

Updated by  
Thermal Engineering Group, Inc.

# Metro Nashville District Energy System

Revenue and Tax Refunding Bonds, Series 2012A \$47,450,000

15c2-12 Continuing Disclosure Update

Please refer to [www.nashville.gov/des](http://www.nashville.gov/des) for further information regarding the District Energy System (DES).

## THE SYSTEM AND ITS OPERATIONS

### Overview

The District Energy System is a district heating and cooling system that provides steam and chilled water to the downtown metropolitan Nashville area for the purpose of general heating and air conditioning and is located in downtown Nashville. The Metropolitan Government of Nashville and Davidson County is the owner of the district system, the Energy Generating Facility (EGF) and the site on which the EGF is located. The ownership of a portion of the Energy Distribution System was transferred from the State to the Metropolitan Government in 2004.

Primary components of the System include (i) the steam production subsystem consisting of four 65,000 PPH forced draft, pressurized, dual-fuel boilers and a duplex soft water system; (ii) the chilled water subsystem comprised of nine 2,600-ton electrical drive chillers, 18 single-cell, induced draft cooling towers and 6 chilled water and 5 condenser water pump/motor sets; (iii) a 69/13.8 KV supply substation and two 69/13.8 KV transformers; and (iv) more than 14,000 trench/tunnel feet of underground energy distribution piping.

### Production and Sale of Energy

#### *Sale of Energy Generated by the System*

Historical Capacity and Sales: Under existing Customer Contracts between the Customers and the Metropolitan Government, the System provides steam and chilled water services to a total of 42 buildings in downtown Nashville, consisting of 18 privately owned buildings, 13 State owned buildings and 11 Metro-owned buildings. The actual sales, on average, over the previous three fiscal years indicates that the Private Customers, the State and the Metropolitan Government customers accounted for approximately 22.66%, 30.17% and 43.17%, respectively of the actual steam sales and 30.13%, 23.33% and 46.54% respectively of the actual chilled water sales. Below is a six-year summary of total historic steam and chilled water sales for the System:

#### **Historical Sales - Fiscal Years Ended June 30**

<b>Sales</b>	<b>FY11</b>	<b>FY12</b>	<b>FY13</b>	<b>FY14</b>	<b>FY15</b>	<b>FY16</b>
Steam (1,000 lbs)	277,943	250,414	374,366	376,433	381,755	325,248
Chilled Water (1,000 tonhrs)	56,118	57,233	62,538	65,994	59,626	61,338

System Capacity and Sales: The Energy Generating Facility has been designed to produce a total installed capacity of 260,000 PPH of 150 PSIG saturated steam and 23,400 tons per hour of 42°F chilled water. Assuming one boiler and one chiller off-line with chilled water and steam services based on historical peak demands, the diversity factors are 66.54% and 74.60% respectively. Recognizing both parasitic loads, line losses and significant increases in actual peak demands in FY16, the Metropolitan Government has estimated remaining diversified contract sales capacity of 821 tons for chilled water and 11,309 PPH for steam. Historically, customer's contract for demand is an amount greater that they actually experience and, when compared to their peak demand this difference is considered the Contract Diversity. The following table sets forth the current total capacities of steam and chilled water contracted for by the Customers pursuant to the Customer Contracts:

Customer Commitments	Committed Capacity		Percentage of Total Available Capacity	
	Steam (pph)	Chilled Water (tons)	Steam (-)	Chilled Wtr (-)
<b>Commercial Customers</b>				
Parkway Towers	4,500	550	2.70%	2.72%
Wells Fargo	1,850	190	1.11%	0.94%
401 Union	1,995	192	1.20%	0.95%
Sheraton Hotel	12,660	950	7.61%	4.70%
Hermitage Hotel	7,000	400	4.21%	1.98%
501 Union Association	2,500	175	1.50%	0.87%
Fifth Third Financial	-	1,043	0.00%	5.16%
Renaissance Hotel	17,287	1,000	10.39%	4.95%
Renaissance Office	-	255	0.00%	1.26%
St. Mary of the Seven	315	27	0.19%	0.13%
Nashville City Center	-	850	0.00%	4.21%
Wildhorse Saloon	1,600	210	0.96%	1.04%
Ryman Auditorium	1,450	230	0.87%	1.14%
<b>Total Commercial</b>	<b>51,157</b>	<b>6,072</b>	<b>30.74%</b>	<b>30.06%</b>
<b>State of Tennessee</b>				
Andrew Jackson	60,403	1,425	36.29%	7.05%
Central Services	. ( 1 )	. ( 3 )	. ( 1 )	. ( 3 )
Cordell Hull	. ( 1 )	498	. ( 1 )	2.47%
John Sevier	. ( 1 )	404	. ( 1 )	2.00%
War Memorial	. ( 1 )	704	. ( 1 )	3.49%
Library & Archives	. ( 1 )	156	. ( 1 )	0.77%
Supreme Court	. ( 1 )	78	. ( 1 )	0.39%
State Capitol	. ( 1 )	222	. ( 1 )	1.10%
James K Polk	14,560	1,309	8.75%	6.48%
Citizen's Plaza	7,350	788	4.42%	3.90%
Tennessee Tower	12,165	1,760	7.31%	8.71%
Tennessee State University	5,405	-	3.25%	0.00%
Legislative Plaza	. ( 1 )	. ( 2 )	. ( 1 )	. ( 2 )
Rachel Jackson	. ( 1 )	. ( 1 )	. ( 1 )	. ( 1 )
<b>Total State</b>	<b>99,883</b>	<b>7,344</b>	<b>60.01%</b>	<b>36.36%</b>
<b>Metropolitan Government</b>				
A. A. Birch	13,800	1,050	8.29%	5.20%
Metro Courthouse	7,000	466	4.21%	2.31%
Municipal Auditorium	4,500	600	2.70%	2.97%
Criminal Justice Center	13,210	585	7.94%	2.90%
Convention Center	18,750	1,400	11.27%	6.93%
Bridgestone Arena	15,269	2,500	9.17%	12.38%
LP Field	-	1,500	0.00%	7.43%
Hume Fogg School	3,000	300	1.80%	1.49%
Nashville Public Library	8,374	700	5.03%	3.47%
Music City Convention Center	47,500	5,820	28.54%	28.81%
<b>Total Metro</b>	<b>131,403</b>	<b>14,921</b>	<b>78.95%</b>	<b>73.87%</b>
<b>Additional Customers</b>				
Sun Trust Bank	6,606	660	3.97%	3.27%
Schermerhorn Hall	4,200	500	2.52%	2.48%
Viridian Tower	-	512	0.00%	2.53%
Nashville Hyatt Place	6,300	250	3.79%	1.24%
<b>Total Additional</b>	<b>17,106</b>	<b>1,922</b>	<b>10.28%</b>	<b>9.51%</b>
<b>TOTAL COMMITMENTS</b>	<b>299,549</b>	<b>30,259</b>	<b>179.98%</b>	<b>149.80%</b>
<b>Total Available Capacity</b>	<b>166,433</b>	<b>20,200</b>		
<b>Historic Peak Demand</b>	<b>157,996</b>	<b>19,654</b>		
<b>Sales Diversity Factor</b>	<b>74.60%</b>	<b>66.54%</b>		
<b>Diversified Sales Avail.</b>	<b>11,309</b>	<b>821</b>		

Notes:

- (1) Included as part of Andrew Jackson capacity
- (2) Included as part of War Memorial capacity
- (3) Included as part of John Sevier capacity

## Projected Operating Results; Projected Revenues and Expenses

The following table sets forth the operating results for the past year of operations, and certain base case financial projections developed by Thermal Engineering Group, Inc. (TEG) for the succeeding 5 years of operation of the System. The base case projections assume sales based on Customer Contracts existing as of the date hereof and not on sales of any remaining available capacity.

### Forecast of Revenues and Expenses Fiscal Years Ended June 30

	FY2016	FY2017	FY2018	FY2019	FY2020	FY2021
	Actual (5)	Budget	Projected (4)			
Metro Funding Amount (1)	\$ 1,421,800	\$ 1,721,800	\$ 1,690,300	\$ 1,635,200	\$ 1,312,500	\$ 1,143,200
<b>Revenues</b>	<b>\$ 17,764,900</b>	<b>\$ 18,894,000</b>	<b>\$ 19,422,700</b>	<b>\$ 19,678,900</b>	<b>\$ 19,957,700</b>	<b>\$ 20,556,400</b>
Total Operating Revenues	\$ 19,186,700	\$ 20,615,800	\$ 21,113,000	\$ 21,314,100	\$ 21,270,200	\$ 21,699,600
Total Operating Expenses (2)	\$ 13,662,200	\$ 15,232,000	\$ 15,814,300	\$ 16,070,800	\$ 16,367,900	\$ 16,858,900
Net Revenues	\$ 5,524,500	\$ 5,383,800	\$ 5,298,700	\$ 5,243,300	\$ 4,902,300	\$ 4,840,700
Total Debt Service (3)	\$ 5,565,900	\$ 5,525,000	\$ 5,473,800	\$ 5,420,200	\$ 5,079,200	\$ 5,022,900

Notes:

- (1) The Metro Funding Amount transferred annually represents the anticipated operational cost shortfall based on the projected revenues and expenses and therefore will be more or less than the amount actually required.
- (2) Operating expenses include transfers made to the EDS Repair and Replacement Fund.
- (3) Debt service amounts have been pro-rated on a 12-month fiscal year basis and are net of any interest earnings and capitalized interest payments. Total debt service includes potential obligations relative to approved capital budgets through FY17. Values reflect re-funded 2002A Bonds.
- (4) Fiscal Year 2018 Budget is under development and will need to be adjusted to recognize true-ups and transfers.
- (5) Fiscal Year 2016 Actual adjusted to include year-end Customer True-Up.

Subsequent to the close of the fiscal year, certain estimated operating expenses and costs charged to system customers must be adjusted to reflect actual cost. This Annual Customer True-up is required to determine variances between budget and actual for purposes of customer invoicing. As a result, the Forecast of Revenues and Expenses do not necessarily reflect the audited financial statements.

Based on the experience of TEG, and the information made available to it by way of historical operating data for the Metro Nashville District Energy System, TEG is of the opinion that the revenues projected to be derived from operation of the System are adequate to pay all operating expenses and provide a minimum debt service coverage on the District Energy System Revenue and Tax Refunding Bonds, Series 2012A of at least 1.00 over the term of the debt.