Ongoing Clean Air Efforts

The Air Improvement Resources Committee, tasked with oversight of air quality planning for the San Antonio region, is working to improve air quality in the San Antonio region. The Clean Air Strategies listed below are locally developed and currently in use. They illustrate the on-going proactive work of business, industry and citizens throughout the area.

Texas Low-Emission Diesel (TX-LED) Fuel

- Texas Low-Emission Diesel (TX-LED) Fuel: Low-emission diesel is currently being used voluntarily by local fleets on an accelerated timeline. Use of this fuel in existing diesel engines cuts NOx emissions by 5-7%. Use in new cleaner diesel engines or engines retrofitted with clean technology gives greater emission reductions.

Distribution

- Produced by Valero; purchase contract signed by Texas Department of Transportation (TxDOT) and this contract available to all area governmental entities. TxDOT established the base contract and has begun taking delivery in San Antonio. Bexar County and VIA are concluding their contracts and delivery is imminent.

History

- Production of TX-LED began in April 2003
- Local distribution began first to TxDOT here in San Antonio.
- TX-LED fuel with a maximum sulfur content of 500 parts per million (ppm) will be in distribution April 1, 2005 as required by 30 TAC §114.312. This requirement will be enforced by the Texas Commission on Environmental Quality (TCEQ) through the TX-LED Fuel Program, which requires the use of low-emission diesel year-round for on-road vehicles and non-road equipment in 110 central and eastern Texas counties.[1]
- TX-LED fuel with a maximum sulfur content of 15 ppm will begin production June 1, 2006. This is mandated by the EPA by way of the Highway Diesel Fuel Sulfur Control Requirements which will be in effect by the middle of June 2006.
- Local, voluntary use is TX-LED years before it is required is a very effective way to help clean up our air now.

Agreement for Use

- Beginning in 2005, TX-LED fuel standard (500 ppm) will be required by TCEQ for areas in Texas located East of the Interstate 35.
- Beginning in 2006, TX-LED fuel with a sulfur content of 15 ppm will be required under federal law for diesel engines throughout the state.

Cost

- The Texas Emission Reduction Program (TERP) may fund TX-LED use since it is a

[1] Texas Motor Vehicle Fuel Programs, Texas Commission on Environmental Quality. Available online: http://www.tnrcc.state.tx.us/air/ms/fuelprograms.html#dsl1

qualifying fuel that reduces NOx emissions.[2] TX-LED fuel meets and exceeds federal requirements by reducing the volatile light ends beyond federal requirement, which gives this fuel the NOx reduction of around 5%. This reduction qualifies it for TERP funding where federally specified ultra low-sulfur diesel does not.

Lower Reid Vapor Pressure Gasoline

- Lower Reid Vapor Pressure Gasoline[3]: fuel that is refined to have a lower evaporation rate and lower volatility then conventional gasoline. Evaporative emissions, which are generated during vehicle refueling, are reduced thus decreasing VOC emissions, an ozone forming compound.

History

- Low Reid Vapor Pressure gasoline was made available in the spring of 1998 by Ultramar Diamond Shamrock during the months of May to October.
- Through the successful intervention of San Antonio Mayor Howard Peak, Exxon Co. USA, along with other gasoline wholesalers, agreed to make low Reid vapor pressure gasoline available to San Antonio residents in 1999. This proactive effort helped assure early, effective use of cleaner fuels in our region.

Implementation

- The current state Regional Low Reid Vapor Pressure program requires the use of low Reid vapor pressure gasoline in Bexar, Comal, Guadalupe, and Wilson counties along with 91 counties in the eastern and central parts of Texas.
- In May 2001, gasoline in Bexar, Comal, Guadalupe, and Wilson had a maximum Reid Vapor Pressure of 7.8 pounds per square inch during the months of June to October.

Cost

- About 0.2 to 0.3 cents per gallon[4]

Transportation Demand Management

Transportation Demand Management (TDM): Several local businesses participate in TDM by promoting single occupant vehicle alternatives for their daily commute to work. TDM reduces traffic congestion, improves air quality, and by maximizes the use of the existing transportation infrastructure. Some measures include carpooling, vanpooling, taking the bus, walking, bicycling, telecommuting, and compressed work weeks, which are described

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[2] "Texas Emissions Reduction Plan (TERP): Incentive Grants for Reducing Emissions," Texas Commission on Environmental Quality. Available online: http://www.tnrcc.state.tx.us/oprd/sips/grants.html

[3] Texas Commission on Environmental Quality. The Regional Low Reid Vapor Pressure (RVP) Gasoline Program. Available online: http://www.tnrcc.state.tx.us/air/ms/fuelprograms.html

[4] Texas Commission on Environmental Quality. Requirements for Gasoline Volatality and Sulfur Content in East and Central Texas and Federal Clean Air Act §211(c)(4)(C) Waiver Request. Available online: http://www.tnrcc.state.tx.us/oprd/rule_lib/4cleanga.pdf

below .[5] Local entities who are participating in TDMs are listed below.

- Rideshare: Individuals commute with other individuals, resulting in multiple commuters as opposed to single occupant driving.
- Telecommuting: Involves employees working from home or at a satellite center through the use of a computer and a telephone linked to the workplace.
- Flex Time: Employees have flexibility in setting arrival and departure times at the workplace. In general, employees are allowed to arrive at work within a predetermined range of time, usually a two to three-hour window, and depart 8 hours later.
- Compressed Work Week: Schedules designed to compress the number of days worked each week so employees work fewer days per week without losing total hours. This is accomplished by working more hours in a single day.
- Staggered hours: Work schedules are comprised of staged work-start times determined by the employer with ensures that all employees are not on the road thus commuting to work at the same time. Employees may come in at one-hour increments throughout the morning. Once the employees work their completed shift then they may leave, allowing schedules to cover a large time frame.

Usage

- Large employee-based companies may receive technical assistance for TDM implementation within the company.
- The following table details the various companies within the San Antonio area that use TDM.

Cost

- Costs vary according to the TDM implemented within the company and the number of participating employees.

Current Employee Participation Per Program for TDM

Company	CWW9	CWW4	STAGGERED HOURS	FLEX-TIME	TELECOMMUTE
311 Human Systems Wing-Brooks AFB, TX	1				
37 SPTG, Lackland Air Force Base			4000	2500	
Audie L. Murphy Veterans Administration	117	50	885		1
Bexar County	42	42	210	210	42
Big Red / 7-Up Bottling Co.	17.5		65		
City of Alamo Heights				4.5	
City of Castle Hills		2			
City of China Grove				2	
City of Hill Country Village		10			
City of Leon Valley **	19		15		
City of San Antonio	15	1343	1812	0	22
Comal ISD (Summer Only)		800			

[5] Transportation Demand Management Program, City of San Ramon, Californaia. http://www.ci.san-ramon.ca.us/transp/tdm.htm

Company	CWW9	CWW4	STAGGERED HOURS	FLEX-IME	TELECOMMUTE
Dean Word Co. Ltd.			90		
Dee Howard Aircraft Maintenance, L.P.			298		
Education Service Center, Region 20			75		
Focus Direct, Inc.		32	52	7	
Goodwill Industries			5		
Guadalupe Valley Hospital		10		2	6
Harlandale ISD				20	
Harlandale ISD (Maintenance Department)			200	200	
Health South RIOSA *	4				
John B. Sanfilippo & Son			285		
LaVernia ISD (Summer Only)		23	0	0	
LeadingEdge Personnel			5		
Marion ISD		25			
Mission Road Development Center			72	5	2
Morningside Ministries					3.5
Northside ISD			9500		
Oberthur Gaming Tech.			12		
Our Lady of the Lake University (Summer Only)		350			
Randolph Air Force Base	219	5		406	
Randolph-Brooks Federal Credit Union			25		
San Antonio - Bexar County MPO			7		
San Antonio Express-News		25			12
San Antonio Federal Credit Union**	13				
San Antonio Housing Authority		1	21	13	1
San Antonio Independent School District		8	74		
San Antonio Missions National Historical Park		2	52		
San Antonio Police Department		225			
Schertz-Cibolo-Universal City ISD		10	10		
Science Applications International Corp (SAIC)			25		6
Southside ISD (Summer Only)		60			
Southwest Independent School District			829		
Southwest Mental Health Center				10	
Southwest Texas State University				7	7.5
Standard Aero (San Antonio), Inc			476		
State Bank & Trust of Seguin, Texas			10		
Sterling Metal Products			6		
Texas Department of Human Services	300	200	100		
Texas Department of Transportation		21		248	
Tobin International Ltd.	94	20		24	2
Town of Hollywood Park			1		
U.S. Army Garrison, FSH, TX.	1250	275		600	
U.S.A.A.		6940			727
Valero Energy Corporation	1127				
VIA Metropolitan Transit Authority		48	1416	258	

	CWW9	CWW4	STAGGERED HOURS	FLEX-TIME	TELECOMMUTE
VNA & Hospice			7.5		1
Wallace L. Boldt, General Construction, Inc.			20		
WellMed at Greenway Park	7		5		1
YMCA of San Antonio & the Hill Country			650		
Zachry Construction Corporation		20		20	15
Totals	**CWW9**	**CWW4**	**STAGGERED HOURS**	**FLEX-TIME**	**TELECOMMUTE**

Total Employee Participation per Program	3225.5	10547	21315.5	4536.5	849
Total EmployeeParticipation	40473.5				

***Compressed Work Week 12**
****Compressed Work Week 4 1/2**

TransGuide Traffic Management System

- TransGuide Traffic Management System: TransGuide provides information to motorists about traffic conditions, accidents, congestion and construction.
- TransGuide uses cameras, message signs, and fiber optics to detect travel times and provide the information to motorists with message signs on highways, the Internet, and a Low-Power Television Station.
- The information provided by TransGuide assists emergency response crews to rapidly respond to accidents and emergencies.
- Information provided by TransGuide notifies motorists of impending delays thus alternate routes may be taken which in turn reduces the number of idling cars.

Agreement of Use

- The TransGuide system was funded by Texas Department of Transportation, VIA Metropolitan Transit, and the City of San Antonio.

History

- Program initiated in 1995.
- The TransGuide system currently encompasses 87 miles of San Antonio highway.
- TransGuide is projected to cover 289 miles of highway in San Antonio.[6]

Air Quality Health Alerts

- Air Quality Health Alerts on the Metro Section of the San Antonio Express News: If unhealthy ozone levels are predicted, an "Air Quality Health Alert" is announced to the media and public for the following day so that people can take steps to protect their health and help to reduce the pollution emissions that eventually become ozone.
- The San Antonio Express News provides the warning on the front page of their Metro section.

[6] "TransGuide; Technology in Motion." Texas Department of Transportation, July 1995. Available online: http://www.transguide.dot.state.tx.us/index.php

- AACOG provides the distribution of Air Quality Health Alerts to individuals and businesses throughout the San Antonio region.

Delay in School Start Dates

- Move Opening Day for Public Schools to the End of Summer: School start dates for public schools may not be before the week August 21st falls in during the school year.
- This measure helps to prevent heavy traffic associated with school travel during the peak of our local ozone season, which runs from the middle of August through September.

History

- Senate Bill 108 of the 76th Texas Legislature passed the bill and was signed by Governor Perry. The law was in effect September 1, 2001.

Energy Efficiency under Senate Bill 5

- Energy Efficiency Requirements (Senate Bill 5): Energy efficiency measures are mandated by the Texas Emissions Reduction Program (TERP) and include energy conservation, use of renewable energy sources, adoption of resource-efficient building standards, and others.
- Senate Bill 5 addresses building standards by adopting, statewide, the International Residential Code for single-family residential construction and the International Energy Conservation Code for all other residential, commercial, and industrial construction.
- For the residential sector alone, the State Energy Code is expected to reduce emissions associated with energy use by 3-6 tons/peak day statewide using 2000 as the base year.[7]

Agreement of Use

- The energy efficiency program requires that political subdivisions, with the exception of school districts, in 38 affected counties (including Bexar, Comal, Guadalupe, and Wilson) implement all cost-effective energy-efficiency measures.
- In response, the City of San Antonio, Bexar County, and City Public Service collaborated with other partners to form the Metropolitan Partnership for Energy (MPE). The MPE develops and implements energy and emissions reduction policies throughout the San Antonio region, assists with energy efficiency plan development, and promotes energy conservation, recycling, use of renewable energy, use of "green building" practices, and other energy programs.[8]
- AACOG has hosted five workshops for builders, business owners, and consumers.
- The political subdivisions must establish a goal to reduce their electric consumption by

[7] Verdict, Malcolm, C.E.M., July 7, 2003, Presentation to the MPE Board of Directors titled, "Creditable Emissions Reductions from Energy Efficiency." Energy Systems Laboratory, Texas A&M University System.
[8] The mission and goals of the Metropolitan Partnership for Energy are available at http://www.mp4e.info/index-mission.htm

five percent each year for five years beginning January 1, 2002. The following table lists the political subdivisions that have met their energy reducing goals as reported by the State Energy Conservation Office.

Energy Efficiency under Senate Bill 5

Entity	Established Goal	2001 Report	2002 Report
Bexar County	X	X	X
Bexar County Hospital District		X	
Cibolo Creek Municipal Authority			X
City of Alamo Heights	X	X	
City of Castle Hills		X	
City of Cibolo	X		X
City of Garden Ridge	X	X	
City of Helotes	X	X	
City of Hill Country Village	X	X	
City of Kirby	X	X	
City of LaVernia		X	
City of Leon Valley		X	
City of Olmos Park	X		X
City of Poth	X		X
City of San Antonio	X		X
City of Seguin	X	X	X
City of Selma		X	
City of Terrell Hills	X	X	
New Braunfels Utilities	X	X	
San Antonio Water System		X	X
VIA Metropolitan Transit	X		X

Cost

- SB 5 requires that political subdivisions in the 38 affected counties implement all cost-effective energy-efficiency measures. It is up to the subdivisions to determine what is and isn't cost effective. However, many energy reduction projects have short payback periods. For example, replacing light fixtures with energy-efficient lights and implementing other building "tune-ups" generally pay for themselves in less than two years.[9]

Alternative Fuel Refueling Stations

- Alternative Fuel Refueling Stations: - Six state-of the art propane E-85 refueling sites are planned for the I-35 Corridor in the Austin/San Antonio Area.
- The refueling stations will be available to public and private fleets 24 hours a day.

[9] Verdict, Malcolm, C.E.M., July 7, 2003, Presentation to the MPE Board of Directors titled, "Creditable Emissions Reductions from Energy Efficiency." Energy Systems Laboratory, Texas A&M University System.

- The program is designed to increase the use of alternative fuel vehicles for cities, counties, local educational agencies, state fleets and the general public to reduce pollution and lessen our dependency on foreign oil.
- Establishing locations for the refueling stations was based on the proximity of participating fleets in the area, such as City Public Service vehicles and Bexar County vehicles.

Agreement of Use

- The state-of-the-art propane refueling dispensers will look and operate just like gasoline-style pumps and will be located at public refueling stations.
- Once an 'Access' card is obtained, customers can pay with any form of credit card 24 hours a day.

Cost

- Funding for the six sites came from The Department of Energy (DOE) through the Texas State Energy Conservation Office in the amount of $250,000.

By increasing alternative fuel distribution, these stations will augment the use of alternative fuels use by many of the following fleets: CPS, CoSA, Bexar County, VIA Metropolitan Transit

Alternative Fuel Vehicle Use

- Alternative Fuel Vehicles: Various public and private fleets in the San Antonio region have converted gasoline-powered vehicles or purchased vehicles which use alternative fuels.
- Vehicles that run on alternative fuel emit less ozone precursor emissions.

Distribution / Usage

- The table details the number of alternative fuel vehicles currently in use in San Antonio and Bexar County.

AFVs for the Alamo Area Clean Cities Coalition		
Vehicle Class	**Fuel**	**2001 Reported Total**
Light Duty	CNG	290
	LNG	0
	Propane	1643
	Ethanol	182
	Electric	52
	Biodiesel	0
	Light duty Subtotal	**2167**

AFVs for the Alamo Area Clean Cities Coalition		
Vehicle Class	**Fuel**	**2001 Reported Total**
Heavy Duty	CNG	0
	LNG	0
	Propane	95
	Ethanol	0
	Electric	0
	Biodiesel	0
	Heavy duty subtotal	**95**
Grand Total		**2262**

The following list describes ownership of five major fleets and the number of alternative fuel vehicles they had in operation at the beginning of 2002:

Bexar County	**77**
CPS	**26**
NISD	**444**
COSA	**331**
TxDOT	**188**
Total	**1066**

Cost

- Costs vary according to vehicle type as well as alternative fuel type.

Comparison of Alternative Fuels

Criteria	CNG	LNG	LPG	Methanol	Ethanol	Electric
Conversion Costs	$2500-$3000	N/A	$2000-$3000	$1500-$3000	$2000-$3000	$4000-$5000
Projected OEM* Cost	$1000-$2000	$30000-$50000	$300-$1000	$400-$1000	$1000-$2000	$1950-$7000

*OEM- Original Equipment Manufactured

Adopt a School Bus

Adopt a School Bus: A cooperative partnership established to aid non-attainment and near-non-attainment area school districts replace their aging diesel school buses with new “clean fuel” buses. The primary goal of the Adopt-A-School Bus Program is to:

1. Reduce school children's exposure to both cancer-causing and smog-forming pollution.
2. Reduce Particulate Matter (PM) and Nitrogen Oxides (NOx) emissions by targeting the oldest diesel buses in a school’s bus fleet for priority replacement.
3. Educate school districts and corporations about the benefits of replacing older diesel buses with lower emissions “clean fuel” buses.

Distribution / Usage

- School districts with diesel powered buses manufactured before 1996 are eligible to participate in this program.
- Identification of these districts and the determination of the numbers eligible will begin July 2003.

History

- This program will last approximately three years and around 275 buses are believed to be eligible.

Agreement for Use

- This program is entirely voluntary. Application will be similar to that for a grant program and the best projects will be selected for funding.

Cost

- Cost will be jointly funded by private contributions (adoptions) and district match.

National Low Emission Vehicle (LEV) Program *(Federal Program)*

- National Low Emission Vehicle (LEV) Program[10]:[11] Program that will make new cars significantly cleaner burning than previously mandated by federal regulations. This program would achieve substantial pollution reductions while providing the automotive industry flexibility to meet program standards.

Agreement of Use

- States and automotive manufacturers opted into the program with the Environmental Protection Agency providing regulatory stability as well as emissions standards based on a combination of California and federal motor vehicle standards.

History

- Program initiated in 1998.
- Program became effective in Bexar County with vehicle model year 2001.

Cost

- Applicable to vehicles model year 2001 and future models.

On-Board Refueling Vapor Recovery *(Federal Program)*

- On-Board Refueling Vapor Recovery: Emission control system found on vehicles that

[10] U.S Environmental Protection Agency (December 1997), Regulatory Announcement:Final Rule for the National Low Emission Vehicle Program. Washington D.C Available online: http://www.epa.gov/otaq/regs/ld-hwy/lev-nlev/sfrm-fs.pdf

[11] U.S. Environmental Protection Agency (July 1998). Information Sheet #6: effect of the New National Low Emission Vehicle Standard for Light Duty Gasoline Fueled Vehicles. Ann Arbor, Michigan. Available online: http://www.epa.gov/oms/m5.htm

inhibits the emission of fuel vapors from a vehicle's gas tank during refueling. Within the gas tank and fill pipe of a vehicle, an activated carbon packed canister absorbs fuel vapors during refueling. When the engine is operating, the canister directs gasoline vapors into the engine intake manifold to be used as fuel.

History

- Became available in 40% of 1998 model year vehicles, in 80% of 1999 model vehicles, and in 100% of 2000 model vehicles.
- Light trucks will have the control phased in during model years 2001 through 2003.
- Heavy-duty trucks will have the control phased in during model years 2004 to 2005.

Cost

- Onboard Reid Vapor Recovery Systems are projected to provide an annual fuel savings of $2 to $4 per vehicle per consumer.[12]

Low Sulfur Gasoline *(State/Federal Program)*

- Low Sulfur Gasoline: In 2000, gasoline distributors in San Antonio committed to provide and distribute low sulfur gasoline at local gasoline stations.
- The low sulfur gasoline was made available to the citizens of San Antonio in 2001.
- Historically, the sulfur within the gasoline hinders catalytic converters and contributes to elevated emission levels in the vehicle's exhaust.
- Lower sulfur level translates into less damage to vehicles within the engine and less emission emitted in vehicular exhaust.

History

- The EPA enacted a ruling supporting the production of gasoline with a lower sulfur content.
- EPA stipulates that sulfur in gasoline should be lowered to 300 parts per million (ppm) by 2005.

Agreement for Use

- Production of gasoline with sulfur content of 300 ppm will begin 2004.[13]
- Gasoline produced for sale in parts of the western US will be allowed to meet a 150 ppm refinery average and a 300 ppm cap through 2006 but must meet the 30 ppm average/80 ppm cap by 2007.[14]

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[12] U.S. Environmental Protection Agency (November 4, 1998). Commonly Asked Questions About ORVR. Available online: http://www.epa.gov/orcdizux/regs/ld-hwy/onboard/orvrq-a.txt

[13] U.S. Environmental Protection Agency (May 1999). Proposed "Tier 2" Emission Standards for Vehicles and Gasoline Sulfur Standards for Refineries. Ann Arbor, Michigan. Available online: http://www.epa.gov/otaq/regs/ld-hwy/tier-2/frm/f99051.pdf

[14] U.S. Environmental Protection Agency (February 2000). 40 CFR Parts 80, 85, and 86 Control of Air Pollution from New Motor Vehicles: Tier 2 Motor Vehicle Emissions Standards and Gasoline Sulfur Control Requirements, Final Rule. Volume 65, Number 28. Available online: http://www.epa.gov/fedrgstr/EPA-AIR/2000/February/Day-10/a19a.htm

Cost

- The cost of lower sulfur diesel is less than two cents per gallon.[15]

The state program was an effort to provide cleaner gasoline to citizens and improve air quality in state nonattainment areas earlier than the federal timeline. (see below)

State Timeline: Gasoline Sulfur Standards[16]

- The cleaner gasoline is required to have a lower RVP outside the DFW and HGA areas, and a limit on the amount of sulfur in each gallon of gasoline.
- The sulfur cap requirement is 150 ppm per gallon of gasoline, starting January 1, 2004.

Federal Timeline: Gasoline Sulfur Standards[17]

2004 sulfur levels capped at 300 parts per million (ppm)
annual corporate average sulfur levels are 120 ppm.

2005 refinery average will be set at 30 ppm, with a corporate average of 90 ppm and a cap of 300 ppm

2006 refiners will meet a 30 ppm average sulfur level with a maximum cap of 80 ppm.

More fed info: Tier 2 / Gasoline Sulfur Final Rulemaking
http://www.epa.gov/oms/tr2home.htm

Cleaner Heavy-Duty Diesel Vehicles *(Federal Program)*

- Heavy-Duty Diesel Vehicle Rates: Combined emission standard for oxides of nitrogen (NOx) and non-methane hydrocarbons (NMHC) for heavy-duty diesel engines in trucks and buses from model year 2004 and later. The new standard will reduce NOx by 50%

Distribution

- Will be required of heavy-duty engines starting with model year 2004

History

- Production of heavy-duty engines complying to standard will begin in 2004.
- By 2020, it is projected that 1.1 million tons of ozone precursors will be reduced in one year nationally.[18]

Gas Cap Testing *(State Program)*

- Gas Cap Testing: Such tests determine whether or not a vehicle's gas cap is functioning properly. A properly functioning gas cap prevents the escape of

[15] U.S. Environmental Protection Agency (December 1999). EPA's Program for Cleaner Vehicles and Cleaner Gasoline. Online: http://www.epa.gov/otaq/regs/ld-hwy/tier-2/frm/f99051.pdf
[16] Available online: HGA Attainment Demonstration - September 2001, page I-9 http://www.tnrcc.state.tx.us/oprd/sips/01007sip_ado.pdf
[17] Available online: http://www.epa.gov/otaq/regs/ld-hwy/tier-2/frm/f99051.pdf
[18] U.S. Environmental Protection Agency (October 1997). New Emission Standards for Heavy Duty Diesel Engines Used in Trucks and Buses. Ann Arbor, Michigan. Available online: http://www.epa.gov/OMSWWW/hd-hwy.htm

evaporative gasoline emissions, particularly VOC's from the vehicle's gas tank.

Usage

- Gas Cap Tests were instituted in 2000 as part of the current annual Texas state vehicle inspections.

Cleaner Compression-ignition Vehicles and Equipment *(Federal Program)*

- Standards for Compression-ignition Vehicles and Equipment[19]: stringent emission standards established by the EPA for diesel engines of all types, including non-road construction, agricultural, and industrial equipment.

Distribution

- Only equipment build after the start date for an engine category (1999-2006, depending on category) is affected by the rule. [20]

History

- Emission standards for hydrocarbons, oxides of nitrogen, carbon monoxide, and particulate matter will be implemented in the first two tiers over ten years (1999-2008).

Implementation

- Rules implemented as part of a 3-tiered structure. Each tier involves emission reductions based on horsepower rating over a span of several years.
- Tier 1: standards for engines over 50 horsepower, such as bulldozers, and is phased into 1996-2000 engine models.
- Tier 2: more stringent standards than Tier 1. Will address engines of all sizes from 2001-2006.

Tier III Heavy-Duty Diesel Equipment *(Federal Program)*

- Tier III Heavy-Duty Diesel Equipment[21]: this rulemaking is part of the 3-tiered progression to low emission standards for diesel equipment.

Distribution

- Tier 3 standards will phase in beginning in 2006 and are expected to lead to implementation of control technologies similar to those that will be used by manufacturers of highway heavy-duty engines (i.e., trucks and buses) to comply with the 2004 highway engine standards.

Implementation

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[19] U.S. Environmental Protection Agency (August 1998). Regulatory Announcement: New Emission Standards for Nonroad Diesel Engines. Available online: http://www.epa.gov/otaq/equip-hd.htm

[20] Federal Register: October 23, 1998 (Volume 63, Number 205)

[21] Available online: http://www.epa.gov/otaq/regs/nonroad/equip-hd/frm1998/f98034.htm

- Tier 3: standards are for engines over 50 hp from model years 2006-2008.

Cleaner Spark-ignition Off-Road Vehicles and Equipment *(Federal Program)*

- Spark-ignition Off-Road Vehicles and Equipment: During the course of several years, the EPA and equipment manufacturers initiated a joint venture to produce small nonroad engines that will emit less emissions than engines previously manufactured.

History

- Phase 1 emission standards are applicable for small engines manufactured after 1997.
- Phase 2 emission standards will be implemented between 2001 and 2007.

Implementation

- The program involves two phases, Phase 1 and Phase 2, and each phase will accomplish a reduction percentage in hydrocarbons + oxides of nitrogen emissions
- Phase 1 applies to engines with a horsepower of 25 or less, predominantly lawn and garden equipment. The new standards require a 32 percent reduction in hydrocarbon (HC) emissions and a 7 percent reduction in CO emissions from these engines in the year 2020.[22]
- Phase 2 will integrate tighter emission controls than that of Phase 1 and is expected to contribute an additional 59% decrease in hydrocarbon + oxides of nitrogen emissions[23].

Cleaner Locomotives *(Federal Program)*

- Locomotives: Three separate sets of emission standards were adopted for locomotive in response to the mandate by the Clean Air Act requiring unregulated nonroad mobile sources to have set emission standards. The emission standards are applied based on the date a locomotive is manufactured.

Implementation

- Standards will be enforced by testing locomotives while the locomotive is being manufactured as well as an in-use compliance program by adhering to an in-use compliance program by using a Federal Test Procedure.
- Tier 0: applies to units manufactured from 1973 to 2001.
- Tier 1: applies to locomotives and locomotive engines originally manufactured from 2002 and 2004.
- Tier 2: applies to locomotives and locomotive engines originally manufactured in 2005

[22] Federal Register: July 3, 1995 (Volume 60, Number 127) Control of Air Pollution; Emission for New Nonroad Spark-ignition Engines At or Below 19 Kilowatts; Final Rule. Available online: http://www.epa.gov/EPA-AIR/1995/July/Day-03/pr-805.txt.html

[23] U.S. Environmental Protection Agency (March 1999). Regulatory Announcement: New Phase 2 Standards for Small Spark-ignition Nonhandheld Engines. Available online: http://www.epa.gov/otaq/regs/nonroad/equip-ld/ph2frm/f99008.pdf

and later. [24]

Cleaner Recreational Marine Engines *(Federal Program)*

- Recreational Marine Standards: Emission standard that increase in stringency over a period of nine years.

History

- Emission control began in 1998.

Implementation

- Recreational marine engines must meet an emission standard that represents a 75% reduction in hydrocarbons compared to unregulated levels.

Cleaner Lawn & Garden Equipment *(Federal Program)*

- Lawn & Garden Equipment Standards[25]: emission standards for small spark-ignition handheld engines, such as trimmers and brush cutters

History

- Phase 1 standards were required of engines manufactured in 1997 and later.
- Phase 2 standards were required of engines manufactured in 2002 and later.

Implementation

- Consisted of two phases, Phase 1 and Phase 2.
- Phase 1: Required a 32% reduction of emissjons.
- Phase 2: Required a 70% reduction in hydrocarbon + oxides of nitrogen emissions beyond the emission standards previously mandated.

Cleaner Electrical Generating (Power) Plants *(State Program)*

Senate Bill 7: Senate Bill 7 requires grandfathered electric generating facilities to cut emissions of nitrogen oxides by 50 percent and sulfur dioxide by 25 percent, beginning May 1, 2003.[26] SB7 is codified in TCEQ Regulations Subchapter I, Electric Generating Facilities, Sections 116.910 to 116.931.

Implementation

- Oxides of nitrogen rates are specified by the bill and are based on the location of the

[24] U.S. Environmental Protection Agency (December 1997). Regulatory Announcement: Final Emissions Standards for Locomotives. Available online: http://www.epa.gov/otaq/regs/nonroad/locomotv/frm/42097048.pdf

[25] U.S. Environmental Protection Agency (March 2000). Regulatory Announcement: Final Rule, Phase 2 Emission Standards for Small Spark Ignition Handheld Engines. Available online: http://www.epa.gov/otaq/equip-ld.htm

[26] page 5 of 10, Executive Summary of TCEQ's Grandfathered Facilities Report (SFR-071), http://www.tnrcc.state.tx.us/admin/topdoc/sfr/071/execsumfin.pdf

electric utility.[27]

In Use [28]

- Senate Bill 7 applies to all CPS gas-fired units except for AVR plant at Braunig Lake which is the newest CPS unit, a combined cycle gas turbine that went on line in mid-year 2000. All of CPS gas-fired power plants were built or contracted prior to August 1971 so they were grandfathered except for AVR which was permitted when it was built. All of the gas units now have Electric Generating Facility permits and must meet the NOx reduction requirements beginning in mid-2003.
- Chapter 117, Division 2 applies to all utility electric power boilers and turbines in east and central Texas that were placed into service before December 31, 1995 (Per Chapter 117.131(a)). It affects all CPS units (including CPS' three permitted coal units) except for AVR which went on line in 2000 and South Texas Project which is an emission-free nuclear plant. Chapter 117 sets up a slightly different set of NOx requirements and compliance begins in mid-2005.
- TNRCC Chapter 117 regulations which require a 50% reduction in NOx emissions by May 1, 2005 from the year 1996 to 1998 levels. This is described in Chapter 117, Division 2 which covers all electric utility units in east and central Texas that are in "near-nonattainment" areas.

Senate Bill 766: In 1999, the 76th Texas State Legislature used the Clean Air Responsibility Enterprise Committee's recommendation as the basis for Senate Bill 766 which directed the TCEQ to develop rules containing incentives for the voluntary permitting of grandfathered facilities. This program is known as the Voluntary Emission Reduction Permit (VERP) program.[29] This came as a response to a 1997 survey by the then-TNRCC showing that the most significant of the grandfathered facilities emitted 898,075 tons of emissions per year and represented approximately 35 percent of the total air emissions in Texas.[30]

Implementation

- Owners/operators of grandfathered facilities had until September 1, 2001, to apply for a VERP. TCEQ received 166 written commitments to apply for a permit prior to September 1, 2001 in order to qualify for the VERP program. These companies collectively have 225,776 tons of emissions from grandfathered facilities. The reductions which will be achieved and the resulting quantity of permitted emissions are also not yet determined.[31]

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[27] The Senate Bill 7 NOx rates and NOx allowances for central and eastern Texas power plants can be found through: http://www.tnrcc.state.tx.us/grandfathered/. See also: http://www.tnrcc.state.tx.us/permitting/airperm/grandfathered/memo.pdf

[28] Email correspondence with Cynthia Levesque, Supervisor of Permits for City Public Service, January 23, 2003

[29] TCEQ's "Permitting Grandfathered Facilities"; http://www.tnrcc.state.tx.us/grandfathered/index.html

[30] page 4 of 10, Executive Summary of TCEQ's Grandfathered Facilities Report (SFR-071), http://www.tnrcc.state.tx.us/admin/topdoc/sfr/071/execsumfin.pdf

[31] page 3 of 10, Executive Summary of TCEQ's Grandfathered Facilities Report (SFR-071), January 24, 2001; http://www.tnrcc.state.tx.us/admin/topdoc/sfr/071/execsumfin.pdf