"FULL STEAM AHEAD"—Saving energy from an unlikely source

Submitted by Don Garrison, Department of Veterans Affairs, Togus, ME

Somewhere in your hospital boiler plant laying in wait is the opportunity to recover a consider amount of electrical energy by utilizing steam. Most hospital steam distribution systems generate steam at a pressure of 125 psi. This steam is then reduced in pressure down to 60 psi and then down to 15 psi or 5 psi for heating the hospital. Most hospitals use a pressure reducing station to accomplish this reduction in pressure from the generated pressure of 125 psi to 15 psi.

There is a different way to do this and generate some usable electricity at the same time. I am referring to a turbine generator which has an inlet pressure of 125 to 185 psi and an outlet pressure of 15 to 60 psi. In the process or reducing the steam pressure, a turbine is turned which produces electricity.

At our hospital we have used this idea to realize substantial savings in electrical energy over the last several months. Since October 1993 we have generated over 300,000 kilowatt hours of electrical energy at a savings of over $24,000.

The Power Company to the rescue

In 1986 we were approached by our power company to see if we would allow

Looking Ahead to the 1994 Fall Seminar

Submitted by Tom Whittaker, Fall Seminar Chair, Baystate Med. Ctr., Springfield, MA

The stage is set for an exciting Fall Seminar. There is a very strong educational program planned. The Guest Program has already attracted significant interest. There are several special events which will add conviviality to the three-day program in Sturbridge, Massachusetts which is a tremendously popular venue for events of this kind.

Sturbridge is noted for Old Sturbridge Village, a genuine replica of an 18th-century town, and is also noted as a mecca for those who appreciate and enjoy antiques and collectibles.

There are several differences to the Fall Seminar program this year, all designed with the needs and interests of our membership in mind. The educational sessions are technically focused and reflect the challenges we currently face in our industry. Multiple topics have been programmed to offer choices for our engineers. On Wednesday, two tracks have been designed using concurrent sessions to maximize educational opportunities.

Continued on page 3
summer is here and prime time for vacations has arrived. we all look forward to barbecues, boating, fishing and having “fun-in-the-sun”. the challenge for hospital engineers becomes more demanding with scheduling vacations while trying to maintain the same workload.

i hope each of you schedules some time time for yourself to get away and have fun with family and friends. my wife and i are heading for the grand canyon and las vegas to do some big-time gambling – a long-planned vacation dream come true.

looking ahead to the fall seminar, i am very excited about the program being planned by tom whittaker and company. i anticipate a good turnout (read on in this issue for more details), and i look forward to seeing all of you there.

once again — don’t forget to get out and enjoy yourselves this summer. use the excuse that it will help you bring perspective to your job. and you know what? it’s the truth!

Don Garrison reports that the financial condition of NEHES is very sound at this writing. we currently have $40,073.72 in the bank with no outstanding bills. our accounts are established in the Government Employees Credit Union which gives us the unique option of being able to have accounts with no service charges. in addition, we can also easily transfer money between our regular checking account and our money market account. we are currently receiving 3.30% interest on our money market balance which is paid every Friday. we have received $74.86 since we established the account with $22,000. this resulted in roughly $13.10 per week income. we just recently deposited another $15,000 which will result in a weekly interest income of approximately $25.00.

we have closed out all income and expenses for the 1994 spring seminar. money for the 1994 fall seminar has started to come in. to date we have received $8,450 for 13 vendor booths.

an independent consulting firm to review our boiler plant to determine if there was any potential to generate some electricity. we welcomed the idea, especially since the power company would be paying the bill. the independent consulting firm determined that indeed there was the possibility to generate some electricity with practically no impact to the plant. they suggested that a small 150 to 500 kw turbine generator could be installed that would generate up to 750,000 kilowatts of electricity per year. it would of course require some changes in our operation, but could be done quite easily.

we began the process of installing the generator by trying to secure partial funding from our power company. this took a number of years, but finally they were receptive and agreed to fund up to 1/2 the cost of the project. we next had to hire a design firm to prepare construction drawings and specifications. in this process we wanted two things to happen. we wanted to be able to switch to a normal system if anything should...
happen to the generator without operator input, and we wanted a system that was very simple to operate so we could continue to use our existing boiler operators with no special training required.

Several changes were required in the boiler plant to make the generator more effective. We needed to raise our steam generating pressure to 185 psi so we could have a minimum 100 psi pressure drop across the turbine. We also were required to change the relief valve settings and install a larger feed water pump. We also had to change some gauges to properly monitor conditions with the new pressures.

The installation went very well, and we are currently generating electricity with essentially no changes on the using end of the steam distribution system.

If you are interested in learning more about the specifics of this project, please let me know. Who knows? You also might be able to install a turbine generator and begin recovering some energy and dollars now hidden in your boiler plant.

1994 FALL SEMINAR (Continued from page 1)

The seminar has been designed this year to accommodate attendance on a day-to-day basis, if the engineer can not get away for the full three days.

**Education is the Focus**

Ten different educational sessions have been programmed into this three-day seminar. On Wednesday, eight one-and-a-half hour sessions have been created on topics of technical interest to the engineer. Among the programs to be offered are: Indoor Air Quality issues; Value Engineering in Construction; Elevator Maintenance and Modernization; and How to Reduce Energy Consumption. On Thursday, a two-hour morning session will focus on NFPA’s new Life Safety Code – 1993. Mr. Ronald Cote, Secretary of NFPA’s Life Safety Committee, will give this presentation. On Friday, a two-hour morning session will focus on JCAHO Plant Technology and Safety Management issues. Mr. Ode Keil from the Joint Commission will give this presentation. In addition to this array of formal presentations, over 90 companies will participate in our vendor show in the convention hall on Thursday afternoon.

The strength of the presentations, the convenience and attraction of Sturbridge, Massachusetts, and the value designed into the entire seminar leads us to conclude that this is a program that engineers can not afford to miss. Mark your calendars now!

**Guest Program Attracts Strong Interest**

The Fall Seminar committee has taken full advantage of the attractions in Sturbridge and has designed enticing programs for guests to attend. Among the activities being developed are: antiquing in nearby Brimfield, MA; learning how to appraise antiques and collectibles by a noted expert, tours of local

(Continued on page 5)
attractons, and a pleasure-filled day in Old Sturbridge Village. As always, the guest program is the greatest vacation value anyone can imagine.

Special Events add Excitement
This year a golf tournament is being planned to kick-off the annual assembly of hospital engineers. The tournament will be on Tuesday afternoon at the Heritage Country Club and is open to members, guests and vendors. Formal registration for the seminar will begin at 7:00 p.m. on Tuesday. Wednesday evening, the annual theme dinner will be held at Salem Cross Inn. This inn, which has been written up in national magazines, is a virtual museum of early American architecture and memorabilia. Following a delicious early American dinner, members and spouses will be entertained by Mr. Robert Olsen, who dressed in period costume, astounds audiences with magic from the 19th-century. Thursday evening the formal dinner will be held in the Grand Ballroom of the Sturbridge Host Hotel. A sumptuous full-course meal is planned with dancing to follow. A 16-piece orchestra has been booked for this evening. This surely will be the highlight of our time together.

Reserve these Dates NOW — October 4 through October 7, 1994
Look for program materials and registration packets for the Fall Seminar in your mail in early August. Don't procrastinate on this seminar - the committee has reserved a block of 125 rooms at the hotel and we anticipate a sell-out! See you there!

JOB SECURITY (continued)

The Right Place, The Right Time
When it comes to being in the right place at the right time, I have always said, "If you're in enough places, at least some of the times you are bound to be in the right place at the right time." Yet while the laws of physics dictate that a body cannot occupy more than one space at any given time, there are other strategies to make yourself available when opportunity knocks.

The obvious way to be singled out is to curry favor with your boss. Moreover, you should cultivate relationships with higher-ups for the purpose of finding a mentor or a sponsor, since doing so can greatly enhance your job security. In addition, a mentor can protect you from organizational politics. Whether you are cultivating a relationship for defensive or offensive purposes, several tactics are important:

- Don't be "one-of-the-gang." Avoid being too closely identified with your peer groups.
- Shine at meetings. One easy way to shine is to simply be attentive.

Take notes when influential people speak. Ask questions, not trivial ones, but questions that will help the speaker clarify his/her points.

- Don't talk trivia. When talking to higher administration, it's okay to warm up with small talk, but as soon as possible try to switch the conversation to a project with which you are involved.
- Send memos. When you do something significant, send a memo to influential people in the organization.

Your vital reputation
At the heart of protecting your job and career, especially in today's bottom-line-driven business environment, is your reputation, i.e., how you are viewed by your superiors, colleagues, and subordinates. At best, you want to be considered an effective, honest manager who can be trusted to do the job right without violating confidences, stomping on other's rights, or fouling up.

Even in the most cutthroat political environments two reliable reputation enhancers remain: (a) know your staff and (b) perform a func-

tion vital to the company. A credible track record and the reputation it earns you are invaluable assets when lobbying for your interests at every level of your organization.

Honor Thy Word
Lastly, and perhaps the most tangible piece of evidence that can be used to justify a job lay off or firing, is not keeping your word. Never promise more than you can deliver.

Inevitably under high-pressure circumstances, such as a crisis or rush job, the temptation to make many informal and formal comments and commitments to employees and people outside your organization is great. Failure to deliver on too many promises will mark you as untrustworthy and can seriously, adversely, affect your chances of job retention. Think twice before saying anything that could be construed as a promise. It will save your credibility and maybe even you job.
The 31st Annual ASHE Conference will be held from July 11 – 15 in Washington D.C. Lots will be happening at the conference. Some things to watch for:

- **Name Change.** ASHE will be considering a name change. Several focus groups at the conference will meet to discuss whether the name, American Society for Hospital Engineering (ASHE), is still a good designation for the membership served by the society. The focus groups will be made up of representative members, non-members and vendors who are attending the conference. The scope of ASHE has grown over the decades to encompass more than engineering functions. The Society’s tagline, “The Leader in Health Care Facilities Management,” begins to better define ASHE’s mission and purpose. The proposed time line for study of this issue will include a vote by the membership later in the year. If a new name is chosen, it will be ushered in with a public relations campaign in 1995.

- **ASHE-NET.** ASHE is currently developing an interactive electronic communication system that will give members immediate access to critical information via their personal computer and modem—similar to the way general interest services such as CompuServe or Prodigy work. Some potential features include:

  Peer networking — bulletin boards, which allow network users from all around the country to “talk” to each other. ASHE-NET might take this concept a step further, by potentially hosting electronic forums on topics related to accreditation surveys and regulatory compliance.

  Access to reference materials — Most regulatory agencies now have databases that can be accessed through services like ASHE-NET. This link would allow system users to find compliance and other information from these databases, simply by searching for key words.

  News service — News services are one of the most common features of systems like ASHE-NET. This service would likely be one of the first incorporated in the network, so that members would always have access to the latest information on health care reform, government regulations, legislation, codes and standards, etc.

  Career opportunities — ASHE-NET might also serve as an ideal vehicle for posting job listings. Offering immediate information on job openings would serve the needs of both prospective employers and job seekers.

The agenda for the conference is jam-packed with useful sessions. Some of the topics to be covered include: JCAHO’s current and future requirements for compliance; Practical applications of OSHA compliance for plant maintenance and general safety; NFPA 101-1994 – significant changes affecting health care facilities; Quick-response sprinklers and smoke detectors; Eliminating barriers to disposal of infectious wastes with microwave technology.

**NOTICE:** For those NEHES members attending the ASHE conference — please consider writing an article for the newsletter about any of the sessions you find interesting and informative. Your fellow NEHES and ASHE members not able to attend would greatly appreciate it. Remember, it doesn’t have to be long, or well written. We will happily edit anything you submit.

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**GOOD NEWS FOR JOB SECURITY**

*Editor’s Note: Don Garrison clipped an article from Maintenance Executive, March 1994, and sent it to us. We liked what it had to say, and have included some excerpts for you here.*

The article is by Dr. William D. Joyner, President, Joyner & Associates, Inc., Chicago, IL

You can’t sit around waiting for bad news—or for good news either. You have to create your own good news, about your budget, your division, your department, your staff, your company, and your facility. Above all, you must create good news about yourself.

To do this, you must act a little more aggressively than everyone else. You must find subtle ways to give your reputation a little extra sheen. You must work conscientiously to gain credibility. You must position yourself strategically for growth and career enhancement. You must make the people who work with you look—and feel—good. You must present information in ways that show top administrators that you are in line with their goals and objectives. And always, you must deliver more than you promise.

If you follow these “musts,” I guarantee you will become too valuable to fire. True, these strategies require hard work and hands-on management, but your career survival demands nothing less. It is also true that only you can shape your future, but here are some tips which can help assure your career’s future is bright and secure.

(Continued on next page)
CONTROLLING ROOF ACCESS — Preventing Damage and Improving Safety


It has become a cliche: A contractor or subcontractor who is working on the roof drops a tool, steps on a blister or standing seam, or in some other way inadvertently causes damage. Some time later the roof leaks and the building owner is left with expensive repairs or damaged assets. Though hackneyed, this old story may still have a use – not for passing the buck, but for suggesting the need for a written policy to help prevent roof damage.

A roof access policy can be written in the time it takes to swap a few roofing horror stories, and can help prevent accidental damage, protect owners from voided warranties, augment safety, and create a system for accountability.

Although no piece of paper can enforce human behavior, a written policy is a smart preventive measure. Who needs one? "Everyone with a roof," answers Bob Bryan, P.E. and president of RTD Associates, a Charlotte, NC-based roof engineering technology, diagnostics, and design firm.

Unfortunately, many facilities departments don’t have written policies. According to William Steinmetz Jr., corporate services manager for Midland Engineering, South Bend, In, this may be because many companies have not had problems in the past. "If you haven’t had a bad experience, maybe it hasn’t caught up with you. What is the great motivator for anybody? Mistakes."

Preventing damage is exactly why a roof access policy should be considered. "One of the things [owners can do] is control and educate the people that get up on the roof," says Steinmetz, noting that small investments of time can pay great dividends.

Perhaps the most common roof access control is lock and key. Undeniably, locks can keep unwanted visitors off roofs. But locks do nothing to educate those who require access. Log books are good for tracking roof access, but used alone, they are an ineffective prevention measure.

Written roof access policies can help integrate all aspects of roof access, while educating those who must work on the roof. They serve as the linchpin that holds together informal attempts at access control, damage prevention, and safety training.

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SAMPLE ROOF ACCESS POLICY

It is imperative that everyone who goes onto the facility’s roof understands the critical and sensitive nature of this roof system. Please read and sign the following form.

1. Stay on walk treads where provided.
2. Exercise caution when working with chemicals to prevent spillage.
3. When walking on the roof, avoid stepping on roof blisters or other roof deficiencies.
4. When working with tools, put down a protective layer of plywood.
5. When crossing firewalls, parapets, or expansion joints, exercise caution to prevent "kick holes" in base flashings, movement of metal caps, or tearing of expansion joints.
6. Remove all debris, obsolete material, containers, etc., when completing work.
7. When using a wheeled cart, make sure the tires are of sufficient size so as to prevent overstressing the roof.
8. Avoid pushing, pulling, or dragging equipment or tools across the roof.
9. If any disturbance to the roof system or adjacent components should occur, please notify the person indicated below as quickly as possible.
10. If any portion of the roof or roof details are to be altered during your work, please get authorization from the person indicated below so as not to void any roof warranties.

Please notify ___________________________ in the event of possible damage.

Signature: ___________________________ Time in: _______ Time out: _______
Reason for requiring access: ___________________________________________
Engineers present at the 1994 Spring Seminar “hunker down” to some serious learning. “Roll up your sleeves boys, there’s a lot of information to be covered!"

Bill Frank of Wm. G. Frank Medical Services leads a discussion on maintenance of piped medical gas and vacuum systems.

NEHES Vice President and 1994 Spring Seminar Chairperson, Ovid Bordeianu, welcomes engineers to the program and introduces the first speaker.

Bill Kulas, Industrial Hygienist & Mgr. of Safety and Occupational Health at the V.A. Hospital in Togus, ME addresses the group. Bill’s talk on OSHA’s new law on confined spaces was an important first step towards compliance for those present.

Region I ASHE Rep., Bob Loranger, explains the purpose of his hospital facility survey to the engineers present. (See page 11 of this issue for details).
Jack Gosselin reports that the Connecticut Engineers recently celebrated their Society's 30th anniversary with a dinner. Four of the original founding members were present, and were among those recognized with Distinguished Service Awards. Chris Burney, President of CHES was named the Hospital Engineer of the year. The meeting was attended by ASHE President, Jim Shoemaker, and Region I Representative, Bob Loranger. Several door prizes were awarded including two t.v.’s, a CD player, and briefcase, along with the grand prize of a full registration package to the ASHE annual conference in Washington, D.C. in July.

Jack also reported on CHES’ second annual spring seminar, held in March. This year’s topic was the NFPA. About 120 people attended.

Chris Burney, Director of Engineering at the Stamford Hospital, and Presidend of CHES, will be presenting a paper at the ASHE annual conference. The topic will be on the selection of design professionals.

CHES is looking forward to hosting the NEHES Fall Seminar in 1996. Board discussion has started regarding assigning a chairperson, dates, and location.

Don Garrison reports that 18 of the Maine engineers received an excellent presentation on current and potential requirements for TB and isolation room ventilation. Roundtable discussion after the presentation focused on the fall seminar for 1995, which Maine will be hosting, and on plans for a summer picnic. There was also discussion about NEHES led by Bob Lord (current president), and Don Garrison (current treasurer).

At a previous meeting in April the Maine engineers attended a seminar on new lighting designs for energy conservation by representatives of the General Electric Company. It is apparent that drastic changes in both lighting types and bulb types will be taking place over the next 2–3 years. The Maine engineers left the seminar with a better understanding of how to prepare for and adapt these new fixtures and bulbs into their facilities. The future looks bright with the energy savings expected to be significant.

Other than the summer picnic, the Maine group is taking a recess until September.

Ernest Margeson reports that 85 members of the Massachusetts group have received the Facilities Survey Questionnaire (see article and enclosure in issue).

Honorary members William Harney of Auburn, MA, and Fred McInnis of Northampton, MA have requested that they be continued on the membership list.

Ernie reports that six new members will be accepted for membership (pending receipt of properly completed applications). They are:

Robert Bunzick, Falmouth Hospital
Alvan Fletcher, St. Elizabeth’s
L.Z. Moulder, Soldier’s Home, Holyoke
Thomas J. Carlier, New England Deaconess
Randolph H. Branson, Dana Farber
Frederick A. Lamburn, Jr., Metro-West Medical Center, Framingham

Member Allan McClure at UMass Medical Center invited any NEHES members to attend a meeting of the Worcester Chapter of the Construction Specifications Institute in May.

Glover Memorial Hospital in Needham has been sold to the Deaconess Hospital. Present information indicates that the Glover Memorial will continue to function as is for the next five years.
Kurt Peterson and the New Hampshire group has been busy planning a seminar on “The Challenges of Empowerment,” which took place on June 16th. The subtitle of the seminar is “A discussion about Strategies to Improve Staff Involvement and Productivity.” The speaker was Carol Evans, a management and training consultant whose work and primary interest centers on the human relations aspects of the workplace and ways to create greater productivity, satisfaction and development through enhancing ways people work and communicate together.

Kurt also reports that Daniel Ebbeghauser has been accepted as a new member of NHSHE.

The New Hampshire Society of Hospital Engineers recently finalized a telephone tree. The tree will be used to notify all NH members quickly of any issues that impact hospital engineers.

Dan Ayres, VHES alternate to NEHES reports that Dick Harris hosted the Vermont engineers at North Country Hospital in Newport in May. Susan Davis or Erik Davis Architecture was the speaker. She is a consultant to the State Health Care Authority for plans review. Susan recommended the following when submitting plans:

- Send a site plan in addition to the project plans.
- Send an existing floor plan.
- Send a proposed floor plan.
- Be sure the plans are the same scale.
- If space is left over or not designated, clearly identify and specify future use.
- If a strategic master plan exists, it may be helpful to submit for review.

Dan reports that Susan sees a move towards alleviating the past adversarial relationship between hospitals and the State.

Dan reports that Mark Cappello of Northeastern Vermont Regional Hospital has changed insurance carriers. The Continental Ins. Co. will be providing NVRH’s coverage (replacing Phico). Continental has made a major commitment to become a big player in the Vermont hospital insurance market. Mark’s hospital has been reviewed by Continental. They are requiring a confined space policy and an outside source for sprinkler inspection.

Ovid Bordeianu reports in Wally Brown’s absence that the Rhode Island group has not met in some time. Because of the great amount of mergers and acquisitions now taking place in Rhode Island, organizers have found it very difficult to get engineers interested in any meetings or programs which take them away from their hospitals. Ovid and Wally have had little success in getting things moving.
HOW TO MANAGE YOUR MEETINGS EFFECTIVELY — Planning & Preparation are the keys

Many of us hate going to meetings. Yet, we all have to go to lots of them. So what is it that we hate? Many people assume that interpersonal relationships are the primary problems at meetings, but a 5-year research program at 10 multinational corporations proved otherwise.

The study revealed that only 3% of the 1,300 problems cited had to do with interpersonal dynamics. The remaining responses from 1,000 managers and technical professionals focused on meeting organization and lack of planning and preparation.

Sound familiar? Probably. Yet, how many of us have a good sense of what’s involved in effective planning and preparation?

Planning and Preparation are Vital

If you’re responsible for leading meetings, you can improve the productivity and attitude of your staff toward meetings by following a few basic principles of planning and preparation:

Planning. No meeting should be called without determining the objective and planning the activities. If you’re planning a meeting to get a commitment for a change, you might want to use a commitment chart to help you plan.

You draw up the chart by listing the key players who will be invited to the meeting and their known or estimated positions on the issue. Also, list your plan for winning to your side those people whose commitment is critical to your success. Using this method, you can lay out your strategy for winning acceptance of the proposed change.

Notification. When meeting experts are asked what one piece of advice they would give to those planning meetings, they invariably answer: “Never conduct a meeting without an agenda.” So, your next step is to send out a meeting notification, which announces the date and time for the meeting and states the agenda.

It should be distributed in advance to the participants to help them plan and prepare for the meeting too. The items in the agenda should be listed in order of priority, and the agenda should be used as a leadership tool during the meeting to keep discussion on track.

A good agenda contains the following points:

—Date.
—Start time and end time.
—Where the meeting will be held (with directions, if needed).
—What will be covered (a brief description of each topic) along with the person responsible for presenting each item.
—How much time will be allowed for each topic.
—Any pre-meeting preparation expected of the participants (attach any required reading, for instance).

Meeting action-plan. Before the start of the meeting, assign one person to use a meeting action-plan. It can be a form you devise to record notes about the actions taken during the meeting, the people responsible, and the deadlines for completion.

Having someone else do this frees you to lead the meeting. It also provides you with a summary of the actions, which you can use to write the minutes of the meeting, or as a substitute for the minutes.

• One idea suggested by a meeting planner is to announce in advance that you will ask the third person who comes into the meeting room to be responsible for keeping the action plan. This might cause a scramble on the part of the participants to get to the meeting first. The result is that your meetings can, and will, begin on time.

Carol M. Barnum
Communication Briefings 4/94

HOSPITAL FACILITIES SURVEY

Bob Loranger, ASHE representative, is collecting facilities data from New England hospitals. Engineers are encouraged to fill out the questionnaire on the following page and mail or fax it to Bob. Bob will accept responses until the first week of September. He will present his results at the Fall Seminar.

The data from the survey can be used to assist engineers in making determinations about the productivity and efficiency of their staff and plant. All data will be treated confidentially and responding facilities will not be identified by name.

To date, about forty hospitals have contributed to the database. To have a meaningful sample, information from an additional forty to sixty hospitals is desired.

Please take a moment to fill out and return the survey. Fill in all data boxes. If you have any questions, please call Bob at (617) 956-5267. Bob's fax number for completed surveys is (617) 350-8118.
## Hospital Facilities Management Comparison

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>1993 EXAMPLE</th>
<th>INPUT DATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>OSS Area Serviced</td>
<td>1,383,288</td>
<td>Total gross building area maintained (excl. garages)</td>
</tr>
<tr>
<td>H.O. Operational Beds</td>
<td>500</td>
<td>No. beds currently being admitted</td>
</tr>
<tr>
<td>Maint. / Facil. Admin. FTEs</td>
<td>11.00</td>
<td>Total Facilities supervision (Dir. to Foreman)</td>
</tr>
<tr>
<td>Admin. per sq. ft.</td>
<td>0.0000080</td>
<td></td>
</tr>
<tr>
<td>Maint. Admin. per trade FTE</td>
<td>0.29</td>
<td>(Total non-supervision FTEs incl. Secr./ disp.)</td>
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<tr>
<td>Maint. trade FTEs</td>
<td>38</td>
<td>(but exclude boiler plant, see Steam)</td>
</tr>
<tr>
<td>Sq. ft. Maintained per FTE</td>
<td>36,402</td>
<td></td>
</tr>
<tr>
<td>Total Maint. Dept. FTEs</td>
<td>49.00</td>
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<tr>
<td>Total FTE per sq. ft.</td>
<td>0.0000354</td>
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<td><strong>Utility Costs:</strong></td>
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<tr>
<td>Electric $ / sq. ft.</td>
<td>$2,734,572</td>
<td>Total annual electric, incl. Chilled Water if you gen.)</td>
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<tr>
<td>KWH</td>
<td>$1.98</td>
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<tr>
<td>KWH $ / KWH</td>
<td>$0.08438</td>
<td>Total kwh related to above.</td>
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<td>KWH / sq. ft.</td>
<td>$23.43</td>
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<td>Chilled Water Cost</td>
<td>In Electric</td>
<td>Cost of chilled Water if you buy from others.</td>
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<tr>
<td>Chilled Water $ / sq. ft.</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>Fuel Oil / Gas / Steam</td>
<td>$1,625,858</td>
<td>Total $ of Steam / gas, incl. FTE $ if to generate</td>
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<tr>
<td>Total Steam $ / sq. ft.</td>
<td>$11.18</td>
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<tr>
<td>Water $ / sq. ft.</td>
<td>$662,279</td>
<td>Total cost of water &amp; sewer charges</td>
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<td><strong>Total Utility Expense</strong></td>
<td>$5,022,709</td>
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<tr>
<td>Utility Cost per sq. ft.</td>
<td>$3.63</td>
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<tr>
<td>Purch. Outside Svcs. (Maint.)</td>
<td>$1,035,154</td>
<td>Total Maintenance related purchased services</td>
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<td>Purch Svcs. per sq. ft.</td>
<td>$0.75</td>
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<td>Maint. Total Salaries</td>
<td>$1,824,526</td>
<td>Total Salaries incl. all supervision, secre. etc.</td>
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<tr>
<td>Sal. Exp. per sq. ft.</td>
<td>$1.32</td>
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<tr>
<td>Average Sal. per FTE</td>
<td>$37,235</td>
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<tr>
<td><strong>Total Supply Expense</strong></td>
<td>$264,069</td>
<td>Total supply cost for Maintenance, exclude Capital work</td>
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<td>Supply Exp. per sq. ft.</td>
<td>$0.19</td>
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<td>Total $: Sal., Supply, Svcs. &amp; Util.</td>
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<tr>
<td>Total Exp. per sq. ft.</td>
<td>$5.89</td>
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</tr>
</tbody>
</table>

### Net Revenue Gain:

| Net Revenue Gain | $1,700,000 | If you do Capital work this is the net "profit" to your department, = charge out - sal. - supplies. |
| Net Total Facility Expense | $6,446,458 | |
| Net Total Facility $ / sq. ft. | $4.66 | |


| Bio-Med FTE | 10 | Total effective FTEs the above provides. |
| Bio-Med Devices | 16,311 | Total electronic devices the above maintains. |
| Biomed Devices per FTE | 1,631 | |
| Expense per Bio-Med Device | $32 | |

### Facilities Design / Proj. Mgmt.

| Dedicated Director | 0.50 | Actual FTEs employed |
| Secretary | 1 | Actual FTEs employed |
| Ac / Mech. Engr. | 3 | Actual FTEs employed |
| Project Planners / Designers | 4 | Actual FTEs employed |
| Construction Managers | 1 | Actual FTEs employed |
| Total Dept. | 10 | |
| FTE per 100,000 sq. ft. | 0.69 | |