and additional services provided by the Contract Administrator would improve the system of internal controls.

GOVERNANCE

Metro Nashville outsources the day-to-day operation, management, maintenance, and repair for the District Energy System to Constellation NewEnergy, Inc. The relationship between the two parties is governed by the “Amended and Restated Contract for the Design and Construction of an Energy Generation Facility, Improvement of an Energy Distribution System and Long Term Operation and Management of the District Energy System”, herein after referred to as “ARMA”.

Under the general guidance of the Mayor, the Metro Nashville Finance Director acts as the “Chief Executive Officer” of the District Energy System, with final authority for all decisions made in its behalf. The ARMA also provides for a Contract Administrator to perform operational and administrative oversight to ensure services to customers are at a high level of performance and the physical assets are maintained to not less than industry standards.

Additionally, a nine member Advisory Board, staffed by the Metro Nashville Liaison and the Contract Administrator, is responsible for the following:

- Reviewing monitoring reports, plans, and budgets.
- Ongoing compliance with all applicable laws, regulations, and relevant bond covenants.
- Metro Nashville’s relationship with the system operator.
- Metro Nashville’s relationship with the customers of the District Energy System.

BACKGROUND

Metro Nashville owns the entire system, including the energy generation facility and the energy distribution system which is a series of pipes and related equipment that runs under the streets of downtown Nashville to distribute steam and chilled water to the customers of the system. All costs not billed out to customers are the responsibility of Metro Nashville and is referred to as the Metro Funding Amount; budgeted as \$2,363,000 and \$2,315,700 respectively for fiscal years 2012 and 2013.

District Energy System Revenue by Customer Type for Fiscal Year 2013

Building	Chilled Water	Steam	Total
Private Customers	\$ 3,868,896	\$1,324,499	\$ 5,193,395
State Government	3,407,215	1,870,844	5,278,059
Metro Nashville	4,084,810	2,277,732	6,362,542
Subtotal	\$11,360,921	\$5,473,075	\$16,833,996
True-up and Adjustments			(102,760)
Total Customer Revenue			\$16,731,236

Source: Metro Nashville District Energy System Fourth Quarter Operations Monitoring Reports for Fiscal Year 2013

Top Seven Metro Nashville District Energy System Vendors for Fiscal Years 2012 and 2013

Vendor	Amount	Purpose
Constellation NewEnergy, Inc.	\$11,150,325	System Operator
Nashville Electric Service	9,939,594	Electricity
Atmos Energy Marketing LLC	3,879,040	Natural Gas
U.S. Bank	1,248,984	Debt services – Revenue Bonds
Deutsche Bank National Trust Co	1,017,315	Debt services – General Obligation Bonds
Metro Nashville Water Services	975,172	Water
Thermal Engineering Group, Inc.	889,288	Contract administration and engineering services

Source: Metro Nashville EnterpriseOne Financial System.

OBJECTIVES AND CONCLUSIONS

1. *Were the Amended and Restated Contract for the Design and Construction of an Energy Generation Facility, Improvement of an Energy Distribution System and Long Term Operation and Management of the District Energy System (ARMA) contract performance requirements monitored by Thermal Energy Group, Inc. (includes monitoring of operations, repairs, maintenance, improvements, and capital projects)?*

Yes. The contract performance requirements were being monitored by the Contract Administrator, Thermal Energy Group, Inc.

2. *Were charges from Thermal Energy Group, Inc. for monitoring the ARMA and additional provided professional services in accordance with agreed contract terms?*

Generally yes. The amounts claimed by Thermal Energy Group, Inc. for ARMA contract services were found to be within contract terms. Additional services outside the scope of the contract were performed at other rates. Timely change authorizations were not issued for these services. (See Observation B.) Also, documentation was unavailable to sufficiently demonstrate Metro Nashville's review of the Contract Administrator invoices. (See Observation A.)

3. *Were major maintenance and capital project payment requests reviewed for accuracy, relevance to project objective, and agreement with contract terms?*

Yes. Capital projects and major maintenance work was being accomplished as required. However, sales tax was paid on some industrial tangible assets that could potentially be classified as tax exempt. (See Observation C.)

4. *Was there ongoing review and oversight of the purchase of energy (natural gas and electricity)? Was there an evaluation of gas purchasing methods and procedures?*

Yes. The purchase of natural gas and the price hedging practices were reviewed and overseen by assigned contractors and designated Metro Nashville personnel. During the audit two year scope hedging costs amount to approximately 11.5 percent of total gas purchase amounts. Also, Invoices for electricity computed correctly compared with the Nashville Electric Services general rate

schedules. The kilowatt hour rates were consistent with the kilowatt hour average rate paid by commercial customers in Tennessee.

5. *Were the metering, billing, and collection services performed within industry standards, accurately, and in accordance with customer contract terms? Did invoices provide customers information regarding the capacity charges, pass through charges, and energy charges for both steam and chilled water, if applicable?*

Yes. Billings were consistent with the ARMA and the customer service agreements for fees and services.

6. *Was the District Energy System actively marketing the system within the downtown building and construction market?*

Generally yes. Two new customers were recently added to the District Energy System, the Hyatt Place Nashville and the Metro Nashville Music City Convention Center. An expansion moratorium was initiated on the District Energy System in 2009 in order to ascertain the needs of the Music City Convention Center, a primary customer.

AUDIT OBSERVATIONS

The Committee of Sponsoring Organizations of the Treadway Commission, *Internal Control – Integrated Framework (2013 Framework)*, Control Environment component recommends management and the board of directors establish mechanisms to communicate and hold individuals accountable for performance of internal control responsibilities and implement corrective action as necessary. The audit observations listed are offered to assist management in fulfilling their internal control responsibilities.

Observation A: Metro Nashville’s Review of Thermal Engineering Group, Inc. Invoices.

Documentation was unavailable demonstrating Metro Nashville's review of Thermal Engineering Group, Inc. invoices for administration of the contract. The monthly invoices are submitted to the Metro Finance Department which forwards them to the Metro Liaison for review and approval. Other than work flow documentation available in the EnterpriseOne financial system, there was no other documentation that a review of amounts claimed was conducted to ensure accuracy and completeness.

Recommendation for management of the District Energy System to:

Develop a contract monitoring plan which includes a checklist for reviewing Contract Administrator invoices.

Observation B: Change Orders for Additional Contract Administrator Services

Change Authorizations were not made for services related to capital project tasks performed during the current contract period by Thermal Engineering Group, Inc. Most of the Thermal Engineering Group, Inc. invoices for capital projects contain the following statement:

The following charges relate to services performed by Thermal Engineering Group, Inc. as Project Contract Administration on tasks relating to the (name of capital project) as additional services. Upon determination of actual costs, contract #19657 will be adjusted by way of a Change Authorization to cover these additional costs.

Recommendation for management of the District Energy System to:

Ensure a contract change authorization to cover any additional costs deemed to be outside the operations element of the Contract Administrator's contract is formalized.

Observation C: Payment of Tennessee State Sales Tax

Tennessee State Sales Tax payments were made by Constellation NewEnergy, Inc. and the Metro Nashville Government for industrial machinery and other items used in the manufacturing of tangible personal property for resale. Although this involves past and current payments, some examples are as follows:

- Metro Nashville Water Services paid \$40,924 in sales taxes to TennCarva Machinery Company in 2011 and 2012 for pump shipped to District Energy System.
- Approximately \$1,000 per month in sales taxes was paid to chemical companies.
- Recurring payments by Constellation NewEnergy, Inc. for energy distribution system repair and maintenance.

Tennessee Code Annotated §67-6-102(44) (D) (i) states:

Such industrial machinery necessary to and primarily for the fabrication and processing of tangible personal property for resale or used primarily for the control of air pollution or water pollution includes, but is not limited to: (i) Machines used for generating, producing, and distributing utility services, electricity, steam and treated or untreated water.

Tennessee Code Annotated 67-6-102(89) (A) states:

'Tangible personal property' means personal property that can be seen, weighed, measured, felt, or touched, or that is in any other manner perceptible to the senses. 'Tangible personal property' includes electricity, water, gas, steam, and prewritten computer software.

The Tennessee Department of Revenue allows a qualified manufacturer and/or their contractor to make an application for industrial machinery exemption to determine if District Energy System machinery would qualify for tax-exemption.

Recommendation for management of the District Energy System to:

Make an application for a qualified manufacture/producer and industrial machinery tax-exempt certificate to clearly demonstrate to customers of the District Energy System its exemption status with the Tennessee Department of Revenue.

OTHER POTENTIAL OPPORTUNITIES

The items below are potential opportunities observed for the consideration of the management of the District Energy System to enhance the natural gas hedging program and do not require a management response. The following opportunities were identified from the *City of Colorado Springs Utilities Natural Gas Hedging Program Performance Audit* report identified during our literature survey.

1. Analysis and decisions regarding hedging should include the possibility of not placing hedges as a viable alternative.
2. Relevant hedging policies and procedures should be updated to address any changes in the approach to monitoring program results and forward decision making.
3. Research and adopt clear, on-going reporting methods regarding hedging program results, bill impacts, and program effectiveness.

GOVERNMENT AUDITING STANDARDS COMPLIANCE

We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our observations and conclusions based on our audit objectives.

METHODOLOGY

To accomplish our audit objectives, we performed the following steps:

- Interviewed key personnel within the District Energy System.
- Reviewed and analyzed documentation for compliance with the Tennessee Code Annotated, Metropolitan Nashville Code of Laws, and other applicable laws, regulations, and policies.
- Evaluated internal controls currently in place.
- Reviewed sample selections to determine the effectiveness of internal controls.
- Considered risk of fraud, waste, and abuse.
- Considered information technology risks.

AUDIT TEAM

Mark Swann, CPA, CIA, CISA, Metropolitan Auditor
Jack Henry, CPA, CGFM, In-Charge Auditor
Seth Hatfield, CPA, Auditor

METROPOLITAN GOVERNMENT OF NASHVILLE AND DAVIDSON COUNTY



KARL F. DEAN
MAYOR

DIRECTOR OF FINANCE
METROPOLITAN COURTHOUSE
ONE PUBLIC SQUARE, SUITE 106
NASHVILLE, TENNESSEE 37201
(615) 862-6151
(615) 862-6156 FAX

April 21, 2014

Mr. Mark Swann
Metropolitan Auditor
Office of Internal Audit
1417 Murfreesboro Road
Nashville, TN 37217

Dear Mr. Swann:

This letter acknowledges the Finance Department's receipt of the audit of the Metropolitan Nashville District Energy System. We have reviewed the findings and recommendations and have incorporated our responses in Appendix A to the attached report.

We appreciate the work you have done to help us improve contractual performance and monitoring requirements, and we appreciate the professionalism of the Internal Audit staff in conducting the work.

Sincerely,

A handwritten signature in blue ink, appearing to read "Riebeling".

Richard M. Riebeling
Director of Finance

Attachment

Copy: Kim McDoniel
Bob Lackey

APPENDIX A – MANAGEMENT RESPONSE AND CORRECTIVE ACTION PLAN

We believe that operational management is in a unique position to best understand their operations and may be able to identify more innovative and effective approaches and we encourage them to do so when providing their response to our recommendations.

Recommendations	Concurrence and Corrective Action Plan	Proposed Completion Date
Management of District Energy System should:		
<p>A. Develop a contract monitoring plan which includes a checklist for reviewing Contract Administrator invoices.</p>	<p>Agree. DES concurs with the recommendation to develop a formal contract monitoring plan, including a checklist for reviewing Contract Administrator invoices.</p>	<p>Checklist: by July 2014</p> <p>Monitoring Plan: October 2015</p>
<p>B. Ensure a contract change authorization to cover any additional costs deemed to be outside the operations element of the Contract Administrator’s contract is formalized.</p>	<p>Agree. DES concurs with the recommendation and will ensure a more timely change authorization process.</p>	<p>July 2014</p>
<p>C. Make an application for a qualified manufacture/producer and industrial machinery tax-exempt certificate to clearly demonstrate to customers of the District Energy System its exemption status with the Tennessee Department of Revenue.</p>	<p>Agree. DES concurs with the recommendation and will continue to collaborate with the Department of Law to make application for an industrial machinery tax exemption certificate.</p> <p>It’s worth noting that previous guidance received by DES conflicts with the recommendation. However, in the best interest of DES customers, an application will be submitted to the Tennessee Department of Revenue to clearly demonstrate whether said payments qualify for tax exemption status.</p>	<p>July 2014</p>