

Update on the Eagle Ford Shale

Safety is the Top Priority





https://www.txdot.gov/driver/share-road/be-safe-drive-smart.html

South Texas Energy & Economic Roundtable



 Trade Association connecting the oil and natural gas industry to South Texas communities

 Represented by the largest operators in the Eagle Ford Shale region

 Mission to facilitate and coordinate communication, education and public advocacy surrounding the production of energy resources in South Texas



South Texas Energy & Economic Roundtable



Supporting Members

- Baker Hughes
- Halliburton
- NGL Energy Partners
- Schlumberger
- Weatherford

Resource Members

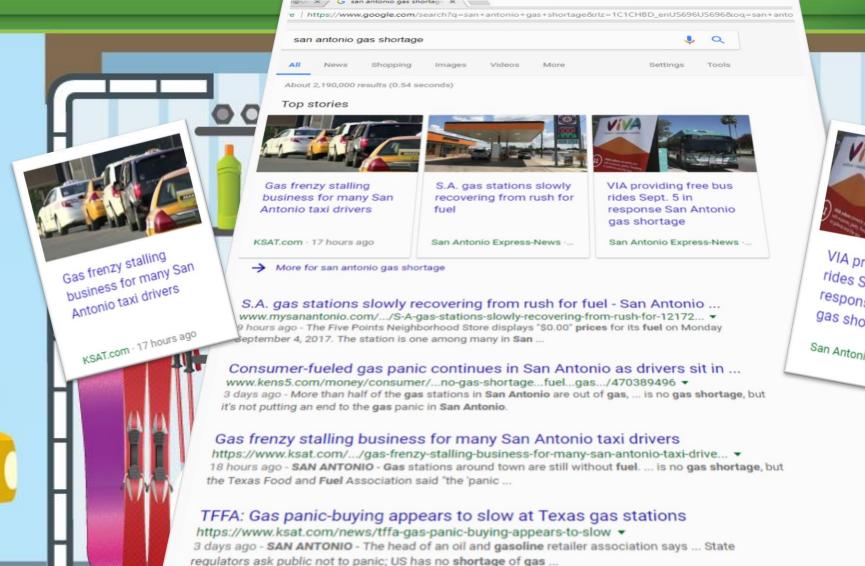
- AEP Texas
- Aggreko
- Cheniere Energy
- HOLT CAT
- Port of Corpus Christi
- Port of Victoria
- Union Pacific
- Tenaris

Associate Members

- Free Trade Alliance
- Victoria Economic
 Development Corporation

Oil and Gas is Vital to Everyday Life





Here's how you can find gas in San Antonio - KSAT com

VIA providing free bus rides Sept. 5 in response San Antonio gas shortage San Antonio Express-News

The Eagle Ford Shale



- Named after Eagle Ford, Texas, the town where the shale outcrops can be found in clay form on the earth's surface
- Made up of sedimentary rock that contains oil and natural gas
- Extends approximately 50 miles wide, 400 miles long
- Primary 15 county region includes: Atascosa, Bee, DeWitt, Dimmit, Frio, Gonzales, Karnes, La Salle, Lavaca, Live Oak, Maverick, McMullen, Webb, Wilson, and Zavala



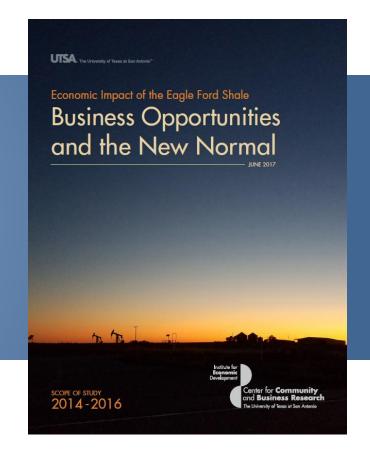
Source: Institute for Economic Development Center for Community and Business Research – The University of Texas At San Antonio - 2012 Economic Impact Study

UTSA Economic Impact Study



Eagle Ford Economic Reports





Economic Impact of Eagle Ford Shale



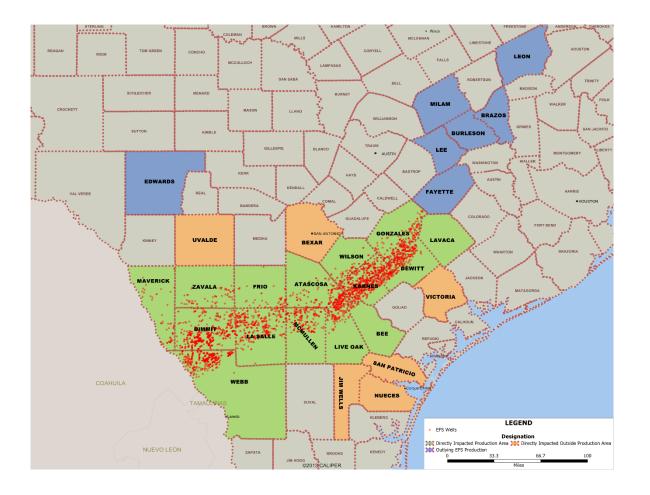
Counties included in the study

Oil Producing Counties

- Atascosa
- Bee
- DeWitt
- Dimmit
- Frio
- Gonzales
- Karnes
- La Salle
- Lavaca
- Live Oak
- Maverick
- McMullen
- Webb
- Wilson
- Zavala

Adjacent Counties

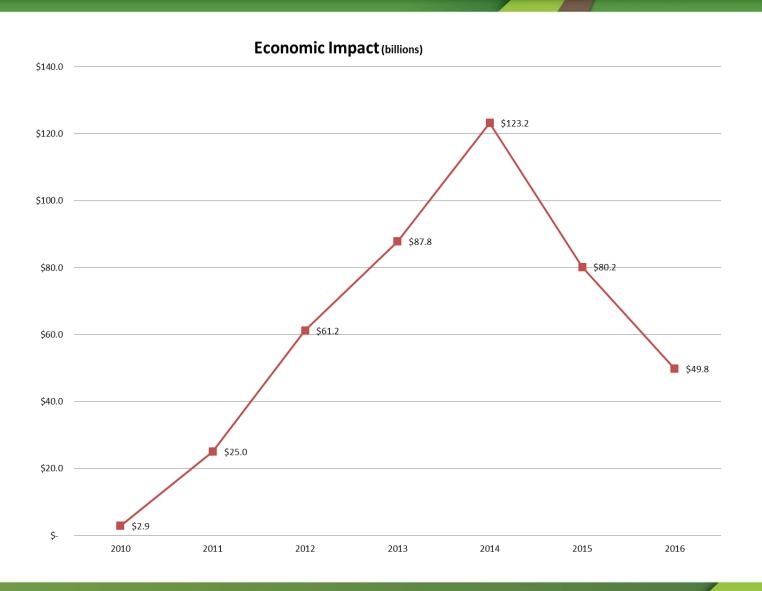
- Bexar
- Jim Wells
- Nueces
- San Patricio
- Uvalde
- Victoria



Total Economic Impact (21 County Area)



- 2014 \$123.2 billion
 an all-time high to date
- 2015 \$80.2 billion
- 2016 \$49.8 billion



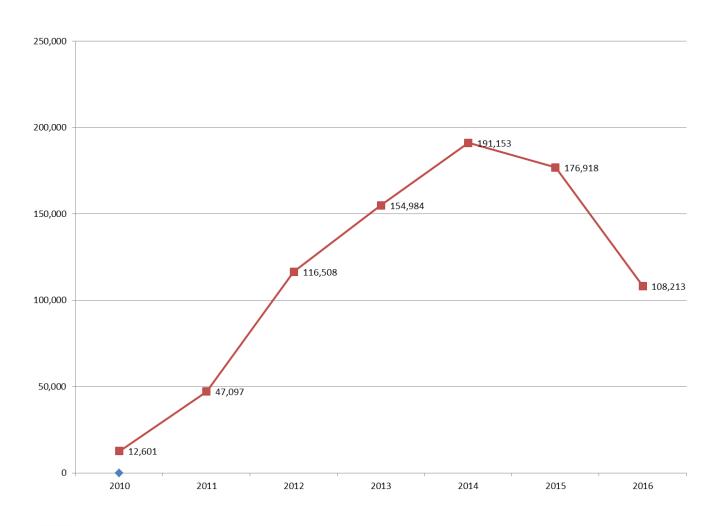
Total Jobs Supported (21 County Area)



2014 – 191,153 jobs (direct and indirect)

- 2015 176,918 jobs
- 2016 108,213 jobs

Job Supported



Drilling Permits Issued in the Eagle Ford

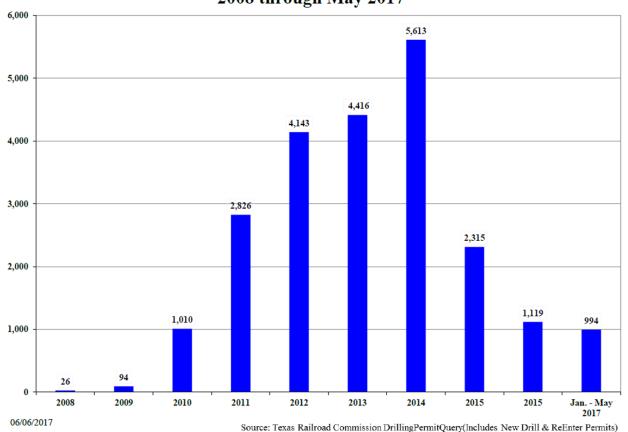


2014 - 5,613

2015 - 2,315

2016 - 1,119

Texas Eagle Ford Shale Drilling Permits Issued 2008 through May 2017



Total Eagle Ford Shale Natural Gas Production

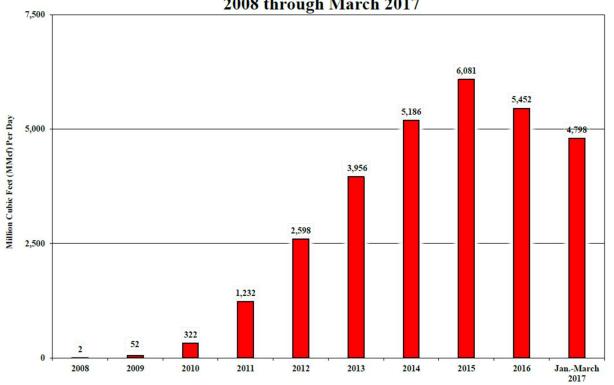


■ 2014 – 5,186 million cubic feet

■ 2015 – 6,081 million cubic feet

■ 2016 – 5,452 million cubic feet

Texas Eagle Ford Shale Total Natural Gas Production 2008 through March 2017



05/22/2017

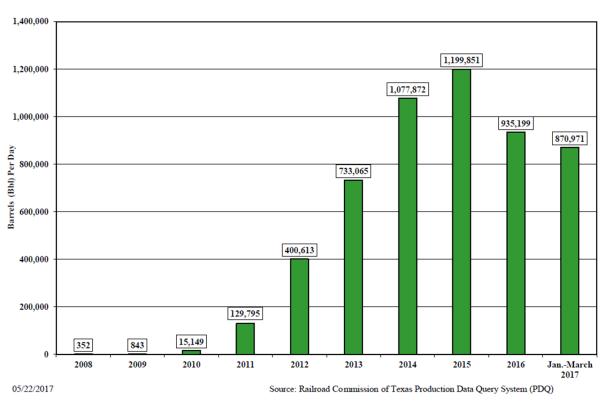
Source: Railroad Commission of Texas Production Data Query System (PDQ)

Total Eagle Ford Shale Oil Production



- 2014 1,077,872 barrels per day
- 2015 1,199,851 barrels per day
- 2016 935,199 barrels per day

Texas Eagle Ford Shale Oil Production 2008 through March 2017

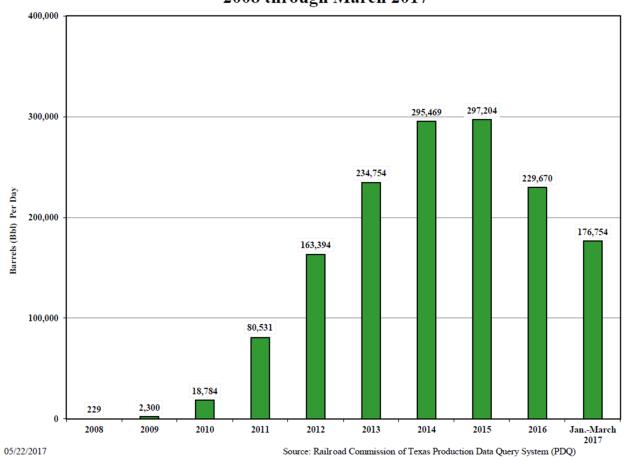


Total Eagle Ford Shale Condensate Production



- 2014 295,469 barrels per day
- 2015 297,204 barrels per day
- 2016 229,670 barrels per day

Texas Eagle Ford Shale Condensate Production 2008 through March 2017



Economic Impact Summary (15 County Area)



Estimated impacts for Eagle Ford Shale at the 15-county Level EFS (2014)						
Economic impacts in millions of dollars						
Direct Indirect Induced Total						
Output	\$84,318	\$10,583	\$3,114	\$98,014		
Employment, full-time equivalent	36,893	69,596	23,963	130,451		
Payroll	\$2,146	\$2,147	\$709	\$5,002		
Gross regional product	\$36,722	\$5,164	\$1,698	\$43,584		
Estimated local government revenues	\$0	\$0	\$0	\$1,590		
Estimated state revenue, incl. severance taxes \$3,042						

Estimated impacts for Eagle Ford Shale at the 15-county Level EFS (2015)							
Economic impacts in millions of dollars							
Direct Indirect Induced Total							
Output	\$50,653	\$6,176	\$2,060	\$58,890			
Employment, full-time equivalent	25,494	38,724	15,725	79,944			
Payroll	\$1,402	\$1,251	\$469	\$3,122			
Gross regional product	\$21,235	\$3,008	\$1,103	\$25,346			
Estimated local government revenues	\$0	\$0	\$0	\$1,413			
Estimated state revenue, incl. severance taxes							

Economic Impact Summary (15 County Area)



Estimated Impacts for Eagle Ford Shale at the 15-county Level EFS (2016)						
Economic impacts in millions of dollars						
Direct Indirect Induced Total						
Output	\$29,021	\$3,037	\$1,221	\$33,278		
Employment, full-time equivalent	9,324	17,406	9,404	36,135		
Payroll	\$855	\$593	\$283	\$1,731		
Gross regional product	\$12,327	\$1,494	\$653	\$14,473		
Estimated local government revenues	\$0	\$0	\$0	\$1,011		
Estimated state revenue, incl. severance taxes \$1,506						

Economic Impact Summary (21 County Area)



Estimated Impacts for Eagle Ford Shale at the 21-county Area EFS (2014) Economic impacts in millions of dollars						
Direct Indirect Induced Total						
Output	\$92,697	\$24,099	\$6,354	\$123,150		
Employment, full-time equivalent	43,611	101,839	45,702	191,153		
Payroll	\$2,530	\$4,411	\$1,618	\$8,559		
Gross regional product	\$38,676	\$12,533	\$3,534	\$54,743		
Estimated local government revenues	\$0	\$0	\$0	\$2,201		
stimated state revenue, incl. severance taxes \$3,672						

Estimated Impacts for 21-county Area EFS 2015						
Economic impacts in millions of dollars						
Direct Indirect Induced Total						
Output	\$59,571	\$13,931	\$6,655	\$80,158		
Employment, full-time equivalent	56,182	71,243	46,491	173,918		
Payroll	\$2,969	\$2,831	\$1,766	\$7,565		
Gross regional product	\$24,874	\$7,943	\$3,712	\$36,529		
Estimated local government revenues	\$0	\$0	\$0	\$1,816		
Estimated state revenue, incl. severance taxes \$2,673						

Economic Impact Summary (21 County Area)



Estimated Impacts for 21-County Area EFS (2016)						
Economic impacts in millions of dollars						
Direct Indirect Induced Total						
Output	\$36,969	\$8,127	\$4,724	\$49,820		
Employment, full-time equivalent	37,848	37,582	32,783	108,213		
Payroll	\$2,291	\$966	\$825	\$4,081		
Gross regional product	\$15,686	\$4,777	\$2,644	\$23,108		
Estimated local government revenues	\$0	\$0	\$0	\$1,303		
Estimated state revenue, incl. severance taxes \$1,847						

Total Economic Output (6 Adjacent Counties)

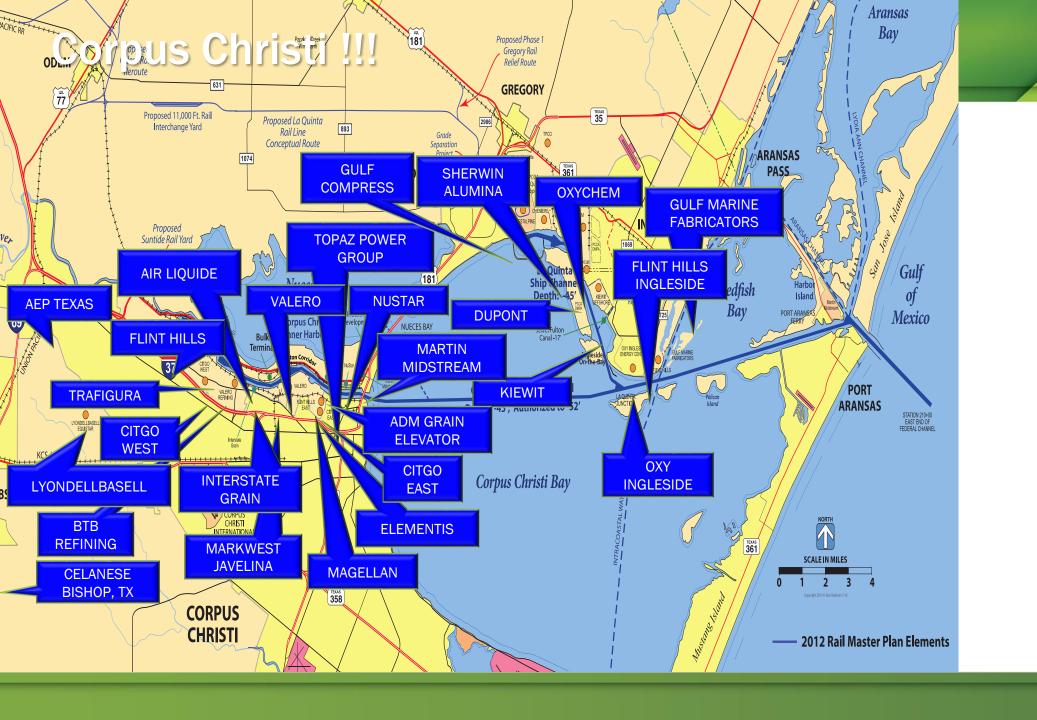


Output Total Impacts Neighboring 6-County Area in millions of US Dollars					
County 2014 2015 2016					
Bexar	\$14,154	\$8,144	\$6,330		
Jim Wells	\$299	\$219	\$120		
Uvalde	\$63	\$49	\$29		
Victoria	\$297	\$242	\$185		
Nueces	\$9,845	\$7,060	\$5,485		
San Patricio	\$1,052	\$4,954	\$5,061		
Total 6-county \$25,710 \$20,668 \$17,209					

Total Economic Output (15 County Area)



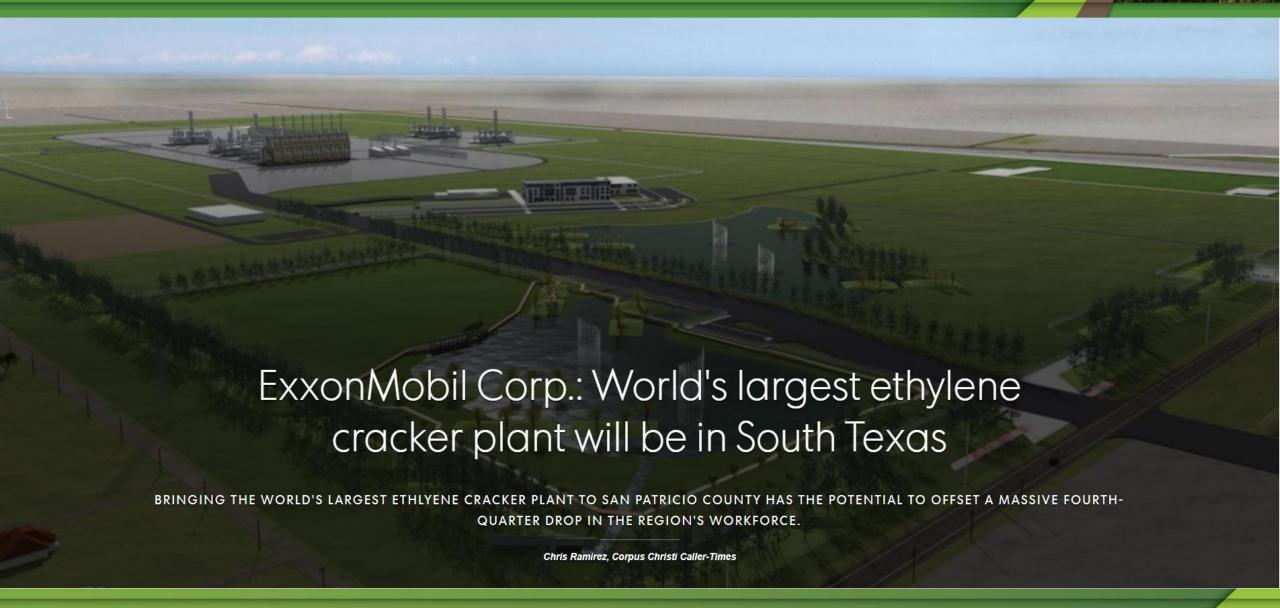
Output Total Impacts Core 15-County Area in millions of US Dollars					
County	2014 2015 2016				
Atascosa	\$5,647	\$2,989	\$1,745		
Bee	\$1,148	\$477	\$254		
DeWitt	\$12,615	\$9,192	\$4,605		
Dimmit	\$10,797	\$6,812	\$3,384		
Frio	\$1,350	\$1,041	\$642		
Gonzales	\$7,442	\$4,048	\$2,594		
Karnes	\$16,512	\$10,131	\$6,130		
La Salle	\$13,401	\$8,445	\$3,935		
Lavaca	\$1,892	\$1,164	\$470		
Live Oak	\$7,280	\$3,700	\$2,821		
Maverick	\$655	\$135	\$94		
McMullen	\$8,855	\$4,456	\$2,558		
Webb	\$8,392	\$5,746	\$3,720		
Wilson	\$748	\$259	\$168		
Zavala	\$1,913	\$862	\$600		
Total 15-County	\$98,647	\$59,457	\$33,720		





Portland Texas





Cheniere Energy







Workforce Trends in The Eagle Ford Shale Region





OIL AND GAS COMPANIES LOOK
TO HIRE MORE LOCAL TALENT;
WE NEED TO TRAIN AND EDUCATE
OUR FUTURE WORKFORCE IN
SOUTH TEXAS.



Oil & Gas Occupations • Transportation • Accounting • IT • Measurements • Instrumentation

Education opportunities in the Eagle Ford Shale Region



- Colleges and universities offering various training services and degrees that will develop and produce oil & gas professionals in South Texas.
 - Laredo Community College: degrees and certifications in electrical technology, diesel engine mechanics, and an oil & gas industry specialization
 - Del Mar College in Corpus Christi: industry training in AutoCad, Electrical, Hazmat, Industrial & Technical Math, Mechanical, Plumbing, Safety, Surveying, and Transportation
 - Coastal Bend College: residents of Beeville, Pleasanton, Alice and Kingsville various petroleum industry training courses that span from CDL certification to oil spill response
 - Victoria College offers associate degrees and technical certifications in business and welding
 - Southwest Texas Junior College in Uvalde offers associate degrees and technical certifications in diesel technology, welding, and more
 - Other colleges include Sul Ross Rio Grande College and Texas A&M International University in Laredo
 - Palo Alto College (San Antonio) developed a unique program called the Eagle Ford
 Boot Camp, geared solely toward preparing our workforce to capitalize on the human
 resource needs in the oil and gas industry.



STEER Programs





Spurring Education ENERGY DAY

April 1, 2016 • AT&T Center



- STEER partnered with the San Antonio Spurs, HOLT CAT, and Shale Magazine for a one-day oil and gas education program.
- Over one thousand students from South Texas and San Antonio with a desire to learn more about STEM careers/oil and gas attended the Spurring Education Energy Day event.
- The event showcased oil and gas industry and STEM career opportunities available upon graduation from high school or college.
- The Day provided students with an explanation of the process of drilling and producing oil and gas, and offered interactive quizzes and games. Students were informed of the various careers related to science, technology, engineering and math as well as the many opportunities that are available beyond STEM fields.



"We are grateful to STEER and Spurs Sports and Entertainment for providing our students with this unique and educational experience," said Nancy Dunn Thompson, Ph.D., Director of Community Outreach and Communications for the School of Science and Technology.

STEER Impacts Through Collaboration



- Alamo Area Council of Governments (AACOG) Eagle Ford Emissions Inventory
- Roads: TxDOT/DPS/STEER
- UTSA Economic Impact Study
- San Antonio River Authority (SARA) on Eagle Ford Shale Handbook
- San Antonio River Authority
- Groundwater Conservation Districts
- Texas Parks & Wildlife
- Taking Care of Texas



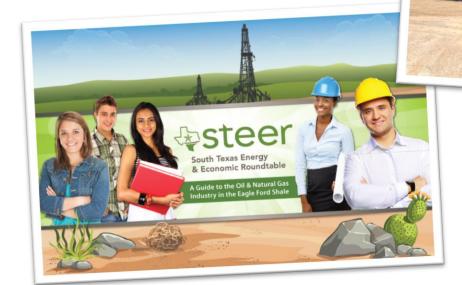
Taking Care of Texas is about building on existing conservation efforts. We want Texas to be a leader in meeting the nation's energy needs while conserving soil and habitat and boosting the economy in South Texas.

- Laura Bush, Taking Care of Texas

South Texas Engagement



- Supporting education and outreach initiatives in South Texas
 - STEER Oil & Gas Education Guide and Presentation
 - Speaking engagements
- Continually foster relationships with stakeholders
- Media relations and rapid response
- Share positive industry news and stories
 - Eagle Ford Excellence Awards
 - Social Media
- Public Forums
 - Town Halls, Commissioner Courts, Neighbors of Oil & Gas, etc.



STEER Programs





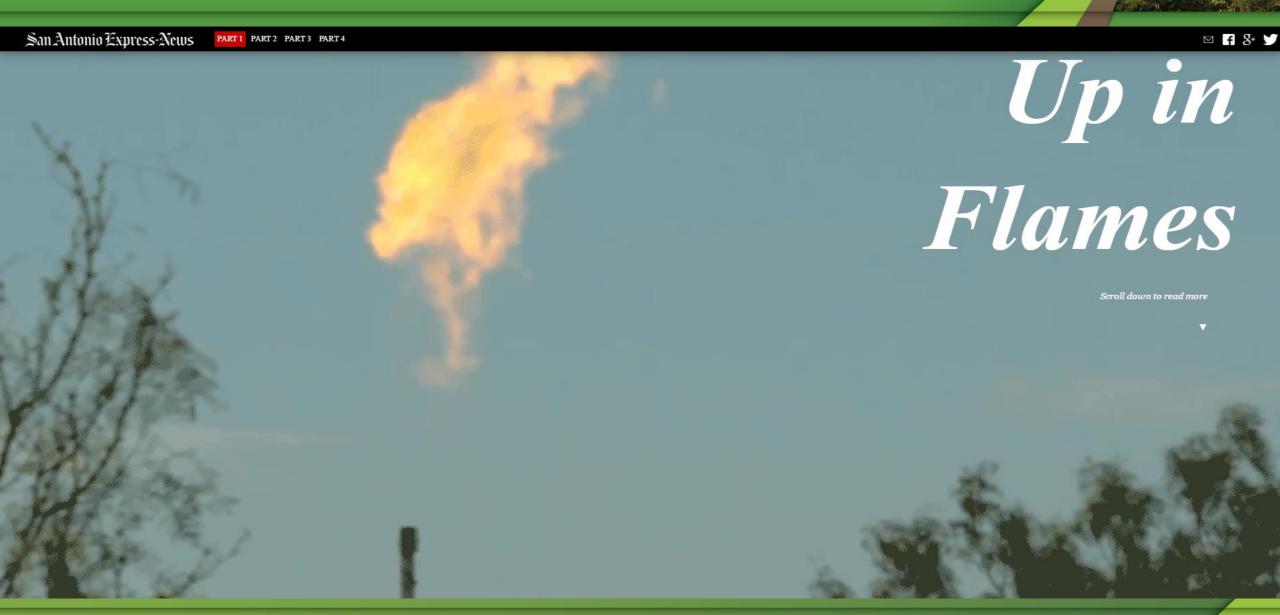
- Awards to showcase companies making a difference in the community, in safety and environmental stewardship
- Awards for 2016 include: Community and Social Investment, Environmental Stewardship, Safety Performance and The STEER Impact Award.
- Previous Environmental winners include: Alphabet Energy, Aggreko, Energy Waste, Schlumberger, NuStar, Caesar Kleberg Wildlife Research Institute at Texas A&M University Kingsville, HOLT CAT, and others.
- Companies have won for water management technologies, emission reduction technologies, reclamation projects, alternative fuel technologies, and more...





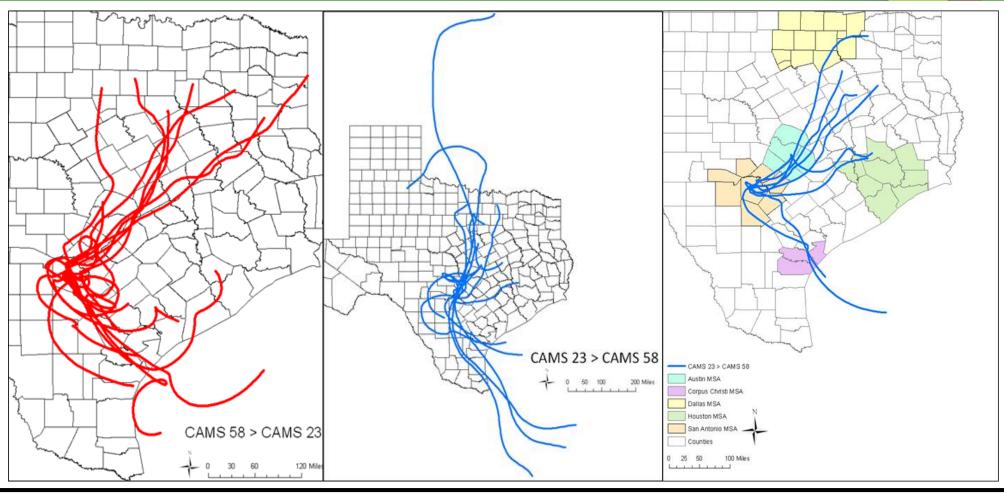
San Antonio, We have an Air Problem...





Bridging Industry and Regional Air Planning

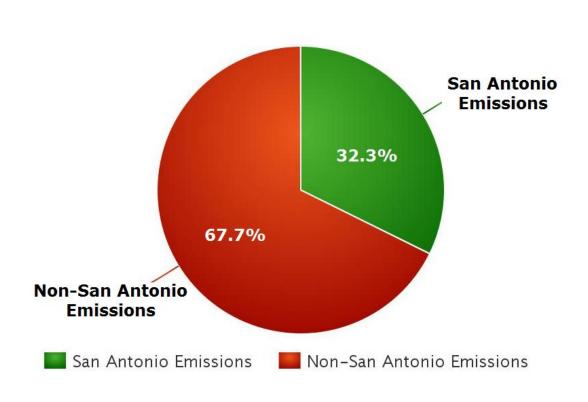




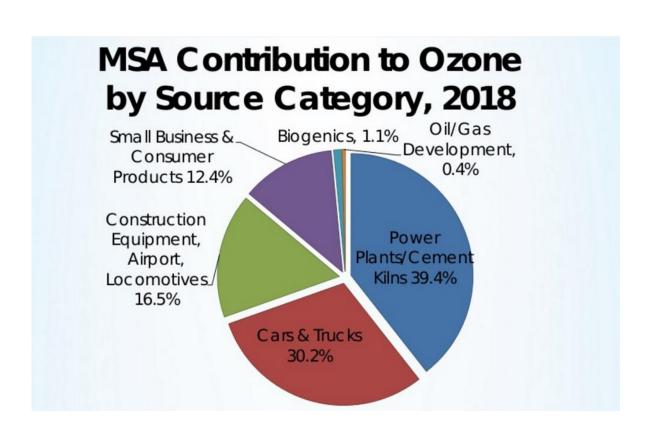
Much of the emissions are transport - thus the need for a regional strategy

Bridging Industry and Regional Air Planning





Source: Ozone Analysis: June 2006 Photochemical Modeling Episode (2015) Dated October 30, 2015



Bridging Industry and Regional Air Planning



Average of the Fourth Highest Eight-hour Average Ozone

Measurements, 2014 -2016* VALIDATED THROUGH SEPTEMBER

* Daily ozone

Monitor Site	2014	2015	2016*	3-Year Average
Camp Bullis C58	72	80	69	73
San Antonio NW C23	69	79	71	73
Calaveras Lake C59	63	68	62	64

2 Monitors showing violations over new standard of 70ppb

What is Industry Doing









Our Partnership with AACOG

Valuable Partnership with AACOG, oil and gas Industry, and organizations like CPS Energy in sharing data

Participating in the Planning Process

We ALL have a role in air quality – it is not one contributor!











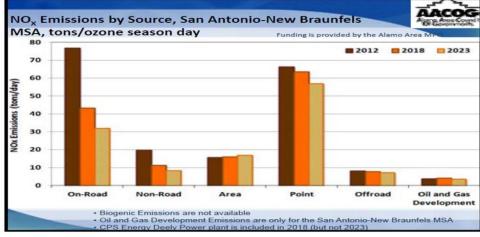


What is Industry Doing

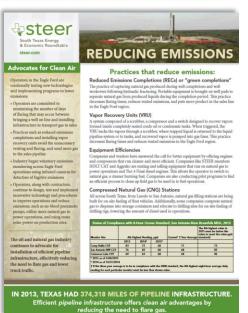


AACOG Eagle Ford Emissions Inventory

- The study is conducted by Alamo Area Council of Governments (AACOG) funded by Texas Commission on Environmental Quality (TCEQ) to study air quality in the San Antonio MSA. The goal is to develop comprehensive air quality planning document to determine how to remain below EPA Non-Attainment qualifications.
- STEER and member companies work with AACOG to supply data for Eagle Ford and serve on committees to continue dialogue.
- STEER Communications Committee gathered talking points for use with media and key stakeholders to educate the community about programs in place to lower emissions







What is Industry Doing



Eagle Ford Well Pad Design Improvements

Standard Tank Battery

 Vertical separators – instrumentation above eye level

- Tank connections
- Truck traffic
- Large footprint
- Higher chance of spills due to loading/unloading

Commingled Allocation Separator

- Horizontal separators –
 instrumentation at eye and ground
 level
- Fewer connections
- No Truck traffic
- Greatly reduced footprint
- Reduced chance of spills



Thank You



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