



Susan Combs Texas Comptroller of Public Accounts



CLEAN AIR THROUGH ENERGY EFFICIENCY

2007 Texas SB 5 Report from the State Energy Conservation Office (SECO)



On the Cover: The City of Houston's Looscan Library

Photo: Courtesy of the Houston Public Library.

On June 23, 2004, Houston City Council adopted the Green Building Resolution, which set a target of Silver-level LEED™ certification for new construction, replacement facilities and major renovations of City of Houston-owned buildings and facilities with more than 10,000 square feet of occupied space. The city currently has 12 facilities pursuing the United States Green Building Council's Leadership in Energy and Environmental Design (LEED™) certification. The city has identified and begun work on projects including demand side management, facility upgrades, traffic signal conversion to light-emitting diode (LED) technology and conversion of 64 fire stations to more energy efficient lighting. Retrofitting the fire stations is projected to result in approximately 9.7 million kWh of reduced electricity consumption per year, and LED traffic signal conversion is projected to save another 17.5 million kWh annually.

Opened in September of 2007, the city of Houston's Looscan Library is the first of Houston's LEED Certified Buildings. Some of the features included with the construction of this facility include: daylighting; energy efficient building envelop and HVAC system; use of low VOC-emitting materials; Energy Star roof; high efficiency irrigation system and native landscaping; 50 percent recycled/salvaged construction waste and recycled rubber flooring.

The city has also reached out to promote energy efficiency in residential neighborhoods. In 2006, the city partnered with Centerpoint Energy, Houston's electrical distribution provider, and offered weatherization installation assistance to the entire Pleasantville community. By May of 2006, 610 homes were completed, and an additional 31 homes were completed thereafter. An analysis of the savings from 566 homes has shown a savings of 20.2 percent as compared to the previous year.





January 10, 2008

Mr. H.S. "Buddy" Garcia
Chairman
Texas Commission on Environmental Quality
12100 Park 35 Circle
Austin, Texas 78753-1808

Dear Chairman Garcia:

I am pleased to submit to you the *2007 Clean Air Through Energy Efficiency* report, as required by Senate Bill 5, 77th Regular Session. SB 5 amended the Health and Safety Code, in part, by requiring affected political subdivisions to: (1) implement all cost-effective energy-efficiency measures, (2) establish a goal to reduce electricity consumption by 5 percent each year for five years, and (3) report efforts and progress annually to the State Energy Conservation Office (SECO). This report details the efforts being undertaken by SECO to provide assistance and information to affected entities and the progress and efforts made by political subdivisions in meeting the energy efficiency mandates of SB 5.

To provide necessary information and resources to affected entities, the Texas Energy Partnership was formed. This partnership is a collaborative effort of SECO, the U.S. Department of Energy (DOE) and ENERGY STAR®, a joint program of DOE and the U.S. Environmental Protection Agency. The Partnership provides information on setting goals, determining strategies, and providing leadership support. In addition, the Partnership has produced brochures, a resource CD, a Web site and numerous workshops in an effort to help entities reach their energy efficiency goals.

As of the date of this report, 280 jurisdictions have reported the establishment of a goal of reducing electricity consumption by 5 percent annually.

Please contact SECO Director Dub Taylor at 463-8352 if you have any questions concerning this report or SECO's efforts in the Texas Emissions Reduction Plan.

Sincerely,

Susan Combs

cc: Dub Taylor

CLEAN AIR THROUGH ENERGY EFFICIENCY

In 2001, the 77th Texas Legislature passed Senate Bill 5 (SB 5), also known as the Texas Emissions Reduction Plan, to amend the state Health and Safety Code. The legislation required ambitious, fundamental changes in energy use to help the state comply with federal Clean Air Act standards. It applied to all political subdivisions within 38 designated counties, now expanded to 41 counties.

Requirements Created by SB 5

Sec. 388.005 of the Health and Safety Code was amended to require that each political subdivision in 38 (now 41) Texas counties:

- Implement all energy efficiency measures that meet the standards established for a contract for energy conservation measures under Section 302.004(b), Local Government Code, to reduce electricity consumption by existing facilities;
- Establish a goal to reduce electricity consumption by 5 percent each year for five years, beginning Jan. 1, 2002;
- Report efforts and progress annually to the State Energy Conservation Office (SECO).

The same section of the Health and Safety Code was amended to require the SECO to provide assistance and information to the political subdivisions to help them meet the goals of the legislation. SECO also was required to evaluate the effectiveness of the energy efficiency programs and report its evaluation annually to the Texas Commission on Environmental Quality (TCEQ).

Texas Energy Partnership

The Texas Energy Partnership was formed to help the counties and cities affected by SB 5. Led by SECO, the Partnership combines resources of SECO, the U.S. Department of Energy (DOE) and ENERGY STAR, a joint program of DOE and the U.S. Environmental Protection Agency.

The Partnership to date has held workshops on energy-efficient building technologies, energy management and planning, financing, benchmarking, motor and pumping systems and "green" building. The partnership developed and distributed an "Energy Solutions" compact disk that contains a wide selection of energy efficiency information.

The Partnership created a Web site, www.texasenergypartnership.org, that serves as an essential tool for affected political subdivisions to report their energy savings data and progress. The Web site allows political subdivisions easy access to information from the Partnership, U.S. Department of Energy and ENERGY STAR. The site includes information on benchmarking, best practices for energy efficient buildings, and "green" building.

The Partnership also provides information on setting goals, determining strategies and allocating resources. It provides expertise and leadership support. Its materials include a roadmap that

can lead managers through the entire energy efficiency process, a comprehensive manual on analyzing energy consumption and efficiency measures, and steps to achieve community initiatives to reduce energy use.

Users logging into www.texasenergypartnership.org since 2004 have the option of either reporting basic information (unchanged from previous year) or reporting more detailed project information for the application of emission credits.

Results: Counties and Cities Are Taking Action

In the fifth year of work under SB 5, the number of Texas jurisdictions adopting the energy efficiency goal of SB 5 expanded to 280. For 2006 we received annual reports representing all non-attainment regions and specifically including the cities of El Paso, Fort Worth, Dallas, Longview, Arlington, Taylor, Austin, Travis County, San Antonio, Victoria, Houston, Galveston, and Counties including Parker Travis and Harris and others. A complete listing of jurisdictions is in Appendix C.

Political subdivisions in the 41 affected counties continued to develop energy efficiency plans, establish electricity consumption baselines, audit individual facilities and achieve significant savings. Projects ranged from the simplest immediate-payback implementation policies to the longest-term changes though improved building codes.

One of the more common actions undertaken by cities has been the replacement of heating and cooling systems, chillers and the installation of light emitting diode (LED) traffic signals. LED retrofit energy savings projects historically decrease traffic signal energy consumption by 80 - 90 percent. Cities from San Antonio to Longview have upgraded their traffic signals.

A number of public jurisdictions, such as Fort Worth, El Paso, Austin, Alvarado and Abilene, have also entered into agreements with Energy Service Companies for energy management services.

To date, a sampling of political subdivisions show reductions from baseline energy usage of Arlington nearly 25 percent, Bastrop 13 percent, Carrollton 22 percent, Colleyville over 50 percent, Duncanville 13 percent, Longview over 45 percent, City Public Service office facilities 28 percent and Allen over 19 percent.

Energy Management: Opportunities for Improvement

The city of El Paso collaborated with SECO and ENERGY STAR to collect energy data on all their city facilities and use the EPA Portfolio Manager to evaluate their facilities. There continues to be a need for political subdivisions to track and manage their energy usage efficiently and cost effectively. SECO plans to evaluate how to use Portfolio Manager and other ENERGY STAR tools for public jurisdictions.

New Construction

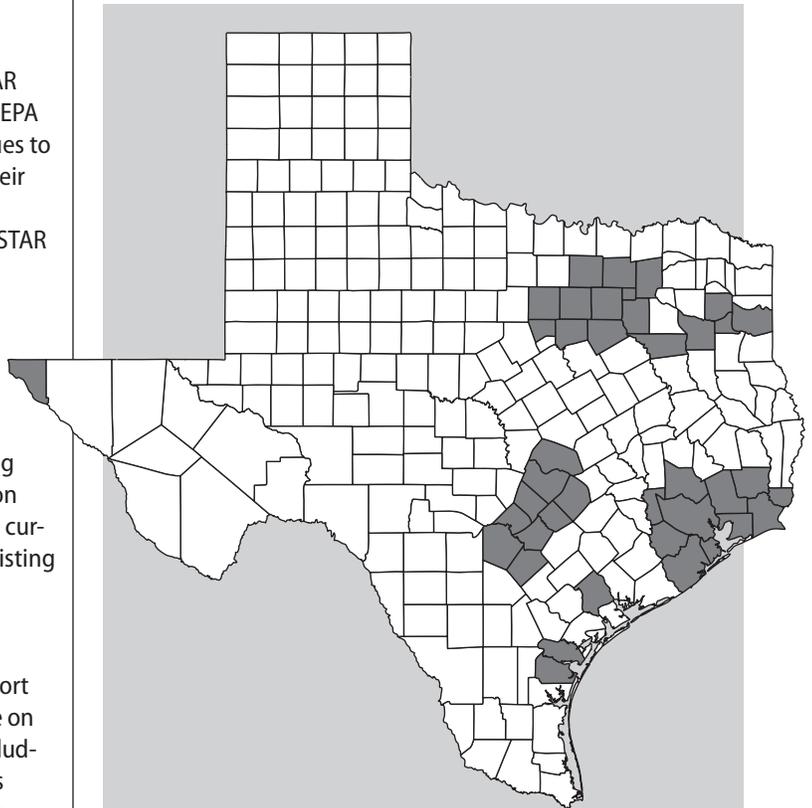
Many cities and counties are experiencing significant growth in population resulting in the construction of new public facilities ranging from civic centers, water and wastewater treatment facilities to fire stations. The resulting new construction has increased overall energy consumption and many of the reporting public subdivisions are not able currently to separate their energy usage between new and existing buildings.

Green Building

SECO/Texas Energy Partnership has provided technical support to a growing list of public subdivisions requesting assistance on building systems and technologies for new construction including “green” building design. A green building, also known as a “high performance building,” is a structure or facility that is designed, built, renovated, and operated in a resource-efficient manner. Green buildings are designed to meet certain objectives such as: saving energy and water, taking advantage of renewable energy sources, using renewable, recyclable or reclaimed materials, protecting occupant health, improving employee productivity; and reducing overall adverse impacts on the environment.

Designing, constructing, renovating and operating high-performance “green” buildings requires a whole building approach. This approach emphasizes from the beginning the integration of all building components and systems and gives special weight to considerations of how they may best work together to save energy and reduce environmental impact.

In 2006-2007, the city of San Antonio passed a resolution requiring new city facilities to meet the standard of the United States Green Building Council’s (USGBC) Leadership in Energy and Environmental Design (LEED) Silver level. The city of Houston has over 12 facilities pursuing USGBC LEED certification. Houston also provides incentives to commercial developments that meet LEED Certification with projects qualifying for a graduated rebate of Quick Start fees based on the level of LEED achievement – certified, silver, gold or platinum. The city of Plano will require the highest level of LEED Certification possible for all city facilities. There will be six facilities pursuing LEED certification. The city of Plano also created a Sustainability Department responsible for developing and implementing policies and programs that promote energy and water conservation. The first “Live Green in Plano” Expo was held in May.



Affected Counties*

| | | |
|-----------|------------|--------------|
| Bastrop | Guadalupe | Orange |
| Bexar | Hardin | Parker |
| Brazoria | Harris | Rockwall |
| Caldwell | Harrison | Rusk |
| Chambers | Hays | San Patricio |
| Collin | Henderson | Smith |
| Comal | Hood | Tarrant |
| Dallas | Hunt | Travis |
| Denton | Jefferson | Upshur |
| El Paso | Johnson | Victoria |
| Ellis | Kaufman | Waller |
| Fort Bend | Liberty | Williamson |
| Galveston | Montgomery | Wilson |
| Gregg | Nueces | |

The affected counties include the cities of:

| | |
|----------------------|-------------------------|
| Austin | Houston |
| Beaumont/Port Arthur | San Antonio |
| Corpus Christi | Tyler/Longview/Marshall |
| Dallas/Fort Worth | Victoria |
| El Paso | |

* The affected counties represent 16.4 million persons and 72 percent of the total population of the state of Texas.

TEXAS EMISSIONS REDUCTION STRATEGIES

The public awareness campaign includes a pledge to create a community in which:

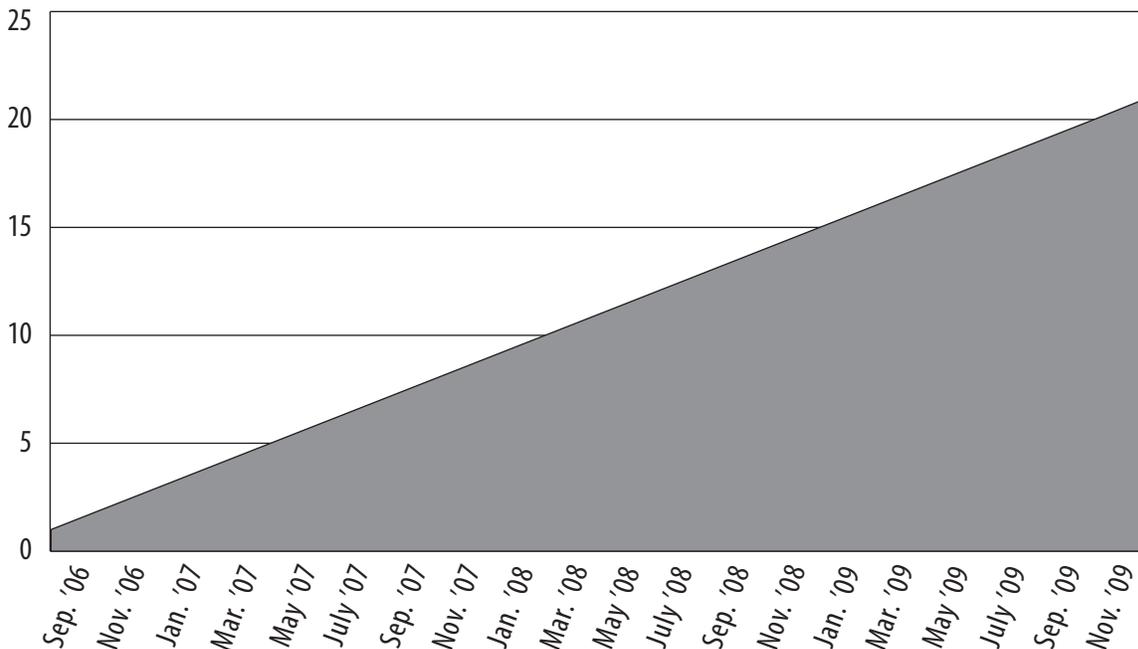
- We protect our environment by conserving resources, minimizing waste and reducing toxic products and materials.
- We have healthy ecosystems and sustainable neighborhoods.
- We integrate environmental values into the economy and our everyday lives.

The city of Frisco passed new building requirements for commercial buildings. The city of Austin announced the Austin Climate Protection Plan to eliminate carbon dioxide emissions

from virtually all municipal activities by the year 2020. The Plan calls for Austin Energy to achieve 700 megawatts of new conservation and efficiency savings and to obtain 30 percent of its energy needs from renewable resources by 2020. It also calls for making all new single-family homes zero net-energy capable by 2015 and increasing efficiency in all new commercial buildings by 75 percent in the same period.

Completion of City of Houston Green Building Projects

Number of Projects



Estimated Substantial Completion

TEXAS EMISSIONS REDUCTION PLAN

ENERGY EFFICIENCY IN POLITICAL SUBDIVISIONS: ACTIONS

- 280 political subdivisions have established the annual 5 percent reduction goal.
- 126 political subdivisions have reported electricity consumption for 2006.

City of Irving

Actions taken to achieve a 5 percent reduction in electric consumption include: the replacement of heating, ventilation, and air conditioning (HVAC) equipment in several facilities, installation of LED traffic lights, energy management control of lighting systems, making sure all electronics are powered down to "sleeper" mode during times of low use, adjusting temperature control settings, installing ceiling fans in low air flow areas and making sure that meters are disconnected or terminated at end of projects.

City of Arlington

Year-over-year annual consumption for 2006 by metered facilities in existence on September 1, 2001 increased slightly by 2,244,625 kWh or 4.3 percent, but usage is still down by 17,909,854 kWh, or 24.76 percent, below 2001 baseline of 72,338,815 kWh. The city completed LED traffic signal replacements at 263 intersections. The Citizens Environmental Committee on green building design standards submitted recommendations to the city's Municipal Policy Committee. Arlington continued replacing high demand lighting fixtures in city buildings with more efficient ballasts and lamps. The city also issued an RFP for energy performance contracts for selected city facilities; staff and consultants will soon complete their evaluations for the city's use in selecting finalist(s). The city is also continuing to evaluate possible wind turbine and other renewable energy projects.

City of Oak Leaf

The city of Oak Leaf is following the International Energy Conservation Code. Oak Leaf is a small municipality with no Public Works Department, no Police Department and no Fire Department. The city has only one facility: city Hall. Staff consists of two full-time employees who practice energy management control at city Hall, which reduces electric consumption. In July 2006, four more energy efficient streetlights were installed.

City of Pasadena

Pasadena continued retrofitting traffic signals with LED lighting, upgraded several air conditioning (A/C) units to a more efficient Seasonal Energy Efficiency Ratio (SEER), and continued retrofitting old F-40 lamps and ballasts with T-8 + electronic type throughout the city. The city installed insulation in a few buildings to reduce electrical consumption, changed out recess can incandescent flood lights to more efficient compact fluorescent lamp (CFL) types and installed motion sensors in several locations to automatically shut down lighting in unoccupied spaces.

City of Richardson

The city of Richardson maintains a proactive approach to energy management. The city has instituted measures to accomplish positive results as opportunities and needs arise in city facilities, leading to accomplishments in on-going programs. One ongoing program evaluates the effectiveness of placing facilities on the centralized energy management system (EMS) whenever equipment is changed out and/or upgraded. A project to replace air handlers at city hall with more efficient equipment was completed in the fall of 2006. Several smaller air handlers were refurbished with new energy efficient motors in January 2006. In March – April 2006, 300 tons of inefficient high maintenance absorption chillers were removed and replaced with approximately 300 tons of high efficiency electric chillers, accounting for a 1.249 percent (305,909 kWh) overall increase in kWh consumed when compared to 2005. In continuation of the city's proactive approach, it is retrofitting existing fluorescent lighting in city buildings to more efficient fluorescent lighting utilizing high efficiency ballasts and 25 percent fewer lamps per fixture.

City of Kyle

All new buildings comply with current energy conservation best practices.

City of Carrollton

Annual mechanical improvements projects included the replacement of various inefficient 15+ year old roof top A/C units with 13 SEER units, and replacement of several inefficient window and A/C units with units rated at 16 SEER. Carrollton also initiated a \$1.6 million performance contracting project including lighting retrofits, energy management system, water saving devices, power correcting capacitors, and energy efficient mechanical equipment. This project is complete and annual savings are exceeding the guarantee of \$185,000/yr. Another energy savings project coordinated by the Traffic Department will have LED traffic lights installed throughout the city.

City of Allen

Allen continued use of EMS computers to assist in energy savings. The city also planned to remedy two long term energy efficiency issues by inclusion of total HVAC replacement with high efficiency units for two 20+ year old buildings as part of their May 2007 Capital Improvement Program (CIP) Bond Election. These new HVAC systems will dramatically improve the efficiency of approximately 36,000 square feet of the 2001 total of 237,421 square feet, representing 15 percent of the air conditioned space in the 2001 baseline. Allen continued to find opportunities to re-

(continued on page 6)

ENERGY EFFICIENCY IN POLITICAL SUBDIVISIONS: ACTIONS (CONTINUED)

place incandescent with compact fluorescent lighting and to replace special purpose light fixtures requiring high-cost inefficient "special" light bulbs with new CFL fixtures. In several cases, the cost of the new fixtures and lamps cost less than replacement bulbs for the "decorator style" inefficient fixtures. The city now tracks the design of new buildings and building retrofits to make sure that light fixtures are selected based not only on aesthetics but also energy efficiency.

City of Alvarado

The city of Alvarado worked with TAC Americas to install energy-conserving equipment throughout the city. The project was completed in March 2004. The city of Alvarado is committed to tracking energy usage on an annual basis to verify the performance. There are no other conservation measures that are financially viable to install at this time.

City of North Richland Hills

The city of North Richland Hills replaced a total of 80 tons of HVAC with setback control features and replaced 368 KBTU of unit heaters with higher efficiency units. The city continued changing light switches to motion sensors in city facilities, replacing traffic signal bulbs with LEDs and outfitting school flashing beacons with solar power source units.

City of Pflugerville

The city continued to use existing solar powered systems for school zone lighting and hike-and-bike trail lighting, and expanded these systems to new sites. In the upcoming year the city proposes to further expand these efforts by installing solar systems to light additional existing trails and to power lighting in new parks. Several city buildings currently use programmable thermostats on air conditioning units to regulate building temperature especially after hours. Additional buildings will use this technology in the near future.

City of Addison

Addison is in the process of changing the last of their traffic signals (14) over to LED's. This will reduce power consumption on these signals by 83 percent. The insulation that was used on city re-roofing projects was a 2.5" high-density polyisocyanurate rigid roof insulation board with a R-rating of 6 per inch, an R-15 rating.

County of Harris

The Harris County Facilities and Property Management Department (FPMD) continued to upgrade the remainder of the 135 buildings under its control with scheduled energy-efficient improvements including: chiller replacements; variable frequency drives (VFDs) on chillers; variable air volume (VAV) air handlers; and ultraviolet band C (UVC) lights in the cool-decks of the larger air handling units. Almost all County buildings under FPMD control have received new T8 lighting, LED exit signs, occupancy sensors, bi-level switching, automated web-based control systems, and other related retrofits except a couple of facilities to be sold,

completely renovated, and/or demolished within the next three years or less. The county continued to add Web-based automated energy management systems to facilities each year to take advantage of the night-time set backs of heating and cooling conditioning loads. The county has 70 facilities using automated controls made by Automated Logic, Trane, Allerton, Johnson Controls, Staefa, and Digital Air Control. This effort has provided speedier emergency service, greater comfort levels for the occupants, has decreased the number of emergency service calls, has increased the scheduled night-time load shedding capabilities, and has made a huge difference in the reduction of electricity demand required. All new facilities are being designed, at a minimum, to meet the International Energy Code Guidelines regarding lighting and energy-efficiency requirements for building space standards. At the monthly New Employee Orientation Meetings, newly-hired employees are given instruction on the importance of energy conservation, not only at the County, but also at home. The County gained some facility square footage this year because the new Harris County Civil Courthouse (661,011 square feet) and several other smaller facilities opened in 2006. There are a small number of County-owned facilities where the FPMD has no control of making energy-efficient upgrades a high priority, and they have been slow to make changes. FPMD is making all efforts to get compliance from those facilities in this new year.

City of Southlake

In 2006 the city of Southlake initiated an HVAC preventive maintenance program for all facilities. city employees turn off lighting in work areas not in use and evening custodians are instructed to turn on lights only in areas where and when they are working. Custodians are also instructed to turn off all lighting at the conclusion of their work and prior to the next business day. Timers and controllers were also installed on all athletic field lighting. Reports of lighting turned on when not in use or after scheduled events are reported to Public Safety. The city replaced defective HVAC equipment with new higher SEER rated equipment and activated an HVAC software program to regulate average temperature settings for all occupied rooms. Planned projects for 2007 include meetings with city staff's Green Team to identify current environmental efforts and approaches and to oversee the development of new energy conservation programs and contracts. The program will notify citizens about environmental issues related to these activities. Meetings will also be conducted to establish guidelines for the evaluation of alternative service providers to the city.

City of Mesquite

All traffic signals have been converted to LEDs. An energy efficiency study was performed on the city's second largest office facility. All energy reduction measures have been implemented through the LoanStar program. What will be the city's largest facility is now under construction replacing an existing facility; all energy savings provisions with a payback of approximately 10 years or less were included in the design. Two large facilities were converted from gas-fired chiller units to more efficient

electrical units, causing an increase in electrical usage, but a decrease in natural gas consumption. The city assumed responsibility for 9 miles of freeway lighting from Texas DOT in 2001 causing a large increase in electrical consumption so that street lights compose almost 20 percent of all electrical consumption.

City of Galveston

The city of Galveston has contracted with Johnson Controls Inc. (JCI) to do a guaranteed savings performance contract for energy efficiency programs to our historic city Hall building. This project includes lighting system improvements, HVAC improvements, piping, cooling tower replacement, and chiller replacement. The funding was provided by the use of a lease purchase agreement, to be paid back over 15 years. The annual existing electrical usage for city Hall is approximately 2,154,240 kWh. The forecast post-renovation annual savings will be approximately 730,560 kWh or 34 percent energy reduction.

The city of Galveston is continuing to convert incandescent traffic signal lights to LED's. 783 lights were replaced in 2005 and 1,260 were replaced in 2006 for a total of 2,043 LED's installed and an estimated 46 percent change out from incandescent signals to LED. More LED signals will be replaced as funding becomes available. In addition to LED change outs, the city of Galveston removed 5 traffic signals totaling 135 incandescent lights .

The city of Galveston has begun construction on a new energy and water efficient 30,000 sq. ft. Recreation Center facility. The project is now scheduled to be completed in fall of 2008.

As part of a previous SECO-funded JCI-constructed guaranteed savings performance project, electric motors, capacitors and banks for soft-starting pump motors were part of a project for waste water treatment plants and some lift stations. The city is scheduled to install variable frequency drives this year on high use lift stations.

Galveston is continuing to manage energy contracts to include renewable energy sources: the current contract for 2006 through 12/31/2007 includes a total of 4.5 percent renewable energy (wind).

County of Parker

The county began an Energy Management program for electricity reduction by implementing programmable thermostats and by changing all light fixtures from T12 fluorescent lamps and magnetic ballast to T8 fluorescent lamps and electronic ballasts.

City of Duncanville

The city of Duncanville is continuing the conservation measures begun in the last few years. The existing program to replace traffic signal bulbs with LEDs continues as the budget allows. Older park lighting fixtures are being updated with more energy efficient

replacements as possible. The city will continue to search for ways to implement additional energy reduction measures.

City of Nederland

The city of Nederland previously utilized Texas Energy Engineering Services Inc., the SECO contractor, to prepare an Energy Management Program Report. As a result of this analysis, representatives of the contractor stated that it would not be possible and/or economically feasible for the city to achieve the five percent consumption reduction goal. Please note that electrical consumption in 2005 was low due to the impacts of Hurricane Rita and being without power for 3 - 4 weeks. As such, the 2006 usage reflects an increase over 2005.

City of New London

The city continues to maintain its filter replacement schedule, had components checked again on all air conditioning units, and maintained lighting and ballast schedules as previously set up. The city continues to monitor buildings, turning off lights and heating and cooling units when unoccupied, and held Departmental meetings on energy conservation. The newly drilled water well is on an electric timer.

City of Cleveland

The city of Cleveland has built three new buildings that comply with the 2003 IECC and completely remodeled and expanded the existing library building so that it is in compliance with the code. The entire 10,000 square foot library building is now being utilized for municipal Library functions, whereas previously portions were either leased out or unused. The remodel at the Library included replacing all air conditioning units with new units. The Police Department was built a few years earlier and complies with the 2000 IECC. The Police Department and the Library were the only 2 buildings that were open in 2006. Public Works has moved into an older larger facility, and will be working to make it more energy efficient. The city Hall, EMS, and Civic Center opened in 2007. There are currently 18 lift stations and 3 water wells in the city along with numerous street lights. The city has implemented a monthly HVAC maintenance program and plans to continue this. The city also plans to further its success in energy conservation as follows: the city will replace T-12 lights with T-8 lights; thermostats in buildings will be updated to digital thermostats; common light switches will be converted to light switches that have timers; and Public Works will begin to phase out pumps currently used in the water and sewer plants and install variable speed submersible pumps.

City of Sugar Land

The city continues to refine energy conservation measures put in place. The Facilities Division has improved its Preventive Maintenance process by scheduling routine inspections of all buildings once a week, focusing on HVAC equipment/controls/temperature settings. Power Save equipment has been installed at all building meters.

County of Smith

Smith County has implemented a "Performance Contract" with Johnson Controls. This has entailed replacing many or all of the operating equipment at 5 of 6 multi-story buildings that Smith County operates, this equipment being electric motors, chillers, boilers, cooling towers, and pumps etc. at each building. Also the lighting was replaced with T-8 lamps and electronic ballasts. On the remaining multi-story building Smith County has entered into a contract with a local construction company to replace or upgrade its AHU's Electric Motors, Chiller, replace the obsolete Master Switchgear, replace the boilers, pumps and remodel the secondary hot water system. Smith County has replaced the existing 1990 model Energy Management System with a current model. Also the lighting was replaced with T-8 lamps and electronic ballasts. On the remaining 12 buildings the county operates, T-8 lamps and electronic ballasts were installed.

City of Longview

The city of Longview is keeping office thermostats at 68 degrees in the winter months and 74 degrees in the summer months. All lights are turned out when employees leave for the day or when a room is not in use. Space or personal heaters are not allowed at the work place. The city has replaced 13 cathode ray tube (CRT) monitors with 13 flat panels and purchased 90 small form factor PCs 240 W. Longview has tinted the windows on 2 Fire Stations and built an energy efficient Fire Station. The city has also completed a major lighting project in city Hall, removing approximately 250 recessed can fixtures at 28 watts each for a total of 7000 watts and replacing them with 54 2'x4' T-8 fluorescent fixtures at 64 watts each and 25 2'x2' T-8 fluorescent fixtures at 34 watts each totaling 4306 watts for a net reduction of 2694 watts. At the recreation facility, the city replaced eight 60 watt incandescent bulbs with 15 watt CF light bulbs, eliminated an electric heater, and turns the men's dry sauna off each night. At one of the water treatment plants the city replaced a 110 gallon gas hot water heater with an electric on-demand heater, switched perimeter lighting from timed to photo cell, and set heater and air conditioner to 71 degrees and 74 degrees, respectively. Lights not in use are now turned off. If they're outside lights in the plant, they are on timers set to turn on at dusk and off at dawn. Appliances and accessories that are purchased are "energy savers" if at all possible. Pumps now run at full power only when needed. At the Environmental Health Department lights are turned off in offices not in use and when leaving for the day. Energy-saving fluorescent lights were installed at the Timpson office, and old ballasts were replaced at the Birdsong office. An electric water heater was installed in the restroom of the Birdsong building to heat the water more efficiently. The heating and air system filters are changed frequently. Weather stripping was installed this winter around the front door at the Birdsong office to seal the cold air from the front office. The refrigerator is maintained and kept at proper temperatures by one of the health inspectors to conserve energy. Coffee pots are turned off when not in use. Monitors are turned off to a "sleep" mode at night.

City of Fort Worth

The city currently exceeds the performance guaranty of approximately 4.4 million kWh/yr in electricity savings for Phase I of the city's Energy Savings Performance Contract (ESPC) with Johnson Controls Inc, based on a Measurement & Verification (M&V) Service Contract. The project implemented Lighting, HVAC, Control and Water system improvements at four city facilities totaling roughly 500,000 sq.ft. (city Hall, Public Safety, Municipal Annex, Meacham Airport Terminal). Construction was completed in September 2004 with funding provided through SECO's LoanSTAR loan program and a competitively-marketed Municipal Lease. Loan payments are made from an environmental management fund while lease payments are made from budget-neutral reallocations based on energy operating cost avoidance verification.

The city is entering the performance guaranty phase of approximately 4.3 million kWh/yr in electricity savings for Phase II of the city's ESPC. The project implemented HVAC, Control and Power Factor Correction improvements at four city facilities totaling roughly 2.7 million sq.ft. (Memorial Center, Convention Center, Central Library, city Hall.) Construction was completed in April 2007 with funding provided through SECO's LoanSTAR loan program. The city is also implementing an ESPC Phase III involving the same four facilities included in the Phase II project and implementing Lighting, HVAC, control and water system improvements with projected savings of approximately 7.6 million kWh/yr. The city is currently implementing a LED Traffic Signal Conversion Project converting nearly 20,000 incandescent automotive and pedestrian traffic signal lamps to LED units with projected savings of roughly 5.8 million kWh/yr.

The city is developing an ESPC Phase IV involving approximately 90 city facilities in TPW, police, fire, health, library and parks departments. Project scope includes implementation of Lighting, HVAC, control and water systems with projected savings of roughly 4.6 million kWh/yr. Project construction funding is planned through a competitively-marketed Municipal Lease with completion in 2008. The city is also developing an ESPC Phase V involving implementation at the city's wastewater plant of Utility Process improvements as well as Lighting, HVAC, Control and Water systems improvements. Project costs, savings and construction funding options are now in development with implementation planned through 2010.

The city is currently participating in the Federal Government's DOE/EPA Energy Star Challenge and is actively benchmarking its utilities in Energy Star's Portfolio Manager as part of a pilot program initiative. Along with the rest of the Energy Star Challenge's program tools, benchmarking results will be utilized in the city's future efforts in assessing the cost-effectiveness of potential conservation projects. The city is implementing on-going Lighting and HVAC retrofits in-house through the Facilities Management Group's Facilities Maintenance Division. Projects

involve various General Fund buildings with funding through the city's annual Operating Budget. Plans are to continue such work based on needs assessments and available funding.

The city recently updated its Design Guidelines for New & Existing Facilities through the Facilities Management Group's Architectural Services Division. Investigations of costs and savings will be used to assess the possibility of constructing high-performance buildings based on needs assessments and available funding. The city also recently formed a community-based Sustainability & Green Buildings Taskforce to provide recommendations to the mayor and council in 2008 regarding community sustainability options including planning and development initiatives, local codes and standards, and performance rating systems such as the USGBC's LEED Program and EPA's Energy Star Program.

City of Richland Hills

The city plans to replace current lighting in all municipal buildings with more energy efficiency hardware, and energy management controls. The city has upgraded the hardware at its public library and city hall with more energy efficient systems. Electric usage at city hall and the public library have been reduced.

City of Farmers Branch

The city is turning the city Hall HVAC off now from 11 pm - 5 am daily. The city installed motion detectors in break rooms, storage, file closets and restrooms throughout city Hall and is testing Damar 25W electronic self ballasted lamps in the second floor hallway to determine if this will be an alternative to existing 125W incandescent bulbs.

Nine strands of Christmas lights were replaced with LED Christmas lights at the city's annual Christmas light tour. The city tested city Hall HVAC to program off during closed hours. However, due to software limitations, this is not feasible at this time; alternatives are being researched. The building maintenance department is reviewing all HVAC units at all city facilities to develop a replacement schedule to install higher efficiency units.

City of Bastrop

At city Hall, a new HVAC unit was installed in the Finance Office. In city Hall and the BP&L Office, lights, HVAC and equipment are regulated during off-peak hours. Public Works has replaced a thermostat to automatically time reductions in AC/Heat in off-peak hours. At the court, the city installed a thermostat guard. At Fire Station 2, the city installed infra-red heating and low usage lighting and at Fire Station 1 insulated the outside which includes new brick and foam insulation on roof.

City of San Antonio

The city of San Antonio sustains its energy efficiency efforts through building maintenance, new facility construction and ordinance development. city Council on April 19, 2007 passed

and approved a green building resolution for all future city facilities mandating that all future new city facilities be certified LEED Silver. city staff is examining council's inquiry to include facilities within other public agencies. On Jan. 11, 2007, Council approved an ordinance to adopt amendments to the city's energy conservation code that included energy controls for heated pools and outdoor lighting. The ordinance also mandated that all illuminated exit signs not exceed 5 watts per side.

The Aviation Department's terminal expansion includes several sustainable design elements. The building's architectural design will provide abundant natural light; visual transparency is achieved at the curb-front façade of the ticketing hall, with minimal heat gain, through a combination of low-e glass, exterior screening devices and a curb-front canopy. The glazing is the full height of the space and screening devices (different for each terminal to address differing orientations) are designed to bounce reflected light into the ticketing hall while excluding all direct sunlight at all seasons until a few minutes before sunset. The translucent plastic canopy acts also as a sunscreen for the glazing closer to the ground plane. At night, light from the building, transmitted through the translucent material, will reduce the need for artificial lighting. All entrance vestibules at both Arrivals and Departures levels will be pressurized, minimizing the amount of outside air admitted to the building. The HVAC system will deliver chilled and hot water to the new terminals by a variable speed pumping system, using less energy when demand is lessened. The recent decision to install similar pumps in Terminal 1 will result in energy savings equivalent to the power required to drive a 20-horsepower pump continuously. Automatic lighting controls also are included in the design, including daylight sensors to switch off selected fixtures when sufficient sunlight is available. Lamp choices for all fixtures were made to achieve the highest levels of efficiency and are all fluorescent or metal halide.

The Alamodome has converted fifty incandescent exit lights to LED and in 2007 will convert exterior crossbeam lighting to LED. The Asset Management Department installed nine programmable thermostats within four city facilities. Affordable Housing Providers are to submit Assurance that home(s) meet or exceed the current minimum Metropolitan Partnership for Energy's Build San Antonio Green program guidelines. The Neighborhood Services Department housing rehabilitation program has rebuilt over 25 homes to LEED standards. In 2007 an additional 30 homes will be built with green building components.

The Downtown Operations Department is currently retrofitting two parking garages. Mid-city Parking Garage and Marina Parking Garage are in operation 24 hours per day. An efficient lighting system will potentially reduce energy consumption by 115,000 kWh annually. Each parking facility will include retrofits from T12 to high efficiency compact fluorescents or T8 lamps and electronic ballasts and exit signs will be converted to LED

ENERGY EFFICIENCY IN POLITICAL SUBDIVISIONS: ACTIONS (CONTINUED)

lamps. Downtown Operations is also doing a thirty day pilot of the "Solar Trash Container", a trash compactor with a fully integrated solar panel that stores power in a twelve volt battery. It is anticipated that the container will undergo a lot of use and visibility being located near the Alamo.

The Economic Development Department's Incentive Scorecard Program provides tax abatements for new commercial buildings that are certified LEED. The Library Department's newest facility, John Igo Library, set to be completed in the Fall 2007 will include a water fountain to be powered primarily by wind.

Since 1996, the Public Works Department has converted or upgraded over 856 school flashing signs from incandescent to solar; this year 18 signs will be upgraded, eliminating 1080 kWh hours per year.

The Metropolitan Partnership for Energy in partnership with the city of San Antonio held a number of continuing education classes in high performance building and the Energy Star home rating system. In April 2007 a Green Building Workshop for Suburban Cities provided information to public officials and municipal managers on the feasibility and benefits of adopting a green building resolution.

Lower Colorado River Authority

In 2006, LCRA was able to quantify a 1.78 percent decrease in energy consumption over 2005. However, when comparing the 2001 baseline to 2006, LRCA has been successful in reducing energy consumption by 16.67 percent.

Over the course of this program numerous LCRA facilities were able to quantify significant energy savings. The LCRA complex located on Montopolis Drive in Austin documented a 26.72 percent decrease over 2001 levels. This location implemented the following energy saving measures since 2001: a central plant for cooling and heating versus numerous rooftop units; natural lighting around the perimeter offices; T8 lighting; sky lights in corridors and shop areas; insulated glass in exterior windows; added insulation to the roof when it was redone; motion sensors in conference rooms and restrooms; and lighting on a computerized timer system. Furthermore, employees conserved energy by turning off their lights and computers when not in use.

The LCRA Sim Gideon Power Plant near Bastrop documented a 36.11 percent decrease over 2001 levels. Energy saving measures implemented since 2001 include new HVAC and T8 lighting and new ceiling tiles installed as part of renovations to the office space. The LCRA Hilbig location near Rockne documented a 35.21 percent decrease over 2001 levels through a reduction in the use of shop heaters, a reduction in the amount of welding, and a reduction of the use of unnecessary lighting.

LCRA's General Office Complex in Austin documented a 4.45 percent decrease over 2001 levels. This location implemented the following energy saving measures since 2001: replaced T12 bulbs with T8s; added photo voltaire cells to exterior lighting; modified auto on/off times for building lights to reflect more usual working hours; replaced 90 percent of the Variable Frequency Drives so instead of fans running at 100 percent speed, they run at reduced RPMs; added sensors in all the restrooms so that lights will not be left on all night or weekend; and maintained and repaired the HVAC air Units and chillers which made them run more efficiently.

Cibolo Creek Municipal Authority

The OJR Plant Modification project is now approximately 97 percent complete. During this last year, several process units have been taken off line and replaced online, as well as an increase in electrical usage anticipated due to larger sized equipment. Energy efficient products pursuant to Government Code 2155.444 have been used in construction of the modification. A generator capable of continuous duty has also been installed. As air conditioning/heating/ or other related equipment is replaced, energy efficient products are used.

City of DeSoto

The city of DeSoto has contracted with Siemen's for energy conservation measures (ECMs) to reduce energy consumption. They include the following projects; interior lighting, Town Center chilled water plant renovation, cooling equipment replacements, police HVAC upgrades, traffic lighting, water meter replacements, vending machine economizers and an electricity rate change.

City Public Service of San Antonio

The three downtown CPS buildings are the Main Office, Navarro Office / Parking structure and the La Villita Assembly building. The three buildings together total 757,660 square feet and were constructed between the late 1950s and 1987. city Public Service of San Antonio created an internal CPS facilities team to implement changes and manage cost effective measures. The most significant change in 2005 and 2006 was changing out parking garage 150 watt high pressure sodium (HPS) lighting to 85 watt induction lighting. The best way for CPS Energy to implement energy savings measures is during O&M. Many changes were implemented during all five years but because CPS Energy does not pay any electrical or gas bills a conventional calculation of cost payback and return on investment are not the same as for CPS customers and other governmental entities.

Other CPS SB5 conservation measures included: working with SECO consultant to develop an independent energy audit on several CPS buildings, sponsorship of several energy conservation organizations and programs in San Antonio, membership in the "Metropolitan Partnership for Energy" and working closely

with all our partners on energy program initiatives. In the CPS Navarro office building's 8th, 9th, and 10th levels CPS installed insulation at all perimeter spandrel glass above the ceilings in all air conditioning return air plenums, improving air quality and reducing return air heat gain and HVAC cooling loads. CPS has also retrofitted fluorescent light fixtures from T-12 lamps and magnetic ballasts to new T-8 lamps and electronic ballasts, with more than 8,000 such fixtures in all three downtown buildings. CPS has also replaced existing incandescent bulbs (90W to 120W) in more than 900 fixtures with CFLs (15W) and employs a computer programmable building control system for better operations. In the two downtown garage buildings 150 watt HPS and T12 lights have been changed out for 85 watt induction lighting with a 100,000-hour life.

CPS continues to provide many community programs. To name just a few:

- Home energy audits for customers
- Cool Volunteers: weatherization of over 500 homes in 2004
- Energy Efficiency Rebate programs
- Energy Education
- Residential High Bill Investigation
- Residential Cooling and Heating Equipment Sizing
- Peak Saver program
- Commercial Energy Audit
- Cool Fuel program
- Smart Energy program to help customers better use gas and electricity.

City of Conroe

The city of Conroe's population of approximately 45,000 is rapidly growing. Faced with rising energy costs, in 2005 the city issued a Request for Qualifications for a performance contract-based solution that would allow the city to make energy efficiency and utility upgrades while allowing energy savings and increased revenue to pay for capital improvements. The eventual total contract for \$7.17 million covered a multitude of projects, including traffic signal upgrades, comprehensive lighting upgrades, building water fixture retrofits, HVAC efficiency improvements, an energy management system installation, a new automatic reading water meter system and wastewater treatment plant improvements.

Among the many improvements the city has made are: replacing over 600 incandescent lights with compact fluorescents; retrofitting over 2,300 fixtures in 26 buildings; replacing over 4,700 T-12 bulbs with T-8 technology; replacing 2,000 magnetic ballasts with efficient electronic ballasts; and retrofitting almost 300 decorative streetlights with efficient bulbs and ballasts.

As part of a contract with Siemens Building Technologies Inc., the city changed out all of its 11,500 water meters for residences

and businesses with an advanced water meter system that uses radio waves to provide automatic readings. Each water meter emits a signal that is read by an on-board laptop or hand-held computer in a city vehicle, dramatically improving the time in which the meters are read. The new system captures accurate figures on water usage to the nearest one-eighth of a gallon so that the city can ensure that customers are billed appropriately for their water usage. The cost of replacing the water meters will be paid for in operational savings and revenues from lost water over the next fifteen years as part of the performance assurance agreement that ensures all energy savings and operational savings are produced and that randomly tests and monitors the system improvements to prove its continued accuracy and efficiency. Since the new water meters can be read from a vehicle-mounted laptop, employee injuries are also dramatically reduced. The automatic meter reading process allowed the city to reduce meter reading from nine to ten days a month to read 4,000 to 5,000 meters to only three to four days to read the entire city.

Another capital project was wastewater plant improvements. Siemens installed an advanced aeration system, including new single stage blowers, to upgrade the city's system from a coarse to fine bubbler that significantly decreased energy consumption. In the first month with the new technology, the wastewater plant's energy consumption dropped by 351,360 kWh at a savings of \$28,779. Dean Towery, director of public works, reported that the plant's energy consumption was cut in half: "It looks like our energy savings will be even more than the original projections." Paul Virgadamo, assistant city administrator, explains: "It is still early after the project completion, but we are excited to see the annual savings that the upgrades and new technology installations will provide. We have already seen some electric and wastewater plant energy reductions of over 50 percent based on the new equipment." The total project guarantees an annual savings along with increased revenues of \$750,000 per year over 15 years.

City of Austin

During the reporting period, the city continued to implement energy conserving strategies in city facilities, and to invest staff time and resources in a Performance Contracting program. As of the close of 2006, the city is six to nine months into a roughly three year Performance Contracting process. The city also anticipates a highly successful program of citywide conservation and cost reducing measures over the next two or three years.

ENERGY EFFICIENCY IN POLITICAL SUBDIVISIONS: ACTIONS (CONTINUED)

Austin's Mayor, Will Winn, recently announced the city of Austin's new Climate Protection Plan. Throughout 2007, detailed implementation plans will be developed, departmental goals will be established, and implementation activities will begin. This initiative establishes goals to reduce the city of Austin's carbon footprint by:

- Providing 100 percent of municipal facilities' power needs with renewable energy by 2012
- Making the city's vehicle fleet carbon-neutral by 2020, through the use of electric power, non-petroleum fuels, and alternative fuel mitigation offsets.
- Implementing Departmental Climate Protection Plans that will include: policies, procedures, targets, and reporting to reduce green house gas emissions and reduce energy consumption.
- Developing an employee climate education campaign with programs and incentives to help employees reduce their personal carbon footprint and engage in community climate protection outreach.

This new initiative will gradually replace the city's current Energy Efficiency Policy, Departmental Energy Efficiency Plans, and the current employee awareness campaign, with new comprehensive and more stringent policies and procedures.

The majority of General Fund electric accounts were changed over to Austin Energy's "Green Power" rate in 2006. This rate change will shift approximately 500 electric accounts and an estimated 55,000,000 kWh/Year from conventional power to renewable power sources.

Austin Energy has been working with city departments to install photovoltaic (PV) systems on city facilities where they will be easily visible to the public. During 2006, PV systems averaging approximately 4 kW (DC) each were installed at: Camacho Activity Center, Rosewood Recreation Center, Conley-Guerrero Senior Center, Montopolis Recreation Center, Milwood Branch Library, Windsor Park Branch Library, Dottie Jordan Recreation Center, Dittmar Recreation Center, Southeast Austin Branch Library, and Dove Springs Recreation Center. These systems will generate a peak kW of approximately 31 kW (AC), and approximately 54,500 kWh of "green power" annually.

In early 2007, the city approved two PV projects to be implemented through a contract with Sun Edison. These systems are slated for implementation in 2008, and include a 500 kW system at the Austin Convention Center, and a 208 kW system to be installed at the Building Services maintenance complex.

Austin Energy's Municipal Energy Conservation Program (MECP) continued to retrofit lighting systems and install occupancy sensors where appropriate. For 2006, this effort also included the replacement of existing high intensity discharge (HID) lighting systems with new Fluorescent High Bay type fixtures. The retrofits will reduce the city's electric use by an estimated 132.2 kW and 437,453 kWh per year. The facilities that were retrofitted include the city of Austin's newly-acquired Rutherford Lane Campus, Austin Energy's Holly Chemical Lab Annex, and Fleet Service Centers #1, #5 and #11.

The Texas A&M Energy Systems Lab (ESL) performed Continuous Commissioning™ studies of several city of Austin facilities during 2006. Studies were done at the Energy Control Center facility, and the new George Washington Carver Museum. These projects are still in the development phase. Currently, Austin Energy is planning to use the Continuous Commissioning in Performance Contracts and the New city Hall and the Austin Bergstrom International Terminal Building as well as other facilities.

Fluorescent Street Lighting – Austin Energy has been working with an equipment manufacturer (MAGNARAY) to develop and validate the effectiveness of high color rendering fluorescent light in the 3500° to 6500° Kelvin range, in outdoor applications. There are currently three (3) test sites with this type of lighting in place where Austin Energy is studying how fluorescent light in outdoor applications interacts with Mesopic sight and human perceptions. Through a partnership with the State Energy Conservation Office, Austin Energy has executed a contract with the Lighting Research Center of Rensselaer Polytechnic Institute, to evaluate this new fluorescent street lighting technology. This study will start during the first quarter of 2007, and a finished study will be submitted during the summer of 2007. One of the deliverables of this project will be a table showing proper fluorescent substitutions for existing HID lighting. If successful, this type of retrofit program has the potential to reduce energy consumed for street lighting by 30 - 35 percent.

VendingMisers – These devices reduce soda machine operation when the area is unoccupied, and saves approximately \$100/year per machine. Many city facilities have been retrofitted in recent years, however, as vending equipment is replaced, or new facilities come on line, new units continue to be installed. In addition, this program will operate as we pursue Performance Contracting and identify new opportunities. During 2006 this program reduced the city's electric demand by an estimated 10 kW and electric consumption by approximately 69,000 kWh/Year. These devices are installed in city facilities at no cost to the occupants or maintenance organization.

City of Alvin

The city implemented an Energy Conservation Program that entailed replacing light bulbs and ballasts that consumed high kilowatts with energy efficient ballasts and fixtures.

City of Bedford

All building lighting, traffic and school flasher lights have been upgraded. New roofs have been installed on an additional two more city facilities. Forty-one HVAC units and two chillers have been replaced. The reporting phase of the city contract with Siemens begins in September 2007 and will continue through September 2010. This will continue to measure kWh usage.

City of Bunker Hill

The city installed programmable thermostats for climate controlled buildings. An ongoing high priority remains repairs of water leaks which translate to reduced production energy. The city also completed installation of photo cell control of outside lighting and installed new controls for school zone safety lighting to allow more accurate control of operation.

City of Dallas

During the year the city continued to implement the construction phase of three energy saving performance contracts. The city retrofitted several facilities spaces, upgraded the lighting, and replaced old HVAC systems to meet current energy codes. The city has implemented more environmental management plans that designate additional staff to seek energy reduction measures in the major departments.

City of McKinney

In 2006 the city continued its retrofit program replacing T-12 light fixtures with new T-8 lamps and electronic ballasts in multiple locations and replacing incandescent lights with CFLs. The city installed two new energy efficient HVAC units and added HVAC controls at new locations, enabling more efficient climate control monitoring and adjustments. In 2007 the city approved supplemental funds to the 2006 budget to replace ten existing HVAC systems with new energy efficient systems: at the Airport Tower 2 units; at the Old Settlers Recreation Center 5 units; at city Hall 1 unit; and at the Golf Course 2 units. McKinney will budget for 8 units in 2008 and continue the replacement of inefficient light fixtures with energy efficient light fixtures. In 2008 the city also plans to add lighting controls at Development Services, Facility Services Complex, Purchasing, Barney Boxing Gym, and Old Settlers.

City of Mustang Ridge

The only building the city has is a 28' x 56' doublewide which houses the police department, court and city offices. Staff are diligent in turning off all lights (other than for security purposes) and adjusting the thermostat when no one is in the building. The city has changed to fluorescent lighting in all major areas.

City of Round Rock

The city of Round Rock is replacing HVAC equipment with more efficient equipment. Existing lighting ballasts and bulbs are being replaced with more efficient T8's from T12's. Round Rock is developing a maintenance program to change out air filters on

a periodic basis throughout city facilities. The city is also looking into the LED traffic lights, as well as other equipment that would be energy efficient. All employees have been asked to turn off lights and computers at the end of each day to conserve energy. The city is growing very rapidly with the addition of new personnel and facilities. Therefore, it will be extremely important for the city to continue to replace existing equipment as well as install new equipment in new facilities using the most efficient, cost effective equipment available, in order to reduce energy consumption in the future.

City of Taylor

The city of Taylor has conducted an energy study to understand where the city can potentially reduce its energy usage. It is anticipated that Taylor can reduce its electrical consumption by 23 percent from implementing a variety of conservation measures. The city will implement these measures in the coming months.

County of Victoria

The County is replacing air handlers in the 1967 Courthouse and plans to replace a boiler in 2007. Victoria is currently purchasing a building, will put new runway lights in place at airport and has reopened another account.

Dallas Area Rapid Transit

DART had a small amount of facility growth last year which did not have a major impact on energy conservation efforts. The new construction was completed late into the year. DART was able to experience past efforts, which include motion sensors in all administrative office areas, more energy efficient lighting systems and more energy efficient mechanical systems replacement. Propulsion power for 2007 has increased because of expansion of the maintenance floor space of DART's Central Rail facility and the installation of air conditioning units to all the "starter system" traction power substations.

City of Plano

All traffic signals in the city of Plano are now equipped with LED technology. Usage in 2006 fell to 612,014 kWh from a high in 2002 of 2,630,574 kWh. Overall, this one project saved the city of Plano 2,018,560 kWh. In 2002, traffic signals consumed 2,630,574 kWh with usage falling to 612,014 kWh in 2006.

Tri-city Academy: Engineers estimated that the replacement of the roof and the three-rooftop air conditioning units should save 96,274 kWh in the year 2006. Carpenter Park Recreation Center: Engineers projected replacement of the 17-rooftop air conditioning units should save 141,696 kWh. Delayed completion of the project reduced savings to 41,436 kWh. Plano Centre: Engineers projected energy savings for Plano Centre should save 123,651 kWh by replacement of the 550-ton Baltimore Aircoil Forced Air Evaporative Cooling Tower. In 2006, events held at Plano Centre increased in size and length of time but even with the increases, Plano Centre experienced a savings of

ENERGY EFFICIENCY IN POLITICAL SUBDIVISIONS: ACTIONS (CONTINUED)

302,295 kWh in 2006. Fire Station No. 7 And Police Assembly 2: Castro Roofing projected energy savings for Fire Station No. 7 and Police Assembly 2 of 19,600 kWh by replacing the roof, but the actual savings was 10,851 kWh. Douglass Annex: Engineers projected replacement of the two-rooftop air conditioning units should save 4,524 kWh. With the increase in programs offered to residents, usage rose over 2005 by 8,570 kWh.

Park/Athletic Operations: The Plano Parks and Recreation Department operates sports field lighting systems and other electrical systems throughout the park system that consume electricity. Changes in actual power consumption have not been documented in detail; however, several programs and mitigation efforts continue to generate reductions. A SCADA sports field lighting control system has been implemented that allows full-time staff to remotely control and monitor field lights. This allows systems to be turned on very close to game times. Before, a part-time staff person had to travel from complex to complex and some systems had to be turned on well in advance of game times to accommodate the travel time. The opposite situation, turning off the light systems, was also less efficient than using the computer-controlled system. New lighting systems or renovations of old systems include use of SCADA controls as a standard. Incandescent scoreboards at a city programmed athletic complex have been replaced with LED fixtures, which consume considerably less electricity. Youth sports organizations have replaced some of the incandescent scoreboards that they originally installed and donated to the city. Any further replacements by youth sports organizations will be required to be LED units. Scheil Park south was off-line for lighting system renovations during the spring 2006 sports season. Lighting system renovations typically change fixtures from high-pressure sodium to halogen. Only halogen systems are capable of directional lighting needed to meet environmental standards and reduce light pollution. Unfortunately, halogen lighting uses more electricity,

so renovations are increasing consumption. Youth sports organizations are responsible for programming the fields that are allocated by the city to them. The city is requiring all daylight game units to be scheduled for use before game units requiring (night) lighting can be scheduled. Solar controllers for irrigation systems at parks, and especially on tree bubbler systems to median landscaping, do not require consumption of purchased electricity and save capital dollars by not having to run electrical lines, meters, etc. to the site. When replacement of an irrigation pump is needed, variable speed pumps (VSPs) are being used which draw only the amount of electricity required to meet the pumping demand for water. One of these VSPs was used at Cheyenne Park during the renovation.

City of El Paso

The city of El Paso plans to perform a Detailed Evaluation Study of 50 city facilities. The city will perform a detailed evaluation study of city's premises, analyze the operational expenditures and characteristics of existing and new facilities and identify facility improvement measures and operating and maintenance services to improve the infrastructure, reduce operating costs and increase revenues. The city is in the process of applying for a loan with SECO's LoanStar program to perform the construction part of the evaluation. The Main Library replaced all the light fixtures with more efficient electronic T8 technology. The city is also implementing a city-Wide Energy and Operational Savings Program including the redesign and replacement of water chillers and hydronic pumps with more efficient equipment including variable frequency drivers for the pumps, air handlers and variable volume boxes to control the air volume. The New History Museum built with energy efficient technology has all equipment connected to an energy management system. El Paso also collaborated with Energy Star and SECO on a benchmarking project utilizing Portfolio Manager for over 100 facilities.

Appendix A: Energy Consumption by Political Subdivision

| Entity | 2001 kWh | 2006 kWh | Difference | Percent Change |
|----------------------------------|-------------|-------------|-------------|----------------|
| Cibolo Creek Municipal Authority | 3,330,340 | 3,130,323 | -200,017 | -6% |
| City of Addison | 8,700,000 | 10,903,890 | 2,203,890 | 25% |
| City of Allen | 9,559,334 | 7,681,902 | -1,877,432 | -20% |
| City of Alvarado | 351,317 | 277,793 | -73,524 | -21% |
| City of Alvin | 8,391,659 | 8,328,600 | -63,059 | -1% |
| City of Arlington | 72,338,815 | 54,528,961 | -17,809,854 | -25% |
| City of Austin | 349,055,754 | 313,494,864 | -35,560,890 | -10% |
| City of Balcones Heights | 946,743 | 728,910 | -217,833 | -23% |
| City of Bastrop | 3,051,073 | 2,651,766 | -399,307 | -13% |
| City of Bedford | 10,382,735 | 5,319,747 | -5,062,988 | -49% |
| City of Bridge City | 1,998,490 | 1,944,981 | -53,509 | -3% |
| City of Bunker Hill Village | 1,046,212 | 1,041,723 | -4,489 | 0% |
| City of Burleson | 3,730,919 | 4,658,918 | 927,999 | 25% |
| City of Carrollton | 29,063,970 | 22,602,669 | -6,461,301 | -22% |
| City of Cedar Hill | 6,326,684 | 6,267,241 | -59,443 | -1% |
| City of Celeste | 169,976 | 330,793 | 160,817 | 95% |
| City of Cleveland | 3,107,416 | 3,203,723 | 96,307 | 3% |
| City of Colleyville | 3,646,788 | 1,544,964 | -2,101,824 | -58% |
| City of Conroe | 24,654,952 | 20,893,543 | -3,761,409 | -15% |
| City of Corpus Christi | 125,820,000 | 146,030,891 | 20,210,891 | 16% |
| City of Dallas | 846,760,000 | 835,842,918 | -10,917,082 | -1% |
| City of Dayton | 2,772,460 | 2,991,680 | 219,220 | 8% |
| City of DeSoto | 8,513,547 | 9,626,217 | 1,112,670 | 13% |
| City of Duncanville | 7,282,218 | 6,314,307 | -967,911 | -13% |
| City of El Paso | 68,367,950 | 93,061,776 | 24,693,826 | 36% |
| City of Elgin | 516,292 | 487,538 | -28,754 | -6% |
| City of Farmers Branch | 1,153,021 | 1,023,011 | -130,010 | -11% |
| City of Florence | 595,094 | 134,809 | -460,285 | -77% |
| City of Fort Worth | 266,253,092 | 287,063,472 | 20,810,380 | 8% |
| City of Galveston | 27,421,050 | 22,275,308 | -5,145,742 | -19% |
| City of Gladewater | 2,680,596 | 2,578,757 | -101,839 | -4% |
| City of Heath | 472,015 | 541,493 | 69,478 | 15% |
| City of Hedwig Village | 294,400 | 256,720 | -37,680 | -13% |
| City of Henderson | 1,703,912 | 765,183 | -938,729 | -55% |
| City of Hickory Creek | 173,923 | 435,437 | 261,514 | 150% |
| City of Highland Park | 1,996,014 | 2,546,774 | 550,760 | 28% |

Appendix A: Energy Consumption by Political Subdivision (Continued)

| Entity | 2001 kWh | 2006 kWh | Difference | Percent Change |
|------------------------------|---------------|---------------|-------------|----------------|
| City of Highland Village | 4,746,573 | 5,273,970 | 527,397 | 11% |
| City of Houston | 1,251,535,704 | 1,270,617,039 | 19,081,335 | 2% |
| City of Irving | 51,130,587 | 49,699,834 | -1,430,753 | -3% |
| City of Jonestown | 283,514 | 326,769 | 43,255 | 15% |
| City of Katy | 5,429,757 | 8,762,213 | 3,332,456 | 61% |
| City of Kennedale | 3,271,682 | 3,001,722 | -269,960 | -8% |
| City of Kilgore | 6,857,918 | 6,331,523 | -526,395 | -8% |
| City of Lakeway | 526,840 | 515,800 | -11,040 | -2% |
| City of Leon Valley | 774,645 | 12,500,548 | 11,725,903 | 1514% |
| City of Live Oak | 1,830,838 | 2,462,652 | 631,814 | 35% |
| City of Longview | 47,694,268 | 25,928,581 | -21,765,687 | -46% |
| City of Lumberton | 218,324 | 306,083 | 87,759 | 40% |
| City of Lytle | 188,357 | 187,520 | -837 | -0.4% |
| City of Marion | 296,246 | 79,290 | -216,956 | -73% |
| City of McKinney | 13,800,661 | 14,115,157 | 314,496 | 2% |
| City of Mesquite | 21,062,651 | 22,881,718 | 1,819,067 | 9% |
| City of Nederland | 5,034,320 | 3,236,243 | -1,798,077 | -36% |
| City of New London | 633,065 | 723,507 | 90,442 | 14% |
| City of North Richland Hills | 14,242,074 | 13,695,682 | -546,392 | -4% |
| City of Oak Leaf | 56,058 | 60,573 | 4,515 | 8% |
| City of Oak Point | 43,469 | 131,770 | 88,301 | 203% |
| City of Odem | 433,001 | 452,486 | 19,485 | 4% |
| City of Ore City | 486,802 | 501,192 | 14,390 | 3% |
| City of Panorama Village | 1,364,076 | 1,393,596 | 29,520 | 2% |
| City of Pantego | 2,074,193 | 2,203,600 | 129,407 | 6% |
| City of Pasadena | 30,000,000 | 27,347,046 | -2,652,954 | -9% |
| City of Plano | 54,582,666 | 51,659,098 | -2,923,568 | -5% |
| City of Pleak Village | 28,656 | 23,085 | -5,571 | -19% |
| City of Portland | 1,546,904 | 4,900,691 | 3,353,787 | 217% |
| City of Richardson | 28,873,505 | 24,798,673 | -4,074,832 | -14% |
| City of Richland Hills | 666,190 | 664,752 | -1,438 | -0.2% |
| City of Round Rock | 6,610,581 | 8,249,291 | 1,638,710 | 25% |
| City of Saginaw | 2,216,350 | 3,596,136 | 1,379,786 | 62% |
| City of San Antonio | 124,991,727 | 243,051,744 | 118,060,017 | 94% |
| City of Simonton | 36,975 | 14,880 | -22,095 | -60% |
| City of Southlake | 7,224,084 | 7,493,865 | 269,781 | 4% |

Appendix A: Energy Consumption by Political Subdivision (Continued)

| Entity | 2001 kWh | 2006 kWh | Difference | Percent Change |
|---------------------------------------|---------------|-------------|----------------|----------------|
| City of Splendora | 842,198 | 930,265 | 88,067 | 10% |
| City of Sugar Land | 28,688,671 | 30,120,771 | 1,432,100 | 5% |
| City of Trophy Club | 87,888,827 | 959,081 | -86,929,746 | -99% |
| City of Victoria | 17,276,279 | 17,789,806 | 513,527 | 3% |
| City of West Lake Hills | 143,557 | 139,560 | -3,997 | -3% |
| City Public Service of San Antonio | 13,136,328 | 9,498,114 | -3,638,214 | -28% |
| County of Bastrop | 2,247,846 | 2,661,875 | 414,029 | 18% |
| County of Bexar | 39,901,156 | 48,863,415 | 8,962,259 | 22% |
| County of Comal | 5,415,145 | 5,655,473 | 240,328 | 4% |
| County of Denton | 1,113,269,231 | 11,149,026 | -1,102,120,205 | -99% |
| County of Ellis | 5,443,370 | 5,107,138 | -336,232 | -6% |
| County of Harris | 213,406,724 | 234,976,000 | 21,569,276 | 10% |
| County of Montgomery | 10,082,380 | 13,380,408 | 3,298,028 | 33% |
| County of Orange | 4,675,770 | 4,660,369 | -15,401 | -0.3% |
| County of Parker | 3,073,404 | 2,374,869 | -698,535 | -23% |
| County of Rockwall | 2,907,758 | 3,977,723 | 1,069,965 | 37% |
| County of Tarrant | 49,868,689 | 54,849,111 | 4,980,422 | 10% |
| County of Travis | 29,239,396 | 29,696,700 | 457,304 | 2% |
| County of Victoria | 5,726,358 | 9,472,674 | 3,746,316 | 65% |
| County of Waller | 1,619,115 | 1,521,606 | -97,509 | -6% |
| Dallas Area Rapid Transit | 66,307,568 | 98,754,197 | 32,446,629 | 49% |
| Fort Worth Transportation Authority | 5,500,587 | 7,411,333 | 1,910,746 | 35% |
| Lower Colorado River Authority | 18,966,301 | 3,161,124 | -15,805,177 | -83% |
| North Texas Municipal Water District | 174,102,798 | 347,183,000 | 173,080,202 | 99% |
| San Antonio Water System (SAWS) | 260,188,783 | 266,112,351 | 5,923,568 | 2% |
| Trinity River Authority of Texas | 125,230,795 | 127,061,412 | 1,830,617 | 1% |
| Upper Trinity Regional Water District | 11,216,103 | 22,933,399 | 11,717,296 | 104% |
| VIA Metropolitan Transit | 10,487,936 | 9,616,867 | -871,069 | -8% |

The list only includes political subdivisions that have reported 2001 and 2006 electrical usage data. The data appears as it was reported to the State Energy Conservation Office.

Appendix B: 2006 Reporting Political Subdivisions (Reports Received as of Sept. 8, 2007)

| | | |
|----------------------------------|------------------------------|---------------------------------------|
| Cibolo Creek Municipal Authority | City of Katy | City of Thompsons |
| City of Addison | City of Kaufman | City of Trophy Club |
| City of Allen | City of Kennedale | City of Victoria |
| City of Alvarado | City of Kilgore | City of Warren City |
| City of Alvin | City of Kyle | City of West Lake Hills |
| City of Arlington | City of Lakeway | City Public Service of San Antonio |
| City of Austin | City of Leon Valley | County of Bastrop |
| City of Balcones Heights | City of Live Oak | County of Bexar |
| City of Bastrop | City of Longview | County of Comal |
| City of Bedford | City of Lumberton | County of Denton |
| City of Bridge City | City of Lytle | County of El Paso |
| City of Buda | City of Marion | County of Ellis |
| City of Bullard | City of McKinney | County of Harris |
| City of Bunker Hill Village | City of Mesquite | County of Hays |
| City of Burleson | City of Montgomery | County of Hood |
| City of Carrollton | City of Mustang Ridge | County of Kaufman |
| City of Cedar Hill | City of Nederland | County of Montgomery |
| City of Celeste | City of New London | County of Orange |
| City of Cleveland | City of North Richland Hills | County of Parker |
| City of Colleyville | City of Oak Leaf | County of Rockwall |
| City of Conroe | City of Oak Point | County of San Patricio |
| City of Coppell | City of Odem | County of Smith |
| City of Corpus Christi | City of Ore City | County of Tarrant |
| City of Dallas | City of Panorama Village | County of Travis |
| City of Dayton | City of Pantego | County of Victoria |
| City of DeSoto | City of Pasadena | County of Waller |
| City of Duncanville | City of Patton Village | Dallas Area Rapid Transit |
| City of El Paso | City of Pflugerville | Fort Worth Transportation Authority |
| City of Elgin | City of Plano | Lower Colorado River Authority |
| City of Farmers Branch | City of Pleak Village | North Texas Municipal Water District |
| City of Florence | City of Portland | San Antonio Water System (SAWS) |
| City of Fort Worth | City of Richardson | Trinity River Authority of Texas |
| City of Fulshear | City of Richland Hills | Upper Trinity Regional Water District |
| City of Galveston | City of Round Rock | VIA Metropolitan Transit |
| City of Gilmer | City of Saginaw | |
| City of Gladewater | City of San Antonio | |
| City of Heath | City of San Marcos | |
| City of Hedwig Village | City of Sanctuary | |
| City of Henderson | City of Seabrook | |
| City of Hickory Creek | City of Simonton | |
| City of Highland Park | City of Southlake | |
| City of Highland Village | City of Splendora | |
| City of Houston | City of Spring Valley | |
| City of Irving | City of Sugar Land | |
| City of Jones Creek | City of Taft | |
| City of Jonestown | City of Taylor | |

Appendix C: Political Subdivisions Establishing the Electricity Consumption Goal

Bayview Municipal Utility District
Benbrook Water and Sewer Authority
Brazoria County Municipal Utility District 5
Brazos River Authority - Williamson County
Brazos River Authority-Brazoria County
Bridgestone Municipal Utility District
Brookshire-Katy Drainage District
Cibolo Creek Municipal Authority
City of Addison
City of Alamo Heights
City of Allen
City of Alvarado
City of Arlington
City of Austin
City of Azle
City of Bartonville
City of Bedford
City of Bellaire
City of Benbrook
City of Bishop
City of Blue Mound
City of Blue Ridge
City of Brazoria
City of Bunker Hill Village
City of Burleson
City of Carrollton
City of Cedar Hill
City of Celeste
City of Cibolo
City of Cleveland
City of Clint
City of Colleyville
City of Combine
City of Conroe
City of Coppell
City of Copper Canyon
City of Corinth
City of Crandall
City of Crowley
City of Dallas
City of Dayton
City of Denton
City of DeSoto
City of Duncanville
City of El Lago
City of El Paso
City of Elgin
City of Enchanted Oaks
City of Ennis
City of Euless
City of Farmers Branch
City of Florence
City of Flower Mound
City of Fort Worth
City of Frisco
City of Fulshear
City of Galena Park
City of Galveston
City of Garden Ridge

City of Gladewater
City of Granbury
City of Grays Prairie
City of Hardin
City of Heath
City of Hedwig Village
City of Helotes
City of Highland Park
City of Highland Village
City of Hill Country Village
City of Horizon City
City of Houston
City of Hudson Oaks
City of Hurst
City of Irving
City of Jamaica Beach
City of Jones Creek
City of Josephine
City of Justin
City of Katy
City of Kenefick
City of Kennedale
City of Kilgore
City of Kirby
City of Krum
City of Lake Jackson
City of Lakeway
City of Lancaster
City of Lavon
City of League City
City of Leon Valley
City of Lewisville
City of Live Oak
City of Lockhart
City of Longview
City of Luling
City of Lumberton
City of Mansfield
City of Manvel
City of Marion
City of Marshall
City of McKinney
City of Mesquite
City of Milford
City of Missouri City
City of Montgomery
City of New London
City of North Richland Hills
City of Oak Leaf
City of Odem
City of Olmos Park
City of Ore City
City of Ovilla
City of Panorama Village
City of Pasadena
City of Patton Village
City of Pflugerville
City of Pilot Point
City of Pinehurst

Appendix C: Political Subdivisions Establishing the Electricity Consumption Goal (Continued)

| | |
|------------------------------------|--|
| City of Plano | County of Hays |
| City of Pleak Village | County of Hood |
| City of Point Venture | County of Hunt |
| City of Ponder | County of Jefferson |
| City of Port Aransas | County of Johnson |
| City of Portland | County of Kaufman |
| City of Poth | County of Montgomery |
| City of Quintana | County of Orange |
| City of Richardson | County of Parker |
| City of Richland Hills | County of Rockwall |
| City of Rollingwood | County of Rusk |
| City of Roman Forest | County of Smith |
| City of Rosenberg | County of Tarrant |
| City of Round Rock | County of Travis |
| City of Rowlett | County of Travis Sheriff's Office |
| City of Sachse | County of Victoria |
| City of Saginaw | County of Wilson |
| City of San Antonio | Cypress Creek Utility District |
| City of Seabrook | Dallas Area Rapid Transit |
| City of Seguin | Dallas-Fort Worth International Airport |
| City of Silsbee | Dowdell Public Utility District |
| City of Socorro | Fallbrook Utility District |
| City of Southlake | Fort Bend County Municipal Utility District 118 |
| City of Splendor | Fort Bend County Municipal Utility District 19 |
| City of Spring Valley | Fort Bend County Municipal Utility District 37 |
| City of Springtown | Galveston County Municipal Utility District 12 |
| City of Stockdale | Greens Parkway Municipal Utility District |
| City of Sugar Land | Harris County Fresh Water Supply District 61 |
| City of Taft | Harris County Municipal Utility District 1 |
| City of Taylor | Harris County Municipal Utility District 104 |
| City of Terrell Hills | Harris County Municipal Utility District 105 |
| City of Thompsons | Harris County Municipal Utility District 118 |
| City of Trophy Club | Harris County Municipal Utility District 119 |
| City of Tyler | Harris County Municipal Utility District 148 |
| City of Uhland | Harris County Municipal Utility District 155 |
| City of University Park | Harris County Municipal Utility District 157 |
| City of Venus | Harris County Municipal Utility District 158 |
| City of Victoria | Harris County Municipal Utility District 172 |
| City of Vidor | Harris County Municipal Utility District 182 |
| City of Watauga | Harris County Municipal Utility District 185 |
| City of Waxahachie | Harris County Municipal Utility District 196 |
| City of Weatherford | Harris County Municipal Utility District 202 |
| City of West Lake Hills | Harris County Municipal Utility District 216 |
| City of Whitehouse | Harris County Municipal Utility District 24 |
| City of Windcrest | Harris County Municipal Utility District 248 |
| City of Wylie | Harris County Municipal Utility District 255 |
| City Public Service of San Antonio | Harris County Municipal Utility District 261 |
| County of Bastrop | Harris County Municipal Utility District 275 |
| County of Bexar | Harris County Municipal Utility District 366 |
| County of Collin | Harris County Municipal Utility District 368 |
| County of Comal | Harris County Municipal Utility District 49 |
| County of Dallas | Harris County Municipal Utility District 71 |
| County of Denton | Harris County Rural Fire Prevention District 12 |
| County of El Paso | Harris County Water Control and Improvement District 113 |
| County of Ellis | Harris County Water Control and Improvement District 50 |
| County of Gregg | Harris County Water Control and Improvement District 70 |
| County of Hardin | Harris County Water Control and Improvement District 99 |
| County of Harris | Horizon Regional Municipal Utility District |

Appendix C: Political Subdivisions Establishing the Electricity Consumption Goal (Continued)

Inverness Forest Improvement District
Lower Colorado River Authority
Memorial Hills Utility District
Montgomery County Emergency Service District 9
Montgomery County Hospital District
Montgomery County Municipal Utility District 19
Mount Houston Road Municipal Utility District
New Braunfels Utilities
Newport Municipal Utility District
North Belt Utility District
North Park Public Utility District
North Texas Municipal Water District
North Texas Tollway Authority
Northeast Hays County Rural Fire Prevention District
Northwest Harris County Municipal Utility District 10
Northwest Harris County Municipal Utility District 12
Northwest Harris County Municipal Utility District 23
Northwest Harris County Municipal Utility District 5
Northwest Harris County Municipal Utility District 6
Northwest Harris County Municipal Utility District 9
Northwest Hays County ESD #5
Orange County Drainage District
Orange County Emergency Services District No. 1

Orange County Navigation and Port District
Pine Village Public Utility District
Port Of Corpus Christi Authority
Port Of Houston Authority
Port Of Port Author Navigation District
Post Wood Municipal Utility District
Rankin Road West Municipal Utility District
Rayford Road Municipal Utility District
Reid Road Municipal Utility District 1
Richey Road Municipal Utility District
San Antonio Water System (SAWS)
Shady Hollow Municipal Utility District
Southern Montgomery County Municipal Utility District
Southwest Harris County Municipal Utility District 1
Spanish Cove Public Utility District
Tarrant Regional Water District
Tattor Road Municipal Utility District
Timberlake Improvement District
Trinity River Authority of Texas
VIA Metropolitan Transit
West Harris County Municipal Utility District 4
West Harris County Municipal Utility District 7
White Oak Bend Municipal Utility District

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