



#### PROJECT AT A GLANCE

**Location:**

Denton, Texas, USA

**Buildings:**

54 (4 million sq. ft.)

**Energy:**

Central plant chiller replacements

**Conservation Measures:**

- Boiler replacements
- Expansion and completion of existing energy management control system
- Direct digital control of air handlers
- Lighting control for the library
- Variable frequency drives added to existing variable air volume air-handling systems
- Variable flow pumping
- Variable speed drive control of cooling tower fans
- Power factor correction
- High-efficiency rooftop HVAC equipment
- Central plant optimization

**Cost:**

\$9 million

**Funding Source:**

Texas Public Finance Authority – Master Equipment Lease Purchase Program

**Estimated Annual Savings:**

\$1.4 million projected  
(\$1.2 million guaranteed)

## University of North Texas

Motivated by a desire to spend as much of its annual budget as possible on education, UNT took advantage of legislative changes to fund the renovation of its aging building infrastructure.

#### THE CHALLENGE

By 1995 UNT's building systems had become unreliable and required constant maintenance and repair. But financing a comprehensive facility upgrade would require more than UNT's annual budget allocation. Legislative changes, however, opened the door to new financing options, empowering universities to retain energy savings and to self-fund energy conservation projects.

In 1996 UNT issued a request for qualifications to select an energy service company (ESCO) deemed capable of providing the required renovations and strategic energy upgrades. The university defined the modernization objectives and specified that it wanted to fund the endeavor with a performance contract, guaranteeing energy savings sufficient to finance improvements.

TAC® was uniquely positioned to accept the challenge because it had prior experience successfully implementing controls and renovations at UNT, as well as an entire division dedicated solely to performance contracting. Moreover, TAC demonstrated how the university could finance the project and pay for it with energy savings of up to \$22.5 million over 15 years.

Upon contract award, TAC committed to 15 separate retrofit projects designed, first and foremost, to upgrade the aging infrastructure. In addition, each project was designed to reduce utility costs while improving the learning environment.

### CUSTOMER BENEFITS

- 31 percent reduction in energy costs
- Simple payback in 6 years
- \$1.2 million guaranteed annual savings
- No upfront money – but all the benefits and use of the upgraded infrastructure

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## THE SOLUTION

TAC's Performance Contracting group assembled a 10-member team of experts in energy management, lighting, HVAC and automatic temperature control to perform the initial energy audit. Over a period of six months, the team invested more than 5,000 man-hours analyzing energy demand and conservation opportunities to calculate potential savings.

Calculations showed that the savings from the selected measures would exceed \$1.4 million per year with simple payback of the initial investment in a little over six years. (See Facility Profile for list of selected energy conservation measures.)

Accordingly, TAC offered a 10-year performance contract guaranteeing the university energy savings of \$1.2 million per year, enabling UNT to repay the project costs. And if the energy savings dropped below the guaranteed level during the 10-year period, then TAC would write a check for the difference.

## THE BOTTOM LINE

Installation of new equipment began in July 1997 and was completed in March 1999. Today, the renovated systems

deliver a consistently higher level of comfort for the 30,000 students that attend the university.

In addition to being more accurate and responsive, the new systems result in fewer calls to maintenance personnel. Centrally monitored and streamlined digital controls also allow facilities staff to quickly troubleshoot and resolve problems throughout various facilities.

TAC's comprehensive training program enables UNT facility managers to develop competencies in HVAC management, control concepts, energy management strategies, system operation and troubleshooting. And TAC's Performance Assurance Support Services (PASS) department is available to assist UNT operators if they encounter any problems during the guarantee period.

As an added benefit outside the scope of the original contract, UNT and TAC have established an on-site training center for the university's facilities staff. The training center boasts a fully equipped product wall containing all the most common components used by the TAC system on campus.

## EDUCATION PROFILE

Students have high expectations when they select a college or university. They require a quality education and campus experience at a reasonable cost. State-of-the-art facilities, safety and security are of primary concern. In order to meet rising expectations within this cost-sensitive market, colleges and universities must invest wisely in their facilities as a strategic asset to recruit students and attract faculty and staff.

TAC has proven experience in working with higher educational facilities to take advantage of building management solutions, that maximize energy efficiency and performance. This leads to a reduction in operating costs and enables the reallocation of saved resources to new programs for students within the same budget.

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