

# State of the Environment Report

April 2009





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With special thanks to staff members of the following City  
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Austin Energy  
Parks and Recreation  
Transportation  
Solid Waste Services  
Austin Water Utility  
Watershed Protection and Development Review

Cover photo by City of Austin staff

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## Executive Summary

On June 16<sup>th</sup> 1996, the City Council approved an ordinance directing the City Manager to appoint an Environmental Officer to ensure that environmental protection is given highest priority, and to produce an annual report regarding the state of Austin's environment. The eleventh annual report addresses the state of our environment from the following departments: Watershed Protection and Development Review Department, Parks and Recreations, Solid Waste Services, Transportation, Austin Energy, and the Austin Water Utility.

### **Watershed Protection**

To protect lives, property, and the environment by reducing the impact of flood, erosion and water pollution, this year was particularly challenging for the Watershed Protection & Development Review Department (WPDRD). Significant water quality events and issues include:

- Approximately 13 inches of rain fell in the Austin area in 2008, well below the average of about 32 inches per year.
- City and area-wide efforts to prevent the proposed discharge of treated wastewater into the headwaters of Bear Creek in the Barton Springs Recharge Zone were a focus for WPDRD this year.
- An unexpected, 15,000 gallon fuel spill on 6<sup>th</sup> Street from an abandoned underground storage tank lead to the discovery, mapping, and dissemination of over 800 potential abandoned tank locations.
- WPDRD received a grant for more than \$200,000 from the Texas Commission on Environmental Quality (TCEQ) for pesticide education through the Grow Green program.
- Improvements to the Environmental Criteria Manual for erosion and sediment control during construction were proposed. Staff completed the technical update in 2008 and the new regulations will be adopted in 2009.
- After approximately 17 years, all but one of the properties at the former East Austin Tank Farms received final approval of their remediation of contaminated soil and groundwater from TCEQ. Approval for the last property is expected in 2009.

## **Parks and Recreations**

With over 235 parks covering more than 17,500 acres, the park system remains one that is nationally recognized as having an outstanding park to population ratio. But as Austin and Central Texas continue to grow at a rapid pace, open space disappears at a corresponding rate.

Although the City of Austin remains the largest provider of parks and open space in the region, other providers and partners contribute significantly to open space preservation. Travis County has implemented a Parkland Dedication Ordinance and works in concert with Austin to conserve regional open space. Williamson and Hays Counties have also assumed aggressive parkland acquisition programs that have been supported by their respective bond initiatives.

The Austin Parks and Recreation Department works with a variety of partners to develop a regional open space plan. The following describes some of those efforts:

- *Greenprinting* is a county-wide land conservation effort that was led by the Trust for Public Land.
- *Austin to Bastrop Colorado River Partnership* is a group formed to educate the region on the values of the Colorado River corridor.
- Regional entities along the *State Highway 130 Corridor* joined to participate in planning efforts for rapidly growing commercial and residential areas along the corridor.

The Parks and Recreation Department not only seeks to expand its park system, but also to restore existing parkland to a healthy natural state. One of the most ecologically stressed park areas is Pease Park and the Shoal Creek Greenbelt. Due to their popularity, the parks are losing their sustainability. The Department is working with local naturalists, the Austin Parks Foundation, and the Lady Bird Johnson Wildflower Center to devise a restoration plan.

## **Solid Waste Services**

Curbside collections of garbage, recyclables, and yard trimmings are arguably the most visible of all City services. There are, however, numerous “behind the scenes” activities and accomplishments in 2007/2008, including the following:

- The Household Hazardous Waste facility serviced 12,316 households and diverted approximately 976,460 pounds of waste;
- Street cleaning crews swept 7,769 tons of material from city roadways;

- Litter Control cleaned 439 illegal dumpsites and 779 right-of-ways;
- Litter Abatement crews collected 2,747 tons of storm debris during the months of May through July; and
- Code Enforcement investigated 10,036 property abatement complaints and responded to 6,955 zoning code complaints.

Solid Waste Services established temporary brush collection sites around town during peak seasons and switched crews to a 6:00 A.M. start time to increase operational efficiency and reduce fuel usage. The department also expanded its use of alternative fuels and reducing vehicle emissions. In FY2007/2008, approximately 18% of Solid Waste Services' fleet ran on alternative fuels.

Solid Waste Services is constantly setting the bar higher on customer service and sustainable practices. Key accomplishments in FY2007/2008 included:

- Expanding service at the Household Hazardous Waste Facility;
- An extensive education campaign to prepare the public for the October 2008 launch of Single Stream Recycling;
- The Campaign Recycle election sign recycling pilot project;
- A sidewalk power washing pilot program in the downtown area;
- Setting up glass bottle recycling in the Central Business District;
- Partnering with local retailers to promote the sale of reusable; and
- Hiring a consultant to develop Austin's Zero Waste Plan, a strategy for achieving zero waste sent to landfills by 2040.

### **Transportation**

The transportation department measured fuel consumption per vehicle and common air pollutant levels on some arterial routes. Data presented herein shows a general decline in fuel consumption and air pollution levels through the past four years.

### **Austin Energy**

The Austin Climate Protection Program (ACPP) was initiated in February 2007 when the Austin City Council passed a resolution focused on coordinating the City's response to climate

change (Resolution No. 20070215-023). In 2008, the ACPP made significant strides towards achieving the goals and objectives set in that resolution, including:

- Municipal Plan – Reducing the City’s Carbon Footprint.
- Utility Plan – Carbon Dioxide (CO2) Cap & Generation Plan. Austin Energy proposed a draft (CO2) cap and reduction plan to reduce its carbon footprint.
- Homes and Buildings Plan – Energy Efficiency.
- Community and “Go-Neutral” Plans – Engagement Tools. ACPP is working with a vendor to develop an on-line carbon footprint calculator for Austin residents.

Recognizing the regional nature of air quality, the COA takes an active role in area initiatives. In conjunction with the CLEAN AIR Force of Central Texas, the COA participates in ongoing public outreach campaigns. As a member of the Commute Solutions Coalition, it assists area employers in promoting trip reduction measures, which reduce traffic congestion and associated emissions.

COA clean air initiatives include:

- **Ozone Reduction Strategies**, including the Vehicle Emissions Testing – Inspection and Maintenance Program.
- **Departmental Ozone Action Day** (OZAD).
- **Green Ride**. CAMPO and CAPCOG are developing an inter-local agreement with the Alamo Area Council of Governments (AACOG) to provide web-based GIS rideshare matching and alternative commute information services.

**Urban Heat Island Mitigation Program**. The City of Austin is committed to reducing the negative environmental impacts associated with the Urban Heat Island effect. Public education and proactive City programs that address these impacts are key in the challenge to cool Austin. The following programs are in progress:

- Partnerships with local entities to promote the development of green roofs with the intent of increased vegetation in the urban area;
- Tree Inventory and Mapping, and Expanded City Tree Planting Program in right-of-ways and parks;
- Increased canopy cover through Large Tree plantings;

- Neighbor Woods and Austin Community Trees programs;
- Austin’s Tree of the Year program and Arbor Day;
- Building code requirements for Light-Colored Roofs;
- Incentive/Enforcement of Tree-Saving Ordinance;
- Ordinance mandating 50% Canopy Coverage within 15 years for all new parking lots;
- Education and outreach through the City of Austin Urban Heat Island website.

**Central Texas Clean Cities (CTCC).** CTCC is a DOE supported program resulting from the Environmental Protection Act of 1992 to advance the nation's economic, environmental, and energy security by supporting local decisions to adopt practices that reduce our dependence of foreign oil in the transportation sector. This program encourages and incentivizes both commercial and residential consumers to reduce energy consumption and pollutants.

**Austin Water Utility**

The City of Austin’s two water treatment plants are Davis and Ullrich, which both draw water from Lake Austin/the Colorado River, treat it and deliver it as high quality drinking water. The Green Water Treatment Plant, built in 1925, was decommissioned in December 2008.

AWU owns and operates two major wastewater treatment plants, which together have a total treatment capacity of 150 million gallons per day. These plants discharge highly treated effluent to the Colorado River, the quality of which surpasses the State and Federal permit requirements. The TCEQ classified the effluent quality as “exceptional.”

In June 2008, an instrument and control failure occurred at the Walnut Creek WWTP which caused a malfunction of blowers that provide air for the biological treatment of wastewater. As a result, ammonia levels at the plant slightly exceeded TCEQ’s permitted standards for a brief period. AWU quickly repaired the malfunctioning equipment and corrected the violation in accordance with TCEQ requirements. This incident did not pose any danger to the public, the environment or the plant staff.

The Austin Youth River Watch is a non-profit organization founded in 1992 which works with South and East Austin high school students “at risk” of leaving school before graduating. The students monitor water quality in Austin urban creeks and the Colorado River providing the City of Austin and the Lower Colorado River Authority with valuable data. During 2008, 86 high school

and middle school students were involved in the Austin Youth River Watch program. Thirty-nine students went on to participate in River Watch summer leadership program during June and July 2008. On average, AYRW high school students attended school more regularly and had grade point averages comparable to, or higher than, the comparison group of AISD high school students. Most importantly, 10 River Watch students graduated from high school during 2008.

The City Council revised Austin's water use management ordinance (Chapter 6-4 of City Code) in August 2007. The new rules took effect October 1, 2007, implementing a year-round mandatory watering schedule for commercial and multi-family users. The changes also made mandatory watering days for residential customers effective each year from May 1 through September 30, and implemented time-of-day restrictions for outdoor watering.

Wildlands programs are supporting City Council desires to provide more trail opportunities for our community. In 2008, Balcones Canyonlands Conservation Plan (BCCP) Coordinating Committee led the development of a trail master plan that would coordinate a comprehensive trail inventory and system for BCP and establish guidelines for new trail development.

As established by the Austin Climate Protection Plan, adopted by the City Council on February 15, 2007, all City facilities, fleets, and operations are to be carbon-neutral by 2020.

AWU staff conducted an initial greenhouse gas (GHG) inventory for 2007, using a protocol established by the Climate Registry to establish a baseline by which progress can be measured. AWU activities emit significant quantities of three of the six primary GHGs: carbon dioxide, methane, and nitrous oxide.

The preliminary CY2008 GHG inventory placed AWU's total greenhouse gas emissions at approximately 125,000 tons of carbon dioxide equivalent. The majority of AWU's greenhouse gas emissions, roughly 90%, come from the generation of electricity.

2008 saw the introduction of new permanent year-round outdoor water restrictions that limit commercial and multifamily customers to irrigating as well as seasonal residential irrigation restrictions for single family homes. These new restrictions will further reduce the City's use of energy.

## **Section 1. Significant Year 2008 Watershed Protection Issues**

To protect lives, property, and the environment by reducing the impact of flood, erosion and water pollution, this year was particularly challenging for the Watershed Protection & Development Review Department (WPDRD). Significant water quality events and issues include:

- Approximately 13 inches of rain fell in the Austin area in 2008, well below the average of about 32 inches per year. It was the lowest annual total in more than 50 years.
- City and area-wide efforts to prevent the proposed discharge of treated wastewater into the headwaters of Bear Creek in the Barton Springs Recharge Zone were a focus for WPDRD this year.
- An unexpected 15,000 gallon fuel spill on 6<sup>th</sup> Street from an abandoned underground storage tank lead to the discovery, mapping, and dissemination of over 800 potential abandoned tank locations.
- The WPDRD received a grant for more than \$200,000 from the Texas Commission on Environmental Quality (TCEQ) for pesticide education through the Grow Green program.
- Significant Improvements to the Environmental Criteria Manual for erosion and sediment control during construction were proposed. Staff completed the technical update in 2008 and the new regulations will be adopted in 2009.
- After approximately 17 years, all but one of the properties at the former East Austin Tank Farms received final approval of their remediation of contaminated soil and groundwater from the Texas Commission on Environmental Quality. Approval for the last property is expected in 2009.

### **HAYS COUNTY WATER CONTROL DISTRICT #1 PERMIT APPLICATION TO DISCHARGE WASTEWATER INTO BEAR CREEK**

The City of Austin, Dripping Springs, Barton Springs Edwards Aquifer Conservation District, and downstream landowners contested the first TCEQ permit which allowed for the direct discharge of treated effluent to a creek in the Barton Springs Zone (Bear Creek). The City actively opposed the permit because Bear Creek, like many pristine Hill Country streams, is extremely sensitive to nutrient inputs. Studies by the City of Austin and USGS indicate that nitrogen and phosphorous, in

the wastewater discharge, will alter the aquatic biology from natural conditions and increase the frequency, magnitude, and duration of nuisance algae blooms in the creek.

City modeling results showed that water quality downstream into the Recharge Zone will be affected. Furthermore, additional pollutant loading to Bear Creek from ongoing and future development downstream from the plant and/or other discharge permits in the Contributing Zone would further increase pollutant concentrations at the Recharge Zone boundary. Dye studies and modeling results demonstrate the impact on Barton Springs was also of concern.

During drought conditions and when combined with the other stressors on the Edwards Aquifer, the proposed discharge will degrade the current condition of Barton Springs through stimulating free-floating and attached algae and decreasing dissolved oxygen concentrations, increasing risk to the endangered Barton Springs Salamander. All of these impacts are predicted to occur regardless of the advanced wastewater treatment system proposed by the applicant and stringent effluent limits in the draft permit written by TCEQ. The City joined with many public and private organizations along with landowners downstream from the development in opposing the permit.

Prior to the hearing at the State Office of Hearings Examiners, attempts at mediation and settlement were made. A settlement agreement was drafted in the final days before the hearing that would allow the discharge only when effluent storage ponds are full, the ground is saturated, or when the Bear Creek USGS gage is above 14 cfs. Council agreed to sign on the settlement as long as all of the other government entities approved the agreement. Hays County did not approve the agreement; therefore, the City continued as a contestant in the hearing process along with Hays County and several groups of downstream landowners. The hearing process concluded with a proposal for decision by the Administrative Law Judge assigned to the case. The judge recommended incorporation of most settlement conditions into the TCEQ permit making the state responsible for enforcing the conditions through the TPDES program. Final decision by TCEQ is scheduled for January 2009.

## 6<sup>TH</sup> STREET OIL SPILL AND ABANDONED TANK RECORDS

The most significant spill this year was in the downtown area. In January an abandoned, buried fuel oil tank in an alleyway off 6<sup>th</sup> Street released thousands of gallons of oil to Waller Creek. Waller Creek was remediated to pre-spill conditions after 25 days of exhaustive work. Over 66,000 gallons and 81 cubic yards of contaminated material were collected and disposed. Due to the quick response, no impacts to aquatic life were noted. Through research into the origin and ownership of the ruptured fuel oil



tank, historical records were found indicating the possible existence of numerous other buried tanks throughout the City. These records included City of Austin Council Meeting minutes from the Austin History Center dated between 1910 and the 1960's. When the research was completed, nearly 1000 tanks had been identified at over 800 locations. This information was incorporated into the AMANDA Permit database, the City GIS system, the City Utility Coordination Committee, and made available on the internet.

## IMPROVEMENTS TO THE ENVIRONMENTAL CRITERIA MANUAL

In October 2007, the City Council requested that the City Manager “evaluate and update the City’s practices, capabilities, and available resources for review and inspection of construction-phase erosion and sedimentation controls, inspection of water quality ponds, and enforcement of maintenance requirements.” As a result of that request a comprehensive review of the City’s criteria and programs related to temporary (construction phase) and permanent water quality controls was completed in 2008.

The review resulted in a number of recommendations for improvements, particularly to the City’s Environmental Criteria Manual which provides the standards and specifications for construction phase erosion and sedimentation controls. Key recommendations included:

- Require phasing for large projects;
- Eliminate outdated and ineffective controls;
- Include the latest control methods supported by good science;
- Require a Certified Professional in Erosion and Sedimentation Control to design temporary controls;
- Make Austin’s requirements consistent with TCEQ requirements to eliminate duplicative requirements;
- Hire temporary inspectors to eliminate large backlog of pond inspections;
- Implement a consistent and efficient process for tracking newly built ponds in the City’s GIS database;
- Address issue of allowing developers to assign responsibility for maintenance of ponds to homeowners associations; and
- Clarify responsibility for maintenance of City owned ponds.

Implementation of the recommendations from the review began in 2008 with the initiation of the most comprehensive update of the Environmental Criteria Manual in decades. Those changes will be adopted in early 2009 after a significant stakeholder input process. Implementation of the recommendations for permanent water quality controls also began in 2008 and will be completed in 2009.

### **EPA GRANT FUNDING/PESTICIDE REDUCTION**

The Texas Commission on Environmental Quality (TCEQ) awarded the City a \$336,000 EPA 319 non-point pollution grant for the WPDRD’s Grow Green program. TCEQ will fund \$201,600 and the City will provide \$134,400 in matching funds. The award will be used to create an outreach campaign that includes three 15-minute television spots, a companion radio spot, and brochures which will be distributed to the general public and pilot neighborhoods. The theme will be The Big Three – the three most important things a homeowner can do to reduce landscape chemicals in our water resources.



Messages will ask Austinites to fertilize sparingly and to use pesticides and herbicides as a last

resort. The campaign will also fund water quality monitoring in several of the pilot neighborhoods which are located in the Northern and Barton Springs segment of the Edwards Aquifer.

## **EAST AUSTIN TANK FARM REMEDIATION**

The East Austin Tank Farms were located at the intersection of Springdale Road and Airport Boulevard and on nearby Jain Lane. Until the early 1990's these facilities were the bulk fuel storage facilities for several oil companies that served the Central Texas area. In the late 1980's and early 1990's, severe soil and groundwater contamination was discovered. Neighborhood residents, the City of Austin, Travis County and the State worked together to require a thorough investigation by the oil companies. The contamination impacted the oil company properties, a number of nearby residential and commercial properties and the City of Austin's Govalle Park. The companies were ordered by the State to begin remediation in 1992.

From 1992 through 2008 the oil companies remediated their properties and the impacted off-site properties under the direction of the TCEQ and close monitoring by City of Austin staff. In the summer of 2008, all but one of the oil companies received final approval for the cleanup of contamination from the TCEQ. The remaining company, Citgo, is likely to receive approval for their cleanup early in 2009. The oil company properties were cleaned up under TCEQ regulations to a commercial/industrial standard and the adjacent non-oil company properties were remediated to a residential standard that is protective of both residential and recreational uses.

## **ON-GOING PROGRAMS**

### ***Water Resource Evaluation***

Water Resource Evaluation (WRE) staff conducts monitoring of baseflow stream water quality, biological health of the aquatic environment, spring flow quantity and quality and assessment of the environmental impact of public and private projects, local, state and federal regulations, and programs on water resources in Austin.

### ***Environmental Integrity Index – Citywide Creek Assessment***

The City of Austin Environmental Integrity Index (EII) is a comprehensive stream monitoring program that incorporates physical, chemical and biological measures to assess the health of each of Austin's 45 watersheds. Each watershed is segmented into one to six study reaches, depending on watershed size and complexity, resulting in a total of 122 stream reaches monitored citywide. This large effort is managed in three phases, with approximately 15 watersheds monitored per year.

In 2008, additional work was performed to predict the improvements in water quality scores that could be attributed to the Austin Clean Water Program (ACWP). The ACWP was created to mitigate sanitary sewer overflows from the wastewater collection system. Data through 2008 were evaluated alongside the location of ACWP projects that were completed. While this monitoring program was not set up to specifically evaluate ACWP projects, there was enough correspondence of monitored and project reaches to evaluate it statistically.

In parameters that would commonly be associated with wastewater such as nitrates and bacteria, the ACWP reaches showed more improvement between paired before and after project scores than negative or no impact. This is one objective indicator that the Sanitary Sewer Overflow problems targeted by ACWP are being tangibly reduced.

In 2009 EII scores will be used, in part, to update the WPDRD Master Plan Water Quality Scores and to conduct a final analysis of ACWP benefits. EII assessments for each creek will be performed every other year instead of every third year. The change in EII scores over two years of monitoring, shown in Figure 1, indicate declines and improvements of water quality in area watersheds. Figure 2 shows the scores from the most current sampling year of each watershed.

Figure 1-1: Change in EII Scores Between Two Years of Monitoring

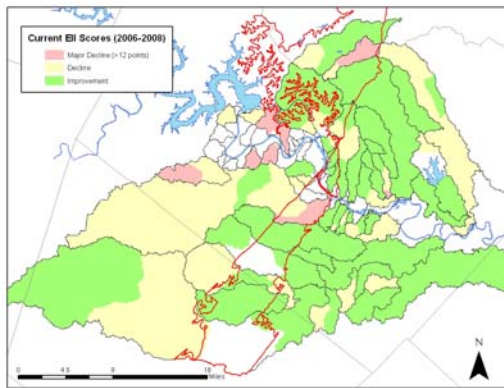
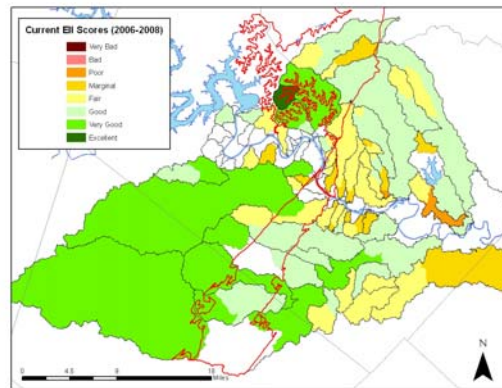


Figure 1-2: EII Scores From Most Current Sampling Year



**Town Lake Status**

ERM completed an update of the Town Lake Report in 2006, building on the previous analyses of Town Lake quality (1992, 2001). The impact of urban runoff to Town Lake from the

City of Austin developed watersheds can be seen in the water quality data collected by the City and the USGS.

Water quality in Town Lake may be improving for several parameters including some forms of nutrients such as orthophosphorus, total kjeldahl nitrogen, total nitrogen, and total phosphorus and metals such as copper, lead, and zinc. Water quality continues to be of concern for nitrate nitrogen levels when compared to TCEQ screening levels for Texas reservoirs. Heavy metals, polycyclic aromatic hydrocarbons (PAHs) and pesticides have been detected at varying frequency in some sediment samples from Town Lake at levels of concern for aquatic life. No consistent increasing trends have been identified. Concentrations of some contaminants in sediment including DDT and lead have been shown to be improving under certain conditions.

A comprehensive Town Lake Index, similar to the EII, was further developed in 2008. A draft version of this index was calculated for the past 30+ years using available water quality and biological data that shows Town Lake generally scoring in and around the “Good” category, finishing 2008 in the “Very Good” category.

### ***Lake Austin***

#### **Hydrilla**

Aquatic plant control on area lakes is a shared concern of the City, Lower Colorado River Authority (LCRA), Texas Parks and Wildlife Department (TPWD), and shoreline neighborhood associations. The main concern since 2000 is the *hydrilla* infestation of Lake Austin. The City’s control efforts have included drawdowns of the lake to expose the plants to drying and freezing temperatures, and the introduction of sterile *hydrilla* eating grass carp.

In May 2008, after the City conducted a successful winter drawdown of Lake Austin, TPWD documented only 53 acres of total vegetation, with no significant *hydrilla* to map. The TPWD September 2008 survey showed approximately 160 acres of total vegetation, with only about 30 acres of *hydrilla*. Due to the limited amount of vegetation in the lake, no drawdown was conducted in winter 2008, and no grass carp (sterile fish that eat *hydrilla*) were stocked during 2008. TPWD will provide periodic vegetation surveys in 2009 to help guide the City’s management efforts.

### **Native Aquatic Plant Revegetation Project**

An increase in native vegetation coverage has been a recommendation of TPWD for fisheries management for many years. Therefore, WPDRD continued native revegetation efforts in 2008 to prevent a re-infestation of *hydrilla* on Lake Austin and Lady Bird Lake, and improve fish habitat diversity. At this time, *hydrilla* has still not established in Lady Bird Lake. As native plants continue to spread, it is hoped they will help prevent new infestations and re-infestations of *hydrilla* and other nuisance exotics.

### **Lake Bathymetry**

In late 2008, the City contracted with the Texas Water Development Board to conduct volumetric surveys on both Lady Bird Lake and Lake Austin. Information from these surveys will be compared with 1999 TWDB surveys to determine changes in overall lake volume as well as localized changes in creek deltas. Sedimentation has not historically been a major problem in these constant level run-of-the-river reservoirs; however local impacts have required maintenance removal of deposits causing navigation or recreation hazards.

### ***Clean River Program Activities***

The City of Austin continues to participate in the Clean Rivers Program ([www.lcra.org](http://www.lcra.org)) with the Lower Colorado River Authority (LCRA) and the Texas Commission on Environmental Quality (TCEQ) by submitting monitoring data that will be used in the ongoing statewide assessment of water quality known as the 303(d) and 305(b) reports ([www.tceq.state.tx.us](http://www.tceq.state.tx.us)). TCEQ updates these reports biennially. In 2008, staff submitted more than 2,500 data points collected from 39 different monitoring locations to the Clean Rivers Program. Water bodies with impairments or concerns are listed in [Table 1-1](#). There were no new listings of impairments to Austin water bodies in 2008. The City of Austin is working cooperatively with TCEQ to confirm the bacteria listings of five water bodies, with sampling to continue through 2009.

Deleted: Table 1-1

Table 1-1: Austin water bodies on the TCEQ 303(d) and 305(b) lists

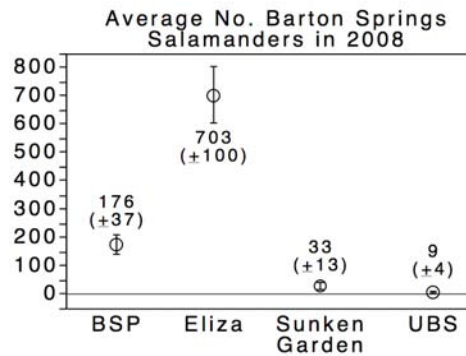
| Water Body                             | Impairment on 303(d) List        | Concern on 305(b) List                  |
|--|----------------------------------|---|
| Lake Austin                            | Dissolved Oxygen                 | Manganese in Sediment                   |
| Bull Creek                             | Macrobenthos Community           |   |
| Spicewood Tributary to Shoal Creek     | Bacteria                         |   |
| Taylor Slough South                    | Bacteria                         | Nitrate                                 |
| Westlake-Davenport Trib to Lake Austin | Bacteria                         |   |
| Barrow Preserve Tributary to Bull      |                                  | Nitrate                                 |
| Stillhouse Hollow Tributary to Bull    |                                  | Nitrate                                 |
| Slaughter Creek                        | Macrobenthos Community           | Dissolved oxygen                        |
| Granada Hills Trib to Slaughter Creek  |                                  | Nitrate                                 |
| Colorado River below Town Lake         | Bacteria                         | Nitrate, phosphorus, fish, macrobenthos |
| Walnut Creek                           | Bacteria                         | Macrobenthos Community                  |
| Gilleland Creek                        | Bacteria                         | Nitrate, phosphorus                     |
| Eanes Creek                            | Bacteria                         |   |
| Lake Travis                            |                                  | Dissolved oxygen                        |
| Waller Creek                           | Bacteria, Macrobenthos Community | PAHs in Sediment                        |
| Barton Creek                           |                                  | Dissolved oxygen                        |
| Tributaries to Barton Creek            |                                  | Nitrate                                 |
| Town Lake                              |                                  | Nitrate                                 |
| East Bouldin Creek                     |                                  | PAHs in Sediment                        |

City of Austin data contributed to the identification of bacteria impairment in Gilleland Creek. Beginning in 2005, LCRA began additional monitoring in Gilleland Creek to determine the source of the impairment for TCEQ, and released a summary of their findings as Total Maximum Daily Load (TMDL) study in 2006 ([waterquality.lcra.org/gill](http://waterquality.lcra.org/gill)). The findings of the TMDL study indicate that non-point sources are the source of the elevated bacteria levels. LCRA/TCEQ/COA and other stakeholders continue to work on a solution implementation plan which may have implications for bacteria impairments or concerns in other Austin water bodies.

## ***Threatened or Endangered Salamanders***

### **Aquatic Habitat Quality**

From January through June of 2008, clear, flowing spring water maintained the diversity and abundance of beneficial algae, salamander prey, moss and plants in the Barton Springs complex including Parthenia, Eliza, Sunken Garden, and Upper Barton Springs. These conditions promoted increases in salamander abundance to record highs in all four spring sites. In Parthenia Spring (Barton Springs Pool) salamander numbers reached a record high of



447 in June, bringing the 2008 annual average to 176. However, monthly counts range widely for this site over several years, resulting in a 6-year annual average of only 84. This suggests that the population in Parthenia is not stable and the availability of good habitat is not consistent. Habitat restoration at this site will continue until there is evidence of population stability.

Eliza Spring, located in the historic Elks Club amphitheater adjacent to the Barton Springs Pool, contains the largest and most stable salamander population. The Barton Springs Salamander abundance exceeded previously recorded highs for 5 consecutive months, which increased the annual average in 2008 to 703 and the 6-year average to 398. These results are most likely attributable to the availability of consistently high quality habitat since restoration was completed in 2004.

Barton Springs Salamanders were observed 97 times in Sunken Garden during May of last year. This spring remains our most vulnerable perennial site in the Barton Springs complex. The annual average salamander abundances, since 2003, range from 1 to 43 and there is no evidence of continuous reproduction or maturation of juveniles to adulthood. Habitat restoration has been ongoing since 2004, and will continue, as this spring still requires more improvement to support the desired large, stable multi-generational population of salamanders.



Austin Blind Salamander  
*Eurycea waterlooensis*



Barton Springs Salamander  
*Eurycea sosorum*

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Upper Barton is an intermittent spring; water flows at the surface only when discharge from the Barton Springs complex is greater than 40 cfs. In 2008, this small site (approx. 500 sq. ft.) flowed from January through May, with an average of 9 salamanders seen during that time. It became dry in June and remained so through the end of the year. Management of wild populations of Barton Springs and Austin Blind Salamanders in the past year focused on continuing habitat restoration in Sunken Garden and Parthenia Springs.

Three important factors that influence the long term health and vitality of the Barton Springs Salamander, *Eurycea sosorum*, and the Austin Blind Salamander, *E. waterlooensis*: 1) aquatic habitat quality, 2) drought, and 3) captive breeding program.

### **Drought Effects**

After the onset of flooding of Barton Creek in January of 2007, the previous year's drought was thought to be over. However, the last half of 2008 was very dry and each of the Barton Springs Edwards Aquifer Conservation District water pumping limits was triggered successively during this year. Currently, Barton Springs discharge is still teetering on the edge of emergency water conservation thresholds.

The abundance of both Barton Springs salamander species in all sites began to decrease in the second half of the year as discharge dropped below the average of 54 cfs. Salamander abundance had decreased by 50% in both Eliza and Parthenia Springs, and 100% in Sunken Garden by the end of the year. The severity of the drought has had the most dramatic impact on aquatic life in Sunken Garden Spring, where the stream went dry, dissolved oxygen in the spring pool dipped to dangerous levels (< 3 mg/L), and no salamanders have been observed since August. Upper Barton Spring went dry in June 2008, as occurs whenever the Barton Springs complex discharge drops below 40 cfs, thus no aquatic salamanders have been present. Management of wild populations of Barton Springs and Austin Blind Salamanders during the drought focused on raising the dissolved oxygen in Sunken Garden by installing a temporary water recirculation system, and mitigating effects of predictable increases in nuisance algae in Parthenia and Eliza Springs.

### **Barton Springs Pool Master Plan**

Council approved a Master Plan for Barton Springs in late 2008. Parks and Recreation and the WPDRD are coordinating efforts to implement the plan that will guide capital improvement projects at the historic swimming facility and grounds. Council funded a list of projects aimed at improving swimming conditions, salamander habitat, and gathering data necessary to evaluate potential long-term improvements.

A joint subcommittee of the Parks and Environmental Boards will oversee implementation and provide a venue for regular updates and public input. Short-term water quality projects in the plan include:

- Pilot studies on re-circulation of water to improve salamander habitat and reduce nuisance algae growth;
- Pilot studies to analyze impacts of allowing creek water to flow through the pool;
- Testing of ultrasonic emitters to control algae growth;
- Repairing joints in the creek bypass, design and construction of a new inlet grate for the bypass;
- Removing the gravel bar and developing a maintenance method to prevent its re-deposition, designing a method for silt and algae removal and disposal or beneficial reuse;

- Surveying topography on the grounds and bathymetry of the pool, assessment of the structural integrity of the downstream dam: and
- Modeling water movement in the pool area and salamander habitat.

Potential long-term projects were also developed, but would require significant additional public input and are not funded. They include:

- Modifying the pool dams to allow greater water movement through the pool to scour sediment;
- Algae and improve aquatic life; reconstructing the spring run from Eliza Spring to the pool;
- Repairing the remaining stone walls around Sunken Gardens, and
- Stream bank stabilization downstream of the pool.

In addition, proposals were included to:

Repair and restore the bath house; construct a new, small bath house to serve the south side of the pool;

- Construct an ADA path from the south entrance to the pool;
- Include a currently wooded area south of the diving board into the pool grounds;
- Remodel the area around Eliza Spring for greater focus on the natural environment, and
- Improve the pool grounds with new fencing, native grasses, and trees.

One of the first critical sources of data collection began in late 2008 with a topographic survey of the grounds, creek channel and pool bottom. PARD and WPDRD staff began the process for acquiring consultants for tree assessment and bypass repairs in late 2008. A significant development in October was localized failure of the bypass floor and development of a large number of holes that allowed water from the pool to drain into the bypass. Temporary mitigation measures have stabilized conditions until permanent repairs are designed and constructed.

### **Captive Breeding**

In 2008, 31 Barton Springs Salamander egg-laying events resulted in 103 new offspring in the Captive Breeding Program. Staff continued to collect data on individual salamanders and develop management practices for the program. In addition, staff established the Austin Salamander Conservation Center — a functional breeding facility for the Barton Springs Salamander located at

the Austin Nature Center. Staff built tank systems, oversaw and coordinated building projects related to the tank chilling system, back-up generator, and electrical systems.

In late 2007 and early 2008, 357 Barton Springs, Austin Blind and Jollyville Plateau salamanders were moved to the new location. An increase in egg-laying events and juveniles occurred at the new Center during 2008 with 38 egg-laying events yielding 130 offspring. At the end of 2008, there were a total of 418 Barton Springs salamanders, 48 Austin Blind salamanders, and 44 Jollyville Plateau salamanders. During late spring-early summer of 2008, toe and limb malformations were observed on most Barton Springs salamanders at the Center. Tank systems were intensively disinfected and multiple treatment methods were applied to the animals, and most affected animals have now recovered. Nutritional needs of the salamanders and more advanced water supply filtration is currently being researched by staff biologists, and the Population Management Plan is being drafted for review and implementation.

### **Jollyville Plateau Salamander Status**

*Eurycea tonkawae* (the Jollyville Plateau Salamander) occurs in springs, spring-runs and caves associated with the northern segment of the Edwards Aquifer, from West Bull Creek north to Brushy Creek, in Travis and Williamson counties. The Jollyville Salamander requires clear, flowing water over clean rock substrates. This species is currently a candidate for federal protection under the Endangered Species Act.



A recent analysis of long term monitoring data collected over 12 years shows that five of the seven salamander populations surveyed have a very high potential for complete loss. These estimates are based on current population size estimates and the population growth rate. Populations in watersheds with high impervious cover tend to be the most imperiled. The monitoring sites that still have large numbers of salamanders are in preserves designated for bird habitat, including the

LCRA Wheless tract in the Long Hollow watershed and along the main stem of upper Bull Creek in the Balcones Canyonlands Preserve.

Six new spring populations of *E. tonkawae* were discovered during 2008, including one likely “rediscovery” that roughly corresponds to the location of a museum collection taken in 1956. The drought has had a negative effect on new population discovery efforts.

Mark and recapture efforts are continuing after a year-long hiatus due to the drought conditions (zero to low spring flow). These data allow estimation of important parameters that cannot be obtained through direct-counting.

### ***Stormwater Quality Evaluation (SQE)***

The Stormwater Quality Evaluation staff monitors water quality of stormwater runoff. Approximately 13 inches of rain fell in the Austin area in 2008, the lowest annual total in more than 50 years, creating an obvious challenge to collection and sampling runoff. Several new monitoring locations were established throughout the year:

- Legend Oaks sand filter (3 stations) was initially established to collect runoff samples to evaluate the effect of education on pesticide and fertilizer concentrations in runoff. Monitoring locations were also established at the effluents of the sedimentation and filtration basins to evaluate the BMP.
- Flint Ridge Cave monitoring was conducted to measure the quality and quantity of recharge into this feature in the Barton Springs Recharge Zone. The drainage area to the feature is currently undeveloped but the proposed Highway 45 SW will cross part of it.
- A monitoring station was established in Little Bear Creek above the recharge zone to help evaluate recharge in this creek. Data from this station will be compared with data at an existing monitoring station on Little Bear Creek at Stoneledge Quarry.
- Three monitoring stations at the Canyon Creek paired sedimentation/filtration BMP were reactivated. Data from these stations will be used to evaluate bio-filtration as an alternative to sand filtration for water quality treatment.
- Work began on four sampling stations at the Park Place retention irrigation BMP for education evaluation and BMP evaluation. Work also began in the Sand Beach bio-filtration BMP (2 stations) to evaluate bio-filtration performance. Work on both locations will be completed in early 2009.

Dry weather screening, as required by the TPDES permit, was conducted in five watersheds during 2008; Blunn, Harpers Branch, East Bouldin, West Bouldin and Williamson. Dry Weather screening techniques are employed after a minimum of three days without any type of precipitation. During these dry times, staff inspects discharge pipes to determine if there is flow when the pipes should be dry which could indicate illicit or accidental discharges are occurring.

One hundred and seventy-four storm sewer outfalls were screened and no flow was detected at any outfall.

### ***Stormwater Treatment***

The Stormwater Treatment program identifies, prioritizes and implements solutions for water quality improvements, and designs and constructs stormwater treatment facilities such as bio-filtration ponds and filter strips.

In 2008, construction was completed on bio-filtration ponds at several locations including Canyon Creek Elementary School in the Bull Creek watershed and Sand Beach at the Gables which is adjacent to Lady Bird Lake. These ponds were designed using innovative water quality controls that were approved and adopted in 2007.

### ***Stream Restoration***

For over a decade, the City of Austin has been a leading agency in developing and implementing bioengineering and stream restoration practices that result in creeks that remain stable, provide habitat, and retain the natural and traditional character of Austin's waterways.



Urbanization impacts our creeks by adding impervious cover, which increases the frequency and volume of storm runoff, which increases stream channel erosion. Our creeks react by getting

deeper and wider. Stream channel erosion impacts residential and commercial properties and public infrastructure.



To combat these erosion impacts, the Stream Restoration Program staff prepares in-house designs and plans for capital and Field Operations Crew projects.

Work to restore degraded streams includes stabilizing the channel form, creating a pool & riffle system to enhance habitat and re-establishing the riparian landscape. Reinforced earth bank reconstruction, limestone rock grade controls, rock weirs and native vegetation are preferred techniques rather than the concrete and gabion installations that have historically been used.



Blunn Creek through Stacy Park was highly degraded. Advancing erosion affected roadways and park amenities. This project reconstructed creek banks, installed grade controls, created a rain garden and landscaped the stream corridor with native vegetation.



Before



After



Before



After

### ***Pollution Prevention and Reduction (PPR)***

The Pollution Prevention and Reduction Section is comprised of two main interrelated programs:

- Stormwater Discharge Permitting, and
- Spills and Complaints Response

The Stormwater Discharge Permit program provides regulatory oversight and guidance regarding the issuance of permits to discharge into the storm sewer system and receiving waterways. The Spills and Complaints program responds to hazardous and non-hazardous material spills and citizen pollution complaints 24 hours a day, 7 days a week, through the City's Pollution Hotline number (512-974-2550).

### **Stormwater Discharge Permit Program**

In 2008, WPDRD issued 1,120 permits and conducted 621 assessments for compliance. As a result of the assessments, the following contaminants were removed from the environment:



- 13.86 cubic yards of contaminated solids:
  - Oil contaminated soil
  - Used sorbent material
- 26,230 gallons of contaminated liquids:
  - Solvent
  - Antifreeze
  - Gasoline
  - Diesel
  - Used motor oil

Staff routinely conducts follow-up assessments to achieve 100% compliance in the Stormwater Discharge Permit program. In 2008, 56% of assessed operations demonstrated 100% compliance without a follow-up visit, demonstrating the success of the program and the educational efforts to keep business owners informed.

Included in 2008 was the assessment and permitting of a large treated groundwater discharge to Lady Bird Lake from the Stratus Block 21, the future home of the “W” development. Stratus Block 21 encountered relatively low levels of groundwater contamination while installing a three level underground parking garage. Historical records revealed that a former dry cleaning facility, located north of the lot, had a release of perchlorethylene (PCE), a common dry cleaning solvent. Although the levels detected at Block 21 are low, State law still requires monitoring and pretreatment of the groundwater prior to discharge to the storm sewer system. As a result, a large carbon filtration system has been installed in the parking garage that will pretreat an estimated 18,000 gallons of groundwater per day. PPR staff will conduct annual inspections of the pump and treat system and review monthly groundwater monitoring results to ensure compliance with City, State and Federal non-stormwater regulations.

## Coal Tar Sealant Ban Enforcement

Staff inspected 362 parking lots within the city limits to assess the amount of coal tar and non-coal tar sealant still available for release into the environment through surface erosion.

Investigators filed charges on one property where a coal tar asphalt blend had been applied in violation of the ban and began working with the property owners to verify that the coal tar material is removed from the environment.

Washington, D.C. became the second major unit of government in the nation to ever enact a coal tar sealant ban.

## Spills and Complaints Response Program

In 2008, 1,455 investigations were conducted. Investigators directed responsible parties in the removal of nearly 300,000 gallons and over 700 cubic yards of pollutants from the environment. The top five pollutants were:

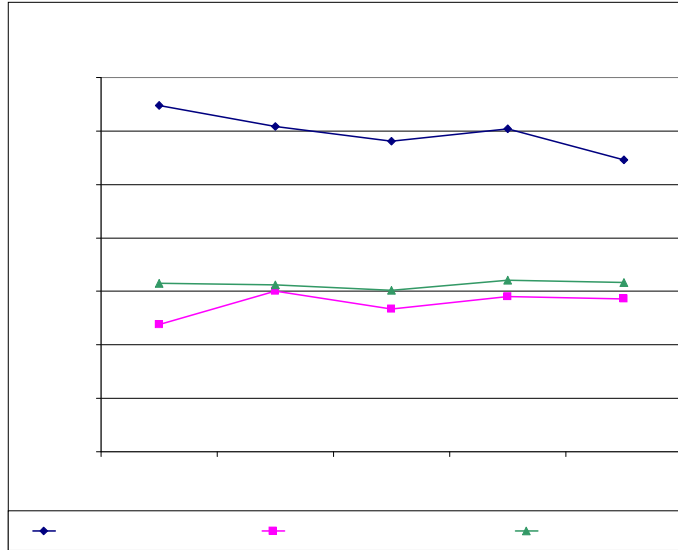


- Sewage from public and private system overflows
- Petroleum from improper vehicle repair practices/disposal and vehicle accidents
- Sediment from construction activities lacking proper controls
- Wastewater discharges, other than sewage
- Food grease from overfilled grease bins and overflowing grease traps

The remaining incidents where a pollutant was found were divided between yard wastes such as dumping leaves, grass clippings, and brush into creeks, chemicals like antifreeze or abandoned drums, and trash.

The total volume of waste recovered and disposed of, using the City's Rapid Remediation Contract, hit an all time high of 82,504 gallons in 2008, an increase of 10,742% from the 768 gallons collected in 2007. Over 81,000 gallons was collected in a single incident involving a ruptured abandoned underground storage tank in downtown Austin.

Figure 1-3: Total Spill Investigations and Pollutant Recovery Volumes



A major investigation was conducted in the Shoal Creek watershed. In response to an unusual number of complaints concerning black water, foul odors, and dead fish in Shoal Creek, Spills Program staff coordinated several investigations in conjunction with the Austin Water Utility and WPDRD’s Water Resource Evaluation Team. Sampling, dye tracing, and TV inspection of wastewater mains was conducted. Initial sampling showed unusually low levels of dissolved oxygen in the creek all the way from 6<sup>th</sup> Street to 34<sup>th</sup> Street. Continued investigations eventually led to the discovery and resolution of a number of water pollution problems including: a leaking sewer main in the creek at 9th Street, a leaking sewer main in the creek at 26th Street, illegal wastewater discharges near Medical Center Parkway, a blocked storm sewer line near 34th Street and Medical Parkway, and an illicit wastewater connection from a restaurant tied directly to a storm sewer at 24th Street. Spills staff continues to monitor the conditions in Shoal Creek.

**Pollution Prevention Improvements with City Operations**

Staff continued to work with various City departments to evaluate operations and practices at City properties to certify compliance with State and local environmental regulations. Staff helped identify activities considered most at risk for creating polluting discharges and developed and implemented plans to prevent such discharges. This year, the focus was on 20 fire stations operated

by the Austin Fire Department and assessed fueling operations, spill handling, chemical storage, vehicle maintenance procedures and the overall condition of the lots. Stormwater ponds were also checked for evidence of spills. AFD received 100% compliance at all 20 locations.

### **East Austin Environmental Initiative (EAEI)**



The EAEI was created in 1993 to address environmental issues in the area east of IH 35. The increase in environmental activism and awareness, as well as the desire to maintain equity throughout the City, highlighted the need for this effort. The area is bounded by IH 35 on the west, Ben White Boulevard/Oltorf Street on the south, Highway 183/Walnut Creek on the east, and Highway 183 on the north.

The goals of the EAEI are to identify and mitigate environmental problems and issues, increase the public's awareness of environmental protection programs and services, and to develop a community interest in pollution prevention and cleanup. These goals are achieved primarily through four City programs: Stormwater Discharge Permit Program, Spills and Complaints Response Program, Stormwater Monitoring Program, and the Brownfields Program.

As a part of the EAEI, 267 pollution investigations and 112 assessments were conducted that resulted in over 100,000 gallons and 250 cubic yards of pollutants removed from the environment. Additionally, staff sponsored a booth at several East Austin events such as the Hispanic Health Fest. Two EAEI newsletters providing area residents with information about EAEI events, efforts, and water quality information were created, printed, and distributed to East Austin libraries, senior centers, neighborhood/community/recreation centers, schools, APD offices, youth centers and organizations, many businesses that have requested them, YMCA branches, and health clinics.

In 2008, EAEI focused on coordinating an environmental assessment after historical dumping was discovered on City property and surrounding private property in the Rosewood neighborhood. The dump site was discovered during bulky trash removal. The assessment revealed elevated levels of lead and arsenic and the presence of pesticides. EAEI met with neighborhood residents and the City Environmental Board, and conducted numerous media interviews to keep everyone informed of the progress of this project. EAEI continues to work with City departments and consultants to remediate the site and make the area safe for public use.

## Education and Outreach Projects



The Pollution Prevention and Reduction Section (PPR) implements a number of outreach programs in response to common pollution causes and sources discovered through the 24-Hour Pollution Hotline.

The Austin Clean Water Partners (ACWP) Program is a cooperative effort between local businesses and the City of Austin Watershed Protection and Development Review Department. Businesses are encouraged to adopt shop practices that keep pollutants from entering storm drains and waterways. The program currently has close to 50 participants, who are provided with rewards that benefit both the shop operators and their customers. In 2008, a link to the ACWP website was added to the WPDRD website and now prospective applicants can access a wide variety of program information including instructional materials on marking storm drains, creating spill contingency plans, and participating in the Waste Reduction Assistance Program. The website also lists all the current Austin Clean Water Partners.

The Shade Tree Mechanic Program works with Austin's "at home" mechanics by providing them the tools and information to help protect the environment while doing their work. In 2008, the program assisted over 60 individuals.

The Food Service Environmental Assessment Program is a cooperative effort between local establishments in the East 6<sup>th</sup> Street Public Improvement District and the City of Austin to assure compliance with stormwater regulations. WPDRD staff worked with businesses and various other city departments to assure that practices such as sidewalk washing, alley flushing, and gum removal are in compliance with local, state and federal law. Currently, WPDRD is working with Solid Waste Services to reduce potential grease spills and spill cleanup costs by standardizing grease containers and moving to a single service yellow grease collection provider. PPR staff will continue to benchmark with other municipalities to determine what has been done to address stormwater problems related to collection and disposal of food grease.

## ***Water Quality Education***

The Water Quality Education group provides educational outreach to the citizens of Austin in order to prevent water pollution. Programs range from general awareness campaigns about our creeks, lakes, and aquifer to hands-on, science-based classes for students in the fifth-grade through high school. Working with WPDRD scientists, the group provides targeted education for adults based on problems identified through the various monitoring programs. Information on all the education programs can be found at: <http://www.cityofaustin.org/watershed/education.htm>

### **Scoop the Poop/Bull Creek Off-Leash Pet Area**

To address high bacteria levels in the off-leash pet area of Bull Creek, Education staff produced new signage, a brochure and giveaways for park users. Survey results demonstrated that there was an increase in awareness that pet waste pollutes water. About 57% of residents recognized that pet waste could produce high bacteria levels before the campaign whereas 88% indicated knowledge of the issue after the campaign.



### **Avoid Weed and Feed Campaign**

Three pilot neighborhoods were targeted for an educational campaign to reduce atrazine levels in their local spring. Atrazine is the herbicide most frequently used in weed and feed products. Neighborhood mailouts were jointly released with television advertising on KVUE and other Time Warner Cable stations. The Education



group sent three types of mailouts – one very brief, driving people to the website for more information and an opportunity to receive a free weeding tool, the second, providing brief reasons why not to use weed and feed, and a third mailing that included detailed information about the

neighborhood spring. Post-survey results in the neighborhoods that received the most detailed information indicated that 66% of the respondents had never used weed and feed, 8% still used weed and feed and 28% had stopped using the product. No one in the neighborhood with the least information requested a weeding tool and 38% still used the product while 23% stopped using it. Future campaigns will reflect these results and more comprehensive messages will be sent out. See [www.avoidweedandfeed.org](http://www.avoidweedandfeed.org).

### **Elementary Education**

A record 6831 AISD fifth graders received water quality education in 2008 through one of WPDRD's three elementary level programs: Earth Camp, a four-day, outdoor program, taught by City staff, Teacher-Led Earth Camp conducted by AISD teachers who have previously attended the full Earth Camp program, or Earth School, a one-hour, hands-on lesson offered in the classroom. See [http://www.cityofaustin.org/watershed/ec\\_main.htm](http://www.cityofaustin.org/watershed/ec_main.htm).

### **Grow Green**

144,500 Grow Green earth-wise landscaping fact sheets were distributed. Hits to the website, [www.growgreen.org](http://www.growgreen.org), reached 577,000 in 2008. A new and enhanced plant guide was also in progress and a new fact sheet, Diagnosing Problems, was produced.



### **Scoop the Poop**

In conjunction with the Parks department, the number of mutt mitts distributed in Austin's parks doubled over the last year to a record 2 million. See [www.scoopthepoopaustin.org](http://www.scoopthepoopaustin.org)



### **City-Wide Initiatives:**

#### **Green City Fest**

WPDRD led in organizing Austin's first Green City Festival at City Hall on October 13, 2007. The goal of the Green City Festival is to provide an event that offers Austinites answers to their questions on energy, water and resource efficiency, gardening, and all things green. It is a one-stop bonanza of environmental information with music and hands-on activities for the entire family. Eleven City departments and more than 30



non-profit groups exhibited. Speakers included the Mayor, City Manager and several Council Members. More than 4,500 Austinites attended this event. See [www.greencityfest.org](http://www.greencityfest.org).

### **Green Neighbor**

The former Clean Creek Challenge booklet was enhanced to provide a comprehensive guide for earth-wise action items that addresses all of the City's environmental missions. It was redesigned and renamed the Green City Challenge and now includes air quality and climate protection tips as well as water quality protection, water conservation and zero waste. See [www.cityofaustin.org/watershed/greenneighbor/](http://www.cityofaustin.org/watershed/greenneighbor/)



### **Green Garden Certified**

A new certification program is being prepared for landscape professionals. Along with five other City departments, WPDRD is leading to offer five, half-day trainings to the landscape community on environmentally-sound gardening. Participants who receive the training will also be required to pass a test on Green Gardening principles to be acknowledged by the City of Austin on the web as having become Green Garden Certified. See [www.ci.austin.tx.us/greengarden/certified.htm](http://www.ci.austin.tx.us/greengarden/certified.htm)



### ***Water Quality Planning & GIS***

The Water Quality Planning and GIS staff worked on a wide range of projects during 2008.

### **Colorado River Buffer Ordinance**

WPDRD staff provided support for a new ordinance for protection of the Colorado River that passed in February 2008. The ordinance increases the effective width of the Critical Water Quality Zone buffer, which provides protection of the river and its riparian zone. Under the new regulation, the buffer zone will start at the bank's edge, the ordinary high water mark, rather than the set river centerline.

### **Pond Database Upgrade**

Work continued on the pond geodatabase upgrade. Staff completed accurate data entry for over 4,600 commercial and over 850 residential stormwater controls. The work will be integrated into program improvements for inspection and maintenance of these ponds.

## **Southern Edwards Aquifer Recharge Zone Mapping**

Council adopted a revised map of the recharge zone for the Barton Springs segment of the Edwards Aquifer to match the State's map approved earlier by the Texas Commission on Environmental Quality

## **Abandoned Landfills**

In cooperation with the Solid Waste Services Department, WPDRD is addressing environmental protection concerns and issues related to the more than 70 abandoned landfills within the City of Austin's jurisdiction. Almost all of these were operated prior to any formal State or Federal landfill regulations. They range from small, illegal dumpsites to large, municipal waste landfills. These sites were evaluated in 2004. Only a relatively small number were identified as needing any action and those were prioritized according to level of environmental threat.

In addition to known landfills, formerly unknown sites are occasionally identified during development or by area residents. In 2008 two abandoned landfills received significant activity, one in the Rosewood area and one along Loop 360. See the prior discussion of the Rosewood dumpsite in the section on the East Austin Environmental Initiative (p. 1-22 )

The Loop 360 site is a former rural dumpsite located above Barton Creek near Loop 360. While not believed to be a significant environmental threat, its location and the presence of exposed waste justified a complete assessment and consideration for remediation. The site assessment was completed in 2008. No significant environmental threats were found, but due to the proximity to Barton Creek, and its location in the Barton Springs Recharge Zone and in a greenbelt, a remediation plan will be developed in 2009.

## **ON-GOING FLOOD HAZARD REDUCTION PROGRAMS**

### ***Floodplain Management***

#### **Floodplain Management and Flood Early Warning System**

The Floodplain Management activity maintains hydrologic/hydraulic floodplain models, maintains floodplain maps, provides floodplain information to the public, reviews/processes floodplain variance requests, reviews floodplain development proposals, and coordinates the City's participation in the National Flood Insurance Program to protect lives and property from flood hazards. The Flood Early Warning System monitors storm events, assesses flood hazard magnitude

and location, and provides flood warnings to the public and emergency responders to protect lives and property from flood hazards. Floodplain Management and Flood Early Warning System (FEWS) Services major accomplishments include:

- **Completion of the FEMA Flood Map Modernization Project.** This five year, \$4,760,000, joint City/FEMA initiative to develop updated floodplain models and digital floodplain maps for all of the City and Travis County. The products provide more accurate floodplain maps to the public and provide new floodplain models to guide future land development activities, including water quality buffer zones. With the implementation of Internet based access, accessibility of floodplain information has been greatly improved.
- **FEWS Hardware and Software System Upgrades.** The FEWS section went through a significant program upgrade on the majority of the system computer hardware based on the result of an overall system evaluation in FY2007. These upgrades increased the efficiency and accuracy of the City's response to flood hazards.
- Number of development assistance meetings conducted was 199, the number of floodplain information requests was 2,622, and the number of floodplain variances processed was 10.
- Completion of the hydrologic and hydraulic studies for the Gilleland Creek, Elm, and Decker Creek watersheds. These studies create updated floodplain boundaries, which will be used for development regulation including water quality buffer zones.

### ***Flood Hazard Mitigation***

The goal of the Flood Hazard Mitigation program is to reduce existing flood hazards to protect lives and property and to maintain regulatory code and design criteria for new development to protect lives and property from flood hazard increase.

### **Creek Flood Hazard Mitigation**

There are currently over 7,000 building structures and 400 roadway crossings located within the boundary of creek floodplains. Improvement projects are planned, designed and constructed to reduce flood hazards for houses, commercial buildings and roadway crossings due to out of bank creek overflows during extreme storm events. Project types include regional detention basins, flood walls/levees, bridge/culvert flow capacity increases, buyout of floodplain properties and stream channel enlargement.

Creek Flood Hazard Mitigation Services accomplishments include:

- **Onion Creek Flood Hazard Mitigation, Ecosystem Restoration, & Recreation.** The US Army Corps of Engineers (USACE) completed a Reconnaissance Study in 1999 and the Interim Feasibility Study in December 2006. The Interim Feasibility Study identified a preferred flood hazard mitigation, ecosystem restoration, and recreational facility project for the lower Onion Creek watershed. In this area, approximately 777 residential house structures are in the Onion Creek floodplain. Many of these structures flooded in October 1998 and November 2001. The plan is to evacuate (buyout) all houses in the 25-year floodplain. The total number of houses proposed for buyout is 410. To date, the City using City funding and FEMA Hazard Mitigation Grant Program (HMGP) funding has purchased a total of 223 properties since 1999 in the study area. There are 260 properties that remain to be purchased in the Corps study or project area. The project also includes ecosystem restoration and recreational facilities. The U.S. House of Representatives and the U.S. Senate passed the Water Resources Development Act of 2007 (WRDA 2007) to authorize the project in November 2007. However, this did not include the Congressional funding appropriation of up to \$46 million. No Federal funding will be included in the FY 2009 national budget for project implementation. The City's cost share of up to \$28 million for the project was approved in the November 2006 bond election. The City hired a consultant in the fall of 2008 to aid with the remaining 260 buyouts. The estimated time frame to complete the remaining 260 buyouts at a cost of about \$55 million is three to five years depending on the timing and level of federal funding. The estimated cost of the park and ecosystem restoration is about \$10.2 million.
- **Williamson Creek Flood Hazard Mitigation and Ecosystem Restoration.** The USACE completed a Reconnaissance Study in 1999 and the Interim Feasibility Study in December 2006. The USACE was not able to recommend a viable solution in the Williamson Creek watershed due to cost issues associated with the ecosystem restoration proposal. The Austin City Council approved a resolution on January 17, 2008 authorizing additional flood hazard reduction study activities for the Williamson Creek watershed by the USACE. This study specifically excluded the Broken Bow area from further evaluation of structural flood hazard reduction solutions due to objections from the neighborhood. It is anticipated that the study will be completed by January 2009.

- **Completion of HMGP Onion Creek Voluntary Buyout Project.** The City completed the voluntary buyout of 114 structures located in the floodplain along lower Onion Creek. The buyouts were funded with a combination of City funding and FEMA Hazard Mitigation Grant Program (HMGP) funding awarded through the State of Texas. The total amount of grant funding approved by the State was \$8.7 million which is the largest grant received by the WPDRD. It allowed for acceleration of floodplain buyouts in the lower Onion Creek area where the living space of several houses is up to 10 feet below the 100 year floodplain elevation. This area was impacted significantly during the floods of October 17, 1998 and November 15, 2001. Owners and occupants were provided with relocation assistance from the City to secure housing outside of flood hazard areas.
- **Completion of the Upper Walnut Creek Regional Detention Facility (Pond “G”).** Pond “G” provides both flood hazard and stream erosion hazard reduction in the upper Walnut Creek watershed. In addition to reducing flood and erosion hazards to existing house structures, the pond will provide additional capacity to support Regional Stormwater Management Program participation for the contributing watershed. Flood and erosion hazard reduction benefits will extend to about 5 miles downstream of the dam (downstream of Metric Boulevard) providing increased protection for 77 structures (homes, businesses and roadways).
- **Completion of the Thornberry Road Culvert Upgrade/Channel Stabilization Project.** The Thornberry Road low-water crossing of a tributary to Carson Creek presented a significant safety hazard for roadway traffic. The improvements included construction of a bridge to safely convey storm flows under the roadway and stabilization of 1200 feet of highly degraded channel.
- **Stormwater Pond Dam Safety Program:** The City of Austin is responsible for more than 60 high hazard stormwater dams. This program has several on-going activities including modernization of the high hazard dams, dam safety inspection and evaluation, developing emergency action plans, developing maintenance plans, revising the Drainage Criteria Manual to incorporate dam safety criteria, and consulting with the One Stop Shop. In FY2007-2008, the designs for two dam modernization projects (Sendera and Great Northern Dams) were completed. In addition, the program manager communicates with the TCEQ regarding dam safety deficiencies as identified in TCEQ inspection

reports of City of Austin stormwater dams. The TCEQ has requested that the City evaluate the removal of trees from City of Austin stormwater dams. The program manager continues to work with other WPDRD staff to reach an agreement to remove the trees.

- **Upgrade of the Los Indios Culvert Crossing.** Construction commenced in FY2007-2008 with completion estimated by December 31, 2008. The culvert upgrade at Los Indios will allow for the safe conveyance of stormwater flows for a 10-year storm event and reduce the depth of flooding of the roadway during 25 and 100-year storm event.
- Acquisition and removal of 10 houses in the floodplain of Carson Creek through the Voluntary Buyout Program.

### **Localized Flood Hazard Mitigation**

There are currently 3,300 structures at risk of flooding due to inadequate storm drain systems. Improvement projects are planned, designed and constructed to reduce local flood hazards for houses, commercial buildings and roadways due to inadequate storm drain systems. Project types include curb inlets, area inlets, storm drain pipe-networks, drainage ditch improvements, and small detention pond improvements.

Localized Flood Hazard Mitigation (LFHM) Services accomplishments include:

- Construction
  - Williamson Creek – Bannockburn Storm Drain Improvements Project. Major stormdrain improvements for Convict Hill Road from Lochinvar Street to just west of Greenock Street, including the side streets of Loch Lommond and Greenock located in the Williamson Creek watershed to address major house and street flooding conditions. Construction began in August 2008.
- Design
  - Town Lake – East 4<sup>th</sup> Street/Pedernales Storm Drain Improvements Project. Construct storm drain system improvements for the area from Town Lake up to E. 7th Street area that are currently served by the Pedernales Storm Drain Tunnel. Benefit - mitigate major flooding for 15 houses/yards and major street flooding. This project is anticipated to begin construction in FY2010.

- Fort Branch – Oaklawn Subdivision Storm Drain Improvements Project. Construct storm drain system improvements generally along and around Meander Drive. The project will reduce localized flooding threat to over 250 homes in the area in addition to the documented 17 building and yard flooding occurrences. Construction was expected to start in FY 2009 but a water line was added to the project and construction is anticipated to begin in FY2010.
- Blunn Creek – Long Bow Storm Improvements Project. Construct storm drain system improvements immediately north of the St. Edwards University campus. The neighborhood is bounded by Blunn Creek, St. Edwards University, Congress Avenue, and Oltorf Street. Benefit - mitigate flooding for 24 houses/yards. Construction was expected to start in FY 2009 but the design engineer has not been able to meet the schedule and construction is anticipated to begin in FY2010.
- Shoal Creek – Allandale Storm Improvements Project. Design for mitigating localized flooding in the Allandale neighborhood. The portion of study for Allandale is bounded by Burnet Road, Allandale Road, MoPac Boulevard, and White Horse Trail. Allandale reports 16 houses/yards that have flooded. Construction was expected to start in FY 2008 but the design engineer did not comply with City code and the design was restarted in FY 2009. Construction is anticipated to begin in FY2011.
- Shoal Creek – Ridgelea Storm Improvements Project. Construct approximately 2500 linear feet of storm drain along Bull Creek Road, 39th Street, and Idlewild Rd to Shoal Creek. Project will mitigate flooding for 10 houses/yards. The design engineer exhausted the design fee but did not provide any bid documents. A new consultant will be hired. Construction is anticipated to begin in FY2013.
- Williamson Creek - Blarwood Storm Improvements Project. Construct storm drain system improvements generally along Blarwood Drive. Project will reduce localized flooding threat to over 250 homes in the area in addition to the documented 20 building and yard flooding occurrences. The design engineer did not verify compliance with City Code. A new consultant will be hired. Construction is anticipated to begin in FY2012.

- Preliminary Engineering
  - Shoal Creek – Brentwood Storm Improvements Project. Construct storm drain system improvements for the area generally along Brentwood, Payne, and Karen Avenues. Project will mitigate flooding for 12 houses/yards. The project has very limited options to avoid an adverse impact to the Hancock Branch of Shoal Creek. Construction is anticipated to begin in FY2013.
  - Shoal Creek – Madison Storm Improvements Project. Construct storm drain system improvements for the area generally along Madison Avenue. Project will mitigate flooding for fourteen houses/yards. The project has very limited options to avoid an adverse impact to the Hancock Branch of Shoal Creek. Construction is anticipated to begin in FY2013.
  - East Bouldin Creek – Euclid\Wilson Storm Improvements Project. Construct storm drain system improvements for the area generally between Euclid and Wilson Streets and East Bouldin Creek. Project will mitigate flooding for thirteen houses/yards. The preliminary engineering completion was delayed due to the need to expand the water quality analysis. Construction is anticipated to begin FY 2012.
- Increased flood hazard protection for six structures due to completion of storm drain system improvement projects on Palm Circle and January Drive.

## Section 2. Parks and Recreation

With over 235 parks covering more than 17,500 acres, the park system remains one that is nationally recognized as having an outstanding park to population ratio. But, as Austin and Central Texas continue to grow at a rapid pace, open space disappears at a corresponding rate.

The citizens of Austin continue to support the acquisition of parks and open space. The bond election in 2006 yielded approximately \$20 million for the acquisition of inner-city parks, regional parks and greenways. Although there is a city-wide need for more parkland, there is a renewed emphasis on riparian corridors along the Colorado River and creeks in the desired development zone on the east side of Austin. There is a concern about vanishing prairie lands, and the expanding growth corridor surrounding State Highway 130.

Although the City of Austin remains the largest provider of parks and open space in the region, other providers and partners contribute significantly to open space preservation. Travis County has implemented a Parkland Dedication Ordinance and works in concert with Austin to conserve regional open space. Williamson and Hays Counties have also assumed aggressive parkland acquisition programs that have been supported by their respective bond initiatives.

The Austin Parks and Recreation Department works with a variety of partners to develop a regional open space plan. The following describes some of those efforts:

- *Greenprinting* is a county-wide land conservation effort that was led by the Trust for Public Land. Based on input from stakeholders, a Geographic Information System was used to identify and prioritize high priority natural resources. A map was developed to identify land conservation and acquisition areas.
- *Austin to Bastrop Colorado River Partnership* is a group formed to educate the region on the values of the Colorado River corridor. These values include wildlife habitat, historic features, water quality and quantity, native plant diversity, and recreational opportunities.
- Regional entities along the *State Highway 130 Corridor* have joined to participate in planning efforts for rapidly growing commercial and residential areas along the corridor. The desired goal is to help realize cohesive, sustainable and balanced growth in this region. Open space preservation is a high priority in the plans. The group includes the Cities of Austin, Pflugerville, Round Rock and Georgetown. Other participants include

Travis, Williamson and Hays Counties; the Capital Area Planning Council, Envision Central Texas, and a variety of citizen and professional groups.

- The Austin and Travis County Parks Departments are working with the Austin Water Utility and the U.S. Army Corps of Engineers for floodplain restoration of the Onion and Williamson Creek watersheds. The plan continues the buyout of properties affected by serious flooding and the conversion of these lands to parkland.
- The Parks and Recreation Department continues to work with Envision Central Texas, an organization that seeks to achieve a balance between rapid urban growth and the preservation of open space.

The Long Range Plan for Land, Facilities and Programs updated plan for parks and recreation is underway. The “gap analysis” has been performed to identify areas within the City that are park deficient. The plan will also address other open space needs and will be mainly focused on linear and other inter-connected greenspaces that will act as a park system. The “systems” approach provides a healthy, sustainable ecology which supports the natural environment, provides recreation and linkages to the greater community.

The Long Range Plan for Land, Facilities and Programs proposes to lead the Greenways and Destination Park acquisition plan aimed at developing a “green infrastructure” in rapidly growing areas of Austin. This land preservation plan is based on stream corridors that provide wildlife habitat, riparian zone protection, and flood control as well as recreational opportunity. Open space and trails are being used to connect parks to other parks and newly developing neighborhoods to schools. This connectivity not only provides for a healthy community but also helps to reduce vehicular traffic on local roadways.

The Parks and Recreation Department not only seeks to expand its park system, but also to restore existing parkland to a healthy, natural state. One of the most ecologically stressed park areas is Pease Park and the Shoal Creek Greenbelt. Due to its popularity, this area is losing its sustainability. To correct this trend, the Department is working with local naturalists, the Austin Parks Foundation, and the Lady Bird Johnson Wildflower Center to devise a restoration plan. The plan includes a parkland ecological assessment and restoration recommendations. It is hoped that this plan can serve as a model for continued restoration efforts throughout the park system.

## **Section 3. Solid Waste Services**

### **KEEPING AUSTIN CLEAN AND GREEN**

#### ***At the curb and beyond***

Curbside collections of garbage, recyclables, and yard trimmings are arguably the most visible of all City services. Residents are accustomed to seeing Solid Waste Services' trucks in their neighborhoods on a weekly basis.

There are, however, numerous activities that the department undertakes to improve Austin's environment that are less obvious to the general public. Some of these "behind the scenes" accomplishments in 2007/2008 included the following:

- The Household Hazardous Waste facility serviced 12,316 households and diverted approximately 976,460 pounds of waste.
- Street cleaning crews swept 7,769 tons of material from city roadways.
- Litter Control cleaned 439 illegal dumpsites and 779 right-of-ways.
- Litter Abatement crews collected 2,747 tons of storm debris during the months of May through July.
- Code Enforcement investigated 10,036 property abatement complaints and responded to 6,955 zoning code complaints.

Solid Waste Services continues to seek and find creative ways to green operations while maintaining a high level of customer service. Measures such as establishing temporary brush collection sites around town during peak seasons and switching crews to a 6:00 A.M. start time have increased operational efficiency, reduced fuel usage and lowered costs. The department is also committed to expanding its use of alternative fuels and reducing vehicle emissions. In FY2007/2008, approximately 18% of Solid Waste Services' fleet ran on alternative fuels. This year, the department also began utilizing biodiesel in some collection vehicles.

#### ***Initiatives***

Solid Waste Services is constantly setting the bar higher on customer service and sustainable practices. Key accomplishments in FY2007/2008 included:

- Expanding service at the Household Hazardous Waste Facility by adding one Saturday collection day per month;

- An extensive education campaign to prepare the public for the October 2008 launch of Single Stream Recycling, designed to add the convenience of all-in-one-cart collection and more materials to curbside recycling;
- The Campaign Recycle election sign recycling pilot project, which resulted in a partnership with Cycled Plastics to provide a recycling option for Coroplast™ signs from municipal elections;
- A sidewalk power washing pilot program in the downtown area;
- Setting up glass bottle recycling in the Central Business District;
- Partnering with local retailers to promote the sale of reusable bags and increase plastic bag recycling; and
- Hiring a consultant to develop Austin’s Zero Waste Plan, a strategy for achieving zero waste sent to landfills by 2040.

***Public outreach***

Public education plays a vital role in helping Austin move from a consuming to a conserving society. Solid Waste Services employs new ways to keep the “reduce, reuse, recycle” message fresh.

Captain Can, Solid Waste Services’ own recycling superhero, reaches elementary school children through interactive, musical skits. The department also offers a math-based recycling class to third graders. In FY2007/2008, 11,202 AISD students in kindergarten through second grade were treated to *Captain Can and the Birthday Surprise*, and 3,313 third graders participated in “Recycling Adds Up” classes.

A long-standing tradition is Solid Waste Services’ annual art contest for middle school students. Young artists submit creative illustrations depicting the importance of recycling right, and the winning entry is displayed on two local billboards. Adam Hamze from Bailey Middle School won the contest in 2007.

The Block Leader Program, which originated during the infancy of Austin curbside recycling in the 1980s, is strong. More than 380 volunteer Block Leaders throughout Austin help spread the word to their neighbors about recycling and other Solid Waste Services programs. Throughout the year, department staff provided printed materials to Block Leaders to facilitate this valuable messenger service.

## ***Awards***

The department received the following recognition in FY2007/2008:

- The Cans for Cash City Recycling Challenge Award from the United States Conference of Mayors, the Novelist Corporation and Keep America Beautiful, Inc., for promoting aluminum can recycling;
- The Wes Castolenia Code Enforcement Officer of the Year Award from the Code Enforcement Association of Texas (CEAT), received by employee Wes Buckner for his outstanding work;
- The Silver Spur/Best of Texas Bronze Award from the Texas Public Relations Association (TPRA) for public relations work on the proposed “Green District” of centralized, state-of-the-art recycling resource facilities;
- The American Association of Code Enforcement award for positive marketing in the community; and
- The 2007 Regional Recycling Leadership Award from the Rechargeable Battery Recycling Corporation (RBRC), received by the Household Hazardous Waste program for its efforts in rechargeable battery recycling.

## ***Diversion***

The diversion rate is the yardstick the department utilizes to measure its progress in diverting curbside residential waste from area landfills. Although SWS also diverts much of the tonnage of bulky items and large brush collected from residents, only the tonnage of yard trimmings and recyclables from weekly curbside collections factors into the official diversion rate. In FY2007/2008, Solid Waste Services’ diversion rate was 28.81%, with a recycling participation rate of 71% citywide.

Solid Waste Services owns and operates a Material Recovery Facility (MRF), where curbside recyclables are sorted and sold. The City’s MRF is also open to private haulers. In 2007/2008, the MRF processed 49,419 total tons of material, approximately 11% over the amount processed the previous fiscal year. The facility sold a total of 40,181 tons of recyclables and generated over \$3.6 million in total revenue.

Table 3-1: Residential Curbside Collection

| Fiscal Year | Residential Household | Garbage (tons) | Recycling (tons) | Yard Trimmings (tons) | Total (tons) | Diversion Rate |
|-------------|-----------------------|----------------|------------------|-----------------------|--------------|----------------|
| FY 91-92    | 112,400               | 128,333        | 13,899           | 0                     | 142,232      | 9.77%          |
| %           |                       | 90.23%         | 9.77%            | 0.00%                 | 100.00%      |                |
| FY 92-93    | 121,100               | 125,881        | 16,535           | 510                   | 142,926      | 11.93%         |
| %           |                       | 88.07%         | 11.57%           | 0.36%                 | 100.00%      |                |
| FY 93-94    | 123,300               | 122,000        | 22,428           | 4,858                 | 149,286      | 18.28%         |
| %           |                       | 81.72%         | 15.02%           | 3.25%                 | 100.00%      |                |
| FY 94-95    | 125,300               | 114,067        | 22,732           | 11,307                | 148,106      | 22.98%         |
| %           |                       | 77.02%         | 15.35%           | 7.63%                 | 100.00%      |                |
| FY 95-96    | 127,200               | 118,298        | 21,340           | 9,735                 | 149,372      | 20.80%         |
| %           |                       | 79.20%         | 14.29%           | 6.52%                 | 100.00%      |                |
| FY 96-97    | 131,200               | 113,059        | 24,776           | 14,133                | 151,969      | 25.60%         |
| %           |                       | 74.40%         | 16.30%           | 9.30%                 | 100.00%      |                |
| FY 97-98    | 132,000               | 107,272        | 26,107           | 18,242                | 151,621      | 29.25%         |
| %           |                       | 70.75%         | 17.22%           | 12.03%                | 100.00%      |                |
| FY 98-99    | 134,643               | 108,228        | 26,104           | 15,593                | 149,925      | 27.81%         |
| %           |                       | 72.19%         | 17.41%           | 10.40%                | 100.00%      |                |
| FY 99-00    | 136,200               | 109,242        | 26,797           | 16,686                | 152,725      | 28.47%         |
| %           |                       | 71.53%         | 17.55%           | 10.93%                | 100.00%      |                |
| FY 00-01    | 141,015               | 115,268        | 28,594           | 16,747                | 160,609      | 28.23%         |
| %           |                       | 71.77%         | 17.80%           | 10.43%                | 100.00%      |                |
| FY 01-02    | 142,651               | 116,492        | 28,446           | 18,636                | 163,574      | 28.78%         |
| %           |                       | 71.22%         | 17.39%           | 11.39%                | 100.00%      |                |
| FY 02-03    | 144,414               | 118,580        | 30,348           | 18,356                | 167,284      | 29.11%         |
| %           |                       | 70.89%         | 18.14%           | 10.97%                | 100.00%      |                |
| FY 03-04    | 152,869               | 122,469        | 30,553           | 18,232                | 171,254      | 28.49%         |
| %           |                       | 71.51%         | 17.84%           | 10.65%                | 100.00%      |                |
| FY 04-05    | 155,830               | 123,225        | 28,776           | 19,237                | 171,238      | 28.04%         |
| %           |                       | 71.96%         | 16.8%            | 11.23%                | 100.00%      |                |
| FY 05-06    | 160,179               | 129,204        | 29,047           | 20,697                | 178,948      | 27.80%         |
| %           |                       | 72.20%         | 16.23%           | 11.57%                | 100.00%      |                |
| FY 06-07    | 164,617               | 135,363        | 30,504           | 20,315                | 186,182      | 27.30%         |
| %           |                       | 72.70%         | 16.38%           | 10.91%                | 100.00%      |                |
| FY 07-08    | 173,067               | 140,380        | 32,789           | 24,027                | 197,196      | 28.81%         |
| %           |                       | 71.19%         | 16.63%           | 12.18%                | 100.00%      |                |

Table 3-2: Residential Brush/Bulky Collection

| Fiscal Year | Residential Household | Disposed Bulky (tons) | Recycled Bulky (tons) | Brush (tons) | Total (tons) | Diversion Rate |
|-------------|-----------------------|-----------------------|-----------------------|--------------|--------------|----------------|
| FY 93-94    | 123,300               | 4,125                 | 607                   | 519          | 5,251        | 21.44%         |
| %           |                       | 78.56%                | 11.56%                | 9.88%        | 100.00%      |                |
| FY 94-95    | 125,300               | 4,605                 | 660                   | 1,136        | 6,401        | 28.06%         |
| %           |                       | 71.94%                | 10.31%                | 17.75%       | 100.00%      |                |
| FY 95-96    | 127,200               | 3,937                 | 463                   | 1,690        | 6,090        | 35.35%         |
| %           |                       | 64.65%                | 7.60%                 | 27.75%       | 100.00%      |                |
| FY 96-97    | 131,200               | 6,062                 | 649                   | 1,977        | 8,688        | 30.23%         |
| %           |                       | 69.77%                | 7.47%                 | 22.76%       | 100.00%      |                |
| FY 97-98    | 132,000               | 3,814                 | 485                   | 1,309        | 5,607        | 31.98%         |
| %           |                       | 68.02%                | 8.64%                 | 23.34%       | 100.00%      |                |
| FY 98-99    | 134,643               | 4,638                 | 1,450                 | 1,823        | 7,911        | 41.37%         |
| %           |                       | 58.63%                | 18.32%                | 23.05%       | 100.00%      |                |
| FY 99-00    | 138,700               | 4,472                 | 935                   | 2,081        | 7,488        | 40.28%         |
| %           |                       | 59.72%                | 12.48%                | 27.79%       | 100.00%      |                |
| FY 00-01    | 143,803               | 6,564                 | 1,330                 | 3,175        | 11,069       | 40.70%         |
| %           |                       | 59.30%                | 12.01%                | 28.68%       | 100.00%      |                |
| FY 01-02    | 144,806               | 7,404                 | 1,149                 | 3,495        | 12,048       | 38.55%         |
| %           |                       | 61.45%                | 9.54%                 | 29.01%       | 100.00%      |                |
| FY 02-03    | 146,569               | 7,334                 | 754                   | 3,560        | 11,648       | 37.04%         |
| %           |                       | 62.96%                | 6.47%                 | 30.56%       | 100.00%      |                |
| FY 03-04    | 152,869               | 7,112                 | 389                   | 5,050        | 12,551       | 43.34%         |
| %           |                       | 56.66%                | 3.10%                 | 40.24%       | 100.00%      |                |
| FY 04-05    | 162,024               | 7,241                 | 293                   | 4,797        | 12,330       | 43.34%         |
| %           |                       | 58.72%                | 2.37%                 | 38.90%       | 100.00%      |                |
| FY 05-06    | 166,924               | 7,706                 | 211                   | 4,464        | 12,381       | 37.76%         |
| %           |                       | 62.24%                | 1.70%                 | 36.06%       | 100.00%      |                |
| FY 06-07    | 171,535               | 7,199                 | 207                   | 6,614        | 14,020       | 48.65%         |
| %           |                       | 51.35%                | 1.48%                 | 47.18%       | 100.00%      |                |
| FY 07-08    | 174,164               | 7,530                 | 203                   | 7,401        | 15,134       | 50.24%         |
| %           |                       | 49.76%                | 1.34%                 | 48.90%       | 100.00%      |                |

### ***Commercial waste reduction and recycling***

Solid Waste Services has increased the amount of business waste diverted from area landfills through waste reduction and recycling. The department implemented several programs that focus on Austin's commercial waste stream.

Through the Waste Reduction Assistance Program (WRAP), site visits to business identify opportunities to source reduce and recycle their wastes. In FY2007/2008, WRAP assisted 510 businesses with various waste issues. WRAP also continued to promote the WasteSMART program, recognizing Austin businesses with exemplary waste reduction accomplishments. In 2007, Silicon Labs led the way as the first company to merit WasteSMART status, with notable achievements such as preventing the disposal of an estimated 300,000 plastic water bottles that year by installing filtered water stations in break rooms and providing reusable polycarbonate bottles to employees. By the end of FY2007/2008, 12 local businesses achieved WasteSMART status.

Solid Waste Services administers the City of Austin's Commercial/Multifamily Recycling Ordinance, which requires businesses with at least 100 onsite employees and apartment complexes with a minimum of 100 units to set up recycling programs. Department staff monitor compliance with the recycling ordinance and provide technical assistance in setting up recycling programs that meet requirements. In 2007/2008, 399 contacts were made with the community regarding the ordinance. Since the recycling ordinance went into effect in 1999, business owners and property managers have reported 398,788 tons of material recycled.

The department has also set up cardboard and paper recycling for companies in the Central Business District contract area. In 2008, glass bottle recycling was also introduced to bars and restaurants located in this area. Downtown businesses recycled 294 tons of cardboard and paper and 56 tons of glass bottles in FY2007/2008. Through the On the Job Recycling Program, Solid Waste Services provides recycling collection to City of Austin offices. In 07/08, City facilities recycled 516 tons of material.

### ***Hazardous waste management***

The City of Austin started collecting household hazardous waste (HHW) at annual collection events in 1986. Participation grew from 450 households generating 37,000 lbs. of hazardous waste in 1986 to 1,750 households generating 150,000 lbs. of hazardous waste in 1990. This material was diverted from solid waste or sanitary and storm sewer streams to recycling or proper treatment and

disposal at EPA-permitted hazardous waste treatment facilities. In 1991, the City completed construction of a permanent HHW Collection Facility. For two years, the HHW Facility was open on one Saturday every other month for home chemical collection. Participation again increased to 3,300 homes generating over 200,000 lbs. of hazardous waste in 1992.

In 1993-1994, the Solid Waste Services Department began weekly (Wednesday, 12:00 pm to 7:00 p.m.) collections. The City of Austin HHW Program completed its sixth year of weekly collections in September of 1999. Nearly 43,000 households were serviced in those six years, diverting over 3.1 million pounds of hazardous waste (Table 3-1, and Table 3-2). On January 4, 2000, this program opened at its new larger facility at 2514 Business Center Drive and implemented a twice-weekly collection schedule (Tuesdays and Wednesday, 12:00 pm to 7:00 pm). During FY07/08, the program began to collect waste the first Saturday of each month (7:00 am to 12:00 pm), as well as every Tuesday and Wednesday (12:00 pm to 6:00 pm). The Saturday collections made up 18% of the yearly participation. This includes a special HHW event held in north Austin. All total for FY2007/2008, the HHW Program serviced 12,316 households and diverted approximately 976,460 pounds of household hazardous waste. Table 3-3 provides an overview of historical results as the Household Hazardous Waste Program progressed from its inception as an annual program to its current weekly program.

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If this waste were not collected, it would remain in homes or be discarded with the risk of injury to Solid Waste Services workers and/or pollution through the solid waste stream, wastewater, or even storm sewer. The City's HHW has serviced over 130,000 households and collected over eleven (11) million pounds of household hazardous waste for recycling or proper disposal since the program's inception in 1986. Not only has this program safely diverted hazardous waste from improper dumping, the landfill, and wastewater systems, it also substantially increases the safety of solid waste workers who may be exposed to such chemicals during garbage collection or at the landfill. The overall purpose of the program is also to increase the public's awareness of the hazards of these materials at home and in the waste stream, and to encourage alternative behaviors that lead to wiser use of such materials and reduction in the generation of these wastes.

Although overall HHW budgetary costs have increased significantly since 1986, the overall program cost per participating household is less than \$30. Disposal costs per household have been reduced from \$132.00 to between \$25.00 and \$30.00 largely through hands-on management (bulking

compatible materials, decanting aerosols, crushing paint cans, etc.) and enhanced recycling (batteries, antifreeze, paint, etc.). Competitive bidding for waste disposal has also brought the reduced costs. In addition, the HHW Program coordinates a household battery-recycling program with collection points at retail outlets throughout the City, so customers can deposit old batteries when they buy new ones. Although it is not practical to keep count of households recycling batteries at retail and school outlets, the number exceeds several thousand annually.

Table 3-3: COA Household Hazardous Waste Collection Program (FY 1986 – 2008)

|                             | <b>Annual Events<br/>1986-1990</b> | <b>Quarterly Events<br/>1991-1993</b> | <b>Weekly Schedule<br/>1994-1999</b> | <b>Twice-weekly Schedule<br/>2000-2007</b> | <b>Twice-weekly, One Saturday per Month<br/>2008</b> | <b>Total</b> |
|-----------------------------|------------------------------------|---------------------------------------|--------------------------------------|--|--|--------------|
| Households                  | 5,185                              | 11,375                                | 42,872                               | 65,089                                     | 12,316   | 136,837      |
| Volume HHW (lbs)            | 425,203                            | 731,052                               | 3,125,250                            | 6,126,824                                  | 976,460  | 11,384,789   |
| Waste Oil Recycled (gal.)   | 11,750                             | 12,885                                | 51,019                               | 52,786                                     | 8,885  | 137,325      |
| Lead Acid Batteries         | 1,957                              | 1,350                                 | 4,798                                | 10,543                                     | 1,597  | 20,245       |
| Recycled Latex Paint (gal.) | N/A                                | 3,169                                 | 26,925                               | 53,016                                     | 5,660  | 88,770       |
| Disposal Cost               | \$429,079                          | \$913,248                             | \$1,531,172                          | \$1,847,465                                | \$357,206  | \$5,078,170  |
| Disposal Cost per Household | \$83                               | \$80                                  | \$36                                 | \$29                                       | \$29   | \$37         |

One of the most successful recycling ventures is the recycled latex “Old Paint.” Good quality latex paint is segregated, bulked, and shipped to a paint plant in the Austin area. The paint is re-blended to a good quality specification, containerized, and picked up by the HHW Program for distribution to community improvement projects and low-income housing building or refurbishing. Since 1991/1992, over 88,000 gallons of paint have successfully been re-blended and distributed to worthwhile projects, including those completed by Habitat for Humanity, Casa Verde Builders, and Urban Youth Corps. Recycling paint has conservatively contributed over \$500,000 in material costs. The Capital Area Corporate Recycling Council awarded the “Old Paint” Recycling Program a first place “Closing the Loop” award in 1996.

Relocating to the new facility allowed for the opening of a Product Reuse Center where citizens can obtain new or unused material. This material includes paint and paint products,

automotive products, cleansers, and garden products (excluding restricted or prohibited pesticides). During FY2007/2008, the product reuse efforts diverted over 50,230 pounds of new or unused products, saving almost \$8,800 in disposal costs.

The HHW Program is open Austin residents and Travis County residents outside the city limits. Participation and hazardous waste volumes collected in the HHW Program continue to increase. The City of Austin's HHW Program is the first of its kind in the State of Texas. It has received regional and national recognition, including the EPA Regional Administrator's Award for Environmental Excellence for Outstanding Non-point Source Pollution Prevention in 1992, and Keep America Beautiful, Inc. National Recycling Award in 1995. In 1994, the National HHW Conference selected Austin as its host City, and over 400 HHW managers/staff from around the nation have visited the City's Facility and observed its operation. The HHW program's battery recycling efforts earned a regional award from the Rechargeable Battery Recycling Corporation with the 2007 RBRC Recycling Leadership Award.

Through the Household Hazardous Waste program, Solid Waste Services also offers hazardous waste disposal services to small businesses. Developed in mid-1996, this program provides an environmentally safe and convenient option for businesses to dispose of unwanted hazardous waste streams. The program is limited to those businesses generating less than 220 pounds of hazardous waste in a month (classified as Conditionally-Exempt Small Quantity Generator), and disposal costs are borne by the business utilizing the service.

A major problem that small businesses encounter when having to dispose of hazardous waste is that the volume generated is not sufficient to obtain service from a licensed hazardous waste disposal company. In some instances, the licensed companies provided the service, but at a cost that is prohibitively expensive. When these instances arise, business options are limited and often involve improper or illegal storage or disposal. During FY2007/2008, this program serviced 270 businesses, collecting approximately 198,700 pounds of waste. Since the program's inception in 1996, over 2,900 businesses have utilized this service and disposed of over 1,633,000 pounds of waste. Figure 3-1 and Figure 3-2 graph the annual growth in both pounds of hazardous waste disposed and businesses serviced since this program inception in 1996. This program serves as a model for other municipalities wanting to provide similar services to their small business community.

Deleted: Figure 3-1

Deleted: Figure 3-2

At the end of July 2008, the CESQG program was indefinitely suspended because of a rule prohibiting HHW facilities from collecting any business waste, as the TCEQ clearly stated in the 2008 edition of the HHW regulations.

Figure 3-1: Volume of Waste (pounds)

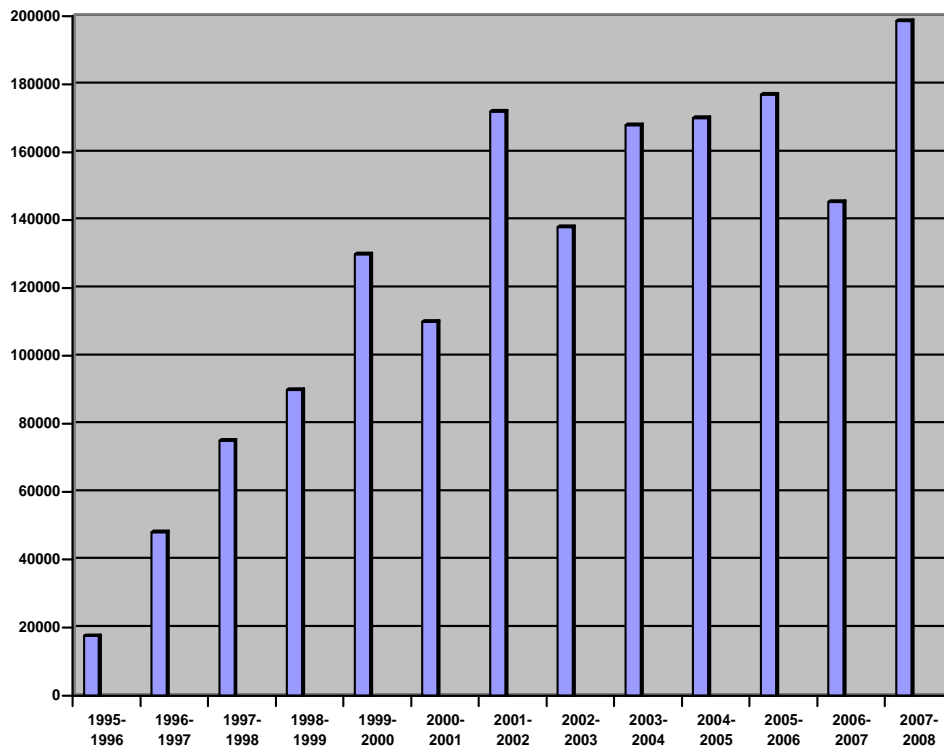
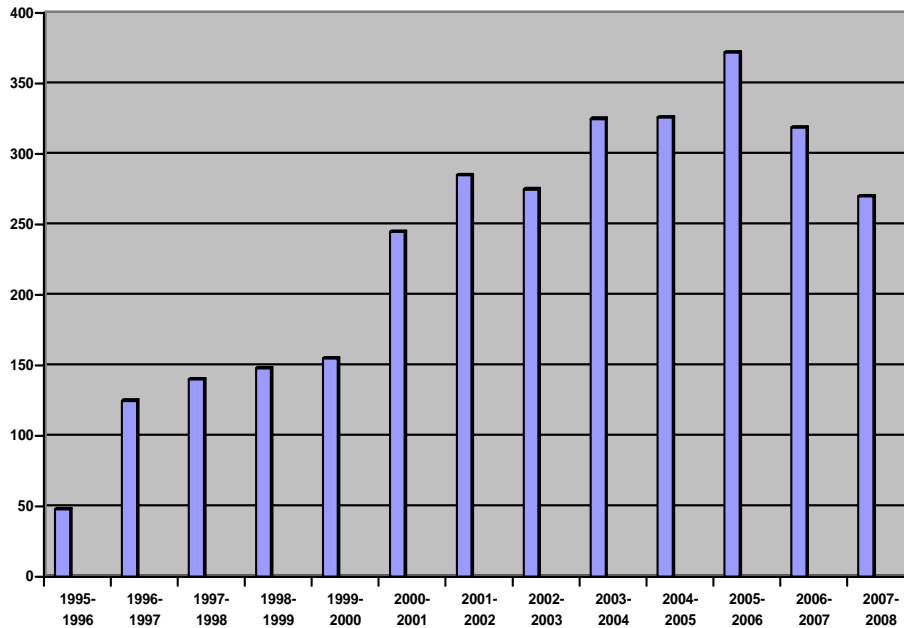


Figure 3-2: Number of Businesses Served



### ***Code enforcement***

The mission of Solid Waste Services' Code Enforcement Division is to attain compliance with City codes regarding land use regulations and the maintenance of structures and premises through education, cooperation, enforcement, and abatement to achieve a cleaner, healthier and safer city. Code Enforcement includes three disciplines of City code: Property Maintenance, Zoning, and Dangerous Buildings and Housing. In FY2007/2008, the department continued with the reorganization of this division by implementing and refining standard operating procedures and furthering cross-training programs. New programs included the bandit signs initiative and the work without permit program. Code Enforcement also acquired the billboard/off-premise sign registrations program and expanded the Volunteers in Code Enforcement (VICE) program. The division continues to build the investigative skills of inspectors with focused cross training of disciplines. Complaints from citizens pertaining to both vacant and occupied property, as well as residential and commercial property, are generated by the 311 call intake center and are assigned to an inspector in one of four geographic zones (North, South, East, and West). After an investigation,

the inspector must make contact with both the violator and the complainant, and resolve the issue through voluntary compliance or Municipal Court action.

### **Property Maintenance**

Property Maintenance complaints address weeds or grass taller than 12 inches, accumulations of junk and debris and stagnant water on public or private property in Austin and/or Limited Purpose Annexations. Complaints regarding tree limbs overhanging the public right of way as well as the investigation and prosecution of illegal dumping come under Property Abatement enforcement. These complaints and issues are investigated and resolved using Municipal Codes 10-5-21 thru 10-5-45 and 6-3-23.

The new Volunteers in Code Enforcement (VICE) program started in mid June of FY2007/2008. This sub-program incorporates the use of volunteer citizens to respond to initial property maintenance violations in plain view. This program is expected to facilitate quicker turnaround of initial investigations. From mid June to September 30, 2008, 557 initial investigations were performed by VICE with an initial response time of 4.12 days.

A 92.28 percent compliance rate was achieved through VICE, resulting in only 43 cases out of 557 escalating to Code Enforcement investigative or legal staff. These figures are based on one Code Enforcement district (East). The VICE program is projected to include all four Code Enforcement districts, encompassing the entire city, by end of FY2008/2009. This new initiative gives citizens the opportunity to get directly involved in the maintenance of their community.

In FY2007/2008, 10,036 Property Abatement complaints/requests were investigated with 335 abatements and an average processing time of 39.35 days. This reflects an increase of 49% in the number of abatements performed by the city vendor over the previous fiscal year.

### **Dangerous Buildings and Housing**

Dangerous Buildings and Housing complaints received from tenants or citizens relating to the safety and condition of structures in Austin and/or Limited Purpose Annexations are investigated by Code Enforcement. The structures addressed include all categories of residential structures, including single-family homes and apartments as well as dangerous commercial structures. Code Enforcement also conducts proactive inspections of hotels, motels, rooming houses, boarding houses, and mobile home parks. The governing codes for this enforcement are the Uniform Housing

Code and the Uniform Code for the Abatement of Dangerous Buildings. These codes are adopted in Sections 25-12-211, 25-12-213, 25-12-231 and 25-12-233 of the Austin City Code.

In FY2007/2008, Dangerous Buildings and Housing investigated 2,132 complaints/requests and achieved voluntary compliance within an average of 84.32 days. Five structures were demolished after Dangerous Buildings and Housing Code Compliance action. This reflects an increase of 33% in the number of Dangerous Buildings and Housing Enforcement complaints/requests received over the previous fiscal year.

### **Zoning**

Zoning complaints about issues related to zoning and land use violations, applying City Code Chapters 25-1, 25-2, 25-3, 25-5, and 25-10 are investigated by Code Enforcement. The types of complaints vary from recreational vehicle screening requirements to home occupations, adult oriented business regulations, and complex site plan violations. Zoning regulations establish four districts and over 130 uses based on those districts and may involve approved neighborhood plans, conditional overlays, non-conforming uses, and other conditions that may affect the determination of whether violations exist. The division has also recently acquired billboard/off-premise sign registration and enforcement.

In FY2007/2008, Zoning Code Enforcement responded to 6,955 complaints with a 66.33 day average to attain voluntary compliance. It took an average number of 158.1 days to achieve compliance when escalating a case to judicial action, down from 190.46 days the previous year. The number of Zoning Enforcement complaints received reflects an increase of 41% over the previous fiscal year.

The division continues to improve in attaining compliance efficiently by issuing on-site warnings and citations for non-compliance.

### **Highlights**

- Code Enforcement applied for and received a grant from the Capital Area Council of Governments (CAPCOG) to purchase and install monitoring camera equipment for illegal dumping. This initiative has lead to several prosecutions in Municipal Court.
- The Code Enforcement informational DVD continues to be distributed to the community in neighborhood meetings and other event forums. This video won a National Award from the

American Association of Code Enforcement for Most Innovative Marketing Idea. Code Enforcement has revised the community outreach video to include Americans with Disability Act information.

- The City of Austin formed a Public Assembly Code Enforcement (PACE) Team to reduce the numerous hazards and City code violations associated with large gatherings and parties of 50 persons or more with no Temporary Use Permit. Code Enforcement continues to collaborate with the Texas Alcoholic Beverage Commission, the Austin Fire Department and the Austin Police Department for the success of this program.
- American Association of Code Enforcement (AACE) presented the Texas AACE Code Enforcement Officer of the Year Award to City of Austin SWS-Code Enforcement investigator Wes Buckner, at its annual conference. This is a prestigious one-time eligible award.
- AACE Solid Waste Services' Code Enforcement division has received the National Award for Innovative Marketing Techniques for two consecutive years. This year's award recognized the Neighborhood Assistance Program, which uses a utility trailer stocked with maintenance equipment to facilitate community cleanups. At the end of FY2007/2008, Code Enforcement purchased a second trailer containing presentation materials to facilitate outreach and education programs at informational community events.
- Code Enforcement continues to provide a full time Community Worker position for investigator support. This position continues to help accommodate mentally impaired or disabled citizens, elderly citizens, and citizens who may require special needs in order to maintain compliance with City Codes related to their property.
- Code Enforcement continues to develop of the Code Enforcement Officer Training Academy.
- Code Enforcement managers and inspectors attend and participate in homeowners' meetings, neighborhood clean-ups, and APD Commander's Forums to continue building collaborative partnerships with the community and improve the quality of life in Austin.
- In addition to ongoing programs to enforce Right-Of-Way sign regulations, a full time position was created specifically to investigate and prosecute repeat offenders who place large volumes of "bandit signs" along the city's roadways.

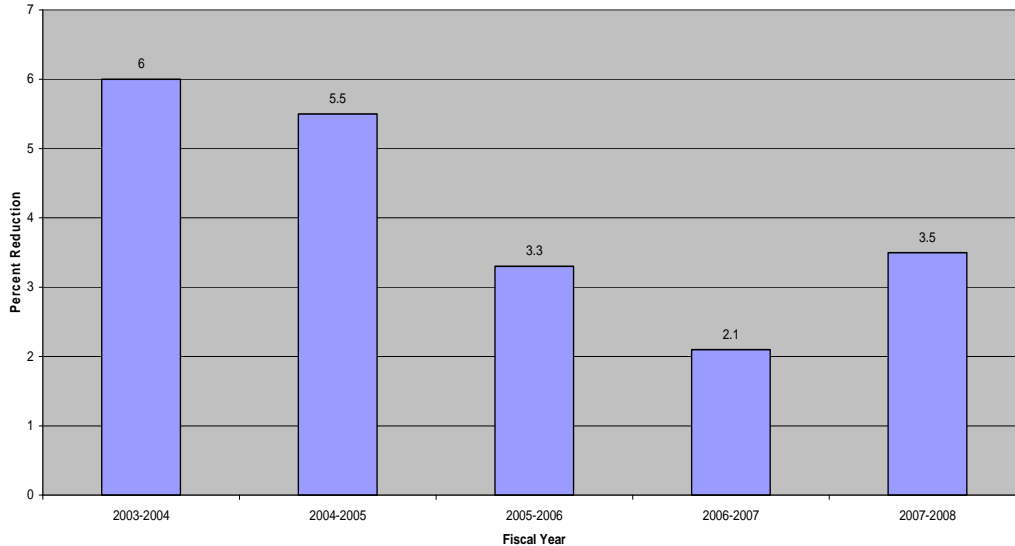
- Interdepartmental projects between the Austin Police Department, the WPDRD, the Health and Human Services Department, and the Austin Fire Department were developed to address multiple crime-related problems.
- New major programs initiated include the Work Without Permit program, and the Volunteers in Code Enforcement (VICE) program.
- Work continues on adopting the new 2006 International Property Maintenance Code (IPMC). With numerous amendments and standards, training on the new regulations is underway.
- The Class C misdemeanor citation program was expanded and continues to be successful in enforcing repeat code violations more efficiently.

## Section 4. Transportation Department

### FUEL CONSUMPTION REDUCTION

The following graph shows the average percent reduction in fuel consumption for each vehicle on each of the arterials that the City's Traffic Signal section evaluated each year for the last five years. The Signal section plans to examine each major arterial in the city at least once every three years, so the arterials studied each year are not necessarily the same as the previous year. Thus, the "percent reductions" achieved were not on the same arterials each year.

Figure 4-1: Yearly Reduction in Fuel Consumption

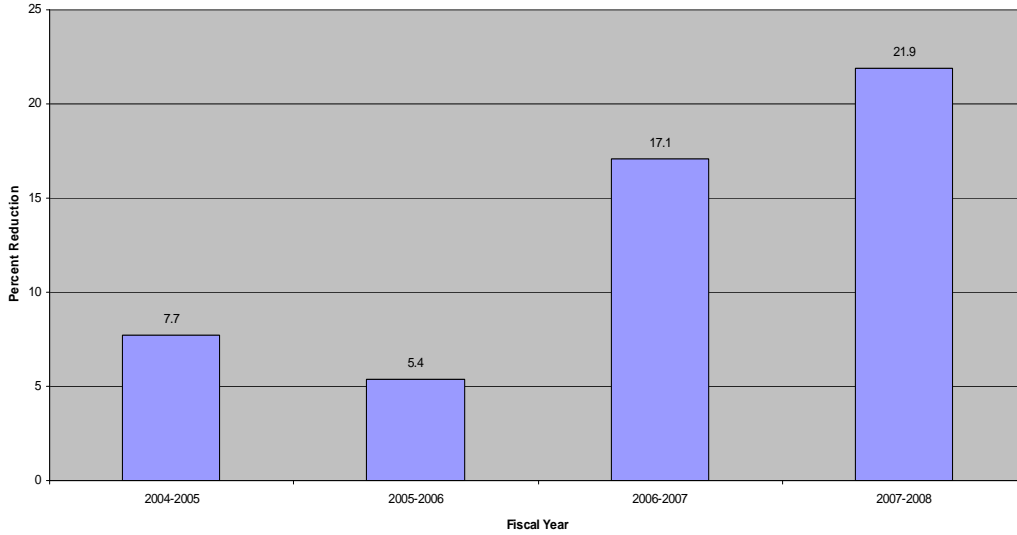


Fuel consumption totals were estimated using GPS data collection software, with data being gathered before and after the arterial evaluations were completed. The percent change in these fuel totals were then calculated. GPS software was first used during of FY2006/2007, replacing handheld data collectors used previously.

### HYDROCARBON EMISSIONS REDUCTION

In addition to fuel consumption, the Signal section also collects data on the estimated pollutants emitted from vehicles on the studied arterials. The following graph displays the yearly percent reduction in the amount of hydrocarbons emitted, after the studied arterials were reevaluated and signal timings were altered, for the last four fiscal years.

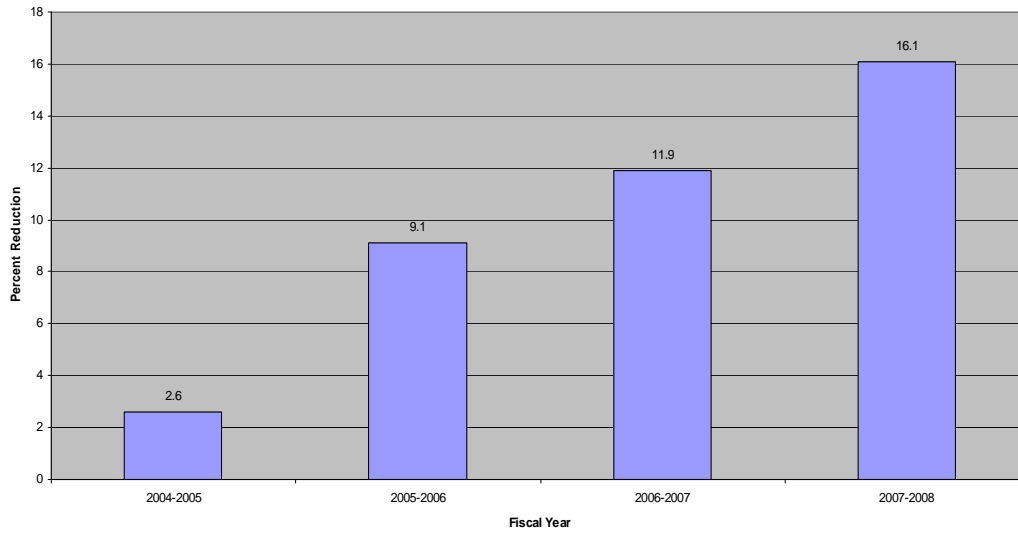
Figure 4-2: Yearly Reduction in Hydrocarbon Emissions



### CARBON MONOXIDE EMISSIONS REDUCTION

In addition to hydrocarbons, the average percent reduction of carbon monoxides emissions is also estimated with data collection software. The following graph displays these values for the past four fiscal years.

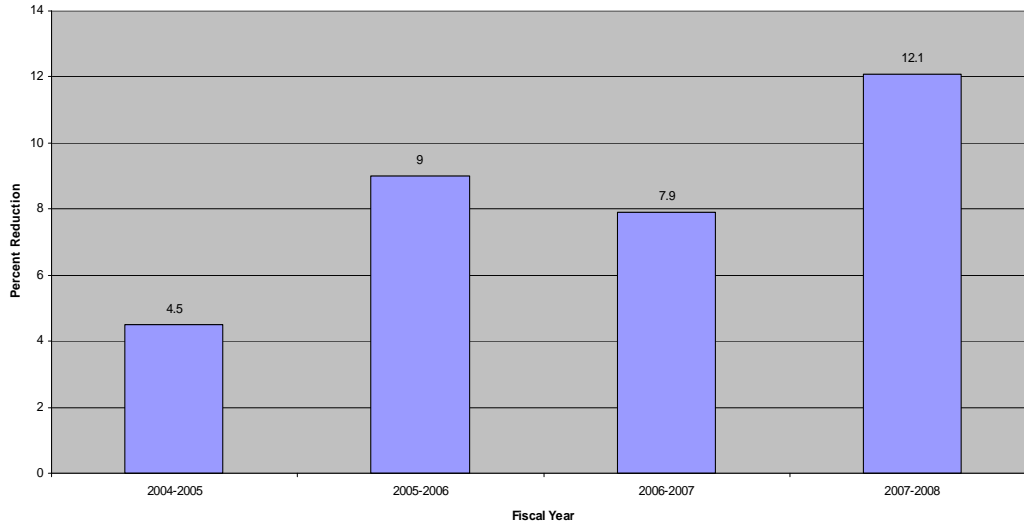
Figure 4-3: Yearly Reduction in Carbon Monoxide Emissions



## NITROUS OXIDE EMISSIONS REDUCTION

The final of the three pollutant emissions that the Signal section estimates is nitrous oxide. The following graph illustrates the percent reduction in this pollutant over the evaluated arterials for the last four fiscal years.

Figure 4-4: Yearly Reduction in Nitrous Oxide Emissions



## SUMMARY

The following table presents a summary of the data graphed above.

Table 4-1: Summary – Fuel and Pollutant Reduction, 2003 – 2008

| Fiscal Year | Fuel Consumption Reduction (%) | Hydrocarbon Reduction (%) | Carbon Monoxide Reduction (%) | Nitrous Oxide Reduction (%) |
|-------------|--------------------------------|---------------------------|-------------------------------|-----------------------------|
| 2003-2004   | 6                              |                           |                               |                             |
| 2004-2005   | 5.5                            | 7.7                       | 2.6                           | 4.5                         |
| 2005-2006   | 3.3                            | 5.4                       | 9.1                           | 9                           |
| 2006-2007   | 2.1                            | 17.1                      | 11.9                          | 7.9                         |
| 2007-2008   | 3.5                            | 21.9                      | 16.1                          | 12.1                        |

## Section 5. Austin Energy

### AUSTIN CLIMATE PROTECTION PLAN

The Austin Climate Protection Program (ACPP) was initiated in February 2007 when the Austin City Council passed a resolution focused on coordinating the City's response to climate change (Resolution No. 20070215-023).

The vision of the ACPP is:

*To ensure a healthy environment and sustainable climate for tomorrow.*

The mission of the ACPP is:

*To develop and promote innovative programs and bold initiatives to reduce greenhouse gases and improve air quality in our community, thereby establishing Austin as a national leader in climate protection.*

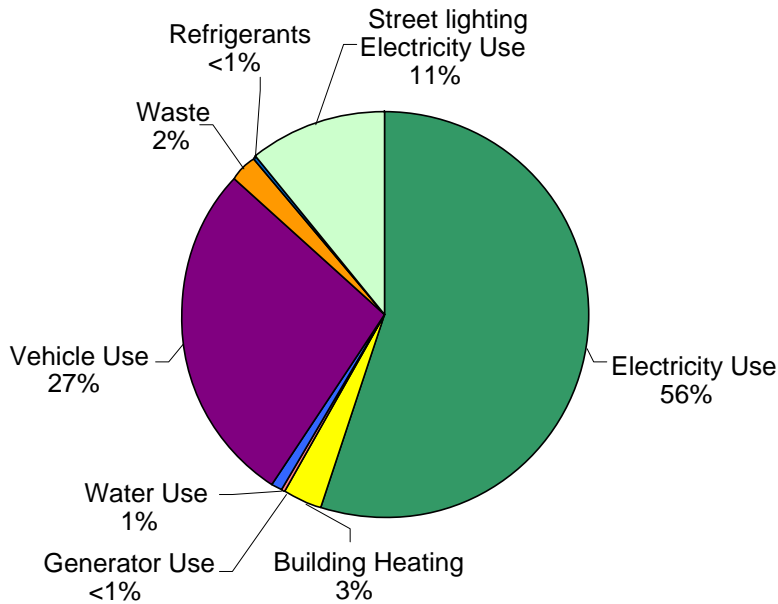
In 2008, the ACPP made significant strides towards achieving the goals and objectives set in that resolution. Some of the program's recent achievements are described below. For a complete discussion of all of the ACPP activities, please see the ACPP Annual Report available in May 2009 on the program's website: [www.coolaustin.org](http://www.coolaustin.org)

#### ***Municipal Plan: Reducing the City's Carbon Footprint***

Frequently referred to as a "carbon footprint", the City of Austin's 2007 greenhouse gas inventory includes the major greenhouse gas emissions associated with the City's day-to-day operations. The inventory was established CY2007 as a baseline for measuring future emission reductions. [Figure 5-1](#), graphs the City's carbon footprint showing the contribution of different emissions sources. Electricity used to operate City facilities and street lights, along with municipal vehicle fuel use, are the three largest contributors to the City's carbon footprint.

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Figure 5-1: Municipal Operations Carbon Footprint, Calendar Year 2007



Total emissions reported in CO<sub>2</sub>-eq which represents all greenhouse gas emissions converted to their equivalent CO<sub>2</sub> emissions based on global warming potentials. Total emissions equal 168,019 metric tons CO<sub>2</sub>-eq., equivalent to annual CO<sub>2</sub> emissions from the electricity used by 23,300 homes.

ACPP staff has created similar carbon footprints for each City department and is working with each department to develop customized climate protection plans. These plans will identify and implement measures to reduce energy, water, and fuel consumption; minimize waste; and reduce the environmental impact of the departments' purchases. The plans will also include strategies to help decrease the City's vulnerability to climate change through adaptation measures. Education is also a key component of the plans to help change employee behavior.

In conjunction with this effort, all the general fund departments within the City were transferred to the GreenChoice<sup>®</sup> renewable energy program as part of the effort to power all City facilities with renewable energy by 2012. In 2008, about 14 percent of the electricity consumed by City facilities came from renewable sources.

Climate Protection has also developed curriculum and begun training all City employees on the importance of climate protection and the value of taking action to save energy, save money, and reduce emissions.

#### ***Utility Plan: Carbon Dioxide (CO<sub>2</sub>) Cap & Generation Plan***

Austin Energy has proposed a draft (CO<sub>2</sub>) cap and reduction plan to reduce its carbon footprint. To meet its CO<sub>2</sub> reduction commitment, the utility continued its efforts to promote energy conservation and to expand the amount of renewable energy it purchases in 2008. Through 2008, Austin Energy reduced peak demand more than 145 MW since October 2006 and approximately 12 percent of its energy comes from renewable sources. The recent biomass and solar power plant contracts are steps towards Austin Energy's goal of obtaining 30 percent of its energy needs from renewable sources by 2020.

#### ***Homes and Buildings Plan: Energy Efficiency***

Progress on increasing energy efficiency for new single-family residences and existing buildings continues to be headed by Austin Energy's Green Building and Energy Efficiency programs, respectively (please see those sections of this report for more details).

#### ***Community and "Go-Neutral" Plans: Engagement Tools***

2009 promises to be an important year for the Climate Protection Program to increase community engagement. ACP is working with a vendor to develop an on-line carbon footprint calculator for Austin residents. This tool will help them calculate their household greenhouse gas emissions and provide guidance on ways to save money and reduce their carbon footprint.

ACPP is also facilitating an Austin Climate Community advisory group to develop strategies for community engagement. One goal of this group is to catalyze a community wide conversation on climate change and identify actions the community can take to reduce emissions and protect our climate.

## **AIR QUALITY**

The Federal Clean Air Act (CAA) directs United States Environmental Protection Agency (EPA) to set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. Currently, national standards exist for six pollutants: ozone, particulate matter, carbon monoxide, lead, nitrogen dioxide, and sulfur dioxide.

For each of these pollutants, the CAA requires EPA to set the health-based or “primary” standards at a level judged to be “requisite to protect the public health with an adequate margin of safety” and are “requisite” to protect public welfare from “any known or anticipated effects associated with the pollutant in the ambient air” including effects on crops, vegetation, wildlife, buildings and national monuments, and visibility.

Central Texas is generally well in compliance with all the NAAQS standards, except ozone. The only standard we are exceeding is for ground level ozone.

### ***Federal Requirements***

EPA bases an area’s attainment status on the “design value,” the rolling average of the fourth highest reading from each of the past three years. When the design value is higher than the standard, the area is considered nonattainment. The current Austin/San Marcos MSA design value is 77.

On March 12, 2008, the EPA significantly strengthened NAAQS for ground-level ozone, the primary component of smog, to a level of 0.075 parts per million (ppm) for the 8-hour ozone standard. Only the US EPA can declare an area nonattainment, and they will be making their decision in March (2010).

Nonattainment designation triggers mandatory state and federal pollution reduction requirements. They are typically prescriptive; noncompliance can lead to increased medical costs, a loss of federal highway funding, and significantly more difficulty in obtaining air permits for expanding or new facilities.

### ***Assessment***

The Texas Commission on Environmental Quality (TCEQ) collects and analyzes statewide air quality data. Central Texas monitors show exceedance of EPA’s health-based 8-hour standard for ground-level ozone, although it has not yet risen to the level of violation. Based on that data, the Austin/Round Rock Metropolitan Statistical Area (MSA) is acting to re-acquire attainment and maintenance of the federal 8-hour standard. This is being accomplished by regional activities of the Early Action Compact, which was created:

- To facilitate the development, adoption and implementation of a clean air plan to maintain compliance with the federal 8-hour ozone standard for the counties of Bastrop, Caldwell, Hays, Travis and Williamson,

- To establish and monitor a regional effort toward the improvement of air quality,
- To develop policies and strategies that will provide guidance for each of its independent governing bodies about actions that will achieve clean air in Central Texas,
- To work cooperatively to achieve clean air standards that will protect public health and yet allow local governments the flexibility to select measures best-suited to each community's needs and resources.

Using the Early Action Compact (EAC) Protocol, the MSA has prepared a Clean Air Action Plan (CAAP) that provides clean air sooner, maintains local flexibility and can defer the effective date of non-attainment designation.

### ***Background***

Ground-level ozone is not emitted directly into the air, but forms through a reaction of nitrogen oxides (NO<sub>x</sub>) and volatile organic compounds (VOCs) in the presence of sunlight. Emissions from industrial facilities and electric utilities, motor vehicle exhaust, gasoline vapors, and chemical solvents are the major man-made sources of NO<sub>x</sub> and VOCs. Because sunlight and hot weather accelerate its formation, ozone is mainly a summertime air pollutant. Both urban and rural areas can have high ozone levels, often due to transport of ozone or its precursors (NO<sub>x</sub> and VOCs) from hundreds of miles away.

Health effects associated with exposure to ground-level ozone include:

- Reduced lung function, making it more difficult for people to breathe as deeply and vigorously as normal;
- Irritated airways, causing coughing, sore or scratchy throat, pain when taking a deep breath and shortness of breath;
- Increased frequency of asthma attacks;
- Inflammation of and damage to the lining of the lung;
- Increased susceptibility to respiratory infection; and
- Aggravation of chronic lung diseases such as asthma, emphysema and bronchitis.

In some people, these effects can lead to:

- Increased medication use among asthmatics;
- More frequent doctors visits;

- School absences;
- Increased emergency room visits and hospital admissions;
- Lung damage, even after symptoms have disappeared;
- Premature death, especially in people with heart and lung disease.

Ground-level ozone can have harmful effects on various plants and ecosystems. When sufficient ozone enters the leaves of a plant, it can:

- Interfere with the ability of sensitive plants to produce and store food, making them more susceptible to certain diseases, insects, other pollutants, competition and harsh weather;
- Visibly damage the leaves of trees and other plants, harming the appearance of urban vegetation, parks, and recreation areas; and
- Reduce forest growth and crop yields.

### ***Regional Initiatives***

Recognizing the regional nature of air quality, the COA takes an active role in area initiatives. In conjunction with the CLEAN AIR Force of Central Texas, the COA participates in ongoing public outreach campaigns. As a member of the Commute Solutions Coalition, it assists area employers in promoting trip reduction measures, which reduce traffic congestion and associated emissions.

The COA hosts Clean Cities of Central Texas, a voluntary program of the U.S. Department of Energy. Its mission is to promote the use of alternative fuel vehicles and to encourage development of alternative fueling infrastructures to reduce consumption of foreign oil and to lower emissions.

To address the 1-hour standard, TCEQ and EPA developed the Early Action Compact (EAC) Protocol. Regions that choose the EAC must follow strict timelines for developing an action plan to reduce emissions. The Action Plan was created by the Early Action Compact, and is acknowledged as one of the best in the Country. As an example, we are the only 'never been in nonattainment' area that has emission inspections (I&M) required on its automobile fleet. The plan is adopted into the State Implementation Plan (SIP) and becomes law. In return for choosing legally enforceable early action, the region is given flexibility in crafting the plan and will reach attainment two years earlier. Failure to complete any portion of the EAC means the area reverts to the traditional nonattainment

process, although without penalty, and with credit given for emission reductions already accomplished.

In December 2002, Austin's Mayor Garcia, along with other Central Texas leaders, signed the EAC. The Clean Air Action Plan's ozone pollution reduction strategies for the region were decided upon and submitted to TCEQ and EPA by March 31, 2004. The CAAP was incorporated into the SIP, and the SIP was adopted by TCEQ by December 31, 2004 and implemented by December 31, 2005. The goal is to get Central Texas air quality to healthy levels no later than December 31, 2007.

The 8-hour O3 Flex program is the latest in a series of regional initiatives and builds on the region's previous plans: the 1-hour O3 Flex program and the Early Action Compact.

According to EPA guidance, "The 8-Hour Ozone Flex (8-O3 Flex) program is a voluntary agreement between Federal, State/Tribal and local communities to encourage 8-hour ozone attainment areas nationwide to reduce ozone emissions as needed to maintain the National Ambient Air Quality Standard (NAAQS) for ozone. The program will support and reward innovative, voluntary, local strategies to reduce ground-level ozone, thereby improving air quality and helping areas maintain attainment. In addition, the program allows States and locals to receive "credit" for these efforts in the State/Tribal Implementation Plans, and help them avoid a violation of the 8-hour ozone standard." Local governments of the Austin-Round Rock MSA expressed their intent to participate in the 8-O3 Flex program in a letter from the CAC Chair, Austin Mayor Will Wynn, dated December 20, 2006, to U.S. EPA Regional Administrator Richard E. Green.

## **COA INITIATIVES**

### ***Ozone Reduction Strategies***

Staff developed strategies to minimize NOx and VOC emissions from daily COA operations. These strategies comprise the core emission reduction measures of the COA's commitment and serve as a template for other municipalities and government agencies. Because cars and trucks are responsible for about 60% of smog-producing emissions in the Austin/Round Rock region, several emissions reduction strategies are aimed at vehicles. These strategies include:

- Voluntary transportation control measures for employees;
- Reductions in emissions from fleet vehicles;
- Reductions in emissions related to traffic congestion;

- Reductions in emissions through contractual agreements;
- Programs to encourage Smart Growth initiatives;
- Enhanced public education programs;
- Development of regional partnerships;
- Reductions in emissions from mobile sources; and
- Reductions in emissions from area and point sources.

Within the CAAP, the strategies are reflected by specific emissions reduction proposals, of which, two of the more substantial are the Vehicle Emissions Testing – Inspection and Maintenance Program, efforts by Austin Energy to reduce NOx emissions.

**Vehicle Emissions Testing – Inspection and Maintenance (I/M) Program**

- Is required annually for all vehicles 2-24 years old.
- Must pass before new vehicle registration or safety inspection can be issued.
- Fee is \$16.00 in Travis and Williamson counties.
- Safety inspection fee remains at \$12.50.
- If emissions test failed, must get repairs within 15 days to get free re-test.
- Repair and replacement financial assistance for low-income drivers.
- Infrared mobile testing equipment will measure vehicle tailpipe emissions at selected traffic points. High-emitting vehicles have 30 days to get repairs.

**Austin Energy NOx Emission Reduction**

Austin Energy reduced total annual NOx emissions from Holly and Decker combined to 1,500 tons or less – from the 1,750 tons that would have been allowed under SB 7. In addition, Austin Energy has committed to cap the total NOx emissions from all AE power plants located in Austin at 1,500 tons per year, even with the addition of the City’s newest generating plant, the natural gas-fueled Sand Hill Energy Center.

The full CAAP and all appropriate updates can be found on the CAPCOG website:  
<http://www.capcog.org/CAPCOairquality/EAC.htm>

### ***Departmental Ozone Action Day (OZAD) Plans***

Every department has an OZAD plan. It guides air-friendly operational changes made on OZADs or for the entire ozone season. Plans are department-specific, but all include employee notification and trip reduction measures.

### ***City Employees Ride Capital Metro Free Program***

Effective October 1, 2004, the City of Austin entered into an interlocal agreement with Capital Metro to enable all City employees to use approved Capital Metro transportation services free anytime, simply by presenting a valid City employee identification card. The program's easy-to-use approach is intended to encourage Metro ridership, and further supports the City's goal of voluntary automobile trip reductions.

### ***Green Ride***

CAMPO and CAPCOG are developing an interlocal agreement with the Alamo Area Council of Governments (AACOG) to provide web-based GIS rideshare matching and alternative commute information services for the Austin and San Antonio regions. These services will be provided by Ecology and Environment, Inc. under the name Green Ride. Green Ride is a web-based GIS software package that offers ride matching services to commuters by allowing them to set up secure accounts to find other potential carpoolers that have common destinations. Green Ride also tracks and calculates ride-share statistics and associated emissions reductions. The website will be in both English and Spanish. It will also include bus-route matching, bus schedules, bike routes and other information helpful to the alternative commuter. CAMPO will administer the program for the Austin region.

## **URBAN HEAT ISLAND MITIGATION PROGRAM**

An urban heat island is when a city experiences higher ambient temperatures than in surrounding rural areas. The reasons that summers in our city are two-to-nine degrees warmer than in nearby rural areas include:

- Fewer trees mean less cooling shade, as well as cooling from the evaporation of water through a trees leaves (evapotranspiration)
- Black topped parking lots and roofs which absorb the sun's heat during the day, reradiating it back into the atmosphere late into the night

- Wasted heat rejected from vehicles and air conditioners.

### ***The Urban Heat Island Effect Takes a Toll***

As Austin grows, its urban heat island grows too and threatens our unique lifestyle:

- Increased A/C demand at home and in our vehicles creates air pollution locally, and affects our global community through increased carbon production;
- Elevated temperatures threaten our personal health, the landscape and wildlife;
- Because of higher temperatures, we run air conditioners longer, increasing energy costs

The City of Austin is committed to improving the quality of life for residents of Austin by reducing the negative environmental impacts associated with the Urban Heat Island effect. Public education and proactive City programs that address these impacts are key in the challenge to cool Austin.

The following programs are in progress:

- Partnerships with local entities to promote the development of green roofs with the intent of increased vegetation in the urban area;
- Tree Inventory and Mapping, and Expanded City Tree Planting Program in right-of-ways and parks;
- Increased canopy cover through Large Tree plantings;
- Neighbor Woods and Austin Community Trees programs planting over 4,000 trees in Austin neighborhoods each year;
- Austin' Tree of the Year program and Arbor Day, designed to educate the public and raise awareness of the many benefits of trees;
- Building code requirements for Light-Colored Roofs;
- Incentive/Enforcement of Tree-Saving Ordinance;
- Ordinance mandating 50% Canopy Coverage within 15 years for all new parking lots;
- Education and outreach through the City of Austin Urban Heat Island website.

For more information, see [www.cityofaustin.org/urbanheatisland](http://www.cityofaustin.org/urbanheatisland), or contact Leah Haynie at (512) 482-5342 or [leah.haynie@austinenergy.com](mailto:leah.haynie@austinenergy.com).

## **CENTRAL TEXAS CLEAN CITIES**

Clean Cities is a DOE supported program resulting from the Environmental Protection Act of 1992. The mission of Clean Cities is to advance the nation's economic, environmental, and energy security by supporting local decisions to adopt practices that reduce our dependence of foreign oil in the transportation sector.

The five identified strategies include:

1. Alternative Fuels and Vehicles
2. Hybrid Electric Vehicles
3. Fuel Blends
4. Anti Idling Technologies
5. Fuel Economy

Clean Cities carries out this mission through a network of 90 volunteer coalitions across the United States, 7 of which are active in Texas. These coalitions are community based voluntary, public/private partnerships that work closely to advance the use of alternative fuels and vehicles.

The Central Texas region of Bastrop, Caldwell, Hays, Travis, Williamson Counties and Ft. Hood, Texas make up the Central Texas Clean Cities coalition. We boast over 90 active stakeholders including private business, Landscapers, mandated fleets, the National Guard and an army base.

Clean Cities coalitions are dedicated to:

- Increase public awareness;
- Create new jobs and commercial opportunities;
- Support state and federally regulated fleets;
- Provide greater fuel choices; and
- Expand alternative refueling infrastructure.

Clean Cities goals:

- Lower fuel costs;
- Lower preventive maintenance costs;
- Lower vehicle emissions;
- Improved air quality alternatives to gasoline and diesel powered vehicles; and

- Reduced dependence on foreign oil.

In 2008, CTCC stakeholders used an estimated 1,127,880 gallons of alternative fuel; COA has begun building their first CNG fleet of refuse trucks and streetsweepers and is planning to build three multi alt fuel locations that will be publicly accessible; COA provides on site 385 fueling for fleet vehicles at three locations and all diesel vehicles and equipment use B20; COA, Travis and Williamson Counties are building their NEV fleets for Parks; many stakeholders are converting their commercial diesel and gasoline mower fleet to LPG; and Travis County will soon have its multi alt fuel station available for public access and regional fleets through an interlocal agreement.

The City worked with school districts, write grants, designed and successfully administrated an electric vehicle purchase incentive plan awarding over \$40,000 in incentives. CTCC won and administers a \$127,000 award from the Propane Education Research Council for all seven Texas Coalitions, awarding rebates for the purchase of OEM commercial mowers and the conversion of gasoline to LPG mowers (the only program like it in the country); hosted a commercial propane mower and electric utility vehicle demo, held educational workshops, webcasts and meetings.

### ***Green Building***

Austin Energy Green Building program evolved out of the Austin Energy Star Homes Program. Energy Star Homes was operated as an alternative path to energy code compliance for home builders. The program was popular with builders because the staff worked with the industry to help builders and designers find the best approach to meeting or exceeding the requirements of the City's energy code rather than simply inspecting homes and giving them a red or green tag.

Green Building has developed and continually updates sustainable rating tools for single family homes, multifamily buildings and commercial buildings. Each of these rating tools was developed to be responsive the local climate, the requirements of Austin's building codes, building industry practices specific to Austin and the needs and priorities of the community. Homes and buildings are rated on a scale of one to five stars, with five stars being the highest level attainable.

These rating tools evaluate a building's sustainability in the areas of:

- Energy Efficiency (emissions reductions)
- Water Conservation and Water Quality
- Efficient Materials Use and Recycling

- Indoor Environmental Quality
- Community Issues (Impact on infrastructure and community building).

Green Building continues the collaborative approach developed in the Austin Energy Star Homes Program in its efforts to rate the sustainability of residential and commercial buildings in Austin. Green Building staff members provide technical assistance to builders, designers, architects, engineers, and the public to guide them in their efforts to build more sustainable buildings. Building professionals who participate in the program are invited to monthly technical seminars on topics that range from the latest developments in water conserving toilets to photovoltaic (solar) energy systems. The lunch time professional seminars attracted 609 attendees in 2008 for a total of more than 1200 hours of training provided.

All services provided in the Austin Energy service area are free. Each project or participating firm is assigned a staff representative who is the point of contact with the program for that project. This close collaboration between the program and the industry allows Green Building to act as the first point of contact for the City with building projects. As program staff work with the design teams and builders, they are able to refer the projects to other City programs that can have an impact on sustainability.

To educate the public about Green Building and the benefits it provides to the community and to individual homeowners the program holds all day Green by Design workshops four times a year. Attendees pay a nominal fee to cover the cost of lunch, space rental, and printed materials and receive seven hours of instruction from staff members. In 2007 631 people attended the Green by Design workshops.

In 2008 the Austin City Council adopted Ordinance number 20080618-098, establishing enhanced criteria for PUDs (Planned Unit Developments). One of the requirements under this ordinance is that all new PUDs are required to meet the City Planned Unit Development Program. This Program is an enhanced AE Green Building rating that requires the standard eight basic requirements plus additional requirements:

- Additional Heat Island Reduction-Site
- Integrated Pest Management
- Additional Energy Use Efficiency – 20% above current code
- Irrigation Water Reduction – 50%

- Indoor Potable Water Reduction – 25%
- Texas Sourced Materials – 30%

The first projects under the new PUD 2 Star rating are now flowing through the permitting process and will be rated in the next few years.

Even with the economic downturn and resulting weakness in the construction industry AE Green Building recorded a very successful year. In 2008 we also strengthened our evaluation and reporting systems and starting with 2007 we are able to report gas savings, indoor water use reductions and the amount of construction waste diverted from landfills. The tables below show results for calendar years 2007 and 2008.

Table 5-1: AE Green Building Participation, calendar years 2007 & 2008

| Program   | 2007   | 2008                                       |
|---|--|--|
| Commercial Green Building                         | 632,378 sq ft  | 3,280,546 sq. ft.                          |
| Multifamily Green Building                        | 1267   | 2551 units                                 |
| Single Family Green Building                      | 884 homes  | 1220 homes                                 |
| Residential Energy Code<br>Commercial Energy Code | All new construction and major renovations participate in E.C. | All new construction and major renovations |

Table 5-2: AE Green Building savings, calendar years 2007 & 2008

| Category   | 2007          | 2008          |
|--|---------------|---------------|
| KW of peak demand reduced                          | 17,797.2 KW   | 18,178.4 KW   |
| MWH of energy savings                              | 27,089.9 MWH  | 40,208.7 MWH  |
| Indoor water in gallons                            | 2,037,400     | 12,838,100    |
| Irrigation water (July) in 1000s gals              | 573,684       | 8,058,935     |
| Natural gas reductions (MBTU)                      | 404,536       | 2,724,037,533 |
| Construction waste diverted from landfills in tons | 3,321         | 68,584        |
| CO2 emissions reduced from power plants            | 17,523.7 tons | 26,010.0 tons |
| SO2 emissions reduced from power plants            | 11.05 tons    | 16.4 tons     |
| NOx emissions reduced from power plants            | 12.21 tons    | 18.3 tons     |
| CO emissions reduced from power plants             | 8.49 tons     | 12.6 tons     |

AEGB continues its involvement with the Energy Code through a Memorandum of Understanding with the WPDRD. Through this collaboration Green Building is responsible for reviewing national energy codes for applicability to Austin's climate, industry conditions and the energy efficiency needs of the utility and the city. Green Building amends the national codes to meet these needs and takes them through the process of adoption as City of Austin Energy Code. Staff then provide training to City Building Inspectors, builders, designers, and other industry professionals on the new codes.

In 2006, the City Council authorized a citizen task force to create a roadmap to make all new homes built in the City Zero Energy Capable by the year 2015. The task force met for the first time in September of 2006. Their first actions were to define Zero Energy Capable Homes (ZECH) and to establish deliverables for the project. ZECH is defined as "homes that are energy efficient enough to be a net zero energy home with the addition of on-site renewable energy generation. This level of energy efficiency is approximately 65% more efficient than homes built to the City of Austin Energy Code in place in November of 2006." The task force approved a plan to achieve this goal and the first group of local code amendments to move the City in this direction. The plan and the code amendments were adopted by the Austin City Council in October, 2007, and the code amendments went into effect on January 1, 2008. The first phase will reduce electric energy use in the typical new home built in Austin by an estimated 2515 kilowatt hours annually and reduce power plant emissions of CO<sub>2</sub> by 3,254 pounds per year. Future phases of the ZECH project will be tied to the code adoption cycle and will take place in 2009, 2012 and 2015.

ZECH is now incorporated into the Austin Climate Protection Plan. In addition to ZECH, Green Building is responsible for ensuring that all non-residential buildings be 75% more energy efficient by 2015, and for developing a carbon neutral certification system for homes and buildings.

### ***Demand Side Management (FY2008)***

The Austin Energy's Power Saver Program provides Residential and Commercial energy management services to customers of Austin Energy (AE). By offering technical assistance and energy audits, DSM helps identify efficiency opportunities, makes recommendations on the most cost-effective measures, and offers financial incentives for installations of qualifying equipment.

The AE Power Saver programs drive market transformation to maximize energy resources by lowering electric bills while increasing customer comfort and satisfaction. Higher efficiency lowers

costs to AE and its customers, while also reducing power plant emissions and promoting economic development in the Austin area. The capital purchases provide economic benefits through increased employment in the local energy efficiency industry. The resulting gain in disposable income increases spending in the local economy.

The diverse mixture of Residential Efficiency and Commercial Energy Management offered by AE has achieved substantial reductions (all-time record) in peak electric demand, energy usage, and power plant emissions. From October 2007 through September 2008, AE achieved the these impacts:

- Demand and Energy Reduction (October 2007 – September 2008):
  - 45 Megawatts of Required Power-Plant Peak Capacity
  - 90,200 Megawatt-hours of Energy Savings
- Estimated Annual Power-Plant Emissions’ Reductions in [Table 5-2](#)
  - Carbon Dioxide:                    58,300 tons    (53,000 metric tons)
  - Nitrogen Oxides:                    40.6 tons      (36.9 metric tons)
  - Sulfur Dioxide:                    36.8 tons      (33.4 metric tons)
  - Carbon Monoxide:                    28.2 tons      (25.6 metric tons)
  - Suspended Particulates:            5.0 tons        (4.5 metric tons)
  - NMOC (VOC):                    2.1 tons        (1.9 metric tons)

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**Power Saver - Residential Program**

In 2008, AE’s Residential Efficiency Programs achieved significant results in participation and savings. For all programs combined, over 40,000 residential customers participated, with a peak demand savings of 25 MW.

Austin Energy’s Home Performance with ENERGY STAR® was awarded the National ENERGY STAR® – “Sustained Excellence” Award in recognition for its consistent high performance each year. AE received this award at a banquet in Washington D.C. from the U.S. Department of Energy (DOE) and the Environmental Protection Agency (EPA).



### **Air Conditioning Rebate (Appliance Efficiency)**

Air Conditioning Rebates are offered on high efficiency air conditioning units and heat pumps that are more efficient than the local energy code requirements and the national appliance manufacturing standards. AE adopts the Consortium for Energy Efficiency (CEE) air conditioning efficiency standards. The CEE standard requires the central air conditioning systems meet both a SEER and EER requirement to be listed in the CEE database. To receive an ENERGY STAR® label, the Department of Energy requires the central air conditioning system have



an efficiency rating of at least 14.0 SEER and 11.5 EER. Rebates for ENERGY STAR® window unit air conditioners are also available. For the first time, new construction air conditioning was excluded due to diminishing returns above 14 SEER. This rebate is available for existing homes and small businesses installs of 5 tons and less.

### **Home Performance with ENERGY STAR® – Rebate**

The Home Performance with ENERGY STAR® – Rebate provides rebates to customers as an incentive to make energy-saving home improvements based on an energy analysis performed by a trained home performance contractor. Through this program, rebates are offered for attic insulation, solar screens, duct repair and sealing, and installing a properly sized high-efficiency heating and cooling system. If a homeowner makes all of the recommended weatherization improvements and installs a properly sized unit, customers can qualify for a “bonus” rebate which ranges higher than that offered through the Appliance Efficiency program. Because the energy improvements bring the home to current energy code standards, this program is offered to existing homes only.

# 10 EASY STEPS TO ENERGY FITNESS!

|  |   |   |
|--|---|---|
| <p><b>Thermostat</b><br/>Set your thermostat to 68 degrees or lower in the winter. Ask for a free Power Star program rebate thermostat from Austin Energy to make the adjustment for you.<br/><b>Savings:</b> \$50 per degree below 68°F at 68 per year.<br/>Energy saved:<br/><b>1,000 kWh per degree per year</b></p>  | <p><b>Light Bulbs</b><br/>Replace standard light bulbs with ENERGY STAR compact fluorescent (CFL) in the fixtures you use the most.<br/><b>Savings:</b> \$7 per bulb per year.<br/>Energy saved:<br/><b>36 kWh per bulb per year</b></p>  | <p><b>Appliances</b><br/>Use ENERGY STAR appliances. Look for the greatest savings with your refrigerator, gas water heater, new front-loading clothes washers, top-freezer chillers, and dishwashers.<br/><b>Savings per year:</b><br/>Refrigerators: \$150, Energy saved: 1,400 kWh<br/>The following appliances reduce water heating (hot water):<br/>Electric coil clothes washers \$54, Energy saved: 872 kWh<br/>Gas coil clothes washers \$24, Energy saved: 24 Ccf<br/>Front-loading chillers: \$174, Energy saved: 17 gallons per load<br/>Electric coil dishwashers \$14, Energy saved: 140 kWh<br/>Gas coil dishwashers \$6, Energy saved: 6 Ccf</p> |
| <p><b>Duct Sealing</b><br/>Seal leaks in your ducts. In an average Austin house, about 27 percent of the energy through leaks, close air leaks about.<br/><b>Savings:</b> \$120 a year.<br/>Energy saved:<br/><b>1,300 kWh per year</b></p>  | <p><b>Ceiling Fans</b><br/>Use ceiling fans in rooms toward warm air back into the rooms.<br/><b>Result:</b> You feel warmer, air saving you from the furnace's burn down.<br/><b>Savings:</b> \$30 a year.<br/>Energy saved:<br/><b>400 kWh per year</b></p>   | <p><b>Caulking and Weatherstripping</b><br/>Seal things around doors and caulk around windows and door frames.<br/>See utility charts for more info.<br/><b>Savings:</b> \$224 a year.<br/>Energy saved:<br/><b>221 Ccf per year</b></p>  |
| <p><b>Did You Know?</b><br/>A tankless gas water heater is a water-saving device that uses a natural gas burner to heat water as you use it. It is sometimes called an "instantaneous" or "flow" water heater. Tankless models can produce from 2 to 4 gallons of hot water per minute and can be installed in a crawlspace or outside your home. Because they heat gas only when you need hot water, you avoid the cost of heating the water in a storage tank hot. This can save up to 22% of your water heating cost.</p> | <p><b>Water Heater</b><br/>Save on new standard water heating. Set the temperature at 120 degrees. Set the temperature to "Boost" when you take the most showers. Consider the new technologies and smart controls for water heaters.<br/><b>Savings per year:</b><br/>GAS: \$54<br/>Energy saved: 56 Ccf<br/>ELECTRIC: \$96,<br/>Energy saved: 1,000 kWh</p> | <p><b>Heating</b><br/>Take care of your furnace. Have it checked annually and change filters monthly. For greatest savings, consider an investment in high efficiency equipment. See utility charts.<br/><b>Savings:</b> \$224 a year.<br/>Energy saved:<br/><b>221 Ccf per year</b></p>  |
| <p><b>Efficient Windows</b><br/>Highly efficient windows ENERGY STAR windows. They keep the warm air inside and prevent cold air from entering your home during winter months.<br/><b>Savings:</b> \$151 a year.<br/>Energy saved:<br/><b>1,400 kWh per year</b></p>   | <p><b>Attic Insulation</b><br/>Add more to your attic. Most homes have R-19 or less. The needed insulation is R-38 (check for rebate chart).<br/><b>Savings:</b> \$144 a year.<br/>Energy saved:<br/><b>1,676 kWh per year</b></p>  | <p><b>ENERGY EFFICIENT APPLIANCES</b><br/>Add more to your attic. Most homes have R-19 or less. The needed insulation is R-38 (check for rebate chart).<br/><b>Savings:</b> \$144 a year.<br/>Energy saved:<br/><b>1,676 kWh per year</b></p>   |

**Check the back page for more rebates and saving opportunities!**

\*The top figures are based on an average single family house in Austin (1,800 - 2,000 sq. ft.) that has made improvements through an efficiency program of Austin Energy. These are estimates for Austin Energy. All savings are approximate and will vary with range and building material use.



## Home Performance with ENERGY STAR – Loan

This program is identical to the Home Performance with ENERGY STAR® – Rebate, but enables the customer to borrow money to complete the home energy efficiency improvements. The loan covers the cost for installing attic insulation, solar screens and Energy Star windows, duct repair and sealing, and installing a new properly sized high efficiency heating and cooling system. The Home Performance with ENERGY STAR® Program emphasizes improving the total home, providing the customer with:

- Greater comfort
- Better energy performance
- Improved indoor air quality

Currently, AE buys down the interest rates through a partnership with Velocity Credit Union. Customers can lock-in at an interest rate of 0% APR interest for 3 or 5 years, or 3.5% for 7 or 10 years.

## Free Weatherization

Austin Energy offers Free Weatherization Services to qualified low-income, elderly and physically/mentally disabled customers, free energy audits and free energy improvements on their homes. The program includes the installation of attic insulation, solar screens caulking/weather

stripping doors and windows, re-glazing of windows, sealing and repair of ducts, and other minor energy-related repairs to address substandard housing conditions. In conjunction with the Free Weatherization Program, customers may apply for a Home Performance with ENERGY STAR<sup>®</sup> Loan or an Air Conditioning Rebate to install cooling equipment. ENERGY STAR labeled compact fluorescent light (CFL) bulbs are also installed in high usage fixtures.

Home safety improvements are installed including advanced smoke and carbon monoxide detectors and improved methods of air testing to insure the health and safety of AE customers. AE also provides qualified customers a \$500 voucher for the purchase of an ENERGY STAR<sup>®</sup> labeled window unit air conditioner through the Window Unit Voucher Program.

### **Multi-Family Incentive**

Multi-Family Incentives are provided to owners, developers and managers of apartment communities and other multi-housing properties with rebates for making energy efficiency improvements.

For existing multi-housing properties, AE's Conservation Program Specialists are available to perform a free walk-through energy audit to identify energy improvements that qualify for rebates. AE recently implemented a Duct Diagnostic and Sealing Program for existing multi-family properties. Through this program,



contractors perform a diagnostic inspection and a duct blaster test to check duct leakage. Recommendations are made to the property manager for duct improvements. Initial duct leakage testing has shown an average duct leakage rate of 40%.

For new construction multi-housing properties, AE's Conservation Program Specialist assist builders, developers and owners with rebates to encourage upgrading air conditioners and heat pumps that exceed national energy code requirements, expertise to review duct system designs, and inspection services to assure quality work.

All participating apartment communities and multi-housing properties can partner with AE and use the Multi-Family logo in their advertising as a symbol of energy efficiency and comfort. Residents of these communities have benefited from the improvements through utility savings ranging from 10% - 40%, improved air quality and higher comfort year-round.

The Multi-Family energy savings increased substantially from 7,000 MWh in 2007 to 24,000 in 2008, therefore increasing total DSM savings by 11% to 132,000. This was due to CFL increasing from 28% to 87% of projects. The associated unit savings increased from 300 kWh/participant in 2007 to 1,100 in 2008. CFL will saturate in 2009. In addition, EISA 2007 will phase out the most common incandescent light bulb by 2012-2014.

### **The Power Partner**



During the last seven years, Austin has grown at a phenomenal rate. The Power Partner load management is a solution to accommodate that growth, and its associated need for increased energy. This program provides AE with an affordable method of load reduction during times of peak demand, and at the same time provides participants with the opportunity to save energy year round.

### **Water-Heater Timers (Multi-Family)**

The Cycle Saver – Water Heater Timer program is another load management program. This program was created to help AE manage peak energy demand by installing energy control timers on individual electric water heaters at multi-family properties. The program directly targets apartments with electric water heaters, providing the owners and managers with incentives for participation. AE has programmed the energy control timers to cycle off June through September, Monday – Friday, 3 pm to 7 pm. The unit does not cycle off the water heater on weekends or holidays.

AE selected the Vaughn Energy Controller IV ([www.vaughncorp.com](http://www.vaughncorp.com)) because of its easy to use, yet sophisticated, load control capabilities. This product was specifically designed to meet electric utility's needs for dedicated peak control of electric water heaters, while offering customer flexibility. State-of-the-art microprocessor technology offers programming capabilities flexible

enough to accommodate AE's load management strategies to save energy, money, and also reduce peak summer demand for electricity.

Property managers of apartment communities like offering this product to its customers because it gives residents an opportunity to save additional energy on their electric bill. The vacation button feature on the timer allows the residence to shut off the water heater for extended periods.

### **Duct Diagnostic and Sealing (Multi-Family)**

Duct Diagnostic and Sealing is for Multi-Family units only. It encourages customers to have their duct system diagnosed for air leakage and proper distribution of air. AE contracts with specially trained contractors who have been certified by the National Balancing Institute (NBI) to provide duct diagnostic testing for \$50 per unit, which includes the following:

- Duct leakage analysis
- Duct airflow test
- Temperature test
- Return sizing test
- Combustion safety test



The duct diagnostic testing identifies significant duct leakage that could reduce cooling and heating capacity and result in higher energy bills. Testing also reveals if rooms have sufficient temperature and airflow for adequate heating and cooling, if return air vents receive sufficient air, and if return air vents are drawing unconditioned air from the attic, garage or crawl space, or introducing unwanted allergens in rooms. The contractor can then make recommendations, and AE can provide rebate opportunities to help offset the cost of improvements.

The benefits of having duct improvements may include saving money, increasing comfort, improved indoor air quality and a safer home.

## Compact Fluorescent Lamps (CFL) Rebate Coupon

The CFL Rebate Coupon encourages customers to purchase “ENERGY STAR®” labeled compact fluorescent light bulbs, instead of incandescent light bulbs. AE offers \$2-\$4 discount coupons to help offset the initial cost of buying the CFL bulbs. Local retailers, working together with AE, help promote the program by stocking CFL bulbs, and accepting the \$2-\$4 discount “point of purchase” coupons. Local retail participants then send the collected coupons to AE and are reimbursed for the face value of the coupons.



The CFL Rebate Coupon provides the following benefits to AE, the environment, and its customers:

- Saves money by reducing energy use in customer’s homes
- Reduces the amount of heat gain from lighting by 80%, thus reducing cooling loads
- Lowers the amount of fossil fuels burned to produce energy
- Assists Austin Energy to reduce energy use during on and off peak usage times
- Reduces bulb replacement cost due to a ten times longer life than standard bulbs.

## Refrigerator Recycling

The Refrigerator Recycling Program is the newest residential energy efficiency program for AE. The program is intended for those homeowners with a working refrigerator that they would like to recycle. AE arranges for the pick up of the refrigerator at no cost. As an added incentive, the homeowner will receive \$50. Ninety-eight percent of the refrigerator is recycled, avoiding disposal in a landfill. The program is intended to remove inefficient refrigerators which can cost homeowners an average of \$150 a year.

**It's A Good Thing!**  
**Get \$50 when you recycle your old refrigerator!**  
**1-800-452-8685**

**AUSTIN ENERGY**  
 www.austinenergy.com

**① You save money.**  
 Old refrigerators and freezers are not just appliances; they are energy-guzzlers.  
 ■ They use more energy than anything in your house except air conditioning, heating, and electric water heaters.  
 ■ By replacing one of these old energy-guzzlers (pre-1993) with a new one, you can save up to \$150 a year, on average.

**② Call us for recycling, we guarantee:**  
 ■ Your refrigerator or freezer will be completely recycled.  
 ■ We will keep it out of the landfill.  
 ■ We will keep it off the "resale" market.  
 ■ It will stay off the electrical grid.  
 As energy-guzzlers are removed from the grid, it saves all of us money. Lower electric demand keeps electric rates down and air quality up for everyone.

**Call us to take your old energy-guzzler away!**  
**1-800-452-8685**

**To find out how much energy your old refrigerator is using, visit our calculator at [www.austinenergy.com](http://www.austinenergy.com)**

### Residential Online Energy Analysis

AE offers residential customers the opportunity to go “online” to perform an energy analysis on their own home. Customers can log onto Austin Energy’s website at [www.austinenergy.com](http://www.austinenergy.com) to perform the energy analysis.

Customers answer a list of questions about the characteristics of their home. The questions include details on wall and attic insulation levels, type of appliances in the home, appliance usage schedules, number and type of lights, and types of heating, cooling and water heating equipment.

After customers have completed the questions, the online analysis will provide:

- Estimated operating cost of customers home appliances
- List of no cost and low cost energy efficiency retrofits
- Savings estimates of recommended retrofits
- Comparison of customers home verses an efficient home of similar size
- Colorful graphs of appliance usage.

“Appliance Calculators” are available to help customers to determine energy savings for specific products such as a refrigerator, dishwasher, cooling system, heating system, water heater and lighting.

If the customer is interested in implementing some of the measures recommended, they are directed to the AE's Residential Efficiency Program webpage.

### **Power Saver - Commercial**

#### **On-Site Energy Surveys**

AE performs no-cost energy audits of commercial buildings to identify energy efficiency opportunities. An experienced staff of energy engineers and energy technicians perform walk-through energy surveys of facilities, educate building owners and operators on facility energy management and identify cost saving opportunities. AE provides pre-inspections of major equipment prior to its replacement and all projects over \$500 are inspected before any rebate funds are disbursed.

#### **Commercial Rebates**

AE's business customers can get utility rebates for investing in new, energy efficient equipment. Rebates are offered for energy efficient technologies that reduce summertime electric peak demand. Eligible measures include lighting, HVAC, thermal cool storage, motors, variable frequency drives, building envelope and other custom technologies. Trade allies are very instrumental in helping create awareness among AE's commercial customers. AE has strong and productive relationships with local equipment suppliers. AE utilizes Key Account Managers and sales staff to better promote these programs to the large and mid market commercial accounts.

To encourage greater participation in the small business sector, Austin Energy offered 20% bonus rebates. This has effectively increased participation in the small business market. The bonus rebate program helped commercial rebates to exceed the MW goal.

#### **Small Business 20% Bonus**

This program is designed to help small-to-midsize business, non-demand and limited-demand customers (less than 100 kW summer average) and tax-exempt not-for-profit organizations implement a variety of energy efficiency measures that can reduce their electric demand by offsetting their initial investment. Qualified businesses and organizations can receive an additional 20% bonus on one or more of AE's Commercial Rebates (with the sole exception of a Solar PV rebate). Note that:

- All rebates must comply with all the requirements of each individual commercial rebate program offering.
- Projects that are classified as “New Construction” under AE’s Guidelines will also qualify for the bonus if the project’s account is assigned for a qualified tax-exempt not-for-profit business or organization.

### **Small Business Lighting**

The objective of this program is to motivate small-to-midsize business, non-demand and limited-demand customers (less than 100 kW summer average) and tax-exempt not-for-profit organizations to participate in this program through the direct installation of energy efficiency lighting equipment. The program offers participating customers a discount for the retrofitting of qualifying energy efficient lighting equipment. In the traditional rebate program, commercial customers receive a rebate after the purchase and installation of the lighting equipment. However, the Small Business Lighting Program offers participating customers a discount before the equipment purchase. This process gives the participant the advantage of reducing their “initial cost”, which has historically been an obstacle for the small business community to implement energy efficiency measures.

The vendor performs the lighting audit in this unique program. This provides the customer an opportunity to meet and interact with the vendor. AE provides a final inspection on selected lighting projects after the equipment is installed.

In FY 2008, the program was revamped to be a rebate style program. In addition, there was no contractor for most of the summer, so the program was dormant at that time.

### **Inter-local Agreements**

Through Inter-local Agreements, AE can provide customized energy consultations and energy project solutions to institutional and governmental agencies. Public institutions, school districts, State, Federal, County, and Municipal Departments require special assistance when it comes to energy management services. Through Inter-local Agreements, AE establishes a closer working relationship with public agencies to identify and implement facility energy management. AE rebates can be allocated for energy conservation projects, and project-financing solutions can also be identified. The only interlocal project was Solar for Schools.

## **Municipal Energy Conservation**

The Municipal Energy Conservation Program (MECP) provides technical support, employee awareness training, and funding for energy conservation projects. The MECP has led the City's efforts in Senate Bill 5 compliance and now Senate Bill 7.

In January 2005, the City Manager issued an Administrative Bulletin (05-01) that outlined the City's commitment to energy conservation in its own facilities and designated AE as the City's Energy Manager. It also outlined the responsibilities of each department and requires energy management plans to be submitted.

In fulfillment of the role as the City's Energy Manager, MECP staff executed a \$10 million performance contract with three Energy Service Companies (ESCOs) to implement energy conservation in City of Austin facilities over the next two to three years. The ESCOs have retrofits at Austin Energy's facilities as well as completed proposals at the airport and within Parks and Recreation facilities. The retrofits will be completed during FY09.

By the end of 2005, the City of Austin had reduced its energy consumption by almost 9% when compared to the 2001 baseline usage. These results were reported to the State Energy Conservation Office (SECO) as required by Senate Bill 5, 1999.

Also, Texas A&M Energy Systems Laboratory was hired to conduct their Continuous Commissioning program on the new Austin City Hall. The year long commissioning program is expected to reduce the cost of operating city hall by about \$60,000 per year.

## **Commercial Power Partner**

These load management programmable thermostats allow business owners to schedule the "on-off" operating schedule of the air conditioner, as well as pre-program setback temperature schedule. Additionally, the programmable thermostats have radio-controlled devices that allow AE to cycle-off air conditioning units during periods of high summer system peak demand. Power Partners' air conditioners may be cycled off as needed for no more than 10 minutes every half-hour from 3 to 7 p.m., Monday – Friday, June through September. Participation in the program is voluntary and offered on a first-come, first-served basis. By participating in the Power Partner Program, customers agree to allow AE to cycle their air conditioner during these times.

### ***Engineering Services***

AE constructed one district cooling plant in the Central Business District in 2001. Construction of a second plant (on the same loop) began in 2003 and operating in 2007. The first plant serves approximately 10 buildings through an underground distribution network of chilled water pipes.

An integral part of both plants is a Thermal Energy Storage (TES) system. The existing plant contains three, 2,000 ton water chillers, two 1,000 ton glycol or ice chillers, and one 26,000 ton-hour ice-based TES system. The second plant is operating successfully and contains one glycol chiller and a 52,000 ton-hr TES system. One additional glycol chiller was installed, one new water chiller ordered, and space for new water chillers is provided to accommodate additional chiller capacity as chilled water demand grows.

In FY2008, three customers were added, resulting in an additional 2.16 MW of peak load reduction.

### ***Thermal Energy Storage***

This program offers an opportunity for AE customers to reduce their utility bills while reducing peak demand during the utility's on-peak periods. Thermal Energy Storage (TES) is a proven technology using conventional refrigeration equipment and specialized storage tanks to shift all or part of a facilities cooling load from on-peak to off-peak.

TES rebates levels were adjusted in an attempt to increase participation. The former \$250/kW is now a declining block structure from \$300 to \$50/kW. This effort recognizes that the economy of scale is not available with smaller systems.

In FY2008, one TES study was completed and three had preliminary assessments. Several customers are considering the implementation of these systems in the future.

One system was installed in 2008, but due to operational problems no rebate was paid or claimed. It is expected to be operational in FY2009.

### ***Smart Vendor***

The Smart Vendor Program, started in 2002, offers free Vending Misers<sup>®</sup> for soda machines. In 2005, the program was expanded to include free devices for snack machines, reach-in beverage coolers, and selected plug loads. No-cost (to customer) installations significantly reduce

refrigeration loads through the use of occupancy sensors. This energy conservation strategy is a low cost option to new equipment purchases.

***Solar Photovoltaic (PV) Rebate***

AE's Solar Rebate Program is designed to help customers implement photovoltaic (PV) technology in their home or business by offering financial incentives that can offset customers' initial investment. As an energy management partner, AE offers unbiased expertise on cost-effective use of energy dollars. By implementing PV technology, customers are helping the City of Austin reduce the need to generate additional power, lower our long-term investment costs for new electric facilities and enhance the City's environment.

The current rebate level is \$4.50/watt. The annual limits are \$13,500 for residential and \$100,000 for commercial customers.

Table 5-3: Annual Program Participation<sup>1</sup>

|                                     | 1982-'03       | 2004          | 2005          | 2006          | 2007          | 2008          | Total          |
|-------------------------------------|----------------|---------------|---------------|---------------|---------------|---------------|----------------|
| <b>Residential Efficiency</b>       |                |               |               |               |               |               |                |
| Appliance Efficiency Program        | 148,871        | 3,665         | 4,688         | 4,214         | 2,415         | 3,093         | 166,946        |
| Home Performance ES - Rebate        | 16,813         | 1,106         | 1,075         | 1,381         | 1,712         | 2,223         | 24,310         |
| H. P. Energy Star - Loan            | 13,880         | 232           | 324           | 350           | 248           | 213           | 15,247         |
| Free Weatherization                 | 10,820         | 565           | 455           | 720           | 632           | 505           | 13,697         |
| Multi-Family Program                | 71,948         | 8,044         | 6,501         | 7,899         | 10,505        | 21,814        | 126,711        |
| Clothes Washer Rebate               | 2,096          | 420           | 411           | 545           | 882           | 813           | 5,167          |
| Duct Leaks Sealing/Diagnosis        | 926            | 251           | 238           | 232           | 147           | 231           | 2,025          |
| Refrigerator Recycling              | 0              | 198           | 2,323         | 2,679         | 3,200         | 4,114         | 12,514         |
| Power Partner                       | 26,186         | 5,931         | 8,314         | 10,210        | 10,355        | 9,934         | 70,930         |
| Cycle Saver                         | 4,849          | 1,126         | 2,597         | 2,366         | 2,279         | 1,237         | 14,454         |
| Compact Fluorescent <sup>2</sup>    | 0              | 0             | 0             | 0             | 0             | 0             | 0              |
| Discontinued Programs               | 103,518        | 0             | 0             | 0             | 0             | 0             | 103,518        |
| Subtotal Residential                | 399,907        | 21,538        | 26,926        | 30,596        | 32,375        | 44,177        | 555,519        |
| <b>Commercial Energy Management</b> |                |               |               |               |               |               |                |
| Commercial Rebate                   | 547            | 213           | 306           | 170           | 325           | 351           | 1,912          |
| Commercial AEP                      | 12,459         | 0             | 9             | 0             | 0             | 0             | 12,468         |
| Small Business                      | 219            | 146           | 164           | 362           | 349           | 264           | 1,504          |
| Municipal                           | 244            | 12            | 16            | 5             | 1             | 129           | 407            |
| Municipal Power Partner             | 742            | 60            | 27            | 32            | 23            | 0             | 884            |
| Commercial Power Partner            | 2,105          | 657           | 619           | 1,250         | 2,034         | 1,331         | 7,996          |
| Load Coop                           | 8              | 0             | 1             | 3             | 23            | 29            | 64             |
| Engineering Support                 | 16             | 2             | 3             | 4             | 3             | 3             | 31             |
| Commercial Smart Vendor             | 2,094          | 1,776         | 1,557         | 368           | 572           | 420           | 6,787          |
| Muni. Vend & Monitor Misers         | 136            | 0             | 0             | 0             | 0             | 0             | 136            |
| Discontinued Programs               | 2,965          | 0             | 0             | 0             | 0             | 0             | 2,965          |
| Subtotal Commercial                 | 21,535         | 2,866         | 2,702         | 2,194         | 3,330         | 2,527         | 35,154         |
| <b>Power Saver Total</b>            | <b>421,442</b> | <b>24,404</b> | <b>29,628</b> | <b>32,790</b> | <b>35,705</b> | <b>46,704</b> | <b>590,673</b> |

## Notes:

1 Fiscal year participation is based on inspection dates.

2 Compact Fluorescent Lamp participation of 27,000 did not have site visits.

Table 5-4: Annual Peak Demand Reduction (MW)

| Program                             | 1982-2003  | 2004      | 2005      | 2006      | 2007      | 2008      | Total      |
|-------------------------------------|------------|-----------|-----------|-----------|-----------|-----------|------------|
| <b>Residential Efficiency</b>       |            |           |           |           |           |           |            |
| Appliance Efficiency                | 123.6      | 3.3       | 4.2       | 3.7       | 2.29      | 2.93      | 140        |
| H P Energy Star - Rebate            | 42.1       | 2.4       | 2.4       | 2.5       | 3.08      | 4.02      | 56         |
| Home Performance ES - Loan          | 36.6       | 0.5       | 0.7       | 0.6       | 0.45      | 0.38      | 39         |
| Free Weatherization                 | 16.0       | 0.5       | 0.4       | 0.7       | 0.60      | 0.48      | 19         |
| Multi-Family                        | 36.7       | 3.9       | 3.2       | 3.8       | 0.00      | 4.61      | 52         |
| Clothes Washer Rebates              | 0.3        | 0.1       | 0.0       | 0.1       | 0.11      | 0.04      | 0.6        |
| Duct Leaks Sealing/Diagnosis        | 0.8        | 0.3       | 0.3       | 0.3       | 0.18      | - - -     | 1.9        |
| Refrigeration Recycling             | 0.0        | 0.0       | 0.6       | 0.6       | 0.73      | 1.21      | 3.2        |
| Power Partner                       | 33.2       | 5.9       | 8.2       | 10.1      | 10.22     | 9.80      | 77         |
| Cycle Saver                         | 3.5        | 0.7       | 1.8       | 1.5       | 1.48      | 0.80      | 10         |
| CFL                                 | 0.2        | 0.1       | 0.1       | 0.3       | 0.94      | 0.99      | 2.6        |
| Discontinued Programs               | 25.8       | 0.0       | 0.0       | 0.0       | 0.0       | 0.0       | 25.8       |
| Subtotal Res.                       | 319        | 17.7      | 21.9      | 24.2      | 20.1      | 25.3      | 428        |
| <b>Commercial Energy Management</b> |            |           |           |           |           |           |            |
| Commercial Rebate & ILA             | 24.1       | 7.2       | 12.6      | 10.1      | 14.1      | 12.8      | 81.0       |
| Commercial AEP                      | 15.3       | 0.0       | 0.0       | 0.0       | 0.00      | 0.00      | 15.3       |
| Small Business Lighting             | 1.3        | 1.1       | 0.6       | 2.0       | 1.31      | 1.10      | 7.3        |
| Municipal                           | 9.9        | 0.5       | 0.4       | 0.2       | 0.00      | 0.13      | 11.1       |
| Power Partner                       | 4.3        | 1.1       | 0.9       | 2.0       | 1.69      | 1.43      | 11.3       |
| Load Coop                           | 7.7        | 0.0       | 0.7       | 1.0       | 3.56      | 1.25      | 14.1       |
| Engineering Support & TES           | 6.4        | 1.04      | 1.20      | 2.15      | 2.04      | 2.16      | 15.0       |
| Commercial Smart Vendor             | 0.4        | 0.4       | 0.2       | 0.063     | 0.10      | 0.07      | 1.2        |
| Small Business Air Conditioner      | 0.0        | 0.0       | 0.4       | 1.1       | 1.46      | 0.73      | 3.7        |
| Discontinued Programs               | 125        | 0.0       | 0.0       | 0.0       | 0.0       | 0.0       | 125        |
| Subtotal Comm.                      | 194        | 11.3      | 16.9      | 18.5      | 24.3      | 19.7      | 285        |
| <b>Power Saver Total</b>            | <b>513</b> | <b>29</b> | <b>39</b> | <b>43</b> | <b>44</b> | <b>45</b> | <b>713</b> |

Note: The avoided demand includes the avoided utility Reserve Margin of 12% and Transmission & Distribution Losses of 7%.

Table 5-5: Annual Energy Savings (MWH)

| Program                             | 1982-2003      | 2004          | 2005          | 2006          | 2007          | 2008          | Total            |
|-------------------------------------|----------------|---------------|---------------|---------------|---------------|---------------|------------------|
| <b>Residential Efficiency</b>       |                |               |               |               |               |               |                  |
| Appliance Efficiency Program        | 116,324        | 3,927         | 4,243         | 4,290         | 2,768         | 3,782         | 135,335          |
| Home Performance ES - Loan          | 46,037         | 543           | 758           | 819           | 496           | 421           | 49,072           |
| H P with Energy Star - Rebate       | 50,836         | 2,891         | 2,810         | 3,610         | 3,382         | 4,390         | 67,919           |
| Free Weatherization                 | 12,913         | 619           | 499           | 789           | 691           | 552           | 16,062           |
| Multi-Family                        | 54,065         | 5,368         | 4,165         | 5,055         | 7,198         | 23,847        | 99,698           |
| Clothes Washer Rebates              | 1,057          | 208           | 204           | 270           | 254           | 234           | 2,228            |
| Duct Leaks Seal/Diagnosis           | 1,216          | 302           | 469           | 457           | 1,954         | - - -         | 4,398            |
| Refrigeration Recycling             | 0              | 234           | 2,193         | 2,446         | 2,706         | 3,235         | 10,813           |
| Power Partner Program               | 394            | 76            | 88            | 107           | 102           | 97            | 864              |
| Cycle Saver Program                 | 470            | 106           | 16            | 15            | 14            | 7             | 627              |
| CFL Program                         | 1,140          | 801           | 338           | 1,898         | 5,440         | 6,244         | 15,861           |
| Previous Programs                   | 11,567         | 0             | 0             | 0             | 0             | 0             | 11,567           |
| Subtotal Residential                | 296,017        | 15,076        | 15,782        | 19,756        | 25,004        | 42,810        | 414,445          |
| <b>Commercial Energy Management</b> |                |               |               |               |               |               |                  |
| Commercial Rebate & ILA             | 71,791         | 18,753        | 52,122        | 38,373        | 59,166        | 42,783        | 282,988          |
| Commercial AEP                      | 29,177         | 0             | 0             | 0             | 0             | 0             | 29,177           |
| Small Business Lighting             | 2,361          | 2,252         | 1,422         | 5,672         | 3,557         | 2,414         | 17,678           |
| Municipal                           | 36,544         | 5,839         | 2,374         | 428           | 0             | 383           | 45,568           |
| Power Partner                       | 47             | 8             | 67            | 15            | 1,285         | 14            | 1,436            |
| Load Coop                           | 20             | 0             | 13            | 30            | 129           | 19            | 211              |
| Commercial Smart Vendor             | 2,506          | 2,130         | 1,340         | 383           | 566           | 492           | 7,416            |
| Engineering Support & TES           | 34             | 0             | 0             | 0             | 0             | 0             | 34               |
| Traffic Signal LED's                | 7,755          | 0             | 0             | 0             | 0             | 0             | 7,755            |
| Small Business Air Conditioner      | 0              | 0             | 465           | 1,871         | 3,892         | 1,238         | 7,466            |
| Previous Programs                   | 315,738        | 0             | 0             | 0             | 0             | 0             | 315,738          |
| Subtotal Commercial                 | 465,972        | 28,981        | 57,804        | 46,771        | 68,595        | 47,343        | 715,467          |
| <b>Power Saver Total</b>            | <b>761,990</b> | <b>44,057</b> | <b>73,586</b> | <b>66,528</b> | <b>93,599</b> | <b>90,154</b> | <b>1,129,913</b> |

Note: The avoided energy includes Transmission & Distribution Losses of 7%.

Table 5-6: Emission Reductions (Metric Tons)

| Program                             | Sulfur Dioxide | Nitrogen Oxides | Suspended Particulates | NMOC / VOC   | Carbon Monoxide | Carbon Dioxide | Total         |
|-------------------------------------|----------------|-----------------|------------------------|--------------|-----------------|----------------|---------------|
| <b>Residential Efficiency</b>       |                |                 |                        |              |                 |                |               |
| Appliance Efficiency Program        | 1.40           | 1.55            | 0.19                   | 0.05         | 1.08            | 2220.16        | 2,224         |
| Home Performance ES - Loan          | 0.16           | 0.17            | 0.02                   | 0.01         | 0.12            | 246.94         | 247           |
| H P with Energy Star - Rebate       | 1.62           | 1.80            | 0.22                   | 0.06         | 1.25            | 2577.18        | 2,582         |
| Free Weatherization                 | 0.20           | 0.23            | 0.03                   | 0.01         | 0.16            | 324.00         | 325           |
| Multi-Family                        | 8.82           | 9.76            | 1.20                   | 0.34         | 6.78            | 13998.19       | 14,025        |
| Clothes Washer Rebates              | 0.09           | 0.10            | 0.01                   | 0.00         | 0.07            | 137.44         | 138           |
| Duct Leaks Seal/Diagnosis           | 0.00           | 0.00            | 0.00                   | 0.00         | 0.00            | 0.00           | 0.00          |
| Refrigeration Recycling             | 1.20           | 1.32            | 0.16                   | 0.05         | 0.92            | 1899.00        | 1,903         |
| Power Partner Program               | 0.04           | 0.04            | 0.00                   | 0.00         | 0.03            | 57.15          | 57            |
| Cycle Saver Program                 | 0.00           | 0.00            | 0.00                   | 0.00         | 0.00            | 4.36           | 4             |
| CFL Program                         | 2.31           | 2.55            | 0.31                   | 0.09         | 1.78            | 3665.21        | 3,672         |
| Total Res                           | 15.8           | 17.5            | 2.2                    | 0.60         | 12.2            | 25,130         | 25,178        |
| <b>Commercial Energy Management</b> |                |                 |                        |              |                 |                |               |
| Commercial Rebate & ILA             | 15.83          | 17.50           | 2.15                   | 0.60         | 12.17           | 25113.62       | 25,162        |
| Small Business Lighting             | 0.89           | 0.99            | 0.12                   | 0.03         | 0.69            | 1417.02        | 1,420         |
| Municipal                           | 0.14           | 0.16            | 0.02                   | 0.01         | 0.11            | 224.82         | 225           |
| Power Partner                       | 0.01           | 0.01            | 0.00                   | 0.00         | 0.00            | 8.44           | 8             |
| Load Coop                           | 0.01           | 0.01            | 0.00                   | 0.00         | 0.01            | 11.27          | 11            |
| Commercial Smart Vendor             | 0.18           | 0.20            | 0.02                   | 0.01         | 0.14            | 288.70         | 289           |
| Engineering Support & TES           | 0.00           | 0.00            | 0.00                   | 0.00         | 0.00            | 0.00           | 0             |
| Small Business Air Conditioner      | 0.46           | 0.51            | 0.06                   | 0.02         | 0.35            | 726.71         | 728           |
| Sub-total Commercial                | 17.52          | 19.37           | 2.38                   | 0.67         | 13.46           | 27,791         | 27,844        |
| Power Saver Total                   | 33.36          | 36.89           | 4.53                   | 1.27         | 25.64           | 52,920         | 53,022        |
| <b>Tons English</b>                 | <b>36.76</b>   | <b>40.65</b>    | <b>4.99</b>            | <b>1.402</b> | <b>28.26</b>    | <b>58,318</b>  | <b>58,430</b> |

## Notes:

1. Metric ton is equal to 1,000 kilograms or 1.102 English tons (2,200 lbs).  
DSM avoided incremental generation was 89% gas-fired, 11% coal-fired, and 0% nuclear.

## Section 6. Austin Water Utility

### WATER SUPPLY

The City of Austin holds water rights to the Colorado River totaling about 330,000 acre-feet per year. Austin Water Utility (AWU) serves a population of approximately 850,505 through roughly 200,000 service connections. AWU delivers highly purified drinking water from two treatment plants to its customers through a distribution system containing more than 3,500 miles of water main, 31,348 fire hydrants, 45 pump stations, and 32 water storage reservoirs. The distribution system is divided into nine major pressure zones because of the varied topography within the City of Austin.

The City of Austin's two water treatment plants are Davis and Ullrich, which both draw water from Lake Austin/the Colorado River, treat it and deliver it as high quality drinking water. The Green Water Treatment Plant, built in 1925, was decommissioned in December 2008. The two existing plants have a rated combined maximum capacity of 285 millions gallons per day (MGD) and a storage capacity of 167 million gallons.



Davis Water Treatment Plant



Ullrich Water Treatment Plant

Table 6-1: COA Water Treatment Plants

| Plant   | Constructed | Capacity    |
|---------|-------------|-------------|
| Davis   | 1954        | 118 MGD (a) |
| Ullrich | 1969        | 167 MGD (b) |

(a) Expanded in 1963, 1977, and 1987.

(b) Modernized in 1993 to meet the higher standards of the Safe Drinking Water Act and expanded in 1987, 2000 and 2006.

Figure 6-1: Total Pumpage/Usage

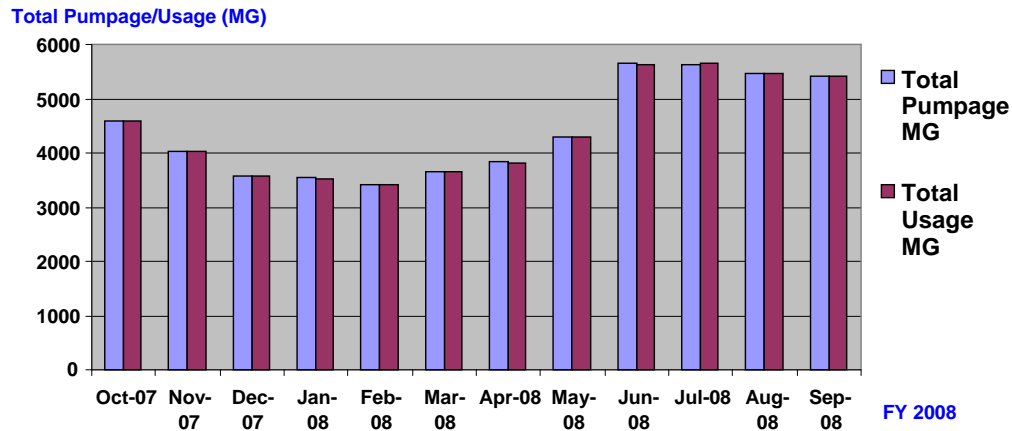
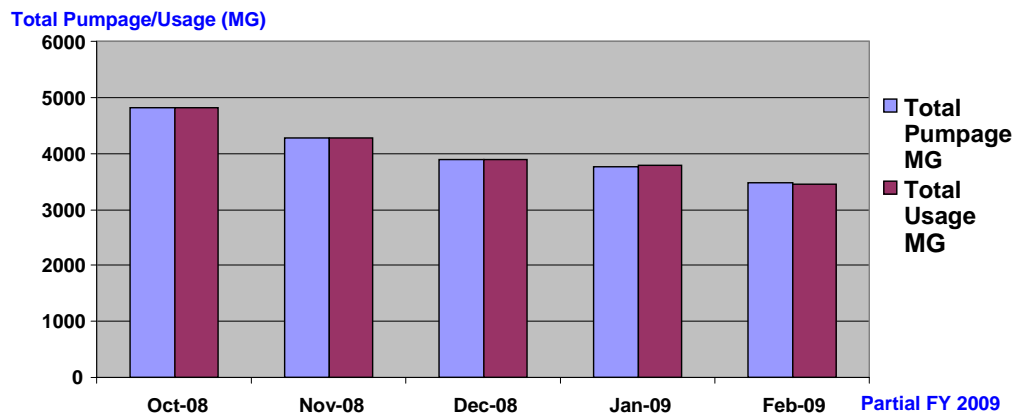


Figure 6-2: Partial FY 2009 Total Pumpage/Usage



AWU supplies water to customers within and outside the corporate city limits of Austin, as well as the communities of Rollingwood, Sunset Valley, Pflugerville and Round Rock, one water control and improvement district, five water supply corporations, seven municipal utility districts, and three private utilities.

***Assuring Treatment and Delivery Standards***

After water is pumped from the river into the plants, it goes through a six to ten hour process which includes screening, disinfection, coagulation, flocculation, sedimentation, and filtration to ensure that the community is provided with clean, safe water.

First, the water is screened at the intake to remove large debris before it is pumped into the plants. Next, the water is disinfected by using chlorine as a primary disinfectant and chloramine as a secondary disinfectant to kill any waterborne pathogens. In the coagulation and flocculation steps, ferric sulfate is added as a coagulant chemical and lime is used for softening. Since lime raises the pH, ferric sulfate becomes the best coagulant as it is effective in the higher pH range. Ferric sulfate and lime are mixed in, so small particles in the water stick together to form larger particles which will settle at the bottom and be removed during the sedimentation process. The water then flows through filters to have any remaining suspended particles removed before being collected in the clearwells. Finally, it is pumped to a storage tank or reservoir for distribution to residences, businesses and industries.

To check the water quality, AWU monitors the monthly turbidity at each water treatment plant. Turbidity is the lack of clarity in water. It is a measure of cloudiness in the water. The more turbid the water, the murkier it is. The Environmental Protection Agency (EPA) Interim Primary Drinking Water Regulations requires the finished water turbidity to be at 0.3 NTU (Nephelometric Turbidity Unit) or below, 95% of the time with no readings above 1.0 NTU. Below are tracking charts of the Average Monthly Turbidity at the Davis WTP and Ullrich WTP to illustrate the quality of our drinking water.

Figure 6-3: Davis WTP Average Turbidity

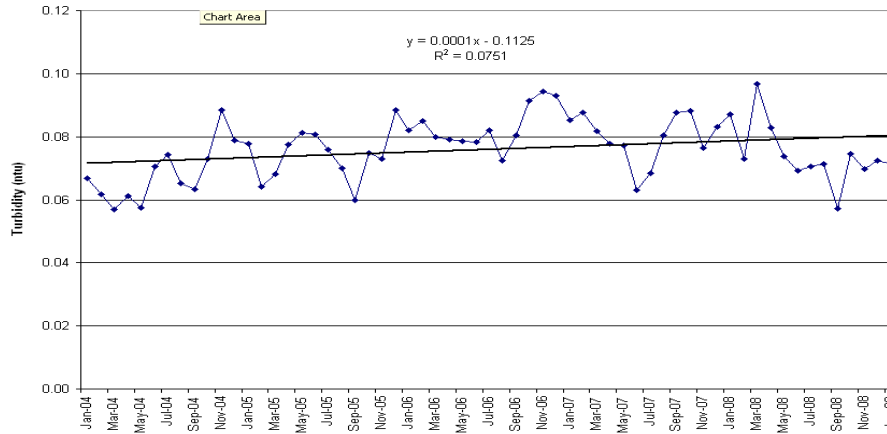
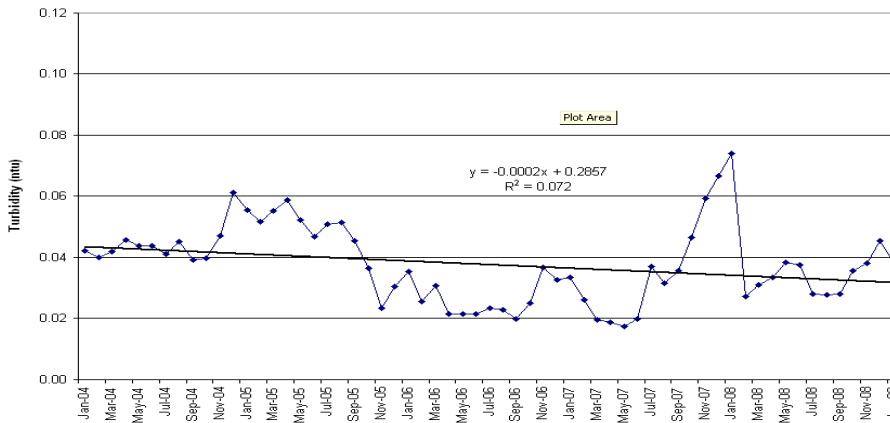


Figure 6-4: Ullrich WTP Average Turbidity



Water quality can degrade between the time it is treated at the plants and the time it is delivered to the customers. Realizing this, AWU maintains a goal of assuring that the high quality drinking water produced at its plants retains the same high quality while it is distributed to the customers. Activities to ensure this include implementing a comprehensive monitoring plan, carrying out the standards for the disinfection of new pipelines in the distribution system, analyzing the suitability of sampling sites, regularly measuring water quality in storage tanks, and routinely flushing mains when disinfection residuals are low. AWU collects and performs water quality testing on more than 270 samples throughout the distribution system each month.

#### ***Water Treatment Plant 4***

To meet the projected increased demand for treated drinking water, the City is planning the construction of a new water treatment plant located near Lake Travis with an initial capacity of 50-million gallon per day. Commonly called Water Treatment Plant 4 (WTP4), the new plant will be located at Bullick Hollow Road, near RM 620 and RM 2222. The City Council chose a new site in 2007 due to continuing concerns about the environmentally fragile nature of the previously planned Bull Creek site – located near the headwaters of Bull Creek.

The new site has multiple environmental advantages over the long disputed Bull Creek site, including:

- There are no Jollyville Plateau salamanders on the site;
- No karst invertebrates were found during WPDRD inspection of the site;
- No bird impacts are expected. If this changes, mitigation is available from the BCP;
- There are few springs and seeps compared to multiple springs and seeps on the Bull Creek site.

Overall project benefits include:

- Added capacity to meet projected increase in demand on a schedule that accounts for increased water conservation;
- Utilization of water supplies secured through agreements with the Lower Colorado River Authority (LCRA);
- Capacity for plant expansion to meet future needs for decades to come;

### **Increased system redundancy and reliability.**

In addition to the benefits of a new plant, there are particular benefits associated with a plant on Lake Travis, located on the Colorado River above Lake Austin. They include:

- Reductions in energy usage resulting from reductions in pumpage due to a higher water source elevation, thereby reducing greenhouse gas emissions and costs;
- Increased supply diversity and reliability from an additional water source;
- Increased system operation flexibility at northwest location;
- Deepest surface water source in the area;
- Highest volume water supply lake;
- More consistent water quality due to the intake upstream of urban development;
- Water contracts with LCRA for withdrawal from Lake Travis.

WTP4 will seek LEED® Silver certifications for both the Administration/Operation and Maintenance buildings. Some of the innovative elements we plan to implement in achieving this level of certification include sustainable storm water design, water use reduction, use of green power and regional materials, construction waste management, and a variety of indoor environmental quality elements. To help ensure the performance of these design elements, a LEED® Accredited Professional will be employed for this project.

### **WASTEWATER**

AWU owns and operates two major wastewater treatment plants, which together have a total treatment capacity of 150 million gallons per day. These plants discharge highly treated effluent to the Colorado River, the quality of which surpasses the State and Federal permit requirements. The TCEQ classified the effluent quality as “exceptional.”

#### ***Facilities, Operations and Statistics***

The Utility has two major wastewater treatment plants: Walnut Creek and South Austin Regional. The plants receive wastewater flow from the City’s sewers and treat it before returning it to the Colorado River. The Hornsby Bend biosolids facility receives sludge generated by the treatment processes at both City wastewater plants and uses it to create compost.



Walnut Creek Wastewater Treatment Plant



South Austin Regional Wastewater Treatment Plant

First, wastewater enters the headworks of a plant and flows through screens to have large solids and trash removed. From there, it flows into grit basins in which heavy inorganic matter such as sand and grit settle out. This material is transferred to a dump container along with the materials removed by screening and sent to the landfill. The wastewater then flows by gravity into the primary clarifiers where a large portion of the organic waste settles to the bottom of the clarifiers and is pumped to sludge processing at Hornsby Bend (see section on Hornsby Bend). Next, the wastewater flows to equalization basins from which measured amounts of the wastewater are pumped into aeration basins. In these basins, bacteria, often referred to as activated sludge, consume

most of the remaining organic matter and produce more microorganisms. Wastewater then flows to the secondary clarifiers where the microorganisms grown in the aeration basins settle out and are returned to the aeration basins. As the mass of microorganisms grows, a portion is removed and pumped to Hornsby Bend to be processed with the wastes from the primary clarifiers.

With more than 95% of pollutants removed, the wastewater then passes to the chlorination basins for disinfection. To reduce suspended solids, the wastewater flows through filters. In the final step, a small amount of sulfur dioxide is applied to remove the chlorine before the fully treated water is discharged into the Colorado River or reused through the City's Water Reclamation Program.

In addition to the two major wastewater treatment plants (WWTP), the Utility owns and operates the following small plants with a combined capacity of approximately 4.64 million gallons per day (MGD):

1. Anderson Mill WWTP
2. Dessau WWTP
3. Harris Branch WWTP
4. Thoroughbred Farms WWTP
5. Wild Horse Ranch WWTP
6. Balcones WWTP
7. Davenport Ranch WWTP
8. Lost Creek WWTP
9. Onion Creek WWTP
10. Pickfair WWTP

Plants 1 – 5 are permitted to discharge their treated effluent to area streams, while plants 6 – 10 dispose of their treated effluent through irrigation of golf courses and are not permitted to discharge to streams.

In June 2008, an instrument and control failure occurred at the Walnut Creek Wastewater Treatment Plant which caused a malfunction of blowers that provide air for the biological treatment of wastewater. As a result, ammonia levels at the plant slightly exceeded TCEQ's permitted standards for a brief period. AWU quickly repaired the malfunctioning equipment and corrected the

violation in accordance with TCEQ requirements. This incident did not pose any danger to the public, the environment or the plant staff.

This was the only noncompliance incident at the Walnut Creek wastewater treatment plant for 2008 and there were no incidents at the South Austin Regional wastewater treatment plant. Furthermore, both of these plants receive high performance awards as noted in our Wastewater Awards section.

### ***Austin Clean Water Program***

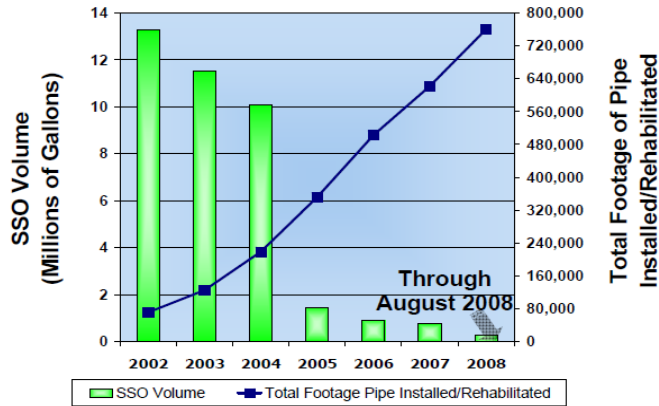
The Austin Clean Water Program (ACWP) was created in November 2001 to comply with an Administrative Order (A.O.) from the EPA issued to eliminate Sanitary Sewer Overflows (SSOs) from the wastewater collection system. SSOs are unplanned discharges of wastewater from the collection system, usually caused by sewer blockage due to the presence of roots, grease or high water flows in the pipelines during wet weather.

The ACWP provides management support and coordination for the planning, design and construction of sustainable wastewater collection facilities necessary to meet the A.O. requirements. The program is run by the AWU and supported by other City departments including Program Management Consultant and their sub-consultants. Activities include Infiltration/Inflow Studies (I/I), Sanitary Sewer Evaluation Surveys (SSES), and subsequent design and construction of necessary improvements to the wastewater collection system. The program has averaged installation of more than 15,000 linear feet per month since January, 2008. It is scheduled for completion by the end of this year.

ACWP was recently voted one of the top 10 infrastructure projects in North America during the last 75 years by the International Right of Way Association (IRWA). The selections were based on projects that have had the “greatest impact on the American quality of life.”

ACWP (8) shares the recognition with the Interstate Highway System (1), Florida’s Turnpike Suncoast Parkway (2), Hoover Dam (3), Trans Alaska Pipeline (4), 2nd Tacoma Narrows Bridge (5), Confederation Bridge (6), City of Phoenix Light Rail Project (7), I-10 Katy Freeway Expansion (9) and Golden Gate Bridge (10) which are well-known projects around the world. AWU is proud to be recognized at the same level as other world projects due to the massive impact that our project has on improving everyday lives. The chart below indicates the reduction in SSO volume since the initiation of the project.

Figure 6-5: Sanitary Sewer Overflow (SSO) Volume



All ACWP projects have completed the review and permitting process and all construction projects required by the A.O. are expected to be completed by June 2009.

**Hornsby Bend**

The Hornsby Bend Biosolids Management Plant is an award-winning biosolids treatment and recycling facility. It is responsible for treating and reusing all of Austin’s biosolids (sewage sludge) which are pumped to the facility from Austin’s two main wastewater plants. This amounts to approximately 1 million gallons a day from the approximately 90 million gallons a day of wastewater treated by the AWU wastewater plants.



Home of Dillo Dirt Compost



The Hornsby Bend Biosolids Management Plant

Hornsby Bend also supports the Solid Waste Services Department’s recycling efforts by recycling all of Austin’s yard trimmings and brush collected curbside. Water generated in

processing the biosolids is treated through a 180-acre pond system, and it, too, is recycled on-site for crop irrigation, which makes Hornsby Bend a zero discharge facility.

Hornsby Bend is nationally known as one of the best “eco-tourism” locations in Texas, with over 370 species of birds identified on site and an abundance of other wildlife. It is popular with the public as a bird watching site. Bird watchers first came to the Hornsby Bend ponds in 1959, and the CER has compiled a database of over 50,000 birding records from the site since then. The database was enhanced by the monthly bird survey conducted through the CER Hornsby Bend Bird Observatory program. 2008 marks the 10<sup>th</sup> year of a monthly bird survey at the site and the 8<sup>th</sup> year of a Fall Hawkwatch during which data on migratory raptors was collected over a two-month period. This data is available online at the Hornsby Bend Bird Observatory program website: [www.hornsbybend.org](http://www.hornsbybend.org).

### ***Dillo Dirt™ Compost***

AWU’s Dillo Dirt™ Program is a model “green” business which allows the City of Austin to keep “brown” waste out of the landfill while generating revenue from selling this compost product throughout the Austin area. Yard trimmings and brush delivered by the Solid Waste Services Department are ground and mixed with digested biosolids to produce Dillo Dirt™ which meets the highest treatment and safety standards for pathogen reduction and metals content set by the EPA and the TCEQ. It is even considered safe enough for vegetable gardens.



Austin yard waste is recycled into Dillo Dirt at Hornsby Bend



Dillo Dirt is sold wholesale to over 30 local vendors

The Dillo Dirt™ program saves valuable landfill space, recycles nutrients back into the soil, helps protect water quality, and generates revenue. With landfill tipping fees at approximately \$6

per cubic yard, this results in at least a \$600,000 savings each year. This composting program utilizes Austin's yard trimmings and brush streams, approximately 13% of the total municipal solid waste produced by the City, and this volume of "waste" material accounts for approximately 42% of the solid waste recycling done by the City.

When utilized in landscaping, Dillo Dirt™ increases nutrient and moisture holding capacity in the soil, resulting in a healthier ecosystem and helps reduce runoff and watering requirements. AWU promotes the use of Dillo Dirt™ on lawns to lessen the use of fertilizers and chemicals. Reduced landfill tipping fees and revenue generated by Dillo Dirt™ sales make this program very cost effective.

### ***Energy from Methane***

All biosolids are anaerobically digested to reduce pathogens and odors. A by-product of biosolids is methane gas, which allows Hornsby Bend to generate "green energy." Onsite generators can burn the methane to produce sufficient power for the entire facility; although currently out of service, the generators should be upgraded during 2009 to again provide power for the plant. Heat from burning methane is further utilized to help heat the digesters, and improve their performance. After anaerobic digestion, biosolids are either applied to on-site hay fields or composted with yard trimmings and brush.

### ***Center for the Environment Research (CER)***



The CER main entrance –  
habitat garden demonstration



USDA researchers taking soil samples  
at Hornsby Bend

The AWU Center for Environmental Research (CER) is housed at the Hornsby Bend Biosolids Management Plant. CER is a partnership formed in 1988 with the University of Texas and Texas A&M University to support urban ecology and sustainability studies for Austin. As a

community service, the CER auditorium and classrooms are used by a wide range of organizations for environmental workshops, training, and classes throughout the year. The CER coordinator manages community involvement, educational activities, and research projects, and educational tours at the Hornsby Bend site.

Research fields at Hornsby Bend are being applied with varying amounts of biosolids, and data is being collected about the environmental trace contaminants, soil ecology, and soil hydrology over the course of 5-10 years. This experimental exemption research focuses on compost, soil ecology, and the long-term effects of biosolids on land application in collaboration with the U.S. Department of Agriculture (USDA) Agricultural Research Service, Grassland Soil and Water Research Laboratory, US Geological Service Austin Office, and Texas Parks and Wildlife Department's Environmental Contaminants Laboratory. In 2008, the USDA awarded a \$400,000 three-year grant to fund the start of this research partnership's project which studies the environmental trace contaminants in Austin's wastewater, biosolids, and the Hornsby Bend site.

### **Austin Youth River Watch**

The Austin Youth River Watch is a non-profit organization founded in 1992 which works with South and East Austin high school students who are "at risk" of leaving school before graduating. Austin Water Utility and the WPDRD jointly fund the Austin Youth River Watch program, whose office is located at the Hornsby Bend Bio-solids Management Plant site in one of the "EcoHouses" on Platt Lane. The students monitor water quality in Austin urban creeks and the Colorado River providing the City of Austin and the LCRA with valuable data. The students' data is can be found online at <http://www.ayrw.org/>. After completion of their water quality monitoring duties each day, the students return to the River Watch office to study and work on their school assignments and to work on the gardens and pond at the office site.

During 2008, 86 high school and middle school students were involved in the Austin Youth River Watch program. Thirty-nine students went on to participate in River Watch summer leadership program during June and July 2008. On average, AYRW high school students attended school more regularly and had grade point averages comparable to, or higher than, the comparison group of AISD high school students. Most importantly, 10 River Watch students graduated from high school during 2008.

2008 marks the 16th year of data collection by River Watch students. The expansion of the AYRW in 2008 has allowed new monitoring sites to be added to its monitoring network.



### **Wastewater Awards**

AWU is a member of the National Association of Clean Water Agencies (NACWA). NACWA is a nationally-recognized leader in environmental policy that works closely with Congress and EPA on strong water protection laws and is a sought-after technical resource on water quality and ecosystem protection issues. Annual Peak Performance Awards are given by NACWA at the Platinum, Gold and Silver levels. These awards recognize member agency facilities for outstanding compliance with their National Pollutant Discharge Elimination System (NPDES) permit limits during the previous year.

In 2008, AWU received the following two awards:

- South Austin Regional Wastewater Treatment Plant – Platinum Award for 100% compliance with NPDES permits over a consecutive five year period including calendar year 2007;
- Walnut Creek Wastewater Treatment Plant – Gold Award for 100% compliance with NPDES permits during calendar year 2007.

### **WATER CONSERVATION**

#### ***Peak Day Outdoor Water Use Management***

The City Council revised Austin's water use management ordinance (Chapter 6-4 of City Code) in August 2007. The new rules took effect October 1, 2007, implementing a year-round

mandatory watering schedule for commercial and multi-family users. The changes also made mandatory watering days for residential customers effective each year from May 1 through September 30, and implemented time-of-day restrictions for outdoor watering. The summer of 2008 was the first year for these changes.

The Water Use Management Ordinance involves a 3-stage system to address drought conditions. Although the city faced drought conditions in 2008, the city did not exceed the Stage 1 level, in part due to water conservation efforts.

The following year-round restrictions apply:

- No property may water with an automatic irrigation system between 10 am and 7 pm;
- Commercial and multifamily customers must adhere to the watering schedule unless granted a [variance](#).

Stage 1 Restrictions take effect each year from May 1 through September 30. All customers (commercial, multifamily residential) must adhere to the watering schedule unless granted a [variance](#). During this time, no customer may water between 10 am and 7 pm except by hand. AWU customers are limited to two designated watering days per week, as listed in the table below.

Table 6-2: Watering Schedule

| Customer Class  | Outdoor Water User Days   | Effective            |
|---|---------------------------|----------------------|
| Commercial, Multifamily   | Tuesday and/or Friday     | Year-Round           |
| Residential<br>Odd-numbered address   | Wednesday and/or Saturday | May 1 – September 30 |
| Residential<br>Even-numbered address  | Thursday and/or Sunday    | May 1 – September 30 |
| Year-round: No watering with automatic irrigation systems between 10 am and 7 pm<br>May 1 – Sept 30: No watering between 10 a.m. and 7 p.m. except with hand-held hose. |                           |                      |

The City Manager may implement Stage 2 conservation measures as needed. The utility generally sets a "trigger" to indicate when those restrictions may be needed; that trigger may vary annually based on system capacity. Customers will be notified by local media and City websites if Stage 2 restrictions are put into effect.

During Stage 2, the following additional restrictions apply:

- Customers may only operate automatic irrigation systems between midnight and 10 am on a designated outdoor water use day;

- Customers may not use an automatic fill valve to add water to an outdoor swimming pool, wading pool or pond;
- Customers may not wash sidewalks, driveways, parking areas or other paved surfaces except to alleviate an immediate health or safety hazard;
- Restaurants may not serve water unless requested by the customer;
- Other restrictions also apply to specific water uses such as car washing and outdoor fountains.

Additional restrictions may be enacted in the case of severe drought or water emergency. For full details, see Chapter 6-4 of the City Code, available through the [City Clerk's office](#).

Following the revisions to the Water Use Management ordinance, AWU saw a dramatic reduction in peak usage and changes in pumpage trends that align with mandated watering times and predicted day-of-week demand. While data is not adequate to link usage reduction with the new water use management practices at this time, AWU will continue to collect usage data from subsequent years to determine the lasting impact on peak demand.

AWU launched a media campaign to educate the public about the new ordinance. In the fall of 2008, AWU announced a partnership with Austin 3-1-1 to redirect the increasing volume of water waste calls generated by the increased media attention. In 2008, reports of water waste and watering schedule violations increased over 900% from FY2007 and FY2006. The website [www.WaterWiseAustin.org](http://www.WaterWiseAustin.org) received 23% more hits in August 2008 than in the same month the previous year. In the initial weeks of the switch to 3-1-1, water waste reports increased 41%. Despite the severe drought conditions of 2008, the city's water usage stayed comfortably below historical peak levels. The following charts indicate water usage over the last few years.

Figure 6-6: Austin Water Usage, 2006 thru 2008

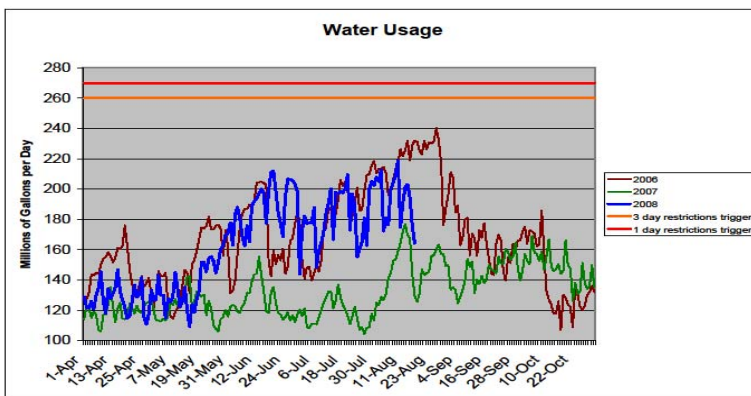
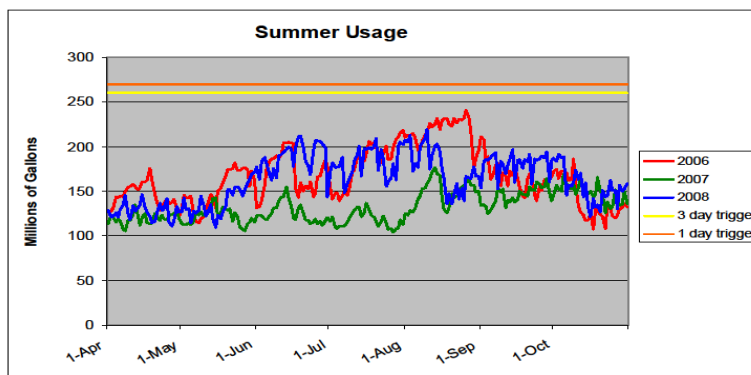


Figure 6-7: Austin Summer Water Usage, 2006 thru 2008



**Reclaimed Water**

Reclaimed water is highly treated effluent from AWU’s wastewater treatment plants. Instead of being discharged to the Colorado River, some of the treated effluent is skimmed off, or reclaimed, placed in tanks and piped to customers. The largest use is for landscaped irrigation (85%), followed by cooling (10%) and manufacturing (5%). The strategy for expanding the program is to convert existing large volume potable water users (golf courses, commercial irrigation, cooling towers, and manufacturing) to reclaimed water for their non-potable needs.

In 1974, AWU began providing reclaimed water at the Jimmy Clay Golf Course. Service at Jimmy Clay stopped in 1986 with the closure of the Williamson Creek Wastewater Treatment Plant and resumed in 1994 with a transmission main extension to the site. The Reclaimed Water Program officially started in December 1990 with the passage of a City Council Resolution on sustainability. AWU has provided reclaimed water continuously since 1991.



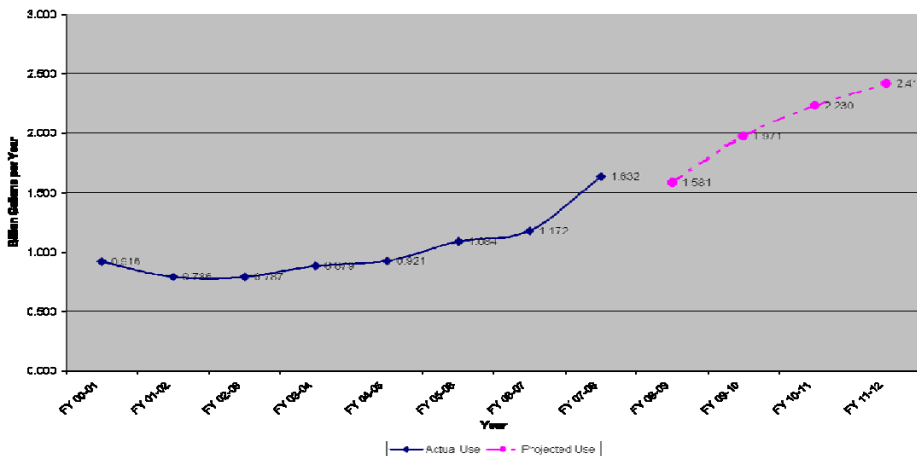
Reclaimed water ready to be used at the cooling tower at Austin Energy's Sand Hill Energy Center – a natural gas fired electric generation plant near the South Austin Regional Treatment Plant

Expansion of the reclaimed water system serves multiple purposes. First and foremost is the need to conserve water in a semiarid region. From the environmental perspective, reclaimed water reduces withdrawals from the Colorado River, resulting in a more natural stream flow in the river and reduces nutrient loading to the river. The reclaimed water system uses less electricity and therefore generates fewer greenhouse gas emissions. On the financial side, the reclaimed water system saves money by deferring expansion of potable water treatment plants, deferring a payment trigger on a water contract, and reducing the amount of water withdrawals under that contract.

The main sources of reclaimed water are the South Austin Regional and Walnut Creek Wastewater Treatment Plants. These plants, as their treatment processes, use screening, grit removal, primary clarification, aeration, secondary clarification, chlorination, and filtration. Reclaimed water from the plants meets Texas Commission on Environmental Quality's highest standards.

Although reclaimed water use varies from year to year depending on the weather, use has grown steadily in recent years (see chart below). Growth occurs through the conversion of existing high-volume potable water customers to reclaimed water. Conversion is possible because AWU extends its reclaimed distribution system through its capital improvement program (CIP).

Figure 6-8: Reclaimed Water Use by Fiscal Year



AWU has several projects under design or construction that will expand the reclaimed water system. The first is an elevated storage tank at 51st Street near the Mueller Redevelopment. The tank received substantial public interest and has a unique design featuring roof mounted solar panels and rainwater harvesting. A main in 51st Street is also under construction and will bring reclaimed water to the distribution system within the Mueller Redevelopment. Perhaps the most significant project is a main to the University of Texas that will be able to supply the University with up to 4 million gallons of water a day. Also under design is a main to the Austin-Bergstrom International Airport, where the water will be used for irrigation, cooling, and in a decorative water feature.

Aside from the construction projects mentioned above, the next focus of the reclaimed system is to improve reliability, while adding customers. This is contingent on CIP funding availability, and will be accomplished by interconnecting the system as it expands toward downtown from the UT area in the north and from the Montopolis area in the east. Anticipated projects include:

- Main to Capitol Complex
- Mains to Downtown

- Montopolis Tank
- Main to Krieg Fields

### **Water Loss Prevention Effort**

AWU currently has two contracts designed to manage water loss and prevent unnecessary water waste caused by leaking pipes or faulty meters. The Leak Detection contract was implemented to survey approximately 600 linear miles of the AWU utility distribution system for previously undetected leaks. The Large Water Meter Accuracy Testing and Repair contract ensures routine testing of 3” and larger water meters throughout the AWU service area.

AWU considers water loss management an important conservation effort and has established an internal Water Accountability Steering Committee to guide the utility’s efforts to minimize water loss. The Texas Water Development Board requires utilities to complete water loss audits every five years; AWU intends to make water loss audits an annual practice.

AWU’s Pipeline Operations Program Area is continuously developing strategies to reduce water leak repair times.

These improvements include all portions of the process to repair leaks from the initial contact by the customer to the final repair of the leak. Over the past year, AWU was 95% successful in repairing non-emergency related leaks within seven days and are now working on completing non-emergency leak repairs in three to four days. Additionally, the AWU Meter Shop function is being upgraded to focus on both residential and commercial meter accuracy for the improvement of water accountability.

### **Water Conservation Task Force**

The City Council empanelled a Water Conservation Task Force (WCTF) in 2006 to research and recommend stronger conservation measures. AWU is implementing the WCTF recommendations based on the amount saved per measure, implementation costs, and projected speed of results.

AWU is also considering several new programs in addition to the WCTF recommendations. These programs will be evaluated and developed with a focus on level of impact and need. Among the programs being considered are the Home Efficiency Leak Repair Program (HELP), offering

plumbing repairs and upgrades at no cost to eligible low-income customers, and a Direct Install Toilet Program to replace aging toilets in multifamily properties.

Existing and proposed conservation programs will continue to be evaluated for efficacy and cost effectiveness, particularly in the current economic situation, to ensure the most effective use of public funds for water conservation programs.

### **Conservation Incentive Programs**

The Water Conservation Division offers a variety of rebates and incentives to help customers conserve water in their homes. Visit the division's webpage at [www.WaterWiseAustin.org](http://www.WaterWiseAustin.org) to learn about currently available rebates.

### **Indoors: toilets, clothes washers**

#### **Toilets**

2008 was a highly successful year for the Free Toilet Program. AWU offers high-performance High Efficiency Toilets (HETs) that use only 1.28 gallons with each flush. These toilets ensure great performance and reduce maintenance needs. 10,473 HETs were distributed through AWU's free toilet program and 3,415 HETs were replaced through the toilet rebate program.

#### **Clothes washers**

In 2008, AWU provided 4,115 rebates for the purchase of qualifying high efficiency clothes washers. 307 Commercial and multi-family properties received rebates for installing water and energy saving coin-operated machines during 2008.

### **Outdoors: rain barrels, irrigation**

#### **Rain barrels**

Rain barrels are distributed through AWU at a subsidized rate to customers who agree to keep their barrel in use within the AWU service area for a five-year period. Rain barrels are intended for non-potable use only and are used by customers to collect rainwater for use during dry spells. During 2008, 2,019 rain barrels were distributed to AWU customers through rain barrel sales, and 77 rebates were issued for rain barrels purchased from other sources. Customers who install larger capacity rainwater harvesting systems (over 300 gallons) are eligible for a customized rebate; 16 such systems were rebated in 2008, with an estimated 24,305 gallons of total storage capacity.

## **Irrigation**

The Water Conservation Division offers free on-site irrigation system evaluations to educate owners on proper use and scheduling strategies, and to identify water waste concerns such as poor coverage, broken sprinkler heads, nozzles and pipe leaks. Recommendations are then made regarding scheduling strategies and equipment upgrades that may qualify for rebates through the AWU.



Free Toilet Program



Irrigation system

## **Outreach and Education**

AWU continues to make public outreach a top priority. Throughout 2008, staff participated in many events that promote awareness of our current conservation efforts and programs. These include annual events and seminars such as our Water Wise Irrigation Seminar for professional irrigators, the Green Garden Festival, and Blues on the Green. Through participation in such events as the Austin Energy Science Festival, Water Conservation was able to interact and speak with hundreds of students and their parents. Our speakers' bureau of staff is readily available to speak to many community and civic groups throughout the AWU service area.

## **WILDLAND CONSERVATION DIVISION**

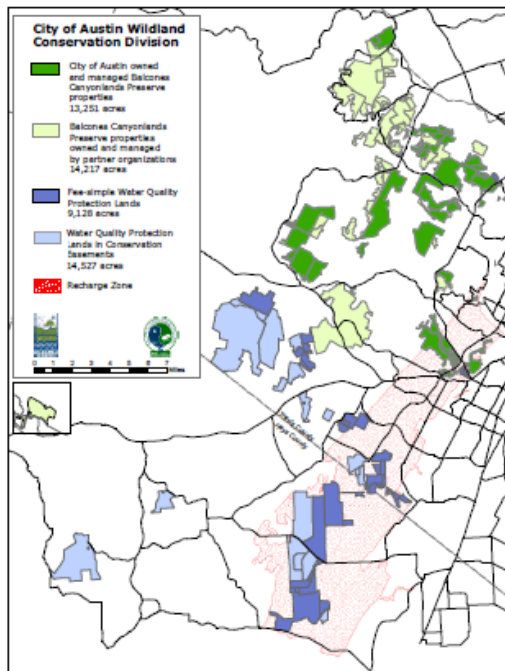
### ***Wildlands Management***

The Austin Water Utility's Wildlands Divisions manages some 36,000 acres for water quality and endangered species protection. The lands are managed for either the Water Quality Protection

Lands (WQPL) or the Balcones Canyonlands Preserve (BCP) program depending on the primary reason for purchase. Prior to purchase by the City, these properties experienced a variety of uses, which have left their impact on the land. The land must now be actively managed to restore, conserve and maintain the target habitat type identified by the mission of the program. Management projects are implemented by staff, contractors, trained volunteers, and organizations such as Environmental Corps of the Austin-based American YouthWorks.



Wildflowers blooming in a meadow on AWU Wildlands



***Water Quality Protection Lands (WQPL) Management***

WQPL are located in the contributing or recharge zones for the Barton Springs segment of the Edwards Aquifer and are managed to enhance and protect water quality and water quantity. The WQPL encompasses 23,655 acres; consisting of 9,128 acres of fee-simple properties and 14,527 acres held in conservation easement. For many properties, restoration of upland areas is targeted towards oak savannah or grassland with an emphasis on native grasses that encourage infiltration of rainfall and hold soil in place.

Riparian areas, however, may be denuded and require the restoration of riparian forests in floodplains to minimize erosion and ensure properly functioning floodplains. Numerous restoration techniques and strategies are utilized to accomplish this management goal including mechanical management of woody species, prescribed fire, re-seeding of native grasses, control of exotic species, riparian restoration, erosion control and wildlife management. In addition, karst maintenance activities are conducted to maintain and/or restore aquifer recharge, and karst surveys are conducted to identify and protect recharge features. All of these practices are intended to restore

ecological function in order to benefit hydrological processes and ultimately optimize aquifer recharge.

The WQPL program also annually administers 14 conservation easements where the Utility has purchased development rights and other rights on private property. This administration includes monitoring to document compliance with the terms and conditions of the Conservation Easement Agreements. Efforts also include providing land management technical assistance to participating landowners to assure that they have the resources available to comply with easement provisions.

### ***Balcones Canyonlands Preserve (BCP) Management***

Lands dedicated to the BCP contain habitat for the eight endangered species protected under the Balcones Canyonlands Conservation Plan. The BCP also provides habitat to 27 species of concern and additional rare species including the Jollyville Plateau salamander. City of Austin owns and manages 13,251 acres of the BCP, while BCP partners own and manage 14,217 acres. The preserve is situated in watersheds serving Lake Austin and Lake Travis. While the primary focus of management of the preserve is to protect habitat for endangered species, it also serves to lessen threats to water quality, enhance air quality and preserve the natural heritage of Austin's rapidly changing landscape. Species monitoring and habitat assessment play key roles in management. Species monitoring is conducted for the golden-cheeked warbler, black-capped vireo, six karst invertebrates, three plant species, and the Jollyville Plateau salamander. Management techniques include habitat restoration, erosion control, and removal of non-native and feral species. Moreover, oak wilt is identified and mapped utilizing aerial reconnaissance and on-the-ground monitoring. Infected oaks are removed and in some areas, trenches are installed to contain and prevent the further spread of oak wilt. Karst features and caves are identified and mapped.

The Wildland Conservation Division (WCD) staff continues to work with Travis County, members of the BCCP Coordinating Committee, and other partners to complete the land acquisitions required under the BCCP permit. Completion requires careful analysis of preserve design and configuration to ensure the preserve is consistent with the intent of the BCCP. City staff are working with other BCP partners to analyze and evaluate current preserve acquisition results in order to better understand future acquirement needs. Information from this exercise is also being used to evaluate potential management actions to create, restore, and protect habitat for different species we protect.

This year the Balcones Canyonlands Preserve system was designated a Global Important Bird Area by National Audubon, Audubon Texas, and BirdLife International. This designation and honor reflects the global significance of the BCP. The Important Bird Areas (IBA) program is a worldwide effort to identify and conserve lands that are vital to birds and other biodiversity. In the United States, 332 IBA's have the Global IBA designation, and 18 of those are in Texas.



The endangered black capped vireo  
(Photo by John Ingram)



The endangered golden-cheeked warbler  
(Photo by John Ingram)



The Tooth Cave Ground Beetle  
(*Rhadine persephone*) is one of the karst  
invertebrates protected under the BCCP  
(Photo by Mark Sanders)



Jollyville Plateau salamander marked with  
visible implant elastomer  
(Photo by Liza Colucci)

### ***Common Management Activities***

Both the BCP and WQPL employ common management techniques to facilitate habitat restoration including invasive species mapping and removal, replanting with native species, growing of native seed stock for future restoration plantings, prescribed burns, removing trash from karst

features, and erosion control. Furthermore, problem wildlife species including feral hogs, cowbirds and white-tailed deer are managed. The BCP and WQPL share common management issues and challenges, many associated with the wildland urban interface (WUI). Management strategies address boundary enforcement as well as illegal activities such as camping, dumping, poaching, vandalizing and looting of cultural resources. Protecting preserves and our neighbors from the effects of potential unintentional wildfires is an ongoing activity for both programs. Additionally, infrastructure and security enhancements such as fencing are utilized to minimize problems.

Education and outreach are integral to the management of BCP and WQPL. In FY2008, seventy guided hikes, led by a cadre of trained volunteers, were offered on both program properties. A total of 985 people participated in the hikes. These hikes provide an opportunity to visit areas otherwise closed to the public and raise awareness of these unique ecosystems and the active role that the public can play in the stewardship of them. Additionally, lectures are offered to the general public to foster an understanding of the programs' missions and related information. Staff and program volunteers provide educational activities and information at local events such as the Austin Cave Festival and Earth Day. Staff also makes presentations to schools, scouts, and homeowner/neighborhood associations. 2,652 participants took part in 29 educational programs and special events mentioned above.

WCD volunteers, trained and supervised by staff or Land Stewards, make an enormous contribution to the programs by providing assistance with most aspects of management activities including habitat restoration, species monitoring, trail maintenance, invasive species removal and replanting. 353 WCD volunteers contributed 718 service days in FY2008; equaling an incredible 5800 hours of service (the equivalent of almost three full time employees). Their contributions represent a significant cost-savings to the programs and frequently accomplish projects that would not occur due to limited resources. These volunteers are also strong advocates for the program in the community.

Research projects are on-going on Wildlands and enhance the understanding and management of these ecosystems while allowing these lands to act as living laboratories for reviewed and approved research projects. Research partners include universities, government agencies, water districts, conservation and environmental non-governmental organizations (NGOs), and other city departments. For example, BCP is cooperating on the Five-Year Status Review of the listing of the

golden-cheeked warbler as endangered. Regulations require US Fish and Wildlife Service to review the status of listed species every five years. BCP is supporting this effort by participating on the Status Review Steering Committee and by supporting additional monitoring and assessment on our preserve land. This research project includes partners from US Fish and Wildlife Service, Texas Parks and Wildlife Department, Texas A&M University, Travis County, and City BCP.

***WCD's Support of City Services and Initiatives***

The Balcones Canyonlands Conservation Plan (BCCP), a community-based, regional conservation plan, created the BCP. The WCD Manager serves as the BCCP Coordinating Committee's secretary. The secretary's role is to manage the day-to-day activities of the committee and be the staff liaison for BCCP. This critical position ensures the efficient and effective operation of BCP and BCCP business.

Wildlands programs are also supporting City Council desires to provide more trail opportunities for our community. In 2008, BCCP Coordinating Committee led the development of a trail master plan that would coordinate a comprehensive trail inventory and system for BCP and establish guidelines for new trail development. Additionally, the WQPL program is part of a regional coalition to plan a trail called Walk for a Day. This 34 mile long trail will originate at Barton Springs and end at the Onion Creek WQPL management unit in Hays County. More than half of this trail will be constructed on WQPL and potentially managed by this program's staff.



Tabor Hike (Photo by Lance Jones)

The WCD staff continues to work with other City of Austin departments in the management of urban wildlife issues including coyotes, white-tailed deer, and feral hogs. Staff assisted with background documentation for the new white-tailed deer feeding ordinance. Staff continues to manage feral hogs on BCP and WQPL and is providing leadership in coordinating a strategic plan for city-wide feral hog management. Staff regularly provides presentations to neighborhood and homeowner associations who have concerns about feral hogs or other wildlife in their areas.

Fire plays a key role in the health of our natural world here in central Texas. However, in the urban wildland interface it presents unique challenges to ensure the health of the ecosystem while protecting the health and safety of the community. WCD staff, along with Texas Forest Service and Austin Fire Department and Parks and Recreation Department lead in educating the public and homeowners about solutions-based measures in the Fire-Wise Communities program. Homeowners are provided detailed information on creating defensible space around their home to greatly reduce the risk of wildfire's impact on their property. This information is distributed at homeowner and neighborhood associations meetings as well as at an annual special event during Wildfire Awareness week. Staff is also actively involved in developing community wildfire protection plans and guidelines for fuel mitigation. In addition, on many preserve boundary areas, shaded-fuel breaks are created to minimize ignition zones near homes.

The WCD staff consistently cooperates with and assists other city departments in their operations. Staff assists AE and AWU with infrastructure projects occurring on BCP and WQPL as well as other areas in the city. Staff also supports projects from WPDRD especially as they relate to endangered species and water quality and quantity in the BCP and WQPL property areas.

For more information on Wildlands, visit: [www.ci.austin.tx.us/water/wildland/default.htm](http://www.ci.austin.tx.us/water/wildland/default.htm).



Volunteer Workday  
(Photo by Sarah Horah)



Volunteer planting day to restore the riparian  
along a portion of Slaughter Creek  
(Photo by Gail McGlamery)

## **CLIMATE ACTION**

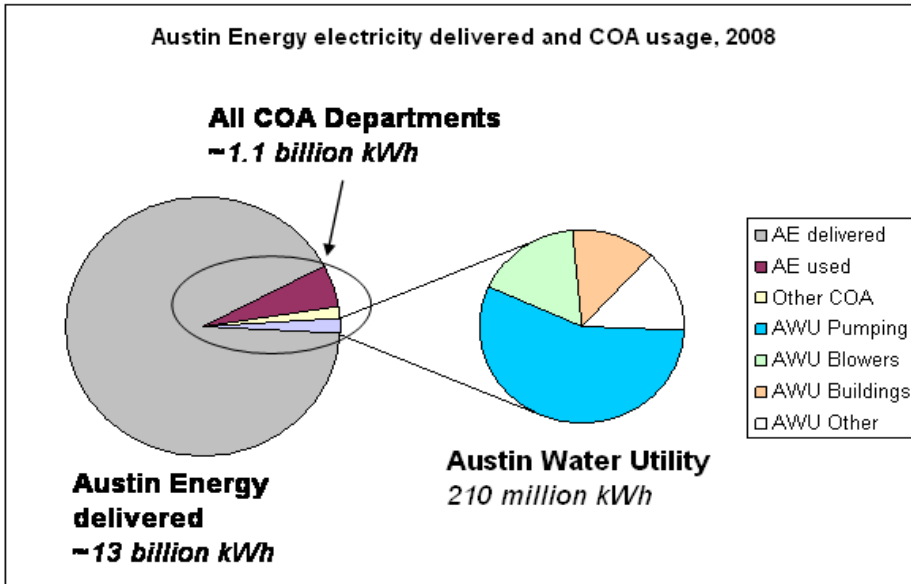
As established by the Austin Climate Protection Plan and adopted by the City Council on February 15, 2007, all City facilities, fleets, and operations are to be carbon-neutral by 2020. The Municipal Plan section directs the City's departments to develop conservation and efficiency programs to accomplish these goals. AWU has conducted a greenhouse gas inventory, identified methods for reducing greenhouse gas emissions and commenced implementation of projects.

### ***Greenhouse Gas (GHG) Inventory***

AWU staff conducted an initial GHG for 2007, using a protocol established by the Climate Registry to establish a baseline by which progress can be measured. AWU activities emit significant quantities of three of the six primary greenhouse gases: carbon dioxide, methane, and nitrous oxide. Staff used certified conversion rates to estimate GHG emissions from electricity and fuel consumption; fugitive emissions of methane and nitrous oxide were estimated using a more generic process detailed in the Climate Registry protocol. The inventory will be updated on an annual basis.

The preliminary CY2008 GHG inventory placed AWU's total greenhouse gas emissions at approximately 125,000 tons of carbon dioxide equivalent. About 90% of AWU's greenhouse gas emissions come from the generation of electricity used to power plant operations, administrative

buildings and support facilities. As shown in the chart below, excluding Austin Energy’s own use of electricity, AWU uses as much electricity as all other City departments combined due to the electricity demands of pumping nearly 50 billion gallons of water per year. In CY2008, AWU’s total electricity use of 210,000 Megawatt hours (MWh) was 1.6% of Austin Energy’s total deliveries.



**Actions**

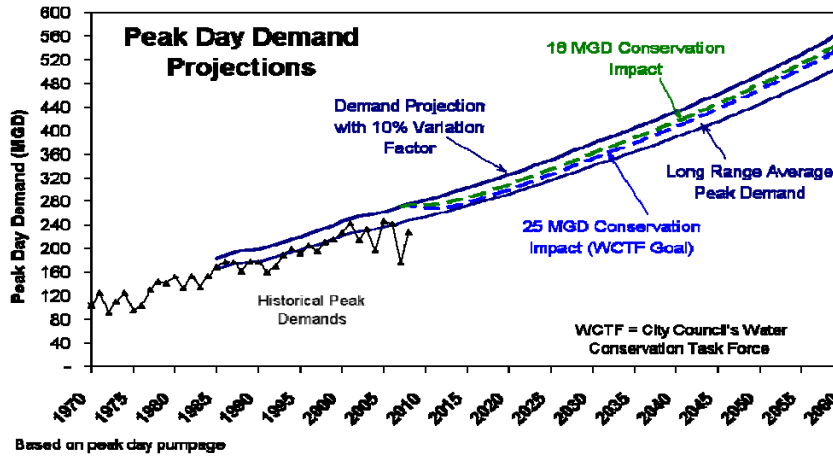
In addition to its GHG inventory, AWU developed a Climate Action Plan to identify projects and programs to reduce emissions. The following provides an overview of these actions.

**Water Conservation**

Since the largest portion of AWU greenhouse gas emissions originate from the generation of electricity used to treat and pump water, the most direct way to reduce AWU’s carbon footprint is to reduce water demand through water conservation and thus reduce electricity consumed for pumping and treating water. Conservation is also essential to AWU’s ability to delay the need for future water treatment plants, which saves money for ratepayers. Additionally, conservation measures made it possible for the City Council to further delay the completion date of Water Treatment Plant 4 for a year to search for a less environmentally fragile site. Ramped-up water conservation efforts had already added two years to the time when the need for the plant is projected.

2008 saw the introduction of new, permanent year-round outdoor water restrictions that limit commercial and multifamily customers to irrigating as well as seasonal residential irrigation restrictions for single family homes. These new restrictions will further reduce the City's use of energy. The following graph illustrates peak day water demand projections, including projections with water conservation measures in place.

Figure 6-9: Peak Water Demand Projections



**Energy Conservation**

GHG emissions from electricity use vary greatly depending on the fuel source of the electricity and the fuel mix of individual electric utilities. AWU is fortunate to have AE, a national leader in the use of renewable energy, as its main energy supplier. AWU is a participant in AE's GreenChoice® program.

While the most direct way for AWU to reduce GHG emissions is through working with its customers to reduce water demand, AWU is also reducing GHG emissions through efforts to improve energy efficiency at all AWU facilities. Separate improvements to the secondary treatment systems at both wastewater treatment plants have allowed operators to turn off one of the 2000-horsepower air blowers for significant periods, resulting in estimated savings at each plant of as much as 2,500 MWh per yr, or approximately 1,250 metric tons CO2-equivalent (MTCO2-e). Bids were also distributed for a primary electrical power system upgrade at the Walnut Creek Wastewater Treatment Plant, which will provide significant additional energy savings by automating the process

air system utilizing dissolved oxygen for blowers control and revamping two of the existing blowers to improve their efficiency. The upgrade is expected to result in savings of approximately 5 million kWh and 2,500 MTCO<sub>2</sub>-e, or an estimated 10-15% reduction of the plant's baseline operations. This project will go before Council in March 2009.

As work has continued on the design of WTP4, AWU has refined its estimates of the energy savings expected from the Plant when it begins operation. Because the plant will draw water from Lake Travis rather than Lake Austin, the higher elevation of this source water requires less pumping effort to get water to the same service areas currently served by the Davis WTP. AWU has estimated these savings to be 20 million kWh and 10,000 MTCO<sub>2</sub>-e per year, an estimated 13.5% less GHG emissions than if the same amount of water were delivered from the existing system.

### **Renewable Energy Generation**

A direct way that AWU and Austin Energy can work together in addressing climate change is through establishing renewable energy generation at AWU facilities. Alternative energy projects currently being pursued are solar and methane gas cogeneration. As construction of a new roof at AWU's Glen Bell Service Center moves forward, AWU is working with AE on a 115 kW solar array to be installed after the roof is replaced.

AWU is also repairing the cogeneration capacity at the Hornsby Bend Biosolids Management Plant. Currently, the methane gas produced from wastewater sludge treatment is used only for heating the anaerobic digesters that treat sewage at the facility. In the past the gas was also used to generate electricity for the plant, and planned repairs in 2009 should allow generation of at least 500 kW by 2010 with a potential of up to 2 MW in the future.

### **Fleet**

As the fleet ages, AWU continues replacing traditional vehicles, when possible, with hybrid vehicles and/or with vehicles that can use bio-fuels. AWU has 443 vehicles and equipment which are candidates to potentially run on alternative fuel, of which 394 are already running on alternative fuels. AWU's diesel fleet is currently operating on the B20 (a blend of 20% biodiesel and 80% diesel fuel). AWU fleet staff estimates a net savings of 600 tons of CO<sub>2</sub> annually by operating these trucks on biodiesel.

Staff is aware of the controversies concerning the relative impacts of bio-fuels from purpose-grown crops once the energy involved in production of the fuels is factored into the equation. AWU and the Solid Waste Department are engaged in discussions about using the grease from restaurants and other sources to produce waste-derived biodiesel that could power utility and other City fleets without the offsetting energy and social costs of bio-fuels from purpose-grown crops.

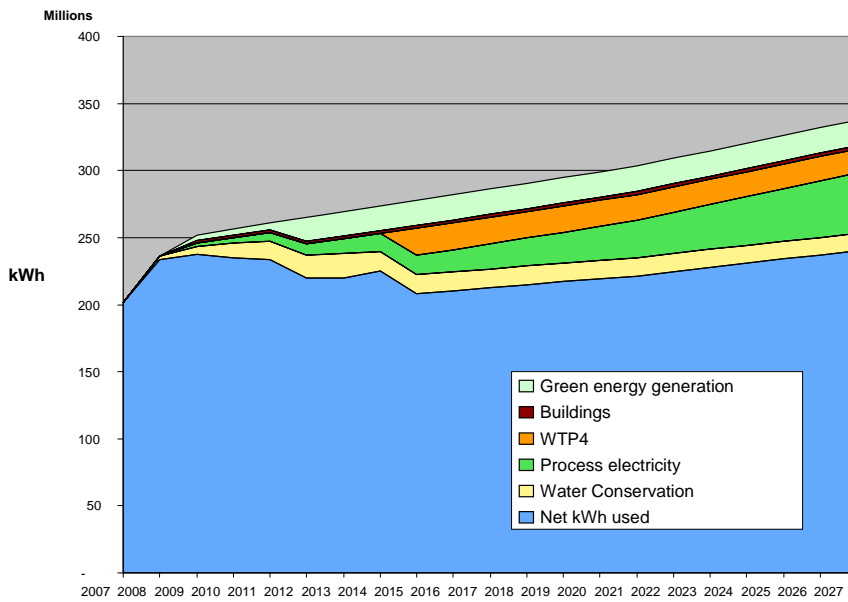
Another GHG reduction strategy that is moving forward is the replacement of gasoline and diesel generators, and idling vehicles powering equipment. Currently, equipment on many AWU vehicles is powered by a truck's idling engine. Television (TV) Inspection trucks, for example, which are used to examine sewage pipes for leaks and clogs, require a mobile energy source to send the cameras into the pipes. AWU has currently and successfully converted two TV Inspection trucks with non-combustion engine driven into two truck-mounted power units to supply the electrical needs of the on-board TV Inspection equipment.

### **Facilities**

AWU staff is also pursuing ways to improve general sustainability in administrative facilities such as the Austin Water Utility's main office, the Waller Creek Center. At Waller Creek, landscaping improvements such as native plants design and the use of alternative fueled equipment have been explored and the building was one of the first City facilities to go to "single stream" recycling. An environmental education program is also being development.

The following chart indicates possible electricity savings that could result from the implementation of different strategies discussed above.

Figure 6-10: Potential Electricity Savings and Net Usage at AWU



**CONCLUSION**

AWU continues to incorporate water conservation and education programs as well as a climate initiative program as priorities utility wide. With the goal to continuously look for new ideas to improve AWU processes and customer services, AWU encourages and considers different viewpoints and opinions in the quest to reduce its impact on our environment and to provide safe, reliable and high quality water services to customers. Through collaboration with citizens and other City departments AWU will reduce its impact on the environment while providing water and wastewater services to the community in an increasingly sustainable manner, adhering to the highest standards of ethics.