



April 15, 2015

Office of the Governor  
1100 San Jacinto  
Austin, Texas 78701

Mrs. Ursula Parks, Director  
Legislative Budget Board (LBB)  
Robert E. Johnson Bldg. – 5<sup>th</sup> Floor  
1501 North Congress  
Austin, Texas 78701

**RE: Semi Annual Energy Report, FY2015**

The Texas Tech University Health Sciences Center (TTUHSC) Semi Annual Energy Report for FY-2015 is being submitted in accordance with Governor's Executive Order, RP 49, Senate Bill 700, and State Energy Conservation Office directives. TTUHSC continues to promote energy conservation measures and strategies and seek new ideas to reduce consumption and improve building system efficiencies.

### **A. Energy Consumption & Cost**

During the first six months of FY2015, the institution consumed 235,650,921 kBtu. The energy utilization index (EUI) is 112 kBtu/sq-ft, a decrease of 13% as compared to first half of FY2014. The energy cost index (ECI) is \$1.50/sq-ft, a decrease of 3% as compared to first half of FY2014. The consumption decrease is mainly due to the weather conditions, and continuous upgrade of equipment and corresponding controls. Water consumption intensity for the first half of 2015 is 10 Gal/sf. The energy and water consumption values are estimated to be within the institutional target values.

The gross floor area (gsf) of the institution during this period has increased by 0.4% as compared to FY2014. However, Heating Degree Days (HDD) has decreased by 4% and Cooling Degree Days (CDD) has decreased by 19% for the first half of FY2015 as compared to FY-2014. This is due to change in weather conditions.

TTUHSC continues to undergo steady programmatic growth and increase in overall occupancy density. Energy consumption and cost breakdowns for the first half of FY2015 are shown in the table below. It includes FY2014 energy consumption, cost, and energy equivalents for the same period to facilitate comparison.





| <b>ENERGY CONSUMPTION AND COST (September to February)</b> |             |             |             |             |
|--|-------------|-------------|-------------|-------------|
| ENERGY<br>TYPE   | CONSUMPTION |             | COST        |             |
|  | FY 2015     | FY 2014     | FY 2015     | FY 2014     |
| ELECTRICITY, kWh   | 20,253,356  | 18,680,145  | \$1,375,993 | \$1,223,531 |
| NATURAL GAS, ccf   | 298,065     | 335,450     | \$205,290   | \$214,380   |
| STEAM, mlb   | 70,859      | 89,926      | \$849,983   | \$945,872   |
| CHILLED WATER, tn-hr                                       | 5,479,202   | 6,840,801   | \$721,579   | \$806,910   |
| TOTAL ENERGY (kBtu), COST (\$)                             | 235,650,921 | 266,670,003 | \$3,152,845 | \$3,190,693 |

N:B: Natural Gas is used to produce the Thermal Energies of Steam and Chilled Water

**B. Energy Conservation Plan & Action**

TTUHSC has a continuous program to educate the faculty and staff regarding energy conservation. TTUHSC Engineering Services Department maintains specific operating policy and procedure relating to the energy conservation program and utility review. Operating policy and procedures make the responsibility of energy conservation the obligation of every employee. A key element of the plan is to prevent waste and assure the conservation of resources.

TTUHSC Engineering Services has identified several projects for potential consideration in reducing the campus energy consumption. Projects were prioritized based on a variety of factors including return on investment, and cost. Projects that were implemented in the past were listed in the previous annual reports. Below is a partial list and status of projects that are completed in FY-2015 or currently being designed and/ or implemented.

1. Annual Energy Report, Resource Efficiency Plan, and 5-yr Energy & Water Management Plan were prepared and submitted to SECO.
2. Replace air handling units in Lubbock HSC which are inefficient and beyond their expected service life, by newer energy efficient air handling units. *Three air handling units are being replaced in FY-15.*
3. We are in the process of installing (4) 350W LED fixtures with occupancy sensor to replace existing parking lot pole lights (400W HPS). The lights will dim to 50% during unoccupied period at night. *This is planned to be completed in April'15.*





4. Lighting design to replace (36) 175W exterior soffit building lights by 34W LED light fixtures has been prepared. *This is planned to be completed by May'15.*
5. We are working with our control system vendors to optimize HVAC system operations. Energy savings features such as temperature resets, static pressure resets, economizer operation, Chiller sequencing based on actual Btu demand etc., are planned to be implemented.
6. Templates were finalized and approved by HSC and the Midland Memorial Hospital to invoice energy consumption and cost for Jenna Welch Center on a monthly basis.
7. We hosted presentations by TRANE and Belimo. TRANE discussed about their best-in-class air handling units, and Belimo introduced their pressure independent valves. Both products offer energy savings and are in consideration for future implementation.
8. We periodically attend State Energy Advisory Group (SAEAG) monthly meetings via conference call. SECO outlined all the reporting requirements for higher education. Other ideas were also discussed to save energy.
9. Lighting retrofit to replace existing lights by LED fixtures in one of the classrooms in Odessa HSC was initiated. The material is on order and is expected to be completed in March'15.
10. New energy efficient LED lights are being tested for performance and reliability since FY2010. As of date, there has been 3.5% failure rate, and no significant depreciation in illumination. Outdoor LED fixtures are performing better than indoor LED fixtures.
11. Upgrade pneumatic control systems to direct digital control systems. *This is being done as and when funding is available.*
12. Install new direct digital control (DDC) system at the WHRI building, Amarillo. Project includes upgrade of air handling units, terminal boxes, and pumps. *Project is currently on hold.*
13. It's our operating policy to use F28T8 lamps for office/laboratory/classroom and other such areas, and F25T8 lamps for hallway/toilet and other areas which need less illumination. This is being done to comply with the lighting power density requirement of the state energy code. *Project is ongoing.*

### C. Future Energy Reduction Plans

We conducted an in-depth energy assessment of two of our HSC buildings in Amarillo campus, in the month of February 2015. The plan is to optimize few operational parameters in favor of energy reduction.

We continue to review and update the 'Resource Efficiency Plan' (REP), which identifies a comprehensive list of projects and measures for the campus energy conservation. Projects are being prioritized and implemented based on acceptable payback period, and availability of funding. Future projects in plan include replacement of older equipment,





use of occupancy sensor and photocell controlled LED light fixtures for all parking lot lighting.

**D. Fuel Consumption Reduction Plans**

TTUHSC has several remote regional campuses in West Texas which require frequent travel between campuses. We continue to emphasize automobile fuel conservation awareness with strategies such as group travel via automobile, and regular preventative maintenance.

Fuel (gasoline/propane/diesel) Data:

| FY15 Consumption | FY15 Cost | FY14 Consumption | FY14 Cost |
|------------------|-----------|------------------|-----------|
| 14,202 Gallons   | \$ 36,873 | 14,458 Gallons   | \$ 42,453 |

Your consideration of this update and information is appreciated.

Sincerely,

Timothy Giebler, M.S., P.E.  
Director, Engineering Services

George G. Morales, P.E., M.E., M.B.A.  
Assistant Vice-President  
Physical Plant & Support Services

XC:

1. Elmo Cavin,  
Executive Vice-President, TTUHSC Finance & Administration
2. Director, State Energy Conservation Office  
111 E. 17<sup>th</sup> Street, Suite 1114, Austin, Texas 78774

