

HOW CLEAN IS YOUR CAR?

For the second year in a row Texas has exceeded California in violations of the Clean Air standards for ozone, and now has the distinction of having the most polluted city in the country (Houston),¹ Texas now faces potential federal sanctions for failing to develop strategies to clean the air. These sanctions include the loss of millions of federal highway dollars for Dallas-Ft. Worth and Houston.

The threat of sanctions has spurred unprecedented community efforts to develop plans that would meet federal health standards. Our state's business and political leadership is moving to approve measures that will reduce its air pollution from industrial sources. The Texas Natural Resource Conservation Commission (TNRCC) has adopted very aggressive measures- up to 75% reductions in Industrial emissions of NO_x and VOC's the primary components of Ozone. However both the DFW and Houston NA attainment areas are likely to fail because of continued economic growth and uncertain control strategies.²

Cleaning the air in Texas will require that we reduce emissions from other sources. Given that technology is now available to achieve 80-90% reductions, it is surprising that there has little effort to reduce the greatest source of air pollution in Texas- namely automobiles and refineries. This report will examine the potential for reducing the emissions associated with on-road mobile sources- primarily automobiles, and trucks.

THE ECONOMIC AND HEALTH IMPACTS

Air pollution has a tremendous impact on the health of Texans, and mobile sources (on-road and off road vehicle engines) have been linked to both short-term and long-term health effects. Young children, the elderly, and those people with health problems such as asthma, heart and lung disease suffer more when the air is polluted. Texans are paying a heavy economic and health cost. A recent study of the impact of cleaning the air to the level of federal standards in Houston found a \$2.9 - \$3 billion dollar economic benefit for the region.³

There are seven major damaging chemicals released by today's vehicles, many of which are scheduled for new federal controls in the near future. In light of this it makes economic sense to begin Investing now in controls of these pollutants. The Federal Government is anticipating or has scheduled the implementation of new standards in five additional areas:

- Ozone - 8 hour ozone standard
- Soot - pm.2.5 fine particles
- Haze- controls of sulfur that forms particles
- Mercury and other air toxins

- Global warming including CO₂ and Methane

TYPES OF POLLUTION

1. Hydrocarbon (Ozone) emissions result when fuel molecules in the engine do not burn or burn only partially. Hydrocarbons react in the presence of nitrogen oxides and sunlight to form ground-level ozone. Ozone irritates the eyes, damages the lungs, and aggravates respiratory problems. It is our most widespread and intractable urban air pollution problem. A number of exhaust hydrocarbons are also toxic, with the potential to cause cancer.

2. Carbon Monoxide (CO) is odorless and colorless gas formed by a product of incomplete combustion and occurs when carbon in the fuel is partially oxidized rather than fully oxidized to carbon dioxide (CO₂). This pollutant can block the movement of oxygen into the brain, heart, and other vital organs.

3. Carbon Dioxide (CO₂) is odorless and colorless gas formed by burning fossil fuels. This pollutant does not directly impair human health, but it contributes greatly to global warming.

4. Nitrogen Oxide (NO_x) is formed under the high pressure and temperature conditions in an engine, nitrogen and oxygen atoms in the air react to form various nitrogen oxides. This pollutant is a major part of ground-level ozone (smog), particulate matter, and acid rain. Also, it can cause lung irritation and weakens the body's defenses against respiratory illnesses.

5. Sulfur Dioxide (SO₂) is produced by diesel and gasoline. This pollutant can constrict airway passages and can trigger asthma attacks.

6. Volatile Organic Compounds (VOCs) are various chemical compounds. These chemicals are known to cause birth defects, cancer, and other serious illnesses at relatively low exposure levels.

7. Particulate matter (PM) is the general term used for a mixture of solid particles and liquid droplets found in the air. Some particles are large or dark enough to be seen as soot or smoke (PM-10).

"Fine" particles are less than 2.5 micrometers in diameter, and result from fossil fuel combustion of motor vehicles, power generation, and industrial facilities, as well as from residential fireplaces and wood stoves. Some particles are emitted directly from their sources, such as smokestacks and cars. In other cases, gases such as sulfur oxide and SO₂, NO_x, and VOC interact with other compounds in the air to form fine particles.

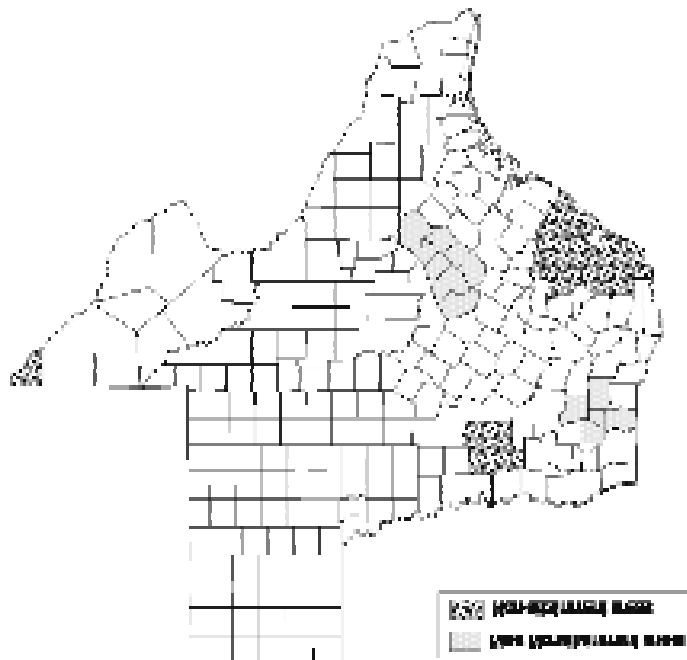


Chart 1

Texas Pop. 20,851,820

NON-ATTAINMENT POP.

Dallas/Ft. Worth	3,287,769
El Paso	679,622
Houston/Galv.	4,669,571
Beau/Port Arthur	385,090

NEAR NON-ATTANMENT POP.

East Texas	430,858
Austin	1,249,763
San Antonio	1,559,975

Total	12,262,648
% of Texas pop.	59%

Source: US CENSUS

The major effects include acute respiratory symptoms, including severe chest pain, gasping and aggravated coughing; aggravated asthma; decreased lung function and chronic bronchitis; and premature death.

THE NEW 8-HOUR OZONE STANDARD

The U.S. Supreme Court has upheld the new stricter and stronger 8 hour standards for ozone. This will likely bring the Austin, San Antonio, and East Texas areas into non-attainment as well. As chart 1 shows 59% of Texans now live in areas where the air is unhealthy to breathe.

Texans deserve clean air to breathe. We must develop and adopt strategies to reduce on-road mobile emissions that are significant sources of ozone and global warming pollution in our dirtiest cities. As this report will demonstrate, strategies to reduce the impact of auto emissions are popular with the public, cost effective, and will result in significant improvements in public health.

ONROAD MOBILE SOURCES CONTRIBUTE TO OZONE, AND PARTICULATE, PROBLEMS IN TEXAS

As tables 1 and 2 show, on-road mobile sources are responsible for approximately half of the NO_x in DFW, El Paso, Austin and San Antonio.

Table 1 ONROAD MOBILE SOURCE INVENTORY

Non-attainment area	NO_x	VOC
DFW	50%	28%
Houston	24%	8%
Beaumont/PA	12%	4%
El Paso	55%	35%

Source: TNRCC

Table 2 ONROAD MOBILE SOURCE INVENTORY

Near Non-attainment areas	NO_x	VOC
Austin	45%	11%
San Antonio	49%	22%
Tyler-Longview-Marshall	11%	2%

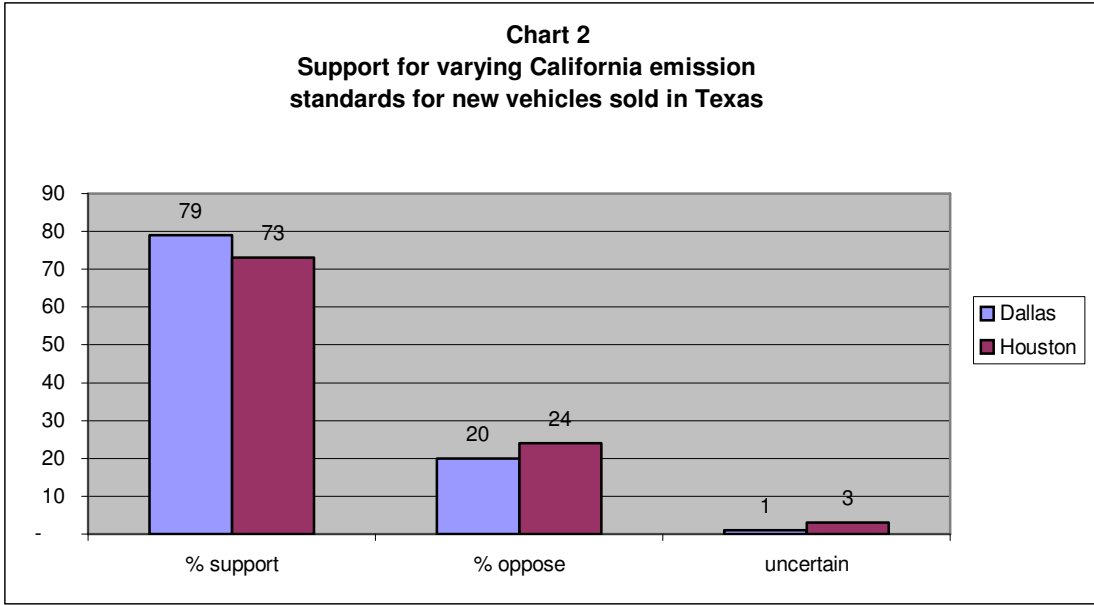
Source: TNRCC

On road sources are also responsible for significant amounts of particulate pollution that has been linked to serious health problems.

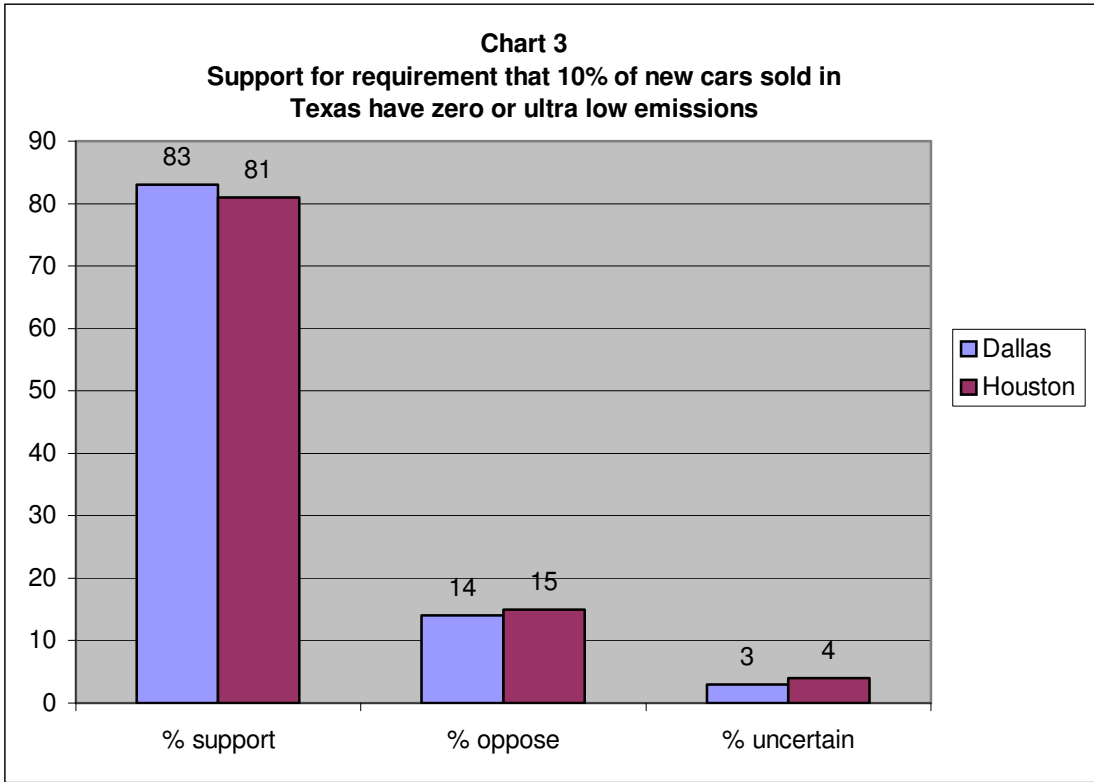
Currently El Paso is the only PM₁₀ non-attainment area in Texas. Preliminary monitoring data indicate that the Houston/Galveston and Dallas/Fort Worth areas may have difficulty meeting the new PM 2.5 standards adopted by EPA.⁴

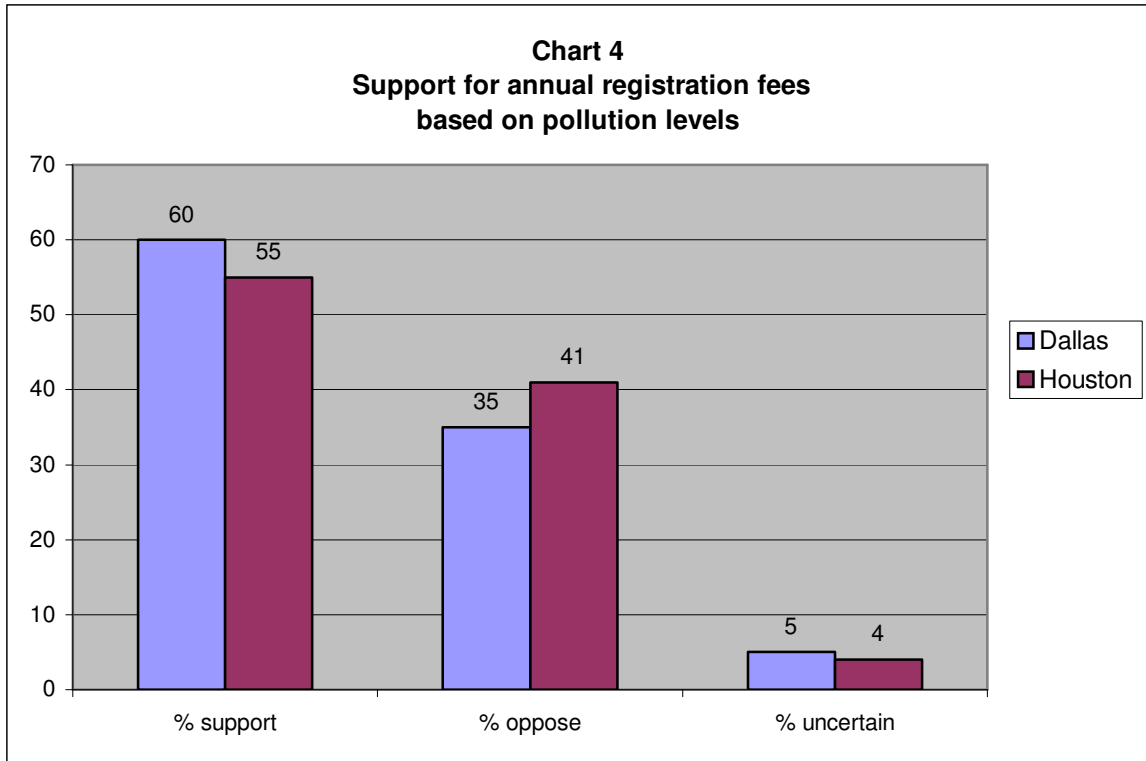
REDUCING ONROAD MOBILE SOURCE POLLUTION IS POPULAR

Texans at the grassroots level understand that we must take steps to reduce pollution for mobile sources. Independent polls show that Texans support emission controls on Autos and will support performance fees on new car registrations⁵



In the two metro areas facing sanctions for failing to develop adequate plans to clean the air, requiring California emission levels for new vehicles is supported by a clear majority of the citizens. Texans view cleaner cars as a critical part of the solution, and also support requiring the use of zero or ultra low emission vehicles.⁶





Varying annual registration fees so that the more you pollute the more that you pay also has the support of a clear majority of Texans.

REDUCING ONROAD MOBILE SOURCE POLLUTION CUTS EMERGENCY ROOM VISITS BY 41%- A CASE STUDY

During the 1996 Summer Olympic Games in Atlanta, GA, the transportation system was modified to reduce traffic congestion in the downtown area.

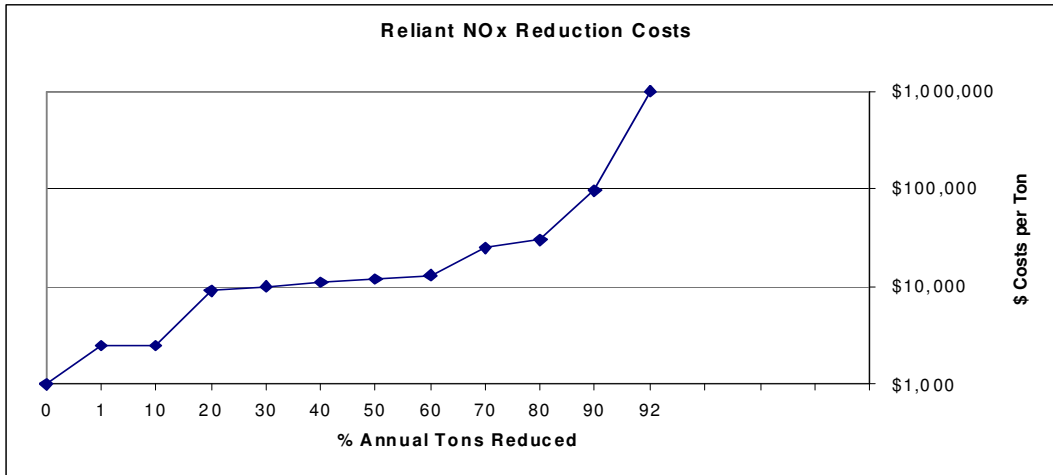
According to the Journal of American Medicine Association, (JAMA) who published a study in its February 2001 issue, the numbers of asthma acute care emergencies in children age one through sixteen decreased 41.6%. JAMA directly links this decrease in emergencies to the decrease in air pollution caused by vehicle exhaust. During the Olympic games peak ozone concentrations decreased by 27.9% and peak weekday morning traffic counts dropped 22.5%.

The JAMA concluded that efforts to reduce downtown traffic congestion in Atlanta during the Olympic games resulted in decreased traffic density, especially during the critical morning period. These reductions in traffic density are associated with a prolonged reduction in ozone pollution and significantly lower rates of childhood asthma events. These data provide support for efforts to reduce air pollution and improve health via reductions in motor vehicle traffic.⁷

CONTROLLING MOBILE SOURCE POLLUTION IS COST EFFECTIVE

The cost effectiveness of various emission control strategies is an important factor in setting policy. The Strategic Implementation Plans (SIPs) developed by the TNRCC to clean up the air in the dirtiest cities are requiring industrial sources to reduce NOx emissions by 75%.

Chart 4



As Chart 4 documents, the cost of NOx reductions at Reliant energy, a Houston based utility increases dramatically as you work to reduce emissions. At the 80% reduction level the cost per ton is approximately \$45,000. When you move towards 90% the cost per ton increases to over \$100,000 per ton and rises.

A comparison of the costs of various NOx control strategies done by the EPA shows that clean car technologies can be adopted for a per ton cost of \$30-35,000 per ton. This represents a potentially more cost effective control strategy than further reductions from the utilities in Houston.⁸

THE CLEANEST CARS ARE SOLD IN CALIFORNIA, NEW YORK, VERMONT, MASSACHUSETTS, AND MAINE BUT NOT IN TEXAS

As chart 5 shows, if Texans were able to buy low emissions vehicles similar to those found in California, there would be less harmful emissions released in the air. To estimate the potential savings from clean car emission levels we studied the effect on air quality if the two most popular vehicles operating in Texas, the Ford 150 pickup (1) and the Honda Accord (2) were running at the five different emission levels currently available in the U.S.⁹

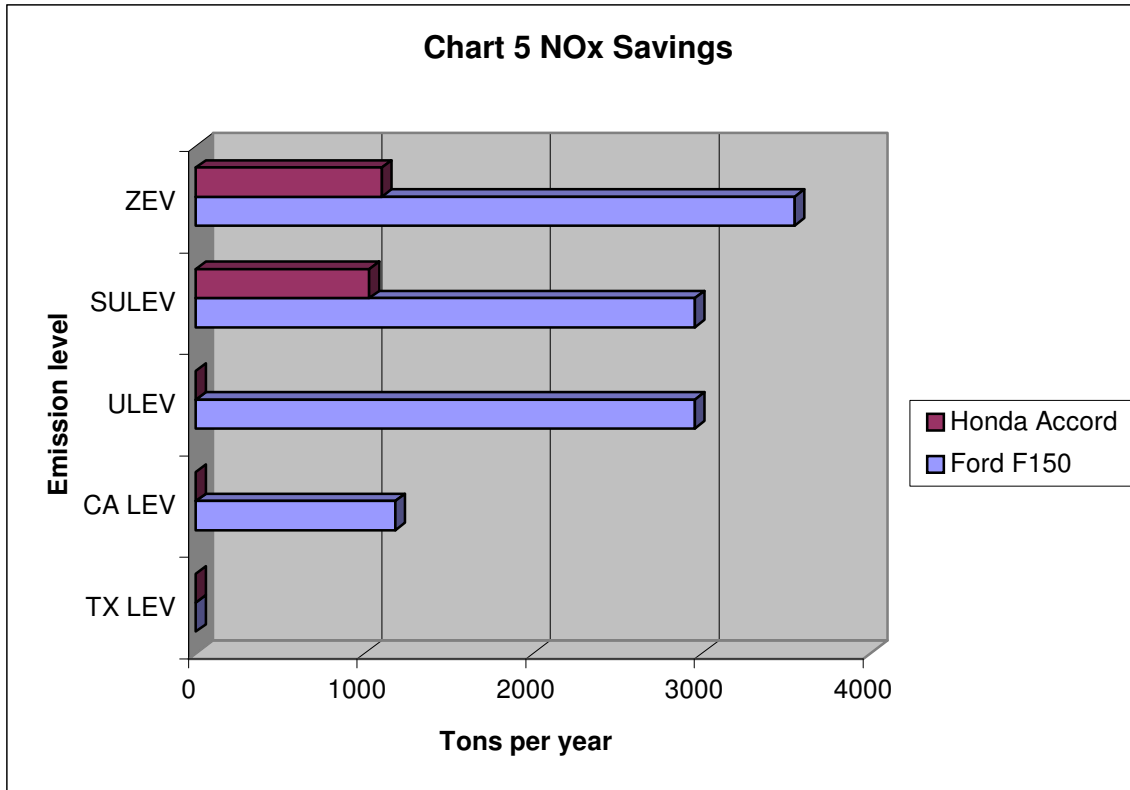


Chart 5 shows that we could achieve significant reductions in NOx emissions by switching to cleaner cars and trucks.

HOW DO WE GET THERE?

The Texas Legislature is considering policies that would direct the TNRCC to develop a program to offer incentives for the purchase of cleaner cars. This effort would not require Texas to adopt California emission standards, but would cover the incremental costs of purchasing the cleanest vehicle possible.

There are several policy options that have been tested and found successful in other places around the country. To achieve the maximum potential reductions the TNRCC should explore a wide variety of options.

Consumer Education

To enable consumers to make informed purchase decisions based on the emissions levels produced within each vehicle class, each new vehicle should display a simple label that identifies potential incentives, as well as overall environmental ratings. Currently the states of California, Maine, and Vermont require a label. The sticker proposed for Texas would list the manufacturer and model. The best and worst in that model class and that individual vehicles'

position within its class. The sticker would also list the incentive available for purchasing a cleaner version. This is an example of what the sticker might look like.

Company	Model	Ranking in class		Incentive
		Best	Worst	
Honda	7 Accord			<u>\$ 240.00</u>
		10	1	

Alternative Fuels

Clean fuels have a number of inherent properties that make them cleaner than conventional gasoline. In general, these fuels emit fewer hydrocarbons, and the hydrocarbons they do emit are less reactive (slower to form ozone) and less toxic. Emissions from electricity, natural gas, propane, or alcohol-powered vehicles can be as much as 90 percent lower in toxics and ozone-forming hydrocarbons than emissions from vehicles fueled with conventional gasoline. Incentives that would cover the cost of retrofitting existing vehicles or the higher cost of a new vehicle are an important tool in establishing this program.

Financial Incentives

There are several opportunities to offer financial incentives to encourage the purchase or lease of low emission vehicles. Sales tax rebates for new vehicles, and annual registration fee rebates could be administered at the state level. In the dirtiest cities, preferential use of High Occupancy Vehicle (HOV) lanes and reduced or free tolls used at the local level would reinforce the incentive over the life of the vehicle.

Research and Development

Investing in research and development of emissions reducing technology is an important opportunity. Just as Texas based research in computer chip design and manufacturing provided the foundation for the growth of the computer industry, we now have the opportunity to develop the next generation of pollution control equipment.

These efforts should be directed at developing retrofit and add-on technologies that provide multiple benefits by reducing emissions of particulates and other pollutants from currently operating vehicles. Advanced technologies for new engines and vehicles that produce very low or zero emissions of NOx., and the commercial development of fuel cells.

CONCLUSION

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¹ TNRCC

² Environmental Defense study

³ Assessment of the health benefits of improving air quality in Houston, Texas April 1999

⁴ TNRCC

⁵ Poll for Public Citizen

⁶ ibid

⁷ JAMA

⁸ EPA (OTAG)

⁹ Let's clear the air over Texas