BURNS McDONNELL

Engineering Consultant's Report

on the Operation and Maintenance of the Electric System Fiscal Year 2015

City of Dover, Delaware

Project No. 89923

4/15/2016

Engineering Consultant's Report

prepared for

City of Dover, Delaware
Dover, Delaware

Project No. 89923

4/15/2016

prepared by

Burns & McDonnell Engineering Company, Inc.
Kansas City, Missouri

April 15, 2016

Ms. Donna S. Mitchell, CPA
Controller/Treasurer
City of Dover
5 East Reed Street
Weyandt Hall, Suite 300
Dover, Delaware 19901

Re: Engineering Consultant's Report
Project No. 89923

Dear Ms. Mitchell:

In compliance with the requirements of Section 705 and Section 504 of the City of Dover, Delaware Resolution Authorizing and Securing Electric Revenue Bonds, adopted December 23, 1985 (Resolution), Burns & McDonnell presents this Annual Engineering Consultant's Report on the Operation and Maintenance of the Electric System for the fiscal year ended 2015. This report summarizes our review and assessment of the City of Dover's (City) Electric System, its existing retail electric rates, its insurance coverage in effect, and its reserve funds. Financial, statistical, and operating data used in preparing the report were initially reported in the City's annual financial statements and accounting records. Additional information was furnished by City and Electric Division staff.

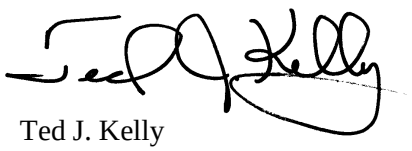
In the preparation of this Engineering Consultant's Report, Burns & McDonnell completed assessments of the electric generating stations and the transmission and distribution system of the City's Electric Division. Assessments involved interviews, observations, and review of fiscal year 2015 expenditures and fiscal year 2016 budgets. In addition, an analysis of the balances of the Improvement and Extension Fund as well as other funds supporting the Electric Division was performed. Burns & McDonnell also reviewed the adequacy of revenues provided by current retail rates in relation to the requirements of the Resolution. Finally, a high-level assessment of the City's insurance coverage related to the Electric Division was completed.

Based on these reviews and assessments, it is the opinion of Burns & McDonnell that the Electric System is being operated and maintained, including replacements and upgrades as appropriate, in a manner that is consistent with current electric utility practices. In addition, the current retail rates have provided sufficient revenues to satisfy the debt service coverage requirement in the Resolution. Further, it is the opinion of Burns & McDonnell that the balances in the various reserve funds maintained by the City for the Electric Division are sufficient for their intended purposes.

We appreciate the cooperation and assistance provided by the City and the Electric Division staff in the preparation of this report. We will be happy to discuss the report with you at your convenience.

Sincerely,

Burns & McDonnell



Ted J. Kelly
Principal & Senior Project Manager
Business & Technology Services

TJK/sg

9400 Ward Parkway \ Kansas City, MO 64114
O 816-333-9400 \ F 816-333-3690 \ burnsmcd.com

TABLE OF CONTENTS

Page No.

APPENDIX A

LIST OF TABLES

Page No.

LIST OF FIGURES

Page No.

LIST OF ABBREVIATIONS

Abbreviation	Term/Phrase/Name
Burns & McDonnell	Burns & McDonnell Engineering Company, Inc.
City	City of Dover, Delaware
DCS	distributed control system
EDQP	Employee Development and Qualification Program
EIA	U.S. Energy Information Administration
FY	Fiscal Year
GWh	gigawatt-hour
I&E Fund	Electric Improvement & Extension Fund
kV	kilovolt
kW	kilowatt
kWh	kilowatt-hour
LAN	local area network
McKee Run	McKee Run Generating Station
MW	megawatt
MWh	megawatt-hour
NAES	North American Energy Services Corporation
NERC	North American Electric Reliability Corporation
NRG	NRG Energy Center
Ohm	standard unit of electrical resistance
PJM	Pennsylvania New Jersey Maryland Interconnection
Report	2014 Engineering Consultant's Report on the Operation and Maintenance of the Electric System
Resolution	Resolution Authorizing and Securing Electric Revenue Bonds, adopted December 23, 1985

VanSant	VanSant Generating Station
TEA	The Energy Authority, Inc.

STATEMENT OF LIMITATIONS

In preparation of the Annual Engineering Consultant's Report on the Operation and Maintenance of the Electric System for the fiscal year ended 2015 (the Report), Burns & McDonnell relied upon information provided by the City of Dover, Delaware (the City). The information included various analyses, computer-generated information and reports, audited financial reports, and other financial and statistical information, as well as other documents such as operating budgets and current retail electric rate schedules. While Burns & McDonnell has no reason to believe that the information provided, and upon which Burns & McDonnell has relied, is inaccurate or incomplete in any material respect, Burns & McDonnell has not independently verified such information and cannot guarantee its accuracy or completeness. In addition, Burns & McDonnell has used the information provided to make certain assumptions with respect to conditions that may exist in the future. While Burns & McDonnell believes the assumptions made are reasonable for the purposes of the Report, it makes no representation that the conditions assumed will occur.

1.0 – EXECUTIVE SUMMARY

1.0 EXECUTIVE SUMMARY

1.1 Introduction

The Fiscal Year 2015 Engineering Consultant's Report on the Operation and Maintenance of the Electric System (Report) has been prepared in compliance with the requirements of the City of Dover, Delaware Resolution Authorizing and Securing Electric Revenue Bonds, adopted December 23, 1985 (Resolution). Burns & McDonnell was retained as the Engineering Consultant by the City of Dover, Delaware (City) to complete an inspection of the Electric System and prepare a report on findings. The Resolution requires that the Engineering Consultant complete the following:

"The City covenants that it will cause the Engineering Consultants employed under the provisions of Section 705 of this Resolution . . . to make an inspection of the Electric System at least once each fiscal year and . . . to submit to the City Manager a report setting forth (a) their findings whether the properties of the Electric System have been maintained in good repair, working order and condition and whether they have been operated efficiently and economically and (b) their recommendation as to

(i) the proper maintenance, repair and condition of the Electric System during the ensuing fiscal year and an estimate of the appropriations which should be made for such purposes,

(ii) the insurance to be carried under the provisions of Article VII of this Resolution,

(iii) the amount that should be deposited during the ensuing fiscal year to the credit of the Improvement and Extension Fund for the purposes set forth in Section 510 of this Article,

(iv) the extensions, improvements, renewals and replacements which should be made during the ensuing fiscal year, and

(v) any necessary or advisable revisions of the electric rates."

This is the twelfth annual Engineering Consultant's Report prepared for the City by Burns & McDonnell.

1.2 Electric System Overview and Assessment

The Electric Division served a monthly average of 24,161 accounts in fiscal year (FY) 2015, approximately 20,070 of which were residential customers. Five of the Electric Division customers take service from the 69-kV transmission system. These customers include the Dover Air Force Base, Kraft, Proctor & Gamble, White Oak Solar and NRG Energy Center (NRG). NRG is an exempt wholesale

generator that sells power that must be transmitted through the City's transmission system to third party purchasers. When the NRG plant is not operational, the Electric Division provides power for the plant site.

1.2.1 General Plant

General plant facilities consist primarily of Electric Division administrative and operations facilities and pollution control related equipment on McKee Run Generating Station (McKee Run) and VanSant Generating Station (VanSant). Other types of general plant include office furniture and equipment, transportation and power-operated equipment, and communication equipment.

Effective July 1, 2011, the City entered into an Energy Management Agreement with The Energy Authority, Inc. (TEA) to assist the City with its energy procurement, energy sale, purchase of fuels, establishment and management of risk policies, and the development and management of hedging protocols and related energy procurement challenges. Headquartered in Jacksonville, Florida, TEA is a non-profit energy manager owned by seven public utility systems operating across the nation.

1.2.2 Production Plant

The City owns two generating plants, the McKee Run and VanSant generating stations. McKee Run consists of three steam turbine generating units with a total combined capacity of 136 megawatts (MW). VanSant is a 39 MW simple-cycle combustion turbine unit. NAES Corporation operates the generating plants. The agreement between the City and NAES Corporation has been in effect since July 1, 2006. The various systems and components of the generating plants reviewed by the Engineering Consultant are listed below:

Major Equipment

- Steam turbines/generators
- Boilers and auxiliaries
- Station cooling water systems
- Fuel handling systems
- Water treatment systems
- Station electrical systems
- Station control systems
- General facilities

Management and Organization

- Safety
- Training
- Staffing

Based on statements and information provided by the City, as well as the observations and reviews performed, it is the Engineering Consultant's opinion that the City's power generation facilities are being operated and maintained consistent with generally accepted electric utility practice in the United States. In general, the performance, operation, maintenance, staff, planning, and training aspects for the McKee Run and VanSant were found to be above average. Specifically, the generation facilities have demonstrated a high level of availability despite the dispatching of the units primarily for peak demand.

1.2.3 Transmission and Distribution Plant

The transmission and distribution network includes 44 miles of overhead transmission lines, 0.12 miles of underground transmission lines, 190 miles of overhead distribution lines and 271 miles of underground distribution lines. Five Electric Division customers take service off of the 69-kV transmission system. The following list includes areas of the transmission and distribution system that were considered and reviewed.

- System reliability
- Power quality
- Operations and maintenance
- Design standards and specifications
- Transmission and distribution improvements

It is the Engineering Consultant's opinion that the design, construction, operation, and maintenance of the City's electric transmission and distribution system and the associated facilities are consistent with current generally accepted electric utility standards. In recent years, the City has made appropriate upgrades and improvements which the Engineering Consultant has observed while conducting the reviews and assessments to complete the annual reports.

1.3 Financial Overview and Assessment

The level of revenues required from the retail electric rates for the Electric Division were determined through the analysis of the financial results and net income or net margins for FY 2015. The Resolution requires that the Electric Division maintain a debt service coverage ratio of 1.25.

Customers of the Electric Division of the City were charged for the electric service they received based on the City's rate schedules and contracts that were in place in FY 2015. A comprehensive cost-of-service and rate design study was completed in 2006 and subsequent rate analyses were completed in 2007, 2008, 2012, 2013, and 2015 to examine revenue requirements and revenue generation. Specifically, the 2006 rate study was conducted to address increased costs associated with a new power supply contract that became effective on July 1, 2006. The rate study recommended combining a number of rate classes and implementing rate increases on July 1, 2006. The 2006 rate study also recommended an additional increase be implemented on January 1, 2007 to cover increased costs associated with operating the generating station. The 2007 and 2008 rate analyses re-examined Electric Division revenues and expenses and recognized additional revisions to power supply costs. As a result of these analyses, additional rate increases were implemented on July 1, 2007, July 1, 2008, and July 2012. The July 2013 rate adjustments established the rate schedules utilized by the Electric Division today.

Total energy sales decreased from 720.8 GWh in FY 2014 to 715 GWh in FY 2015, a decrease of 0.82 percent. Total revenue from sales to electric customers in FY 2015 was $78.34 million, representing an increase of $0.15 million from FY 2014. In FY 2015, the average revenue per kWh for residential customers was 12.62 cents and the system-wide average price was 10.96 cents per kWh.

The Electric Division's largest cost in providing electric service to its customers is the wholesale cost of power purchased from the Pennsylvania New Jersey Maryland Interconnection (PJM) marketplace through its energy manager, TEA. From FY 2014 to FY 2015, the cost of power decreased from $57.2 million to $50 million. Net income loss of $2.3 million in FY 2014 turned to a positive net income of $2.6 million in FY 2015. The net income increase in FY 2015 was due to a decrease in power supply costs while all other expenses stayed relatively constant.

Following is an excerpt from Section 502(c) of the Resolution.

> *"(c) The total amount of the Revenues of the Electric System during the preceding fiscal year shall have been not less than the total of the following:*
>
> *The Current Expenses of the Electric System during the current fiscal years shown by the Annual Budget . . . for such fiscal year, and*
>
> *One hundred twenty-five percent (125%) of the maximum amount of the Principal and Interest Requirements for any fiscal year thereafter on account of all bonds then Outstanding under the provisions of this Resolution."*

The Resolution requires that annual revenues of the Electric Division be no less than the total current expenses plus 125 percent of the greatest remaining annual debt service. The Electric Division achieved debt service coverage ratios for FY 2013, FY 2014, and FY 2015 of 6.56, 3.25, and 5.42, respectively. Therefore, the revenues generated by the current electric rates have been sufficient to meet the applicable covenant of the Resolution.

The City maintains a comprehensive insurance program to cover varying types of liabilities, as well as significant losses related to various Electric Division properties. It is the opinion of Burns & McDonnell as Engineering Consultant, and not as insurance counselor, the insurance in full force and affect appears to satisfy the requirements of Section 706 of the Resolution.

The City established the Electric Revenue Fund and the Electric Improvement & Extension (I&E) Fund to make money available for specific purposes when they are needed. The following is a list of these funds' respective cash accounts:

Electric Revenue Fund

- Insurance Reserve Account
- Contingency Reserve Account
- Electric Rate Stabilization Reserve Account
- Interest and Sinking Account

Electric Improvement and Extension Fund

- Depreciation Reserve Account
- Future Capacity Reserve Account

The Engineering Consultant reviewed activity information on the accounts listed above and found that the balances in those accounts as of June 30, 2015, were consistent with the required or target balances.

1.4 Conclusions

Based on the reviews and assessments completed, it is the opinion of Burns & McDonnell that:

1. The City's power generation facilities are being operated and maintained consistent with generally accepted electric utility practice in the United States.
2. The design, construction, operation, and maintenance of the City's electric transmission and distribution system and the associated facilities are consistent with current generally accepted

electric utility standards and over the past few years, the system has been upgraded in order to improve operation and service to customers.

3. The Electric Division capital projects included in the City's Capital Investment Plan and the FY 2016 Operating Budget are necessary and should provide improved reliability and power quality for the Electric System.
4. The cash balances as of June 30, 2015 for the various accounts maintained by the City for the Electric Division appear to be sufficient for their defined purposes.
5. The insurance coverage for the assets of the Electric Divison is maintained by the City, is in full effect, and appears to satisfy the requirements of Section 706 of the Resolution.
6. The electric revenues generated by the City's current retail rates are more than sufficient to fulfill the debt service coverage requirement (125 percent of current expenses) defined in Section 502(c) of the Resolution.

2.0 – INTRODUCTION

2.0 INTRODUCTION

The City of Dover, Delaware (City) operates a municipally-owned electric utility system that served 23,350 customers, excluding lighting, within the City and surrounding areas at the end of fiscal year (FY) 2015. The 68 square-mile service area of the electric utility is located in central Delaware; with the City itself located approximately 70 miles south of Philadelphia, Pennsylvania.

2.1 Purpose of Report

This FY 2015 Annual Engineering Consultant's Report (Report) has been prepared in compliance with the requirements adopted December 23, 1985 of the City of Dover Electric Bond Resolution (Resolution). Burns & McDonnell was retained by the City as the Engineering Consultant defined in Section 705 of the Resolution, as follows.

> *"The City covenants that it will, for the purpose of performing and carrying out the duties imposed on the Engineering Consultants under the provisions of this Resolution, employ an independent engineer or engineering firm or corporation having a nationwide and favorable repute for skill and experience in such work."*

The required scope of the Report is described in Section 504 of the Resolution, as follows.

> *"The City covenants that it will cause the Engineering Consultants employed under the provisions of Section 705 of this Resolution . . . to make an inspection of the Electric System at least once each fiscal year and . . . to submit to the City Manager a report setting forth (a) their findings whether the properties of the Electric System have been maintained in good repair, working order and condition and whether they have been operated efficiently and economically and (b) their recommendation as to*
>
> *(vi) the proper maintenance, repair and condition of the Electric System during the ensuing fiscal year and a estimate of the appropriations which should be made for such purposes,*
>
> *(vii) the insurance to be carried under the provisions of Article VII of this Resolution,*
>
> *(viii) the amount that should be deposited during the ensuing fiscal year to the credit of the Improvement and Extension Fund for the purposes set forth in Section 510 of this Article,*
>
> *(ix) the extensions, improvements, renewals and replacements which should be made during the ensuing fiscal year, and*

(x) any necessary or advisable revisions of the electric rates."

2.2 Organization

The Electric Utility Director is responsible for the overall management of the Electric Utility Division. Mr. Harry Maloney is the current Electric Utility Director for the Electric Division. The Electric Director oversees the day-to-day operations of the Electric Division and manages the Division's staff. The Director also provides oversight of the production plant budget, monitors the contracts of the energy coordinator and the power generation operator/manager, and is responsible for North American Energy Services Corporation (NAES Corporation) contracts and oversight. The Electric Division is organized into four separate operating sections. Descriptions of the current Electric Division sections are provided below.

Administration Section – Administration provides the overall management of the Electric Division's Engineering and Transmission & Distribution Sections. This section performs all planning and budgeting, monitors all construction projects, administers all power supply and generating station operations agreements, and coordinates with customer service and public relations for the Electric Division.

Electric Engineering Section – Electric Engineering provides design, specifications, construction management, and project inspection for all capital investment projects of the Electric Division. This section also develops and maintains maps, plans, and specifications, as well as engineering standards for construction and maintenance of the Electric System.

The group formerly known as the System Operations Section has been reorganized as part of the Electric Engineering Section. This group is responsible for the operation of a 24/7 system operations control center and is comprised of the System Operators Crew Leader and the Operators.

Transmission & Distribution Section – Transmission & Distribution constructs, operates, and maintains the overhead and underground electric systems and fiber optic communication facilities. This section installs and maintains all electric metering, as well as street and security lighting. This section also investigates and resolves customers' power supply problems and oversees the work of tree trimming contractors.

Figures 2-1 through 2-3 provide organizational charts illustrating the staffing hierarchies of the various sections in the Electric Division. The number of individuals in each position is indicated as appropriate. Electric Division staff totaled 37 at the time this report was issued.

Figure 2-1: Organization

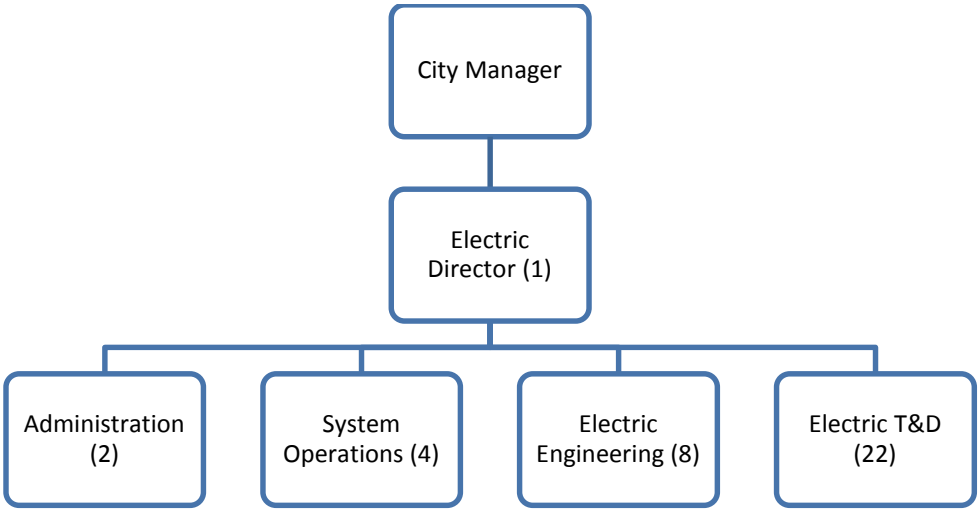


Figure 2-2: Administration Section

Figure 2-3: Electric Engineering Section

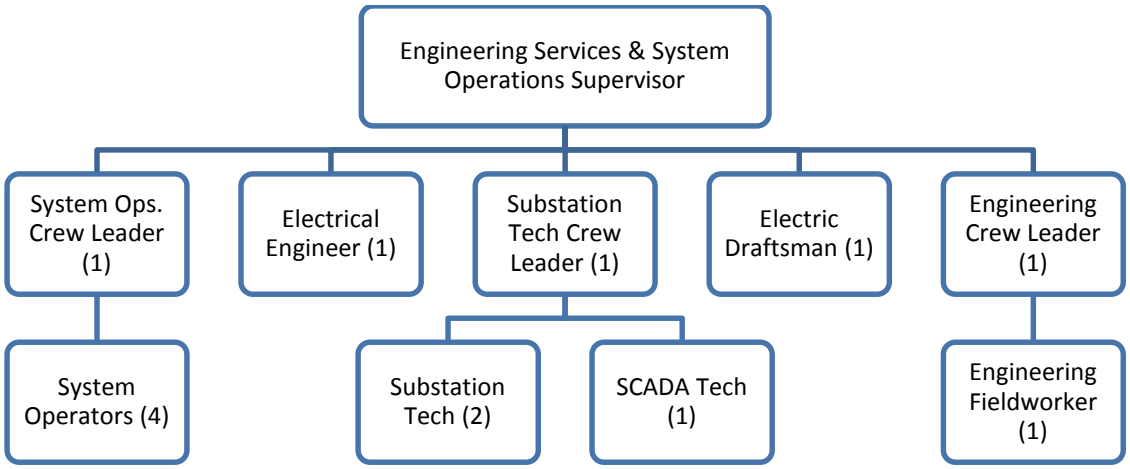
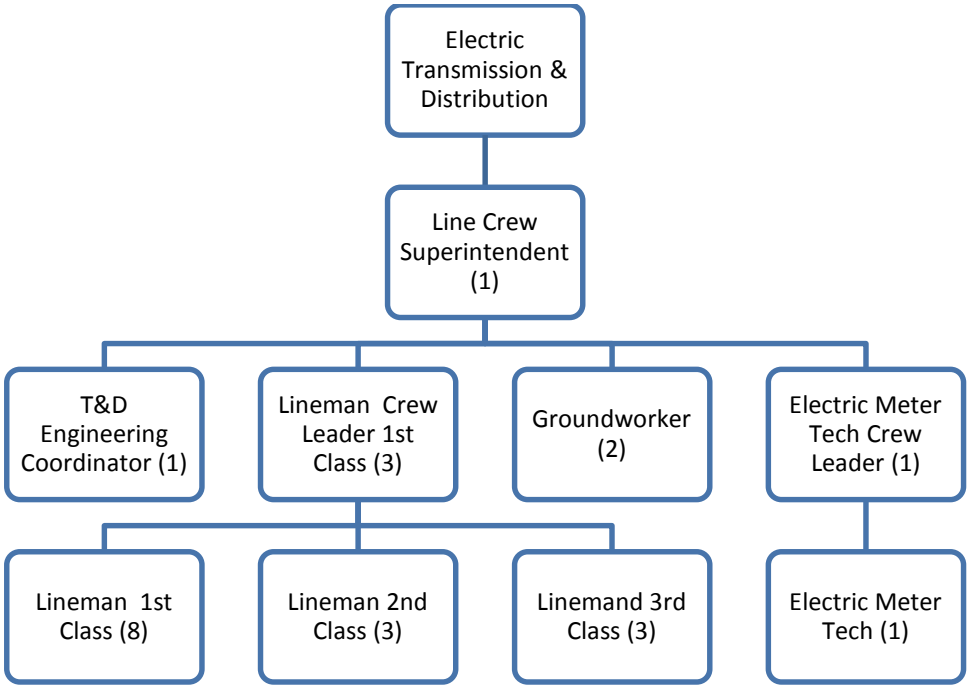


Figure 2-4: Electric Transmission & Distribution Section



The subsequent sections of the Report provide a discussion of the required reviews and inspections conducted pursuant to Section 504 of the Resolution. Section 3.0 describes the assessment of the Electric System and its condition. Section 4.0 presents the financial results for the Electric Division, including an analysis of the adequacy of revenues provided by the electric rates. Section 5.0 summarizes the conclusions of Burns & McDonnell regarding the operation and maintenance of the Dover Electric System.

3.0 – ELECTRIC SYSTEM OVERVIEW AND ASSESSMENT

3.0 ELECTRIC SYSTEM OVERVIEW AND ASSESSMENT

3.1 Electric System Overview

The Electric System owned by the City primarily consists of a production plant, transmission plant, distribution plant, general plant facilities, and construction work in progress. Table 3-1 displays the year-end balances of the various plant components for FY 2013 through FY 2015. Table 3-3itemizes the specific capital investment plan projects and anticipated expenditures included in the FY 2016 budget.

Table 3-1: Year-End Plant in Service

	FY 2013	FY 2014	FY 2015
Capital assets, not being depreciated			
Land	$ 1,458,066	$ 1,458,066	$ 1,458,066
Construction in progress	1,338,909	1,690,462	2,364,099
Total capital assets, non-depreciable	$ 2,796,975	$ 3,148,528	$ 3,822,165
Capital assets, being depreciated			
Buildings	$ 17,619,349	$ 17,666,269	$ 17,675,949
Production	65,040,049	65,913,284	66,561,061
Transmission	34,010,686	35,084,087	35,899,287
Distribution	61,752,469	62,388,947	63,392,975
Administration	1,743,754	1,743,754	1,743,754
Vehicles	625,876	645,747	607,949
Total capital assets, being depreciated	$ 180,792,183	$ 183,442,088	$ 185,880,975
Less accumulated depreciation for:			
Buildings	$ (11,795,879)	$ (12,172,080)	$ (12,576,076)
Production	(42,682,428)	(44,002,794)	(45,423,777)
Transmission	(11,537,017)	(12,776,190)	(14,045,341)
Distribution	(26,832,246)	(28,382,673)	(29,742,291)
Administration	(1,316,532)	(1,427,205)	(1,536,190)
Vehicles	(481,527)	(517,428)	(482,121)
Total accumulated depreciation	$ (94,645,629)	$ (99,278,370)	$(103,805,796)
Total capital assets, being depreciated, net	86,146,554	84,163,718	82,075,179
Total capital assets, net	$ 88,943,529	$ 87,312,246	$ 85,897,344

In FY 2015, the Electric System experienced an increase in the annual system peak demand and a decrease in annual energy sales from the previous year. The Electric System experienced its peak at 4 p.m. on July 2, 2014 of 158.2 MW; a decrease of 6 MW from the previous year. For the year, 715 GWh of energy were sold; a decrease of 0.82 percent from the preceding year. The Electric Division projects energy sales in FY 2016 to total 715 GWh, showing constant energy sales from 2015. The Electric Division expects annual energy sales to grow moderately from FY 2016 through FY 2020.

3.1.1 Production Plant

The City owns two plants, the McKee Run and VanSant generating stations. McKee Run consists of three steam turbine generating units with a total combined capacity of 136 megawatts (MW). VanSant is a 39-MW simple-cycle combustion turbine unit. Generating units 1 and 2 from McKee Run station are currently scheduled to be retired in June 2017.

NAES Corporation operates the generating plants. The organizational structure of NAES has changed based on the city's request and general operating requirements. The agreement between the City and NAES Corporation has been in effect since July 1, 2006. The Engineering Consultant's observations regarding the generating stations and units are described later in this section of the Report.

Effective July 1, 2011, the City entered into an Energy Management Agreement with The Energy Authority, Inc. (TEA) to manage the sales associated with the production plants; the Electric Division's first contract with TEA. TEA also assists the City with its energy procurement, energy sales, purchase of fuels, establishment and management of risk policies, the development and management of hedging protocols and related energy procurement challenges.

3.1.2 Transmission and Distribution Plant

The service area includes 234 miles of overhead lines, 271 miles of underground lines. Five Electric Division customers take service off of the 69-kV transmission system. These customers include the Dover Air Force Base, Kraft, Proctor & Gamble, and NRG Energy Center (NRG). NRG is an exempt wholesale generator that sells power that must be transmitted through the City's transmission system to third party purchasers. When the NRG plant is not operating the Electric Division provides power for the plant site.

The Electric Division has two contracts for providing transmission service through the Electric System. The Electric Division provides transmission service to NRG for the output of its 16 MW electric generator. The Electric Division also has a point-to-point contract for the output of an NRG Combustion Turbine which ties directly to the Kent Substation and is not part of the Dover transmission system.

3.1.3 General Plant

The general plant category consists primarily of Electric Division administrative and operations facilities, and pollution control-related equipment at McKee Run and VanSant. The agreement with NAES Corporation stipulates NAES Corporation manage the operation and maintenance of the facilities while the City funds all replacements and upgrades required for maintaining the capability of the two generating

stations. The City is also responsible for the costs of compliance with new regulations promulgated. Other types of items included in the general plant category include office furniture and equipment, computer-related equipment, transportation and power-operated equipment, and communication equipment. Burns & McDonnell did not specifically assess the items in the general plant category for this Report.

3.2 Production Plant Assessment

Burns & McDonnell made observations and conducted assessments of the Electric System assets in support of the development of this annual Engineering Consultant's Report. On March 4, 2016, Mr. Ted Kelly of Burns & McDonnell met with representatives of NAES Corporation to discuss the condition of the McKee Run and VanSant generating stations. Mr. Don Mordus, the Plant Manager, coordinated the visit. Mr. Kelly also met with Jacob Aucoin, the Plant Engineer during the visit. The findings of Burns & McDonnell from the assessment of the City's production plant assets are documented herein.

3.2.1 Production Plant Operations

McKee Run consists of three units. Units 1 and 2 were originally coal-fired units, which began operations in 1961 and 1962, respectively. In 1972, these units were converted to burn No. 6 fuel oil. Units 1 and 2 each have rated capacities of 17 MW. Unit 3 began operations in 1975 and was designed to fire No. 6 fuel oil and natural gas. Unit 3 has a rated capacity of 102 MW. In FY 2008, the City began work to convert all three units at McKee Run to burn No. 2 fuel oil in order to reduce pollution from the plant. The necessary upgrades and new equipment were installed allowing each of the units to burn both natural gas and No. 2 fuel oil.

VanSant consists of a simple cycle combustion turbine with a rated capacity of 39 MW. This unit commenced operation in 1991. An inlet fogging system was installed in the spring of 2015 and capacity testing performed in June 2015 proved a 6 MW increase in unit capacity. VanSant remains unmanned, except when it is dispatched into service. On the occasions when the unit is dispatched, personnel from McKee Run travel to VanSant to startup and operate the unit until the unit dispatch is released by PJM. There is an action item to restore remote start capability to allow the unit start time to be reduced to 15 minutes, currently the transmission operator is asked to allow 1 hour for starting time because the VanSant site is not manned. A remote start capability for this unit would improve the dispatch starting time and increase unit run hours for quicker response to area transmission needs.

3.2.1.1 Management and Organization

Station management is well organized and knowledgeable. Personnel take a logical approach to the operation and maintenance of the generation facilities. Mr. Don Mordus serves as the Plant Manager. The

management/leadership team consists of eight positions including Mr. Mordus' position. The Administrative Manager, Plant Engineer, Compliance Coordinator, and Materials Coordinator, all report directly to Mr. Mordus. (Note: there will be retirements in the leadership team in the next couple of years.) One Operations Supervisor position is currently open at the plant. The open Operations Supervisor position is part of the management/leadership team but will not be filled. (Note: Three new operators have been hired in calendar year 2015.)

The Plant Engineer oversees and assists with plant operations and engineering compliance. He works closely with the Maintenance Supervisor and three Operations Supervisors to ensure all plant parameters are observed and equipment can be operated per the OEM operating procedures. He provides engineering review for plant modifications and the management of change program. When fully staffed, each operations team consists of a supervisor and three operators working 12-hour rotating shifts. The maintenance team consists of a supervisor and five employees working eight-hour shifts. The operations and maintenance hourly personnel are all union employees. The relationship between the union and management was reported to be excellent. McKee Run is currently at a staff level of 28 employees, with 32 approved positions.

3.2.1.2 Major Equipment Operations and Maintenance

In general, the generation facilities appear to have been properly operated and maintained, and in good condition as evidenced by the high availability of the units. The generation facilities are dispatched sparingly and operate primarily as peaking units. As such, the individual units incur a low annual capacity factor. Table 3-2 summarizes the major FY 2015 operating statistics.

Table 3-2: FY 2015 Generating Plant Operating Statistics

FISCAL YEAR 2015 OPERATING STATISTICS
City of Dover Electric Division

Unit	Rated Capacity - MW	Net Production - kWh	Net Capacity Factor	Net Heat Rate Btu/kWh	Number of Starts
VanSant	39	2,249	0.66%	13.079	15
McKee Run					
Unit 1	17	248	0.17%	15.253	3
Unit 2	17	234	0.16%	13.916	5
Unit 3	102	23,938	2.68%	13.855	40
Total	175	26,669	1.72%	13.592	63

Unit	Forced Outage Hours	Operating Hours	Service Factor	Availability Factor
VanSant	-	68.8	0.79%	58.64%
McKee Run				
Unit 1	203.4	31.0	0.35%	56.31%
Unit 2	282.0	35.1	0.40%	55.42%
Unit 3	273.7	532.2	6.07%	53.44%
Total	759.1	667.1	7.62%	55.95%

The large amount of time that units are not operating allows for maintenance and repair of the units. As a result, the FY 2015 overall equivalent availability factor for the generation facilities averaged 55.95 percent. Low net capacity factors are offset by PJM capacity credits. In FY 2015, $15.1 million of PJM capacity credits helped cover the entirety of purchased capacity costs. PJM capacity credits are expected to continue to offset significant portions of system capacity costs in FY 2016 and beyond.

3.2.1.3 O&M Management System

Maintenance activities are organized, planned, and managed using MP2[tm] by CMMS Data Group, a computer-based management system. All three major categories of maintenance activities (corrective, preventative, and predictive) are electronically managed by MP2[tm]. The city is getting better use of the system and is improving on their outstanding work orders, reducing from approximately 400 to close to 100.

For corrective maintenance activities, any station operator or mechanic can enter a work order into the system at any terminal on the Station local area network (LAN). A supervisor reviews the request, turns it into a work order, and assigns a priority according to a predetermined categorization. The work order is

planned, parts are ordered, and then the work order is assigned to an operator or maintenance technician for completion once the material has been received.

This system is also used to manage and track preventative maintenance activities that follow a schedule. Changing filters, and turning on and off heat tracing are examples of preventative maintenance. Predictive maintenance activities practiced include oil analyses, vibration testing, and infrared surveys. Portable vibration testing equipment is used at the Stations to improve the frequency of and capabilities to trouble-shoot rotating equipment. This technology allows personnel to identify problems and take corrective actions before equipment failure can occur.

In FY 2015, the City started or planned several general upkeep items to the plants as well as initiating several larger items. Starting in FY2016, the plant will be winterized to keep the temperature above 40 degrees Fahrenheit to shorten the time to reach full capacity. The power plant is also working to reinstate the remote start capability of the VanSant unit in order to allow quicker dispatch time, improve PJM's dispatch of the combustion turbine and earn better revenue ultimately to comply with market requirements and the PJM Capacity Performance program.

3.2.1.4 Safety

"Safety First" is an overall theme and attitude of the Electric Division. Near-miss incidents are documented, reviewed, and corrective follow-up actions are taken as required with an employee-run safety committee actively in place. This committee conducts monthly safety meetings, completes safety equipment inspections, and defines and implements tasks to improve safety in all areas. Members of the safety committee complete periodic visual inspections of employee work activities utilizing an observation checklist to detail their findings. Recorded observations are discussed and infractions corrected. Safety is the first topic discussed at all meetings at the generating plant, prior to the start of each meeting a "safety moment" is discussed, before the morning management meeting and at the beginning of each shift turnover. An indoctrination video emphasizing safety is shown to all visitors when entering the Station.

Mr. Mike Benkert, Senior Project Manager – Safety, reported an accident in January 2015 when an employee slipped on ice at the VanSant facility. The incident resulted in a broken ankle and 6 months off work for rehabilitation. The ice buildup was on a walkway sloped towards the building allowing a pooling of water and ice formation in cold weather. The walkway was replaced in the summer of 2015 and sloped for proper rain and water run off to preclude a repeat of this incident at the VanSant site. The updated lost time accident rate for the City of Dover generation plant is 3.67. The Plant Manager has made a strong

commitment to improving the safety culture to reduce or eliminate recordable accidents at the sites through a NAES Safe approach and focus of all employees.

3.2.1.5 Training

The required annual OSHA compliance training is completed and documented for each employee. A formal two-day employee orientation program is required for all new employees. This orientation covers a multitude of subjects from employee benefits to a review of the various Station operating manuals.

For operator training, the Employee Development and Qualification Program (EDQP) was established prior to 2002. EDQP is a formal program for training operators to progressively advance to positions with additional responsibilities. The training program is a combination of a self-paced and instructor-led learning. In addition to the above programs, cross training of various disciplines also occurs. An example of cross training would be plant operators training with maintenance staff. NAES has replaced the EDQP program with the standard NAES Training Manual, it is made up of qualification levels more applicable to the specific technology operated at the City of Dover utility. NAES has implemented the new training manual qualifications procedure in 2015 an all new employees are being trained according to this training program. As current employees complete their existing EDQP qualification level they are shifted in to the NAES TMP Manual program.

Plant staff receive environmental and safety training online via the GPi Learning website. The training includes tutorials and exams to ensure comprehension of the subject matter. Plant manuals, meetings, and lessons learned offer additional safety training topics. The plant staff also performs safety stand downs based on industry events, lessons learned and best practices that occur in other NAES operated facilities and the industry at large.

Plant staff continues to receive appropriate operator certification training for the Pennsylvania New Jersey Maryland Interconnection (PJM) market. This training will continue in the future and is funded by the City to ensure their operators are knowledgeable and conform to the PJM required operator directions when required. The plant also performs, plans, and schedules continuing education training on a regular basis for certified PJM plant operators. Non-certified operators are also encouraged to attend this training to help them prepare for operator certification which is an expectation of all operators by their 18 months anniversary at the generation plants. In FY2015, all plant operators without the operating certification from NAES were required to attend training courses to prepare them for completing the PJM certification.

3.2.1.6 Capital Improvements

The following table describes 2016 fiscal year on-going and planned Capital Expenditures for the system. The table is organized into three categories, completed, on-going, and planned improvements to the City's assets:

Table 3-3: Fiscal Year 2016 On-going/Planned Capital Expenditures

Production		
McKee Run & VanSant Preservation of Structures	$	215,000
McKee Run Building Equipment Replacements		42,000
Unit 3 Software & Computer Upgrades - CEMS		44,500
Unit 3 Stack Repairs		485,000
Unit 3 Boiler Systems		42,000
Unit 3 Auxillary System Components		135,000
Unit 3 Cooling Water Line Replacement/Repairs		469,000
VanSant Software & Computer Upgrades - CEMS		44,500
VanSant Component Replacements		21,000
Safety & Compliance Improvements		157,000
Subtotal Electric Generation Division	$	1,655,000
Transmission & Distribution		
New Developments - UG Transformers	$	1,872,000
New Developments - UG Conductors/Devices		450,000
DNREC R&R Metering		41,000
Public Works Wetland Project		78,000
Washington Street Lights		40,000
NBR Properties, LLC		19,000
Vehicles, Trucks & Equipment		387,600
Subtotal Electric Transmission Division	$	2,887,600
Electric Engineering		
Townpoint Distribution Upgrades	$	350,000
Oak Grove Trailer Park Distribution Upgrade		78,500
Lakeland Laurel Point - Distribution Upgrade		63,000
Rt 8/ Mifflin Road Crossing - Distribution upgrade		51,500
Rt 8/ Taps - Distribution upgrade		38,500
Townsend Brothers - Distribution upgrade		14,500
Persimmon Tree Apartments - Distribution upgrade		62,000
North Street OH to UG (Governots to Queen)		100,000
Dover East Estates - Distribution Upgrade		130,000
Lighting Project and Rehabilitation		67,000
Satellite Syncrhonized Substation Clocks		30,000
Horsepond Road URD - Distribution Feeders		67,000
Transmission Line Maintenance Program		75,000
Distribution Capacitors - Overhead		25,000
Distribution Capacitors - Underground		25,000
Frazier Substation Reliability Upgrade (900 Circuits)		10,000
Horsepond SS to Cartanza 69kV Rebuild		255,500
69kv Substation Cable Replacement North Street		50,000
Weyant Hall Roof Refurbishment		201,800
Dover Air Force Base Substation Relocation		30,000
Subtotal Electric Engineering Division	$	1,724,300
Total Planned Capital Investment Projects	**$**	**6,266,900**

3.2.2 McKee Run Condition Assessment

The following is a summary of the condition assessment of major equipment at McKee Run as presented by the NAES corporation staff. Units 1 and 2 will be decommissioned in 2017; therefore, major maintenance and capital projects have been and will be limited for these units in the near future. Burns & McDonnell made no internal assessments of equipment during the facility tour.

XL Insurance completes inspections of the Electric Division production facilities on an annual basis. After each inspection the insurance provider issues a report detailing its risk reduction recommendations. Burns & McDonnell received the insurance inspection report from XL Insurance conducted on February 24, 2016. The report indicates that there were no major incidents in all units during 2015. However, 2015 oil sample analysis of unit 3B forced draft fan outboard bearing was rated critical due to incorrect oil viscosity and elevated particle counts. The oil sample analyses of unit 1 forced draft fan motor inboard bearing, unit 1 induced draft outboard bearing, unit 2 forced draft fan motor inboard bearing, unit 3A induced draft fan motor inboard bearing, and unit 3 main turbine were rated marginal due to high particle count.

3.2.2.1 Steam Turbines/Generators

The steam turbines and generators for VanSant and McKee Run Units 1 and 2 were reported to be in satisfactory condition with no major problems.

No inspections, planned maintenance or upgrades were completed on Units 1 and 2 during the 2015 outages. During the spring 2014 outage, Unit 3 was dismantled and inspected. Erosion was detected in some places and steps were taken to mitigate. The unit experienced the same vibration issues that were historical on the unit during the startup process after the spring outage. The contractor was dissatisfied with the unit operation and the unit had a rub. The decision was made to go back into the unit and found that the turbine end packing housing was misaligned .050" in the turbine casing and corrected the problem by having the gland box machined for proper alignment and proper gland packing operation without the "rub". The rotor growth was causing the packing to "rub" and wear. Post work testing of the unit after the gland packing box machining revealed that the vibration issue was resolved. The rotor would grow without rubbing and the vibration issue was resolved.

3.2.2.2 Boilers and Auxiliaries

Boiler inspections are conducted every year on each of the boilers. The annual inspections typically include the inspection and cleaning of the major boiler components, including the mud and steam drums, the forced draft and induced draft fans, the wind box, condenser water box, condenser tubes, hot well, air preheater components, and safety valves.

During the spring 2014 outage, piping maintenance and replacements earned the most attention at Unit 1 in addition to typical planned inspections and maintenance on all units. Unit 2 repairs were primarily piping focused as well. Ash and debris was cleared from Unit 3 and a leak was found and repaired.

No adverse conditions, controls, or operational concerns were reported during the 2014 fall outage at Units 1 and 2. During that outage the neutralization pit liner was replaced, new insulation and lagging was installed on the high energy piping, and leaking tubes were replaced all on Unit 3. Additionally, a grating and cover will be added.

During February 2015, there was a severe cold weather event which caused problems for the plant equipment, those problems were all corrected, as stated previously, through winterizing the plant and keeping it above 40 degrees during the winter months. In addition, the chemistry issues have been addresses and corrected. There is a higher focus on maintaining boiler water chemistry to mitigate boiler tube failures and improve oiler water chemistry overall.

3.2.2.3 Station Cooling Water Systems

The Station has split cooling water systems with one system serving Unit 1 and Unit 2 and a separate system serving Unit 3. Projectile tube cleaning was completed on the Unit 1 and Unit 2 condensers during the spring FY 2011 outage. All the tubes in each unit were cleaned utilizing the scraper blade plug method. Samples were taken from the tube cleanings and retained for inspection. No leaks were detected in the expansion joint or condenser tubes. Each condenser box was cleaned. A significant Unit 3 cooling tower project was completed in CY 2014. This project included the change out of a number of columns in the tower, work on the hot deck, and balancing of water flow. The cooling water systems are reported to be sufficiently sized and in satisfactory condition, with no major issues reported at the time of this Report.

3.2.2.4 Fuel Handling Systems

Natural gas is delivered to the Station via a 4-inch pipeline for Unit 1 and Unit 2 and in a 10-inch diameter pipeline for Unit 3. No. 2 fuel oil is delivered to the Station by truck and unloaded into tanks. Forwarding pumps deliver the fuel oil to each of the units. No major fuel projects were reported to be completed in FY 2015 but they will be inspecting and replacing fuel hoses as needed.

3.2.2.5 Water Treatment/Steam Purity

Quality control parameters for boiler feed-water, internal boiler water, cooling tower water, and steam purity are checked at a minimum of twice per day when systems are operating. Results are recorded and graphically compared to control limits. Adjustments are then made as required. Boiler feed water is treated city water (well water from the City) using a regenerative ion resin demineralizer system, along with deaeration for oxygen control. Boilers 1 and 2 use a coordinated phosphate control for boiler internal purity control and Boiler 3 uses a balanced trisodium phosphate and disodium phosphate within a narrow pH range. A deep-bored water well was installed to provide water in addition to the City supplied water. City water has a high chlorine level which may exceed the Station permitted limits. By combining City water with the well water, the chlorine levels can be maintained at the permitted limits. Water for cooling tower makeup is also obtained from City water. The primary control parameter is silica concentration. Blow down is adjusted as required to maintain control. The City received an industrial waste water permit from Kent County to be able to discharge cooling water to the sewer system. No major water treatment issues were reported at the time of this Report.

Steam purity is not continuously monitored. Samples are taken at least twice daily and tested for pH, conductivity, and silica. There have not been any problems with steam purity. Annual inspections of the boiler drums and separation internals have verified that these systems are intact and operating properly.

In FY 2015, the station did not experience any internal corrosion related failures, steam path deposits, or excessive condenser fouling. Condor Technologies provides water treatment consulting services and chemicals. A representative visits the Station periodically to review test data and check chemical usage rates. No major issues were reported at the time of this Report.

3.2.2.6 Station Electrical Systems

Overall, Station electrical systems and transformers are considered to be in satisfactory condition. A condition assessment of the generation facilities' transformers was conducted in 2014 by TJ/H2b Analytical Services. Oil inspections and analyses were conducted. The inspector recommended that normal operation continue for all the transformers at the plant; however, heating was indicated at two of the transformers. The City has a contract with an environmental consultant to check each substation for oil leaks and to provide instruction on cleaning up in the event of an oil spill.

Oil sampling is now completed twice per year on the generator step-up transformers (GSUs). Based on the 2012 XL Insurance annual inspection, there are still no sprinkler protection or blast walls for GSU's 1-3. In 2012, the city had blast walls installed between Units 1 and 2 auxiliary transformers as

recommended in the insurance report. This item has since been closed per the insurance company. All plant transformers are examined annually. In 2015, all breaker relays, CTs, and PTs were tested by Cameo.

3.2.2.7 Station Control Systems

Unit 1 and Unit 2 controls are electro-pneumatic. Unit 3 controls are a distributed control system (DCS). In general, the station control systems are considered to be in satisfactory condition. The Unit 1 and Unit 2 control systems are outdated but perform satisfactorily. All relays have recently been inspected at both McKee Run and VanSant for North American Electric Reliability Corporation, PJM Interconnection and Mid-Atlantic Area Council compliance. The electro hydraulic control system was modified to become a primary/primary system in 2013. In 2013 additional control wiring was installed to upgrade the Unit 1 and Unit 2 gas control system. No additional controls upgrades or issues to report for FY 2014.

3.2.2.8 General Facilities

No major projects or improvements were completed to the General Facilities in FY 2015 other than installing building heaters and routine maintenance and repairs. In general, the station facilities appeared clean and well maintained during the site visit.

3.2.3 VanSant Condition Assessment

The following is a summary of the condition assessment of major equipment at VanSant as presented by the NAES corporation staff. Burns & McDonnell made no internal assessments of equipment during the facility tour.

In general, the unit is operated infrequently, but is well maintained. The VanSant unit has the capability of black starts. The unit does not currently have remote start capability. The Title V permit requires that the station be manned within 15 minutes of stating the unit and when the unit is operating. An operator travels to the site and performs a twice daily walk down of the unit with a checklist of items to review and the walk down results are logged.

XL Insurance completes inspections of the Electric Division production facilities on an annual basis. After each inspection the insurance provider issues a report detailing its risk reduction recommendations. The lone recommendation for VanSant following the FY 2012 inspection addressed safety. XL Insurance recommended the installation of gas detection equipment at the plant. A gas detection system has been installed. The gas detectors will activate the fire suppression system and alarm to the central control system. No other major repairs or upgrades were made at VanSant in FY 2013. No new recommendations were made in 2015. However, 2015 oil sample analysis of VanSant turbine was rated marginal due to

high particle count. During the spring outage in 2016 the unit is scheduled to have the lube oil sump cleaned and inspected by Total Lubrication and inspected which will resolve the high particulate count.

A capital project was completed on the exhaust stack and the D1 water tank was cleaned in FY 2014. NAES Instrument, Control and Electrical (IC&E) Technicians completed four recommended General Electric Technical Information Letters (TIL) projects for VanSant Unit 11 in the spring 2014 outage as shown below:

1. Annual TIL 1004-2R1 (IGV's and first stage corrosion/pitting inspection)
2. Annual TIL 1068-2R1 (IGV's bushing inspection)
3. Annual TIL 1132-2 (IGV thrust washer corrosion inspection)

Spring 2014 inspections indicated normal wear on the unit and minor maintenance was completed. During the fall 2014 outage, several minor projects were identified and will be completed at the time of the next major project on the unit. No issues were reported.

Every five years, the fuel tanks are inspected for rust and corrosion for leak prevention. The scheduled inspection was completed in June 2015. PM Tasks were developed in the CMMS to perform 5 year inspection next due in 2020 and a 15 year API 653 Ultrasonic shell inspection in 2030.

Remote start of the VanSant unit is currently being discussed with the OEM for restoration. The exhaust plenum work will be completed in FY 2016. A weekly diesel start is performed at the site to improve starting reliability of the diesel starting engine. A unit full speed 30-minute no-load test is performed once a month for starting reliability improvements and training purposes, and 26 hours per year has been allocated for the testing of the unit which have little impact on the allowable operating hours (432) under the VanSant Title V diesel engine annual operation

3.2.4 Production Plant Conclusion

Based on statements and information provided, as well as the observations and reviews performed, it is the opinion of Burns & McDonnell that the City's power generation facilities are being operated and maintained consistent with accepted electric utility practice in the United States. In general, the performance, operation, maintenance, staff, planning, and training aspects for the McKee Run and VanSant stations were found to be above average. Specifically, the generation facilities have demonstrated a high level of availability despite the dispatching of the units primarily for peak demand.

3.3 Transmission and Distribution Plant Assessment

On March 3 and 4, 2016, Mr. Ted Kelly visited the City to collect information and to observe the City transmission and distribution system, as operated and maintained by the Electric Division. Mr. Harry Maloney provided information related to the transmission and distribution system. Mr. Maloney also led a tour of the electric transmission and distribution system. Pictures taken of the substations during the inspections are provided in Appendix

3.3.1 Transmission and Distribution Plant Operations

The Electric Division distributes power to its customers by a network of transmission lines, distribution substations, and distribution lines. The transmission lines are rated at 69 kV and are connected to fifteen distribution substations located throughout the service area. The distribution substations reduce the power from transmission voltages to the primary distribution voltages of 12 kV to facilitate distribution of electric power to customers.

3.3.1.1 Operations and Maintenance

The Electric Division has a SCADA system that is monitored continuously for any problems that may arise in the Electric System. The main control room has two system operator desks and a large screen where system operating information is displayed. System operators can monitor the Electric System operation, such as voltage levels, current flows, etc. and make necessary adjustments as problems arise. The systems operators have received some PJM training, but are not required to be certified as Delmarva Power is the controlling agency.

Loading on substation transformers used for an emergency, a switching operation, or maintenance is limited to 120 percent of the rated capacity, followed by a twelve-hour cool-down period. The Electric Division has eight line crews and two ground workers to work on the system. Four crews are responsible for overhead lines, four crews are responsible for underground lines, and one crew is responsible for maintenance. The primary responsibilities of the eight line crews are installation of new service connections and construction of new lines. The trouble crew maintains the street lights, repairs underground services and is the first responder to outages. Tree trimming is contracted out and is no longer performed by the Electrical Division; however, performance of the contractor is monitored by the Line Crew Superintendent.

The Substation/Relay Maintenance Division is responsible for operation and maintenance of the substations and associated equipment. Visual inspections of substations, associated equipment, trip counter checks and battery systems checks are performed regularly. The Substation/Relay Maintenance

Division is also responsible for contractor oversight during annual transformer condition assessments including annual oil testing.

TJ/H2b Analytical Services completed the annual transformer condition assessments in February 2011. No abnormal gas was indicated and since the oil condition was within acceptable parameters, TJ/H2b recommended the continuation of normal operation. The City has a contract with an environmental consultant to check each substation for oil leaks and to provide instruction on cleaning up in the event of an oil spill.

The City contracts with an outside firm to inspect and chemically treat each wood pole in the Electric System every ten years. This is accomplished by awarding a five-year contract to spread out the expenses. Pole treatments were completed in May of 2013. Dover treated and inspected over 760 poles during 2013, of which, only one pole was rejected resulting in a 99.9 percent pass rate.

3.3.1.2 Design Standards and Specifications

The Electric Division designs the transmission and distribution circuits and some substation upgrades in conformance with national safety standards. Other substation and transmission design is contracted to Pike Electric, Inc.

The underground distribution design utilizes road or alley front access construction. This design means the electrical equipment, such as transformers and underground cable, are installed beside the road instead of behind houses or buildings. The advantage of front access construction is the accessibility for maintenance and repairs to cable and electric equipment. The underground cables are installed in polymerized vinyl chloride pipe for added protection and for easy cable replacement. The Electric Division installs jacketed, concentric cable that is rated at 15 kV, with 133 percent ethylene propylene rubber insulation.

The standard overhead distribution design utilizes a flat construction with a single cross-arm and insulators on 45-foot class 2 poles. Typically all electrical equipment locations have ground rods installed with measured readings of 25 ohms or less.

The substation design is generally a low-profile rigid bus design. The circuit breakers are SF6 gas-filled and the relays are microprocessor based with SCADA control and monitoring.

3.3.1.3 System Reliability

The Electric Division provides for reliability of its distribution system by configuring a majority of its distribution circuits in primary open loop arrangements, improving existing circuits, and installing adequate substation transformer capacity. Normal transformer and line loading are limited to provide sufficient margin to convey firm power requirements during an emergency or a switching operation, or for maintenance.

3.3.1.4 Power Quality

The Electric Division does not have any significant power quality problems. The overall power factor for the Electric System is 99.9 percent. Power transformers are equipped with load tap changers that regulate bus voltages at the distribution substations. Distribution transformers are equipped with no-load taps to make voltage adjustments. There are capacitors and voltage regulators on the Electric System that control voltage and vars on the portion of the system furthest away from the current source and generation. The system operators monitor the power factor closely and turn on capacitors or adjust the generation to compensate for low power factors.

3.3.1.5 Safety

Mr. Maloney reported to Burns & McDonnell the Electric Division had no lost time in FY 2015 but they did have one small incident of a bruised hand. No other incidents or details were provided for this report.

3.3.1.6 Capital Improvements

The following describes completed, on-going, and planned improvements to the City's transmission and distribution assets:

Recently Completed (FY 2012-FY 2015):

- Wyoming Avenue - Underground
- Pleasonton Acres - Underground
- Morris Estates - Underground
- Royal Grant - New Underground Service
- Dover Downs Switchgear
- Lebanon 400 Feeder
- Bayside Drive (Persimmon to White Oak Rd)
- Distribution System Upgrades - Unidentified
- Substation Equipment & Fencing (Division St)
- SCADA Master Hardware Replacement

- Transmission Line Maintenance Program
- Distribution Feeder Replacement Program
- Distribution Capacitors - Overhead
- 69-kV Switch Replacement
- McKee Run Transformer/Substation Repairs
- Frazier Substation Reliability Upgrade (900 circuits)
- Substation PT & CT Replacement Program
- Updated Platex Feeder, from 4-5MW to 10MW
- Substation Battery Replacement
- Richardson Circle
- Chandelle Airport URD
- General Scott Switchgear Garrison Oak Technical Park
- Uzin Utz Manufacturing
- Playtex/Energizer System Upgrades
- Dover Downs Tower
- Eden Hill Lights
- Family Dollar Store
- Route 8/Taps - Distribution Upgrade
- Townsend Brothers - Distribution Upgrade
- NBR Properties, LLC

On-Going:

- Capitol Park - Underground
- Townpoint Distribution Upgrades
- Lighting Project and Rehabilitation
- Horsepond Road Substation Reliability Upgrade
- McKee Run & State College Road Feeder replacements
- GOTP Transmission Line Relocation
- Horsepond SS to Cartanza 69-kV Rebuild
- 69kv Substation Cable Replacement North Street
- New Developments - UG Transformers
- New Developments - UG Conductors/Devices
- West Dover Connector

- Meadows at Jefferson Terrace
- Chestnut Grove Development
- Clearview Meadows
- Leander Lakes
- Meter Replacements & System upgrades

Planned (through FY 2020):

- Distribution System Upgrades - Unidentified
- Oak Grove Trailer Park Distribution Upgrade
- Lakeland Laurel Point - Distribution Upgrade
- Rt. 8/ Mifflin Road Crossing - Distribution Upgrade
- Persimmon Tree Apartments - Distribution Upgrade
- North Street OH to UG (Governors to Queen)
- Dover East Estates - Distribution Upgrade
- Satellite Synchronized Substation Clocks
- Horsepond Road URD - Distribution Feeders
- Transmission Line Maintenance Program
- Distribution Capacitors - Overhead
- Distribution Capacitors - Underground
- Frazier Substation Reliability Upgrade (900 circuits)
- Dover Air Force Base Substation Relocation
- System Automation
- DNREC R & R Metering
- Public Works Wetland Project
- Washington Street Lights
- Blue Hen Apartments
- New K-Mart Building
- Ollies Transformer
- Winner Volkswagen
- Del Homes Warehouse
- Clearview Meadow phase 4
- Reed Street Roof
- Dover Town Center

- Outback Steakhouse

3.3.2 Transmission and Distribution Plant Condition Assessment

The transmission and distribution system assessment included drive-by observations of a sample of the transmission circuits and distribution circuits. Each of the fifteen substations was physically observed during the tour.

- McKee Substation
- College Road Substation – Plan to replace oil-filled PTs
- Dover Downs Substation
- Frazier Substation
- VanSant Substation
- General Scott Substation (North Street)
- Division Street Substation – Plan to expand in the future
- Mid-City Substation – Three new breakers
- Mayfair Substation
- St. Joan's Substation – Fence damaged by a car accident, still needing repair
- Cartanza Substation
- Horsepond Substation
- Danner Farm Substation
- Lebanon Substation – New battery set installed

In general, the substations appeared to be in acceptable operating conditions. All battery sets in the system substations are less than ten years of age. Mr. Harry Maloney, the Electric Department Director, provided a tour of the substations with Ted Kelly on March 3, 2016. The General Scott Substation has relatively new breakers, and the 12-kV switchgear and controls are scheduled to be upgraded in FY 2016. Horsepond Substation was recently rebuilt which included a three breaker 69-kV system for the 69-kV bus and the substation logic was reprogrammed. Work started in late February 2013 and was completed in November 2014. At the Cartanza Substation, Delmarva has expanded their side of the substation. In the Lebanon Substation work on the capacitor bank has been completed. Maintenance requirement for battery testing has been completed for NERC requirements.

The City has recently completed the process of replacing conductor throughout the entire 69-kV system. In addition, the City has invested heavily in its undergrounding program to increase system reliability.

Moving forward, the system will continue to be converted from overhead to underground distribution, but this process has slowed to allow for further evaluation.

3.3.3 Transmission and Distribution Plant Conclusion

It is the opinion of Burns & McDonnell that the design, construction, operation and maintenance of the City's electric transmission and distribution system and the associated facilities are consistent with current generally accepted electric utility standards. In completing Annual Engineering Consultant's Reports over the past several years, Burns & McDonnell has observed that the City has made appropriate system upgrades and improvements. The City and the Electric Division are proactive in preventative maintenance and expansion of the Electric System before problems arise.

4.0 – FINANCIAL OVERVIEW AND ASSESSMENT

4.0 FINANCIAL OVERVIEW AND ASSESSMENT

A review of the financial results of the Electric System for the fiscal year ended June 30, 2015, is provided herein.

4.1 Required Revenue

The level of revenues required from the retail electric rates for the Electric Division was determined through the analysis of the financial results and net income or net margins for the most recent fiscal year. The City of Dover, Delaware Resolution Authorizing and Securing Electric Revenue Bonds, adopted December 23, 1985 requires that the Electric Division maintain a debt service coverage ratio of 1.25. The following is an excerpt from Section 502(c) of the resolution.

> *"(c) The total amount of the Revenues of the Electric System during the preceding fiscal year shall have been not less than the total of the following:*
>
> *(3) The Current Expenses of the Electric System during the current fiscal years shown by the Annual Budget . . . for such fiscal year, and*
>
> *(4) One hundred twenty-five percent (125%) of the maximum amount of the Principal and Interest Requirements for any fiscal year thereafter on account of all bonds then Outstanding under the provisions of this Resolution.*
>
> *The City further covenants that, from time to time and as often as it shall appear necessary, it will adjust the electric rates as may be necessary or proper so that the revenues of the Electric System in each fiscal year will not be less than the total of the amounts set forth in subdivision (c) of this section."*

4.2 Electric Rates

Customers of the Electric Division are charged for the electric service based on rate schedules, tariffs, or contracts that reflect the costs to the Electric Division of providing that service. For purposes of setting electric rates, customers with similar load and service characteristics should be placed in the same rate classification.

A comprehensive cost-of-service and rate design study was completed in 2006 and subsequent rate analyses were completed in 2007 and 2008 to examine revenue requirements and revenue generation. Specifically, the 2006 rate study was conducted to address increased costs associated with a new power supply contract that became effective on July 1, 2006. The rate study recommended combining a number

of rate classes and implementing rate increases on July 1, 2006. The 2006 rate study also recommended an additional increase be implemented on January 1, 2007 to cover increased costs associated with operating the generating station. The 2007 and 2008 rate analyses re-examined Electric Division revenues and expenses and recognized additional revisions to power supply costs. As a result of these analyses, additional rate increases were implemented on July 1, 2007 and July 1, 2008.

The City retained Burns & McDonnell to conduct cost-of-service and rate design study in 2012 followed by an update in 2013. The 2012 study examined revenue adequacy, revenue responsibility, and revenue recovery for the Electric Division. It scrutinized customer classes and proposed adjustments for demand rate components and corresponding changes to energy charges. In May 2013, the City retained Burns & McDonnell to incorporate updated power supply cost projections, and other updates, into the model it developed as part of the 2012 Study. An update to the model and rates analysis was completed in early 2015 to reallocate costs and redesign rates in order to remain regionally competitive. Electric rates are approved by Council on an annual basis. The current rate classes are listed below.

- Residential
- Small Commercial (1 Phase, 3 Phase, 1 Phase Heating, Church, and Municipal)
- Medium Commercial (1 Phase & 3 Phase)
- Large Commercial (3 Phase with Reactive Metering)
- Primary
- Transmission
- Outdoor Development Lighting
- Private Outdoor Lighting

4.3 Operating Results

Table 4-1 presents a summary of the annual energy sales, the average monthly number of customer accounts, and the annual average kilowatt-hour (kWh) energy per customer of the Electric Division for FY 2013 through FY 2015. Annual energy sales were 715 GWh in FY 2015, a decrease of 0.8 percent from FY 2014. Energy sales amounted to 720.9 GWh in FY 2014, a 1.2 percent decline from FY 2013.

Table 4-1: Annual Sales and Customer Accounts

	FY 2013	FY 2014	FY 2015
Energy Sales (kWh)			
Residential	204,759,680	205,302,701	204,121,492
Commercial	232,220,877	230,178,899	233,016,412
Primary	167,144,717	164,218,197	162,698,678
Transmission	119,003,804	114,470,558	114,470,558
Outdoor Lighting	6,704,350	6,724,400	8,109,618
Total Energy Sales	729,833,428	720,894,755	715,001,017
Average Number of Monthly Customers (accounts)			
Residential	19,990	19,900	20,070
Commercial	3,412	3,412	3,239
Primary	37	37	37
Transmission	4	5	4
Outdoor Lighting	811	811	811
Total Customers Accounts	24,254	24,165	24,161
Energy Usage Per Customer (kWh/cust./yr.)			
Residential	10,243	10,317	10,170
Commercial	68,060	67,462	71,941
Primary	4,517,425	4,438,330	4,397,262
Transmission	29,750,951	22,894,112	28,617,640
Outdoor Lighting	8,267	8,291	10,000
Average Usage Per Customer	30,091	29,832	29,593

Table 4-2 presents revenues from sales, revenue per kWh ratios, and average revenue per customer ratios for each revenue classification. Total revenue from sales to electric customers in FY 2015 was $78.3 million, representing an increase of $0.15 million, or 0.19 percent from FY 2014. Total revenue from sales to electric customers includes utility tax revenue and power cost adjustment revenue.

In FY 2015, the average rate revenue per kWh for residential customers was 12.59 cents and the total average rate revenue was 10.95 cents per kWh. The 2015 national average retail prices of electricity to ultimate customers, as published by the US Energy Information Administration (EIA), were 12.67 and 10.42 cents per kWh for residential customers and across all sectors, respectively.[1] For a state-wide comparison, the EIA summarized the Delaware 2015 average monthly utility-level retail sales of

[1] US Energy Information Administration, Table 5.3. Average Price of Electricity to Ultimate Customers Total by End-Use Sector, 2005-December 2015 Data for December 2015, Release Date: February 26, 2015. http://www.eia.gov/electricity/monthly/pdf/epm.pdf

electricity and associated revenue per kWh to be 13.46 cents per kWh for residential customers and 11.21 cents per kWh across all sectors.[2]

Table 4-2: Annual Revenues and Sales Ratios

	FY 2013	FY 2014	FY 2015
Revenue			
Residential	$ 28,200,423	$ 25,882,393	$ 25,708,276
Commercial	29,642,803	25,852,554	26,360,222
Primary	17,809,562	15,619,663	15,380,906
Transmission	11,376,866	9,674,084	9,468,043
Outdoor Lighting	1,301,542	1,158,558	1,361,018
Total Revenue	$ 88,331,196	$ 78,187,252	$ 78,278,464
Revenue/kWh			
Residential	$ 0.1377	$ 0.1261	$ 0.1259
Commercial	0.1276	0.1123	0.1131
Primary	0.1066	0.0951	0.0945
Transmission	0.0956	0.0845	0.0827
Outdoor Lighting	0.1941	0.1723	0.1678
Total Revenue/kWh	$ 0.1210	$ 0.1085	$ 0.1095
Revenue Per Customer			
Residential	$ 1,411	$ 1,301	$ 1,281
Commercial	8,688	7,577	8,138
Primary	481,340	422,153	415,700
Transmission	2,844,216	1,934,817	2,367,011
Outdoor Lighting	1,605	1,429	1,678
Average Revenue Per Customer	$ 3,642	$ 3,236	$ 3,240

The Electric Division's largest cost in providing electric service to its customers in FY 2015 was the wholesale cost of power. The Electric Division purchased power from the PJM Interconnection marketplace through its Energy Manager, TEA. The cost of non-generated power includes energy and demand costs, power supply management expense, PJM charges and credits, generation fuels cost, and capacity charges and credits.

The significance of power supply cost to the Electric Division is illustrated in Table 4-3. The top portion of the Table shows net operating revenue as the difference between total revenues generated by the rates and the cost of power supply.[3] The ratios of power supply cost to sales revenues were calculated for FY

[2] US Energy Information Administration, Table 5.6.B. Average Price of Electricity to Ultimate Customers by End-Use Sector by State, Year-to-Date through December 2015 and 2014, Data for December 2015, Release Date: February 26, 2016. http://www.eia.gov/electricity/monthly/pdf/epm.pdf

[3] For the purposes of this Report, the phrase "Power Supply" refers to the sum of the costs of power purchased and power generated. This includes plant costs and the cost of fuel. Power Supply also includes any expenses in the CIP

2013 through FY 2015. As illustrated, the Electric Division's power supply cost as a percentage of rate revenue decreased from 73.2 percent in FY 2014 to 63.4 percent in FY 2015.

Table 4-3: Revenue Margins and Unaccounted for Energy

	FY 2013	FY 2014	FY 2015
Net Revenue Margins ($)			
Sales Revenues	$ 88,331,196	$ 78,187,252	$ 78,340,056
Power Supply	55,681,251	57,233,726	49,645,951
Net Revenue Margin	$ 32,649,945	$ 20,953,526	$ 28,694,105
Net Revenue Ratio	63.0%	73.2%	63.4%
Unaccounted for Energy (kWh)			
Power Supply	752,869,000	762,254,000	756,897,000
Energy Sales	729,833,428	720,894,755	715,001,017
Unaccounted for Energy (Losses)	23,035,572	41,359,245	41,895,983
Percentage	3.1%	5.4%	5.5%

Table 4-3 also illustrates the ratio of the amount of energy purchased and delivered to the electric system to total energy sales. This relationship identifies the level of unaccounted for energy in the Electric System. This unaccounted for energy may include energy that was unmetered, metered inaccurately, stolen, lost, PJM transmission line losses, local system line/transformer losses, etc. The bottom portion of Table 4-3 presents these comparisons for the Electric Division for FY 2013 through FY 2015. As shown, the percentage ratio of the unaccounted for energy to the total energy purchased for FY 2015 was 5.5 percent. This is up from 5.4 percent in FY 2014. In previous Annual Engineering Consultant's Reports, Outdoor Lighting energy was recorded as losses. In this report, Outdoor Lighting customer accounts, energy sales, and revenues were recorded as a separate rate class. The impact this modification has on this Financial Overview and Assessment is most pronounced on the Table 4-3 Unaccounted for Energy analysis, as losses are shown to have increased from corresponding years in previous reports.

Table 4-4 presents a re-creation of the Electric Division's Statement of Revenues, Expenses, and Changes in Unreserved Retained Earnings for the Electric Revenue Fund for FY 2013 through FY 2015. Net income increased in FY 2015 to $2.7 million from -$2.3 million in FY 2014. Steady revenues, a decrease in power supply costs of 13.3 percent and all other expenses staying relatively constant were the main reason for the large swing in net income between 2014 and 2015.

Fund that are not capital expenses. The phrase "Purchased Power" refers only to the cost of power purchased from the market and other directly associated costs.

Table 4-4: Comparative Statement of Revenues, Expense, and Changes in Unreserved Retained Earnings

	FY 2013	FY 2014	FY 2015
Operating Revenues:			
Charges for Electric Service	$ 88,331,196	$ 78,187,252	$ 78,278,464
Miscellaneous Services/Incomes	2,354,497	1,287,501	1,484,573
Total Operating Revenues	$ 90,685,693	$ 79,474,753	$ 79,763,037
Operating Expenses:			
General Administration	$ 4,470,795	$ 2,450,884	$ 2,937,003
Power Supply	55,681,251	57,233,726	49,645,951
Transmission/Distribution	3,267,698	3,806,078	3,508,209
Engineering	1,107,231	1,331,909	1,364,077
Metering	219,010	284,229	346,943
System Operations	544,405	739,406	671,048
Utility Tax	1,443,853	1,258,957	1,266,872
Depreciation	4,621,501	4,748,120	4,863,653
Retirees Pension	1,115,765	975,700	-
Retiree Health Care	696,500	513,300	1,523,100
Total Operating Expenses	$ 73,168,009	$ 73,342,309	$ 66,126,856
Net Operating Income	$ 17,517,684	$ 6,132,444	$ 13,636,181
Non-operating Revenues (Expenses)			
Interest Earned			
Operating Fund	$ 190,469	$ 2,112	$ 6,957
Reserved Funds	506,771	216,010	165,827
Net Increase in Fair Value of Investments	(614,989)	426,399	236,779
Interest and Fiscal Charges	(1,432,779)	(1,138,739)	(1,040,204)
Gain/(Loss) on Sale of Assets	5,203	14,439	39,637
Total Non-operating Revenues(Expenses)	$ (1,345,325)	$ (479,779)	$ (591,004)
Net Income Before Operating Transfers	$ 16,172,359	$ 5,652,665	$ 13,045,177
Operating Transfers - In	8,282		
Operating Transfers - Out	(10,000,000)	(8,000,000)	(10,000,000)
Total Net Operating Transfers	$ (9,991,718)	$ (8,000,000)	$ (10,000,000)
Net Income	$ 6,180,641	$ (2,347,335)	$ 3,045,177

4.3.1 Adequacy of Electric Rates

The City's Bond Resolution requires annual revenues of the Electric Division be no less than the total current expenses plus 125 percent of the greatest remaining annual debt service. "Current expenses", as defined in the Resolution, includes all expenses necessary to maintain and repair the Electric System, all administrative expenses, and engineering, legal or other consultant fees. Transfers to reserve accounts and special purpose funds, and allowances for depreciation are specifically excluded from "current expenses."

In order to determine if the City and the Electric Division have met this requirement, the net income shown in Table 4-4 was adjusted to include the interest on bonds, depreciation expense, and other non-cash income and expenses. Table 4-5 summarizes net income adjustments and the calculation of the revenues available for debt service for FY 2013 though FY 2015.

Table 4-5: Debt Service Coverage

	FY 2013	FY 2014	FY 2015
Net Income	$ 6,180,641	$ (2,347,335)	$ 2,650,160
Plus Excluded Expenses:			
Operating Transfers - Out	$ 10,000,000	$ 8,000,000	$ 10,000,000
Depreciation	4,621,501	4,748,120	4,863,653
Interest and Fiscal Charges	1,432,779	1,138,739	1,040,204
Gain/(Loss) on Sale of Assets	(5,203)	(14,439)	(39,637)
Less Excluded Income:			
Net Increase in Fair Value of Investments	614,989	(426,399)	(236,779)
Interest Earned - Reserve Funds	(506,771)	(216,010)	(165,827)
Revenues Available for Debt Service	$ 22,329,654	$ 10,882,676	$ 18,111,774
Maximum Principal and Interest in Any Year	$ 3,401,954	$ 3,344,404	$ 3,344,404
Debt Service Coverage	6.56	3.25	5.42
Minimum Required Debt Service Ratio	1.25	1.25	1.25

As Table 4-5 illustrates, the City and the Electric Division maintained a debt service coverage ratio each year that exceeded the required 125 percent plus current expenses. Therefore, the revenues generated by the current electric rates have been sufficient to meet the applicable covenants of the Resolution.

Section 502 of the Resolution requires that the annual debt service used in evaluating the revenues is to be the maximum amount for any fiscal year thereafter. Table 4-6 presents the annual totals of principal and interest amounts due on bonds currently outstanding. The calculation of the debt service coverage ratio in Table 4-5 is based on the total maximum debt service expense in any fiscal year. The FY 2015 calculation was based on the total FY 2015 debt service expense of $3,344,404.

4.4 Status of Revenue Bonds

At the end of FY 2014, the City had two series of outstanding electric revenue bonds that were issued pursuant to the Resolution. On July 1, 2008, the City issued $22,200,000 in Electric Revenue Bonds (2008 Bonds). The proceeds from the sale of the 2008 Bonds were used (i) to finance or reimburse the City for improvements to the City's electric system; (ii) to fund a Debt Service Reserve Fund; and (iii) to pay the costs of issuance of the 2008 Bonds.

On November 17, 2010, the City issued $8,810,000 of Electric Revenue Refunding Bonds (Series 2010). The proceeds from the sale of the Series 2010 Bonds were used (i) to refund the Series 2004 Bonds, and (ii) to pay the costs of issuance of the Series 2010 Bonds. The non-taxable Series 2010 Bonds received an underlying rating of Aa2 by Moody's Investors Services and an underlying rating of A+ by Fitch Ratings.

Table 4-6 illustrates the debt service schedule for the Series 2008 and 2010 Bonds. The principal and interest and the annual total are shown for each series of bonds. At the time of issuance of the Series 2010 Bonds, the combined outstanding principal balance for both series of bonds was $23,940,000.

Table 4-6: Debt Service Schedule of Electric Revenue Bonds

	2008 Electric Revenue Bonds			2010 Electric Revenue Refunding Bonds			Total Annual
Period	Principal	Interest	Debt Service	Principal	Interest	Debt Service	Debt Service
FY 2016	475,000	930,579	1,405,579	1,890,000	47,250	1,937,250	3,342,829
FY 2017	695,000	901,329	1,596,329	-	-	-	1,596,329
FY 2018	730,000	865,704	1,595,704	-	-	-	1,595,704
FY 2019	765,000	831,580	1,596,580	-	-	-	1,596,580
FY 2020	800,000	798,706	1,598,706	-	-	-	1,598,706
FY 2021	840,000	763,856	1,603,856	-	-	-	1,603,856
FY 2022	880,000	726,756	1,606,756	-	-	-	1,606,756
FY 2023	925,000	686,694	1,611,694	-	-	-	1,611,694
FY 2024	970,000	644,056	1,614,056	-	-	-	1,614,056
FY25-34	12,710,000	3,405,972	16,115,972	-	-	-	16,115,972
Total	$19,790,000	$10,555,232	$30,345,232	$1,890,000	$ 47,250	$ 1,937,250	$32,282,482

4.5 Insurance

The City maintains a comprehensive insurance program to insure against varying types of liabilities and significant losses related to various Electric Division properties. Section 706 of the Resolution reads:

> *"The City covenants that it will maintain a practical insurance program, with reasonable terms, conditions, provisions and costs, which the City Manager determines, with the approval of the Engineering Consultants, will afford adequate protection against loss, including loss of Revenues, caused by damage to or destruction of the Electric System or any part thereof and also comprehensive public liability insurance on the Electric System for bodily injury and property damage in such amounts as may be approved by the Engineering Consultants."*

Table 4-7 summarizes itemized insurance coverage procured by the City for the period July 1, 2014, through June 30, 2015. Burns & McDonnell has reviewed this list of insurance, and in the opinion of Burns & McDonnell, as Engineering Consultant and not as insurance counselor, the insurance in full force and affect appears to satisfy the requirements of Section 706 of the Resolution.

Table 4-7: Schedule of Insurance Coverage in Effect

Starr Technical Risks Agency	July 1, 2014 - June 30, 2015 Coverage
Property	
Earth Movement -Per Occurrence and in the Annual Aggregate, except	$20,000,000
Earth Movement in High Hazard Earth Movement Zones;	EXCLUDED
Earth Movement in California;	EXCLUDED
Flood -Per Occurrence and in the Annual Aggregate;	10,000,000
Accounts Receivable;	100,000
Business Interruption;	EXCLUDED
Contingent Time Element Coverage;	EXCLUDED
Debris Removal (or 25% of Direct Property Loss, whichever the greater);	2,500,000
Demolition and Increased Cost of Construction;	10,000,000
EDP Media;	1,000,000
Errors and Omissions;	2,000,000
Expediting Expense;	1,000,000
Extra Expense, excluding replacement power or increased cost of generation, transmission and/or distribution of electricity, water or natural gas;	2,000,000
Fire Department Service Charges and Extinguishing Expenses;	500,000
Hazardous Substances -Per Occurrence and in the Annual Aggregate;	500,000
Inland Transit;	2,500,000
Newly Acquired Locations -90 Days reporting;	1,000,000
Personal Property Temporarily Off Premises;	100,000
Course of Construction;	EXCLUDED
Miscellaneous Unnamed Locations (except perils of Flood, Earth Movement and	500,000
Valuable Papers and Records;	100,000

Deductibles

All deductibles listed below are per occurrence except with respect to coverage provided under the Boiler & Machinery which shall be any One Accident.

In respect of Damage to Insured Property:

$750,000 per Occurrence, except;

$100,000 per Occurrence as respects Transit.

In respect of Time Element loss (Extra Expense):

45 days per Occurrence, except;

72 hours per Occurrence in respect of Service Interruption.

XL Insurance	July 1, 2014 - June 30, 2015 Coverage
Property	
per Occurrence and in the Annual Aggregate in respect of Flood;	$ 10,000,000
per Occurrence and in the Annual Aggregate in respect of Earth Movement, Excluded. per Occurrence and in the Annual Aggregate applicable in High Hazard Movement zones;	20,000,000
per Occurrence and in the Aggregate in respect Hazardous Substance;	500,000
per Occurrence in respect of Business Interruption;	EXCLUDED
per Occurrence in respect of Accounts Receivable;	100,000
per Occurrence in respect of scheduled, direct Contingent Time Element;	EXCLUDED
per Occurrence in respect of Incidental Course of Construction;	5,000,000
(or 25.00% of the direct physical loss, whichever greater) per Occurrence in respect of Debris Removal;	2,500,000
per Occurrence in respect of Demolition and Increased Cost of Construction;	10,000,000
per Occurrence in respect of Electronic Data Processing Media;	1,000,000
per Occurrence in respect of Errors and Omissions;	2,000,000
per Occurrence in respect of Expediting Expense;	1,000,000
per Occurrence in respect of Extra Expense excluding replacement power of increased cost of generation, transmission and/or distribution of electricity, water or natural gas;	2,000,000
per Occurrence in respect of Fire Department Service Charges and Extinguishing Expenses;	500,000
per Occurrence in respect of Newly Acquired Locations (ninety (90) days reporting);	1,000,000
per Occurrence in respect of property in Course of Inland Transit;	2,500,000
per Occurrence in respect of Miscellaneous Unnamed Locations, except:	500,000
Excluded. per Occurrence in respect of Flood;	
Excluded. per Occurrence in respect of Earth Movement;	
Excluded. per Occurrence in respect of Named Storm;	
per Occurrence in respect of Valuable Papers and Records;	100,000
per Occurrence in respect of Personal Property Temporarily Off Premise.	100,000

Deductibles / Retentions

Application of Deductibles as described in Policy form unless otherwise indicated in Policy Form Revisions Section, if applicable.

In respect of Damage to Insured Property:

$750,000, Per Occurrence, except;

$100,000, per Occurrence as respect Transit;

In respect of Time Element loss (Extra Expense):

45 days per Occurrence except;

72 hours Per Occurrence in respect of Service Interruption

4.6 Operating and Reserve Accounts

The Electric Revenue Fund and the Electric Improvement & Extension (I&E) Fund are the City's two funds devoted to the Electric Division. The funds are used to manage cash and transactions related to utility operations and capital expenditures, respectively. Each fund includes certain cash accounts established to make money available for specific purposes when they are needed. The accounts maintained within the Revenue and I&E Funds are listed herein.

Electric Revenue Fund

- Insurance Reserve Account
- Contingency Reserve Account
- Electric Rate Stabilization Reserve Account
- Interest and Sinking Account

Electric Improvement & Extension Fund

- Depreciation Reserve Account
- Future Capacity Reserve Account

The following are descriptions of each Fund, their respective accounts and their purposes.

4.6.1 Electric Revenue Fund

The Electric Revenue Fund was established in Section 503 of the Resolution. All revenues are to be deposited into the Electric Revenue Fund when received. Current expenses are to be paid and other accounts are to be maintained from the Electric Revenue Fund. Moneys are transferred from the Electric Revenue Fund to the Electric Rate Stabilization Reserve Account, the Interest and Sinking Account, the I&E Fund, the Depreciation Reserve Account, and the Future Capacity Reserve Account.

4.6.1.1 Insurance Reserve Account

The Insurance Reserve Account was established by the City to fund insurance deductibles in the event of loss(es) covered by the City's insurance policies then in effect. The target minimum balance in the Insurance Reserve is $350,000. The reserve balance at the end of FY 2015 was $740,642. In an effort to reduce insurance premiums, the City approved raising the minimum reserve balance to $750,000 in 2014. The new minimum balance will be in force in FY 2016; achieved by the accumulation of interest earnings and a $10,000 appropriation.

4.6.1.2 Contingency Reserve Account

The Contingency Reserve Account was established by the City in FY 2003 to provide for unplanned expenditures that may not be avoidable. The City's Financial Policies require that a minimum balance be maintained in the Contingency Reserve Account equal to 1.0 percent of the current year revenues for the Electric Revenue Fund. The FY 2015 year-end balance was $822,677, which is equal to 1.03 percent of the FY 2015 revenues for the Electric Revenue Fund.

4.6.1.3 Electric Rate Stabilization Account

The Electric Rate Stabilization Reserve Account was established in FY 2005 to offset the costs of the power cost adjustment to the customers of Dover. The account's target balance is a minimum of 3.0 percent, not to exceed 10.0 percent, of purchased power cost in any given year. Any excess of this amount will be refunded to customers in future years by reducing the rate of the power cost adjustment. The account's FY 2015 end-of-year balance was $7,505,354, which was 14.9 percent of the FY 2015 purchased power cost.

4.6.1.4 Interest and Sinking Account

The Interest and Sinking Account was established in Section 507 of the Resolution. This account consists of two restricted accounts: the Bond Service account and the Reserve Account. The Bond Service Account is funded with equal monthly transfers from the Electric Revenue Fund such that the balance, as of each payment date for interest or for principal and interest, will be equal to the amount of the payment due. The payments of principal and interest due on bonds are made from the Bond Service Account. The Reserve Account is funded by transfers from the Electric Revenue Fund, as necessary, to maintain a balance equal to the maximum combined principal and interest for any future fiscal year through the life of all bonds then outstanding. Moneys in the Reserve Account are used for paying interest on and principal of bonds when the balance in the Bond Service Account is insufficient for making those payments. Excess moneys in the Reserve Account are also used towards paying current interest payments. The total amount in the Restricted Accounts for the 2008 and 2010 bonds as of June 30, 2015, was $3,562,746.

4.6.2 Electric Improvement and Extension Fund

The I&E Fund was established in Section 507 of the Resolution. Funds are transferred to the I&E Fund from the Electric Revenue Fund to the extent that the amount of funds available from the Electric Revenue Fund exceeds the total of the amounts required to be added to the Interest and Sinking Account. The I&E Fund also receives additional funding from the Depreciation Reserve Account, the Future Capacity Reserve Account, and from development receipts. Section 510 of the Resolution indicates that,

except for certain situations, moneys held in the I&E Fund are to be used only for payment of costs of unusual maintenance or repairs, renewals or replacements, obtaining or replacing equipment, constructing extensions, additions, or improvements, and engineering expenses related to the foregoing activities.

4.6.2.1 Depreciation Reserve Account

The Depreciation Reserve Account represents moneys that have been set aside for the sole purpose of funding renewals and replacements of the Electric System as components or equipment wear out, deteriorate, or otherwise become unsuitable for the intended purpose. Transfers from the Electric Revenue Fund and investment earnings are the only sources of additional moneys for the Depreciation Reserve Account. Transfers to the I&E Fund are made as necessary to fund capital projects. The target appropriation for the Depreciation Reserve Account each year is the excess of depreciation expense for the year over the amount of principal included in debt service payments made during the year. The reserve balance at the end of FY 2015 was $9,957,873.

4.6.2.2 Future Capacity Reserve Account

The Future Capacity Reserve Account was established to set aside and accumulate funds from the Electric Revenue Fund for use in evaluating and pursuing activities related to the Electric Division's alternatives for power supply resources for future demand for electricity. The target balance for this reserve is $10,000,000. The reserve balance at the end of FY 2015 was $10,107,899.

Table 4-8 presents FY 2013 through FY 2015 year-end summaries of the activity within the cash accounts described above. The Insurance Reserve Account, the Contingency Reserve Account, the Electric Rate Stabilization Reserve Account, and the Interest and Sinking Account are accounts within the Electric Revenue Fund. The Depreciation Reserve Account and the Future Capacity Reserve Account are accounts within the I&E Fund.

Table 4-8: Reserve Account Activity and Balances

	Insurance Reserve Account	Contingency Reserve Account	Electric Rate Stabilization Account	Bond Reserve Account	Depreciation Reserve Account	Future Capacity Account
Year Ended June 30, 2012						
Balance in Account on July 1	$ 403,334	$ 1,056,788	$ 6,160,167	$ 3,519,376	$ 10,412,221	$ 9,178,771
Receipts						
Interest Earned	4,661	14,026	69,966	3,443	129,837	126,711
Appropriations	-	-	5,000,000	3,370,068	-	-
Total Funds Available	$ 407,995	$ 1,070,814	$ 11,230,133	$ 6,892,887	$ 10,542,058	$ 9,305,482
Disbursements						
Debt Service Payments	-	-	-	(3,370,054)	(500,000)	-
Transfer to Capital Projects/Ops.	(70,730)	-	(1,000,000)	-	(300,000)	500,000
Balance in Account on June 30	$ 337,265	$ 1,070,814	$ 10,230,133	$ 3,522,833	$ 9,742,058	$ 9,805,482
Year Ended June 30, 2013						
Balance in Account on July 1	$ 337,265	$ 1,070,814	$ 10,230,133	$ 3,522,833	$ 9,742,058	$ 9,805,482
Receipts						
Interest Earned	10,178	16,022	151,991	3,224	172,146	153,208
Appropriations	385,600	-	12,400,000	3,375,534	-	2,100,000
Total Funds Available	$ 733,043	$ 1,086,836	$ 22,782,124	$ 6,901,591	$ 9,914,204	$ 12,058,690
Disbursements						
Debt Service Payments	-	(272,600)	-	(3,375,534)	(58,500)	(54,500)
Transfer to Capital Projects/Ops.	-	-	(5,400,000)	-	-	(2,000,000)
Balance in Account on June 30	$ 733,043	$ 814,236	$ 17,382,124	$ 3,526,057	$ 9,855,704	$ 10,004,190
Year Ended June 30, 2014						
Balance in Account on July 1	$ 733,043	$ 814,236	$ 17,382,124	$ 3,526,057	$ 9,855,704	$ 10,004,190
Receipts						
Interest Earned	4,415	4,904	83,692	3,388	59,358	60,252
Appropriations	-	-	-	3,391,860	-	-
Total Funds Available	$ 737,458	$ 819,140	$ 17,465,816	$ 6,921,305	$ 9,915,062	$ 10,064,442
Disbursements						
Debt Service Payments	-	-	-	(3,391,860)	-	-
Transfer to Capital Projects/Ops.	-	-	(7,000,000)	-	-	-
Balance in Account on June 30	$ 737,458	$ 819,140	$ 10,465,816	$ 3,529,445	$ 9,915,062	$ 10,064,442
Year Ended June 30, 2015						
Balance in Account on July 1	$ 737,458	$ 819,140	$ 10,465,816	$ 3,529,445	$ 9,915,062	$ 10,064,442
Receipts						
Interest Earned	3,184	3,537	39,538	33,300	42,811	43,457
Appropriations				3,401,952		
Total Funds Available	$ 740,642	$ 822,677	$ 10,505,354	$ 6,964,697	$ 9,957,873	$ 10,107,899
Disbursements						
Debt Service Payments				(3,401,952)		
Transfer to Capital Projects/Ops.			(3,000,000)			
Balance in Account on June 30	$ 740,642	$ 822,677	$ 7,505,354	$ 3,562,746	$ 9,957,873	$ 10,107,899

5.0 – CONCLUSIONS

5.0 CONCLUSIONS

In the preparation of this Engineering Consultant's Report, Burns & McDonnell completed assessments of the electric generating stations and the transmission and distribution system of the City Electric Division. The investigations included interviews, observations, and reviews of FY 2015 expenditures and FY 2016 budgets. In addition, an analysis of the balances of the Improvement and Extension Fund and other funds benefiting the Electric Division was performed. Burns & McDonnell also reviewed the adequacy of the revenues provided by the current retail rates in relation to the requirements of the City of Dover, Delaware Resolution Authorizing and Securing Electric Revenue Bonds, adopted December 23, 1985. A high level assessment of the City's insurance coverage related to the Electric Division was also completed. Based on these reviews and assessments, it is Burns & McDonnell's opinion that:

1. The City's power generation facilities are being operated and maintained consistent with accepted electric utility practice in the United States.
2. The design, construction, operation, and maintenance of the City's electric transmission and distribution system and the associated facilities are consistent with current generally accepted electric utility standards and over the past few years. The system has been upgraded in order to improve operation and service to customers.
3. The Electric Division capital projects included in the City's Capital Investment Plan and the FY 2016 Operating Budget are necessary and should provide improved reliability and power quality for the Electric System.
4. The balances as of June 30, 2015 for the various reserve funds maintained by the City for the Electric Division appear to be sufficient for their defined purposes.
5. The insurance coverage in full force and affect as maintained by the City related to the various assets of the Electric Division appears to satisfy the requirements of Section 706 of the Resolution.
6. The electric revenues generated by the City's current retail rates are more than sufficient to fulfill the debt service coverage requirement defined in Section 502(c) of the Resolution.

APPENDIX A

Photo 1 - Cartanza Substation


Photo 2 - Cartanza Substation

Photo 3 – Danner Farm Substation

Photo 4 – Division Street Substation

Photo 5 – Division Street Substation

Photo 6 – Division Street Substation

Photo 7 – Division Street Substation

Photo 8 – Dover Downs Substation

Photo 9 – General Scott Substation

Photo 10 – General Scott Substation

Photo 11 – General Scott Substation

Photo 12 – Horsepond Substation

Photo 13 – Horsepond Substation

Photo 14 – Horsepond Substation

Photo 15 – Lebanon Substation

Photo 16 – Lebanon Substation

Photo 17 – Mayfair Substation


Photo 18 – Mayfair Substation

Photo 19 – Mayfair Substation

Photo 20 – Mid-City Substation

Photo 21 – Mid-City Substation

Photo 22 – Mid-City Substation

Photo 23 – Mid-City Substation

Photo 24 – St. Joan's Substation

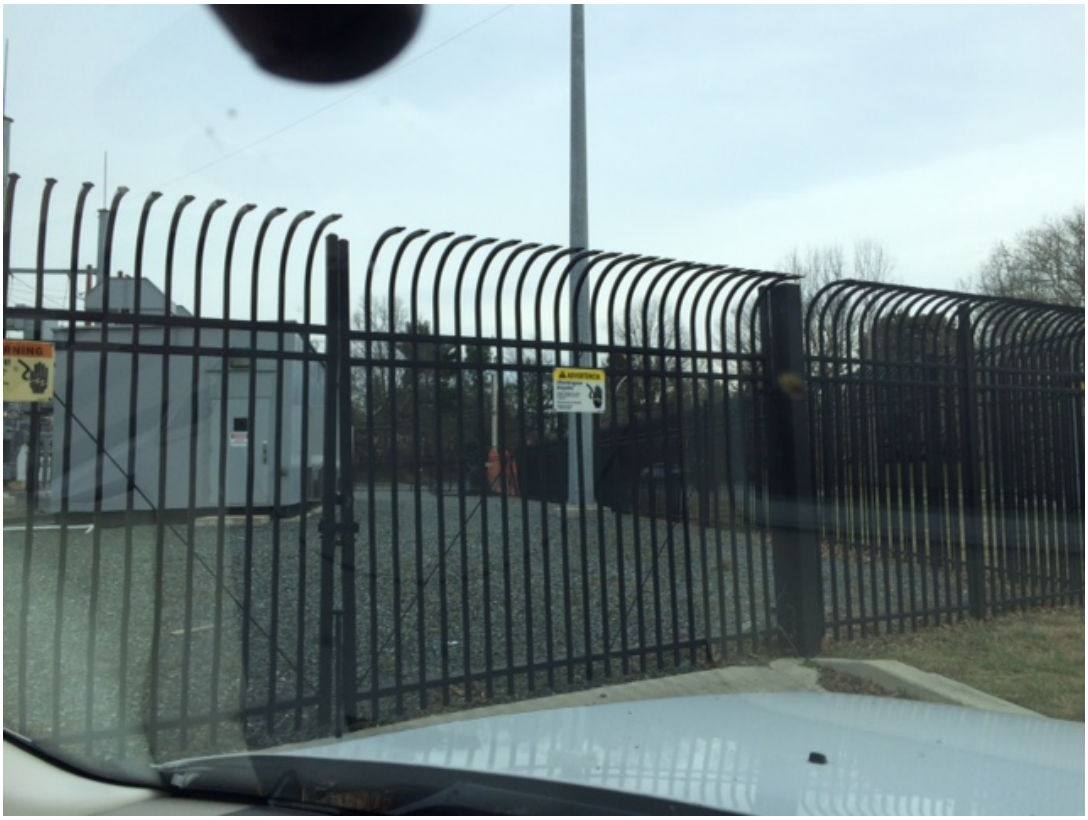


Photo 25 – St. Joan's Substation

Photo 26 – VanSant Substation

Photo 27 – VanSant Substation

Photo 28 – VanSant Substation

Photo 29 – VanSant Plant

Photo 30 – VanSant Plant

Photo 31 – VanSant Plant

BURNS McDONNELL

CREATE AMAZING.

Burns & McDonnell World Headquarters
9400 Ward Parkway
Kansas City, MO 64114
O 816-333-9400
F 816-333-3690
www.burnsmcd.com