

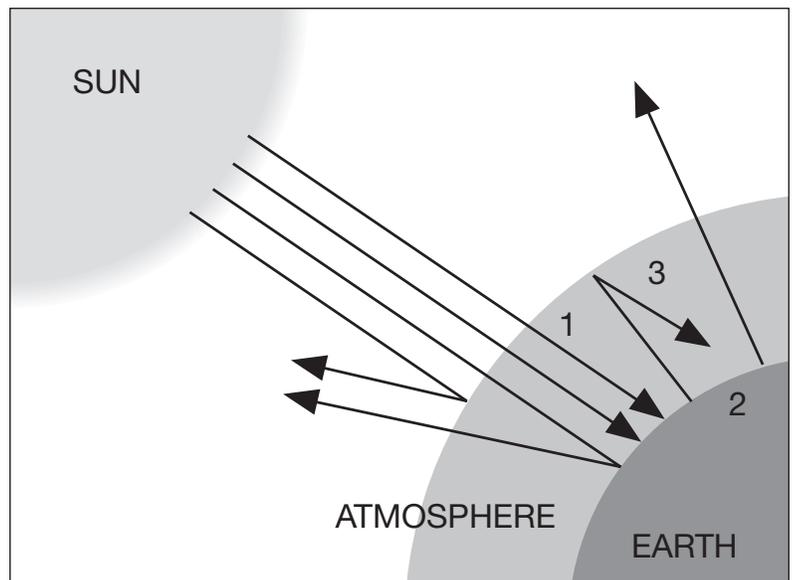
Environmental Pollutants from Electricity Production



RENEWABLE ENERGY
THE INFINITE POWER
OF TEXAS

HIGHLIGHTS

- Electricity production emits pollutants and produces Wastes that cause health and environmental problems
- Many Texas electricity providers offer customers an option to purchase cleaner energy
- Understanding emission basics will help Texas consumers make wise energy choices



Global Warming Cycle 1. Some radiation is reflected, but most is absorbed by the earth as heat. 2. Radiation leaves earth's surface. 3. Some of the radiation is absorbed and re-emitted by the greenhouse gases. This warms the earth and atmosphere.

SUMMARY

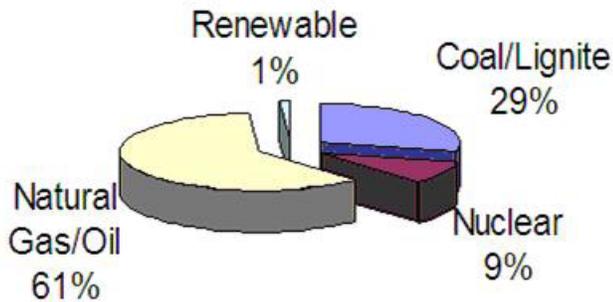
Traditional power plants produce air pollution, emit toxic chemicals and greenhouse gases into the atmosphere, and create toxic and nuclear waste. Electricity production also consumes finite fuel and water resources. Over the past few decades, the electric utility industry has made great strides in reducing pollution by adding pollution control devices and changing combustion processes. However, electricity generation still produces more environmental pollutants than any other industry. A better

understanding of the environmental pollutants produced from electricity production will allow consumers to make informed decisions.

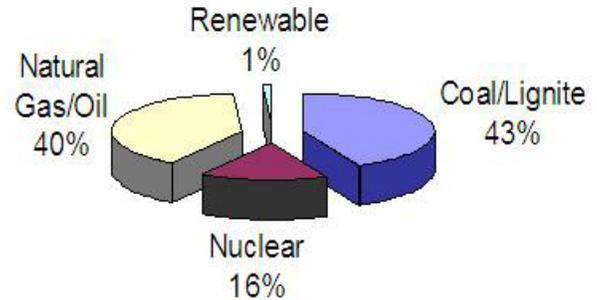
NEW CHOICES

Deregulation of the electric industry allows many consumers to choose from an array of electricity providers and electricity products. These consumers will have access to information concerning the fuel mix used to generate

INSTALLED CAPACITY



GENERATION MIX



Texas Generation Mix (1998) Although the coal capacity installed in Texas in 1998 was far less than that for natural gas, the coal plants accounted for more energy production.

their electricity and environmental pollutants produced by the electricity they purchase.

Municipally-owned utilities and rural electric cooperatives may elect to forego the competitive arena. However, the consumer desire for cleaner energy products is well documented. Therefore, many providers not opting into competition are still offering their customers cleaner energy in the form of green pricing programs.

THE ENVIRONMENTAL POLLUTANTS

Sulfur Dioxide (SO₂)

Sulfur dioxide contributes to acid rain that damages soil and water ecosystems and corrodes building materials. Although the acid rain problem is most severe in the northeastern United States, sulfur dioxide emissions within our own state are partly responsible for decreased visibility at Big Bend and Guadalupe Peak parks. Nationally, electricity production from coal accounts for more than 90% of the sulfur dioxide created from electricity production. Gas and oil fuels emit limited SO₂.

Nitrogen oxide (NO_x)

Nitrogen oxides combine with organic compounds on warm, still days to form ozone. Ozone causes respiratory problems and irritates eyes and mucous membranes. Coal-fired power plants emit over 75% of the NO_x created from electricity production.

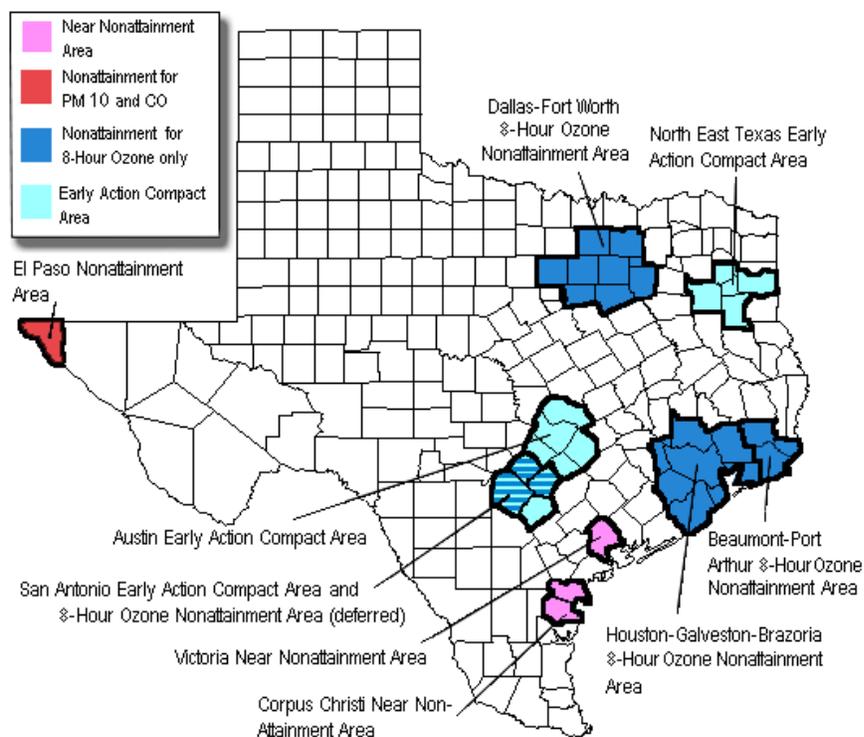
Carbon Dioxide (CO₂)

Carbon dioxide is a greenhouse gas. Greenhouse gases trap the sun's energy in the earth's atmosphere rather than allowing the heat to radiate back into space.

Greenhouse gases contribute to global warming. Of the fossil fuels, coal produces the most CO₂ emissions per kilowatt-hour. Natural gas produces about half as much CO₂ as coal per kilowatt-hour of electricity produced.

Particulate Matter

Particulate pollution causes respiratory illness and has been linked to some cases of premature death especially in metropolitan areas. Particulate matter is classified by size. The smaller particles, such as those contained in smoke from forest fires,



Texas Nonattainment Areas

(2001) *El Paso, Dallas/Ft. Worth, Beaumont/Port Arthur and Houston/Galveston all exceed national pollution standards. Corpus Christi and Tyler/Longview may exceed the standards soon.*

are believed to be more dangerous than larger particles. Particulate matter less than ten microns in diameter (PM-10) is now regulated. Over the last few decades, the electric utility industry has greatly reduced particulate emissions from its plants with the use of particulate filtration equipment. However, older coal-fired generation plants still contribute significantly to the particulate pollution problem. In 1999, the Texas Legislature created new incentives for older facilities to upgrade their pollution control technologies.

Other Pollutants

Nuclear plants do not contribute CO₂, NO_x or SO₂ to the atmosphere, but nuclear waste is dangerous to transport and remains radioactive for, in some cases, hundreds of thousands of years. Site burial options are limited, and the state of Texas has been selected as a nuclear waste dump several times in recent years.

Throughout the mining, refining, transportation and combustion cycle, precious water resources

are consumed. When fossil and nuclear fuel resources are mined, waterways are often polluted with toxic chemicals. Coal and oil-burning plants emit mercury into the air that then finds its way into waterways. Some Texas lakes currently carry contaminated fish advisories because of elevated mercury levels found in fish.

WHAT CAN YOU DO?

Conserve energy! The best way to reduce emissions caused by electricity production is to conserve. On average, it takes 3 BTUs of fuel energy to produce 1 BTU of electricity.

Become informed. When possible choose a provider and a product that support investment in renewable energy resources. Renewable energy technologies such as wind, hydroelectric and solar power do not emit pollutants. Other renewables, such as those derived from biomass, emit only small amounts of environmental pollutants, greenhouse gases or toxic wastes.

ORGANIZATIONS

Natural Resources Defense Council

40 West 20th Street
New York, NY 10011
(212) 727-2700

www.nrdc.org

Clean air and energy, global warming,
toxic chemicals and nuclear waste

Environmental Defense

257 Park Avenue South
New York, NY 10010
(800) 684-3322

www.environmentaldefense.org/home.cfm

Texas Commission on Environmental Quality

12100 Park 35 Circle
Austin, Texas 78753
(512) 239-1000

www.tceq.state.tx.us

Real time air pollution monitoring, health
alerts, and non-attainment area information.

Texas Solar Energy Society

P.O. Box 1447
Austin, TX 78767-1447
(800) 465-5049

www.txses.org

Texas Renewable Energy Industries Association

P.O. Box 16469
Austin, Texas 78761-6469
(512) 345-5446

www.treia.org

RESOURCES

Free Texas Renewable Energy Information

For more information on how you can put Texas' abundant renewable energy resources to use in your home or business, visit our website at www.infinitepower.org or call us at 1-800-531-5441, ext. 3-1796. Ask about our free Teacher Resource Guides and CD available to teachers and home schoolers.

ON THE WORLD WIDE WEB:

Energy Information Administration (EIA)

Emissions and energy publications and statistics, search by fuel type.
eia.doe.gov/environment.html

Environmental Protection Agency (EPA)

Energy and pollutant information, search by emission type,
Region 6 (Texas) information.

www.epa.gov

The Environmental Protection Agency's Toxic Release

Inventory and the Environmental Defense Fund's Scorecard allow citizens to find what pollutants are in their communities, including those from electric generation, and the specific sources of those pollutants.

www.epa.gov/tri/

www.scorecard.org/

PUBLICATIONS

“Carbon Dioxide Emissions from the Generation of Electric Power in the United States,” EPA report, July 2000.

“1999 Annual Update of Generating Electric Utility Data,” Public Utility Commission of Texas, October 1999.

“Climate Change: What Does It Mean for the Central Southwest?” EPA Regional Conference Report, October 1997.



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