# UTILITY COMMITTEE
# A G E N D A

**APRIL 23, 2012 - 5:00 P.M.**

**CITY HALL COUNCIL CHAMBERS**
**15 LOOCKERMAN PLAZA**
**DOVER, DELAWARE**

***Public comments are welcomed on any item and will be permitted at appropriate times. When possible, please notify the City Clerk (736-7008 or e-mail at CityClerk@dover.de.us) should you wish to be recognized.***

AGENDA ADDITIONS/DELETIONS

1. Proposed Ordinance #2012-12 - Amending Chapter 110 - Utilities, Article III - Water Service, Division 1 - Generally, Section 110-61 - Definitions and Section 110-67 Private Wells

2. Presentation by The Energy Authority (TEA) - Capital Improvement Projects (CIPs) Related to Units 1 and 2

3. Annual Engineering Consultant's Report on the Operation and Maintenance of the Electric System - Fiscal Year 2011

4. FY 2013 Five-Year Capital Investment Plan (CIP)

5. Update - Garrison Oak Technical Park Project

6. Adjournment by 5:45 P.M.

/tm
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*THE AGENDA ITEMS AS LISTED MAY NOT BE CONSIDERED IN SEQUENCE. THIS AGENDA IS SUBJECT TO CHANGE TO INCLUDE THE ADDITION OR THE DELETION OF ITEMS, INCLUDING EXECUTIVE SESSIONS.*

**CITY OF DOVER PROPOSED ORDINANCE #2012-12**

**BE IT ORDAINED BY THE MAYOR AND COUNCIL OF THE CITY OF DOVER, IN COUNCIL MET:**

That Chapter 110 - Utilities, Article III - Water Service, Division I - Generally, Section 110-61 - Definitions, and Section 110-67 Private Wells, be amended by inserting the text indicated in blue font and deleting the text indicated in red strikeout as follows:

Sec. 110-61. - Definitions.

The following words, terms and phrases, when used in this article, shall have the meanings ascribed to them in this section, except where the context clearly indicates a different meaning:

*Agricultural use* means the use of water for the commercial production of crops including ornamentals or the growing of farm products, including, but not limited to, vegetables, citrus, and other fruits, pasture, sod or animals.

*Agricultural well* means any well used solely to supply water for irrigation or other agricultural purposes.

*Aquifer* means an underground formation from which groundwater can be usefully extracted using a water well.

*Aquifer-Confined* means an aquifer that is isolated from the atmosphere at the point of discharge by an impermeable geological formation.

*Aquifer-Unconfined* means an aquifer in which the water table is exposed to the atmosphere through openings in the overlying geological formation.

*Customer* means any person supplied with water by the city.

*Farm*. Where farms are exempt from the provisions of this article, they shall be defined as a tract of land for agricultural use and shall include farm residences, buildings, and other structures located on the farm, and being accessories to a farm operation. It shall be a farm in fact and not in name only.

*Geothermal heat exchange well (including ground source heat pump wells)* means any artificial excavation by any method, that uses the heat exchange capacity of the earth for heating and cooling (such as for air conditioning units) in which excavation the ambient ground temperature is eighty-six degrees Fahrenheit (thirty degrees Celsius) or less and which uses a closed-loop fluid system to prevent the discharge or escape of its fluid into surrounding aquifers or geologic formations.

*Potable water* means water which is in compliance with all the primary health related drinking water standards specified in the Delaware Regulations Governing Public Drinking Water Systems and the US EPA Safe Drinking Water Act, and is suitable acceptable for human consumption.

*Service line* means a water line connected to the water main for the purposes of serving a customer.

*Shallow well* means any well which obtains its groundwater from an unconfined aquifer.

*Water main* means any public water line, other than a service line.

Draft

*Water service fees* means water use fees.

*Water tap* means the connection of a service line to a water main.

Sec. 110-67. - Private wells.

(a) *When authorized*. It shall be unlawful and a nuisance ~~for any person to dig,~~ to drill ~~or otherwise excavate any~~ a well ~~more than 150 feet below the surface of the ground~~ within a confined aquifer within the city, or one mile thereof, without the permission of the city council given by resolution. No permission shall be given for such a well on any property where a potable water supply is available.

(b) *Shallow wells*. Shallow wells may not be drilled from the unconfined aquifers within the limits of the city, except for the following:

(1) *Agriculture wells*. Wells may be drilled in the unconfined aquifer for the sole purpose of supplying a farm with water to irrigate their respective crop. Subject to potable water for properties preservation easement in accordance with 3 Del. C. c. 9.

(c) *Administrative variance, shallow wells.* Subject to approval by the Delaware Department of Natural Resources and Environmental Control (DNREC), the City Manager may grant an administrative variance for a shallow well where documentary evidence establishes that a modification of the shallow well standards as provided in this chapter will not endanger the general public health and safety, and strict compliance would be unreasonable in view of all the circumstances.

~~(b)~~(d) *Geothermal* heat exchange *wells*. Wells may be drilled for the purpose of the installation of a geothermal heating and cooling system within the limits of the city, subject to the following:

(1) These wells shall be a closed-loop system and shall not be authorized for withdrawal or injection. They will function as borings, filled with a bentonite grout, with a piping system that acts as a heat exchanger to dissipate/absorb heat from the system to the ground.

(2) There shall be no interconnection with any public water supply, nor shall the geothermal well be used as a potable water supply for human consumption.

(3) No well shall be located within any city right-of-way or utility easement without written authorization from the city manager.

ADOPTED: *

**SYNOPSIS**

This ordinances adds definitions pertaining to wells, provides clarification to the installation of shallow wells, and provides for an Administrative Variance for shallow wells.

(SPONSORS: STAFF)

Actions History

April 23, 2012 - Scheduled for Consideration by Utility Committee



Draft

# Cost/Benefit Analysis for City of Dover

# McKee Run Units 1&2


## Prepared by: Jamie Mahne


## 4/23/12

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*The Nation's Leader in Public Power Energy Trading*

# Introduction

- PJM provides multiple revenue sources for electric generators.
- Dover relies on two primary sources of revenue from PJM to maintain and operate its generation fleet:
  1. Energy Payments
  2. Capacity Payments



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# Energy Payments

- Dover's McKee Run units are older and less efficient than the average unit in PJM
- This means that it costs Dover more to produce a single megawatt-hour when compared to other generators
- For this reason, the McKee Run units do not generate electricity very often
  - Only in times of very high energy prices from PJM or for system reliability
  - Typically when loads are high and/or other generation is unavailable



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# Capacity Payments

- HOWEVER, Dover's generation units are still valuable as capacity resources
  - Capacity = **capability to produce** electricity when needed, whether or not electricity is produced
- Dover's units are budgeted to create significant positive cash flows for the city
  - $1.7M in FY2012
  - $6.6M in FY2013
  - $7.2M in FY 2014
  - $1.3M in FY 2015



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# Capacity Market - Introduction

- In order to understand how and why PJM pays Dover for its Capacity, it's helpful to understand the basics of the PJM capacity market
- PJM must ensure that they have an adequate amount of generation available to meet the peak load of their combined Load Serving Entities (plus reserves)
- To accomplish this, PJM administers a capacity market



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# Capacity Market – How Does it Work?

- Two types of participants in the capacity market:
  1. **Load Serving Entities (LSEs)** - PJM requires each LSE to purchase enough capacity from the market to meet its peak obligation
  2. **Suppliers** – those with installed or planned generation must offer their resources into the capacity auction
- Dover is both an LSE and a Supplier



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# Capacity Market - RPM

- PJM clears the auction using its Reliability Pricing Model (RPM)
- Determines the price that the LSEs will pay to fulfill their capacity obligations and the price that generators will be paid for committing their capacity to PJM
- The prices are locational
  - Dover historically pays and gets paid a premium based on the physical limitations of PJM's grid



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# Capacity Market – Dover as an LSE

- As a Load Serving Entity in PJM, Dover has an obligation to provide (or purchase) its share of capacity
- Dover generally participates as a buyer in the PJM capacity auction
- Dover is budgeted to pay PJM $8.5M for capacity in FY 2011-12



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# Capacity Market – Dover as a Generator

- Dover is paid the RPM clearing price for every MW of generation that it has available (currently 175MW total)
- The PJM Capacity Price that Dover is paid has averaged $180 per megawatt-day since the 2007/08 planning year
  - Average annual capacity revenue for Dover:

    175(MW) X 365 (days) X 180 ($/MWd)

    **= About $11,500,000/year**
  - To obtain that revenue, Dover spends an average of $7,700,000 on Operating, Maintaining and Improving its generation fleet



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# Capacity Market – Timing Risks

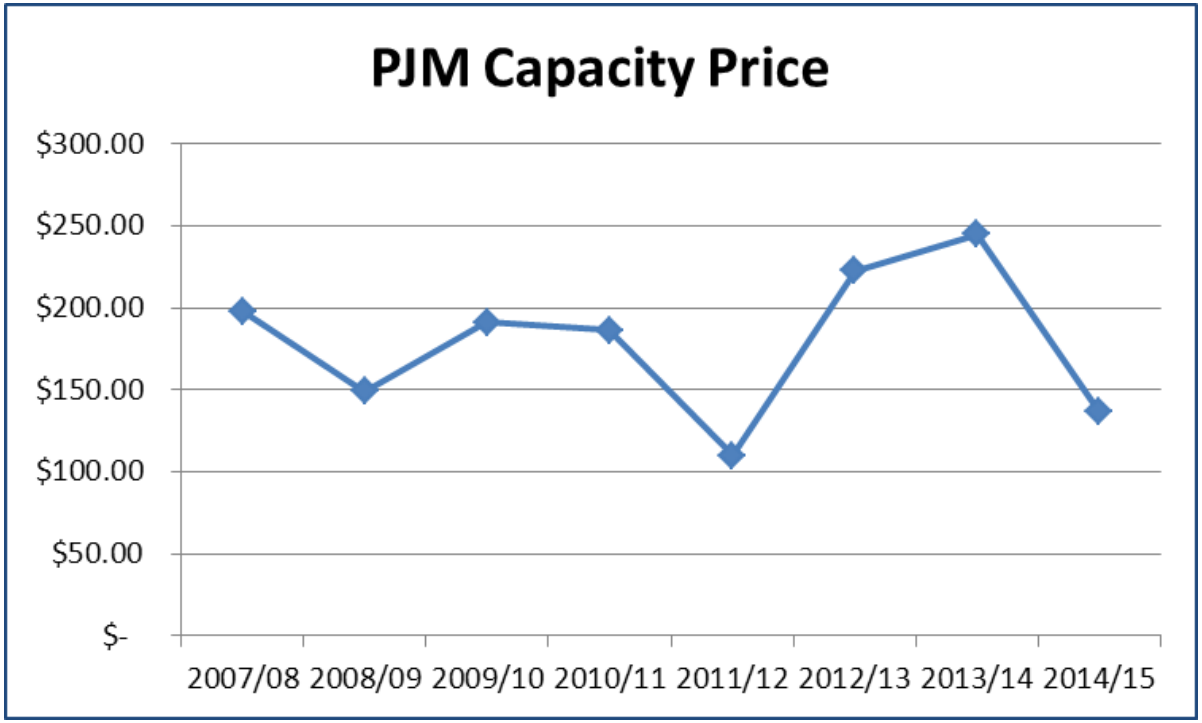
- PJM's capacity market is cleared for a one year planning period that begins 3 years in the future
  - In May 2012, PJM will purchase capacity for June 1, 2015 – May 31, 2016
- Generators are committing that their units will be available 3 years from now
- Given the age of Dover's units, capital improvements are required to ensure that the units will be operable in 3 years



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# Capacity Market – Price Risks

PJM's capacity market prices swing widely from year to year






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# Capacity Market – Operational Risks

- Generators must ensure that the units will be able to produce electricity when called upon by PJM
  - Requires trained & experienced staff all-hours
  - Requires maintenance & renewals (capital improvements)
- Failure to generate results in the utility having to replace its capacity in subsequent auctions (or from other sources) and having to pay a penalty for non-performance
  - While well-maintained, the age of Dover's McKee Run Units 1 and 2 means this risk of operational failure is always increasing



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# Current Situation

- Capacity prices faltered in the last auction
  - The most recent year was significantly less than the previous year in Dover's Capacity Zone
- Unit 1 bore scope inspection found notable damage
  - Extent of damage and needed repairs are uncertain
  - NAES has identified several alternatives to consider, with costs ranging from $50,000 per unit to $660,000 per unit



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# Current Situation (cont.)

- Insurer-recommended improvements to Units 1 and 2 may add *at least* $2.7M in capital improvement costs (years 5-10)
  - There's a chance that these could be needed sooner if problems arise or if the insurance provider insists
  - This cost estimate can change significantly
  - These repair costs would be in addition to existing capital improvements planned for Units 1 and 2 (~$780,000 by 2017)
  - It is uncertain what the impact on premiums will be if this work is deferred



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# Decision Timeline

- PJM's next capacity auction for the Planning Year 2015/16 opens on May 7, 2012
- Units 1 and 2 are already committed to PJM through May 31, 2015
- Next auction would commit them to PJM through May 31, 2016



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# Decision Methodology

- Estimate total cost of keeping the units active over a projected timeframe (5 years)
  - Include Base Case and Alternative Scenarios
- Estimate what savings (if any) would be realized if Units 1 and 2 were retired or mothballed
- Calculate target capacity price that will keep the units revenue positive



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# Decision Methodology (cont.)

- Estimate likelihood that PJM capacity prices will meet or exceed target price over the projected timeframe
- Consider qualitative inputs as well:
  - Depth of market: Can PJM sustain the loss of these units in the (usually) constrained area?
  - Alternatives for supply (PJM auction, contracts with other suppliers)
  - Long-term plan for the Utility
  - Other?



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# Assumptions

- McKee Run Unit 3 & Van Sant Unit 11 are not considered in this study
- Capital improvement dollars are shown in the year that the work is completed
  - This is based on the limitation that PJM's capacity market clears one year at a time
- All amounts are in 2012 dollars



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# Base Case

- Base Case Description:
  - Known Capacity Revenue through May 31, 2015
  - Projected *incremental* operating costs for Units 1&2 (2012 dollars)
  - Planned Capital Improvement Projects – Dover 5 year plan

| Dover Capacity Study McKee Runs Units 1&2 | BASE CASE | | | | |
|---|---|---|---|---|---|
| | 2012/13 | 2013/14 | 2014/15 | 2015/16 (est) | 2016/17 (est) |
| Capacity Revenue | $ 2,758,743 | $ 3,040,450 | $ 1,693,965 | UNKNOWN | UNKNOWN |
| Operating Costs | $ (874,450) | $ (900,684) | $ (927,704) | $ (955,535) | $ (984,201) |
| Capital Costs | $ (164,260) | $ (118,000) | $ (64,000) | $ (201,000) | $ (234,000) |
| **Net Cash Flow** | **$ 1,720,033** | **$ 2,021,767** | **$ 702,261** | **UNKNOWN** | **UNKNOWN** |
| **Unit 1 and 2 Break Even Capacity Price ($/MWd)** | **$ 83.70** | **$ 82.09** | **$ 79.91** | **$ 93.19** | **$ 98.16** |



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# Base Case - Findings

- Break even capacity prices:
  - ~$93/MWd (2015/16)
  - ~$98/MWd (2016/17)
- Historical prices for Dover's zone since 2007/08
  - Low: $136.50/MWd
  - High: $245/MWd
  - Average: $180/MWd
- Projected Prices (TEA's survey of multiple market projections)
  - $177 - $230 (2015/16)
- PJM Cost of New Entry estimation
  - $285 - $302 (2015/16)



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# Alternative Scenario

- Alternative Scenario Description:
  - All assumptions from Base Case
  - The $2.7M in capital improvements currently scheduled for post-2017 are required immediately

| Dover Capacity Study<br>McKee Runs Units 1&2 | ALTERNATE SCENARIO - Add'l $2.7M in Capital costs for 1&2 in next 2 years | | | | |
|---|---|---|---|---|---|
| | 2012/13 | 2013/14 | 2014/15 | 2015/16 (est) | 2016/17 (est) |
| | Capacity Revenue | | | | |
| Capacity Revenue | $ 2,758,743 | $ 3,040,450 | $ 1,693,965 | UNKNOWN | UNKNOWN |
| Operating Costs | $ (874,450) | $ (900,684) | $ (927,704) | $ (955,535) | $ (984,201) |
| Capital Costs | $ (1,514,260) | $ (1,468,000) | $ (64,000) | $ (201,000) | $ (234,000) |
| **Net Cash Flow** | **$ 370,033** | **$ 671,767** | **$ 702,261** | **UNKNOWN** | **UNKNOWN** |
| **Unit 1 and 2 Break Even Capacity Price ($/MWd)** | **$ 192.48** | **$ 190.87** | **$ 79.91** | **$ 93.19** | **$ 98.16** |



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# Alternative Scenario - Findings

- Break even capacity price for outer years doesn't change:
  - ~$93/MWd (2015/16)
  - ~$98/MWd (2016/17)
- Units are still cash flow positive in the years the expense is incurred

| | Actual Price | Break Even Price |
|---|---|---|
| 2012/13 | $222.30 | $192.48 |
| 2013/14 | $245.00 | $190.87 |



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# Conclusions

- In the base case, there is a High likelihood that McKee Run Units 1&2 will remain cash flow positive for the next 5 years
- Operational risks are significant
  - Somewhat mitigated by lower incremental capacity prices (historically)



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# Conclusions (cont.)

- In the alternate scenario, the units are still projected to be cash flow positive in the years the major expense is incurred
  - Additionally, life of the investment (if needed) would last beyond the 5 year term
- Risk that repair costs could escalate significantly



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# Recommendations

- Short-term: Offer Units 1 & 2 into 2015/16 capacity auction in May 2012
- Benefits:
  - Current projection of capital improvements and operating expenses result in a strong positive cash flow in the known years
  - TEA has high confidence that the next auction will clear above Dover's break even amount
  - Commits Dover to only one more year of O&M
  - Allows for decision about the future of the utility to be made without jeopardizing future value



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# Recommendations

- Short-term: Offer Units 1 & 2 into 2015/16 capacity auction in May 2012
- Risks:
  - Operational failure will expose Dover to incremental capacity auctions and penalties
  - If additional significant capital improvements are required in the next 3 years (i.e., Alternative Scenario), Dover's cash flows will be at risk
    - At that point, Dover may decide to replace the capacity in the incremental auction and not incur the capital expense



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# Recommendations

- Long-term: Create an Integrated Resource Plan for the City of Dover's Electric Utility
  - Survey all supply options, including new generation projects in/around Dover
  - Weigh against cost of future capital improvements to Units 1&2
  - Holistic approach, to include future resource needs (i.e., wind)
  - Complete by April 2013



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# Annual Engineering Consultant's Report

on the

## Operation and Maintenance of the Electric System Fiscal Year 2011

**Electric Division**
**City of Dover, Delaware**

**Project No. 66212**
April 2012

# Annual Engineering Consultant's Report on the Operation and Maintenance of the Electric System Fiscal Year 2011

**Prepared for the**

## Electric Division
## City of Dover, Delaware

**April 2012**

**Project No. 66212**

**Prepared by**

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

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April 18, 2012

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

City of Dover
Annual Engineering Consultant's Report
Project No. 66212

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 submits this Annual Engineering Consultant's Report for the fiscal year ended June 30, 2011. 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, as well as additional information 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 2011 expenditures and fiscal year 2012 budgets. In addition, an analysis of the balances of the Improvement and Extension Fund, as well as 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 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.

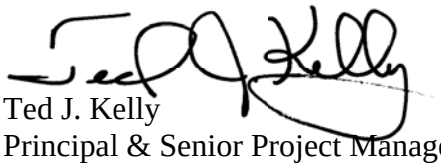
Further, it is the opinion of Burns & McDonnell that the balances in the various reserve funds maintained by the City for the Electric Division are sufficient for their intended purposes.

9400 Ward Parkway • Kansas City, MO 64114-3319
Tel: 816 333-9400 • Fax: 816 333-3690 • www.burnsmcd.com

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

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* * * * *

# EXECUTIVE SUMMARY

# EXECUTIVE SUMMARY

## INTRODUCTION

The 2011 Annual Engineering Consultant's Report (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 has been retained as Engineering Consultant by the City of Dover, Delaware (City) for this purpose.

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 ninth annual Engineering Consultant's Report prepared for the City by Burns & McDonnell.

## ELECTRIC SYSTEM OVERVIEW AND ASSESSMENT

The Electric System owned by the City primarily consists of production plant, transmission plant, distribution plant, and general plant facilities.

The City owns two power plants, the McKee Run Generating Station (McKee Run) and the VanSant Generating Station (VanSant). 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.

Effective May 4, 2006, the City entered into a five-year Energy Management Agreement with PACE Global Asset Management (PACE), LLC of Fairfax, Virginia to assist the City with its energy procurement, energy sale, purchase of fuels, establishment and management of risk policies, the development and management of hedging protocols and related energy procurement challenges. The PACE contract expired June 30, 2011 and effective July 1, 2011, The Energy Authority, Inc. (TEA) began assisting the City with its energy management activities. Headquartered in Jacksonville, Florida, TEA is a non-profit energy manager owned by seven public utility systems operating across the nation.

North American Energy Services Corporation (NAES Corporation) operates the generating plants. 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 in the Electric System Overview and Assessment section of the Report.

The Electric Division served approximately 22,915 customers at the end of FY 2011, over 19,730 of which were residential customers. The distribution facilities include 219 miles of overhead lines and 219 miles of underground lines connected through fifteen substations. The Engineering Consultant's observations regarding the transmission and distribution systems are described in the Electric System Overview and Assessment section of the Report.

Four of the 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 operational, the Electric Division provides power for the plant site.

The Electric Division has one contract for providing transmission service through the Electric System. As previously stated, the Electric Division provides transmission service to NRG for the output of its 16-MW electric generator.

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

The various systems and components of the generating stations reviewed by the Engineering Consultant are listed below:

Major Equipment Condition and Improvements

- 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

Based on statements and information provided, 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 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.

The Engineering Consultant's observations regarding the generating stations and units are described in the Electric System Overview and Assessment section of the Report. 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 done a good job of making appropriate upgrades and improvements which the Engineering Consultant has observed while conducting the reviews and assessments to complete the annual reports.

The Engineering Consultant's observations regarding the transmission and distribution systems are described in the Electric System Overview and Assessment section of the Report.

## FINANCIAL 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 2011. The Resolution requires that the Electric Division maintain a debt service coverage ratio of 1.25. 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:*
> *(1) The Current Expenses of the Electric System during the current fiscal years shown by the Annual Budget . . . for such fiscal year, and*
> *(2) 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."*

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 2011. 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 July 2008 rate adjustments established the rate schedules utilized by the Electric Division today.

Total energy sales increased from 708.5 GWh in FY 2010 to 734.1 GWh in FY 2011, an increase of 3.6 percent. Total revenue from sales to electric customers in FY 2011 was approximately $99.5 million, representing an increase of $1.4 million from FY 2010 rate revenue of approximately $98.1 million. In FY 2011, the average revenue per kWh for residential customers was 14.79 cents and the system-wide average price was 13.56 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 by its FY 2011 Energy Manager, PACE. From FY 2010 to FY 2011, the cost of power decreased from $72.8 million to $69.6 million. Net income decreased from $3.3 million in FY 2010 to $3.2 million in FY 2011. The net income decrease in FY 2011 was due in large part to operating transfers out, which reached a ten-year high of $8.9 million.

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 2009, FY 2010, and FY 2011 of 2.88, 4.24, and 5.45 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 insure against 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 ensure that moneys are 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 information on the accounts listed above and found that the balances in those accounts as of June 30, 2011, were consistent with the required or target balances.

## 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 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 2012 Operating Budget are necessary and should provide improved reliability and power quality for the Electric System.

4. The balances as of June 30, 2011, 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 effect 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 (125 percent of current expenses) defined in Section 502(c) of the Resolution.

* * * * *

# PART I - INTRODUCTION

# PART I
# INTRODUCTION

The City of Dover, Delaware (City) operates a municipally-owned electric utility system that serves approximately 22,915 customers within the City and surrounding areas. The service area of the electric utility is located in central Delaware; with the City itself located approximately 70 miles south of Philadelphia, Pennsylvania.

## PURPOSE OF REPORT

This 2011 Annual Engineering Consultant's Report (Report) has been prepared in compliance with the requirements of the City of Dover Electric Bond Resolution (Resolution) adopted December 23, 1985. Burns & McDonnell has been 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*
>
> *(i) 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,*
>
> *(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."*

## ORGANIZATION

The Public Utilities Director is responsible for the overall management of the Public Utilities Department. The Public Utilities Director oversees the day-to-day operations of the Electric, Water, and Wastewater Divisions and manages the Division's staff. The Director also provides oversight of the Power Plant budget and monitors the contracts the energy coordinator and the power generation operator/manager. The Electric Division is organized into three 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. Lastly, it is responsible for the operation of a 24/7 system operations control center, referred to as System Operations.

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 problems and oversees the work of tree trimming contractors.

Figures I-1 through I-4 provide organizational charts illustrating the staffing hierarchies of the various sections in the Electric Division. The number of individuals in each position was indicated as appropriate. Electric Division staff totaled 47 at the time the FY 2012 budget was issued.

Figure I-1: Organization

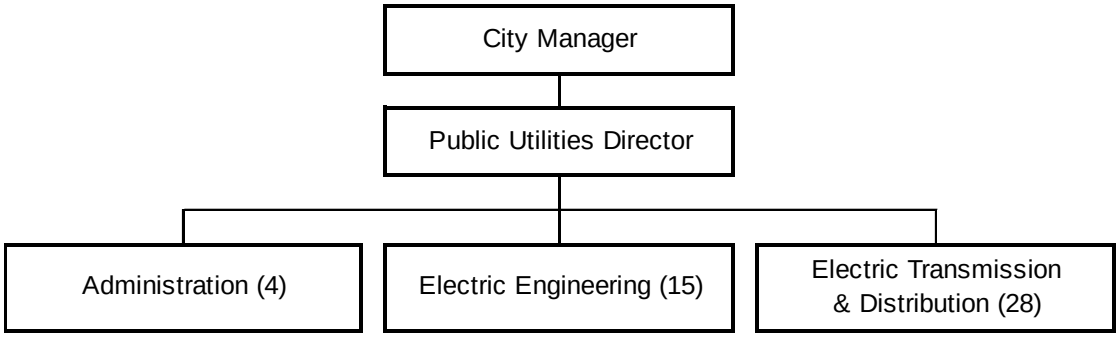



Figure I-2: Administration

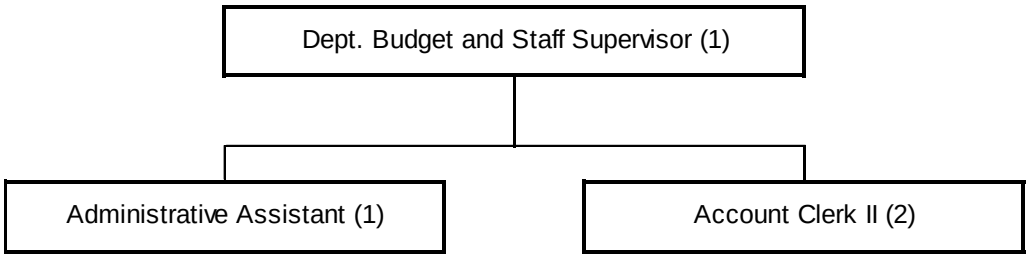



Figure I-3: Electric Engineering

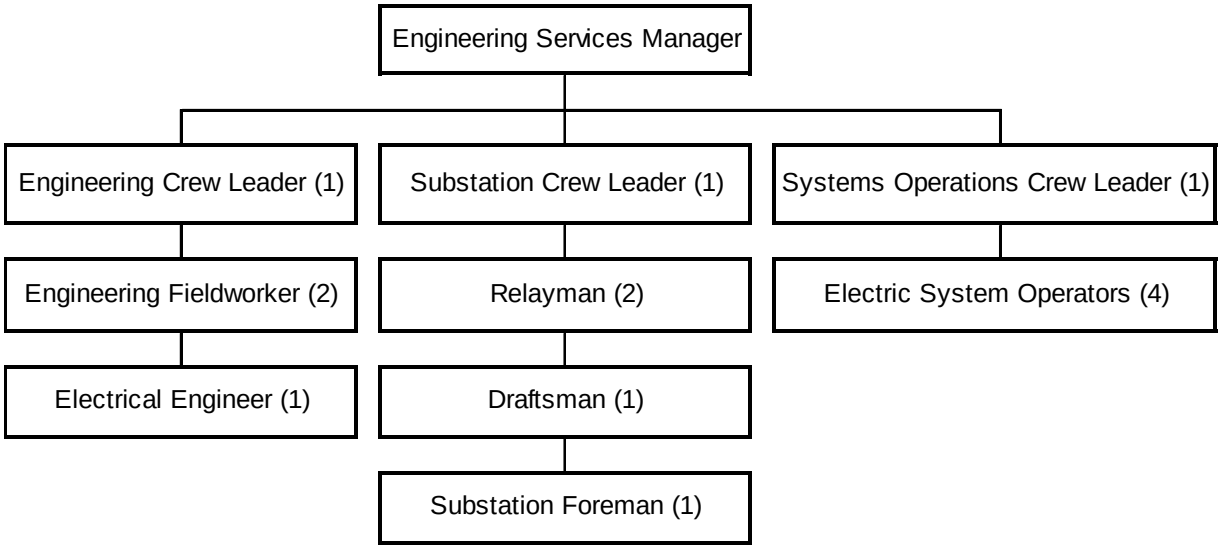
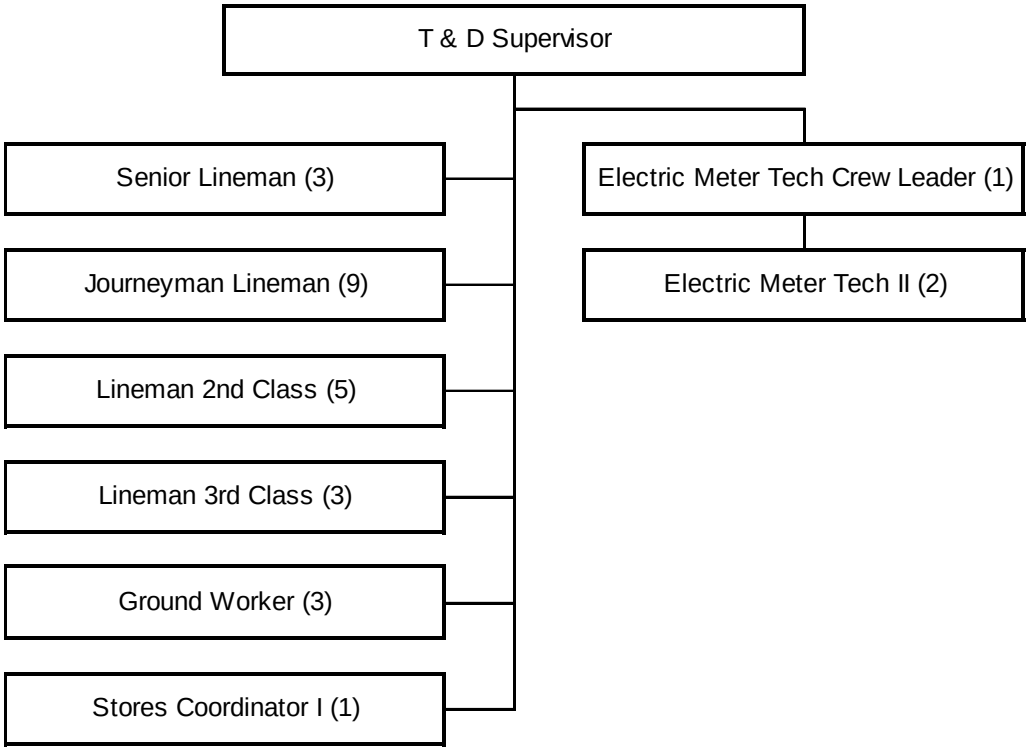


Figure I-4: Electric Transmission & Distribution




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

In the preparation of the Report, Burns & McDonnell reviewed and analyzed maintenance records, audited financial statements, and other data provided by the City. Burns & McDonnell has relied on the information provided without independent verification, 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.

* * * * *

# PART II – ELECTRIC SYSTEM OVERVIEW AND ASSESSMENT

# PART II

# ELECTRIC SYSTEM OVERVIEW AND ASSESSMENT

## ELECTRIC SYSTEM OVERVIEW

The Electric System owned by the City of Dover, Delaware (City), primarily consists of production plant, transmission plant, distribution plant, and general plant facilities, and construction work in progress. Table II-1 displays the year-end balances of the various plant components for FY 2009 through FY 2011. Table II-2 itemizes the specific capital investment plan projects and anticipated expenditures for FY 2011, as well as projections for other components included in the FY 2012 budget.

**Table II-1**

**YEAR-END PLANT IN SERVICE**
**City of Dover Electric Division**

| | FY 2009 | FY 2010 | FY 2011 |
|---|---|---|---|
| Capital assets, not being depreciated | | | |
| Land | $ 1,458,066 | $ 1,458,066 | $ 1,458,066 |
| Construction in progress | 17,272,520 | 12,772,089 | 424,809 |
| Total capital assets, non-depreciable | $ 18,730,586 | $ 14,230,155 | $ 1,882,875 |
| Capital assets, being depreciated | | | |
| Buildings | $ 16,676,093 | $ 16,922,580 | $ 17,383,566 |
| Production | 60,028,422 | 62,442,716 | 63,408,937 |
| Transmission | 20,821,161 | 22,651,256 | 32,558,944 |
| Distribution | 49,431,989 | 55,811,945 | 59,824,248 |
| Administration | 1,519,649 | 1,530,413 | 1,551,280 |
| Vehicles | 674,610 | 624,428 | 622,236 |
| Total capital assets, being depreciated | $ 149,151,924 | $ 159,983,338 | $ 175,349,211 |
| Less accumulated depreciation for: | | | |
| Buildings | $ (10,180,242) | $ (10,574,839) | $ (10,992,065) |
| Production | (37,316,699) | (38,692,760) | (39,931,442) |
| Transmission | (7,369,638) | (8,052,226) | (9,206,982) |
| Distribution | (20,962,765) | (22,260,895) | (23,817,302) |
| Administration | (937,556) | (1,029,427) | (1,102,778) |
| Vehicles | (405,418) | (427,752) | (435,188) |
| Total accumulated depreciation | $ (77,172,318) | $ (81,037,899) | $ (85,485,757) |
| Total capital assets, being depreciated, net | 71,979,606 | 78,945,439 | 89,863,454 |
| Total capital assets, net | $ 90,710,192 | $ 93,175,594 | $ 91,746,329 |

In FY 2011, 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 3

p.m. on June 9, 2011 when demand reached 164.6 MW. For the year, approximately 734.1 GWh of energy were sold, a decrease of 3.6 percent from the preceding year. The Electric Division projects energy sales to decrease in FY 2012 to 710.0 GWh, a decrease of 3.3 percent. From FY 2012, the Electric Division expects annual energy sales to remain relatively constant through FY 2016.

**Table II-2**

**FISCAL YEAR 2012 PLANNED CAPITAL EXPENDITURES**
**City of Dover Electric Division**

| | | |
|---|---|---|
| Electric Engineering Projects: | | |
| Distribution System Upgrades | $ | 500,000 |
| Lighting Project and Rehabilitation | | 50,000 |
| Substation Equipment & Fencing (Division St) | | 40,000 |
| SCADA Master Hardware Replacement | | 75,000 |
| Transmission Line Maintenance Program | | 75,000 |
| Distribution Feeder Replacement Program | | 377,510 |
| Distribution Capacitors - Overhead | | 50,000 |
| Distribution Capacitors - Underground | | 50,000 |
| Frazier Substation Reliability Upgrade | | 155,000 |
| Substation PT & CT Replacement Program | | 267,715 |
| Vehicles, Trucks, & Equipment | | 150,491 |
| Subtotal Electric Engineering Division | $ | 1,790,716 |
| Electric Transmission & Distribution Projects: | | |
| New Developments - UG Transformers | $ | 600,000 |
| Vehicles, Trucks, & Equipment | | 48,337 |
| Subtotal Electric Transmission Division | $ | 648,337 |
| Electric Generation Projects: | | |
| McKee Run Switchyard Blast walls | $ | 50,000 |
| McKee Run Preservation of Structures | | 38,000 |
| McKee Run Demineralizer Replacement | | 65,000 |
| Unit 3 - Stack Repairs | | 25,000 |
| Unit 3 Boiler Air Heater | | 440,000 |
| Unit 3 Boiler Systems | | 130,000 |
| Unit 3 - Gas Modification | | 36,206 |
| Unit 3 FD & ID Fan Controller Upgrade | | 92,000 |
| Unit 3 DCS Computers & Software Upgrades | | 85,000 |
| Unit 3 Auxiliary System Components | | 113,000 |
| Unit 3 Turbine Outage/Inspections | | 348,000 |
| Unit 3 Cooling Water Line Replacement | | 25,000 |
| Unit 3 Air Heater Expansion Joint | | 82,807 |
| Units 1 & 2 Life Extension | | 196,331 |
| Units 1 & 2 Cooling Tower Life Extension | | 25,410 |
| Units 1 & 2 Control Modifications | | 25,700 |
| VanSant component replacements | | 50,000 |
| McKee Run Equipment replacements | | 70,000 |
| Subtotal Electric Generation Division | $ | 1,897,454 |
| Electric Metering Division | | |
| Vehicles, Trucks, & Equipment | $ | 20,000 |
| Total Planned Capital Investment Projects | $ | 4,356,507 |

## Production Plant

The City owns two power stations, the McKee Run Generating Station (McKee Run) and the VanSant Generating Station (VanSant). 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.

Effective May 4, 2006, the City entered into a five-year Energy Management Agreement with PACE Global Asset Management (PACE), LLC of Fairfax, Virginia to assist the City with its energy procurement, energy sale, purchase of fuels, establishment and management of risk policies, the development and management of hedging protocols and related energy procurement challenges. The PACE contract expired June 30, 2011 and effective July 1, 2011, The Energy Authority, Inc. (TEA) began assisting the City with its energy management activities. Headquartered in Jacksonville, Florida, TEA is a non-profit energy manager owned by seven public utility systems operating across the nation. At the time of the Report, TEA was currently completing a useful life study focusing on Units 1 and 2 at McKee Run. The purpose of the study is for financial due diligence and proper accounting. A similar study was completed several years ago by the City's former energy manager, PACE.

North American Energy Services Corporation (NAES Corporation) operates the generating plants. 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.

## Transmission and Distribution Plant

The service area includes 44 miles of overhead transmission lines, 0.12 miles of underground transmission lines, 175 miles of overhead distribution lines and 219 miles of underground distribution lines. Four 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. As previously stated, 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.

### 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 and the City funds all replacements and upgrades required to maintain 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 the Report.

## ELECTRIC SYSTEM ASSESSMENT

Burns & McDonnell, the Engineering Consultant to the City, made observations and conducted assessments of the Electric System assets in support of the development of this annual Engineering Consultant's Report. The findings of Burns & McDonnell from the review of the City's Electric System are documented herein.

### Electric Generating Stations

On February 22, 2012, 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. Kenneth Beard, the Plant O&M Manager, coordinated the visit along with Mr. Phillip Kosek, the Plant Administration and Environmental Health & Safety Manager.

**Description:** 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. To date, the necessary upgrades and new equipment had been 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. VanSant remains unmanned, except when it is dispatched into service. On the occasions when the unit is dispatched, personnel from McKee Run are transferred to VanSant to startup and operate the unit.

**Management and Organization:** Station management is very well organized and knowledgeable, and takes a logical approach to the operation and maintenance of the generation facilities. Mr. Vince Scire serves as the Plant Manager. The management/leadership team consists of eight members including Mr. Scire. The Administrative & Employee Health and Safety Manager, Material Management Coordinator, and O&M Manager, all report directly to Mr. Scire. An Administrative Specialist position is currently open at the plant. This position is part of the management/leadership team as well.

The O&M Manager oversees a Maintenance Supervisor, a Compliance Specialist and four Operations teams. Each operations team consists of two supervisors and three operators working 12-hour rotating shifts. Two operators work eight-hour flex time shifts Monday through Friday, and fill in as needed. The maintenance team consists of a planner, a supervisor and five employees working eight-hour shifts. The operations and maintenance 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.

**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. An employee-run safety committee is 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. An indoctrination video emphasizing safety is shown to all visitors when entering the Station.

There were no restricted work days or lost time accidents reported in FY 2011. NAES ended the year with 22,831 man-hours worked with no OSHA recordable accidents.

**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) has been established. EDQP is a formal program for training operators to progressively advance to positions with additional responsibilities. 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.

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, etc. offer additional safety training.

Four employees completed formal training and received certification for Hazardous Waste Management: Resource Conservation and Recovery Act (RCRA) and US Department of Transportation (DOT) Regulations in FY 2011. The training was completed in East Windsor, New Jersey on April 6, 2011 and administered by Nexeo Solutions of Dublin, Ohio.

**Major Equipment Operation 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 relatively large number of starts per year and low annual capacity factor. Table II-3 summarizes the major FY 2011 operating statistics.

The large amount of time that units are not operating allows for maintenance and repair of the units. As a result, the FY 2011 overall equivalent availability factor for the generation facilities averaged 67.6 percent. Low net capacity factors are partially offset by Pennsylvania New Jersey Maryland Interconnection (PJM) capacity credits. In FY 2011, approximately $11.4 million of PJM capacity credits helped cover the fixed operating and maintenance costs of the Electric System. PJM capacity credits are expected to continue to provide similar benefits in FY 2012 and beyond.

**Electronic 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].

**Table II-3**

**FISCAL YEAR 2011 OPERATING STATISTICS**
**City of Dover Electric Division**

| Unit Number | Rated Capacity - MW | Net Production - MWh | Net Capacity Factor | Net Heat Rate Btu/kWh | Number of Starts |
|---|---|---|---|---|---|
| VanSant | 39 | 5,148.0 | 1.43% | 13,300 | 39 |
| McKee Run | | | | | |
| Unit 1 | 17 | 411.5 | 0.28% | 15,804 | 3 |
| Unit 2 | 17 | 1,408.8 | 0.95% | 13,782 | 5 |
| Unit 3 | 102 | 47,297.8 | 5.21% | 11,464 | 49 |
| Total | 175 | 54,266.1 | 3.54% | | 96 |

| Unit Number | Forced Outage Hours | Operating Hours | Service Factor | Equivalent Availability Factor |
|---|---|---|---|---|
| VanSant | - | 154.7 | 1.77% | 97.17% |
| McKee Run | | | | |
| Unit 1 | 579.8 | 43.0 | 0.49% | 63.18% |
| Unit 2 | - | 159.7 | 1.82% | 69.80% |
| Unit 3 | 6.3 | 714.7 | 8.16% | 69.73% |
| Total | 586.1 | 1,072.1 | 12.24% | |

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, 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. The technology allows personnel to identify problems and take corrective actions before equipment failure occurs.

**Electric Generation Improvements:** The following describes completed, on-going, and planned improvements to the City's generation assets:

Recently Completed:

- DOE Grant - Photovoltaic Panels
- McKee Run & VanSant Arc Flash
- McKee Run Driveway Repaving
- Unit 3 Fire Protection System
- Unit 3 Cooling Tower Life Extension
- Unit 1 Outage FY 2011
- Unit 2 - Boiler Inspection & Repair
- VanSant CT Mark IV Upgrades
- Work Management Software Replacement

On-Going:

- McKee Run Preservation of Structures
- Unit 3 - Gas Modification
- Unit 3 Air Heater Expansion Joint
- Units 1 and 2 Life Extension
- Units 1 and 2 Cooling Tower Life Extension
- Units 1 and 2 Control Modifications
- McKee Run Equipment Replacements

Planned:

- McKee Run Demineralizer Replacement
- McKee Run Turbine Level Window Modification
- McKee Run High Energy Piping
- Unit 3 - Stack Repairs
- Unit 3 Boiler Air Heater
- Unit 3 Boiler Systems
- Unit 3 FD and ID Fan Controller Upgrade
- Unit 3 DCS Computers & Software Upgrades
- Unit 3 Auxiliary System Components
- Unit 3 Turbine Outage/Inspections
- Unit 3 Cooling Water Line Replacement
- Unit 3 Generator Repairs
- Units 1 and 2 Stack Repairs
- Units 1 and 2 Boiler Repairs
- Units 1 and 2 Component Repairs
- VanSant Capacity Increase
- VanSant Component Replacements
- Metering System Upgrades

**Condition Assessment:** The following is a summary of the condition assessment of McKee Run major equipment and VanSant as presented by the NAES Corporation staff. Burns & McDonnell made no internal assessments of equipment during the facility tour.

**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. McKee Run Unit 3 turning gear engagement problems were reported in the summer 2010 outage report. Plant staff developed a list of parts needed to complete the appropriate repairs. Plans were made to replace both mating clutch ends during the spring 2010 outage. Delays in parts availability postponed the planned repairs until FY 2012.
XL Insurance completes inspections of the Energy Division production facilities on an annual basis. After each inspection the insurance provider issues a report detailing its risk reduction recommendations. A recommendation following the FY 2010 inspection addressed safety. XL Insurance recommended the

installation of a permanent fire protection system for the turbine generator bearings at McKee Run. The City completed the installation of the system in FY 2011 for Unit 3. The City and XL Insurance agree that portable foam generating carts are sufficient fire protection for Units 1 and 2, due to their light use.

In FY 2011, the McKee Run Units 1 and 2 turbine generators were degassed and removal of hydrogen fill piping was completed. The existing hydrogen fill piping was replaced with stainless steel piping to help reduce corrosion. Once the piping was installed it was checked for leaks. No leaks were reported. No other major repairs or replacements were required for the turbine/generators in FY 2011.

**Boilers and Auxiliaries:** Boiler inspections are conducted every year on each of the boilers. Each fiscal year, the inspections on each boiler 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 windbox, condenser water box, condenser tubes, hotwell, air preheater components, and safety valves.

In FY 2010, McKee Run Unit 1 experienced a tube failure and excursion and consequently was shut down. The City hired a contractor to supply replacement parts and repair the tube by replacing a tube section. After an internal inspection, plant staff made the decision to replace six additional tubes in Unit 1. The City subsequently hired inspectors to examine the repaired unit and provide recommendations for additional repairs and inspections. These maintenance recommendations helped determine certain projects to be completed during future outages.

In FY 2011, outlet duct expansion joint was replaced at Unit 3. Operations removed the appropriate insulation and lagging to prepare the duct. The Electric Division contracted Apex to complete the installation the equipment. A complete seam weld was utilized to seal the joint and the job site was cleaned.

Following its FY 2010 annual inspection of the production facilities, XL Insurance recommended the City implement a program that tracks annual hot and cold settings of hangers in the steam, reheat, feedwater and boiler systems. In FY 2011, the City has met the recommendation by implementing a program that will examine the high energy piping systems on a five-year basis, beginning in 2014.

**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 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. Projectile tube cleaning was last completed in the nineteen eighties. 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.

**Fuel Handling Systems:** Natural gas comes into the station in a 4-inch diameter 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 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 2011.

**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 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 is currently undergoing the approval process with Kent County to obtain an integrated waste water permit to be able to discharge cooling water to the sewer system. No major issues were reported at the time of this Report.

Steam purity is not continuously monitored. Samples are taken 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.

Following its FY 2010 annual inspection of the production facilities, XL recommended the City implement lay-up procedures to protect water systems from corrosion. In FY 2011, the City worked to update plant procedures to conform to NAES standards.

In FY 2011, the station did not experience any internal corrosion related failures, steam path deposits, or excessive condenser fouling. NALCO 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.

**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 February 2011. Oil inspections and analyses were made. The inspector recommended that normal operation continue for all the transformers at the plant. Oil sampling is now completed twice per year on the GSUs. All plant transformers are examined annually.

Following its FY 2008 annual inspection of the production facilities, XL recommended the City build blast walls around transformers at the plant. In FY 2011, the City continued to research blast wall protection. The revised FY 2012 Capital Budget includes costs for blast wall installation at McKee Run.

**Station Control Systems:** Unit 1 and Unit 2 controls are electro-pneumatic and Unit 3 controls are a distributed control system (DCS). During the March FY 2011 spring outage, a controls upgrade was completed at McKee Run Units 1 and 2. The new devices will control igniters, pilots and shut down main fuel to protect the boiler. The project included the installation of new limit switches on main gas, pilot gas, and oil supply/return valves. The controls upgrades help the system meet national fire protection codes.

Following its 2007 annual inspection of the production facilities, XL Insurance recommended the City seal openings in fire barriers through which cables pass. The City has worked each year since to make progress on sealing openings in fire barriers. The City intends to seal the rest of the openings as part of its boiler controls and control room upgrades.

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 (NERC), Pennsylvania-New Jersey-Maryland (PJM) Interconnection and Mid-Atlantic Area Council (MAAC) compliance. The EHC system will be modified in the future to become a primary/primary system. No major issues were reported at the time of this Report.

**General Facilities:** No major projects or improvements were completed to the General Facilities in FY 2011 other than routine maintenance and repairs. In general, the station facilities appeared clean and well maintained during the site visit.

**VanSant Generating Station:** In general, the unit is operated infrequently, but is well maintained. Although the station is only manned when operating, an operator performs a twice daily walk through with a checklist of items to review and the results are logged. The annual overhaul and inspections were conducted at VanSant during FY 2011. No major problems were found.

The VanSant unit now has the capability of completing black starts. Upgrades have been made to provide the capability of remote control of the unit; however, complications have not made remote control possible.

XL Insurance completes inspections of the Energy 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 2011 inspection addressed safety. XL Insurance recommended the installation of gas detection equipment at the plant. The City is making an effort to meet this recommendation. No date has been set for its expected completion. No other major repairs or upgrades were made at VanSant in FY 2011.

## Transmission and Distribution Systems

On February 22, 2012, 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. Steve Enss, the Engineering Services & System Operations Superintendent, provided information related to the transmission and distribution system. Mr. Enss also led a tour of the electric transmission and distribution system.

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.

**Safety:** Mr. Jeremy Johnson – Public Utilities Director for the City, reported to Burns & McDonnell that there were no reportable injuries or lost workdays in FY 2011.

**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.

**Power Quality:** The Electric Division does not have any significant power quality problems. The overall power factor for the Electric System decreased from approximately 98.72 percent in FY 2010 to 98.43 percent in FY 2011. Power transformers are equipped with load tap changers 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.

**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 nine line crews 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, their performance is monitored by the Line Crew Superintendent.

The Substation/Relay Maintenance Division is responsible for operation and maintenance of the substations and associated equipment. They perform visual inspections of substations, associated equipment, trip counter checks, battery systems checks, and oversee annual transformer condition assessments.

TJ/H2b Analytical Services completed the annual transformer condition assessments in February FY 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. No pole treatments were reported completed in FY 2011.

**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 PVC 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 (EPR) insulation.

The standard overhead distribution design utilizes a flat construction using 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.

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

Recently Completed:

- 69-kV Feeders 3 and 4
- Replacement of 69-kV Breakers & Design
- Governors Avenue Rebuild
- Mid City Substation Upgrades
- 69-kV Substation Switch Replacement
- New Developments – Underground Conductors and Devices
- Single Phase Meters

On-Going:

- Distribution System Upgrades
- Lighting Project and Rehabilitation
- Substation PT and CT Replacement
- New Developments – Underground Transformers

Planned:

- Horsepond Road Substation Reliability Upgrade
- Replace Substation Equipment and Fencing
- McKee Run Yard Rebuild
- North Street 69-kV Cable Replacement
- Distribution Feeder Replacement Program
- Transmission Relaying, Replacement and Calibrations
- Distribution Capacitors - Overhead
- Distribution Capacitors - Underground
- Outage Management System
- System Automation & SCADA Equip.
- Frazier Substation Reliability Upgrade
- Horsepond Substation to Cartanza 69-kV Rebuild
- 69-kV Substation Switch Replacement
- General Scott Switchgear

**Condition Assessment:** The transmission and distribution system assessment included drive-by observations of a sample of the transmission circuits, distribution circuits, and substations. Most of the fifteen substations were physically observed during the tour. The following substations were observed during the tour:

- Mid City Substation
- Frazier Substation
- North Street Substation
- General Scott Substation
- Lebanon Substation
- Division Street Substation
- St. Jones Substation
- Horsepond Substation
- Cartanza Substation

The first stop during the transmission and distribution system evaluation was the Mid City Substation. In FY 2011, breaker change outs were completed. The oil breakers were replaced with SF6 breakers at the

substation. Routine maintenance was completed at the Frazier Substation in September 2010 and reliability upgrades are scheduled to begin in FY 2012. Switch replacement was completed at the North Street Substation and cable replacement is on the Electric Division's five-year capital plan. Switches were replaced at the General Scott Substation and the 69-kV breakers were replaced. The switchgear is scheduled for replacement in FY 2015 at the General Scott Substation.

The Lebanon, Division Street, St. Jones, and Horsepond Substations appeared to be in good condition. Routine maintenance was completed in FY 2011 at these locations. There was little to no vegetation visible and the yards appeared to be well maintained.

The Cartanza Substation was observed during the system tour. Cartanza is a 230/69-kV substation, which serves as a tie with Delmarva. Delmarva maintains the 230-kV side of the station, while the City of Dover maintains the 69-kV side. In FY 2011, tap changer seals were replaced at the substation. The Electric Division works Delmarva Power on transformer testing. Cartanza currently has four 69-kV lines leaving the station. The four circuits leave the station on two diverse pole lines, each holding a double circuit, until the circuits split down the line. This configuration allows for two separate loops for the entire 69-kV system to minimize total system failure should one common pole be critically damaged.

Along the transmission and distribution system tour route, additional projects were detailed. The replacement of old underground circuits was completed in December FY 2011. Also, a number of insulators were replaced due to some breakdowns primarily due to age. Specifically, a transmission line near McKee Run had to be replaced because of the continual damage sustained by cooling tower exhaust. Another transmission line connecting a 10-MW Sun Power solar project was completed during the fall of FY 2011. Force labor completed the job. The transmission line featuring composition poles was completed in time to shave 6 MW from the system peak.

In addition, the tour included driving through several residential areas that are served by underground distribution lines. The pad mounted transformers observed along the way appeared to be in good condition.

## Conclusions

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.

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 done a good job of making 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.

* * * * *

# PART III – FINANCIAL ASSESSMENT

# PART III
# FINANCIAL ASSESSMENT

The financial results of the City of Dover, Delaware (City) Electric System for the fiscal year (FY) ended June 30, 2011, were generated through the management and operation of the Electric System by the Electric Division. A review of the financial results is provided below.

## FINANCIAL RESULTS

The total revenue of the Electric Division during FY 2011 included revenue from charges for electric service, as well as miscellaneous revenues from items such as rents, penalties, reconnection fees, and emission credits. On the Comparative Statement of Revenues, Expenses, and Changes in Unreserved Retained Earnings table, revenues were compared to the Electric Division's costs of providing services to its customers to determine whether the financial requirements of the Electric Division were met.

### Required Revenue Level

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 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:*
>
> *(1) The Current Expenses of the Electric System during the current fiscal years shown by the Annual Budget . . . for such fiscal year, and*
>
> *(2) 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."*

## Electric Rates

Customers of the Electric Division of the City 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 July 2008 study established the rate schedules utilized by the Electric Division today. 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
- Water Pumping
- Supplemental for NRG

The City has retained Burns & McDonnell to begin a comprehensive cost-of-service and rate design study in fourth quarter FY 2012. The study will examine revenue adequacy, revenue responsibility, and revenue recovery for the Electric Division. The FY 2012 study will scrutinize customer classes and propose adjustments for demand rate components and any corresponding changes to energy charges.

## Operating Results

Table III-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 2009 through FY 2011. After reaching a low in FY 2010 for the three-year period, annual energy

sales increased to 734.1 GWh in FY 2011. On a percentage basis, the one-year increase equaled 3.6 percent.

**Table III-1**

**ANNUAL SALES AND CUSTOMERS**
**City of Dover Electric Division**

| | FY 2009 | FY 2010 | FY 2011 |
|---|---|---|---|
| Energy Sales (kWh) | | | |
| Residential | 195,185,587 | 193,911,702 | 208,092,047 |
| Commercial | 248,757,087 | 237,608,938 | 243,985,517 |
| Primary | 156,096,547 | 148,381,527 | 153,879,249 |
| Transmission | 119,910,158 | 128,628,155 | 128,146,159 |
| Total Energy Sales | 719,949,379 | 708,530,322 | 734,102,972 |
| Average Number of Customers (bills) | | | |
| Residential | 19,685 | 19,785 | 19,730 |
| Commercial | 3,497 | 3,371 | 3,140 |
| Primary | 37 | 36 | 42 |
| Transmission | 4 | 4 | 3 |
| Total Customers | 23,223 | 23,196 | 22,915 |
| Energy Per Customer | | | |
| Residential | 9,915 | 9,801 | 10,547 |
| Commercial | 71,131 | 70,493 | 77,702 |
| Primary | 4,209,345 | 4,102,715 | 3,663,792 |
| Transmission | 30,615,359 | 32,157,039 | 42,715,386 |
| Average Energy Per Customer | 31,001 | 30,546 | 32,036 |

Table III-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 2011 was approximately $99.5 million, representing an increase of $1.4 million, or 1.5 percent from FY 2010. Total revenue from sales to electric customers includes utility tax revenue and power cost adjustment revenue.

In FY 2011, the average rate revenue per kWh for residential customers was 14.79 cents and the total average rate revenue was 13.56 cents per kWh. The July 2010, through June 2011 national average monthly utility-level retail sales of electricity and associated revenue per kWh, as published by the US Energy Information Administration (EIA), were 11.66 and 9.91 cents per kWh, respectively. For a state-wide comparison, the EIA summarized the Delaware July 2010, through June 2011 average monthly

utility-level retail sales of electricity and associated revenue per kWh to be 13.86 cents per kWh for residential customers and 11.90 cents per kWh across all sectors.[1]

**Table III-2**

**ANNUAL REVENUES AND SALES RATIOS**
**City of Dover Electric Division**

| | FY 2009 | FY 2010 | FY 2011 |
|---|---|---|---|
| Revenue | | | |
| Residential | $ 29,553,954 | $ 29,320,410 | $ 30,774,462 |
| Commercial | 37,547,855 | 36,856,716 | 36,572,134 |
| Primary | 18,988,842 | 18,025,548 | 18,450,238 |
| Transmission | 13,551,839 | 13,878,764 | 13,716,322 |
| Total Revenue | $ 99,642,490 | $ 98,081,438 | $ 99,513,156 |
| Revenue/kWh | | | |
| Residential | $ 0.1514 | $ 0.1512 | $ 0.1479 |
| Commercial | 0.1509 | 0.1551 | 0.1499 |
| Primary | 0.1216 | 0.1215 | 0.1199 |
| Transmission | 0.1130 | 0.1079 | 0.1070 |
| Total Revenue/kWh | $ 0.1384 | $ 0.1384 | $ 0.1356 |
| Revenue Per Customer | | | |
| Residential | $ 1,501 | $ 1,482 | $ 1,560 |
| Commercial | 10,737 | 10,935 | 11,647 |
| Primary | 512,059 | 498,402 | 439,291 |
| Transmission | 3,460,044 | 3,469,691 | 4,572,107 |
| Average Revenue Per Customer | $ 4,291 | $ 4,228 | $ 4,343 |

The Electric Division's largest cost in providing electric service to its customers in FY 2011 was the wholesale cost of power. The Electric Division purchased power from the PJM Interconnection marketplace through its Energy Manager, PACE. From FY 2010 to FY 2011, the net cost of non-generated power decreased from $66.8 million to $62.7 million. 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. Reduced demand and energy costs were the main driver behind the reduction in net cost of non-generated power.

The significance of power supply cost to the Electric Division is illustrated in Table III-3. The top portion of the table shows net operating revenue as the difference between total revenues generated by the rates

[1] US Energy Information Administration, Form EIA-826 Data Monthly Electric Utility Sales and Revenue Data, http://www.eia.gov/cneaf/electricity/page/sales_revenue.xls (Mar. 19, 2012)

and the cost of power supply.[2] The ratios of power supply cost to sales revenues were calculated for FY 2009 through FY 2011. As illustrated, the Electric Division's power supply cost as a percentage of rate revenue decreased from approximately 74.1 percent in FY 2010 to 70.0 percent in FY 2011.

**Table III-3**

**NET REVENUE MARGINS AND UNACCOUNTED FOR ENERGY**
**City of Dover Electric Division**

| | FY 2009 | FY 2010 | FY 2011 |
|---|---|---|---|
| Net Revenue Margins ($) | | | |
| Sales Revenues | $ 99,642,490 | $ 98,081,438 | $ 99,513,156 |
| Power Supply | 74,928,897 | 72,695,602 | 69,616,076 |
| Net Revenue Margin | $ 24,713,593 | $ 25,385,836 | $ 29,897,080 |
| Net Revenue Ratio | 75.2% | 74.1% | 70.0% |
| Unaccounted for Energy (kWh) | | | |
| Power Supply | 751,171,000 | 751,250,000 | 768,254,000 |
| Energy Sales | 719,949,379 | 708,530,322 | 734,102,972 |
| Unaccounted for Energy (Losses) | 31,221,621 | 42,719,678 | 34,151,028 |
| Percentage | 4.2% | 5.7% | 4.4% |

Table III-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 III-3 presents these comparisons for the Electric Division for FY 2009 through FY 2011. As shown, the percentage ratio of the unaccounted for energy to the total energy purchased for FY 2011 was 4.4 percent. This is down from 5.7 percent in FY 2010.

Table III-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 2009 through FY 2011. Net income was down slightly from FY 2010, totaling $3.2 million in FY 2011. Increased charges for electric service and reduced operating expenses equated to $2.9 million increase in net operating income

[2] 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 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.

for the year; however, operating transfers out resulted in an annual net income decrease. Annual operating transfers out totaled ($8.9) million, the highest total for the past ten years.

**Table III-4**

**COMPARATIVE STATEMENT OF REVENUES, EXPENSES, AND CHANGES IN UNRESERVED RETAINED EARNINGS**
**City of Dover Electric Division**

| | FY 2009 | FY 2010 | FY 2011 |
|---|---|---|---|
| Operating Revenues: | | | |
| Charges for Electric Service | $ 99,642,490 | $ 98,081,438 | $ 99,513,157 |
| Miscellaneous Services/Incomes | 1,778,492 | 2,197,036 | 2,389,462 |
| Total Operating Revenues | $ 101,420,982 | $ 100,278,474 | $ 101,902,619 |
| Operating Expenses: | | | |
| General Administration | $ 4,084,382 | $ 5,529,887 | $ 5,298,869 |
| Power Supply | 74,928,897 | 72,695,602 | 69,616,076 |
| Transmission/Distribution | 4,032,931 | 3,146,123 | 3,083,714 |
| Engineering | 2,393,416 | 1,465,740 | 1,722,244 |
| Metering | 285,118 | 301,416 | 204,352 |
| System Operations | 559,743 | 496,195 | 486,894 |
| Utility Tax | 1,738,059 | 1,922,645 | 1,944,543 |
| Depreciation | 3,898,475 | 4,106,802 | 4,710,658 |
| Retiree Health Care | 1,830,903 | 531,843 | 1,839,110 |
| Total Operating Expenses | $ 93,751,924 | $ 90,196,253 | $ 88,906,460 |
| Net Operating Income | $ 7,669,058 | $ 10,082,221 | $ 12,996,159 |
| Non-operating Revenues (Expenses) | | | |
| Interest Earned | | | |
| Operating Fund | $ 141,310 | $ 37,849 | $ 832,145 |
| Reserved Funds | 1,041,655 | 865,878 | 511,922 |
| Net Increase in Fair Value of Investments | 239,624 | (168,775) | (861,216) |
| Interest and Fiscal Charges | (726,448) | (648,581) | (1,385,035) |
| Bond Discount Amortized | (113,206) | (113,206) | (21,579) |
| Gain/(Loss) on Sale of Assets | 115,638 | 17,984 | 16,830 |
| Total Non-operating Revenues(Expenses) | $ 698,573 | $ (8,851) | $ (906,933) |
| Net Income Before Operating Transfers | $ 8,367,631 | $ 10,073,370 | $ 12,089,226 |
| Operating Transfers - In | 1,332,350 | - | - |
| Operating Transfers - Out | (6,758,100) | (6,758,100) | (8,856,000) |
| Total Net Operating Transfers | $ (5,425,750) | $ (6,758,100) | $ (8,856,000) |
| Net Income | $ 2,941,881 | $ 3,315,270 | $ 3,233,226 |

## 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 III-4 was adjusted to include the interest on bonds, depreciation expense, and other non-cash income and expenses. Table III-5 presents the adjustments to net income and the determination of the revenues available for debt service for FY 2009 though FY 2011.

**Table III-5**

**DEBT SERVICE COVERAGE CALCULATION**
**City of Dover Electric Division**

| | FY 2009 | FY 2010 | FY 2011 |
|---|---|---|---|
| Net Income | $ 2,941,881 | $ 3,315,270 | $ 3,233,226 |
| Plus Excluded Expenses: | | | |
| Operating Transfers - In | $ (1,332,350) | $ - | $ - |
| Operating Transfers - Out | 6,758,100 | 6,758,100 | 8,856,000 |
| Depreciation | 3,898,475 | 4,106,802 | 4,710,658 |
| Interest and Fiscal Charges | 726,448 | 648,581 | 1,385,035 |
| Bond Discount Amortized | 113,206 | 113,206 | 21,579 |
| Gain/(Loss) on Sale of Assets | (115,638) | (17,984) | (16,830) |
| Less Excluded Income: | | | |
| Net Increase in Fair Value of Investments | (239,624) | 168,775 | 861,216 |
| Interest Earned - Reserve Funds | (1,041,655) | (865,878) | (511,922) |
| Revenues Available for Debt Service | $ 11,708,843 | $ 14,226,872 | $ 18,538,962 |
| Maximum Principal and Interest in Any Year | $ 4,058,700 | $ 3,347,479 | $ 3,401,954 |
| Debt Service Coverage | 2.88 | 4.25 | 5.45 |
| Minimum Required Debt Service Ratio | 1.25 | 1.25 | 1.25 |

As Table III-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 III-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 III-5 is based on the total maximum debt service expense in any fiscal year. The FY 2011 calculation was based on the total FY 2016 debt service expense of $3,401,954.

## STATUS OF REVENUE BONDS

At the end of FY 2011, the City had two series of outstanding electric revenue bonds that were issued pursuant to the Resolution. The 2004 Electric Revenue Bonds (2004 Bonds) were issued in 2004, in the amount of $22,535,000. These bonds were issued to refund the 1990 and 1993 bonds. 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 will be 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 III-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 $30,280,000.

**Table III-6**

**DEBT SERVICE SCHEDULE OF ELECTRIC REVENUE BONDS**
**City of Dover Electric Division**

| | 2008 Electric Revenue Bonds | | | 2010 Electric Revenue Refunding Bonds | | | Total Annual |
|---|---|---|---|---|---|---|---|
| Period | Principal | Interest | Debt Service | Principal | Interest | Debt Service | Debt Service |
| FY 2012 | $ 390,000 | $ 1,028,404 | $ 1,418,404 | $1,670,000 | $ 178,267 | $ 1,848,267 | $ 3,266,671 |
| FY 2013 | 410,000 | 1,006,954 | 1,416,954 | 1,700,000 | 253,100 | 1,953,100 | 3,370,054 |
| FY 2014 | 430,000 | 986,454 | 1,416,454 | 1,740,000 | 219,100 | 1,959,100 | 3,375,554 |
| FY 2015 | 450,000 | 964,954 | 1,414,954 | 1,810,000 | 166,900 | 1,976,900 | 3,391,854 |
| FY 2016 | 475,000 | 942,454 | 1,417,454 | 1,890,000 | 94,500 | 1,984,500 | 3,401,954 |
| FY 2017 | 695,000 | 918,704 | 1,613,704 | - | - | - | 1,613,704 |
| FY 2018 | 730,000 | 883,954 | 1,613,954 | - | - | - | 1,613,954 |
| FY 2019 | 765,000 | 847,454 | 1,612,454 | - | - | - | 1,612,454 |
| FY 2020 | 800,000 | 815,706 | 1,615,706 | - | - | - | 1,615,706 |
| FY21-34 | 16,325,000 | 6,618,185 | 22,943,185 | - | - | - | 22,943,185 |
| Total | $21,470,000 | $15,013,223 | $36,483,223 | $8,810,000 | $ 911,867 | $ 9,721,867 | $46,205,090 |

## 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."*

Tables III-7 and III-8 summarize itemized insurance coverage procured by the City for the period July 1, 2011, through June 30, 2012. 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.

## 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 ensure that moneys are available for specific purposes when they are needed. The accounts maintained within the Revenue and I&E Funds are listed herein.

<u>Electric Revenue Fund</u>

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

<u>Electric Improvement & Extension Fund</u>

- Depreciation Reserve Account
- Future Capacity Reserve Account

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

**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.

**Insurance Reserve Account:** The Insurance Reserve Account was established by the City to provide for the funding of 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 2011 was $403,334.

**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 2011 year-end balance was $1,056,788, which is equal to 1.04 percent of the FY 2011 revenues for the Electric Revenue Fund.

**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 purchase power cost in any given year. Any excess of this amount will be refunded to customers by reducing the rate of the power cost adjustment. The account's FY 2011 end-of-year balance was $6,160,167, which was 9.8 percent of the FY 2011 purchased power cost.

**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 2004 and 2008 bonds as of June 30, 2010, was $3,519,382.

**Electric Improvement and Extension Fund:** The I&E Fund was established in Section 507 of the Resolution. Funds are added 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, the Insurance Reserve Account, and from the State of Delaware. 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.

**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 2011 was $10,412,221.

**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 original target balance for this reserve was $5,000,000. The reserve balance at the end of FY 2011 was $9,178,771.

Table III-9 presents FY 2009 through FY 2011 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 III-7**

**SCHEDULE OF INSURANCE COVERAGE IN EFFECT**
**City of Dover Electric Division**

| **Starr Technical Risks Agency** | July 1, 2011 - June 30, 2012 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 |
| Professional Fees; | 250,000 |
| Incidental Course of Construction; | 5,000,000 |
| Miscellaneous Unnamed Locations (except perils of Flood, Earth Movement and | 500,000 |
| Valuable Papers and Records; | 100,000 |

**Deductibles**

For each Occurrence giving rise to a claim under this policy, the Insured agrees to retain for its own account an initial amount of:

In respect of Damage to Insured Property:
$350,000 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.

**Table III-8**

**SCHEDULE OF INSURANCE COVERAGE IN EFFECT**
**City of Dover Electric Division**

| **XL Insurance** | July 1, 2011 - June 30, 2012 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**

For each Occurrence giving rise to a claim under this policy, the Insured agrees to retain for its own account an initial amount of:

In respect of Damage to Insured Property:
$350,000, Per Occurrence, except;
$100,000, per Occurrence as respect Transit;

In respect of Time Element loss (Extra Expe
45 days per Occurrence except;
72 hours Per Occurrence in respect of Service Interruption

**Table III-9**

**RESERVE ACCOUNT ACTIVITY AND BALANCES**
**City of Dover, Delaware**

| | Insurance Reserve Account | Contingency Reserve Account | Electric Rate Stabilization Account | Bond Reserve Account | Depreciation Reserve Account | Future Capacity Account |
|---|---|---|---|---|---|---|
| **Year Ended June 30, 2009** | | | | | | |
| Balance in Account on July 1 | $ 370,802 | $ 894,169 | $ 2,471,465 | $ 3,257,091 | $ 4,451,663 | $ 8,457,351 |
| Receipts | | | | | | |
| Interest Earned | 14,300 | 34,484 | 95,314 | 252,718 | 338,327 | 306,512 |
| Appropriations | - | - | 2,085,748 | 4,041,632 | 5,000,000 | - |
| Total Funds Available | $ 385,102 | $ 928,653 | $ 4,652,527 | $ 7,551,441 | $ 9,789,990 | $ 8,763,863 |
| Disbursements | | | | | | |
| Debt Service Payments | - | - | - | (6,046,632) | - | - |
| Transfer to Capital Projects | - | - | - | - | (2,000,000) | - |
| Balance in Account on June 30 | $ 385,102 | $ 928,653 | $ 4,652,527 | $ 1,504,809 | $ 7,789,990 | $ 8,763,863 |
| **Year Ended June 30, 2010** | | | | | | |
| Balance in Account on July 1 | $ 385,102 | $ 928,653 | $ 4,652,527 | $ 1,504,809 | $ 7,789,990 | $ 8,763,863 |
| Receipts | | | | | | |
| Interest Earned | 11,428 | 27,613 | 123,992 | 211,615 | 231,165 | 260,065 |
| Appropriations | - | 83,500 | - | 4,066,610 | - | - |
| Total Funds Available | $ 396,530 | $ 1,039,766 | $ 4,776,519 | $ 5,783,034 | $ 8,021,155 | $ 9,023,928 |
| Disbursements | | | | | | |
| Debt Service Payments | - | - | - | (2,445,212) | - | - |
| Transfer to Capital Projects | - | - | - | - | - | - |
| Balance in Account on June 30 | $ 396,530 | $ 1,039,766 | $ 4,776,519 | $ 3,337,822 | $ 8,021,155 | $ 9,023,928 |
| **Year Ended June 30, 2011** | | | | | | |
| Balance in Account on July 1 | $ 396,530 | $ 1,039,766 | $ 4,776,519 | $ 3,337,822 | $ 8,021,155 | $ 9,023,928 |
| Receipts | | | | | | |
| Interest Earned | 6,804 | 17,022 | 83,648 | 108,706 | 141,066 | 154,843 |
| Appropriations | - | - | 1,300,000 | 3,588,881 | 2,250,000 | - |
| Total Funds Available | $ 403,334 | $ 1,056,788 | $ 6,160,167 | $ 7,035,409 | $ 10,412,221 | $ 9,178,771 |
| Disbursements | | | | | | |
| Debt Service Payments | - | - | - | (3,516,027) | - | - |
| Transfer to Capital Projects | - | - | - | - | - | - |
| Balance in Account on June 30 | $ 403,334 | $ 1,056,788 | $ 6,160,167 | $ 3,519,382 | $ 10,412,221 | $ 9,178,771 |

* * * * *

# PART IV – CONCLUSIONS

# PART IV
# 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 2011 expenditures and FY 2012 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 2012 Operating Budget are necessary and should provide improved reliability and power quality for the Electric System.
4. The balances as of June 30, 2011 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.

* * * * *

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City of Dover, Delaware

*Fiscal 2013 DRAFT Capital Investment Plan*

FY 13 thru FY 17

# PROJECTS BY DEPARTMENT

| Department | Project# | Priority | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|---|---|
| **Electric Engineering** | | | | | | | | |
| Distribution Upgrades | *EE1200* | 1 | 400,000 | 400,000 | 400,000 | 400,000 | 400,000 | *2,000,000* |
| Lighting Project and Rehabilitation | *EE1202* | 4 | 100,000 | 50,000 | 50,000 | 50,000 | 50,000 | *300,000* |
| Frazier Substation Reliability Upgrade | *EE1205* | 9 | 610,247 | | | | | *610,247* |
| Distribution Feeder Replacement Program | *EE1206* | 8 | 277,510 | 277,510 | 120,510 | 277,510 | 277,510 | *1,230,550* |
| Distribution Capacitors and Controls | *EE1207* | 10 | 125,000 | 60,000 | 50,000 | 50,000 | 50,000 | *335,000* |
| Transmission Line Maintenance Program | *EE1208* | 7 | 75,000 | 75,000 | 75,000 | 75,000 | 75,000 | *375,000* |
| SCADA Master Hardware Replacement | *EE1209* | 6 | | | | | 75,000 | *75,000* |
| 69 kV Substation Switch Replacement | *EE1301* | n/a | 55,000 | 80,000 | | | | *135,000* |
| Horsepond Substation Reliability Upgrade | *EE1302* | n/a | 170,000 | 591,812 | | | | *761,812* |
| Division Street Substation Fence | *EE1304* | n/a | 70,000 | | | | | *70,000* |
| General Scott Switchgear | *EE1400* | n/a | 50,000 | 800,000 | 300,000 | | | *1,150,000* |
| Horsepond to Cartanza 69 kV Rebuild | *EE1500* | n/a | | | 330,467 | | | *330,467* |
| 69 kV Cable Replacement North Street | *EE1502* | n/a | | | 85,000 | 480,710 | | *565,710* |
| System Operations Monitoring | *EE1503* | n/a | | | 30,000 | | | *30,000* |
| McKee Run Yard Rebuild | *EE1600* | n/a | | | | 450,000 | 700,000 | *1,150,000* |
| **Electric Engineering Total** | | | **1,932,757** | **2,334,322** | **1,440,977** | **1,783,220** | **1,627,510** | ***9,118,786*** |
| **Electric T & D** | | | | | | | | |
| New Developments | *EE1212* | 1 | 450,000 | 450,000 | 450,000 | 450,000 | 450,000 | *2,250,000* |
| **Electric T & D Total** | | | **450,000** | **450,000** | **450,000** | **450,000** | **450,000** | ***2,250,000*** |
| **Power Plant** | | | | | | | | |
| Units 1 & 2 Cooling Tower Repairs | *EG1102* | 8 | 37,260 | | | | | *37,260* |
| McKee Run Unit 3 Boiler Systems | *EG1202* | 2 | 129,000 | | 144,000 | | 344,000 | *617,000* |
| McKee Run Unit 3 Auxillary System Components | *EG1203* | 4 | 55,000 | 188,500 | 45,000 | 6,000 | 34,000 | *328,500* |
| Van Sant Unit 11 Component Replacements | *EG1207* | 4 | | 75,000 | 75,000 | 143,000 | 78,000 | *371,000* |
| McKee Run & VanSant Preservation of Structures | *EG1209* | n/a | | 42,000 | | 165,000 | 142,000 | *349,000* |
| McKee Run Unit 3 Turbine Repairs | *EG1212* | 1 | 115,000 | 1,031,000 | | | 10,000 | *1,156,000* |
| McKee Run Units 1 & 2 Component Repairs | *EG1304* | 4 | 52,000 | 100,000 | 44,000 | 172,000 | 234,000 | *602,000* |
| McKee Run Turbine Level Window Modification | *EG1306* | 6 | 85,000 | | | | | *85,000* |
| McKee Run Unit 3 Air Heater Expansion Joint | *EG1307* | 7 | 80,000 | | | | | *80,000* |
| McKee Run Unit 3 Stack Repairs | *EG1309* | 9 | 27,000 | 50,000 | | | | *77,000* |
| McKee Run Units 1 & 2 Stack Repairs | *EG1310* | 10 | 75,000 | | | | | *75,000* |
| Van Sant Capacity Increase | *EG1311* | n/a | 550,000 | | | | | *550,000* |
| McKee Run Unit 3 Generator Repairs | *EG1312* | 1 | 236,000 | | | | | *236,000* |
| Units 1 & 2 Boiler Repairs | *EG1401* | 2 | | 18,000 | 20,000 | 29,000 | | *67,000* |
| Unit 3 Cooling Tower Repairs | *EG1402* | 1 | | | 571,000 | 52,000 | 138,000 | *761,000* |
| Unit 3 Cooling Water Line Repairs | *EG1403* | n/a | | 240,000 | | | | *240,000* |
| McKee Run High Energy Piping Repairs | *EG1406* | 1 | | 80,000 | | | | *80,000* |
| Metering System Upgrades | *EG1407* | 6 | | 25,000 | 125,000 | | | *150,000* |
| McKee Run Building Equipment Replacement | *EG1601* | n/a | | | | 110,000 | 50,000 | *160,000* |
| Van Sant Unit 11 Major Overhaul/Inspection | *EG1701* | 3 | | | | | 900,000 | *900,000* |

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| Department | Project# | Priority | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|---|---|
| **Power Plant Total** | | | 1,441,260 | 1,849,500 | 1,024,000 | 677,000 | 1,930,000 | *6,921,760* |
| **GRAND TOTAL** | | | 3,824,017 | 4,633,822 | 2,914,977 | 2,910,220 | 4,007,510 | *18,290,546* |

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City of Dover, Delaware

*Fiscal 2013 DRAFT Capital Investment Plan*

**FY 13** thru **FY 17**

# FUNDING SOURCE SUMMARY

| Source | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|
| Electric Bond | 236,000 | | | | | *236,000* |
| Electric I & E Fund | 3,038,017 | 4,633,822 | 2,914,977 | 2,910,220 | 4,007,510 | *17,504,546* |
| Future Capacity Reserve Fund | 550,000 | | | | | *550,000* |
| **GRAND TOTAL** | **3,824,017** | **4,633,822** | **2,914,977** | **2,910,220** | **4,007,510** | ***18,290,546*** |

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# Fiscal 2013 DRAFT Capital Investment Pla FY 13 *thru* FY 17

## City of Dover, Delaware

**Project #** EE1200
**Project Name** Distribution Upgrades



**Type** Improvement
**Useful Life** 20-25 years
**Category** Electric
**New Project:** No
**Time-Line:**

**Department** Electric Engineering
**Contact** Electric Director
**Priority** 1
**Account Number:** 487-8300-563.90-25

### Description

**Total Project Cost:** **$4,554,000**

This project involves the systemic replacement of overhead lines with underground lines whenever services are being moved, wire is damaged, trees cause a high number of outages, or development is in progress, and when it is beneficial to the Utility to convert to underground. This can involve a single line section or an entire residential neighborhood. Annual outage records are reviewed and selected areas are scheduled for upgrade to underground service. Additionally, this program funds the replacement of existing underground conductors and equipment that have reached their useful life and have started failing and require replacement.

This account is used to upgrade any trouble areas during the year. The following developments are to be upgraded in FY2013: Capitol Park, Dover East, and Morris Estates II.

### Justification

The number of storm and tree-related outages have been greatly reduced under this program and further improvements can be made to insure the most reliable electric service possible. Reliability has become one of most important factors to electric customers, second only to safety. The utility has responded by attempting to provide the most reliable system possible. Underground cable replacements are necessary as the useful, reliable, life of the original underground cable was 20-30 years. By proactively replacing this cable we will minimize outages and improve system reliability. In addition to cable replacement, overhead lines are replaced with underground to minimize outages caused by tree growth or animal contact. Lastly, overhead lines that have reached the end of their useful life are replaced with underground instead of rebuilding the overhead.

CONSEQUENCES OF DELAYING OR ELIMINATING THIS PROJECT: Continued outages lead to increased complaints from our customers and will lead to customer dissatisfaction. There will be increased costs for repairs made under outage conditions as well as loss of electric revenue.

| Expenditures | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|
| Construction/Maintenance | 400,000 | 400,000 | 400,000 | 400,000 | 400,000 | 2,000,000 |
| **Total** | **400,000** | **400,000** | **400,000** | **400,000** | **400,000** | **2,000,000** |

| Funding Sources | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|
| Electric I & E Fund | 400,000 | 400,000 | 400,000 | 400,000 | 400,000 | 2,000,000 |
| **Total** | **400,000** | **400,000** | **400,000** | **400,000** | **400,000** | **2,000,000** |

### Budget Impact/Other

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# Fiscal 2013 DRAFT Capital Investment Pla FY 13 *thru* FY 17

## City of Dover, Delaware

**Project #** EE1202
**Project Name** Lighting Project and Rehabilitation



| | | | |
|---|---|---|---|
| **Type** | Maintenance | **Department** | Electric Engineering |
| **Useful Life** | 10-12 years | **Contact** | Electric Director |
| **Category** | Electric | **Priority** | 4 |
| **New Project:** | No | **Account Number:** | 487-8300-563.50-76 |
| **Time-Line:** | | | |

### Description

**Total Project Cost:** **$750,000**

This fund was developed to replace and repair existing street lights or install new lights upon customer request.

COMMENTS: This fund will remain active as long as there are improvements to be made. Private area lighting requests are a source of revenue for the City. Areas completed are White Oak Apartments, Westfield, Fairview, Cranberry Run, Millcreek, Independence Village and Governors Avenue (South 100 Block), Deerfield, Central Middle School, Fox Hall, Hidden Oaks, a portion of North Governors Ave, The Meadows, Turnberry, Baltray, and Bicentennial. Areas to be completed this budget year include Old Mill Acres, Overlook, Fox Hall West, and Woodcrest. $50,000 was added to FY2013 to include lights on the north bound side of Route 13.

### Justification

The Electric Division receives numerous requests for lighting improvements. These requests are due to the lights aging, and as they age they put out less light and become unreliable. There are many developments that are in need of street light improvements. This fund would also provide funding for new private security light requests.

ONSEQUENCES OF DELAYING OR ELIMINATING THIS PROJECT: Constant complaints of poor street lighting and multiple failures due to antiquated lights.

| Prior | Expenditures | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|---|
| 450,000 | Construction/Maintenance | 100,000 | 50,000 | 50,000 | 50,000 | 50,000 | 300,000 |
| **Total** | **Total** | **100,000** | **50,000** | **50,000** | **50,000** | **50,000** | **300,000** |

| Prior | Funding Sources | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|---|
| 450,000 | Electric I & E Fund | 100,000 | 50,000 | 50,000 | 50,000 | 50,000 | 300,000 |
| **Total** | **Total** | **100,000** | **50,000** | **50,000** | **50,000** | **50,000** | **300,000** |

### Budget Impact/Other

DRAFT

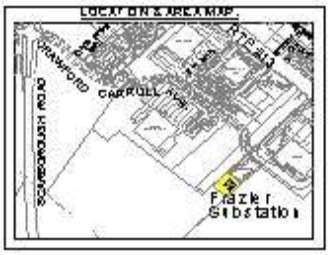
# Fiscal 2013 DRAFT Capital Investment Pla

**FY 13** *thru* **FY 17**

## City of Dover, Delaware

**Project #** **EE1205**

**Project Name** **Frazier Substation Reliability Upgrade**




| | | | |
|---|---|---|---|
| **Type** | Improvement | **Department** | Electric Engineering |
| **Useful Life** | 20-25 years | **Contact** | Electric Director |
| **Category** | Electric | **Priority** | 9 -- |
| **New Project:** | No | **Account Number:** | 487-8300-563.70-27 |
| **Time-Line:** | | | |

### Description

**Total Project Cost:** **$765,247**

The high side of the substation will be upgraded to include transmission line protection breakers as well as the transformer breaker.

TIME-LINE/CURRENT STATUS: The design began in July 2011; materials will be ordered in July 2012 and construction to be completed by February 2013.

COMMENTS: The completion date is dependent on material lead times, such as steel. Winter weather could also be a factor, if the above lead times cause a late fall start.

### Justification

When the transmission line experiences a fault this substation loses power until the short circuit is found and the appropriate switching is accomplished. With the installation of the two new line breakers the faulted transmission line will be isolated from the substation and the customers will not experience an interruption of service.

CONSEQUENCES OF DELAYING OR ELIMINATING THIS PROJECT: Accepting the outages in the northwest section of the system during transmission line faults.

| Prior | Expenditures | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|---|
| 155,000 | Construction/Maintenance | 610,247 | | | | | 610,247 |
| **Total** | **Total** | **610,247** | | | | | **610,247** |

| Prior | Funding Sources | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|---|
| 155,000 | Electric I & E Fund | 610,247 | | | | | 610,247 |
| **Total** | **Total** | **610,247** | | | | | **610,247** |

### Budget Impact/Other

DRAFT

# Fiscal 2013 DRAFT Capital Investment Pla

**FY 13** *thru* **FY 17**

## City of Dover, Delaware

**Project #** **EE1206**

**Project Name** **Distribution Feeder Replacement Program**



**Type** Improvement
**Useful Life** 20-25 years
**Category** Electric
**New Project:** No
**Time-Line:**

**Department** Electric Engineering
**Contact** Electric Director
**Priority** 8 --
**Account Number:** 487-8300-563.90-25

### Description

**Total Project Cost:** **$1,608,060**

Substation feeders are defined as the three-phase lines that carry the load from the substations to the customers' neighborhood. They interconnect to other substations to provide load redundancy should there be a failure of an adjacent substation. Many of the older substation feeders have smaller conductors that cannot carry the load that is required during system peaks and emergency situations. This project would systematically upgrade these conductors to increase the capacity of the feeders as well as ultimately reducing system losses. Lastly, many of the feeder components have reached the end of their useful life and require substantial maintenance.

COMMENTS: The average cost to run one mile of underground equates to $135,400 per mile; the average cost to run one mile of overhead equates to $21,342. It is the departments' goal to run two miles of underground and five miles of overhead per year. The project began by increasing the capacity from College Road Substation to General Scott Substation. Feeders to be upgraded in FY13 include sections of Route 9 and Persimmon Tree Road.

### Justification

These lines are typically older, smaller, and are reaching the end of their life. This program will provide the needed systematic maintenance to the conductors, cross arms, switches, insulators, and related components as well as increasing system capacity hence resulting in more efficient operations by reducing line losses.

CONSEQUENCES OF DELAYING OR ELIMINATING THIS PROJECT: Due to the age and condition of the current feeders, delaying this systematic maintenance/upgrade program will result in reduced system utilization as well as detrimentally impacting future reliability.

| Prior | Expenditures | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|---|
| 377,510 | Construction/Maintenance | 277,510 | 277,510 | 120,510 | 277,510 | 277,510 | 1,230,550 |
| **Total** | **Total** | **277,510** | **277,510** | **120,510** | **277,510** | **277,510** | **1,230,550** |

| Prior | Funding Sources | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|---|
| 377,510 | Electric I & E Fund | 277,510 | 277,510 | 120,510 | 277,510 | 277,510 | 1,230,550 |
| **Total** | **Total** | **277,510** | **277,510** | **120,510** | **277,510** | **277,510** | **1,230,550** |

### Budget Impact/Other

DRAFT

# Fiscal 2013 DRAFT Capital Investment Pla

**FY 13** *thru* **FY 17**

## City of Dover, Delaware

**Project #** EE1207

**Project Name** Distribution Capacitors and Controls



| | | | |
|---|---|---|---|
| **Type** | Improvement | **Department** | Electric Engineering |
| **Useful Life** | 15-20 years | **Contact** | Electric Director |
| **Category** | Electric | **Priority** | 10 -- |
| **New Project:** | No | **Account Number:** | 480-8300-563.60-82 |
| **Time-Line:** | | | |

### Description

**Total Project Cost:** **$899,995**

Install distribution capacitors throughout the system to correct poor power factor on distribution circuits. Install capacitor controllers capable of two-way communication to provide real-time monitoring and remote control operation. These controllers will be capable of switching the capacitors on and off to comply with system requirements. This project will also replace outdated substation equipment, capable of advanced metering such as power factor and harmonics to further analyze system performance remotely. Lastly, distribution line recorders will be purchased and installed to provide power factor recordings to fine tune this operation.

COMMENTS: The required substation equipment installation will be completed in two phases. FY2013 will upgrade the required communication equipment installed 20 years ago. FY2014 will install equipment capable of extracting system data, for enhanced performance analyzing. The completion of these two phases will ultimately reduce engineering time and costs because of remote access to all substations. In addition to this advanced metering, event report extraction and analysis, relay settings review and installation, and advancements to our 24 hour system operation center will be also be realized. FY2015 -FY2017 will be the addition of capacitor banks and controllers into the distribution system.

### Justification

Additional capacitance is required in order to meet system power factor requirements at the Delmarva Power and Light interchange point. This was substantiated through a load-flow study conducted by Shaw in early 2004 and distribution study by Wilson & Wilson in 2006. The current capacitor controls are not providing the granularity required to turn them off and on as required to meet both the power quality requirements of our customers and DP&L requirements. Additional controls are required to fine tune the systems operation.

CONSEQUENCES OF DELAYING OR ELIMINATING THIS PROJECT: Without the additional capacitor banks and more importantly controls, the City may experience a low/high voltage problem at the customer level and/or the possibility of having to pay power factor penalties to Delmarva Power and Light.

| Prior | Expenditures | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|---|
| 564,995 | Construction/Maintenance | 125,000 | 60,000 | 50,000 | 50,000 | 50,000 | 335,000 |
| **Total** | **Total** | **125,000** | **60,000** | **50,000** | **50,000** | **50,000** | **335,000** |

| Prior | Funding Sources | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|---|
| 564,995 | Electric I & E Fund | 125,000 | 60,000 | 50,000 | 50,000 | 50,000 | 335,000 |
| **Total** | **Total** | **125,000** | **60,000** | **50,000** | **50,000** | **50,000** | **335,000** |

### Budget Impact/Other

DRAFT

# Fiscal 2013 DRAFT Capital Investment Pla FY 13 *thru* FY 17

## City of Dover, Delaware

**Project #** EE1208

**Project Name** Transmission Line Maintenance Program



**Type** Maintenance
**Useful Life** 20-25 years
**Category** Electric
**New Project:** No
**Time-Line:**

**Department** Electric Engineering
**Contact** Electric Director
**Priority** 7 --
**Account Number:** 487-8300-563.70-35

### Description

**Total Project Cost:** **$450,000**

Replace aging porcelain insulators and related components on the transmission system with new polymer insulators and components.

COMMENTS: 69kV transmission line segments Horsepond Road to Lafferty Lane and the NRG leased line (from North Street substation to DP&L's Kent substation) are scheduled for FY13.

### Justification

Insulators have a defined equipment life due to sun and weather conditions breaking down the porcelain and base bonding cement. Insulators installed in 1960's and 1970's are due for replacement because of this deterioration. We have experienced several transmission outages due to insulator failure. Replacing the insulators should extend the life an additional 30 years.

CONSEQUENCES OF DELAYING OR ELIMINATING THIS PROJECT: Outages may occur if insulators are not replaced and fail due to deterioration.

| Prior | Expenditures | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|---|
| 75,000 | Construction/Maintenance | 75,000 | 75,000 | 75,000 | 75,000 | 75,000 | 375,000 |
| **Total** | **Total** | **75,000** | **75,000** | **75,000** | **75,000** | **75,000** | **375,000** |

| Prior | Funding Sources | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|---|
| 75,000 | Electric I & E Fund | 75,000 | 75,000 | 75,000 | 75,000 | 75,000 | 375,000 |
| **Total** | **Total** | **75,000** | **75,000** | **75,000** | **75,000** | **75,000** | **375,000** |

### Budget Impact/Other

DRAFT

# Fiscal 2013 DRAFT Capital Investment Pla FY 13 *thru* FY 17

## City of Dover, Delaware

**Project #** EE1209
**Project Name** SCADA Master Hardware Replacement



**Type** Improvement
**Useful Life** 5 years
**Category** Electric
**New Project:** Yes
**Time-Line:**

**Department** Electric Engineering
**Contact** Electric Director
**Priority** 6 --
**Account Number:** 487-8300-563.80-38

### Description

**Total Project Cost:** **$75,000**

This project will replace the Master Station hardware. The Master Station receives all the analog data, alarms and control for all electrical substations and wastewater lift stations. The Master Station in comprised of Dual Host Servers, Dual Operator consoles, paging system, web server, 2-Firewalls for DMZ and One remote access/support firewall.

TIME-LINE/CURRENT STATUS: Equipment will be ordered and replaced during the FY 17 budget year.

### Justification

The equipment will reach the end of its expected life. It should be noted that this computer system operates 24/7. The additional firewalls are required to meet required NERC CIP Cyber Security Standards.

CONSEQUENCES OF DELAYING OR ELIMINATING THIS PROJECT: If the system fails we will not be able to monitor or control electrical substations and we will not be able to view alarms for wastewater lift stations. This failure could result in electrical outages or wastewater overflows.

| Expenditures | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|
| Construction/Maintenance | | | | | 75,000 | 75,000 |
| **Total** | | | | | **75,000** | **75,000** |

| Funding Sources | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|
| Electric I & E Fund | | | | | 75,000 | 75,000 |
| **Total** | | | | | **75,000** | **75,000** |

### Budget Impact/Other

DRAFT

# Fiscal 2013 DRAFT Capital Investment Pla FY 13 *thru* FY 17

## City of Dover, Delaware

**Project #** EE1301
**Project Name** 69 kV Substation Switch Replacement



**Type** Improvement
**Useful Life** 20-25 years
**Category** Electric
**New Project:** No
**Time-Line:**

**Department** Electric Engineering
**Contact** Electric Director
**Priority** n/a
**Account Number:** 487-8300-563.70-35

### Description

**Total Project Cost:** **$135,000**

This project will be replacing obsolete 69kV switches in the substation/transmission system.

COMMENTS: The substations to be completed in FY13 are Danner and Lebanon and FY2014 is the Dover Air Force Base.

### Justification

The new switches will be gang operated switches which provide more system stability when operated and more importantly increase operator safety. The switches to be replaced have reached the life expectancy and the utility has started to experience several switch failures each year over the past few years due to component fatigue.

CONSEQUENCES OF DELAYING OR ELIMINATING THIS PROJECT: The majority of the switches in the older substations are showing signs of fatigue resulting in difficult operation (failure to open or close when required), frequent maintenance, and component obsolescence. Delaying this program will result in continued switch failure possibly resulting in wide-spread power outages.

| Expenditures | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|
| Construction/Maintenance | 55,000 | 80,000 | | | | 135,000 |
| **Total** | **55,000** | **80,000** | | | | **135,000** |

| Funding Sources | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|
| Electric I & E Fund | 55,000 | 80,000 | | | | 135,000 |
| **Total** | **55,000** | **80,000** | | | | **135,000** |

### Budget Impact/Other

DRAFT

# Fiscal 2013 DRAFT Capital Investment Pla FY 13 *thru* FY 17

## City of Dover, Delaware

**Project #** EE1302
**Project Name** Horsepond Substation Reliability Upgrade




**Type** Improvement
**Useful Life** 20-25 years
**Category** Electric
**New Project:** No
**Time-Line:**

**Department** Electric Engineering
**Contact** Electric Director
**Priority** n/a
**Account Number:** 487-8300-563.70-27

### Description

**Total Project Cost:** **$761,812**

The high-side of the substation will be upgraded to include two transmission line protection breakers.

The design and long lead time materials will be completed in FY 2013 and the majority of the materials will be purchased and construction completed in FY 2014.

### Justification

When the transmission line experiences a fault this substation loses power until the short circuit is found and the appropriate switching is accomplished. With the installation of the line breakers the faulted transmission line will be isolated from the substation and the customers will not experience an interruption of service.

CONSEQUENCES OF DELAYING OR ELIMINATING THIS PROJECT: Accepting the outages in the southeast section of the system during transmission line faults.

| Expenditures | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|
| Planning/Design | 70,000 | 60,000 | | | | 130,000 |
| Construction/Maintenance | 100,000 | 531,812 | | | | 631,812 |
| **Total** | **170,000** | **591,812** | | | | **761,812** |

| Funding Sources | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|
| Electric I & E Fund | 170,000 | 591,812 | | | | 761,812 |
| **Total** | **170,000** | **591,812** | | | | **761,812** |

### Budget Impact/Other

DRAFT

# Fiscal 2013 DRAFT Capital Investment Pla FY 13 *thru* FY 17

## City of Dover, Delaware

**Project #** EE1304
**Project Name** Division Street Substation Fence



**Type** Improvement
**Useful Life** 20-25 years
**Category** Electric
**New Project:** No
**Time-Line:**

**Department** Electric Engineering
**Contact** Electric Director
**Priority** n/a
**Account Number:** 487-8300-563.70-27

### Description

**Total Project Cost:** **$70,000**

Replace the existing fence at Division Street Substation.

TIME-LINE/CURRENT STATUS: FY 2013

COMMENTS: The existing fence does not meet the National Electric Safety Code (NESC) and is in poor condition. Division Street substation is located in a populated area with heavy foot traffic. As this structure continues to deteriorate, the safety concern steadily increases. Entrance into the substation by an unauthorized person, can be deadly!

### Justification

This project will replace the existing fence at Division Street Substation with a decorative fence, similar to the fence that was erected at St. Jones Substation.

CONSEQUENCES OF DELAYING OR ELIMINATING THIS PROJECT: Existing structure does not meet the National Electric Safety Code (NESC).

| Expenditures | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|
| Planning/Design | 70,000 | | | | | 70,000 |
| **Total** | **70,000** | | | | | **70,000** |

| Funding Sources | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|
| Electric I & E Fund | 70,000 | | | | | 70,000 |
| **Total** | **70,000** | | | | | **70,000** |

### Budget Impact/Other

DRAFT

# Fiscal 2013 DRAFT Capital Investment Pla FY 13 *thru* FY 17

## City of Dover, Delaware

**Project #** EE1400
**Project Name** General Scott Switchgear



**Type** Improvement
**Useful Life** 20-25 years
**Category** Electric
**New Project:** No
**Time-Line:**

**Department** Electric Engineering
**Contact** Electric Director
**Priority** n/a
**Account Number:**

### Description

**Total Project Cost:** **$1,150,000**

This project will replace the metal clad switchgear and replace the distribution breakers as they have reached the end of their useful life.

### Justification

This station carries the industrial and residential load on the west side of Dover. The station distribution switch gear was installed in 1985. Additionally, the breakers have numerous moving parts, including plastic components that tend to fail with age resulting in mis-operation of the breaker.

CONSEQUENCES OF DELAYING OR ELIMINATING THIS PROJECT: General Scott's switchgear is aging and replacing it will reduce the possibility of outages due to aged equipment failure. Additionally, another feeder will be added to the substation to provide a 12 kV feed to a large commercial customer. Due to the rate tariffs, this 12kV feed will increase revenue should it become the primary feed, which is currently in discussion.

TIME-LINE/CURRENT STATUS: Engineering will be completed in FY13. Construction of the new metal clad switchgear in FY14. Installation and commissioning completed in FY 2015.

| Expenditures | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|
| Planning/Design | 50,000 | | | | | 50,000 |
| Construction/Maintenance | | 800,000 | 300,000 | | | 1,100,000 |
| **Total** | **50,000** | **800,000** | **300,000** | | | **1,150,000** |

| Funding Sources | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|
| Electric I & E Fund | 50,000 | 800,000 | 300,000 | | | 1,150,000 |
| **Total** | **50,000** | **800,000** | **300,000** | | | **1,150,000** |

### Budget Impact/Other

DRAFT

# Fiscal 2013 DRAFT Capital Investment Pla FY 13 *thru* FY 17

## City of Dover, Delaware

**Project #** EE1500
**Project Name** Horsepond to Cartanza 69 kV Rebuild




**Type** Improvement
**Useful Life** 20-25 years
**Category** Electric
**New Project:** No
**Time-Line:**

**Department** Electric Engineering
**Contact** Electric Director
**Priority** n/a
**Account Number:** TBD

### Description

**Total Project Cost:** **$330,467**

Replace the poles, conductor, and insulators from Horsepond Substation to Long Point Road.

COMMENTS: Alternative pole materials will be explored to minimize future woodpecker damage to the new segment.

### Justification

Currently, the conductor size from Horsepond substation to Long Point Road limits the capacity that can be carried on Feeder 4. Upgrading the existing 636 ACSR to 795 ACSR will increase the capacity and result in a standard conductor size from Cartanza Substation to Horsepond Substation. Additionally the poles have nearly reached the life expectancy due to numerous problems with woodpecker destruction. The annual pole testing program has noted deficiencies in the above ground condition of this line segment.

CONSEQUENCES OF DELAYING OR ELIMINATING THIS PROJECT: Aging poles and hardware may fail causing outages in east Dover.

| Expenditures | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|
| Planning/Design | | | 75,000 | | | 75,000 |
| Construction/Maintenance | | | 255,467 | | | 255,467 |
| **Total** | | | **330,467** | | | **330,467** |

| Funding Sources | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|
| Electric I & E Fund | | | 330,467 | | | 330,467 |
| **Total** | | | **330,467** | | | **330,467** |

### Budget Impact/Other

DRAFT

# Fiscal 2013 DRAFT Capital Investment Pla FY 13 *thru* FY 17

## City of Dover, Delaware

**Project #** EE1502
**Project Name** 69 kV Cable Replacement North Street



**Type** Improvement
**Useful Life** 30+ years
**Category** Electric
**New Project:** No
**Time-Line:**

**Department** Electric Engineering
**Contact** Electric Director
**Priority** n/a
**Account Number:** TBD

### Description

**Total Project Cost:** **$565,710**

Replace the aging 69 KV underground cables from North Street switching yard to Kraft's and Proctor & Gamble's (customer owned) substations.

COMMENTS: Proactively replacing cables that have reached their anticipated life.

### Justification

Proctor & Gamble and Kraft are two (2) of the City of Dover's 69 KV customers and it is our obligation to provide them with adequate and reliable service. The cables were installed in 1973 and have had two repairs. The first repair was in 1986 and the second repair was in 1992.

CONSEQUENCES OF DELAYING OR ELIMINATING THIS PROJECT: Customer outages due to failing conductor. Additionally, the limited capacity of a single circuit could restrict the possible generation of NRG and the production of Proctor & Gamble and Kraft Foods.

| Expenditures | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|
| Planning/Design | | | 85,000 | | | 85,000 |
| Construction/Maintenance | | | | 480,710 | | 480,710 |
| **Total** | | | **85,000** | **480,710** | | **565,710** |

| Funding Sources | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|
| Electric I & E Fund | | | 85,000 | 480,710 | | 565,710 |
| **Total** | | | **85,000** | **480,710** | | **565,710** |

### Budget Impact/Other

DRAFT

# Fiscal 2013 DRAFT Capital Investment Pla FY 13 *thru* FY 17

## City of Dover, Delaware

**Project #** EE1503
**Project Name** System Operations Monitoring



**Type** Equipment
**Useful Life** 5 years
**Category** Electric
**New Project:** No
**Time-Line:**

**Department** Electric Engineering
**Contact** Electric Director
**Priority** n/a
**Account Number:**

### Description

**Total Project Cost:** **$30,000**

Replace the system operations monitoring screens.

### Justification

This project replaces the existing monitoring screens in system operations, with projection screens. City staff uses an array of these devices to view and operate the electric system and the lift stations. Additionally, the Public Utilities recently added 6 security cameras surrounding its facility and 2 security cameras at the interconnecting substation, which is our connection to the bulk electric system. These monitoring screens are also utilize in these security hardening measures.

| Expenditures | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|
| Equip/Vehicle/Furnishings | | | 30,000 | | | 30,000 |
| **Total** | | | **30,000** | | | **30,000** |

| Funding Sources | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|
| Electric I & E Fund | | | 30,000 | | | 30,000 |
| **Total** | | | **30,000** | | | **30,000** |

### Budget Impact/Other

DRAFT

# Fiscal 2013 DRAFT Capital Investment Pla FY 13 *thru* FY 17

## City of Dover, Delaware

**Project #** EE1504
**Project Name** College Road to McKee Substation Feeders

**Type** Unassigned
**Useful Life**
**Category** Electric
**New Project:** Yes
**Time-Line:**

**Department** Electric Engineering
**Contact**
**Priority** n/a
**Account Number:**

### Description

**Total Project Cost:** $307,000

PROJECT DESCRIPTION: This project will be constructed in conjunction with the water main upgrade planned for this section of Walker Road. The Electric Division will install conduit, cable and equipment, as the Water Division installs the new water main.

CONSEQUENCES OF DELAYING OR ELIMINATING THIS PROJECT: The aging pole line will require the replacement of overhead wire. Leaving the overhead line in service increases the chances of weather related damages. Additionally, if this project isn't constructed in conjunction with the water main upgrade, the cost of installation significantly increases.

TIME-LINE/CURRENT STATUS: Design will be completed in FY 2014. Material procurement and construction will be completed FY 2015.

COMMENTS: This project will be in conjunction with the water main project. Therefore, if the water main is delayed this project will also be delayed.

### Justification

NEED, JUSTIFICATION, BENEFIT: The installation of the new power lines will provide McKee Run power with improved reliability, because of the decreased exposure of the feeder to weather events.

THIS PROJECT IS RELATED TO THE FOLLOWING: Walker Road Water Main Upgrade (Water Division)

| Expenditures | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|
| Construction/Maintenance | | | 307,000 | | | 307,000 |
| **Total** | | | **307,000** | | | **307,000** |

| Funding Sources | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|
| Electric I & E Fund | | | 307,000 | | | 307,000 |
| **Total** | | | **307,000** | | | **307,000** |

### Budget Impact/Other

DRAFT

# Fiscal 2013 DRAFT Capital Investment Pla FY 13 *thru* FY 17

## City of Dover, Delaware

**Project #** EE1600
**Project Name** McKee Run Yard Rebuild

**Type** Improvement
**Useful Life** 25+ years
**Category** Electric
**New Project:** No
**Time-Line:**

**Department** Electric Engineering
**Contact** Electric Director
**Priority** n/a
**Account Number:** TBD

### Description

**Total Project Cost:** **$1,150,000**

Refurbish McKee Run switching yard.

TIME-LINE/CURRENT STATUS: The purchase of equipment with long lead times and engineering will be completed in FY 2016. Construction will be the following year, FY 2017.

### Justification

The City of Dover's electrical system has undergone a complete conversion to a 69KV transmission network. Hence, eliminating the old 22KV transmission network. Therefore, the 22KV system located at McKee Run Generating Plant should also be eliminated and a second 12470/69 KV step-up transformer should be installed, provided that Units 1 & 2 are still in operation.

| Expenditures | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|
| Planning/Design | | | | 250,000 | | 250,000 |
| Construction/Maintenance | | | | 200,000 | 700,000 | 900,000 |
| **Total** | | | | **450,000** | **700,000** | **1,150,000** |

| Funding Sources | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|
| Electric I & E Fund | | | | 450,000 | 700,000 | 1,150,000 |
| **Total** | | | | **450,000** | **700,000** | **1,150,000** |

### Budget Impact/Other

DRAFT

# Fiscal 2013 DRAFT Capital Investment Pla FY 13 *thru* FY 17

## City of Dover, Delaware

**Project #** EE1212
**Project Name** New Developments

**Type** Improvement
**Useful Life** 30+ years
**Category** Electric
**New Project:** No
**Time-Line:**

**Department** Electric T & D
**Contact** Electric Director
**Priority** 1
**Account Number:** 4878200-562.Several



### Description

**Total Project Cost:** **$4,484,800**

This project purchases materials and equipment that are used to provide electric service to new housing developments, businesses, and industrial developments. Additionally, a portion of this expense is offset by the extension payments whereby new developers pay a $1,100 per residential lot connection fee, or business and industrial developers pay the total material expense for line extensions.

This is an ongoing project and affects three separate accounts:
487-8200-562.60-31 - $ 70,536
487-8200-562.60-34 - $ 479,464
487-8200-562.60-46 - $ 500,000

COMMENTS: Not all new development projects are known, as some will arise during the year. Village of Maple Dale, Clearview Meadows, M&L Ventures Storage, Bayard Plaza, Nottingham Meadows, Brentwood Place, 215 Walker Rd, and Bayhealth are project known to be moving forward in FY13.

### Justification

During the course of each budget year, new developers request line extensions for new electric projects. Some are new projects, while other projects may have received plan approval previously but were not completed for any number of reasons.

| Expenditures | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|
| Construction/Maintenance | 450,000 | 450,000 | 450,000 | 450,000 | 450,000 | 2,250,000 |
| **Total** | **450,000** | **450,000** | **450,000** | **450,000** | **450,000** | **2,250,000** |

| Funding Sources | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|
| Electric I & E Fund | 450,000 | 450,000 | 450,000 | 450,000 | 450,000 | 2,250,000 |
| **Total** | **450,000** | **450,000** | **450,000** | **450,000** | **450,000** | **2,250,000** |

### Budget Impact/Other

DRAFT

# Fiscal 2013 DRAFT Capital Investment Pla

**FY 13** *thru* **FY 17**

## City of Dover, Delaware

**Project #** EG1102

**Project Name** Units 1 & 2 Cooling Tower Repairs



**Type** Maintenance
**Useful Life** Unknown
**Category** Electric
**New Project:** No
**Time-Line:**

**Department** Power Plant
**Contact** Electric Director
**Priority** 8 --
**Account Number:** 487-8101-591.40-31

### Description

**Total Project Cost:** **$389,400**

This project was developed to repair mechanical and structural components of the Units 1 and 2 cooling tower. The project scope has been developed through inspections performed in 2009 & 2010, and represents a systematic approach to maintaining the reliability and efficiency of the tower components. Specific activities scheduled for Fiscal 2013 include the replacement of the towers structural support members located at the base of the tower.

### Justification

This project is needed to maintain the structural integrity of the cooling tower and the continued reliability of the cooling systems mechanical components. Also, the continued deterioration of the cooling towers performance will lead to load reductions on the unit during periods of high ambient temperatures. This will occur during the time period when generation costs are at their peak. Additonally, this will aid in meeting the discharge temperature limitation that is being required by the DRBC (Delaware Rivier Basin Commission)

| Prior | Expenditures | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total | Future |
|---|---|---|---|---|---|---|---|---|
| 199,140 | Miscellaneous | 37,260 | | | | | 37,260 | 153,000 |
| Total | Total | 37,260 | | | | | 37,260 | Total |

| Prior | Funding Sources | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total | Future |
|---|---|---|---|---|---|---|---|---|
| 199,140 | Electric I & E Fund | 37,260 | | | | | 37,260 | 153,000 |
| Total | Total | 37,260 | | | | | 37,260 | Total |

### Budget Impact/Other

DRAFT

# Fiscal 2013 DRAFT Capital Investment Pla

**FY 13** *thru* **FY 17**

## City of Dover, Delaware

**Project #** EG1202

**Project Name** McKee Run Unit 3 Boiler Systems



**Type** Maintenance
**Useful Life** Unknown
**Category** Electric
**New Project:** No
**Time-Line:**

**Department** Power Plant
**Contact** Plant Manager
**Priority** 2
**Account Number:** 487-8101-591.40-31

### Description

**Total Project Cost:** **$1,049,000**

This fund was developed to perform inspections and repairs to the Unit 3 boiler on a predetermined frequency based on unit operating hours, required regulatory inspection intervals, and known equipment condition. In general, most work activities are those requiring planned outages and therefore will be scheduled to coincide with planned outages. Work identified includes the following:
2013 - Boiler safety valve refurbishment and adjustments, Forced draft fan and motor refurbishments, Induced draft fan motor refurbishment
2015 - Boiler safety valve refurbishment and adjustments, Forced draft and induced draft fan and motor refurbishments, feedwater heater repairs
2017 - Major boiler repairs to waterwall, superheater, and reheater tubes, air heater steam coil replacement

### Justification

Critical system equipment represents components that, if they fail, will result in loss of generation and or capacity. Routine evaluation of the condition of critical components will allow for proper prioritization of maintenance activities and resources. Delaying this project could result in the failure of critical unit equipment and subsequent loss of generation and or capacity. More importantly, component failure could also result in safety risk to personnel.

| Prior | Expenditures | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total | Future |
|---|---|---|---|---|---|---|---|---|
| 130,000 | Construction/Maintenance | 129,000 | | 144,000 | | 344,000 | 617,000 | 302,000 |
| Total | Total | 129,000 | | 144,000 | | 344,000 | 617,000 | Total |

| Prior | Funding Sources | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total | Future |
|---|---|---|---|---|---|---|---|---|
| 130,000 | Electric I & E Fund | 129,000 | | 144,000 | | 344,000 | 617,000 | 302,000 |
| Total | Total | 129,000 | | 144,000 | | 344,000 | 617,000 | Total |

### Budget Impact/Other

DRAFT

# Fiscal 2013 DRAFT Capital Investment Pla FY 13 *thru* FY 17

## City of Dover, Delaware

**Project #** EG1203

**Project Name** McKee Run Unit 3 Auxillary System Components



**Type** Maintenance
**Useful Life** Unknown
**Category** Electric
**New Project:** No
**Time-Line:**

**Department** Power Plant
**Contact** Electric Director
**Priority** 4
**Account Number:** 487-8101-591.40-31

### Description

**Total Project Cost:** **$772,500**

This project will perform inspections and repairs of unit 3 auxillary system components that have been identified as critical through the plant life assessment study. Critical auxillary sysem components are those that could result in unit load reduction or outage with consequential loss of capacity and/or generation although they would not individually affect the long range financial viability of the unit. Components identified will be addressed in 2013 inlcude the 3B condensate pump and motor. Components scheduled for 2014 include boiler feed pumps and motors, condenser circulator pumps and motors Components scheduled for 2015 include condensate pump and motor. Components scheduled for 2016 include service water pump. Components scheduled for 2017 include circulating water booster pump and motor.

### Justification

Critical system components that, if they fail, will result in the loss of generation and/or capacity. Addressing these assets in a systematic fashion will result in minimize forced outages and eliminate major maintenance expenses associated with component failure. Performing work as scheduled will also levelize maintenance expenditures. Delaying this project could result in the failure of critical unit equipment and subsequent loss of generation and/or capacity.

| Prior | Expenditures | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total | Future |
|---|---|---|---|---|---|---|---|---|
| 113,000 | Construction/Maintenance | 55,000 | 188,500 | 45,000 | 6,000 | 34,000 | 328,500 | 331,000 |
| Total | Total | 55,000 | 188,500 | 45,000 | 6,000 | 34,000 | 328,500 | Total |

| Prior | Funding Sources | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total | Future |
|---|---|---|---|---|---|---|---|---|
| 113,000 | Electric I & E Fund | 55,000 | 188,500 | 45,000 | 6,000 | 34,000 | 328,500 | 331,000 |
| Total | Total | 55,000 | 188,500 | 45,000 | 6,000 | 34,000 | 328,500 | Total |

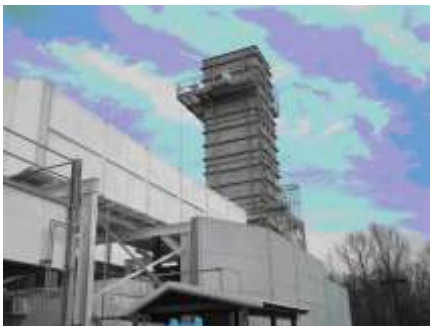
### Budget Impact/Other

DRAFT

# Fiscal 2013 DRAFT Capital Investment Pla FY 13 *thru* FY 17

## City of Dover, Delaware

**Project #** EG1207
**Project Name** Van Sant Unit 11 Component Replacements



**Type** Maintenance
**Useful Life** Unknown
**Category** Electric
**New Project:** No
**Time-Line:**

**Department** Power Plant
**Contact** Plant Manager
**Priority** 4
**Account Number:** 487-8101-591.40-31

### Description

**Total Project Cost:** **$821,000**

This fund was developed to perform inspections and repairs to the VanSant Unit 11 auxiliary equipment on a predetermined frequency based on unit operating hours, required regulatory inspection intervals, and known equipment condition. Work to be performed to include the following equipment:
2014 - Refurbish Exhaust frame blower B and motor, B Cooling Water pump and motor, B injection water pump motor
2015 - Replace inlet guide vanes
2016 - Generator inspection and repair
2017 - Injection water pump and motor refurbishment, A Exhaust frame blower and motor refurbishment

### Justification

This project is required to fund the replace of capital items that are expected to reach their useful life and will need to be replaced or refurbished to maintain plant system and unit reliability. Extended equipment and /or unit outage time will result from lack of funding this project. This will have a direct effect on the cost of energy during the extended outage time as well as increase future energy capacity charges.

| Prior | Expenditures | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total | Future |
|---|---|---|---|---|---|---|---|---|
| 50,000 | Construction/Maintenance | | 75,000 | 75,000 | 143,000 | 78,000 | 371,000 | 400,000 |
| Total | Total | | 75,000 | 75,000 | 143,000 | 78,000 | 371,000 | Total |

| Prior | Funding Sources | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total | Future |
|---|---|---|---|---|---|---|---|---|
| 50,000 | Electric I & E Fund | | 75,000 | 75,000 | 143,000 | 78,000 | 371,000 | 400,000 |
| Total | Total | | 75,000 | 75,000 | 143,000 | 78,000 | 371,000 | Total |

### Budget Impact/Other

DRAFT

# Fiscal 2013 DRAFT Capital Investment Pla FY 13 *thru* FY 17

## City of Dover, Delaware

**Project #** EG1209
**Project Name** McKee Run & VanSant Preservation of Structures

**Type** Maintenance
**Useful Life** Unknown
**Category** Electric
**New Project:** No
**Time-Line:**

**Department** Power Plant
**Contact** Plant Manager
**Priority** n/a
**Account Number:** 487-8101-591.40-31

### Description

**Total Project Cost:** $527,000

This project involves the preservation of plant structures in order to prevent deterioration of building structural steel and equipment subject to corrosion due to the working environment. Included will be the sandblasting and painting of identified structures and equipment along with the removal of equipment that has been retired in place. This work is an ongoing effort spanning multiple years. Work identified includes the following:
2014 - Paint the radiator support structure and diesel cooling water tank at VanSant, Repair and paint the exterior of the circulating water piping at the base of the Unit 3 condenser, Paint all structural steel bolted connections at grade on Unit 3 boiler.
2016 - Paint Unit 3 stack, replace portions of the stack grounding system
2017 - Paint city water and outside demineralized water storage tank

### Justification

Structural steel painting is needed in various areas throughout the plant proper as well as various outbuildings on the plant property to maintain the physical building structures and equipment in an acceptable condition and prevent further deterioration. This project represents a minimum preservation and maintenance of structures consistent with the expected life of the station. Consequences of delaying or eliminating this project will result in the acceleration of deterioration of plant structures and larger future costs associated with structural repairs.

| Prior | Expenditures | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total | Future |
|---|---|---|---|---|---|---|---|---|
| 38,000 | Construction/Maintenance | | 42,000 | | 165,000 | 142,000 | 349,000 | 140,000 |
| Total | Total | | 42,000 | | 165,000 | 142,000 | 349,000 | Total |

| Prior | Funding Sources | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total | Future |
|---|---|---|---|---|---|---|---|---|
| 38,000 | Electric I & E Fund | | 42,000 | | 165,000 | 142,000 | 349,000 | 140,000 |
| Total | Total | | 42,000 | | 165,000 | 142,000 | 349,000 | Total |

### Budget Impact/Other

DRAFT

# Fiscal 2013 DRAFT Capital Investment Pla FY 13 *thru* FY 17

## City of Dover, Delaware

**Project #** EG1212
**Project Name** McKee Run Unit 3 Turbine Repairs



**Type** Maintenance
**Useful Life** Unknown
**Category** Electric
**New Project:**
**Time-Line:**

**Department** Power Plant
**Contact** Plant Manager
**Priority** 1
**Account Number:**

### Description

**Total Project Cost:** **$1,760,000**

This project will inspect the Unit 3 turbine and auxiliary equipment to determine repairs needed to keep the unit reliable and to assess remaining life of the unit. This project will be completed in two phases, an initial limited inspection followed by an extensive detailed inspection and repair planned outage. The first phase that will be completed in 2012 under Project EG1212 and will utilize borescope equipment to determine condition of components that can be observed through limited access locations along the turbine casing and through turbine inlet valves. This inspection will provide a general condition assessment of a portion of the highly stress components of the turbine and may provide insight into the extent of replacement parts needed to successfully execute phase 2. Phase 2 to be completed later in 2014 will include a full disassembly and inspection of the turbine and auxiliary equipment. Expenditures in 2013 are for long lead material procurement. Phase 2 costs have been revised to reflect the need to replace 9th stage blading on the turbine.

### Justification

An assessment of the unit needs to be performed to determine condition of the highly stressed turbine components to assure continued reliability. Documented condition of rotor blading during last inspection noted deterioration of 9th stage blades and temporary repairs performed. A significant probability that the blades should be replaced. Consequences of delaying or eliminating this project include possible catastrophic equipment failure and indefinite loss of unit availability.

| Prior | Expenditures | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total | Future |
|---|---|---|---|---|---|---|---|---|
| 348,000 | Construction/Maintenance | 115,000 | 1,031,000 | | | 10,000 | 1,156,000 | 256,000 |
| Total | Total | 115,000 | 1,031,000 | | | 10,000 | 1,156,000 | Total |

| Prior | Funding Sources | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total | Future |
|---|---|---|---|---|---|---|---|---|
| 348,000 | Electric I & E Fund | 115,000 | 1,031,000 | | | 10,000 | 1,156,000 | 256,000 |
| Total | Total | 115,000 | 1,031,000 | | | 10,000 | 1,156,000 | Total |

### Budget Impact/Other

DRAFT

# Fiscal 2013 DRAFT Capital Investment Pla

**FY 13** *thru* **FY 17**

## City of Dover, Delaware

**Project #** EG1304

**Project Name** McKee Run Units 1 & 2 Component Repairs



**Type** Maintenance
**Useful Life** Unknown
**Category** Electric
**New Project:** No
**Time-Line:**

**Department** Power Plant
**Contact** Electric Director
**Priority** 4
**Account Number:** 487-8101-591.40-31

### Description

**Total Project Cost:** **$3,116,500**

This project will inspect and repair capital equipment associated with the Units 1 and 2 turbine generator and Boiler equipment. Components identified that will be addressed include the following:
2013- Refurbishment of 2A condensate pump and motor and replacement of heater exchanger level controllers.
2014 - Inspection of turbine nozzles
2015 - Unit 2 boiler feed pump and motor refurbishments
2016 - Major boiler component inspections and repairs.
2017 - Replacement of boiler feed recirculation valves, circulating water pump refurbishment, replacement of steam air heater coils

### Justification

This project is required to fund the repair and /or replace of capital items that are expected to reach their useful life and will need to be repaired or replaced to maintain plant system and unit reliability. Extended equipment and /or unit outage time will result from lack of funding this project. This will have a direct effect on the cost of energy during the extended outage time as well as increase future energy capacity charges.

| Prior | Expenditures | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total | Future |
|---|---|---|---|---|---|---|---|---|
| 364,000 | Construction/Maintenance | 52,000 | 100,000 | 44,000 | 172,000 | 234,000 | 602,000 | 2,150,500 |
| Total | Total | 52,000 | 100,000 | 44,000 | 172,000 | 234,000 | 602,000 | Total |

| Prior | Funding Sources | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total | Future |
|---|---|---|---|---|---|---|---|---|
| 364,000 | Electric I & E Fund | 52,000 | 100,000 | 44,000 | 172,000 | 234,000 | 602,000 | 2,150,500 |
| Total | Total | 52,000 | 100,000 | 44,000 | 172,000 | 234,000 | 602,000 | Total |

### Budget Impact/Other

DRAFT

# Fiscal 2013 DRAFT Capital Investment Pla FY 13 *thru* FY 17

## City of Dover, Delaware

**Project #** EG1306
**Project Name** McKee Run Turbine Level Window Modification



| | | | |
|---|---|---|---|
| **Type** | Improvement | **Department** | Power Plant |
| **Useful Life** | Unknown | **Contact** | Plant Manager |
| **Category** | Electric | **Priority** | 6 -- |
| **New Project:** | Yes | **Account Number:** | |
| **Time-Line:** | | | |

### Description

**Total Project Cost:** **$85,000**

PROJECT DESCRIPTION: Install equipment for safety of plant personnel and to maintain reliability of plant equipment in the event of an explosion at the McKee Run switchyard.
Equipment includes the following:
System Design (2013) - $5k
Purchase of window blocking materials (2013) - $20k
Purchase of Fire Shutters for windows (2013) - $20k
Installation (2013) - $40k

### Justification

This project is a result of an insurance inspection and recommendation to install equipment or window blocking materials for the protection of plant personnel and plant equipment in the event of an explosion of electrical distribution equipment in the McKee Run switchyard. Consequences of delaying or eliminating this project will be the continued risk of personal injury or damage to electrical distribution equipment. In addition, no benefit to, or even an increase of, insurance company premium costs could result due to not acting on insurance company recommendations.

| Expenditures | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|
| Planning/Design | 5,000 | | | | | 5,000 |
| Construction/Maintenance | 80,000 | | | | | 80,000 |
| **Total** | **85,000** | | | | | **85,000** |

| Funding Sources | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|
| Electric I & E Fund | 85,000 | | | | | 85,000 |
| **Total** | **85,000** | | | | | **85,000** |

### Budget Impact/Other

DRAFT

# Fiscal 2013 DRAFT Capital Investment Pla FY 13 *thru* FY 17

## City of Dover, Delaware

**Project #** EG1307
**Project Name** McKee Run Unit 3 Air Heater Expansion Joint

**Type** Maintenance
**Useful Life** Unknown
**Category** Electric
**New Project:** Yes
**Time-Line:**

**Department** Power Plant
**Contact** Electric Director
**Priority** 7 --
**Account Number:** 487-8101-591.40-31

### Description

**Total Project Cost:** $215,000

This project will replace the Unit 3 boiler air heater, hot air outlet expansion joint closest to the air heater which has reached the end of its' useful life. This replacement is the last expansion joint to be replaced in the hot gas duct from the boiler to the air heater. The work is scheduled to be completed in the fall of 2013. This work was previously scheduled for 2017 but was accelerated due to its' deteriorated condition.

### Justification

This expansion joint has failed in multiple locations, allowing hot air to escape from the ductwork exiting the boiler. This has a direct impact on the performance of the Unit, limiting capacity and reducing efficiency. Replacement of this expansion joint is necessary in order to recover unit efficiency. This project will be completed in 2013.

| Prior | Expenditures | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|---|
| 135,000 | Construction/Maintenance | 80,000 | | | | | 80,000 |
| Total | Total | 80,000 | | | | | 80,000 |

| Prior | Funding Sources | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|---|
| 135,000 | Electric I & E Fund | 80,000 | | | | | 80,000 |
| Total | Total | 80,000 | | | | | 80,000 |

### Budget Impact/Other

DRAFT

# Fiscal 2013 DRAFT Capital Investment Pla

**FY 13** *thru* **FY 17**

## City of Dover, Delaware

**Project #** EG1309

**Project Name** McKee Run Unit 3 Stack Repairs



**Type** Maintenance
**Useful Life** Unknown
**Category** Electric
**New Project:** No
**Time-Line:**

**Department** Power Plant
**Contact** Electric Director
**Priority** 9 --
**Account Number:** 487-8101-591.40-31

### Description

**Total Project Cost:** **$102,000**

An inspection and assessment will be made to determine the condition of the stack and also provide cost of any repairs required to extend the life of the stack for 15 to 20 yrs. Repairs to the stack lining and exterior will be made in order to allow continued operation of Unit 3. A determination for the necessity of repairs to Unit 3 stack will be performed on an annual basis. An internal and external inspection will be performed by outside consultant in 2012.

### Justification

Current plans are to contract for an external and internal inspection in 2013 to develop an action plan to extend the life of the stack as well as develop costs for the repairs of the stack by outside contractors. We will contract for needed repairs as determined by the 2013 and subsequent yearly inspections. Delaying necessary repairs could lead to more costly repairs in the future, unplanned forced outage on Unit 3, fall out of internal material upon the surrounding community and potential injury to employees. Earnings from the sale of capacity may also be affected.

| Prior | Expenditures | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|---|
| 25,000 | Miscellaneous | 27,000 | 50,000 | | | | 77,000 |
| **Total** | **Total** | **27,000** | **50,000** | | | | **77,000** |

| Prior | Funding Sources | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|---|
| 25,000 | Electric I & E Fund | 27,000 | 50,000 | | | | 77,000 |
| **Total** | **Total** | **27,000** | **50,000** | | | | **77,000** |

### Budget Impact/Other

DRAFT

# Fiscal 2013 DRAFT Capital Investment Pla FY 13 *thru* FY 17

## City of Dover, Delaware

**Project #** EG1310
**Project Name** McKee Run Units 1 & 2 Stack Repairs



**Type** Maintenance
**Useful Life** 10-15 years
**Category** Electric
**New Project:** No
**Time-Line:**

**Department** Power Plant
**Contact** Electric Director
**Priority** 10 --
**Account Number:** 487-8101-591.40-31

### Description

**Total Project Cost:** **$75,000**

Repairs to the stack lining and exterior will be made in order allow continued operation of these units. In addition, an assessment will be made to determine the remaining life of the stack and also provide cost of any repairs required to extend the life of the stack for another 10 to 15 yrs. The current expectation is to perform limited repairs in fiscal year 2013. An evaluation of future repairs will also be made.

### Justification

This stack has been in service past its expected life and repairs are needed to ensure continued operation for the remaining life of the Units. Should this stack need to be taken out of service, it will necessitate taking both Units 1 and 2 offline. Delaying necessary repairs could lead to more costly repairs in the future, simultaneous unplanned forced outages on both Units 1 & 2, fall out of internal material upon the surrounding community and potential injury to employees. Earnings from the sale of capacity will also be affected.

| Expenditures | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|
| Miscellaneous | 75,000 | | | | | 75,000 |
| **Total** | **75,000** | | | | | **75,000** |

| Funding Sources | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|
| Electric I & E Fund | 75,000 | | | | | 75,000 |
| **Total** | **75,000** | | | | | **75,000** |

### Budget Impact/Other

DRAFT

# Fiscal 2013 DRAFT Capital Investment Pla FY 13 *thru* FY 17

## City of Dover, Delaware

**Project #** EG1311
**Project Name** Van Sant Capacity Increase

**Type** Maintenance
**Useful Life** Unknown
**Category** Electric
**New Project:** Yes
**Time-Line:**

**Department** Power Plant
**Contact** Plant Manager
**Priority** n/a
**Account Number:** 487-8101-591.40-31

### Description

**Total Project Cost:** **$550,000**

This project will increase the electric generation output of the VanSant Unit 11 gas turbine generator by installing technology specifically designed to decrease the air inlet temperatures to the gas turbine during high ambient air temperature days. This project is dependent on obtaining favorable payback as determined by an evaluation of available technologies conducted as part of a strategically budgeted initiative that will determine the most cost effective technology to utilize. This initiative is contained in the 2012 Strategic level of the Power Plant O&M budget. The project is estimated to be completed in 2013. Multiple technologies to achieve the increased generator output will be evaluated in 2012.

### Justification

This project will provide a positive cash flow within 5 years of installation as the City of Dover will benefit through additional capacity and generation sales. Each year this project is delayed will result in lost revenue opportunity to the City of Dover.

| Expenditures | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|
| Planning/Design | 75,000 | | | | | 75,000 |
| Construction/Maintenance | 475,000 | | | | | 475,000 |
| **Total** | **550,000** | | | | | **550,000** |

| Funding Sources | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|
| Future Capacity Reserve Fund | 550,000 | | | | | 550,000 |
| **Total** | **550,000** | | | | | **550,000** |

### Budget Impact/Other

DRAFT

# Fiscal 2013 DRAFT Capital Investment Pla FY 13 *thru* FY 17

## City of Dover, Delaware

**Project #** EG1312
**Project Name** McKee Run Unit 3 Generator Repairs



**Type** Maintenance
**Useful Life** Unknown
**Category** Electric
**New Project:** No
**Time-Line:**

**Department** Power Plant
**Contact** Plant Manager
**Priority** 1
**Account Number:**

### Description

**Total Project Cost:** **$236,000**

This project will inspect the Unit 3 turbine generator, and auxiliary equipment to determine repairs needed to keep the generator operational and to assess remaining life of the unit. This project will include a full disassembly and inspection of the generator and auxiliary equipment. Extensive electrical testing of the generator will be performed.

### Justification

An assessment of the generator needs to be performed to determine mechanical and electrical condition of the internal turbine components to assure continued reliability. This unit has not been inspected since 2000 and Industry maintenance practices recommend inspection intervals not exceeding 10 years. Consequences of delaying or eliminating this project include a possible equipment failure and extended or indefinite loss of unit availability.

| Expenditures | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|
| Construction/Maintenance | 236,000 | | | | | 236,000 |
| **Total** | **236,000** | | | | | **236,000** |

| Funding Sources | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|
| Electric Bond | 236,000 | | | | | 236,000 |
| **Total** | **236,000** | | | | | **236,000** |

### Budget Impact/Other

DRAFT

# Fiscal 2013 DRAFT Capital Investment Pla FY 13 *thru* FY 17

## City of Dover, Delaware

**Project #** EG1401
**Project Name** Units 1 & 2 Boiler Repairs

**Type** Maintenance
**Useful Life** Unknown
**Category** Electric
**New Project:** Yes
**Time-Line:**

**Department** Power Plant
**Contact** Plant Manager
**Priority** 2
**Account Number:** 487-8101-591.40-31

### Description

**Total Project Cost:** **$407,000**

This fund was developed to perform inspections and repairs to the Units 1 and 2 boilers on a predetermined frequency based on unit operating hours, required regulatory inspection intervals, and known equipment condition. In general, most work activities are those requiring planned outages and therefore will be scheduled to coincide with planned outages.
Work scheduled includes the following:
2014 - Boiler safety valve refurbishment and inspections.
2015 - Boiler air heater inspection and repair
2016 - Boiler safety valve refurbishment and inspections

### Justification

This project is required to fund the repair/replacement of capital items that are expected to reach their useful life. Critical system equipment represents components that, if they fail, will result in loss of generation and or capacity. Routine evaluation of the condition of critical components will allow for proper prioritization of maintenance activities and resources. Delaying this project could result in the failure of critical unit equipment and subsequent loss of generation and or capacity. More importantly, component failure could also result in safety risk to personnel.

| Expenditures | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total | Future |
|---|---|---|---|---|---|---|---|
| Construction/Maintenance | | 18,000 | 20,000 | 29,000 | | 67,000 | 340,000 |
| **Total** | | **18,000** | **20,000** | **29,000** | | **67,000** | **Total** |

| Funding Sources | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total | Future |
|---|---|---|---|---|---|---|---|
| Electric I & E Fund | | 18,000 | 20,000 | 29,000 | | 67,000 | 340,000 |
| **Total** | | **18,000** | **20,000** | **29,000** | | **67,000** | **Total** |

### Budget Impact/Other

DRAFT

# Fiscal 2013 DRAFT Capital Investment Pla

**FY 13** *thru* **FY 17**

## City of Dover, Delaware

**Project #** EG1402

**Project Name** Unit 3 Cooling Tower Repairs



**Type** Maintenance
**Useful Life** Unknown
**Category** Electric
**New Project:** No
**Time-Line:**

**Department** Power Plant
**Contact** Electric Director
**Priority** 1
**Account Number:** 487-8101-591.40-31

### Description

**Total Project Cost:** **$1,159,338**

This project was developed to repair mechanical and structural components of the Unit 3. The project scope has been developed through inspections performed in 2009 and 2010 and represents a systematic approach to maintaining the reliability and efficiency of the tower components. Specific activities scheduled for 2015 include installing new tower fill which will recover or improve the heat transfer efficiency of the tower and assure that the discharge temperature of the cooling tower continues to meet regulatory requirements. Work scheduled for 2016 includes cooling fax gear box refurbishments. Work scheduled for 2017 includes replacing cooling fan motors and replacing tower wall casing.

### Justification

This project is needed to maintain the structural integrity of the cooling tower and the continued reliability of cooling system mechanical components. Also continued deterioration of the cooling tower performance will lead to load reductions on the unit during periods of high ambient temperatures. This will occur during the time period when generation costs are at their peak.

| Prior | Expenditures | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|---|
| 398,338 | Construction/Maintenance | | | 571,000 | 52,000 | 138,000 | 761,000 |
| **Total** | **Total** | | | **571,000** | **52,000** | **138,000** | **761,000** |

| Prior | Funding Sources | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|---|
| 398,338 | Electric I & E Fund | | | 571,000 | 52,000 | 138,000 | 761,000 |
| **Total** | **Total** | | | **571,000** | **52,000** | **138,000** | **761,000** |

### Budget Impact/Other

DRAFT

# Fiscal 2013 DRAFT Capital Investment Pla FY 13 *thru* FY 17

## City of Dover, Delaware

**Project #** EG1403
**Project Name** Unit 3 Cooling Water Line Repairs



**Type** Maintenance
**Useful Life** Unknown
**Category** Electric
**New Project:** No
**Time-Line:**

**Department** Power Plant
**Contact** Plant Manager
**Priority** n/a
**Account Number:** 487-8101-591.40-31

### Description

**Total Project Cost:** **$265,000**

This project will inspect and repair the underground cooling water line from the Unit 3 condenser to the cooling tower. An inspection of the pipe condition will be performed on this pipe in the fall of 2013 to develop a repair/replace action plan to address the suitability for continued operation as well as extending the life of the piping beyond 2013. The actual repairs will be completed in the spring of 2014.. Completion of the project as scheduled will eliminate the need to add additional O&M funding for emergency repairs in future years. The budgeted costs assume only repairs of the lines (2) from the cooling tower to the plant exterior wall.

### Justification

The condition of the underground cooling water line has required numerous repairs over the life of the plant and is expected to reach its useful life in the 2015-2020 time period. It is expected that the repair frequency will accelerate over the next several years as the internal pipe coating continues to degrade. Delaying this project beyond 2014 will increase the risk of a failure causing an extended unit outage to repair or replace the failed pipe as well incur water spillage to the surrounding ground. Additional budget dollars will need to be allocated to make the repairs of the failed piping.

| Prior | Expenditures | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|---|
| 25,000 | Miscellaneous | | 240,000 | | | | 240,000 |
| **Total** | **Total** | | **240,000** | | | | **240,000** |

| Prior | Funding Sources | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|---|
| 25,000 | Electric I & E Fund | | 240,000 | | | | 240,000 |
| **Total** | **Total** | | **240,000** | | | | **240,000** |

### Budget Impact/Other

DRAFT

# Fiscal 2013 DRAFT Capital Investment Pla FY 13 *thru* FY 17

## City of Dover, Delaware

**Project #** EG1406
**Project Name** McKee Run High Energy Piping Repairs



**Type** Maintenance
**Useful Life** Unknown
**Category** Electric
**New Project:** No
**Time-Line:**

**Department** Power Plant
**Contact** Plant Manager
**Priority** 1
**Account Number:** 487-8101-591.40-31

### Description

**Total Project Cost:** **$80,000**

This project will address deficiencies in highly stressed piping systems at the McKee Run Generating Station found during inspections conducted on those piping systems. The inspections are scheduled for early 2013. Included will be the main steam, hot and cold reheat lines as well as feed water and condensate piping of all units. This work is intended to repair or replace piping and pipe supports that are found to be defective before any long term stress or flow induced pipe failures occur.

### Justification

High energy piping systems are subject to service related structural failure due to the high temperature service under which they operate. Additionally, lower temperature piping systems are subject to accelerated corrosion rates due to flow characteristics. Identifying and correcting any such piping degradation before failures occur will prevent extended forced outages to make emergency repairs/replacement. Delaying this project could result in the failure of critical piping systems and subsequent loss of generation and or capacity. Most importantly, component failure could also result in serious safety risk to personnel. This project is one that is required to meet insurance company recommendations.

| Expenditures | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|
| Planning/Design | | 80,000 | | | | 80,000 |
| **Total** | | **80,000** | | | | **80,000** |

| Funding Sources | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|
| Electric I & E Fund | | 80,000 | | | | 80,000 |
| **Total** | | **80,000** | | | | **80,000** |

### Budget Impact/Other

DRAFT

# Fiscal 2013 DRAFT Capital Investment Pla FY 13 *thru* FY 17

## City of Dover, Delaware

**Project #** EG1407
**Project Name** Metering System Upgrades

**Type** Maintenance
**Useful Life** Unknown
**Category** Electric
**New Project:** Yes
**Time-Line:**

**Department** Power Plant
**Contact** Electric Director
**Priority** 6 --
**Account Number:** 487-8101-591.40-31



### Description

**Total Project Cost:** **$150,000**

This project involves the replacement of all the meters (15) in the COD system that are currently tied to the metering computer at McKee Run Generating Station. In addition, costs associated with the replacement of the Metering computer (PC) at McKee Run and an alternate demark for the telephone line that the NRG meter uses to communicate data to the McKee Run computer is included in this project. A metering computer would also be installed at the City of Dover dispatch center for use. At the present time, there are annual maintenance costs associated with keeping the reliability of the meters and the metering software current. In addition, a software maintenance fee is included in the annual budget. Activities scheduled for 2014 include planning and design. Installation and purchase to be completed in 2015.

### Justification

The meters are 14 years old and the metering computer is 4 years old and nearing the end of their recommended service life. The metering system provides the City of Dover, T.E.A, NAES, PJM, NRG and Delmarva Power with accurate data for revenue metering, cost metering, load scheduling and forecasting and for generator capacity rating verification purposes. Submission of this data/information is also an important part of compliance with various NERC standards. Non-compliance with NERC Standards could result in fines and other penalties. Delaying or eliminating this project could have a substantial effect on the City of Dover electric bill. Failures to the meters or computers would force the City of Dover to rely on DPL metering, NRG metering and/or other methods of determining load usage costs and generation revenues. In addition, costs associated with the manual documentation and submission of the information would be labor intensive and could become extremely costly.

| Expenditures | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|
| Planning/Design | | 25,000 | | | | 25,000 |
| Construction/Maintenance | | | 125,000 | | | 125,000 |
| **Total** | | **25,000** | **125,000** | | | **150,000** |

| Funding Sources | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|
| Electric I & E Fund | | 25,000 | 125,000 | | | 150,000 |
| **Total** | | **25,000** | **125,000** | | | **150,000** |

### Budget Impact/Other

DRAFT

# Fiscal 2013 DRAFT Capital Investment Pla FY 13 *thru* FY 17

## City of Dover, Delaware

**Project #** EG1601
**Project Name** McKee Run Building Equipment Replacement

| | | | |
|---|---|---|---|
| **Type** | Maintenance | **Department** | Power Plant |
| **Useful Life** | Unknown | **Contact** | Plant Manager |
| **Category** | Electric | **Priority** | n/a |
| **New Project:** | Yes | **Account Number:** | 487-8101-591.40-31 |
| **Time-Line:** | | | |

### Description

**Total Project Cost:** **$330,000**

This project includes the replacement of certain building support systems that are expected to reach their useful life. The specific building systems to be addressed include:
Supervisors Office Roof top Air Conditioners – 2016-$30,000
#3 elevator refurbishment- 2016- $60,000
Turbine roof exhaust fans- 2016 - $20,000
Control Room rooftop air Conditioning Unit – 2017 - $50,000

### Justification

This project is required to fund the replacement of roof top air conditioners and exhaust fans starting in 2016. In addition, the #3 elevator is expected to require significant rebuilding to maintain its reliability. Major maintenance was performed last in 1999. Continuing increase in the costs to maintain this equipment will result from the lack of funding this project. In addition, critical temperature control is necessary to keep plant instrumentation located in the control room at acceptable operating conditions. Allowing the temperature to exceed design conditions could contribute to reduced control equipment life and possible reduced unit reliability.

| Expenditures | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total | Future |
|---|---|---|---|---|---|---|---|
| Construction/Maintenance | | | | 110,000 | 50,000 | 160,000 | 170,000 |
| **Total** | | | | **110,000** | **50,000** | **160,000** | **Total** |

| Funding Sources | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total | Future |
|---|---|---|---|---|---|---|---|
| Electric I & E Fund | | | | 110,000 | 50,000 | 160,000 | 170,000 |
| **Total** | | | | **110,000** | **50,000** | **160,000** | **Total** |

### Budget Impact/Other

DRAFT

# Fiscal 2013 DRAFT Capital Investment Pla FY 13 *thru* FY 17

## City of Dover, Delaware

**Project #** EG1701
**Project Name** Van Sant Unit 11 Major Overhaul/Inspection



**Type** Improvement
**Useful Life** 20 years
**Category** Electric
**New Project:** No
**Time-Line:**

**Department** Power Plant
**Contact** Electric Director
**Priority** 3
**Account Number:** 487-8101-591.40-31

### Description

**Total Project Cost:** **$1,941,000**

This project will perform a major overhaul on the turbine generator based on Original Equipment Manufacturer (OEM) recommended repair frequency which is based on factored starts of the unit from first commissioning and from last inspection/repair interval. This project will be implemented in 2017 with long lead material purchases and installation in 2018.

### Justification

This project is required to fund the purchase of all parts needed to perform a major overhaul on the unit based on estimated factored starts since unit was first commissioned and since last the Hot Gas Path inspection. This project will span the course of three years. In Year 1, the majority of the long lead parts will be purchased. Services will be identified in year 2 and the actual installation will be performed in Year 2. Extended equipment and /or unit outage time will result from lack of funding this project. This will have a direct effect on the cost of energy during the extended outage time as well as increase future energy capacity charges. In addition, gradual degradation of the unit's output could occur which would have a negative effect on the capacity rating of the unit and could result in catastrophic failure of the unit.

| Expenditures | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total | Future |
|---|---|---|---|---|---|---|---|
| Construction/Maintenance | | | | | 900,000 | 900,000 | 1,041,000 |
| **Total** | | | | | **900,000** | **900,000** | **Total** |

| Funding Sources | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total | Future |
|---|---|---|---|---|---|---|---|
| Electric I & E Fund | | | | | 900,000 | 900,000 | 1,041,000 |
| **Total** | | | | | **900,000** | **900,000** | **Total** |

### Budget Impact/Other

DRAFT

City of Dover, Delaware

*Fiscal 2013 DRAFT Capital Investment Plan*

FY 13 thru FY 17

# PROJECTS BY DEPARTMENT

| Department | Project# | Priority | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|---|---|
| **Electric Engineering** | | | | | | | | |
| 2008 Dodge Avenger (7) | *Veh# 7* | n/a | | | | 25,000 | | *25,000* |
| 2006 Ford Van (749) | *Veh# 749* | n/a | | | 25,000 | | | *25,000* |
| 2005 Ford Utility Truck (764) | *Veh# 764* | n/a | | 35,000 | | | | *35,000* |
| 2005 Ford Pick Up (770) | *Veh# 770* | n/a | | | | | 29,000 | *29,000* |
| 2006 Dodge Pickup (790) | *Veh# 790* | n/a | | | 26,000 | | | *26,000* |
| 2005 Dodge Stratus (8) | *Veh# 8* | n/a | | | | | 23,000 | *23,000* |
| 2007 Dodge Pickup (9) | *Veh# 9* | n/a | | | | 27,000 | | *27,000* |
| **Electric Engineering Total** | | | | **35,000** | **51,000** | **52,000** | **52,000** | ***190,000*** |
| **Electric T & D** | | | | | | | | |
| Trencher/Hoe (702) | *Veh# 702* | n/a | | | | 57,423 | | *57,423* |
| 1989 Smith SM160 (716) | *Veh# 716* | n/a | | | 15,450 | | | *15,450* |
| 2001 Freightliner (750) | *Veh# 750* | n/a | | | | | 300,000 | *300,000* |
| 2002 Sherman & Reilly Wire Puller (758) | *Veh# 758* | n/a | | 112,837 | | | | *112,837* |
| 2001 Freightliner (766) | *Veh# 766* | n/a | | 190,550 | | | | *190,550* |
| 2001 Dodge Pickup (767) | *Veh# 767* | n/a | 22,389 | | | | | *22,389* |
| 2003 Freightliner (778) | *Veh# 778* | n/a | 123,600 | | | | | *123,600* |
| 2003 Freightliner (779) | *Veh# 779* | n/a | | | | 190,550 | | *190,550* |
| 2001 Dodge Ram 3500 (799) | *Veh# 799* | n/a | | | 30,900 | | | *30,900* |
| **Electric T & D Total** | | | **145,989** | **303,387** | **46,350** | **247,973** | **300,000** | ***1,043,699*** |
| **GRAND TOTAL** | | | **145,989** | **338,387** | **97,350** | **299,973** | **352,000** | ***1,233,699*** |

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City of Dover, Delaware

*Fiscal 2013 DRAFT Capital Investment Plan*

FY 13 thru FY 17

# PROJECTS BY DEPARTMENT

| Department | Project# | Priority | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|---|---|
| **Wastewater Management** | | | | | | | | |
| Inflow/Infiltration Removal | *WW1201* | 2 | 1,000,000 | 1,013,800 | 1,264,500 | 1,200,000 | 1,207,500 | *5,685,800* |
| SCADA Equipment Technology Upgrade | *WW1202* | 3 | 29,300 | | | | | *29,300* |
| Miscellaneous Sewer System Improvements | *WW1203* | 1 | 39,000 | 41,000 | 43,000 | 45,000 | 47,000 | *215,000* |
| Baltray Pump Station Replacement | *WW1204* | 5 | 100,000 | | | | | *100,000* |
| Dover Brook Gardens Pump Station Upgrade | *WW1205* | 6 | 50,000 | | | | | *50,000* |
| Brandywine Pump Station Replacement | *WW1206* | 4 | 350,000 | | | | | *350,000* |
| McKee Road Pump Station Communator Replacement | *WW1207* | 7 | 45,000 | | | | | *45,000* |
| Hazlettville Road Interceptor | *WW1301* | 9 | 30,000 | 740,000 | | | | *770,000* |
| Lakeview Drive Pump Station Replacement | *WW1302* | 10 | 52,000 | 450,000 | | | | *502,000* |
| Westover Pump Station and Force Main Upgrade | *WW1303* | 8 | 65,000 | 703,800 | | | | *768,800* |
| Retreat Pump Station Replacement | *WW1401* | 6 | | 52,000 | 360,500 | | | *412,500* |
| Rolling Acres Pump Station Replacement | *WW1501* | 4 | | | 52,000 | 360,500 | | *412,500* |
| Lepore Road Sanitary Sewer Main Upgrade | *WW1601* | 4 | | | | 50,000 | 275,000 | *325,000* |
| Delaware Tech Pump Station Replacement | *WW1602* | 5 | | | | 52,000 | 403,000 | *455,000* |
| Silver Lake Pump Station Replacement | *WW1701* | 5 | | | | | 52,000 | *52,000* |
| **Wastewater Management Total** | | | **1,760,300** | **3,000,600** | **1,720,000** | **1,707,500** | **1,984,500** | ***10,172,900*** |
| **Water Management** | | | | | | | | |
| Miscellaneous Distribution System Improvements | *WD1202* | 1 | 70,000 | 75,000 | 75,000 | 75,000 | 75,000 | *370,000* |
| Wellhead Redevelopment Program | *WD1203* | 2 | 70,000 | 75,000 | 80,000 | 82,500 | 85,000 | *392,500* |
| Emergency Generators (Wells) | *WD1204* | 4 | 80,000 | 80,000 | 80,000 | | | *240,000* |
| Piney Point Well | *WD1301* | 5 | 450,000 | | | | | *450,000* |
| 1.0 MG Elevated Water Storage Tower | *WD1302* | 6 | 2,000,000 | 390,000 | | | | *2,390,000* |
| Future Columbia Well Installation | *WD1304* | 8 | 55,000 | | | | 98,800 | *153,800* |
| SCADA Equipment Technology Upgrade | *WD1501* | 6 | | | 80,000 | 80,000 | | *160,000* |
| Meter Replacement Program | *WD1601* | 6 | | | | 300,000 | 400,000 | *700,000* |
| Water Quality Improvements | *WQ1201* | 3 | 479,000 | 905,000 | 960,000 | 950,000 | 1,600,000 | *4,894,000* |
| Water Treatment Plant Process Improvements | *WQ1303* | 7 | 150,000 | | 350,000 | 550,000 | | *1,050,000* |
| **Water Management Total** | | | **3,354,000** | **1,525,000** | **1,625,000** | **2,037,500** | **2,258,800** | ***10,800,300*** |
| **GRAND TOTAL** | | | **5,114,300** | **4,525,600** | **3,345,000** | **3,745,000** | **4,243,300** | ***20,973,200*** |

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City of Dover, Delaware

*Fiscal 2013 DRAFT Capital Investment Plan*

**FY 13** thru **FY 17**

# FUNDING SOURCE SUMMARY

| Source | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|
| Other | | | 36,000 | | | *36,000* |
| W/WW Debt Financing | 3,687,300 | 2,499,800 | 2,747,000 | 2,713,000 | 3,014,500 | *14,661,600* |
| Water/Wastewater Fund | 1,427,000 | 2,025,800 | 562,000 | 1,032,000 | 1,228,800 | *6,275,600* |
| **GRAND TOTAL** | **5,114,300** | **4,525,600** | **3,345,000** | **3,745,000** | **4,243,300** | ***20,973,200*** |

DRAFT

# Fiscal 2013 DRAFT Capital Investment Pla

**FY 13** *thru* **FY 17**

## City of Dover, Delaware

**Project #** **WW1201**

**Project Name** **Inflow/Infiltration Removal**

| | | | |
|---|---|---|---|
| **Type** | Improvement | **Department** | Wastewater Management |
| **Useful Life** | 50 years | **Contact** | Public Works Director |
| **Category** | Water/Wastewater | **Priority** | 2 |
| **New Project:** | No | **Account Number:** | 417-6900-569.40-31 |
| **Time-Line:** | | | |



SANITARY SEWER INFLOW AND INFILTRATION (I & I ) PROBLEMS

### Description

**Total Project Cost:** **$8,835,800**

This project identifies and corrects areas in the sanitary sewer collection system that are deteriorating and allowing groundwater to enter the sanitary sewer system through cracked pipes and/or joints. Video investigations of the lines are performed by in-house crews to determine the condition of subject pipes which may also help with the identification of sump pumps and other illicit connections to the system which will have to be removed by individual property owners. Investigations are occurring systematically through the sewer basins to establish projects for the following year. Sanitary sewer lines are also being inspected in conjunction with water quality improvement project areas to determine main condition. Smoke testing, pipe relining and or replacement are to occur each year.

The wet weather which was experienced in both 2003 and 2009/2010/2011, exemplified the fact that the aging and deteriorating sanitary sewer system allows groundwater and rain water to enter the system. This in turn results in higher treatment charges from Kent County. In FY 2011 a new groundwater inflow adjustment charge was established as a result. It is critical to continue making improvements on a regular and planned basis to improve the integrity of the wastewater system. Weather occurs in a cyclical fashion and discrepancies between fees collected and charges received will likely happen again when groundwater and precipitation levels rise. Anticipated areas that will be rehabilitated include City of Dover maintained infrastructure that contributes to the following pump stations; Schoolview, Brandywine, Lafferty Lane and Dover East.

### Justification

The wet weather experienced in both 2003 and 2009/2010/2011, highlighted the fact that we have an aging wastewater system that requires more attention to the condition of the old pipe network and more monitoring of illicit connections to the system. Inflow and infiltration are problems that all customers pay for since they are costs that are not assigned to an individual customer. Therefore, all customers are affected by expenses related to inflow and infiltration.

Delaying or eliminating this project will result in continued higher treatment charges for wastewater flow to Kent County than is necessary. In addition, the reduction in available capacity in the City and county systems due to inflow and infiltration will reduce the capacity available for future growth.

| Prior | Expenditures | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total | Future |
|---|---|---|---|---|---|---|---|---|
| 1,900,000 | Construction/Maintenance | 1,000,000 | 1,013,800 | 1,264,500 | 1,200,000 | 1,207,500 | 5,685,800 | 1,250,000 |
| **Total** | **Total** | **1,000,000** | **1,013,800** | **1,264,500** | **1,200,000** | **1,207,500** | **5,685,800** | **Total** |

| Prior | Funding Sources | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total | Future |
|---|---|---|---|---|---|---|---|---|
| 1,900,000 | W/WW Debt Financing | 1,000,000 | 1,013,800 | 1,264,500 | 1,200,000 | 1,207,500 | 5,685,800 | 1,250,000 |
| **Total** | **Total** | **1,000,000** | **1,013,800** | **1,264,500** | **1,200,000** | **1,207,500** | **5,685,800** | **Total** |

### Budget Impact/Other

The project will reduce the operating budget over time due to the reduction in costs for sewage treatment paid to Kent County. All savings are cumulative.

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# Fiscal 2013 DRAFT Capital Investment Pla FY 13 *thru* FY 17

## City of Dover, Delaware

**Project #** WW1202
**Project Name** SCADA Equipment Technology Upgrade



| | | | |
|---|---|---|---|
| **Type** | Improvement | **Department** | Wastewater Management |
| **Useful Life** | 10-12 years | **Contact** | Public Works Director |
| **Category** | Water/Wastewater | **Priority** | 3 |
| **New Project:** | No | **Account Number:** | 417-6900-569.40-31 |
| **Time-Line:** | | | |

### Description

**Total Project Cost:** **$196,300**

This project involves the replacement of antiquated and/or obsolete remote terminal units (RTUs) at sewage pumping stations with new up-to-date serviceable SCADA equipment. Microwave radios, antennas, and enclosures would be upgraded as needed. The RTU and radio are the reporting equipment for the SCADA system (Supervisory Control and Data Acquisition) which reports, on a constant basis, the status of alarms at the City's pumping stations. The RTUs that are being replaced are outdated and unable to be repaired. Most of the equipment is installed in two steel cabinets mounted outside and are corroding. The new equipment is installed within a single fiberglass NEMA 4 enclosure.
Each Year: order equipment and construct cabinets and back-plates by December; complete installation by June. Stations being completed in Fiscal 2013: University South, Maureen and Nottingham.

### Justification

Replace failing antiquated equipment with completely new alarm reporting equipment to provide reliable SCADA system reporting and to prevent the need for costly non budgeted emergency repairs.
Lack of alarms resulting in costly sewer backup claims. An RTU or radio failure would provide no advance warning of a failure and could result in costly sewer backup claims or sewage overflows into waterways. Equipment would become old, not supported, and obsolete. This an ongoing project that started in Fiscal 2008 and will be continued in Fiscal 2013.

| Prior | Expenditures | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|---|
| 167,000 | Miscellaneous | 29,300 | | | | | 29,300 |
| **Total** | **Total** | **29,300** | | | | | **29,300** |

| Prior | Funding Sources | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|---|
| 167,000 | W/WW Debt Financing | 29,300 | | | | | 29,300 |
| **Total** | **Total** | **29,300** | | | | | **29,300** |

### Budget Impact/Other

DRAFT

# Fiscal 2013 DRAFT Capital Investment Pla

**FY 13** *thru* **FY 17**

## City of Dover, Delaware

**Project #** **WW1203**

**Project Name** **Miscellaneous Sewer System Improvements**



| | | | |
|---|---|---|---|
| **Type** | Improvement | **Department** | Wastewater Management |
| **Useful Life** | Unknown | **Contact** | Public Works Director |
| **Category** | Water/Wastewater | **Priority** | 1 |
| **New Project:** | No | **Account Number:** | 417-6900-569.40-35 |
| **Time-Line:** | | | |

### Description

**Total Project Cost:** **$336,000**

This project will primarily address emergency sanitary sewer infrastructure repairs including sanitary sewer mains and laterals within major roadways, major pump station and force main failures and associated appurtenances. These funds can also be used to partner with private developers to oversize future mains or to install associated improvements to meet the long term goals of the utility.
Emergency repairs are performed by private contractors or in-house crews as dictated by the scope of work. All costs for over sizing will be paid through negotiated cost and public utilities agreements. This is an ongoing annual program. Emergency repairs are addressed as they occur.

### Justification

Due to the age of the sanitary sewer system, it can be expected that system failures will occur resulting in capital expenses to repair or replace the failed component(s). In addition, missing opportunities to oversize or reroute mains will result in higher construction costs in the future. Delaying or eliminating this project would result in reduced ability to properly address system failures and missed opportunities to expand the system.

| Prior | Expenditures | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total | Future |
|---|---|---|---|---|---|---|---|---|
| 72,000 | Construction/Maintenance | 39,000 | 41,000 | 43,000 | 45,000 | 47,000 | 215,000 | 49,000 |
| Total | Total | **39,000** | **41,000** | **43,000** | **45,000** | **47,000** | **215,000** | Total |

| Prior | Funding Sources | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total | Future |
|---|---|---|---|---|---|---|---|---|
| 72,000 | W/WW Debt Financing | 39,000 | 41,000 | 43,000 | 45,000 | 47,000 | 215,000 | 49,000 |
| Total | Total | **39,000** | **41,000** | **43,000** | **45,000** | **47,000** | **215,000** | Total |

### Budget Impact/Other

DRAFT

# Fiscal 2013 DRAFT Capital Investment Pla FY 13 *thru* FY 17

## City of Dover, Delaware

**Project #** WW1204
**Project Name** Baltray Pump Station Replacement




**Type** Improvement
**Useful Life** 20-25 years
**Category** Water/Wastewater
**New Project:** No
**Time-Line:**

**Department** Wastewater Management
**Contact** Public Works Director
**Priority** 5
**Account Number:** 417-6900-569.40-31

**Total Project Cost:** **$125,000**

### Description

The proposed project includes the in kind replacement of the grinder pumping station installed with the construction of the Baltray Subdivision in 1988. The station is approaching its anticipated life expectancy of 20-25 years. The grinder pumps, rail system, and electric controls and comminutor will be replaced.
Grinder pumps require periodic repairs and replacement to maintain efficient operation. During previous pump removal, staff has noticed leaking seals and instability in the rail system for the pumps due to corrosion. Although grinder pumps are less costly than standard pumps used elsewhere, they are only appropriate under certain conditions. As a grinder pump is still effective at this location, it will be replaced in kind.

### Justification

Replace the aging station with new components to prevent the need for costly non budgeted repairs to maintain operation.
Pump failure resulting in a sewage spill into waterways or backup in a residence. Because of the age of the pump station, certain parts are no longer obtainable, and replacement of equipment is costly.

| Prior | Expenditures | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|---|
| 25,000 | Construction/Maintenance | 100,000 | | | | | 100,000 |
| **Total** | **Total** | **100,000** | | | | | **100,000** |

| Prior | Funding Sources | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|---|
| 25,000 | Water/Wastewater Fund | 100,000 | | | | | 100,000 |
| **Total** | **Total** | **100,000** | | | | | **100,000** |

### Budget Impact/Other

DRAFT

# Fiscal 2013 DRAFT Capital Investment Pla FY 13 *thru* FY 17

## City of Dover, Delaware

**Project #** WW1205
**Project Name** Dover Brook Gardens Pump Station Upgrade

**Type** Improvement
**Useful Life** 20-25 years
**Category** Water/Wastewater
**New Project:** No
**Time-Line:**

**Department** Wastewater Management
**Contact** Public Works Director
**Priority** 6 --
**Account Number:** 417-6900-569.40-31




### Description

**Total Project Cost:** **$65,000**

This project would construct a force main priming loop to insure that adequate back pressure is provided to the check valves to maintain prime on the vacuum primed Smith & Loveless pumps and upgrade to maintain or increase capacity, which may be accomplished by installing new pumps. The loop is to create a high point in the force main above the pumps to provide a column of water against the check valves. The existing force main was originally installed with a constant slope away from the station to the receiving gravity sewer manhole. The force main drains by gravity away from the check valves providing very little static water pressure to hold check valves closed.
Staff has observed numerous high wet well alarms due to pump loss of prime. Construction to be provided by in-house crew.

### Justification

Reduce maintenance time of cleaning check valves weekly and on-call or overtime pay when the pumps lose prime.
Pump prime failure could result in a sewage spill into waterways or backup in a residence.

| Prior | Expenditures | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|---|
| 15,000 | Construction/Maintenance | 50,000 | | | | | 50,000 |
| **Total** | **Total** | **50,000** | | | | | **50,000** |

| Prior | Funding Sources | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|---|
| 15,000 | Water/Wastewater Fund | 50,000 | | | | | 50,000 |
| **Total** | **Total** | **50,000** | | | | | **50,000** |

### Budget Impact/Other

DRAFT

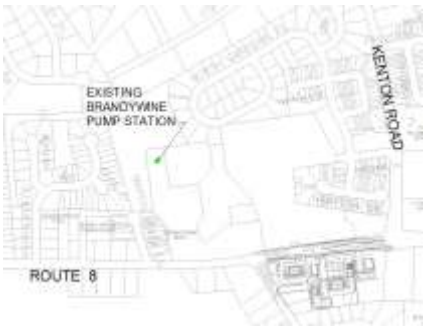
# Fiscal 2013 DRAFT Capital Investment Pla FY 13 *thru* FY 17

## City of Dover, Delaware

**Project #** WW1206
**Project Name** Brandywine Pump Station Replacement

**Type** Improvement
**Useful Life** 20-25 years
**Category** Water/Wastewater
**New Project:** No
**Time-Line:**

**Department** Wastewater Management
**Contact** Public Works Director
**Priority** 4
**Account Number:** 417-6900-569.40-31




### Description

**Total Project Cost:** **$402,000**

The proposed project includes the replacement of the Smith & Loveless package pumping station installed in 1977. The station has exceeded its life anticipated expectancy of 20-25 years and is in need of a capacity upgrade due to the increased growth in the basin.
This station was installed for the Dover Country Club Apartments when City sewer was made available to this area. The site was previously outside the City's service area and had its own onsite sewer treatment system. Over the life span of this station, it has seen increased flows with the construction of Mallard Pond, Marsh Creek, and Westwind Meadows, and the extension of service to Fox Hall Drive and possible infiltration. Based on the monthly runtime hours, the station is currently operating at 130 percent of desired capacity. Staff has observed numerous pump clogs and failures in the past years. The Dover Country Club and Brandywine Condo sewer lines are old and possibly influenced by infiltration.

### Justification

Replace the aged station with a completely new station to prevent the need for costly non budgeted repairs to maintain operation.

Pump failure resulting in a sewage spill into waterways or backup in a residence. Because of the age of the pump station, certain parts are no longer obtainable, and replacement of equipment is costly.

| Prior | Expenditures | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|---|
| 52,000 | Construction/Maintenance | 350,000 | | | | | 350,000 |
| **Total** | **Total** | **350,000** | | | | | **350,000** |

| Prior | Funding Sources | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|---|
| 52,000 | Water/Wastewater Fund | 350,000 | | | | | 350,000 |
| **Total** | **Total** | **350,000** | | | | | **350,000** |

### Budget Impact/Other

DRAFT

# Fiscal 2013 DRAFT Capital Investment Pla FY 13 *thru* FY 17

## City of Dover, Delaware

**Project #** WW1207
**Project Name** McKee Road Pump Station Communator Replacement




**Type** Improvement
**Useful Life** 20-25 years
**Category** Water/Wastewater
**New Project:** No
**Time-Line:**

**Department** Wastewater Management
**Contact** Public Works Director
**Priority** 7 --
**Account Number:** 417-6900-569.40-31

### Description

**Total Project Cost:** **$55,000**

The proposed project includes the replacement of the comminutor at the influent line to the pumping station installed in 1995. This acts as a screen/grinder at the influent side of the station, cutting or stopping large debris from entering the wet well and clogging the pumps. The comminutor motor has run 24/7 since the initial startup of the pumping station.

### Justification

Replace the aging equipment to prevent the need for costly unbudgeted repairs to maintain operation.
Unbudgeted costly repairs to comminutor and damage to a pump when failure occurs. Pump failure resulting in a sewage spill into waterway or backup in a residence. Due to the age of the station, certain parts are no longer obtainable, and replacement of equipment is costly.

| Prior | Expenditures | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|---|
| 10,000 | Construction/Maintenance | 45,000 | | | | | 45,000 |
| **Total** | **Total** | **45,000** | | | | | **45,000** |

| Prior | Funding Sources | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|---|
| 10,000 | Water/Wastewater Fund | 45,000 | | | | | 45,000 |
| **Total** | **Total** | **45,000** | | | | | **45,000** |

### Budget Impact/Other

DRAFT

# Fiscal 2013 DRAFT Capital Investment Pla

**FY 13** *thru* **FY 17**

## City of Dover, Delaware

**Project #** **WW1301**

**Project Name** **Hazlettville Road Interceptor**




| | | | |
|---|---|---|---|
| **Type** | Improvement | **Department** | Wastewater Management |
| **Useful Life** | 90+ years | **Contact** | Public Works Director |
| **Category** | Water/Wastewater | **Priority** | 9 -- |
| **New Project:** | No | **Account Number:** | 417-6900-569.40-35 |
| **Time-Line:** | | | |

### Description

**Total Project Cost:** **$770,000**

This project, identified in the 2009 Wastewater Master Plan, identified sections of 15" gravity wastewater main as being overloaded in peak conditions, due to a negative slope in the pipe. This project calls for the upgrade of roughly 1,320 linear feet of wastewater main. The proposed upgrade will install 21" main at proper slope to provide adequate capacity and allow for future growth in the basin.

### Justification

This project has been identified by the 2009 Wastewater Master Plan that the section of pipes is flowing nearly full, due to negative slope. This project will allow for proper capacity to handle current flow as well to allow for growth.
Delaying or eliminating this project would result in overflow of wastewater material.
In-house design in Fiscal 2013; construction in Fiscal 2014.

| Expenditures | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|
| Planning/Design | 30,000 | | | | | 30,000 |
| Construction/Maintenance | | 740,000 | | | | 740,000 |
| **Total** | **30,000** | **740,000** | | | | **770,000** |

| Funding Sources | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|
| Water/Wastewater Fund | 30,000 | 740,000 | | | | 770,000 |
| **Total** | **30,000** | **740,000** | | | | **770,000** |

### Budget Impact/Other

DRAFT

# Fiscal 2013 DRAFT Capital Investment Pla FY 13 *thru* FY 17

## City of Dover, Delaware

**Project #** WW1302
**Project Name** Lakeview Drive Pump Station Replacement




**Type** Improvement
**Useful Life** 20-25 years
**Category** Water/Wastewater
**New Project:** No
**Time-Line:**

**Department** Wastewater Management
**Contact** Public Works Director
**Priority** 10 --
**Account Number:** TBD

**Total Project Cost:** **$502,000**

### Description

This project calls for replacement of the Smith & Loveless package pumping station installed in 1971. The station has exceeded its life anticipated expectancy of 20-25 years and is need of a capacity upgrade due to high peak inflow rates.
This station is located within the roadway of Lakeview Drive. The design portion of this project is to address the relocation of this station.

### Justification

Replace the aged station with a completely new station to prevent the need for costly unbudgeted repairs to maintain operation.
Pump failure resulting in a sewage spill into waterway or backup in a residence. Due to the age of the station, certain parts are no longer obtainable and replacement of equipment is costly.
Design and bid in Fiscal 2013; construction in Fiscal 2014.

| Expenditures | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|
| Planning/Design | 52,000 | | | | | 52,000 |
| Construction/Maintenance | | 450,000 | | | | 450,000 |
| **Total** | **52,000** | **450,000** | | | | **502,000** |

| Funding Sources | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|
| Water/Wastewater Fund | 52,000 | 450,000 | | | | 502,000 |
| **Total** | **52,000** | **450,000** | | | | **502,000** |

### Budget Impact/Other

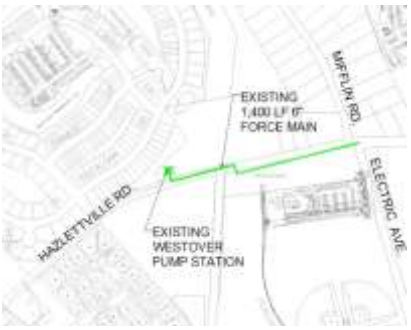
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# Fiscal 2013 DRAFT Capital Investment Pla FY 13 *thru* FY 17

## City of Dover, Delaware

**Project #** WW1303

**Project Name** Westover Pump Station and Force Main Upgrade




**Type** Improvement
**Useful Life** 20-25 years
**Category** Water/Wastewater
**New Project:** No
**Time-Line:**

**Department** Wastewater Management
**Contact** Public Works Director
**Priority** 8 --
**Account Number:** 417-6900-569.40-31

**Total Project Cost:** **$768,800**

### Description

The proposed project includes the upgrade of the Smith & Loveless pumping station and force main installed in 1994. The pump station's available capacity will be consumed with the build out of the Village of Cannon Mills and will be in need of additional capacity in order to be able receive additional flow from the west, specifically, the new Dover High School. The project will include replacement of interior six-inch suction and discharge piping with eight-inch pipe and upgrade 1,400 feet of six-inch force main to 12-inch diameter pipe from the station to Electric Avenue.

### Justification

Provide adequate capacity to receive additional sewage flow from the immediate vicinity due to development and annexation.
Pump failure resulting in a sewage spill into waterways or backup in a residence.
Design and bid in Fiscal 2013; construction in Fiscal 2014.

| Expenditures | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|
| Planning/Design | 65,000 | | | | | 65,000 |
| Construction/Maintenance | | 703,800 | | | | 703,800 |
| **Total** | **65,000** | **703,800** | | | | **768,800** |

| Funding Sources | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|
| Water/Wastewater Fund | 65,000 | 703,800 | | | | 768,800 |
| **Total** | **65,000** | **703,800** | | | | **768,800** |

### Budget Impact/Other

DRAFT

# Fiscal 2013 DRAFT Capital Investment Pla FY 13 *thru* FY 17

## City of Dover, Delaware

**Project #** WW1401
**Project Name** Retreat Pump Station Replacement

**Type** Improvement
**Useful Life** 20-25 years
**Category** Water/Wastewater
**New Project:** No
**Time-Line:**

**Department** Wastewater Management
**Contact** Public Works Director
**Priority** 6 --
**Account Number:** TBD




### Description

**Total Project Cost:** **$412,500**

The proposed project includes the replacement of the Smith & Loveless package pumping station installed in 1978. The station has exceeded its life expectancy of 20-25 years and is in need of a capacity upgrade due to the increased growth in the basin, specifically the proposed development at the Maple Dale Country Club, which had provided a cash-in-lieu contribution for upgrading the station proportional to the amount of flow they will be contributing to the pump station.

### Justification

Replace the aged station with a completely new station to prevent the need for costly non budgeted repairs to maintain operation.
Pump failure resulting in a sewage spill into waterways or backup in a residence. Because of the age of the pump station, certain parts are no longer obtainable and replacement of equipment is costly. Design in Fiscal 2014; construction in Fiscal 2015.

| Expenditures | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|
| Planning/Design | | 52,000 | | | | 52,000 |
| Construction/Maintenance | | | 360,500 | | | 360,500 |
| **Total** | | **52,000** | **360,500** | | | **412,500** |

| Funding Sources | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|
| Other | | | 36,000 | | | 36,000 |
| W/WW Debt Financing | | | 324,500 | | | 324,500 |
| Water/Wastewater Fund | | 52,000 | | | | 52,000 |
| **Total** | | **52,000** | **360,500** | | | **412,500** |

### Budget Impact/Other

DRAFT

# Fiscal 2013 DRAFT Capital Investment Pla FY 13 *thru* FY 17

## City of Dover, Delaware

**Project #** WW1501
**Project Name** Rolling Acres Pump Station Replacement




**Type** Improvement
**Useful Life** 20-25 years
**Category** Water/Wastewater
**New Project:** No
**Time-Line:**

**Department** Wastewater Management
**Contact** Public Works Director
**Priority** 4
**Account Number:** 417-6900-569.40-31

### Description

**Total Project Cost:** **$412,500**

This project calls for replacement of the Smith & Loveless package pumping station installed in 1973 in order to handle the commercial areas from Harrington Realty Shopping Center to the Howard Johnson Hotel. The station has exceeded its life anticipated expectancy of 20-25 years and is in need of a capacity upgrade due to the high peak inflow rates.
This station experiences periods of high inflow rates due to the hotel occupancy and is susceptible to possible inflow/infiltration. Staff has observed numerous pump high wet well alarms due to high inflows and increased runtimes during wet months.

### Justification

Replace the aged station with a completely new station to prevent the need for costly unbudgeted repairs to maintain operation.
Pump failure resulting in a sewage spill into waterway or backup in a residence. Due to the age of the station, certain parts are no longer obtainable, and replacement of equipment is costly. Design and bid in Fiscal 2015; construction in Fiscal 2016.

| Expenditures | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|
| Planning/Design | | | 52,000 | | | 52,000 |
| Construction/Maintenance | | | | 360,500 | | 360,500 |
| **Total** | | | **52,000** | **360,500** | | **412,500** |

| Funding Sources | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|
| W/WW Debt Financing | | | | 360,500 | | 360,500 |
| Water/Wastewater Fund | | | 52,000 | | | 52,000 |
| **Total** | | | **52,000** | **360,500** | | **412,500** |

### Budget Impact/Other

DRAFT

# Fiscal 2013 DRAFT Capital Investment Pla FY 13 *thru* FY 17

## City of Dover, Delaware

**Project #** WW1601
**Project Name** Lepore Road Sanitary Sewer Main Upgrade

**Type** Improvement
**Useful Life** 90+ years
**Category** Water/Wastewater
**New Project:** Yes
**Time-Line:**

**Department** Wastewater Management
**Contact** Public Works Director
**Priority** 4
**Account Number:** 417-6900-569.40-31

### Description

**Total Project Cost:** **$325,000**

This project calls for the replacement of approximately 374 linear feet of 8 inch gravity sewer main. Currently, the sewer main operates in a reverse slope condition, which overloads the pipe. The proposed upgrade will provide slope and adequate capacity for current flow to be carried to discharge.

### Justification

This project will allow for proper capacity and slope to handle the current flow.
Delaying or eliminating this project could result in overflow of wastewater material.
Design and bid in Fiscal 2016; construction in Fiscal 2017.

| Expenditures | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|
| Planning/Design | | | | 50,000 | | 50,000 |
| Construction/Maintenance | | | | | 275,000 | 275,000 |
| **Total** | | | | **50,000** | **275,000** | **325,000** |

| Funding Sources | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|
| Water/Wastewater Fund | | | | 50,000 | 275,000 | 325,000 |
| **Total** | | | | **50,000** | **275,000** | **325,000** |

### Budget Impact/Other

DRAFT

# Fiscal 2013 DRAFT Capital Investment Pla FY 13 *thru* FY 17

## City of Dover, Delaware

**Project #** WW1602
**Project Name** Delaware Tech Pump Station Replacement

**Type** Improvement
**Useful Life** Unknown
**Category** Water/Wastewater
**New Project:** Yes
**Time-Line:**

**Department** Wastewater Management
**Contact** Public Works Director
**Priority** 5
**Account Number:** 417-6900-569.40-31

### Description

**Total Project Cost:** **$455,000**

This project calls for replacement of the Smith & Loveless package pumping station installed in 1975 in order to handle the increased flows from the area. The station has exceeded its life anticipated expectancy of 20-25 years and is in need of a capacity upgrade due to anticipated increase flow.

### Justification

Replace the aged station with a completely new station to prevent the need for costly unbudgeted repairs to maintain operation.
Pump failure resulting in a sewage spill into waterway or backup in a residence. Due to the age of the station, certain parts are no longer obtainable, and replacement of equipment is costly. Design and bid in Fiscal 2016; construction in Fiscal 2017.

| Expenditures | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|
| Planning/Design | | | | 52,000 | | 52,000 |
| Construction/Maintenance | | | | | 403,000 | 403,000 |
| **Total** | | | | **52,000** | **403,000** | **455,000** |

| Funding Sources | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|
| Water/Wastewater Fund | | | | 52,000 | 403,000 | 455,000 |
| **Total** | | | | **52,000** | **403,000** | **455,000** |

### Budget Impact/Other

DRAFT

# Fiscal 2013 DRAFT Capital Investment Pla

**FY 13** *thru* **FY 17**

## City of Dover, Delaware

**Project #** **WW1701**

**Project Name** **Silver Lake Pump Station Replacement**

| | | | |
|---|---|---|---|
| **Type** | Improvement | **Department** | Wastewater Management |
| **Useful Life** | Unknown | **Contact** | Public Works Director |
| **Category** | Water/Wastewater | **Priority** | 5 |
| **New Project:** | Yes | **Account Number:** | 147-6900-569.40-31 |
| **Time-Line:** | | | |

### Description

**Total Project Cost:** **$427,000**

This project calls for replacement of the Smith & Loveless package pumping station installed in 1982 in order to handle development in the area, as well as completely rehabilitate the wet well side of the pump station using the poly-triplex system liner. The station has exceeded its life expectancy of 20-25 years and is in need of a capacity upgrade to handle anticipated growth in the basin.

### Justification

Replace the aged station with a completely new station to prevent the need for costly unbudgeted repairs to maintain operation. The wet well has deteriorated due to age and is subject to groundwater infiltration. Pump failure resulting in a sewage spill into waterways or backup in a residence. Because of the age of the pump station, certain parts are no longer obtainable and replacement of equipment is costly. Design and bid in Fiscal 2017; construction in Fiscal 2018.

| Expenditures | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total | Future |
|---|---|---|---|---|---|---|---|
| Planning/Design | | | | | 52,000 | 52,000 | 375,000 |
| **Total** | | | | | **52,000** | **52,000** | **Total** |

| Funding Sources | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total | Future |
|---|---|---|---|---|---|---|---|
| Water/Wastewater Fund | | | | | 52,000 | 52,000 | 375,000 |
| **Total** | | | | | **52,000** | **52,000** | **Total** |

### Budget Impact/Other

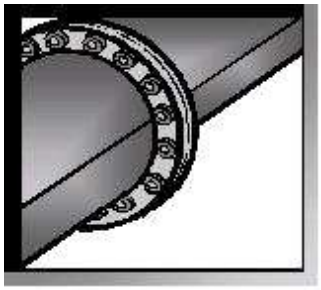
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# Fiscal 2013 DRAFT Capital Investment Pla FY 13 *thru* FY 17

## City of Dover, Delaware

**Project #** WD1202

**Project Name** Miscellaneous Distribution System Improvements



**Type** Improvement
**Useful Life** Unknown
**Category** Water/Wastewater
**New Project:** No
**Time-Line:**

**Department** Water Management
**Contact** Public Utilities Director
**Priority** 1
**Account Number:** 417-6800-568.40-34

### Description

**Total Project Cost:** **$1,033,948**

This project will primarily address emergency distribution system infrastructure repairs including water mains and services within major roadways and associated appurtenances. This project will also install improvements identified by the flushing program such as valve insertions and hydrant installations. These funds can also be used to partner with private developers to oversize future mains or to install associated improvements to meet the long term goals of the utility.

Emergency repairs are performed by private contractors or in-house crews as dictated by the scope of work. All costs for over sizing will be paid through negotiated cost and public utilities agreements.

### Justification

Due to the age of the water system, it can be expected that system failures will occur resulting in capital expenses to repair or replace the failed component(s). Implementing improvements identified by the flushing program will aide in improved operational control of the system. In addition, missing opportunities to oversize or reroute mains will result in higher construction costs in the future.

Delaying or eliminating this project would result in reduced ability to properly address system failures and missed opportunities to expand the distribution system.

| Prior | Expenditures | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total | Future |
|---|---|---|---|---|---|---|---|---|
| 588,948 | Construction/Maintenance | 70,000 | 75,000 | 75,000 | 75,000 | 75,000 | 370,000 | 75,000 |
| Total | Total | 70,000 | 75,000 | 75,000 | 75,000 | 75,000 | 370,000 | Total |

| Prior | Funding Sources | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total | Future |
|---|---|---|---|---|---|---|---|---|
| 588,948 | W/WW Debt Financing | 70,000 | 75,000 | 75,000 | 75,000 | 75,000 | 370,000 | 75,000 |
| Total | Total | 70,000 | 75,000 | 75,000 | 75,000 | 75,000 | 370,000 | Total |

### Budget Impact/Other

DRAFT

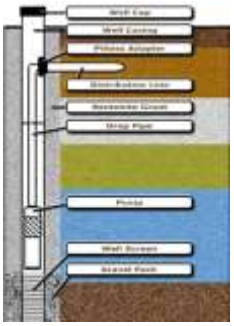
# Fiscal 2013 DRAFT Capital Investment Pla

**FY 13** *thru* **FY 17**

## City of Dover, Delaware

**Project #** **WD1203**

**Project Name** **Wellhead Redevelopment Program**



| | | | |
|---|---|---|---|
| **Type** | Improvement | **Department** | Water Management |
| **Useful Life** | 20-25 years | **Contact** | Public Utilities Director |
| **Category** | Water/Wastewater | **Priority** | 2 |
| **New Project:** | No | **Account Number:** | 417-6800-568.40-34 |
| **Time-Line:** | | | |

**Total Project Cost:** **$940,962**

### Description

This project will provide for rehabilitation and repair of each deep wellhead in an effort to maintain operations and/or increase/maintain the yield of each well as it relates to the permitted allocation.

FY 2008; total well inspection and testing performed. FY 2009: Motors at Wells #6A and #9 were rebuilt, and wells #13R and #15 were redeveloped. FY 2010: Well #10. FY 2011: Well #4 redevelopment and well piping improvements at various well locations, as well as continued well testing. FY 2012: Well #1 redevelopment. FY2013: Work will be determined following the testing in FY2012.

### Justification

The well screening and gravel pack requires cleaning over time due to a buildup of mineral deposits and foreign materials such as clay and silt. This maintenance effort is critical to ensure that production can continue to meet demand. It is also necessary to maintain the operational aspects of each well and provide repairs as needed to minimize downtime to maintain system capacity.

Delaying or eliminating this project would result in the continued deterioration of the well screen, gravel pack, and well yield over time. It would also result in increased well downtime, emergency repairs, and decreased capacity. These issues can lead to increased flow pattern changes and water quality concerns.

| Prior | Expenditures | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total | Future |
|---|---|---|---|---|---|---|---|---|
| 460,962 | Construction/Maintenance | 70,000 | 75,000 | 80,000 | 82,500 | 85,000 | 392,500 | 87,500 |
| **Total** | **Total** | **70,000** | **75,000** | **80,000** | **82,500** | **85,000** | **392,500** | **Total** |

| Prior | Funding Sources | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total | Future |
|---|---|---|---|---|---|---|---|---|
| 460,962 | W/WW Debt Financing | 70,000 | 75,000 | 80,000 | 82,500 | 85,000 | 392,500 | 87,500 |
| **Total** | **Total** | **70,000** | **75,000** | **80,000** | **82,500** | **85,000** | **392,500** | **Total** |

### Budget Impact/Other

DRAFT

# Fiscal 2013 DRAFT Capital Investment Pla FY 13 *thru* FY 17

## City of Dover, Delaware

**Project #** WD1204
**Project Name** Emergency Generators (Wells)



**Type** Equipment
**Useful Life** 10-12 years
**Category** Water/Wastewater
**New Project:** No
**Time-Line:**

**Department** Water Management
**Contact** Public Utilities Director
**Priority** 4
**Account Number:** 417-6800-568.40-31

### Description

**Total Project Cost:** **$240,000**

This project, identified in the 2006 Water Master Plan Update, would provide emergency generators for large production wells. Due to the inability of obtaining a homeland security grant, staff will pursue a partial grant from the Drinking Water State Revolving Fund (DWSRF).

All generators purchased will be permanent fixtures at each site. Generator purchased in FY 2012 will support Well #2, FY 2013 will support Well #6 and FY 2014 will support Well #10. Currently, a portable generator is stationed at Well #10, after installation of permanent generator at Well #10; the portable generator will be used at medium sized production wells as needed.

### Justification

This project will provide emergency power to wells for continued water production and reliability in the event of power disruptions or other emergencies.

Delaying or eliminating this project would result in reduced or suspended water service in the event of power disruptions or other emergencies.

| Expenditures | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|
| Miscellaneous | 80,000 | 80,000 | 80,000 | | | 240,000 |
| **Total** | **80,000** | **80,000** | **80,000** | | | **240,000** |

| Funding Sources | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|
| Water/Wastewater Fund | 80,000 | 80,000 | 80,000 | | | 240,000 |
| **Total** | **80,000** | **80,000** | **80,000** | | | **240,000** |

### Budget Impact/Other

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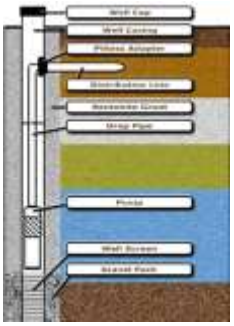
# Fiscal 2013 DRAFT Capital Investment Pla

**FY 13** *thru* **FY 17**

## City of Dover, Delaware

**Project #** **WD1301**

**Project Name** **Piney Point Well**



| | | | |
|---|---|---|---|
| **Type** | Improvement | **Department** | Water Management |
| **Useful Life** | 50 years | **Contact** | Public Utilities Director |
| **Category** | Water/Wastewater | **Priority** | 5 |
| **New Project:** | No | **Account Number:** | 417-6800-568.40-31 |
| **Time-Line:** | | | |

**Total Project Cost:** **$645,000**

### Description

This project, identified by staff and confirmed by the 2006 Water Master Plan Update, proposes the drilling of a new Piney Point Aquifer Production Well to increase production capacity up to our current permitted allocation as well as increase system pressure and stabilize the chlorine residuals of the City. The proposed wellhead is planned to be located in Schutte Park. It is intended that the yield from a new production well will allow us to abandon one of our poorly performing wells.
Planning started in Fiscal 2009. Design continued between 2010 and 2012. Construction to be completed in Fiscal 2013.

### Justification

A reduction in long-term yield from our Piney Point Well is causing a greater reliance on our more costly aquifers.

Delaying or eliminating this project would result in the continued reduction in our production capabilities under our permitted allocation, as well as our ability to meet projected demand increases.

| Prior | Expenditures | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|---|
| 195,000 | Construction/Maintenance | 450,000 | | | | | 450,000 |
| **Total** | **Total** | **450,000** | | | | | **450,000** |

| Prior | Funding Sources | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|---|
| 195,000 | Water/Wastewater Fund | 450,000 | | | | | 450,000 |
| **Total** | **Total** | **450,000** | | | | | **450,000** |

### Budget Impact/Other

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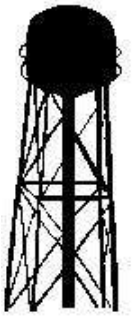
# Fiscal 2013 DRAFT Capital Investment Pla

**FY 13** *thru* **FY 17**

## City of Dover, Delaware

**Project #** **WD1302**

**Project Name** **1.0 MG Elevated Water Storage Tower**



| | | | |
|---|---|---|---|
| **Type** | Improvement | **Department** | Water Management |
| **Useful Life** | 90+ years | **Contact** | Public Utilities Director |
| **Category** | Water/Wastewater | **Priority** | 6 -- |
| **New Project:** | No | **Account Number:** | 417-6800-568.40-31 |
| **Time-Line:** | | | |

### Description

**Total Project Cost:** **$3,085,000**

The proposed project, identified by staff and confirmed by the 2006 Water Master Plan Update, will construct a new 1.0 million gallon elevated storage tank within the distribution system.
The planning, site selection and land acquisition was conducted between Fiscal 2009 and Fiscal 2012. For bonding purposes, the construction of the tank has been divided between two fiscal years. Construction is planeed for Fiscal 2013 and 2014.

### Justification

This project was determined necessary by the 2006 Water Mater Plan Update in order to meet future storage volume requirements based upon demands and to aid in reducing low pressure areas and enhance fire suppression capability.
Delaying or eliminating this project will result in preventing growth within the system, particularly; fire suppression measures will be compromised.

| Prior | Expenditures | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|---|
| 695,000 | Construction/Maintenance | 2,000,000 | 390,000 | | | | 2,390,000 |
| **Total** | **Total** | **2,000,000** | **390,000** | | | | **2,390,000** |

| Prior | Funding Sources | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|---|
| 695,000 | W/WW Debt Financing | 2,000,000 | 390,000 | | | | 2,390,000 |
| **Total** | **Total** | **2,000,000** | **390,000** | | | | **2,390,000** |

### Budget Impact/Other

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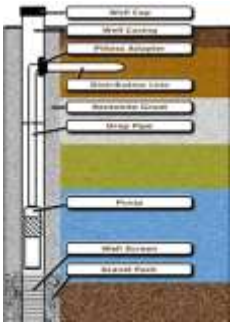
# Fiscal 2013 DRAFT Capital Investment Pla

**FY 13** *thru* **FY 17**

## City of Dover, Delaware

**Project #** **WD1304**

**Project Name** **Future Columbia Well Installation**



| | | | |
|---|---|---|---|
| **Type** | Improvement | **Department** | Water Management |
| **Useful Life** | 20-25 years | **Contact** | Public Works Director |
| **Category** | Water/Wastewater | **Priority** | 8 -- |
| **New Project:** | No | **Account Number:** | 417-6800-568.40-31 |
| **Time-Line:** | | | |

### Description

**Total Project Cost:** **$562,700**

This project, identified by staff and confirmed by the 2006 Water Master Plan Update, proposes the drilling of new shallow well to increase production capacity at the Water Treatment Plant to design levels of 5.0 million gallons per Day. This project is to be completed in conjunction with the Water Treatment Plant Process Improvements.
The specific location of a proposed wellhead has not been determined at this time. The location will be selected in the planning and design phase. In addition, the yield from a new production well may allow us to abandon some of our poorly performing wells. Land costs are based upon the need of 1/4 acre of land for the project. This project will be designed in Fiscal 2013 to coincide with the Water Treatment Plant Process Improvements Design, Construction is planned for Fiscal 2018.

### Justification

To meet increased water demand and fire suppression requirements.
Delaying or eliminating this project would result in the continued reduction in our production capabilities under our permitted allocation, as well as limiting the City's growth.

| Expenditures | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total | Future |
|---|---|---|---|---|---|---|---|
| Planning/Design | 55,000 | | | | 48,800 | 103,800 | 408,900 |
| Land Acquisition | | | | | 50,000 | 50,000 | Total |
| **Total** | **55,000** | | | | **98,800** | **153,800** | |

| Funding Sources | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total | Future |
|---|---|---|---|---|---|---|---|
| Water/Wastewater Fund | 55,000 | | | | 98,800 | 153,800 | 408,900 |
| **Total** | **55,000** | | | | **98,800** | **153,800** | Total |

### Budget Impact/Other

DRAFT

# Fiscal 2013 DRAFT Capital Investment Pla FY 13 *thru* FY 17

## City of Dover, Delaware

**Project #** WD1501
**Project Name** SCADA Equipment Technology Upgrade



**Type** Equipment
**Useful Life** 10-12 years
**Category** Water/Wastewater
**New Project:** No
**Time-Line:**

**Department** Water Management
**Contact** Public Utilities Director
**Priority** 6 --
**Account Number:** 417-6800-568.40-31

### Description

**Total Project Cost:** **$160,000**

This project involves the replacement of antiquated and/or obsolete equipment related to the SCADA (Supervisory Control and Data Acquisition) system, which controls water production. This equipment includes, but is not limited to, Remote Telemetry Units (RTUs), Master Telemetry Unit (MTU) and Radios. SCADA is used for reporting, on a constant basis, the status of the City of Dover's water production wells as well as the Water Treatment Plant. The equipment being replaced would be outdated, or unable to be repaired.
It is estimated that upgrades will be made at deep well sites and the Water Treatment Plant, as part of this program.

### Justification

Replace failing and antiquated equipment to improve monitoring ability and system control to comply with regulatory and reporting requirements and to prevent the need for costly non budgeted emergency repairs. Due to the age of some of the equipment, only used parts are available. Lack of alarms regarding problems at water production wells and the water treatment plant. Failures would provide no advance warnings of failures in the field at water production sites.

| Expenditures | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|
| Miscellaneous | | | 80,000 | 80,000 | | 160,000 |
| **Total** | | | **80,000** | **80,000** | | **160,000** |

| Funding Sources | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|
| Water/Wastewater Fund | | | 80,000 | 80,000 | | 160,000 |
| **Total** | | | **80,000** | **80,000** | | **160,000** |

### Budget Impact/Other

DRAFT

# Fiscal 2013 DRAFT Capital Investment Pla FY 13 *thru* FY 17

## City of Dover, Delaware

**Project #** WD1601
**Project Name** Meter Replacement Program

**Type** Improvement
**Useful Life** Unknown
**Category** Water/Wastewater
**New Project:** Yes
**Time-Line:**

**Department** Water Management
**Contact** Public Utilities Director
**Priority** 6 --
**Account Number:** 417-6800-568.40-31

### Description

**Total Project Cost:** **$700,000**

This project will be an ongoing project to replace our aged water meters in the system. A portion of water meters will be replaced each year. A majority of the water meters have exceeded their life expectancy of 15-20 years. The industry standard is to replace 20% of the meter inventory for five years. The city will benefit from this project by having a more efficient system which will recover maximum revenue to the water utility. Additionally, expenses of maintaining, stocking and operating the out dated meters are greatly reduced.

### Justification

This project will provide the City of Dover with accurate readings of our water users, thus creating accurate revenue from the customers.

Delaying or eliminating this project would result in the age of the water meters increasing, and consequently the meters will not read the correct volume of water being consumed. Additionally, older water meters typically require more maintenance.

| Expenditures | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|
| Miscellaneous | | | | 300,000 | 400,000 | 700,000 |
| **Total** | | | | **300,000** | **400,000** | **700,000** |

| Funding Sources | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|
| Water/Wastewater Fund | | | | 300,000 | 400,000 | 700,000 |
| **Total** | | | | **300,000** | **400,000** | **700,000** |

### Budget Impact/Other

Over time, the capabilities of a water meter to read accurate volumes of water deteriorates, typically registering less water than actually being consumed. With installation of new meters, accurate readings will increase the actual revenue from this utility.

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# Fiscal 2013 DRAFT Capital Investment Pla

**FY 13** *thru* **FY 17**

## City of Dover, Delaware

**Project #** WQ1201

**Project Name** Water Quality Improvements

| | | | |
|---|---|---|---|
| **Type** | Improvement | **Department** | Water Management |
| **Useful Life** | 90+ years | **Contact** | Public Utilities Director |
| **Category** | Water/Wastewater | **Priority** | 3 |
| **New Project:** | No | **Account Number:** | 417-6800-568.40-31 |
| **Time-Line:** | | | |

**Total Project Cost:** **$6,994,000**

### Description

This project was first identified by staff and the 2006 Water Master Plan Update, and has since become further refined with the FY 2006 Water Quality Evaluation. Projects to be included under this category primarily consist of replacement or relining of old unlined cast iron water main within the City's water distribution system; system upgrades to improve system control; and utilization of a consultant to provide additional design and evaluation services, as needed. Recent research and data collection has produced a Water Main Rehabilitation Priority List, based on several criteria to identify water mains that are in need of replacement or relining. Pipes will be upgraded according to the severity of the pipe condition, as well as coordination with the City of Dover's Public Services Street Rehabilitation Program. Timeline/Current Status:between FY 2008 and FY 2010, the deep well contact chambers were designed and installed. Between FY 2008 and FY 2011 the water mains that were replaced include, Washington Street, Pennsylvania Avenue, South Street, Pear Street, West Street, Hazel Road, Maryland Avenue, American Avenue, Bayard Avenue, Greenhill Avenue, Bayard Avenue Alley and Loockerman Street. Operational efforts, such as flushing, will continue to occur on a routine basis. FY 2012 improvements include, N. Pennsylvania Ave., American Ave. Ext., Madison St., Rodney Rd., New Street, Ross Street and Bradford Street (near Wesley College). As part of the Water Main Rehabilitation Priority List, water lines were identified throught the City that require replacing/relining. The following water line rehab projects are scheduled for FY2013: William Street, West Street & Alley. As part of the Water Main Rehabilitation Priority List, water lines were identified throughout the City that requires replacement/relining. Using this as a guide the following water line rehabilitation projects are scheduled for FY 2013: William Street, West Street West Alley and West Street East Alley.

### Justification

Water quality complaints have eroded consumer confidence in the City's water supply as the water is perceived to be aesthetically unpleasant. In order to reduce complaints and potentially alleviate this problem, it is necessary to implement the improvements identified by staff, the 2006 Water Master Plan Update, and the FY 2006 Water Quality Evaluation.

Delaying or eliminating this project will prolong customer dissatisfaction and further erode confidence in the City's water supply. In addition, main rehabilitation and replacement, ensuring pipes do not significantly exceed the expected life cycle, is critical to provide a reliable supply of water for our customers and for fire suppression. Water leaks and breaks on older lines can have a significant impact on our ability to serve over time.

Addressing the brown water and associated water quality concerns of the City's water system will not only require capital improvements to the system but also operational changes. Some operation changes will result in no net effect on the operating budget, while others will need to be addressed in the development of future operating budgets. Such items include tools and supplies necessary to improve system sampling and monitoring as well as tools and supplies necessary to improve system-wide flushing operations.

| Prior | Expenditures | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total | Future |
|---|---|---|---|---|---|---|---|---|
| 500,000 | Construction/Maintenance | 479,000 | 905,000 | 960,000 | 950,000 | 1,600,000 | 4,894,000 | 1,600,000 |
| **Total** | **Total** | **479,000** | **905,000** | **960,000** | **950,000** | **1,600,000** | **4,894,000** | **Total** |

| Prior | Funding Sources | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total | Future |
|---|---|---|---|---|---|---|---|---|
| 500,000 | W/WW Debt Financing | 479,000 | 905,000 | 960,000 | 950,000 | 1,600,000 | 4,894,000 | 1,600,000 |
| **Total** | **Total** | **479,000** | **905,000** | **960,000** | **950,000** | **1,600,000** | **4,894,000** | **Total** |

### Budget Impact/Other

DRAFT

# Fiscal 2013 DRAFT Capital Investment Pla FY 13 *thru* FY 17

## City of Dover, Delaware

**Project #** WQ1303
**Project Name** Water Treatment Plant Process Improvements



**Type** Improvement
**Useful Life** 20-25 years
**Category** Water/Wastewater
**New Project:** No
**Time-Line:**

**Department** Water Management
**Contact** Public Utilities Director
**Priority** 7 --
**Account Number:** TBD

### Description

**Total Project Cost:** **$1,050,000**

This project, identified in the 2006 Water Master Plan Update, proposes process improvements to the existing Water Treatment Plant. Due to limitations with the Ozone Contactors, the capacity at the Water Treatment Plant is limited to 4.0 million gallons per day, as opposed to 5.0 million gallons per day, as originally designed. A consultant will be utilized to determine the best means and improvements necessary to increase the capacity. This project is to be performed in conjunction with the future Columbia Well installation.
Planning is proposed for Fiscal 2013. Construction to begin in Fiscal 2015.

### Justification

Process improvements will allow for capacity enhancements as well as improved ability to meet regulatory requirements.
Delaying or eliminating this project can result in production capacity decreases, which could limit growth, and/or cause regulatory incompliance.

| Expenditures | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|
| Planning/Design | 150,000 | | | | | 150,000 |
| Construction/Maintenance | | | 350,000 | 550,000 | | 900,000 |
| **Total** | **150,000** | | **350,000** | **550,000** | | **1,050,000** |

| Funding Sources | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|
| Water/Wastewater Fund | 150,000 | | 350,000 | 550,000 | | 1,050,000 |
| **Total** | **150,000** | | **350,000** | **550,000** | | **1,050,000** |

### Budget Impact/Other

DRAFT

City of Dover, Delaware

*Fiscal 2013 DRAFT Capital Investment Plan*

FY 13 thru FY 17

# PROJECTS BY DEPARTMENT

| Department | Project# | Priority | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|---|---|
| **W/WW Engineering** | | | | | | | | |
| 2003 Chevrolet Pick-Up (418) | *Veh# 418* | n/a | 23,400 | | | | | *23,400* |
| 2008 Chevrolet Pickup (421) | *Veh# 421* | n/a | | | | 27,000 | | *27,000* |
| **W/WW Engineering Total** | | | **23,400** | | | **27,000** | | ***50,400*** |
| **Wastewater Management** | | | | | | | | |
| 2001 Dodge Pick Up Truck (661-2) | *Veh 661-2* | n/a | 11,450 | | | | | *11,450* |
| 2002 Dodge Pick Up Truck (663-2) | *Veh 663-2* | n/a | | 17,450 | | | | *17,450* |
| 2002 Dodge Pick- Up (668-2) | *Veh 668-2* | n/a | | 17,450 | | | | *17,450* |
| 2002 Sterling L7500 Dump Truck (671-2) | *Veh 671-2* | n/a | | | 59,850 | | | *59,850* |
| 1997 New Holland 575E (674-2) | *Veh 674-2* | n/a | | | | 59,100 | | *59,100* |
| 2005 Case Backhoe (682-2) | *Veh 682-2* | n/a | | | | | 62,050 | *62,050* |
| 2000 Airman Air Compressor (683-2) | *Veh 683-2* | n/a | | 9,700 | | | | *9,700* |
| 2006 Vaccon Jet Vac Truck (695-2) | *Veh 695-2* | n/a | 144,500 | | | | | *144,500* |
| 2008 Ford Pickup | *Veh 698-2* | n/a | | | | 17,150 | | *17,150* |
| 1987 Empire Generator (601) | *Veh# 601* | n/a | | | 30,600 | | | *30,600* |
| 1987 Empire Generator (602) | *Veh# 602* | n/a | | | 30,600 | | | *30,600* |
| 1987 Empire Generator (603) | *Veh# 603* | n/a | | | 30,600 | | | *30,600* |
| 2003 Chevrolet Pick-Up (655) | *Veh# 655* | n/a | 45,100 | | | | | *45,100* |
| 2002 Ford 1-Ton Utility Truck with Crane (664) | *Veh# 664* | n/a | 43,000 | | | | | *43,000* |
| 2008 Ford 1 Ton Utility w/ Crane (665) | *Veh# 665* | n/a | | | | 47,600 | | *47,600* |
| 2003 Sterling Truck Jet (691) | *Veh# 691* | n/a | | 210,400 | | | | *210,400* |
| **Wastewater Management Total** | | | **244,050** | **255,000** | **151,650** | **123,850** | **62,050** | ***836,600*** |
| **Water Construction** | | | | | | | | |
| 1999 Dodge 1-Ton Utility Truck | *Veh# 403* | n/a | 31,000 | | | | | *31,000* |
| 1995 Caterpillar Excavator | *Veh#400* | n/a | | | | 352,400 | | *352,400* |
| 1995 Caterpillar Loader | *Veh#402* | n/a | | | 182,300 | | | *182,300* |
| 2002 Caterpillar Backhoe | *Veh#405* | n/a | | | 135,600 | | | *135,600* |
| 1995 John Deere Broom Tractor | *Veh#406* | n/a | | | 44,300 | | | *44,300* |
| 2004 Ford 1-Ton with Dump | *Veh#417* | n/a | | 61,600 | | | | *61,600* |
| 2001 Dodge Pick-Up | *Veh#419* | n/a | | 22,200 | | | | *22,200* |
| 1991 International 40S | *Veh#422* | n/a | | | | 75,200 | | *75,200* |
| 2002 Sterling STE | *Veh#424* | n/a | | | | | 129,500 | *129,500* |
| **Water Construction Total** | | | **31,000** | **83,800** | **362,200** | **427,600** | **129,500** | ***1,034,100*** |
| **Water Management** | | | | | | | | |
| 1997 New Holland (674-2) | *16Veh# 674-2* | n/a | | | | 59,100 | | *59,100* |
| 2001 Dodge Pick Up Truck (661-2) | *Veh# 661-2* | n/a | 11,450 | | | | | *11,450* |
| 2002 Dodge Pick-Up (663-2) | *Veh# 663-2* | n/a | | 17,450 | | | | *17,450* |
| 2002 Dodge Pick-Up (668-2) | *Veh# 668-2* | n/a | | 17,450 | | | | *17,450* |
| 2002 Sterling L7500 (671-2) | *Veh# 671-2* | n/a | | | 59,850 | | | *59,850* |
| 2005 Case Backhoe | *Veh# 682-2* | n/a | | | | | 62,050 | *62,050* |
| 2000 Airmen Air Compressor (683-2) | *Veh# 683-2* | n/a | | 9,700 | | | | *9,700* |

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| Department | Project# | Priority | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | Total |
|---|---|---|---|---|---|---|---|---|
| 2006 Vaccon Jet Vac Truck (695-2) | *Veh# 695-2* | n/a | 144,500 | | | | | *144,500* |
| 2008 Ford Pickup (698-2) | *Veh# 698-2* | n/a | | | | 17,150 | | *17,150* |
| **Water Management Total** | | | **155,950** | **44,600** | **59,850** | **76,250** | **62,050** | ***398,700*** |
| **Water Treatment Plant** | | | | | | | | |
| 2010 Ford 1-Ton Utility Truck w/ Gage | *Veh# 620* | n/a | | | | | 48,000 | *48,000* |
| 2007 Ford 1-Ton Utlity (622) | *Veh# 622* | n/a | | | 45,200 | | | *45,200* |
| 2001 Dodge Pick Up (660) | *Veh# 660* | n/a | 24,100 | | | | | *24,100* |
| 2008 GMC Cargo Van (662) | *Veh# 662* | n/a | | | | 25,900 | | *25,900* |
| **Water Treatment Plant Total** | | | **24,100** | | **45,200** | **25,900** | **48,000** | ***143,200*** |
| **GRAND TOTAL** | | | **478,500** | **383,400** | **618,900** | **680,600** | **301,600** | ***2,463,000*** |

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