

**THE TEXAS A&M UNIVERSITY SYSTEM HEALTH SCIENCE CENTER
STATE AGENCY ENERGY SAVINGS PROGRAM
APRIL 2006 PROGRESS REPORT**

Introduction

The Texas A&M University System Health Science Center is the youngest of the seven academic health centers in the State of Texas, including The University of Texas Southwestern Medical Center in Dallas, The University of Texas Health Science Center in Houston, The University of Texas Health Science Center in San Antonio, The University of Texas Medical Branch at Galveston, the Texas Tech University Health Science Center, and the University of North Texas Health Science Center. In 1997, the Texas State Legislature and the Board of Regents of The Texas A&M University System officially approved the establishment of The Texas A&M University System Health Science Center (HSC), to be initially composed of the Texas A&M University College of Medicine (College Station and Temple), the Baylor College of Dentistry (Dallas), the newly created School of Rural Public Health (College Station), the Institute of Biosciences and Technology (Houston), and the Graduate School of Biomedical Science (College Station) that would merge the existing graduate degree authority for the College of Medicine and the Baylor College of Dentistry. The Texas Higher Education Coordinating Board approved the Health Science Center on January 23, 1998, and the Health Science Center became an institution of The Texas A&M University System on September 1, 1998.

The shape and structure of The Texas A&M University System Health Science Center has changed significantly since the initial report was submitted last fall. This Spring, the Health Science Center has acquired a College of Pharmacy program located on the Texas A&M University – Kingsville campus in Kingsville. The new College of Pharmacy will begin classes Fall '06 and given the short period of time to hire requisite faculty and recruit students, a significant amount of extraordinary ground travel is required to get the College of Pharmacy up to operational standards.

Energy Conservation Strategic Plan

The Texas A&M University System Health Science Center, as noted above, is not only a complex organization located throughout the State of Texas, but is also growing faster than any other Health-Related Institution in the State of Texas. Each location has its own unique issues and protocol to obtain water, natural gas, and electricity. The following is an area/location approach to explain the current energy conservation plan of the various components of the Health Science Center. It is the plan of The Texas A&M University System Health Science Center to use both education and technology to reduce the rate of its energy consumption. Coordination of the plan requires individual analysis of the component location given there are different types of facilities in the various regions of

Texas. It should be noted that the Health Science Center created a Facilities and Energy Conservation Committee made up of representatives from each component location across the State of Texas. It is the philosophy of this committee to identify opportunities to maximize energy use efficiencies that enhance good stewardship of State resources.

Some strategies will be implemented in the near future (i.e. website, online energy conservation suggestion box, email reminders, etc.) and some are more long-term strategic strategies (change lighting lamps, windows, etc.). The website, although a work-in-progress, was recently put online and will provide information and strategies that individuals, departments, and colleges can utilize to facilitate reduction their energy consumption. The Health Science Center plan to implement more sensing devices that will turn lights on and off by detecting motion in a specific area. There will be a greater emphasis placed on using TTVN technology versus driving automobiles to remote areas of the Health Science Center. In short, the Health Science Center plans to utilize technology and education to increase efficiencies and modify behavior, respectively. However, it should be noted that The Texas A&M University System Health Science Center expects research expenditures, faculty, and student enrollment to grow significantly over the next decade. Given this, there will be a greater demand for energy and other utility resources.

College of Medicine Temple

A. The extent to which the agency has met the percentage goal it established for reducing its usage of electricity , gasoline, and gas.

The College of Medicine (COM) recently opened new laboratories that more than doubled the square footage of the 100% fresh air wet lab space in the Medical Research Building (MRB). Given this dramatic change in the MRB building, it is difficult to determine actual energy savings until the change is evaluated and reviewed. *The goal remains to reduce energy consumption 1 to 2 percent each of the next two fiscal years taking into account the significant operational changes in the facility.*

B. The steps the agency may take to increase the percentage goal for reducing its usage of electricity, gasoline, and natural gas.

The College of Medicine has installed motion detectors in the MRB to limit wasted use of electricity when no one is in the room or area. Also, the building maintenance handyman will conduct energy audits of the building to ensure there are no loss opportunities for saving energy.

C. Any additional ideas the agency has for reducing energy expenditures relating to facilities.

The College of Medicine plans to require T-5 lamps in all future construction renovation and replacement of all T-8 lamps as funds become available for maintenance. All new construction contracts will require energy efficient glass. The COM will use its Energy Management Systems Control to identify “Energy Abusers” and notify the individual responsible for that area that wasted energy has been identified. Ask employees to dress appropriately for their work environment and to allow some reasonable flexibility in work attire. Remind all employees to not use space heaters and enforce the remove all space heaters from a building.

D. Any additional ideas the agency has to minimize fuel usage in all vehicles and equipment used by the agency.

The College of Medicine will encourage greater use of TTVN including working with Information Technology to determine the extent TTVN is used to hold meetings and training sessions. Also the COM plans to encourage High Occupancy Vehicle for travel by employees to various Health Science Center components across the State. It should be noted that the COM is located in two different locations. The first two of medical education occurs in College Station and the last two years of Clinic occurs in Temple. Given this, many COM faculty travel between College Station and Temple on a regular basis to teach and conduct research.

Institute of Biosciences and Technology Houston

A. The extent to which the agency has met the percentage goal it established for reducing its usage of electricity , gasoline, and gas.

The Institute of Biosciences and Technology (IBT) facility is under major construction for the retrofitting and implementation of the Texas Institute of Genomic Medicine. It is difficult to get accurate savings during major construction of a facility given the often after hours use of electricity and other utilities by the contractors. However, constant monitoring of energy purchasing and finding best price for utilities continues to be a constant endeavor of the Institute of Biosciences and Technology. The following provides some details of the oversight and managed control that the IBT exhibits in energy purchases. Implementation and monitoring of usage will become much more practical at the point major construction and renovation activities are completed.

The Institute of Biosciences and Technology (IBT) purchases its thermal energy from the Texas Medical Center Central Heating and Cooling Services Cooperative Association (TECO). TECO provides economical and reliable thermal services to institutions in the Texas Medical Center. TECO specializes in providing thermal services allowing its customers to concentrate on their primary missions, which have brought national and international acclaim to the Texas Medical Center. The cooperative is owned by nine Texas Medical Center institutions and operates two plants (Central Plant and South Main Plant) with a combined capacity of 52,000 tons of chilled water and 542,000 pounds-per-

hour of steam. These plants supply service to 25 Texas Medical Center institutions in 42 buildings, which occupy approximately 10 million square feet of space, and represent over 75 percent of contiguous Texas Medical Center central campus building space. TECO is the only thermal system in the Texas Medical Center authorized to supply multi-institution services. TECO expands as needed to keep pace with the service needs of the institutions, and operates one of the largest and most up-to-date thermal systems in the world; a system which no single institution could reasonably justify or afford. More importantly, TECO saves its customers money, in real and relative terms, at a time when cost containment is so imperative to health care. TECO's economy of size and commitment to excellence result in increased productivity and minimum cost. Design and operating philosophies provide safeguards and back-up systems resulting in ample redundancy to ensure the reliable services required.

The Institute of Biosciences and Technology is currently contracted as member-customer (owner) with TECO until 2015. Presently, The Texas A&M University System Health Science Center is reviewing extending the contract through 2030.

The Institute of Biosciences and Technology purchases its natural gas from Center Point Energy. It is anticipated the IBT Building will continue to purchase natural gas from Center Point Energy over the next five years. The large usage spikes shown in the previous report was from bad utility company readings.

The Institute of Biosciences and Technology purchase its water from the City of Houston. It is anticipated the IBT Building will continue to purchase water from the City of Houston over the next five years.

The institute of Biosciences and Technology purchases its electrical power from Sempra Energy Solutions. IBT utilizes the services of the Texas A&M University Energy Systems Laboratory to be a part of a larger group purchasing power at a more economical rate. It is anticipated IBT will continue to purchase power from Sempra Energy as long as the company maintains a competitive price. *If the building utility is ceribus paribus (without major construction and renovation and with limited growth), then with education and implementation of technology, one would expect a 2 to 4 percent given the building is in excellent mechanical condition.*

B. The Steps the agency may take to increase the percentage goal for reducing its usage of electricity, gasoline, and natural gas.

The Health Science Center plans to provide on its website a location for all faculty, staff, and student to provide input on ways to save energy.

The Energy Management System controls the operating cold decks of the air handlers to minimize utilities and maintain an acceptable humidity level required for research.

The building will experience a significant increase in activity as the new Texas Institute of Genomic Medicine (TIGM) will house one of its libraries in the IBT Building which

could drive up the demand for electricity and gas as new labs are refurbished and developed to house the new genome technology. However, the freezers used to house the mouse libraries will use liquid nitrogen and very little electrical impact.

The IBT has maintained the building and evaluated all published means to conserve energy to date. Heat recovery and solar power systems have been evaluated with respect to investment and rate of return. The IBT has installed motion sensors to eliminate electrical waste when individuals are not occupying a specific area. An automated electrical power factor system was installed to maintain as close to 100% of the purchased power as possible as working power. The present power factor is between 97% and 98% of the purchased power. The IBT plans to install new delta P valves for the Air Handlers in FY '06 which should increase efficiency of cooling the building. There will be a diligent effort to remind and educate faculty, staff, and students to turn off all unnecessary lights and to turn off all electrical equipment when not in use. The IBT has implemented an HVAC laboratory operation schedule with added over rides for researchers to manage the efficient use of air conditioning in the laboratories after normal working hours. The IBT Building located in Texas Medical Center is in excellent operational condition and the building mechanical and air handling units are maintained as scheduled which enhances effective and efficient use of utilities.

The IBT building operates an energy management system to stabilize the chilled water and heating water usage in the building and operates a lighting schedule for the animal facilities. The primary problem with HVAC in the Houston area is humidity control. In a research facility like the IBT building, nearly 85% of the air conditioned air is used one time and exhausted due to possible contamination of research if the air is recirculated.

C. Any additional ideas the agency has for reducing energy expenditures relating to facilities

The Health Science Center plans to provide on its energy conservation website a location for all faculty, staff, and student to provide input on ways to save energy and to report suspected energy waste. This reporting system will have an anonymous component if the employee wishes not to be identified in reporting suspected energy waste.

D. Any additional ideas the agency has to minimize fuel usage in all vehicles and equipment used by the agency.

The Institute of Biosciences and Technology will encourage greater use of TTVN including working with Information Technology to determine the extent TTVN is used to hold meetings and training sessions. Also the IBT plans to encourage High Occupancy Vehicle for travel by employees to various Health Science Center components across the State.

Baylor College of Dentistry Dallas

A. The extent to which the agency has met the percentage goal it established for reducing its usage of electricity, gasoline, and gas.

The Baylor College of Dentistry leases its main facility from Baylor University Medical Center. As such, Baylor University Medical Center provides all the utilities and bills the Baylor College of Dentistry for consumption. Eight years ago, the Baylor College of Dentistry pursued an aggressive approach to energy management, which included a lighting retrofit with T-8 lamps and electronic ballasts. In addition, a comprehensive computer based Building Management System/Energy Management System was installed. A variable frequency drive to chilled water pumps was added. The overall savings from the above approach amounted to approximately 28% in permanent reduction of energy costs; it remains the goal of the Baylor College of Dentistry to continue to educate its employees on protocols that will lead to another 1% to 2% reduction in utility usage.

B. The steps the agency may take to increase the percentage goal for reducing its usage of electricity, gasoline, and natural gas.

All future modification and construction projects will be designed around T-5 lighting and other energy efficient elements. Keeping this in mind, the next five years is somewhat limited in engineering retrofits but education and finding best value utility service (when viable) is the push of the Baylor College of Dentistry. During the same time frame there was approximately 45,000 gross square feet added to the facility placing more demand on utility usage. Consequently, an aggressive energy conservation plan in the recent past places limitations on the ability to meet increased percentages in the near future.

C. Any additional ideas the agency has for reducing energy expenditures relating to facilities.

Other retrofits/changes at the Baylor College of Dentistry include the installation of efficient HD lighting in the parking garage, removal of old CT scan with a more energy efficient new scanner. The Baylor College of Dentistry through its programmed maintenance program adds new more efficient equipment that is tied to the Building Management System.

The Texas A&M University System Health Science Center is currently reviewing and monitoring approaches to obtain cheaper and better utility service. The Baylor College of Dentistry (Dallas) and the Institute of Biosciences and Technology (Houston) have on-staff professional engineers heading their facilities management. Texas A&M

University is responsible for The Health Science Center buildings located on the campus at College Station. The College of Medicine buildings located in Temple are tied to the Scott and White (Buildings 7 and 147) or the City of Temple (Medical Research Building). The South Texas Center complex is a stand-alone facility in McAllen. In short, there is no one plan or implementation plan for The Texas A&M University System Health Science Center, but a complex network of activities to maximize resources. To accurately model the energy use for The Texas A&M University System Health Science Center requires developing complex mathematical models that can account for energy usage and growth of the institution. Measuring growth at Health Science Center is difficult as it take into consideration increases and density of faculty, students, staff, outreach programs, facilities, and researchers. Although the Health Science Center is committed to finding good measurements of growth, good business practices are always at the heart of the Health Science Center's energy conservation program. The use of mathematical models was embraced by all members of The Texas A&M University System University System Health Science Center Facilities and Energy Conservation Committee on April 3, 2006.

D. Any additional ideas the agency has to minimize fuel usage in all vehicles and equipment used by the agency.

The Baylor College of Dentistry will encourage greater use of TTVN including working with Information Technology to determine the extent TTVN is used to hold meetings and training sessions. Also BCD plans to encourage High Occupancy Vehicle for travel to various components across the State to conduct Health Science Center business.

School of Rural Public Health College Station

A. The extent to which the agency has met the percentage goal it established for reducing its usage of electricity, gasoline, and gas.

The School of Rural Public Health took occupancy of their facility located on the Texas A&M University campus circa January 17, 2006. There is insufficient data to suggest what reasonable measures can be implemented to determine a reduction in costs. The building has new equipment and systems installed.

B. The steps the agency may take to increase the percentage goal for reducing its usage of electricity, gasoline, and natural gas.

The School of Rural Public Health may use email hotlines to notify its employees of energy saving ideas or reminders to cut off lights and other equipment when not in use. Also, the school will audit areas to determine where motion detectors might be a good fit. The School is considering implementing energy conservation into its new employee education hiring orientations.

C. Any additional ideas the agency has for reducing energy expenditures relating to facilities.

The Health Science Center plans to provide on its energy conservation website a location for all faculty, staff, and student to provide input on ways to save energy and to report suspected energy waste. This reporting system will have an anonymous component if the employee wishes not to be identified in reporting suspected energy waste.

D. Any additional ideas the agency has to minimize fuel usage in all vehicles and equipment used by the agency.

The Texas A&M University System Health Science Center is dispersed across the State of Texas. Travel is a requisite function for faculty and researchers to collaborate with each. The use of TTVN technologies will be encouraged for faculty, researchers, and staff to limit use of highway travel by the Health Science Center. Protocols for communicating travel plans/dates to remote areas of Health Science Center will be encouraged and a format is being studied for the energy website.

South Texas Center McAllen

A. The extent to which the agency has met the percentage goal it established for reducing its usage of electricity, gasoline, and gas.

The South Texas Center is a new building facility located in McAllen, Texas. The overall electrical usage declined each month in FY '05 as the management of the building became more proficient and there were fewer occupants of the facility. However, overall electrical usage is expected to rise in FY '06 as the occupancy of the building has risen steadily due to the development of programmatic efforts. These efforts have also led to an increase in use of the building's meeting rooms, which had been receiving sporadic use. This increased utilization of meeting space will also likely result in an increase in energy usage. The goal remains is reduce energy consumption 1 to 2 percent each of the next two fiscal years taking into account the significant operational changes in the facility.

B. The steps the agency may take to increase the percentage goal for reducing its usage of electricity, gasoline, and natural gas.

The South Texas Center plans to install motion detectors in the STC facility to limit wasted use of electricity when no one is in the room or area. Engineering solutions include: (1) energy management system to promote more efficient use of lighting; installing window film to reduce heat inside the building; (3) installation of motion sensors in certain common areas. Educational opportunities include: (1) concerted effort to educate new and existing faculty and staff to turn off all unnecessary lights and electrical equipment when not in use; (2) periodic email reminders to faculty and staff

about energy conservation; and (3) emails before scheduled holidays to remind faculty and staff to turn off all lights and electronic equipment.

C. Any additional ideas the agency has for reducing energy expenditures relating to facilities.

The South Texas Center will require T-5 lamps in all future construction renovation to replace current T-8 lamps. All new construction contracts will require energy efficient glass. The STC administrators will requests that employees dress appropriately for their work environment and to allow some reasonable flexibility in work attire.

D. . Any additional ideas the agency has to minimize fuel usage in all vehicles and equipment used by the agency.

The Texas A&M University System Health Science Center is dispersed across the State of Texas. Travel is a requisite function for faculty and researchers to collaborate with each. The use of TTVN technologies will be encouraged for faculty, researchers, and staff to limit use of highway travel by the Health Science Center. Protocols for communicating travel plans/dates to remote areas o f Health Science Center will be encouraged and a format is being studies for the energy website.