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San Antonio Express-News

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Elmendorf Police Chief Michael Pimentel.

Elmendorf stunned by killing of its chief of police

By Mark D. Wilson and Valentino Lucio
STAFF WRITERS

Most days, Elmendorf Police Chief Michael Pimentel would patrol the usually quiet streets of his South Bexar community, often stopping to joke and chat with people in the neighborhoods.

"He would drive through the neighborhood every morning," Elmendorf resident Eugene Rios said. "Things are always quiet out here, so he always made a point to stop and say hello. He joked a lot. He was just a great guy."

"We've had other police chiefs, but he was the nicest."

But his cruise through the quiet neighborhood turned deadly Saturday morning when Pimentel was killed during a traffic stop, the Bexar County Police continues on A16

Alamo City works at never being a Ferguson

By Josh Baugh
STAFF WRITER

As protests continued last week in Ferguson, Missouri, over the shooting death of an unarmed black youth by a white officer, an African-American San Antonian died while in police custody here after he was shot with a Taser.

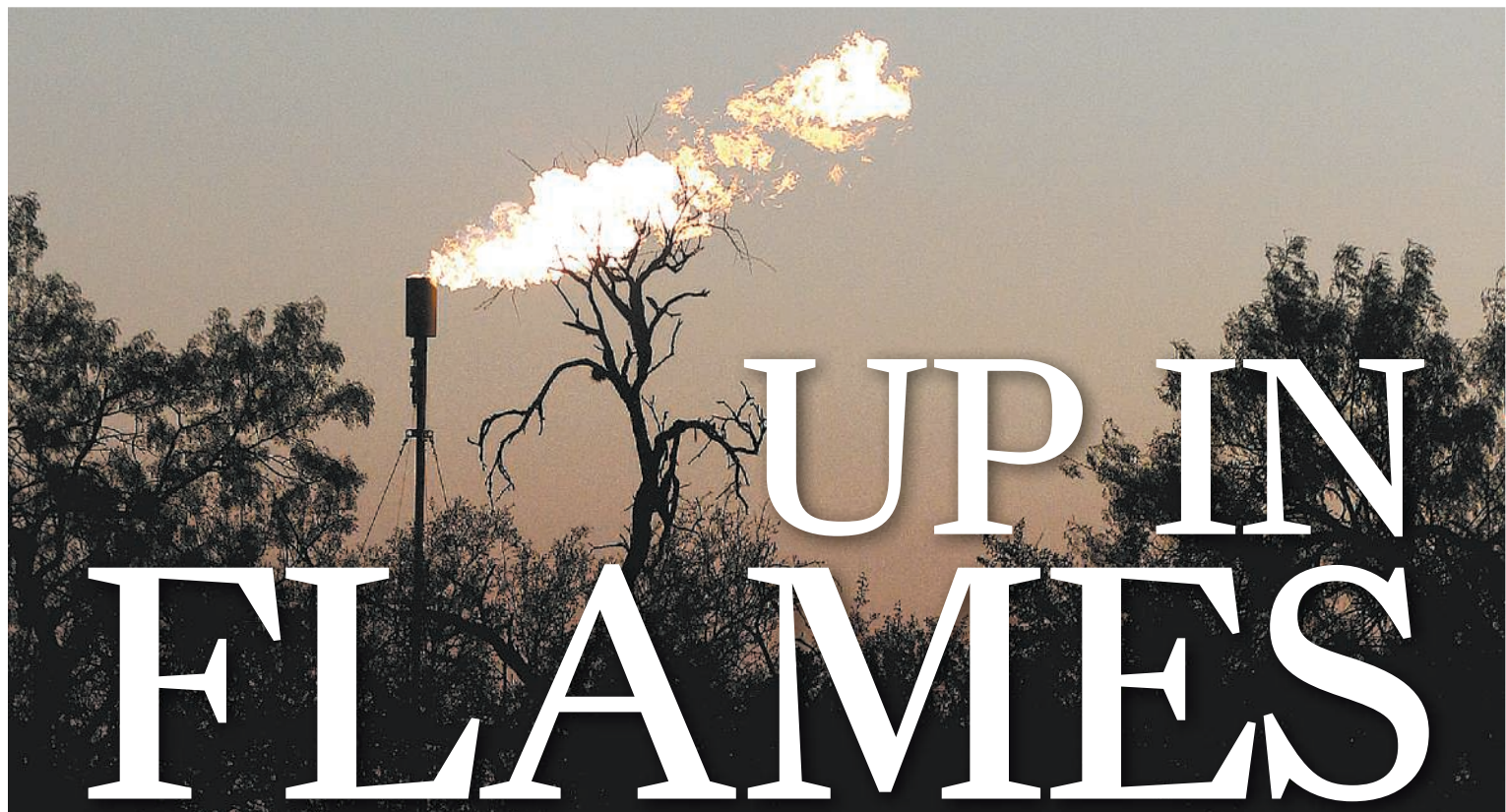
The Aug. 17 death of Levon Leroy Love garnered minimal media attention and no public outcry, standing in stark contrast to what's unfolded in the St. Louis suburb after officer Darren Wilson shot and killed 18-year-old Michael Brown.

In the days after Wilson shot Brown, protesters marched in the streets chanting, "Hands up! Don't shoot!" Riots broke out and stores were looted as protesters threw Molotov cocktails and police responded with tear gas and rubber bullets.

Alamo City continues on A23

Peaceful night in Ferguson. A21

INVESTIGATIVE REPORT



Flares in Eagle Ford Shale wasting natural gas

By JOHN TEDESCO and JENNIFER HILLER | Photos by KIN MAN HUI

Since the Eagle Ford Shale boom began in 2009, flares burning across the countryside have fouled the air with pollution, caused claims of illness and wasted millions of dollars' worth of natural gas. Texas requires companies to get permits and limit flaring on oil leases, but some of the biggest operators flared without any state oversight.

OUR FINDINGS ARE PRESENTED IN THIS FOUR-PART SERIES:

Today: Wasting natural gas | Monday: Flaring pollution | Tuesday: Enforcement | Wednesday: Solutions

Oil and gas companies rushing to drill in the Eagle Ford Shale since 2009 have burned and wasted billions of cubic feet of natural gas — enough to meet the needs for an entire year of every San Antonio-area household that relies on the fossil fuel.

Faced with a pipeline shortage in rural South Texas, companies bleed off the gas into flares that release air pollutants and greenhouse gases in amounts that collectively rival the output of a half-dozen oil refineries.

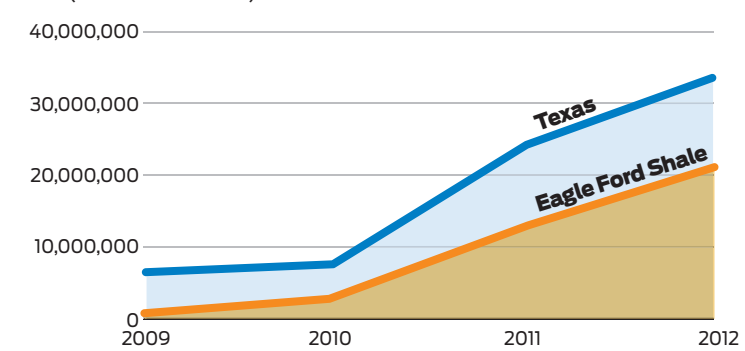
Not even the state's top regulators at the Railroad Commission of Texas who oversee the oil and gas industry know how much gas is going to waste and polluting the air in the Eagle Ford Shale.

"Nobody wants to flare," said Barry Smitherman, chairman of the Railroad Commission's three-member elected board.

Eagle Ford Shale flares the most gas

Most of the natural gas produced in Texas is not flared. But the amount of flaring that does occur has increased by more than 400 percent from 2009 to 2012. Most of that flaring happened in the Eagle Ford Shale region.

Flaring and venting of natural gas in Texas



Source: Texas Railroad Commission

San Antonio Express-News

Online coverage

- ExpressNews.com: To read the complete four-part series.
- mySA.com: See an introductory video and an interactive map.

"When you do that, you're burning up money." But a yearlong San Antonio

Express-News investigation used the state's own data to show how often a resource

used to cook, heat homes, produce electricity and fuel vehicles is being squandered.

Analyzing millions of records, the newspaper found the volume of wasted gas in Texas has reached levels not seen in decades — and the South Texas shale field is largely to blame.

Among the newspaper's findings:

- ▶ No region in Texas flared as much gas as the Eagle Ford Shale. Since the early days of the energy boom in 2009, statewide flaring and venting in Texas surged by 400 percent to 33 billion cubic feet in 2012. Nearly-two thirds of the gas lost that year — 21 billion cubic feet — came from the Eagle Ford.
- ▶ The rate of Eagle Ford flaring was 10 times higher than the combined rate of the state's other oil fields.
- ▶ The total volume of wasted gas in the shale from 2009 to 2012 was almost 39 billion cu-

Natural continues on A8

WEATHER

HIGH 100 LOW 77 Mostly sunny Full report, B14

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Natural gas going up in flames in the Eagle Ford

From page A1

bic feet — enough to meet the annual heating and cooking needs for all 335,700 residential customers who relied on gas last year in CPS Energy's service area, which includes San Antonio.

► Despite assurances by the Railroad Commission that gas flares are safely regulated, the Express-News found seven Eagle Ford operations with some of the highest amounts of flaring had failed to obtain the necessary permits from the agency.

► Eagle Ford flares pumped more than 15,000 tons of volatile organic compounds and other contaminants into the air in 2012, state pollution estimates obtained by the Express-News state.

That's more pollution than the amount emitted by the six oil refineries in Corpus Christi. And it doesn't include all the other sources of pollution in the oil patch.

It's the downside of an energy boom that seemed unthinkable not long ago.

The discovery that hydraulic fracturing could tap the Eagle Ford's rich oil and gas reserves has sparked a flurry of drilling that has pumped billions of dollars into the region and has helped propel a surge in domestic oil production.

Advances in horizontal drilling have made "fracking" widespread in the United States. Drillers inject high-pressure fluids down wells to unlock fossil fuels trapped in layers of shale rock buried deep beneath the earth.

Texas oil production is on track to surpass every OPEC country except Saudi Arabia because of the fracking boom in oil fields, with the Eagle Ford and Permian Basin leading the way.

Energy companies, though, are missing opportunities to harness all the natural gas that bubbles to the surface with more profitable crude oil in the Eagle Ford Shale. The only practical way to transport gas is through pipelines to processing plants. But some remote areas of the Eagle Ford lack that critical infrastructure or can't handle the skyrocketing gas production.

The solution? Oilfield workers raise tall metal spires known as flare stacks to burn off natural gas and release it into the Texas sky — sometimes for months.

Flares light the countryside at night like ghostly beacons. The glow of flames and lights of 24-hour drilling and fracking operations are so widespread, the region south of San Antonio looks like a sprawling city in satellite photos.

While flaring is supposed to incinerate impurities in raw natural gas and produce carbon dioxide, some of the wasted fossil fuel simply is being vented — unburned — directly into the atmosphere.

The vented gas is mostly methane, a greenhouse gas that traps 20 times as much heat in the earth's atmosphere as does carbon dioxide.

Texas regulators blame the cheap price of natural gas for the spike in flaring. They said the plummeting cost of the fossil fuel in recent years hampered pipeline construction.

While Smitherman and other officials at the Railroad Commission tout the low rates of flaring in Texas oil and gas fields, they said they didn't know how much gas has been lost in the Eagle Ford, where they acknowledge flaring is a concern.

The Express-News analyzed a public database kept by the agency that shows how much natural gas is produced in Texas — and what happens to it.

The database contains millions of monthly production reports filed by oil and gas operators dating to 1993. The re-



cords don't show every source of flaring — the production reports are for oil and gas wells, not other sources of flaring such as processing plants.

The database also lumps flaring and venting numbers together. While officials know the total volume, they don't know how much gas has been burned into carbon dioxide, and how much has been released into the air as more troublesome methane.

Ultimately, the Railroad Commission — an agency critics say is too cozy with the industry it regulates — is leaving it up to the industry it regulates to solve the problem.

The surge in flaring came at a time when Smitherman criticized "global warming alarmists" and boasted about his clashes with the Environmental Protection Agency during a failed electoral bid for Texas attorney general.

Meanwhile, preliminary data for 2013 indicates flaring and venting in South Texas is getting worse.

Energy firms operating Eagle Ford wells lost more than 35 billion cubic feet of gas that year — a 65 percent increase from 2012, when flaring and venting totaled more than 21 billion cubic feet.

"That amount of gas is horrible," said Sister Elizabeth Riebschlaeger, a nun with the Sisters of Charity of the Incarnate Word who lives in South Texas and speaks out for residents who believe they've been harmed by rising levels of pollution in the Eagle Ford. "I would use the word disastrous."

Riebschlaeger, who works out of her Honda Civic as she drives the back roads of the shale, said she's seen flares burning "day and night" and emitting plumes of black smoke that indicate the flames are burning inefficiently and releasing air pollutants.

"It's an environmental tragedy," Riebschlaeger said. "There are lots of people who bought nice, quiet country places who now find that same quiet environment destroyed."

Smitherman said the waste of any natural resource is a serious problem. But he emphasized most Eagle Ford gas still is being collected. He predicted energy producers will have a bigger incentive to build pipelines as gas prices rise.

"There will, ultimately, be pipelines built to reduce this flaring," Smitherman told the Express-News. "We're just in a transition period right now where the price of oil is so high, everybody's chasing after liquids. And when they find liquids in the Eagle Ford, they also find gas."

Flaring hot spots

When an oil company drilled new wells next to their rural home last year, Adrian and Loretta Niestroy quickly learned that oil isn't the only thing that flows from the ground.

The Niestroys live in Karnes County, in the heart of the boom. No other spot in Texas produces more oil. Last year, the county yielded 56 million barrels — enough to fill 30 tanker ships.

But in Karnes and other oil-rich areas of the region, thou-



Cattle roam next to a pond at dusk as a flare burns off excess gas at a nearby oil well in Karnes County.



Mayor Katherine Payne (left) and Sister Elizabeth Riebschlaeger converse at Nordheim City Hall. Payne says nearby flaring was so violent that the noise and vibrations shook her home.



There are lots of people who bought nice, quiet country places who now find that same quiet environment destroyed."

SISTER ELIZABETH RIEBSCHLAEGER

sands of wells that dot the landscape also produce natural gas. Drillers call it casinghead gas, a reference to the heavy metal casings that are fitted on top of a well.

Murphy Exploration and

Production Co., the company that drilled the oil wells near the Niestroys' property, asked state regulators for permission to flare casinghead gas last summer while it waited for a nearby processing plant and pipeline to be built.

The Railroad Commission approved the request and the gas infrastructure eventually was finished in January 2014. But in the six months leading up to that, records show that Murphy flared all of the gas from the wells on the lease, a total of 245 million cubic feet.

"That's enough gas to power Karnes City," Adrian Niestroy quipped as he sat in his backyard within view of one of the flares, where a column of fire danced and swirled for months and lit his yard at night.

Niestroy said he loves the oil boom — a different company drilled an oil well on his own property. But he doesn't understand why state officials are letting a useful natural resource go to waste.

The problem often stems from simple economics. Over the past few years, oil prices climbed while gas prices dipped. Producers followed the money and hunted oil. That's why flaring often occurs in counties such as Karnes that lie in the oil-rich northern swath

of the shale region, a formation the size of Costa Rica that stretches for 400 miles like a lopsided grin from the Mexican border near Laredo to Madison County.

Most of the gas flared in the Eagle Ford Shale comes from oil wells. Oil producers flared and vented 32.7 billion cubic feet of casinghead gas from 2009 to 2012.

That's nearly 8 percent of all casinghead gas produced in the region, 10 times higher than the flaring rate in the rest of Texas. In those years, rates of flaring in several Eagle Ford counties approached levels seen in North Dakota's Bakken field, which has become notorious for burning off about 30 percent of its natural gas.

► La Salle County, one of the top producers of oil and casinghead gas in the region, flared or vented about a fifth of its production — more than 10 million cubic feet.

► At oil wells in Atascosa and Frio counties, energy firms flared a quarter of the 17 billion cubic feet of casinghead gas they produced.

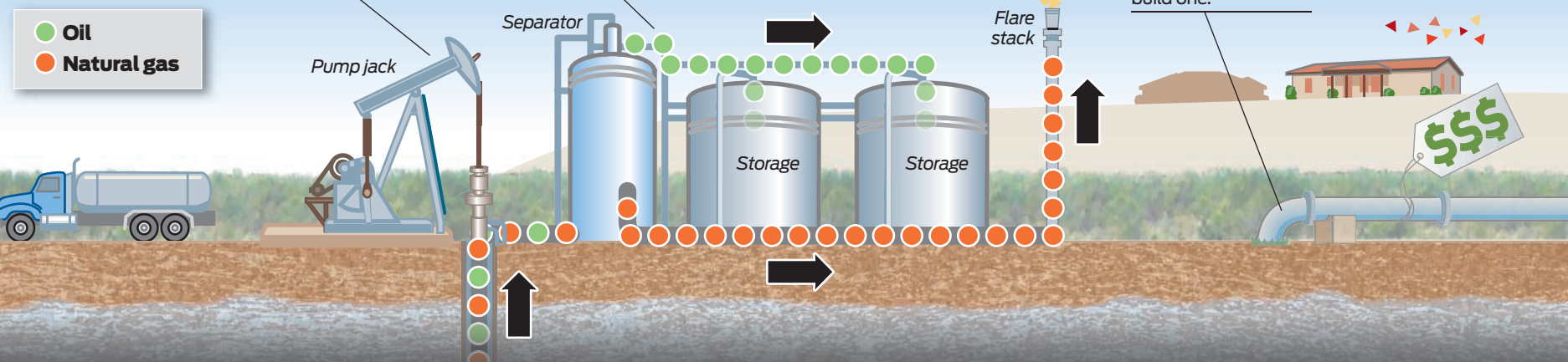
► Companies operating in Wilcox County produced nearly 1.4 billion cubic feet of gas from oil wells — but flared or vented more than a third of it.

Flames continues on A10



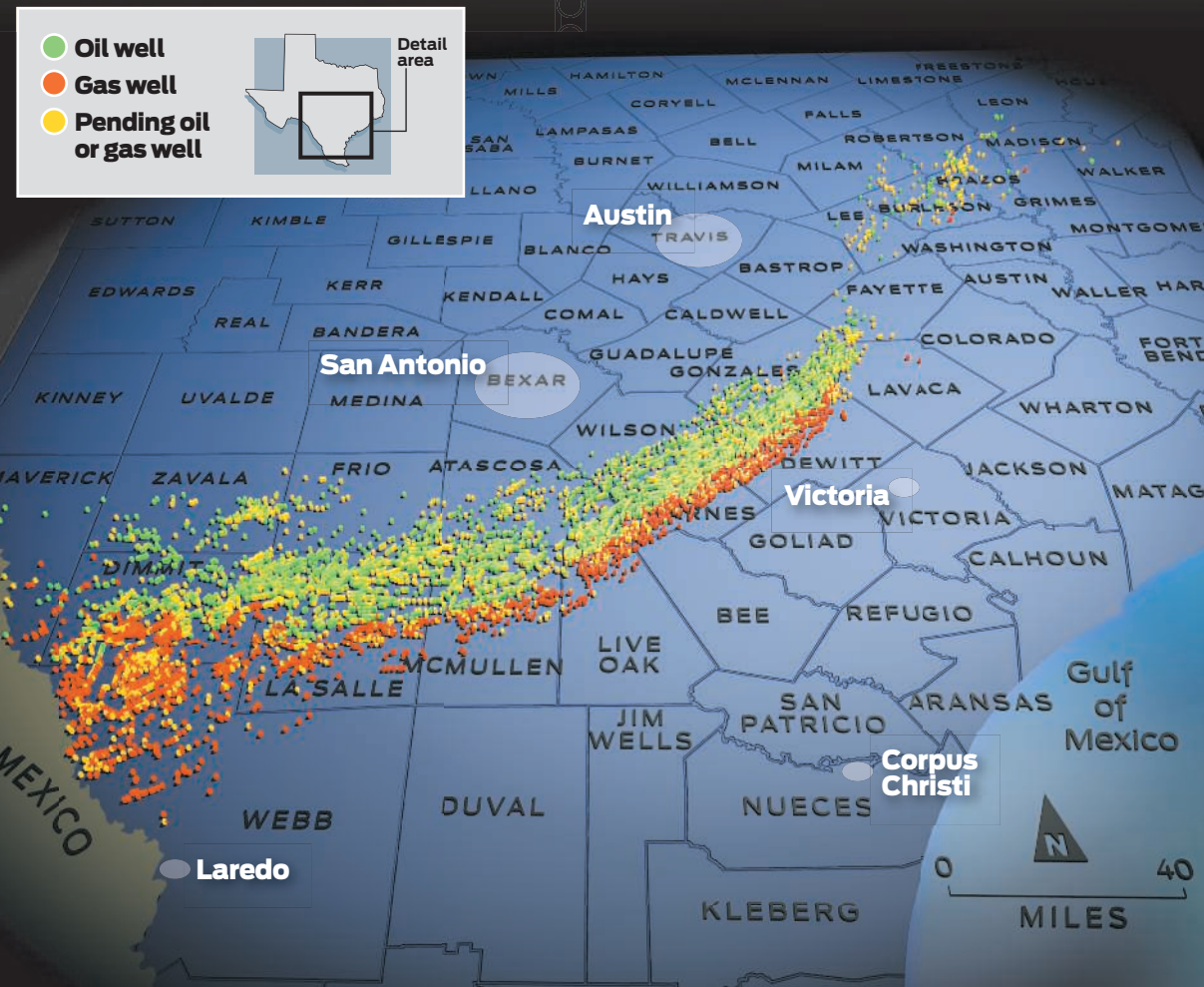
Natural gas flaring basics

- 1** Oil well operators may extract both oil and natural gas after drilling, but today companies are most interested in oil, since it is more profitable to sell.
- 2** The oil and natural gas are separated from each other. The oil is sent to storage tanks.
- 3** Because of the current deflated state of natural gas prices, sometimes companies simply burn or vent the natural gas.
- 4** In many cases there isn't a pipeline infrastructure in place that could move the natural gas to market, and companies say it doesn't make economic sense to build one.
- 5** But there are concerns that burning or venting the natural gas is a permanent waste of a natural resource and could harm the environment.



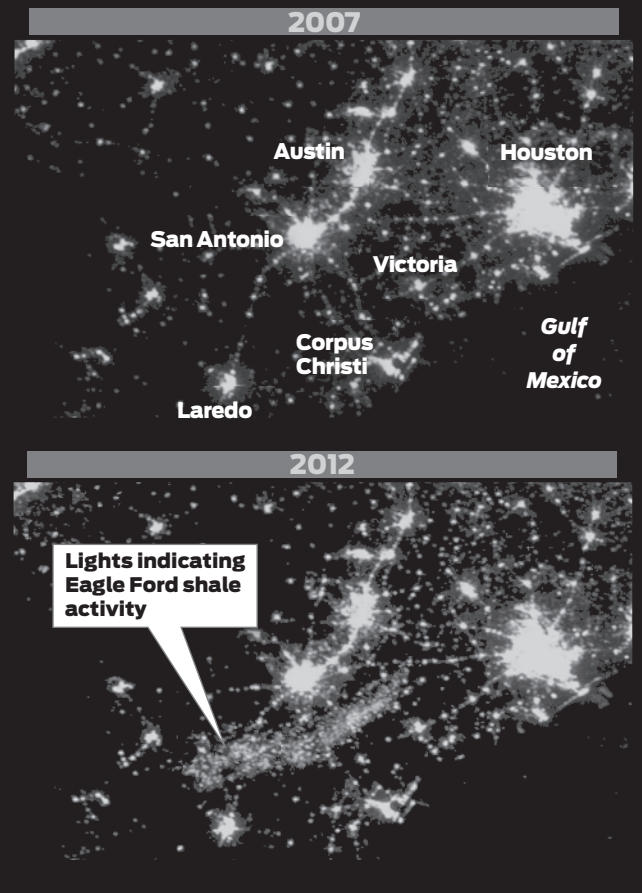
Eagle Ford wells

Map shows wells both permitted and completed as of June 2.



Eagle Ford night lights

Nighttime satellite photography of Central and South Texas shows clusters of lights representing cities. Since 2007, a large crescent-shaped cluster south of San Antonio has popped up, representing the nighttime lights and flares of Eagle Ford Shale activity.



UP IN FLAMES

Investigative Report

As Robert Jonas goes about his ranching chores, natural gas is flared off in the background near Karnes City.



FLAMES

From page A8

Ryan Salmon of Ceres, a Boston-based coalition of investors and environmentalists, said the Eagle Ford and Bakken share key attributes: A pipeline shortage and companies that hunt oil, not gas.

“Development is happening in areas that lack the legacy infrastructure and companies are primarily interested in the oil,” Salmon said.

The Eagle Ford dips toward the Texas coastline, and along that southern swoosh, the deepest part of the rock produces pure natural gas, known as dry gas. There isn’t much oil.

Rates of flaring are much lower at those wells, which makes sense — drillers in that region actually want the natural gas, and much of the infrastructure to collect it already was in place.

Webb County, for example, is home to thousands of gas wells that produced more than 330 billion cubic feet of natural gas in 2012. Yet only a fraction of that dry gas — a tenth of a percent — was lost to flare stacks.

Cheaper to flare

Pipelines don’t come cheap. And that’s assuming a company can obtain the regulatory approvals quickly. James Mann, an Austin attorney who handles pipeline cases, said it can take a year to secure the right-of-way for a pipeline. He recently worked on a short segment of pipe in the Eagle Ford that took six months from start to finish — an exceptionally fast pace.

“When they have to move into a booming area, it takes a while,” Mann said. “There’s always a pipe shortage. You have to find welders. You have to see if a construction company is available. The schedule is filled with things that the pipeline company may have no control over.”

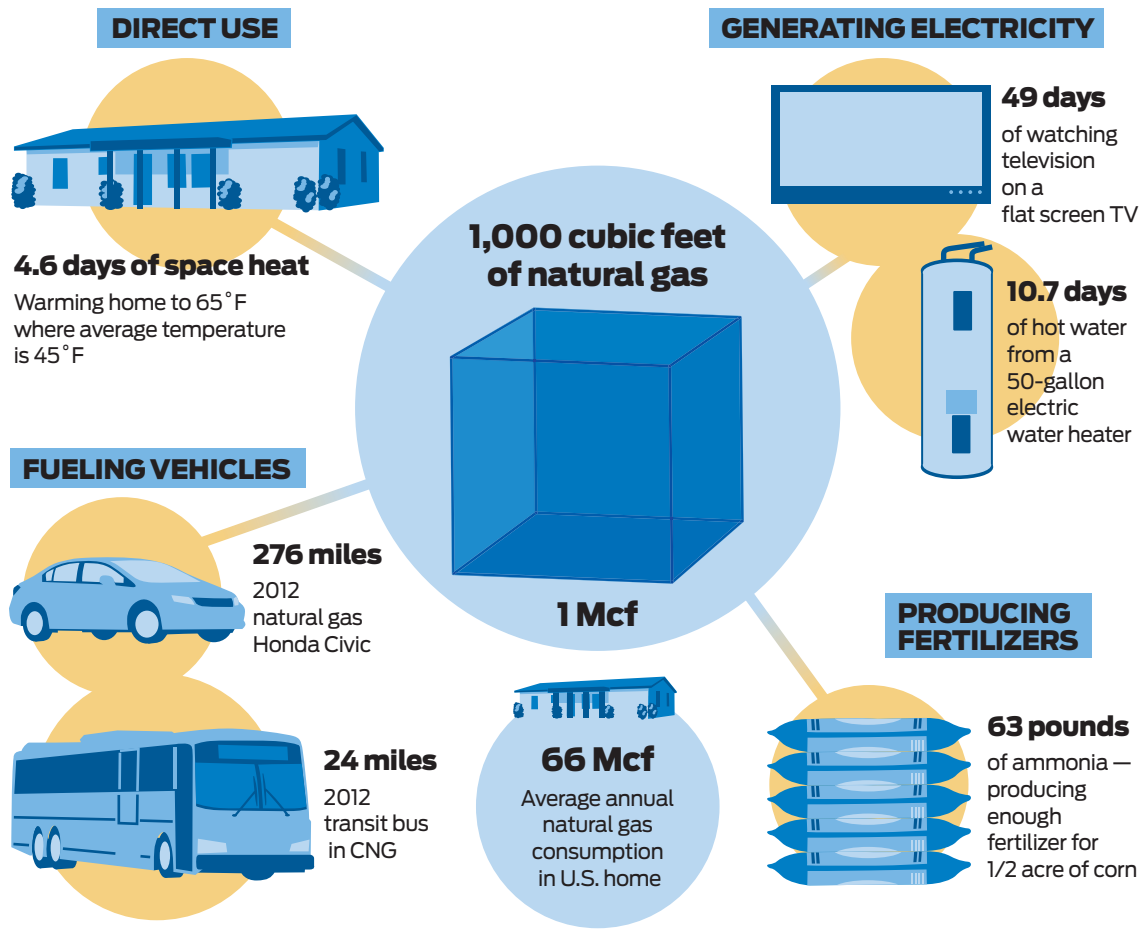
The low price of gas in recent years hasn’t been enough to cover pipeline expenses.

On Oct. 30, 2013, oil producer EF Energy LLC told the Railroad Commission it would be too costly to build a new pipeline from its oil lease at Sheffield Ranch in Wilson County.

The company said it would

Versatile natural gas

What does 1,000 cubic feet of natural gas — expressed as 1 Mcf — produce for us?



the “Burns Ranch A” lease, operated by Goodrich Petroleum.

Records show scores of oil wells on the Burns Ranch produced 1.9 billion feet of casinghead gas in 2012, and Goodrich flared or vented about a fifth of that — more than 440 million cubic feet.

“We would love to sell absolutely every molecule of that gas,” Goodrich spokesman Daniel Jenkins said. But the gas goes to pipelines owned by another company, he said, and it stopped accepting all of it.

And there’s no incentive for Goodrich to stop producing. Like many oil leases signed with mineral-rights owners, there’s a continuous-drilling provision, which means Goodrich must keep drilling and producing at the Burns Ranch.

“If you stop drilling on the lease,” Jenkins said, “you lose your rights to go back and drill more wells.”

Pipeline delays

A clash between Texas officials and the EPA also delayed pipeline projects.

In 2011, new federal rules required polluters to obtain greenhouse gas permits in an effort to tackle climate change. The rules didn’t apply to pipelines. But they did apply to the infrastructure that connects to pipelines — things like compressor stations and processing plants.

Texas Gov. Rick Perry and Attorney General Greg Abbott, who’s now running for governor, said the new requirements would be disastrous for the industry and sued the EPA.

The Texas Commission on Environmental Quality could have taken responsibility for issuing greenhouse gas permits, but refused.

What seemed like a business-friendly move instead created a bureaucratic nightmare.

The approval of greenhouse gas permits was left to the EPA — something industry and environmental advocates say delayed construction of mid-stream infrastructure, the part of the oil and gas industry that moves products from point A to point B.

“The TCEQ is really falling down on the job in every way,” said Elena Craft of the Environmental Defense Fund, an environmental group that has partnered with the industry. “We’re going on three years

Source: American Clean Skies Foundation

San Antonio Express-News

Well site near the Niestroy home



San Antonio Express-News

cost \$1.5 million to build a 5.7-mile pipeline to hook into the nearest available pipeline. With the gas worth an estimated \$670,000, the company would lose more than \$800,000. EF Energy sought permission to flare the casinghead gas instead.

“Due to the explosive rapid rate of drilling by operators in the area, there is a severe shortage of equipment, supplies, manpower and services available to construct and complete gas gathering pipelines,” state officials wrote in their decision regarding the company’s request.

Noting that EF Energy already was flaring casinghead gas without permission, officials went ahead and approved the request.

Skip York, an analyst with energy research firm Wood Mackenzie, said people often ask him about flaring, but can’t believe his answer. He says gas prices have been so historically cheap, it doesn’t justify the time and expense of building a pipeline.

“There’s a case to be made

that it’s cheaper for me to flare it at the well than it is for me to build the infrastructure to move the gas,” York said. “That makes their head explode. I’m throwing away money, but I’m throwing away less money. They say it makes no sense. It doesn’t.”

Smaller companies — those that wildcat to discover hydrocarbons where no one else has — generally can’t afford to build expensive pipeline networks, said Joseph Pratt, an energy historian at the University of Houston.

“Look at the size of the company,” Pratt said. “The smaller companies have less option to invest in anything except to burn it. That’s the case in a lot of the shale history. The big companies have the money to do this.”

Even in areas with pipelines, the surge in gas production has created bottlenecks in the system.

In 2012, no other county in Texas flared as much casinghead gas as La Salle in the Eagle Ford. And no other area in La Salle flared as much gas as



Waves of heat distort the view of the trees beyond this flare at an oil well near Nordheim.

Oil-producing counties have the highest rates of flaring

Most flared gas doesn't actually come from gas wells, it comes from oil wells. Known as casinghead gas, it's a byproduct that flows up with oil but can't easily be transported without pipelines. The northern portion of the Eagle Ford Shale is rich in oil, while the southern portion produces mostly "dry" gas. Rates of flaring are higher in the oil-rich portion of the shale, where nearly 8 percent of casinghead gas was lost between 2009 and 2012. That's 10 times higher than rates of flaring at oil wells in the rest of Texas.

Casinghead gas, in Mcf (thousand cubic feet), 2009-2012

County	Gas production, in Mcf	Amount flared or vented, in Mcf	Percent lost
Atascosa	7,339,518	1,823,971	25%
Bee	2,377,832	1,562	0%
Burleson	31,701,231	7,252	0%
DeWitt	44,744,344	580,443	1%
Dimmit	34,612,611	3,300,071	10%
Fayette	29,362,775	39,279	0%
Frio	9,611,175	2,693,726	28%
Gonzales	35,047,661	2,108,023	6%
Grimes	3,950,911	4,663	0%
Karnes	73,037,898	5,386,110	7%
La Salle	52,829,039	10,008,984	19%
Lavaca	3,369,277	360,574	11%
Lee	29,103,118	100,400	0%
Leon	4,528,038	80,637	2%
Live Oak	21,827,304	1,231,334	6%
Maverick	1,618,866	69,390	4%
McMullen	27,802,528	4,061,788	15%
Milam	1,308,852	34,850	3%
Webb	1,337,556	38,597	3%
Wilson	1,363,478	517,950	38%
Zavala	1,759,782	376,350	21%
Total	418,633,794	32,735,594	7.8%
Other parts of Texas	3,438,599,611	26,724,735	0.78%

Source: Express-News analysis of data from the Texas Railroad Commission

San Antonio Express-News

where we've had businesses losing money and a deterioration in environmental quality. We have this abundance of natural resources and we're just wasting them. That's not smart. And for what? Some partisan personal political statement?"

Now it takes anywhere from eight months to more than a year and a half to get a greenhouse gas permit through the EPA, said Celina Romero, an Austin attorney who works with the Texas Pipeline Association.

Romero said it would take the TCEQ less time to issue the same permit because it has more staff than the EPA.

In the meantime, 50 such projects for things such as compressor stations were delayed in the Eagle Ford and Barnett Shale, the massive gas field in the Fort Worth area.

The Texas Pipeline Association estimates the delays placed more than 48,000 jobs at risk — a number it based off of pending applications for air permits or company news releases that included jobs numbers.

The Texas Legislature passed a law in 2013 authorizing the TCEQ to regulate greenhouse gas emissions. But it probably will take months for the agency to craft its rule-making process and have the EPA sign off on it, Romero said.

"Regulations that prevent the pipe from going in the ground is what really seems to hamper us," said Jeff Applekamp, vice president of government affairs for the Gas Processors Association, one of the industry groups that publicly complained about the "uncertain situation in Texas."

State 'prohibits' waste

Throughout history, people have discovered natural gas seeping from the ground and tried to tap it in various ways — including using bamboo shoots as makeshift pipe in China.

In Texas, the first gas well was discovered in 1872 in Young County. It wasn't long before the state tried to stop companies from wasting the hydrocarbon.

In 1899, the Legislature passed a law that said a gas well had to be shut down within 10 days until it could be used for "light, fuel, or power



Oil-field-related structures can be seen in the distance as rancher and land owner Robert Jonas tends to his cattle near an old bus outside Karnes City.

purposes."

Lawmakers over the decades gave the Railroad Commission wide latitude to define what it meant to "waste" natural gas, and by the late 1940s, some Texas Supreme Court cases made it clear that gas flaring couldn't happen without a permit.

The current Natural Resources Code says that "in recognition of past, present, and imminent evils occurring in the production and use of gas," waste is prohibited for the protection of the public and private interests.

Some amount of flaring is unavoidable.

"Things happen. Things shut down. Operations go through cycles," Mann said. "Equipment goes down to be maintained so gas is flared. So there's always some of that going on."

Gas rushes out of some flares with so much force that they roar like jet engines, frightening residents who have no idea whether they need to evacuate.

In the tiny town of Nordheim in DeWitt County, population 307, Mayor Katherine Payne was working inside the old brick building that serves as the community's City Hall last year when a deafening noise blasted the town.

"What the hell is that?" Payne recalled saying, adding: "It was so loud, we couldn't even talk in here."



We have this abundance of natural resources and we're just wasting them. That's not smart."

ELENA CRAFT

The roar was coming from a nearby flare at a lease operated by Sabine Oil and Gas, an energy company based in Houston. A company representative declined to be interviewed for this report.

The rumble outside Nordheim eventually subsided after a half-hour. But two days later, Payne was sitting on the deck at her house when her dog Charlie grew agitated, as if he could sense trouble coming.

Payne asked Charlie, "What's your problem?" Suddenly, the sound of rush-

ing gas from the same flare shook the home.

"It's a waste," Payne later said. "I'm sorry, it's a waste."

Missing money

Katy Pier Moore, an attorney with Cox Smith in San Antonio, said it's a rare lease that demands royalties from flared gas.

But after watching the nighttime skies light up over the past few years, some South Texas mineral owners are starting to demand payment.

"With the growth in flaring, we have noticed an uptick in attention being paid to the issue of royalty on flared gas," Moore said.

Oil and gas royalties typically range from 20 to 25 percent, Moore said, and records show flared and vented gas in the Eagle Ford Shale was worth about \$125 million from 2009 to 2012. That's potentially millions of dollars for mineral owners that went up in smoke.

And Texas doesn't collect taxes from flared gas. It's difficult to calculate that missing revenue because of various exemptions offered to gas producers. But the taxes lost to flaring likely are just a fraction of the \$1.5 billion Texas collected during the last fiscal year from all gas production.

Late last year in North Dakota, mineral owners filed a lawsuit against 10 companies in hopes of forcing the operators to pay royalties on what's get-

ting burned off.

The lawsuit argues that the companies violated North Dakota law by not getting the required exemptions to the 12-month time period that the state allows for flaring.

In May, a federal district judge dismissed 13 proposed class actions, ruling that the mineral owners had not gone to North Dakota's regulatory commission first. A 14th case is pending in state court.

Despite the missing revenue from flared gas, oil is where the money is. For many residents of the Eagle Ford Shale who spent their lives trying to make a living off the parched land, the energy boom is a financial miracle.

Nolan Jonas, a retired police chief of Karnes City, is witnessing the town bustling with traffic and workers from the oil patch. It wasn't always that way.

"When things go bad, there are no jobs, no employment," Jonas said as he and his son tended a herd of cattle at their ranch outside Karnes City.

Jonas, who owns the mineral rights on his ranch, is spending his retirement years watching his investment in the land pay off. Landowners who suddenly find themselves awash in royalty checks call it "mailbox money."

But next to the ranch sits a sprawling gas processing plant. As cattle munched on feed and looked lazily around, flames from the plant's flare stack burned off natural gas.

Like many residents, Jonas doesn't like seeing a natural resource going to waste. He tries to be philosophical about it. "You can find good and bad, but you have to look at the whole picture," he said.

Still, when it comes to knowing how much pollution is spewing out of flare stacks that have spread across the shale region, it's difficult to see the whole picture.

In many cases, no one is tracking the kind of toxins being released from specific flare sites — including the state regulators who are supposed to protect residents from air pollution.

Express-News Database Editors Joseph Kokenge and Joe Yerardi contributed to this report