Chapter 1

CHAPTER ONE

Innovations and Accomplishments

On a daily basis, the Texas Commission on Environmental Quality undertakes a myriad of duties to fulfill its role as the state's leading environmental agency. Its major responsibilities fall under the broad categories of air quality water quality, and waste management.

In carrying out these endeavors, the agency is regarded as an innovator in developing programs that enhance environmental protection and data reporting. Among the environmental agencies around the country, the TCEQ has been recognized for initiative and creativity—trying something new, or taking an established practice and making it work better.

This chapter highlights some of the projects that have earned the TCEQ the reputation of being first among its peers.

Incentives Aim to Lower Diesel Emissions

Since 2002, the Texas Emissions Reduction Plan (TERP) has been awarding grants and rebates to obtain voluntary reductions in nitrogen oxide (NO_x) emissions in older heavy-duty vehicles and equipment.

Because NO_x is a leading contributor to the formation of ground-level ozone, lowering these emissions is key to achieving compliance with the federal Clean Air Act.

The TERP has been focused largely on the ozone nonattainment areas of Dallas-Fort Worth and Houston, but funding has also been awarded to projects in San Antonio, Beaumont-Port Arthur, Austin, Corpus Christi, and Tyler-Longview-Marshall. To be eligible, the projects must be diesel powered.

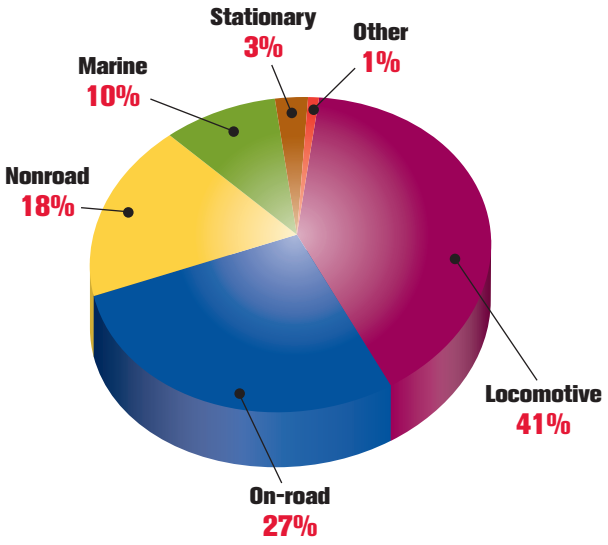
In all, the agency has issued $541.5 million under the TERP, for a total of 3,407 projects, or 7,875 individual vehicles and pieces of equipment. That represents an overall reduction of an estimated 126,963 tons of NO_x since 2002. On a daily basis, the reduction has been 57.09 tons of NO_x.

TERP projects have included:

- Purchase or lease of new, lower-emission equipment
- Replacement of old vehicles and equipment with newer, more efficient models
- Retrofits and add-ons that reduce emissions from vehicles, equipment, and stationary sources
- Infrastructure to support electrification, qualifying fuels, or reduced idling time
- Rail relocation and improvement

TERP Grants
2002 to August 2008

Over the life of the Texas Emissions Reduction Plan, grants and rebates have funded an overall reduction of 126,963 tons of nitrogen oxides (NO_x), a component of ozone. These NO_x reductions were from the following emission sources.



Drive Cleaner

AirCheckTexas saw a major expansion with the debut of Drive a Clean Machine, a program that helps motorists in certain counties replace older, polluting vehicles. As many as 1.9 million households in 16 eligible counties have been in the running for vouchers to help replace their older cars or trucks.

The program targets the areas of Houston, Dallas-Fort Worth, and Austin, all of which conduct annual tests of vehicle emissions.

Backed by a $90 million appropriation for the biennium, Drive a Clean Machine was formed to remove older, heavy-polluting vehicles from the road. Driving a new car, or a qualifying used car, is better for air quality than driving a vehicle that is 10 years or older. Today's new, low-emission vehicles can be up to 98 percent cleaner than those produced a decade ago.

When the AirCheckTexas Drive a Clean Machine program went public in December 2007, the response was so great that local program administrators had to add telephone lines and hire additional staff. Telephone calls to the program hotline topped 250,000 in all, and more than 43,000 applications were received.

Funding went so fast that in May 2008 the North Central Texas Council of Governments stopped accepting applications for a few months until new funds became available. In July, the Houston-Galveston Area Council placed applicants on a waiting list until fiscal 2009. Travis and Williamson counties continued to accept applications.

By August 2008, the program had removed and scrapped about 14,800 older, polluting vehicles in the participating counties. With the state-funded incentives, total removal could top 30,000 by September 2009.

Motorists must fit within income guidelines to qualify for vouchers. The vouchers provide:

- $3,000 for a car, current model year or up to three model years old
- $3,000 for a truck, current model year or up to two model years old
- $3,500 for a hybrid vehicle of the current or previous model year

Qualifying replacement vehicles are listed at **www.driveacleanmachine.org**.

AirCheckTexas also offers funding assistance to help eligible drivers repair vehicles that fail emissions tests (see Chapter 2).

Participating Counties

Dallas-Fort Worth: Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Rockwall, and Tarrant

Houston-Galveston: Brazoria, Fort Bend, Galveston, Harris, and Montgomery

Austin: Travis and Williamson

2008 Net Income Requirements

Under Drive a Clean Machine, income eligibility for households is set at three times the federal poverty level. Income levels are updated each February.

Household Size	Maximum Net Income (Per Year)
1	$31,200
2	$42,000
3	$52,800
4	$63,600
5	$74,400
6	$85,200
7	$96,000
8	$106,800

School Districts Curb Emissions

More than 36,000 school buses carry about 1.3 million public school students on a typical day in Texas. More than a third of the buses have been in operation 10 years or longer. The majority of these older school buses lack the most advanced emissions-reduction technology available. Without this equipment, potentially harmful emissions could enter the school bus cabin.

Diesel exhaust contains tiny pollutants, or particulate matter, that can cycle into the bus through the crankshaft or from the tailpipe. Exposure to diesel exhaust is known to aggravate asthma, allergies, and other respiratory problems. Long-term exposure may lead to more serious health problems.

The Environmental Protection Agency (EPA) increased emissions standards for new diesel engines, but the standards do not apply to older diesel engines. Therefore, one of the best ways to reduce

emissions from older engines is with retrofits using the latest technology.

The Legislature created a program to improve children's health by reducing diesel exhaust emissions from school buses. Under the Texas Clean School Bus Program, the TCEQ is authorized to provide grants for eligible projects to offset the incremental costs of emission-reducing projects.

Although issuing grants for retrofits is the primary objective, the program includes other approaches to reducing school bus emissions. One is creation of a Web site for the Texas Clean School Bus Program to serve as a clearinghouse for all Texas activities related to cleaning up school bus emissions. The Web site, at **www.texascleanschoolbus.org**, includes information on public and private grant opportunities, voluntary emissions-reduction strategies for school bus fleets, and technical details on bus emissions.

In fiscal 2008, the Texas Clean School Bus Program began providing grants that allow school districts to purchase and install emissions-reduction devices. The program designed a streamlined process, from application through reimbursement, to make it user-friendly for school districts. In addition, informational materials and the Web site help stakeholders and school districts learn about the program and educate others.

An enthusiastic response from around the state resulted in the issuance of $4.5 million in grants to 50 school districts. More than 2,500 school buses received retrofitted devices in time for the 2008-2009 school year.

The agency plans to award another $8 million in late 2008, based on a second round of applications that began in August. School districts and charter schools in Texas are eligible, and all sizes of diesel-powered buses receive consideration. Grant recipients must verify that the retrofits were made.

To get the word out about the program and the application process, the TCEQ has worked closely with public and private groups statewide, including councils of governments, the Environmental Defense Fund, and the Texas Parent Teacher Association.

Take Care of Texas

The TCEQ has a large number of regulatory and technical assistance programs that deal with municipalities, industry, and businesses. But one outreach program speaks directly to individual responsibilities.

The Take Care of Texas campaign urges Texans to take some simple steps that can go a long way toward improving the environment and keeping the state clean.

The statewide campaign, which kicked off in the spring of 2007, strives to involve families in lifestyle changes that help improve air and water quality, conserve water and energy, and reduce waste. In the process, households can also save money.

The agency established **www.takecareoftexas.org**, which offers materials ranging from general information about environmental programs to specific, step-by-step instructions that address common environmental problems. The site also includes kids' games and suggested activities with environmental themes.

In other marketing efforts, the TCEQ joined with the H-E-B grocery chain to display the Take Care of Texas message on reusable grocery bags. Stores sold about 1.4 million of the 99-cent totes, which reduce the use of plastic and paper bags. And Take Care of Texas messages were distributed weekly by the Texas State Radio Network to 127 stations statewide. The public service announcements, called the "Take Care of Texas Minute," were aired in English and Spanish.

Take Care of Texas recommendations offer practical, money-saving suggestions. For example:

Change the lighting: Choose compact fluorescent light bulbs, which use 67 percent less energy than incandescent bulbs and last up to 10 times longer.

Upgrade the HVAC: Select a properly sized Energy Star cooling and heating system to reduce home energy consumption and help improve air quality.

Cook efficiently: Reduce energy consumption by making sure that pots and pans are not smaller than the stove's burners. (A 6-inch pot on an 8-inch burner wastes more than 40 percent of the burner's heat.)

Load it up: Wash full laundry loads, instead of partial ones, and save more than 3,400 gallons of water each year, on average. Using cold water instead of hot or warm water nets more than $30 annually.

Watch the temp: Choose an Energy Star water heater for maximum efficiency and set the thermostat to 120 degrees.

Maintain the car or truck: Properly maintain the vehicle—change the oil, check tire pressure, and replace the filters—to reduce emissions and improve gas mileage.

Broad-based Air Monitoring Operations

To effectively monitor air quality, the TCEQ employs a vast monitoring network. In fact, the TCEQ collects data from the largest state-run monitoring network in the country. Fenceline monitoring of industrial plants is also a part of this comprehensive operation.

The network has grown over the years as a result of changes in federal air quality standards and the

increasing proximity between pollution sources and growing communities.

Fixed-site monitoring. The TCEQ and its air network partners operate air quality monitors in 57 counties. Of these, 39 counties host ozone monitors, primarily in and around urban areas.

Using some of the best technology available, the monitoring network—representing both public and private ownership—encompasses 217 stations. (A single station can contain up to 15 instruments, and a single instrument can collect data on as many as 100 pollutants.) More than 200 million data points are collected each year from the network.

This broad network includes not only state-owned sites, but also stations funded by Harris County and Galveston County; the cities of Houston, Dallas, Fort Worth, El Paso, San Antonio, and Victoria; and councils of governments based in Austin, San Antonio, Corpus Christi, Southeast Texas, and East Texas. The network also includes industry-sponsored stations (whose data is hosted by the TCEQ), established as part of self-monitoring initiatives, voluntary agreements, court orders, or Supplemental Environmental Projects resulting from enforcement actions.

The main network components of fixed-site monitors are:

- Continuous-monitoring stations that take 5-minute average measurements of ozone, NO_X, carbon monoxide, and other compounds, in addition to several weather features.
- Automated gas chromatographs, owned by the TCEQ and by industry, that tie into agency computers. This equipment separates and identifies 48 to 65 compounds, producing hourly readings.
- Stations, mostly along the Gulf Coast and in urban areas, that take canister samples for volatile organic compounds (VOCs). The 24-hour samples are collected every sixth day for the laboratory analysis of more than 100 air toxics and ozone precursors.
- Non-continuous $PM_{2.5}$ filter samplers and automated continuous $PM_{2.5}$ monitors that measure for microscopic particulate matter, such as soot, smoke, and dust.

Mobile monitoring. While the fixed-site monitoring network can detect ongoing pollutant levels of potential concern, of equal importance is the task of finding which emission sources are primarily responsible for the emissions. Van-based mobile monitoring stations monitor air quality upwind and downwind of specific industrial facilities. This focuses attention on potential sources during permitting, inspections, enforcement, and voluntary emission-reduction efforts.

Mobile monitoring also allows the TCEQ to gather some air quality monitoring data in areas that do not have a fixed monitoring station, which is valuable in evaluating air quality in relation to complaints or concerns regarding such pollutants as particulate matter, VOCs, and sulfur compounds.

Staff is working to improve the monitoring capability in terms of VOC identification and the transmission and loading of monitoring data, including sampling locations, into the Leading Environmental Analysis and Display System. Streaming data into the LEADS will allow quicker access to air quality data and verification of where the data was collected in relation to on-site meteorological conditions and potential emission sources.

Targeting Industrial Pollution

Harris County and its neighboring counties are home to eight petroleum refineries, three of which are listed among the 10 largest in the United States. Also, more than 150 chemical facilities in the area provide products for the domestic and international markets.

Even with widespread growth, the region continues to make improvements in air quality. With state regulations and enforcement activity, NO_X emissions have fallen by 57 percent and VOCs by 38 percent since 2000. This represents a total reduction of 675 tons per day of these smog-forming pollutants.

The TCEQ and partners in local government and industry jointly operate a network of 65 stationary monitors, some of which calculate hourly averages of pollutants day and night. The innovative system includes monitors capable of triggering e-mail alerts when concentrations spike, so that the TCEQ and its partners can quickly look for the emissions source.

To track industrial emissions in the Houston area, the TCEQ targets specific toxic air pollutants—for example, benzene, a well-documented carcinogen that is an essential part of products such as gasoline, packaging, and compact discs. For this purpose, the agency has assembled an array of advanced monitoring tools.

Infrared cameras. With the technology of the GasFindIR camera, which was developed for the military, TCEQ investigators can view emission plumes invisible to the naked eye. Of the agency's six cameras, two are assigned to the Houston regional office. The infrared cameras have been dispatched on aerial surveys of industrial sites and are used in on-site inspections. Also, TCEQ investigators ride on U.S. Coast Guard vessels to conduct infrared-camera observations of facilities along the Houston Ship Channel. The TCEQ was the first state agency in the country to use this tool for monitoring air quality.

High-tech vans. The TCEQ deploys up to eight mobile monitoring vans to conduct monitoring for different pollutant types, sampling upwind and downwind of specific facilities to identify pollution sources. This practice is helpful when there is no stationary monitor nearby or when a stationary monitor has identified key pollutants in a highly industrialized area. Agency vans drive outside a company's fence line, with monitors positioned according to the wind direction, to pinpoint sources of elevated emissions.

Differential absorption lidar (DIAL). This imported mobile monitoring unit combines infrared and ultraviolet laser technology to scan industrial facilities and measure industrial emissions from sources such as storage tanks, flares, and cooling towers. Following a five-week trial in the Houston area, the TCEQ began reviewing DIAL monitoring data in 2007 to determine whether conventional calculation methods used to estimate emissions result in the underrepresentation of some sources that are difficult to monitor. The trial period represented the first time DIAL equipment had been used in the United States. A final report is expected in fiscal 2009.

In another development, the Coast Guard is helping to pinpoint emissions from vessels traveling through the ship channel. The TCEQ hosts data from an industry-sponsored monitor—an automated gas chromatograph—at the Lynchburg Ferry. Using real-time data, the monitor issues an alert when elevated benzene concentrations are detected. The Coast Guard checks wind direction and provides a radar picture of the tugboats and towboats that were nearby at the time of the concentration spike.

The state does not have the authority to regulate marine vessels in transit, but the TCEQ's pollution prevention team contacts tug, tow, and barge owners to find out what the barge was carrying and its travel route. With this information, the agency may be able to determine whether barges carrying benzene products are contributing to spikes in benzene levels.

Continuous Water Quality Monitoring

Seven years after its first installation, the TCEQ's Continuous Water Quality Monitoring Network has expanded to 60 sites. Day and night, the automated equipment accomplishes its tasks in or near rivers, streams, reservoirs, and bayous. A variety of equipment measures basic conditions such as dissolved oxygen, temperature, pH, and water levels. At select sites, certain nutrients, such as phosphorus, are monitored several times a day by automated chemistry labs.

Every 15 minutes, the autonomous monitors collect data on these environmental conditions in places as diverse as Caddo Lake in East Texas and the Pecos River in the Chihuahuan Desert. The data is transmitted to TCEQ computers and posted at **www.texaswaterdata.org**.

With the many advances in continuous monitoring over the years, the TCEQ has become a pioneer in the use of long-distance continuous monitoring and reporting of water quality. Most states still rely on the traditional method of collecting data for laboratory analysis—sending staff to manually take water quality measurements with a variety of instruments. But at high-priority water segments, TCEQ staff wanted more frequent data on changing conditions in certain water bodies. Experiments led to the deployment of solar panels, satellite telemetry, data-acquisition electronics, and meteorological sensors.

The TCEQ is now pushing the network to even higher levels by documenting water quality trends, tracking cleanup of water bodies, prioritizing field investigations, and providing water quality data to local governments. The agency even plans to demonstrate that automated monitors can make timely management decisions—that is, use water quality data to take independent actions, such as closing a valve, initiating monitoring, or turning on pumps to prevent water contamination.

Expansion of the Continuous Water Quality Monitoring Network

Fiscal Year	Number of Monitors
2008	60
2007	51
2006	31
2005	22
2004	11
2003	8
2002	4

The monitoring network is called on every day to guide decisions on how to better protect certain segments of rivers or lakes, as seen by the following.

Brazos River Basin. The TCEQ has seven continuous water quality monitors in the six-county area comprising much of the North Bosque-Leon watersheds, northwest of Waco. The monitors are part of the agency's cutting-edge Environmental Monitoring and Response System (EMRS), which is focusing on potential pollution sources at the "microwatershed" level. The streambeds in these microwatersheds are normally dry and run only after significant rainstorms. By monitoring areas of just 1,000 to 1,500 acres, which have a limited number of potential sources for contamination, the agency can better monitor the runoff and target potential field investigations. (See North Bosque Cleanup," page 21.)

Lower Rio Grande. Under an international treaty, both Texas and Mexico get allotments from the Rio Grande each year. Water taken by Mexico below the Falcon Reservoir dam eventually drains back to the Rio Grande upstream from the Anzalduas Reservoir, near Mission. The TCEQ continuously monitors the quality of reservoir water near the El Morillo drain, where water

draining off Mexican agricultural fields returns to the Rio Grande. These agricultural return flows sometimes have high concentrations of total dissolved solids (salts). When TCEQ monitors detect high saline levels, the agency requests that the International Boundary Water Commission (IBWC) release more water from Falcon Reservoir to freshen the water in the Anzalduas Reservoir. If the IBWC confirms that Mexico failed to properly operate the drain to divert the salty return flows, the water released by the IBWC comes out of Mexico's allotment.

San Antonio River Basin. The TCEQ often gets a helping hand in building and maintaining complex monitoring systems. One partner is the San Antonio River Basin Monitoring Network, which generates real-time water quality data at six sites. This network, with 15 participants from the public and private sectors, also produces information about baseline conditions so that long-term water quality trends can be monitored during urban development. The voluntary partnership has saved the state almost $500,000 in equipment, installation, monitoring, and maintenance costs.

Citations in the Field

With field citations, the TCEQ can more quickly handle enforcement of certain clear-cut environmental violations. Seventeen violations are now eligible for this expedited procedure.

The use of field citations began in March 2006 after an agencywide review of the enforcement process suggested that the agency and the regulated community could benefit from quicker resolutions, when feasible.

Violators have 30 days to pay the fine and 45 days to correct the problem. Otherwise, the reduced penalty will be withdrawn, and the case will be sent through the standard enforcement process. Under standard procedures, enforcement is usually initiated 30 to 60 days from the investigation date. But with field citations, the entire process can be wrapped up in 60 days or less.

A regulated entity can be offered only one field citation per violation in a five-year period. The Commission must approve each citation and penalty.

A high number of field citations have been issued for petroleum storage tank (PST) violations, primarily at retail gasoline stations. The storm water program also sees many field citations, primarily violations of the multi-sector general permit and construction permit. Field citations also address failure to obtain water rights permits, occupational licenses, on-site sewage facility permits, and dry cleaning registrations.

Field Citations Enforcement Program

Fiscal Year	Number of Citations Issued	Penalties Assessed
2006 (March to August)	64	$109,725
2007	140	$192,895
2008	143	$111,752

Processing Permits

Since the inception of the Permit Time-Frame Reduction project in 2002, the TCEQ has made significant progress toward its goal of improving permitting efficiencies and reducing the backlog of permit applications. Most notably, the agency reduced the overall backlog of uncontested permits—from 1,150 to 109—over the last six years.

A backlog occurs when a permit exceeds its targeted "time frame," the amount of time required to complete all the steps in processing the application.

Staff continues to build on this success by implementing a new program called Project Time-Frame Tracking. This initiative focuses not only on permits but also on nonpermitting functions such as water system plans and specification reviews, water district bond reviews, Superfund cleanups, corrective actions, and voluntary cleanup.

For a full report, see Appendix B.

Late Payments Come Due

The TCEQ's get-tough stance on delinquent fees and penalties has helped boost the agency's overall collection rate.

A new collections protocol was enacted in September 2006, after the Commission agreed that the agency would no longer issue, amend, or renew permits, registrations, or certifications for any person or entity with overdue penalties or fees. This requirement also applies to anyone seeking to obtain or renew an occupational license.

The agency's collection rate in fiscal 2006 was just under 97.9 percent of the $137 million invoiced.

But with the new policy in effect in fiscal 2007, the collection rate was 98.1 percent of the $139 million in invoices issued that year. In fiscal 2008, the collection rate was 98.2 percent of the $140 million in invoices issued.

Under the delinquent fee and penalty protocol, the agency will not declare an application to be administratively complete if the applicant is delinquent in any payments. Nor will the agency complete the processing of an application, even if it had been ruled administratively complete before staff knew about the late payments. The protocol allows certain exceptions, such as with applicants who agree to a TCEQ-approved payment plan or are engaged in bankruptcy proceedings.

So far, the biggest impact of the policy has been to speed up collections, which improves the agency's ability to fund its programs.

In fiscal 2006, the agency referred 3,635 accounts to a collection agency, for a total of $1.5 million in late payments. But in fiscal 2007, 3,588 accounts were referred, representing a total of $870,000 in overdue payments, and 3,418 accounts were referred in fiscal 2008, representing a total of $1.1 million in overdue payments.

eServices Expand

The TCEQ has continued to expand its menu of electronic services that are available to the regulated community and the general public.

Prior to Commission meetings, for instance, the agenda and backup materials for each agenda item are now posted on the agency Web site 19 days before the meeting—on the same day that the printed materials are available to anyone who visits the Office of the Chief Clerk. This gives the public easy access to the full agenda and to all background materials.

The public can follow meeting proceedings in real time through **www.texasadmin.com** or find archived meetings for the last six months. Webcasts are also provided for meetings of several agency advisory groups. The webcast link is on the agency's newly designed home page.

To better serve the public, the TCEQ redesigned the home page and upper-level navigation pages of its Web site. The redesign improved the site's usability and appearance. The year-long project included extensive testing—involving more than 100 customers from both the regulated community and the general public—to arrive at a design that would best meet the needs of the many audiences the agency serves.

Individuals can also search the TCEQ Web site for orders pertaining to permit applications that have completed the administrative hearings process, as well as for enforcement orders, resolutions, and other orders issued by the Commission. They can also register online for TCEQ seminars and workshops.

The expansion of online government offers greater efficiencies to companies, municipalities, and individuals conducting business with the agency. The TCEQ began moving some of its permitting and reporting functions to the Internet in 2002 with the creation of the State of Texas Environmental Electronic Reporting System (STEERS). Since then, each year has bought new online features.

Here are the main categories of the TCEQ's online services:

ePermits. This automated system allows for not only the submittal of forms but also the issuance of authorizations and permits. The estimated time for filling out a form, paying the application fee, and printing the permit authorization is less than 30 minutes. Through STEERS, regulated entities have been able to submit electronic applications for coverage under two storm water general permits. Recent advances have created a more modernized ePermits system, which works with the agency's Central Registry to instantly assign customer and regulated-entity numbers along with the permit numbers. This gives the TCEQ the flexibility to add applications with minimal modifications. The first phase covered the general permits for storm water discharges related to industrial and construction activities. Since implementation of electronic processing for the two general permit types in February 2008, almost half of the 15,275 incoming applications were submitted and processed through ePermits. The TCEQ is developing e-permitting for additional types of applications. By the end of 2009, the agency expects to have online applications for concentrated animal feeding operations.

eReporting. Online reporting services allow regulated entities to electronically fulfill reporting requirements related to air emissions and maintenance events, industrial and hazardous waste, self-certification of underground petroleum storage tanks, and annual air emissions inventory data. Another category of online reporting is the discharge monitoring reports (DMR) for facilities covered under the Texas Pollutant Discharge Elimination System permit. In 2006, Texas became the first state to establish a paperless DMR system for the secure submission of compliance reports. The TCEQ has been working on a new DMR system, NetDMR, which will be compatible with EPA's new database for water quality permit and compliance information. This is expected to be completed by August 2009.

ePay. This online payment application uses **www.texasonline.com** to provide a secure environment for financial transactions. Users may pay many fees and assessments with a credit card or electronic check. Since becoming available in 2004, the system has handled about $11.7 million in revenue associated with TCEQ fees and assessments. It now processes more than 2,000 transactions a month.

eLicenses. With this service, renewing TCEQ occupational licenses and registrations is easily accomplished online. The site contains applications to renew both individual licenses and company registrations.