



A Customer Owned Utility
Serving Our Community Since 1894

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March 12, 2008

Dear Members of the North Attleborough Community:

I am pleased to present this year for your review the department's Fiscal Year 2008 Capital Improvement Plan (CIP), as prepared by NAED's administration and approved by the Board of Electric Commissioners on January 2, 2008.

I want to thank the Commissioners for their input and suggestions and our departmental managers for the quality of their proposals and abilities to advocate on behalf of their requests.

I believe that this year's Capital Improvement Plan is a realistic and flexible planning document which is responsive to both the present and future capital needs of this department. I also believe that the plans presented herein address this department's needs to protect and maintain our capital facilities in a well considered and fiscally responsible manner.

This year's CIP and annual budget presentations will also reflect the interest of NAED's administration in technology and planning so as to improve our department's overall capacity to better serve our customers.

Since becoming NAED's General Manager, since August 15, 2005, this office and the Board of Electric Commissioners have, together, sought to reform the department's previous efforts in capital improvement planning. During the past months the administration has instituted new internal forms and processes relative to the preparation of the CIP and evaluation of divisional requests.

Our purpose for instituting changes in the department's internal processes has been predicated upon our commitment to the department's customers that NAED's CIP is a viable fiscal and operational planning document with work descriptions, projected fiscal requirements, and where possible, estimates regarding the commitment of departmental man-hours and personnel.

Although progress has been made, candidly, much work remains to be done.

Our capital recommendations are guided by the department's projected fiscal resources for capital and for the purposes of financing the proposed capital projects presented herein we are recommending, where appropriate, the utilization of depreciation expense and prior year funds. The Fiscal Year 2008 CIP does not contain any recommended use of our Depreciation Funds or debt.

While the plan is an on-going exercise, the information presented herein does provide, to the Commissioners and our customers, a "guide" as to where the department believes capital expenditures are required and appropriate.

In addition to the Board of Electric Commissioners, I want to particularly note, and express my appreciation to Paula Tattrie, Business Division Manager, Geoff Morton, Project Manager, and Janine Newman, Administrative Assistant for their assistance in preparing this plan and recommendations.

On behalf of NAED's administration, we look forward to your review of this document and hope that you will find our efforts useful.

Sincerely,

James C. Moynihan
General Manager

I. SUMMARY OF NAED's FY 2008 CAPITAL IMPROVEMENT PLAN

Projected Cost: \$2,530,103

A clear, concise and well considered capital improvement plan (CIP) is a necessity for NAED if the department is to be effective in developing an effective long term sense of "vision" and "strategic planning".

We are very pleased to present the FY 2008 CIP to the Board of Electric Light Commissioners and our customers. We believe that the plan is well considered and responsive to our commitment to maintain and improve the department's distribution system relative to:

Reliability
Capacity
Equipment Maintenance

The proposed FY 2008 CIP utilizes both FY 2008 "Depreciation Expense" and FY 2007 "Unexpended Capital Funds". The CIP does not assume any utilization of NAED's Depreciation Funds or the issuance of debt.

While there are several exciting projects and efforts presented herein, as General Manager, let me note in particular the following "cornerstones" of this year's plan:

- a. Two capital projects relating to the design to upgrade two of our distribution system circuits (E-8 and E-11).
- b. New financial management software/system to replace the "hodgepodge" relating to our current fiscal software efforts which seek (generally unsuccessfully) to integrate Macola software with Harris software, Word and Excel spreadsheets.
- c. A commitment and embracing of technology in the areas of Geographic Information Systems (GIS), purchase of an infra red camera, upgrading of meter technology, and a new SCADA (Supervisory Control and Data Acquisition) system to better manage our distribution system.
- d. Support for our town government's operation by upgrading the hardware of the Muni-Net.
- e. Commitment to upgrading our facilities with improved security.
- f. Commitment to maintaining our infrastructure and equipment through our annual effort to replace departmental vehicles in a timely fashion and recommended appropriations to address the needs of our distribution system (such as switches, reclosers, capacitors and transformers).

As I noted elsewhere in the CIP document, we look forward to the review of the Board of Electric Light Commissioners and hope that you will share our enthusiasm for this plan and its impact upon the department, both in FY 2008 and in NAED's future.

II. OVERVIEW OF NAED'S FY 2008 CAPITAL IMPROVEMENT PLAN

A. NAED'S FY 2008 CAPITAL IMPROVEMENT PLAN

(As approved by the Board of Electric Commissioners, January 2, 2008)

TOTAL CIP PROPOSED: **\$2,530,103**

A. ADMINISTRATION: **\$ 6,000**

1. ADA Improvements to 275 Landry Avenue

B. ENGINEERING **\$ 12,370**

- | | |
|--------------------------------------|---------|
| 1. PMI Voltage Mounting Devices (3): | \$9,000 |
| 2. System Load Monitor: | \$1,800 |
| 3. Voltmeter (Fluke 87): | \$ 570 |
| 4. Other Tools/Equip. (Camera...): | \$1,000 |

C. INSTITUTIONAL TECHNOLOGY (TOTAL) **\$ 305,645**

1. NAED FACILITIES

- | | |
|---|-----------|
| a. Multi-function Printer - Current Lease: | \$ 4,700 |
| b. Postage Meter Lease: | \$ 1,920 |
| c. GIS Arc Server: | \$98,000 |
| d. Facility Security: | \$83,525 |
| e. LAN Switches: | \$ 28,500 |
| f. PC Replacements: | \$ 31,000 |
| g. Printer – Customer Service Area (Lease): | \$ 5,000 |

2. MUNI-NET

- | | |
|-----------------------------------|----------|
| a. Muni-Net Hardware Replacement: | \$53,000 |
|-----------------------------------|----------|

D. METER DIVISION **\$ 147,588**

- | | |
|---------------------------------|----------|
| 1. Meters (Total – 2S, 16S, 9S) | \$48,588 |
| 2. Meter Reading – Handheld | \$18,000 |
| 3. MVRS Software | \$ 6,000 |
| 4. Mobil Collection Data Pac: | \$45,000 |
| 5. Meter Testing – Test Bench: | \$30,000 |

E. PROJECT MANAGER **\$ 535,000**

- | | |
|---------------------------------|-----------|
| 1. Financial Management System: | \$450,000 |
| 2. SCADA System Purchase: | \$ 85,000 |

F. OPERATIONS DIVISION **\$ 1,523,500**

- | | |
|--|-------------|
| 1. Infra Red Camera: | \$ 45,000 |
| 2. Defibrillators (6): | \$ 12,000 |
| 3. Vehicle Replacement Program: | \$ 200,000 |
| 4. Sherman Substation (Paving & Security): | \$ 90,000 |
| 5. Circuit E-8 (Elmwood) Upgrade: | \$ 400,000 |
| 6. Circuit E-11 Project – Walcott Road area: | \$ 275,000 |
| 7. Distribution System - Air Switches (6): | \$ 24,000 |
| 8. Distribution System – Reclosers (2): | \$ 30,000 |
| 9. Distribution System – Capacitor (1): | \$ 5,500 |
| 10. Field Computers (3): | \$ 12,000 |
| 11. Operations Center – Facility Improvements: | \$ 15,000 |
| 12. Transformers: | \$ 200,000 |
| 13. Routine Distribution Projects: | \$ 200,000* |
| 27. Utility Pole Trailer | \$ 15,000 |

** In this item we are now incorporating what were listed on the draft CIP, prepared by P. Tattrie, dated 12-4-07. Included in this category are the following: #16 – Routine Distribution Projects, #22 – Poles, #23 – Wires/Cable, #24 – Hardware & Inventory.*

We are doing so, because in truth, such items listed in these categories will show as an “operating expense” until included in a “Job Order” – specific project - and then they will be “capitalized”.

Also included in this category will be Leased Lighting.

**B. PROJECTED FUNDING NAED'S FY 2008 CAPITAL IMPROVEMENT
PLAN**

(As approved by the Board of Electric Commissioners, January 2, 2008)

1. Anticipated Sources of Funding of the FY 2008 CIP:*

FY 2008 Depreciation Expense:	\$1,824,000
FY 2007 Unexpended Capital Funds:	\$ 706,103
Cost of the FY 2008 CIP:	\$2,530,103

*The amounts of the anticipated sources of funding may change based upon the determination at the end of the fiscal year of the department's "Total Plant Value"

C. CIP – WORK TO BE DONE – PROJECTS AUTHORIZED IN PREVIOUS FISCAL YEAR

While not part of the FY 2008 CIP, the department plans to address, and complete, the following capital improvements, previously authorized by the Board of Electric Light Commissioners in FY 2008.

Circuit E-7:	\$ 595,875
Circuit E-11	\$ 229,872
Mall Switchgear:	\$ 185,000
Replace Transformer contacts:	\$ 8,332
Air Compressor & Gas Sniffer:	5,500
TOTAL -	\$1,024,579

Sources of Funding: Funds Previously Identified in FY 2007

III. FACTORS & INFORMATION CONTRIBUTING TO THE DEVELOPMENT OF THIS YEAR'S PLAN

A. FINANCIAL

1. Depreciation Expense (Annual Operating Budget)

Pursuant to the provision of M.G.L.c. 164, section 57, the department can annually fund capital projects at an amount of three percent (3%) rate – based on “...the cost of the plant exclusive of land and any water power appurtenant thereto.”

Subject to the approval of the Commonwealth's Department of Public Utilities The three percent (3%) rate can be increased to five percent (5%).

2. Depreciation Fund(s)

We need to be prudent in our use of the Depreciation Fund(s) and accurate in our fiscal revenue projections. There must be elements of planning, logic, prioritization and choices in our plans and efforts to maintain and keep our current services and system “up to date” and responsive to the changes in population and land use within our community.

3. Debt Service (Bonding)

We may need, on occasion, to consider the viability and appropriateness of developing a funding plan that may incorporate debt (bonding) as a component of the funding process. In 1998 the department informed the Town Treasurer that \$4 million authorized for infrastructure improvements by the Representative Town Meeting in 1988 was not needed. In truth, the reliability department's distribution system, equipment, facilities and services would be greatly enhanced from an infusion of \$4 million.

The use of debt by the department to address the departments' capital needs is entirely appropriate and can be used to supplement the department's annual depreciation expense and utilization of the department's depreciation funds.

Capital improvements to the system will benefit the department and customers for several years. It is entirely appropriate that the cost of a capital improvement be paid for by those customers who benefit from the improvement. As an example, why should NAED customers in 2007 pay for the establishment or enhancement of a new electrical circuit, if that circuit will serve a customer base for the next twenty years?

The mere fact that the department may have strong fiscal resources should not negate the need for a viable debt management process establishment/maintenance of an appropriate level/amount of debt to improve and maintain NAED's infrastructure. Such an effort would provide the opportunity for the department to limit challenges in determining whether ratepayer payments should be used for current obligations or future needs.

The department's most recent bonding effort was a \$1.2 million authorization in CY 2003 for the Muni-Net.

The department should consider developing criteria for the use of debt and a funding schedule and process which reflects a "Pay as You Use" philosophy.

B. EVALUATION OF THE DEPARTMENT'S CAPITAL EQUIPMENT & ESTABLISHMENT OF REPLACEMENT PLANS

There needs to be development of replacement schedules for capital equipment (i.e. vehicles), data must be updated and accurate, and NAED must have flexibility and the fiscal resources required to respond effectively to extraordinary or unforeseen circumstances.

In FY 2007 there was a great deal of initial progress made in this area, with more information and data still needed to help guide our efforts.

Our work plans must be realistic relative to time, costs, staffing and preparatory work. It is generally assumed that an item or project presented in this plan will commence and be completed in the fiscal year in which the funding is provided. A viable CIP is not a "wish list" – it is a listing of efforts which the NAED administration understands – based upon the assurances of the division managers - are "ready to go"!

C. CLOSING COMMENTS AND INFORMATION REGARDING THIS YEAR'S CIP

We are utilizing \$500, per FERC accounting standards, as the benchmark for CIP purposes.

The preparation of a viable five year capital and work plans is vital if the department is to be effective in developing an effective long term sense of “vision” and “strategic planning”.

As noted in my cover letter to the Commissioners, much work remains to be done at NAED in the area of capital planning. Some projected costs in the plan are based on the work and recommendations of prior divisional managers, but the basis for why the amounts in question are currently being “carried” within the CIP remain unknown and need to be reevaluated.

Although progress has now commenced, there needs to be development of replacement schedules for capital equipment (i.e. vehicles), data must be updated and accurate, and NAED must have flexibility and the fiscal resources required to respond effectively to extraordinary or unforeseen circumstances.

Our work plans must be realistic relative to time, costs, staffing and preparatory work. It is anticipated and assumed that an item or project presented in this plan will commence and be completed in the fiscal year in which the funding is provided. A viable CIP is not a “wish list” – it is a listing of efforts which the NAED administration understands – based upon the assurances of the division managers - are “ready to go”!

IV. NAED'S FY 2008 CAPITAL PLAN BY - BY REQUESTS - BY DIVISIONS

A. ADMINISTRATION: \$ 6,000

1. ADA IMPROVEMENTS @ 275 LANDRY AVENUE

PROJECT BENEFITS: **Compliance with Federal and State Accessibility statutes and standards**

DESCRIPTION:

In 2000, the Town selected the firm of BC Stewart & Associates of Boston, MA to conduct an assessment of the municipality's facilities to assess whether the facilities met the standards required by the Americans With Disabilities Act (ADA) and related state statutes.

During its review of NAED's facilities the firm offered several recommendations to ensure that the department achieved compliance with the statute.

Cafeteria Room: \$6,000

In FY 2008 the department continues its efforts to implement the recommendations relative to the Operations Center's cafeteria space. BC Stewart & Associates wrote, "Public spaces in the building include the Cafeteria.... This room like other public spaces in the building generally satisfy accessibility compliance standards."

BC Stewart & Associates stated that, "The kitchen lacks under-counter space and accessible appliances for wheelchair users".

In FY 2007 the department commenced its efforts to implement the recommendations at the Operations Center, which are as follows:

a. Stairs: \$1,500

Removal of handrails & remounting @ proper height

b. Doors: \$1,000

Modifications to all non-compliant doors, including the door between the Women's Room and the Shower Room

c. Public Restrooms: \$ 500

Relocate the Flush Control at the Women's Room toilet to the opposite side of the toilet and that piping under the sinks in both toilet rooms be insulated

d. Alarms: \$5,000

Install compliant A/V alarms in all general usage rooms and spaces currently not alarmed

e. Controls: \$1,500

Remount all non-compliant fire extinguishers and other non-compliant, non-sampled control devices mounted above or below accessibility compliance standards be replaced

B. ENGINEERING DIVISION:**1. ARC Fault Study: \$25,000**

Rule 410 A of the National Electric Safety Code requires that by January of 2009 that all electric utilities will have completed a study that quantifies the magnitude and duration of electrical faults at all locations of the electrical system. These locations need to be labeled with the severity level which will determine the appropriate level of protective clothing that is required at each location. This applies to low voltage as well as high voltage. The location with the highest arc fault potential is probably the secondary connections of the Emerald Square Mall transformers. This is a task that most likely needs to be accomplished by a contractor.

2. Operations Generator Synchronization: \$30,000

A significant source of controllable load is customer generation. The Operations Center has a 500 kilowatt generator which could be used to produce significant savings. To obtain maximum financial effectiveness; an auto synchronization device needs to be added which would allow the unit to operate at full output synchronized to the "grid". There would be a payback to the department, perhaps as quickly as within two years.

3. Voltage Monitoring – Sherman Substation: \$ 9,000

NAED currently owns high speed voltage/current recording devices. The Engineer recommends that it would be "helpful" if the department has a device that constantly records voltage at the substation. This device would verify that bus voltage meets ANSI (American National Standards Institute) standards and would accurately record system disturbances. The proposed amount would fund three devices.

4. Tools/Instruments**a. System Load Monitor: \$1,800**

It would be valuable to the department to have a continuously updated display of system load. The software and wiring is in place and was in use in the past. Funding would provide a PC and an interface card.

b. Voltmeter (Fluke87) – Multimeter: \$800

The department currently does not have a voltmeter to use as a standard. It should be certified and calibrated to a national standard. The proposed instrument would be handheld and would measure current, resistance and temperature.

c. Other: \$1,000 (Total)

1. Digital Camera: \$500

The camera will be used to provide the department with a digital photographic record and can become integrated into the department's electronic library.

2. Miscellaneous: \$500

For items such as Photo Shop and PageMaker software or a new measuring wheel.

C. INSTITUTIONAL TECHNOLOGY

PROJECT BENEFITS: **Compliance with Federal and State Accessibility statutes and standards**

JUSTIFICATION: **Reliability and Maintenance of Departmental Systems & Services**

DESCRIPTION:**1. GIS – ArcServer:****\$98,000**

NAED operates its GIS on a single MS Access database. This does not support NAED planning for GIS use. The GIS (Geographic Information Systems) has great potential for NAED. The NAED Customer Information Software (CIS), departmental field inventory and an outage management system are all planned to “tie” into the GIS system.

GIS is an MS Access personal geodatabase, only one user may edit the data. NAED divisional plans point to a need to have several editing sessions potentially running concurrently – that cannot be done currently.

Initially, NAED acquired GIS separately from the Town. NAED operated GIS strictly within the Engineering office.

There is now concern by NAED managers that the Town's current fiscal and organizational efforts relative to GIS are not sufficient or responsive to NAED's future needs or plans.

The acquisition of the ArcServer, and GIS training for all users – from different divisions will enhance NAED's ability not only to utilize the GIS technology, but also to integrate the technology into all elements of planning and operations.

NAED will acquire a pre-configured ArcServer – a turn key “bundle” that includes software, hardware, installation and first year maintenance cost.

A failure to obtain and install this server will likely devalue NAED's current investment in GIS and reduce management's plans to enhance the planning and management capacity of the department's infrastructure and assets.

2. MUNI-NET Hardware Standardization **\$53,000**

NAED's IT Manager has noted his concern that as municipal use of the Muni-Net grows and utilization of video increases that the portion of the Muni-Net that serves General Government may become impacted (slowness of processes, data retrieval...).

It is the current position of NAED management that NAED has spent in excess of \$1.2 million to build the Muni-Net and therefore it is an asset of NAED. We believe, further, that NAED will continue to manage the Muni-Net system and maintain its functionality, consistent with the capacity of the system when it was established. Any enhancement of the current system desired by either the School Department or General Government should be paid for by that organization and installed/overseen by NAED.

3. NAED Facility Security: **\$83,525**

In FY 2006 the department commenced an effort to improve the overall security for the NAED infrastructure and facilities by installing a card access system for the building at 275 Landry Avenue.

In FY 2008 the department plans to install access control devices and motion activated cameras at the Sherman Sub-Station.

4. Data Infrastructure – NAED LAN Switches **\$28,500**

Replacing the current NAED local area network switches will better support current and pending NAED network performance demands. The new switches will position NAED for: maximum productivity and investment in deployment of new applications such as IP telephony, wireless access and building management.

The current NAED switches are inadequate for current network demands and incapable of supporting pending network performance demands.

The replaced switches will be retained by NAED for reuse.

5. Data Infrastructure - PC Replacements: **\$31,000**

This is the annual replacement and upgrade of department computers and Staff personal technology, based on age and use. It is projected that the department will:

Replace/upgrade eleven (11) computers.

Acquire dedicated – user laptops for three managers

Replace two obsolescent departmental laptops

Two new network switches to be acquired to replace existing switches – replaced switches will be able to be reused

Muni-Net fiber move/add/changes, as needed

Muni-Net hardware will be standardized

Note: Regarding the Muni-Net in FY 2008 it is projected that Motorola equipment will have been phased out and replaced by Metrobility equipment (wireless).

The department has, as of October 25, 2007, twenty eight (28) PC machines and six (6) laptops.

A three year turnover for machines is consistent with acceptable business practices.

6. Printer – Multi-Function (Customer Service Representative area): \$5,000

This would be funded via a three year lease (\$15,000 total). This printer will replace the department's current analog, black and white copier with a networked, color multi-function printer.

7. Other – Leases

1. Printer – Upstairs: \$4,700

Current lease expires in FY 2009

2. Postage Meter: \$1,920

Current lease expires in FY 2009

D. PROJECT MANAGEMENT

1. Applications Needs Assessment (including SCADA): \$130,000

It is proposed that it is necessary for the department to institute a full systems analysis of all applications used by NAED before replacement or changes of current departmental software programs. The study will take approximately four (4) months to complete.

Other systems/applications may be needed by NAED to implement what is being referred to as a "Geocentric System". Essentially this is the label for a set of applications/software which integrates with each other connected to the GIS. It is a fundamental principal that before proceeding in purchasing these applications or any application, a full review of all systems in the light of their function in and for the department, the useful life, service and support, their interaction with the other information sources at NAED, etc. The estimate for the study is based on an estimate provided by Westin Engineering Consultants.

2. Financial Management Systems (FMS) Purchase (FY 2009): \$450,000

The department currently utilizes Macola software as its financial management software and Harris as its billing/customer information software.

The current system has some major flaws, not the least of which, as noted by C. Mitchell (11-20-06), are as follows:

Focus: Macola is neither a utility industry nor governmental FMS

Orientation: Macola is designed for primary use in Industrial manufacturing operations

Operation: Macola is not readily automated and relies on the manual re-entry of data

Integration: Macola is not tied to the NAED Harris billing application

Fiscal Reporting: There is a need for a third-party tool to compile financial reporting

Fiscal Reporting: The inability to readily obtain detail

Budget Preparation: Modeling and Versioning

Budget Reporting: Availability and depth of line-item reporting and line detail

Work Orders (WO): Tying out to fiscal reporting an average annual volume of 6,000 WO and approximately 20,000 related activities managed by NAED

Payroll Processing: Three manual repeated entries in each payroll period

Purchasing: Procurement has repeated manual steps for involved NAED divisions

Accounts Payable: No interface for direct automated export of the relevant information to the Town FMS, relating to a manual process

General Accounting: Information is reported in segmented fashion and must be manually compiled for reporting purposes.

3. Update GIS Electrical Layer (work/service orders): \$65,000

The GIS needs to be updated to stand any chance of serving as a base for all NAED applications. This project will result in the updating of the existing NAED electrical layer – which has not been done now for approximately three (3) years. It will also integrate work orders and service orders into the base information.

The project is expected to take approximately three months.

3. GIS (Geographical Information Systems) Budget: \$25,000

At the current time, the future plan of the Town relative to its organizational and fiscal commitments relative to GIS is uncertain. These funds would represent the department's annual fiscal commitment to maintaining the integrity of the GIS database.

Projects known to be needed include: Street Naming, GIS Database cleaning and web based access to GIS.

4. Commercial & Industrial Survey: \$13,000

The Commercial and Industrial section of NAED customer base has not been surveyed for many years. As rates for electricity even out between power suppliers, more emphasis should be spent on determining what customers want. The survey should point out areas where NAED could do more for the purchasers of 50% of NAED power. The survey will also dictate the action of any Key Account Team that is created at NAED. It is also clear that this survey, combined with the 2007 Residential survey, will provide information that will be considered in any Business Plan that NAED draws up.

5. SCADA (Supervisory Control and Data Acquisition) System Purchase: \$85,000

A SCADA system will be very valuable. The infrastructure is here and with additional technology, remote monitoring and control of the sub-station is possible.

SCADA will allow the department to ultimately do remote reading of meters and provide real time data. The SCADA system also "fits" into GIS.

The SCADA system allows a utility to "...monitor, maintain and secure accurate data for the utility." An effective SCADA system also necessitates a long-term commitment (fiscally and organizationally). According to D. Backer of Cannon (vendor) states that, "Our best payback is when the system prevents a really expensive failure, and this happens within the first years of each system we have done." As Mike Somonet of Siemens Power Transmission states, "When a utility is considering SCADA or an upgrade, "it becomes a function of how you better serve your customers...to serve them quicker (or) get crews dispatched to serve them quicker. If a tree falls on a line, it will short the line out and SCADA will get an alarm and they can then know to dispatch a crew out to that line, versus if they have no SCADA then they are dependent on customers calling to figure out where this problem is. They may not even know they have a problem until somebody calls."

E. METER DIVISION:**PROJECT BENEFITS: Reliability and Maintenance of Equipment****DESCRIPTION:****1 - 4. Purchase of New Meters** **\$65,484**

The department must maintain and update its meter inventory. The Meter Division has presented a proposal for FY 2008 which includes new meters.

- a. New Construction /2S Residential meters:** **\$27,648**
Single phase 3 wire meter for residential homes and small single phase commercial industrial applications. Class 20 with demand, voltage 120 – 480.

Funding will provide an estimated 288 meters which can be used for new construction or replace current meters.

- b. New Construction Updating/ 16S:** **\$10,470**
3 phase 4 wire self contained for commercial and industrial under 400 amps. Class 200 and 320 with demand, voltage 120 – 480.

Funding will provide an estimated 30 meters which can be used for new construction or replace current meters.

- c. New Construction/Update 9S:** **\$10,470**
3 phase 4 wire current transformer rated for over 400 amp commercial and industrial applications. Class 200 with demand, voltage 120 – 480.

Funding will provide an estimated 30 meters which can be used for new construction or replace current meters.

- d. New Construction/Update 12S:** **\$16,896**
2 phase 3 wire meters for multiplex apartments, Class 200, voltage 120/208.

Funding will provide an estimated 96 meters which can be used for new construction or replace current meters.

5. Hand Held Meter Reading Devices (3 total @ \$6,000/each): \$18,000

These handhold devices are used by the Meter Department to read meters and record data. They offer a portable automatic meter reading (AMR) solution. The devices interface with the Harris software CIS/billing system. The models being used by the department are old and cannot be repaired if broken. The devices are used for various functions, including reading along routes and/or responding to citizen complaints. The Hand Held devices are used when the Mobil Collector cannot “read” meters along a route.

6. Mobil Collector Data Pac: \$45,000

The current collector is old from a technology standpoint and will not be serviced by the manufacturer in the near future. The devices interface with the Harris software CIS/billing system. The Mobil Collector is placed in the Meter Division vehicle and can “read” a large percentage of the meters per route. The device is like a “lap top” and can be purchased with GIS capacity. A Mobile Collector can be transferred between vehicles and therefore eliminates the need for a dedicated vehicle for meter reading.

7. Meter Test Bench: \$30,000

The Meter Division is not doing mass testing of meters that was done before. The Meter Test Bench is used for checking the accuracy of the departments’ meters in the field and to respond to customer complaints.

8. Meter Vehicle: \$30,000

The department is requesting that it be allowed to replace two divisional vehicles with a single, four wheel drive vehicle – there should be sufficient room for meters, seals, tools, etc.

The vehicles proposed to be replaced are as follows:

Vehicle # 1 (Truck #78) is a 1996 Chevy s-10 with 70,073 miles on it (as of October 25, 2007). The vehicle is not used a great deal by the Meter Division because of the limited size of the Meter Division (3 employees). The vehicle is used by the Line Crew.

Vehicle # 2 (Truck #75) is a 1996 GMC Sonoma with 98,844 miles.

9. MVRS Software: \$ 6,000

The above software is required to serve as the interface between the Harris software and the Itron (Meter) software. The software requested here is an upgrade of the current software. MVRS 7.8 upgrade. The upgrade is needed given the upgrade instituted by the department in 2007 (live November, 1, 2007) of the Harris software (6.2), as well as the proposed new “hand helds” and Mobil Collector. AMR software update to communicate with our billing system.

10. Hot Water Heaters’ Program: \$ 0

The department did, for several years, provide and install – through leases – hot water heaters. The Hot Water tanks were stone lined dual element electric hot water tanks – ranging from 40 gallons to 120 gallons.

This program was discontinued, as of August 30, 2007, accordingly, there is no funding requested for this program.

E. OPERATIONS DIVISION – FY 2008 PROJECTS

1. OVERVIEW

The FY 2008 CIP for the Operations Division was initially presented to address the various needs of the department, prioritizing 26 projects totaling \$2,324,241.

These projects range from planning studies to merge asset management tools into the financial network of the department, development of software and electronic forms for data collection in the field, review of environmental liabilities of the department's facilities to construction projects, property and building improvements, equipment and supplies for the 2008 construction season.

The primary goal of the Operations Division is to maintain the existing substation and distribution system infrastructure and to provide the maximum reliability in a cost effective manner to the customer. The following Capital Improvements Program supports several operational objectives, which were identified in the Division's Strategic Plan, to achieve this goal.

The previous direction of the Operations Division has been based on projects outlined to replace the old 4kV distribution system and upgrade it to the 13/8kV system. While this is indeed a worth while and important goal to pursue, there appears to have been significantly less consideration for the existing infrastructure and its aging condition. The upgrades of the distribution system to transfer the loads from the old 4kV circuits to new circuits has made strides in replacing much of the older equipment in some of the oldest parts of the town. However, much of the older infrastructure is still in operation and its condition needs to be assessed.

With the collection of fundamental data in the distribution system generated by the 2008 Capital Improvements Programs future Capital Programs will be directed towards specific upgrades to improve reliability and economy.

2. PHILOSOPHY & GENERAL PRIORITIES

The division has made great efforts to prepare a responsive CIP which addresses the needs of the department and the system's distribution system. During the past months the division has established a realistic five (5) year CIP for the first time in the department's history.

Potential projects were analyzed and ranked in priority; then detailed cost and man-hour estimates were developed.

The division has established four (4) priorities to guide its CIP presentation:

A. Reliability

System reliability is a paramount focus for NAED; and distribution reliability can be enhanced by upgrading weak circuits or replacing system equipment that can cause higher than acceptable outage frequency or duration.

During calendar year 2005, the NAED system experienced 121 recorded unplanned outages, with a Customer Average Interruption Duration Index (CAIDI) of 53 minutes. These numbers can be improved on with increased system reliability.

B. Capacity

Capacity of substation equipment and distribution feeder circuits is critical to being able to supply present and future growth on a normal basis, and more importantly during contingency when tie circuit and backup equipment must function to carry the expected load.

C. Equipment Maintenance / End of Useful Life

The NAED system has several elements that are at or near the end of their useful life. Most of this equipment is related to the 4kV distribution still in place; originally constructed in the 1950's. This 4kV system can no longer meet the capacity needs of a growing town with the robust residential and commercial development that has occurred in the past few years. Couple this with the increased maintenance costs on aging equipment and the increased likelihood of failure and outage time, CIP funds need to be focused on retiring equipment that is deemed at the end of its useful life to stay ahead of the continuing growth and demand needs.

D. Planning & Technology

The department, generally, and the Operations Division, in particular are committed to improving NAED's ability to establish and implement "planning" as a means of improving the department/division's ability to be prepared to respond to future challenges and ensure that the department's current distribution system and facilities are being properly maintained and improved in a well considered manner.

A key component of the planning effort is to consider how technology can benefit the department. In FY 2008 department/Operations Division will be considering, developing and implementing plans that utilize technologies, such as GIS, SCADA and infra-red.

3. SECTIONS OF THE TOWN

A map of the Town which identifies the “Sections” listed below is attached to this document.

Section I Kelley Boulevard and Plain Street

Section II North Attleborough Industrial Park

Section III Whiting Street Supply

Section IV Attleborough Falls and Triboro

Section V South of Attleborough Falls to Old Town at Old Post Road

Section VI Route 1 from Landry Avenue to Interstate 295

Section VII West Side of Town from Route 1 and Route 1A to Rhode Island/North Attleborough Border

Section VIII Route 1 in the Vicinity of and South of the Emerald Square Mall

4. RECENT CAPITAL ACTIVITIES/PROJECTS OF THE DIVISION

In FY 2007 the department Operations Divisions' capital activities included:

- a. Upgrading the E8 circuit (Fisher Street – Grove Street – High Street area) from 4 kV to 13.8 kV. Work was done by NAED personnel.
- b. Upgrading the E2 and E3 circuits (along Old Post Road/Allen Avenue) upgrading the circuits' capacity and reliability and taking load off of circuit E15. Work was done by a contractor, Halpin Construction Corporation.
- c. Mall Switches: Engineering work commenced relative to the replacement of the mid-1980's Mall Switches – which have not worked, evidently, for several years (problems in loss of hydraulic pressure, leaks, control failures,...) and needed to be operated manually. NAED's efforts during FY 2007 has been oriented to determining whether the hydraulic switches in the current Mall Switches could be retrofitted with electronic actuators (current technology).

At the time of the writing of the FY 2008 CIP the department has received information and quotes regarding the possible retrofitting.

- d. E11 Circuit: At the time of the writing of the FY 2008 CIP, the department has commenced work to install E11 as a new circuit.

Funding for this project will be provided over two years within the CIP: FY 2007 and FY 2008.

The project will bring additional capacity to the 13.8kV system to the north central part of Town, where the Whiting Substation is located. The circuit will be of particularly value ?? should the department ultimately decide to retire the Whiting Street substation.

As noted in the written presentation by D. Columbo (12/06) relative to this project, "The circuit will then go through existing conduit up Homeward Lane to Coach Rd to Oriole Rd to BlueJay Lane to Mockingbird Lane. For the underground portion of the work it is planned to install the underground primary cable on the streets listed above". A portion of the cable (60%) was purchased in 2005 and is in inventory. There will need to be some additional manhole racks installed along the almost 1.5 mile route.

The work is being done by NAED personnel.

The written presentation by D. Columbo (12/06) also stated, "The justification for this work is based on load estimates that the entire Whiting Substation load that could be shifted to the existing Circuit E8 would increase the peak load on E8 from 2.2MW to 13.2MW, likely causing voltage and

overload problems on E8. By bringing a second circuit (designated E11) to the area, the load from Whiting Substation can be converted and split amongst these two 13.8kV feeders, providing a highly reliable means to retire Whiting Substation, which is now non-firm under peak load conditions”.

e. E7 Circuit – Underground Portion:

The department considered starting this project in FY 2007, however, due to needs for further engineering work and a desire to “bid out” the entire project, construction has been delayed until FY 2008. The upgrade of this circuit will address capacity concerns, with the work likely being done by an outside contractor.

As noted in the written presentation by D. Columbo (12/06) relative to this project, “Circuit E7 is near its capacity due to having a large portion of its construction made up of old smaller ampacity wire. Circuit E7 has been used to convert the 4.16 kV load to 13.8 kV and is well positioned to provide further conversion support. In order for the circuit to provide supply for converted 4.16 kV load and to be used as backup supply for adjacent circuits, the sections with undersized wire need to be upgraded... It would also be used to convert 4.16 kV load along Mt Hope St. and Spring St. It would also be able tie to circuit E8 on Mt. Hope St....Removing load off of Whiting Street 4.16kV substation over the next 5 years is important to be able to retire the 4.16kV system before its costs to maintain increases significantly. One step towards that is extending the E7 circuit northward along Mt. Hope Street, to convert load in the Spring Street area and to tie and take load off of Circuit E8”.

5. OPERATIONS DIVISION – FY 2008 PROJECTS

1. Needs Assessment for Business & Technology (1): \$17,000

Technology currently exists that will allow NAED to view its financial information, asset inventory, equipment condition information once collected, and maintenance activities history. There is a need to, via an overall plan, merge all of this information into usable formats. The integration of this information will allow NAED to develop effective solid maintenance and CIP plans. A Needs Assessment Study will provide the department with the information and guidance required to allow the department to improve its planning capacity, update and integrate differing technologies and serve our customers.

The study will review the department's procedures and processes, diagram our current process flows, business interactions and affected procedures. It will also assist NAED to establish important baseline information and consider how best the department can utilize technologies such as SCADA and GIS while integrating such technologies with department financial and asset information and software.

2. Condition Assessment for Sherman Substation (2): \$15,000

The Sherman Substation is the linchpin of the department's distribution system. The proposed assessment will assist NAED in its efforts to improve the distribution system's reliability by having an outside firm assess the station's components, prepare a replacement schedule and provide estimated construction costs. Such a review is vital in order to ensure that the department can develop an effective replacement/upgrade program that is responsive to future CIP and maintenance planning efforts.

3. Condition Assessment for Distribution System (Phase 1): \$43,000

The study will assess the condition of the various components within the department's distribution system (i.e. poles, primary wire, secondary wire, transformers, cross arms, grounds, etc.). While the department did, a few years ago, do an inventory of the system's distribution system (integrated into the GIS information), the inventory did not assess the condition of the systems' components.

This study will provide the basis for the department to better plan maintenance and replacement schedules – thereby providing the information for the department to improve the reliability of the distribution system.

4. Purchase Infra Red Camera: \$45,000

In the past, the department has contracted with engineering firms to conduct infra-red camera surveys. The value of such surveys is that they can provide preliminary detection of defective components before such equipment fails. Such inspections can prevent major system disruptions, shutdowns for repairs and excessive costs.

Currently the department spends approximately \$10,000, annually for a vendor to provide one to two weeks of survey time with the infra red camera. The camera's limitation to a short period of time means that much of our system is not being assessed and evaluated.

The purchase of the camera will allow the department to survey its infrastructure (i.e. wires, transformers...) throughout the year and allow the department to both address defective equipment expeditiously and develop an effective replacement infrastructure program.

5. Environmental Audit of Facilities: \$5,000

The audit will assess our facilities and practices to ensure that there is proper storage and material handling of hazardous waste and other federal or state environmental requirements. Items to be reviewed and assessed include storage of oil and other petroleum products, storage of transformers and labeling.

The results of the audit will be used by NAED as a tool to improve its own operations and establish appropriate procedures and staff knowledge base.

6. Needs Assessment for SCADA (Supervisory Control and Data Collection)

Implementation: \$37,000

The installation of SCADA into the substation and distribution system will enhance the reliability and quality of service for the department's customers. SCADA provides for constant, real time monitoring of equipment conditions and allows automated operation of certain equipment on site, and offsite.

The assessment will assess and recommend a plan (equipment, training, personnel, etc.) to implement SCADA in three areas:

1. Substations (Sherman & Whiting): This assessment will provide information to the Operations Division and System Engineer relative to load management and allow for secure remote access by the Substation Technician and Engineer to assess any power outages.
2. SCADA connections via Muni-Net: This will provide the planning needed to consider and estimate the cost of connecting distribution system equipment via SCADA which is in close proximity to the Muni-Net. This will include overhead and underground switches along with compatible reclosers. This will allow prompter response to situations where customers are experiencing an outage.
3. SCADA connections via Radio Signals: This will provide the planning needed to consider and estimate the cost of connecting distribution system equipment via SCADA where the equipment is in remote locations and therefore necessitate the use of radio signals.

7. Automatic External Defibrillators – Six (6): \$12,000

The department commenced an effort to have defibrillators in the departments' vehicles, commencing in September, 2007. Currently there are seven (7) vehicles that have defibrillators.

It is planned that the next six defibrillators will be located as follows:

Facilities: 2 (Sherman Sub-Station and Administration Building)

Vehicles: 4 (all in the Operations Divisions' trucks – which will mean that all Operations Division trucks will have a defibrillator)

8. Vehicle Replacement Program: Bucket Truck

On an annual basis the department reviews all of its vehicles and considers the value of replacing certain vehicles. As noted by the Operations Division Manager, "The existing fleet is in reasonable condition; however, a preliminary review of the records indicates that some of the vehicles have had extensive work done to keep them in good condition. In one case over \$50,000 was spent on a single vehicle over a five year period. Typically, a vehicle should be traded in when its costs exceed that of a newer vehicle but while the vehicle still retains some trade in value".

Generally, criteria for considering vehicle replacements are as follows:

Administrative Vehicles:	7 years or 75,000 miles
Utility Vehicles:	7 years or 75,000 miles
Medium Duty Service Vehicles:	10 years or 80,000 miles
Heavy Duty Service Vehicles:	12 years or 80,000 miles

The recommended vehicle to be replaced in FY 2008 is Bucket Truck #2, which over the last 5 years almost \$50,000 has been expended in maintenance costs. Such expenditures are well in excess of what would otherwise be expected of such a vehicle.

Bucket Truck #2 has (as of October, 2007) total mileage in excess of 64,200 and an annual operating cost of \$1.03/mile. The vehicle was incorporated into the NAED fleet in 1994.

The department has already developed bid specifications for the chassis and body of a bucket truck to be purchased in FY 2007, so these general specifications will be used by the department again for the purchase of this vehicle.

9. Sherman Sub-Station Paving: \$60,000

The paving would replace the current gravel base throughout much of the substation. The gravel area requires maintenance to keep the areas passable for the departments' vehicles fleet. Vegetation growth requires pesticides to control. Approval of this project will reduce the wear on vehicles and benefit the department both via maintenance costs and enhance the ability to pave the site.

The paving would include cleaning, grading compaction and paving in two layers for a total thickness of 3.5 inches.

10. Sherman Sub-Station Security: \$30,000

The fencing and its condition around the Sherman Sub-Station needs to be addressed. The fencing provides important security control. Replacement of the fencing is estimated to cost \$15,000 and the additional cost is predicated upon the need to do trenching to bring power to the area and install an access control system.

11. Elmwood Street Area Conversion: \$400,000

This project includes the conversion of part of the W4 feeder circuit from the Whiting Street Substation from 4.16kV to 13.8kV.

This project ties into the previous project (Elmwood St), by bringing additional capacity on the 13.8kV system to the north central part of Town, where the Whiting Substation is located, to be able to retire the substation in the next 5-7 years.

This will remove additional load from the substation by moving this feeder's load to the E8 Circuit, which will eventually become Circuit E11. The E8 circuit currently has the lowest peak demand load of all the department's 13.8kV feeders

The scope of this project includes existing three-phase primary along Elmwood Street from Mount Hope Street (approximately 3500 feet) to the Plainville town line, along with 40 new poles. The new feed into this portion of Elmwood Street will be from Circuit E8/E11 to Mt. Hope Street, and will be an additional backbone for 4.16kV conversions in the north central part of Town. The 3,500 foot length will be reconducted with three-phase 477kcmil spacer cable (NAED standard primary) while the voltage is converted to 13.8kV.

The underground portion of the project from the Sherman substation to Walcott Road will be completed in 2008.

For more information see report by D. Columbo, 12/06.

JUSTIFICATION: New subdevelopments are planned for this area of town, bringing new units of housing onto the already overloaded Whiting Street 4kV substation. This area needs to be converted to 13.8kV so that the load can be put on a lightly load Sherman Substation feeder.

12. New Circuit E-11 Project - Walcott Road: \$275,000

This project ties into the FY 2007 CIP project (E11 underground circuit work) and will tie into the Elmwood Project (FY 2008). The overhead portion begins at Walcott Road with a rebuild to 3 phase 477 spacer cable to Mt. Hope Street. This will provide a new 13.8 kV circuit to supply most of the 4.16kV load being served by Whiting Street Sub-Station.

Justification: The justification for this work is based on load estimates that the entire Whiting Substation load that could be shifted to the existing Circuit E8 would increase the peak load on E8 from 2.2MW to 13.2MW, likely causing voltage and overload

problems on E8. By bringing a second circuit (designated E11) to the area, the load from Whiting Substation can be converted and split amongst these two 13.8kV feeders, providing a highly reliable means to retire Whiting Substation, which is now non-firm under peak load conditions.

13. Air Switches for Distribution Upgrades – Six (6): \$24,000

Air Switches allow for changing circuits and direction of service to minimize customer outages during large scale power outages and also distribution system maintenance and construction activities.

Three Air Switches will be used at the following locations to improve service:

Landry Avenue – E-10 and E-4 Tie
 Tower Square – Elm Street for the E-7 Tie
 Mount Hope Street for the new E-11 Circuit (2008)

The other three requested switches will be used as follows:

Emergency replacement during storm events : 1
 Expansion of the distribution system control*: 2

**As the department commences an evaluation of the distribution system, the department will want to have additional controls to operate the system*

14. Reclosers for Distribution Upgrades – Two (2): \$30,000

A recloser (relay) is a device that allows the automatic closing of a circuit interrupting device following automatic tripping. Reclosing may be programmed for any combination of instantaneous, time-delay, single-shot, multiple-shot, synchronism-check, dead-line-live-bus, or dead-bus-live-line operation.

Reclosers are required for distribution system upgrades. The requested reclosers will be installed as follows:

1. Kelly Boulevard – north of Landry Avenue. This area, which services the Cliffs and east side of Kelly Boulevard, currently only has fuse protection and high fault at the substation. If the area experiences an outage it will take the entire circuit out, which includes everything south and east of Kelly Boulevard and Landry Avenue. The installation of a recloser will minimize potential outages in the area.
2. Grove Street and High Street area. The recloser will be installed in the new E-8 circuit that has been just extended to remove some of the old 4kV load. Currently E-8 extends out to Ellis Road, by installing a Recloser in the area of Grove Street and High Street the department will protect the E-8 Circuit that services the center of town to the substation.

15. Capacitor for Distribution Upgrades – One (1): \$5,500

A Capacitor is a device, the primary purpose of which is to introduce capacitance into an electric circuit. Capacitance is defined as that property of a system of conductors and dielectrics which permits the storage of electricity when potential differences exist between the conductors. Its value is expressed as the ratio of a quantity of electricity to a potential difference. A capacitance value is always positive.

This effort will replace the existing Capacitor on Mount Hope Street which is defective and not repairable.

16. Routine Distribution Projects: \$180,000

This category is a “placeholder” for capital efforts, costs and man-hours that will be necessary for smaller or unplanned (at the time of the writing of this CIP) capital projects that necessitates NAED involvement and attention.

Such projects, and a need to fund those projects, develop over the course of the year, due to system reliability issues, challenges presented by “growth” (such as new subdivisions), equipment failures, etc.

Given the 2007 carryover projects and the full schedule of significant CIP projects forecast for FY2008, the number of smaller projects that NAED crews will have the time resources to complete may be limited. If necessary some of these could be contracted out.

17. Field Computers – Three (3): \$12,000

The proposal is that the department provide NAED personnel with three (3) lap top computers to allow the NAED personnel in the “field” to access technologies such as GIS and software such as SCADA linked to the GIS mapping.

18. GIS (Geographic Information System) Updates – Complete: \$10,000

*“Geographic Information System (GIS), also known as a **geographical information system**, is a system for capturing, storing, analyzing and managing data and associated attributes which are spatially referenced to the Earth.*

In the strictest sense, it is an information system capable of integrating, storing, editing, analyzing, sharing, and displaying geographically-referenced information. In a more generic sense, GIS is a tool that allows users to create interactive queries (user created searches), analyze the spatial information, edit data, maps, and present the results of all these operations” (from Wikipedia, 11-19-07)

Although the department has had the GIS technology for several years, it has not been well maintained. Currently there are almost 400 Service Request Forms (SRFs) dating back to December, 2005 – which have not been entered into the GIS database. Further, the department has several work orders that have been completed that need to be entered into the GIS database so as to update NAED’s asset information.

Without updating, the information in NAED’s GIS database will lose its value.

19. Operations Center Improvements: \$15,000

It is important to maintain the Operations Center given its utilization as NAED's administrative headquarters.

The proposed funding would be used to replace the facility's carpeting and/floor tile.

20. Clearing of Easements: \$35,000

The department will review all electric utility easements throughout the Town. These easements will be walked and evaluated and entered into a maintenance schedule for clearing and brush control. It is anticipated that the 69 kV line easement will need some clearing in FY 2008 and these funds will address that effort.

21. Master Plan for Distribution/Generation Operations: \$40,000

The purpose of this plan is to allow the department to develop the strategic planning needed for the department to consider, plan and address the future challenges such as facility planning (i.e. future of Sherman Substation, need for a new substation, improvements to the distribution system, security...).

Also, with the commencement of the new Forward Capacity Market (December, 2006) there is a opportunity for the department to consider the viability of developing in-town energy capacity (potential and viability of NAED developing in-town energy facilities, such as a Peaking Unit next to the Sherman Sub-Station, a larger power facility or "green" type facilities (i.e. wind...)).

22 – 27 EQUIPMENT/CAPITAL INVENTORY

It is vital that the department maintain proper, current and safe equipment as well as maintain the department's inventory of equipment.

Accordingly, the CIP proposes that the following capital equipment areas be funded as follows:

	FY 2007	FY 2008
22. Poles:	\$ 74,174	\$ 77,883
23. Wire/Cable:	\$296,273	\$ 311,078
24. Hardware/Inventory:	\$186,600	\$ 195,930
25. Line Transformers:	\$350,000	\$ 207,900
26. Distribution Switches:	\$ 39,000	\$ 0 *
27. Other:	\$ 5,500	\$ 0

** Per discussion with the Operations Division Manager, December 4, 2007, he advised that this line request is repetitive with his request presented in #13 of the Operations Division's CIP, "Air Switches for Distribution Upgrades – Six (6): \$24,000". Accordingly, it is not anticipated that Item #26 will be recommended in FY 2008.*

27. Utility Pole Trailer:**\$15,000**

The existing pole trailer is basically a hand made doll trailer with an extended tongue utilizing an old utility pole. There is no weight certification for this trailer. The current pole trailer is wholly inadequate and unsafe. The proposed new trailer is rated at 12,000 lbs. carrying capacity and has an extended tongue from 20' – 33' with tie downs and light bars. The standard pole that is carried is a 45' class 2 pole which has an approximate weight of 2,369 pounds. The model PT-12 will allow the department to carry up to 5 poles at the same time.