

KEEPING TEXAS STRONG



YOUR CONVERSATION GUIDE

LET'S TALK

TO THE OIL AND NATURAL GAS INDUSTRY

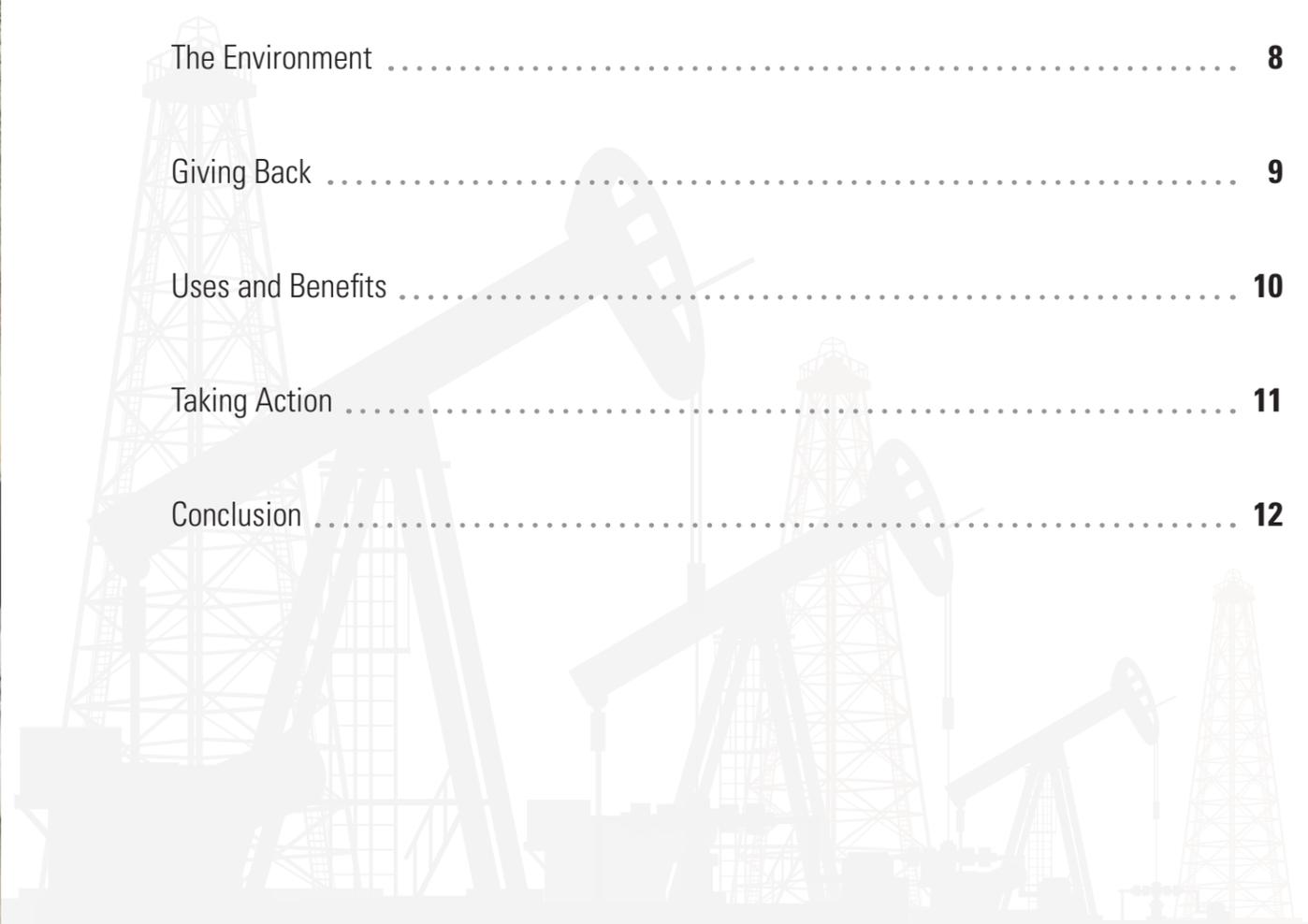
TXOGA

TEXAS OIL & GAS ASSOCIATION | SINCE 1919



TABLE OF CONTENTS

Introduction	2
Quick Facts	3
Sectors	4
Frack 101 Q & A	5
Fracking Facts	6
Regulation	7
The Environment	8
Giving Back	9
Uses and Benefits	10
Taking Action	11
Conclusion	12



This toolkit is a resource with helpful information about the oil and natural gas industry so that you can have conversations about the business that fuels our lives.

You are the best voice to talk about the industry with your family, friends, neighbors and colleagues!



WHAT'S AT STAKE?

There is a general lack of understanding about the oil and natural gas industry because misinformation is everywhere. Not everyone knows that the oil and natural gas industry benefits all Texans by supporting our economy, building and funding our schools and roads, producing products we use every day and more. This toolkit is a guide to help you share the importance of the industry with your neighbors, friends and colleagues.



START THE CONVERSATION.

Everywhere! At a neighborhood cookout, after church, at a cocktail party or at dinner with friends or family, you can talk about the oil and natural gas industry anywhere.



RECOGNIZE THE URGENCY.

The industry is under attack, and your conversations are more important now than ever. Share your story about how you personally contribute to Texas as a member of the oil and natural gas industry!



JOIN TXOGA IN SUPPORTING THE INDUSTRY THAT FUELS OUR GREAT LONE STAR STATE AND START TALKING NOW!

QUICK FACTS

With your help, the oil and natural gas industry anchors our economy by raising the standard of living across our communities and by generating revenue. The Texas oil and natural gas industry paid a hefty **\$9.4 billion in state and local taxes and state royalties** in fiscal year 2016. That's nearly 6 times more in state and local taxes and state royalties on a per employee basis than other business sectors. Put another way, the Texas oil and natural gas industry contributed an average of **\$26 million a day to state and local revenue last year. This revenue is used to directly fund our schools, universities, roads and first responders.**

WE'RE PROUD

to work in the oil and natural gas industry!

- Oil and natural gas produced here makes Americans **more secure** and less dependent on other countries
- Affordable, cleaner-burning natural gas provides **electricity for millions of Texans**
- Oil and natural gas is used to **make life-saving products, medicine and equipment**, not to mention everyday goods like **computers, automobiles and diapers**
- Oil and natural gas companies and their employees **give back to the community**
- Working in the oil and natural gas business **supports Texas families** and our nation
- Oil and natural gas revenues are **directly tied to funding** things like **public education and transportation**

DID YOU KNOW, a single barrel of oil can produce ALL of the following:

<p>Enough GASOLINE to drive a medium-sized car over</p> <p style="font-size: 2em; font-weight: bold; color: #0070c0;">280 MILES</p>	<p style="font-size: 1.5em; font-weight: bold; color: #0070c0;">ASPHALT</p> <p>to make about one gallon of tar for patching ROOFS and STREETS</p>
<p>LUBRICANTS to make about</p> <p style="font-size: 1.5em; font-weight: bold; color: #0070c0;">1 QUART</p> <p>of MOTOR OIL</p>	<p style="font-size: 1.5em; font-weight: bold; color: #0070c0;">NEARLY 70 KILOWATT HOURS</p> <p>of ELECTRICITY at a power plant generated by residual fuel</p>
<p>Approximately</p> <p style="font-size: 1.5em; font-weight: bold; color: #0070c0;">4 lbs</p> <p>of CHARCOAL BRIQUETTES</p>	<p>Wax for</p> <p style="font-size: 1.5em; font-weight: bold; color: #0070c0;">170</p> <p>BIRTHDAY CANDLES or 27 wax crayons</p>

Afterwards, there are enough petrochemicals left in **THAT SAME BARREL** to provide ingredients used to make one of the following:

39	750	540	65	23	65	195	11	135
POLYESTER SHIRTS	POCKET COMBS	TOOTHBRUSHES	PLASTIC DUSTPANS	HULA HOOPS	PLASTIC DRINKING CUPS	ONE-CUP MEASURING CUPS	PLASTIC TELEPHONE HOUSINGS	FOUR-INCH RUBBER BALLS

TAKE NOTE:

Points from Alex Epstein, author of "The Moral Case for Fossil Fuels"

- Energy isn't just a thing that shows up on a power bill. It's our basic ability to use machines to **improve our lives**.
- The energy industry is the **industry that powers every other industry** to improve human life.
- There are some **3 billion people** in the world who have next to no energy, and **1.3 billion** who have none whatsoever.

Sources: Texas Oil and Gas Association - www.txoga.org
 Chevron - <http://elsegundo.chevron.com/abouttherefinery/whatwedo/whatisinabarrelofoil.aspx>
 Alex Epstein, "Moral Case for Fossil Fuels" - <http://www.moralcaseforfossilfuels.com/> and <https://www.txoga.org/staples-cant-take-granted-thats-possible-oil-natural-gas/>

THE THREE MAJOR SECTORS: UPSTREAM, MIDSTREAM AND DOWNSTREAM

There are three sectors in the oil and natural gas industry: **upstream**, **midstream** and **downstream**. Together, these three sectors get oil and natural gas from the ground, transport it to refining and processing centers and turn it into products that we use every day.



UPSTREAM:

Upstream is the first part of the process. It involves looking for, drilling, fracking and producing oil and natural gas. As a whole, upstream describes the process of finding oil and natural gas underground and bringing it to the surface. Engineers, geologists, drilling crews and frack crews are all part of the upstream sector.



MIDSTREAM:

Midstream activities take oil and natural gas from the well site, perform the initial stages of processing, and transport those resources to their next destination. That includes trucking, storing or pipeline transportation of oil and natural gas from the well to a refinery, manufacturing plant or shipping terminal. Midstream careers include pipeline operators, truck drivers, engineers, schedulers and technicians.



DOWNSTREAM:

As the last step, downstream describes the process by which oil and natural gas go through refineries or chemical manufacturing and become final products. The downstream sector delivers natural gas to homes for heating and cooking, generates electricity, provides fuel for cars and airplanes, and helps create products we use every day. Anyone who works at a refinery, chemical plant or distribution company is employed in the downstream sector of the oil and natural gas industry.

TAKE NOTE: EACH SEGMENT HAS A DIFFERENT ROLE AND EACH IS VITALLY IMPORTANT TO OUR WELL-BEING.

FRACKING 101: Q&A

Over half of the country's oil output comes from fracking. It fuels Texas families, communities, and local and state economies. Fracking has revived manufacturing and high-tech Texas jobs. Simply put, fracking fuels the oil and natural gas industry in Texas.

Q: What is fracking?

A: Short for hydraulic fracturing, fracking is a **proven well stimulation technique** that has been used for more than 60 years on over one million wells. Fracking, used in conjunction with horizontal drilling, is responsible for the U.S. shale revolution that has made America energy secure. Fracking is necessary to economically produce most wells in the United States today. In fact, over 99% of all wells drilled in the U.S. onshore are completed using this technique (per HIS). Fracking occurs generally a mile or more underground, thousands of feet below freshwater supplies, and often with thousands of feet of impenetrable rock in between. Texas law requires that wells be constructed with multiple layers of industrial-grade steel casing (pipe), which is surrounded by multiple layers of cement. With steel casing and cement in place to ensure the integrity of the well, operators drill down vertically and/or horizontally thousands of feet into the targeted rock formation. A mixture (fracturing fluid) of pressurized water, sand and a proportionately very small amount of additives is pumped into the rock formation to create tiny, millimeter thick "fractures," or fissures about the size of a human hair, that free trapped oil and natural gas. While fracking can take between two and 10 days per well, one completed well can produce for up to 40 years.

Q: What does fracking do?

A: Advances in horizontal drilling and fracking technology allow operators to extract trapped oil and natural gas that were once considered unreachable. **Thanks to fracking, the United States is the #1 oil and natural gas producer in the world.**

Q: What's in fracking fluid?

A: In Texas, fracturing fluid is typically **99.5% water and sand and .5% additives**. The additive combination is a mixture of diluted ingredients found in common household items, such as cosmetics, deodorant, ice cream and kitchen cleaners.

Q: How much water is used in fracking?

A: Each frack job lasting 2 to 10 days requires about **3.5 million gallons of water**. By comparison, **a single U.S. golf course typically uses this much water every 11 days**. In addition, a typical frack job alone can create enough energy for almost 50,000 homes for one year.

Q: Is my drinking water affected by fracking?

A: No; studies continually verify that fracking does not contaminate drinking water. Research from Yale University, Syracuse University, California Council on Science & Technology, University of Colorado and Stanford University all confirm that fracking is not affecting water.

The construction of oil and natural gas wells includes many safeguards to protect underground freshwater supplies. Texas law requires that wells be constructed with multiple layers of industrial-grade steel casing (pipe), which is surrounded by cement. Aquifers are typically 200 to 500 feet below the surface, while oil and natural gas wells extend down to anywhere between 4,000 and 14,000 feet below the surface.

However, regulators continue to monitor fracking's impact on the Texas environment, including water and air quality and roads.

Sources: Texas Oil and Gas Association - <http://www.txoga.org>
 Joint Association Education Initiative - <http://www.oilandgasjointassociationeducation.com/>
 Yale University - <http://news.yale.edu/2015/10/12/study-elevated-organic-compounds-pennsylvania-drinking-water-hydraulic-fracturing-surface>
 Syracuse University - <http://www.sciencedirect.com/science/article/pii/S0883292715300056>
 California Council on Science and Technology - <http://ccst.us/news/2015/0115sb4.php>
 University of Colorado - <http://onlinelibrary.wiley.com/doi/10.1002/2014JD022697/abstract;jsessionid=6BA0EA007BDD8D03D6BBE08BD82B470B.f02t02>
 Stanford University - <http://pubs.acs.org/doi/abs/10.1021/acs.est.5b01228?journalCode=esthag&>
 Fueling Conversations – SM Energy - <http://sm-energy.com/docs/default-source/misc-documents/ambassador toolkit.pdf?sfvrsn=2>

FRACKING FACTS

1

Fracking is the reason the **U.S. is the world's #1 producer of oil and natural gas** and we're less dependent on other countries for our energy needs.

2

Multiple scientific studies show that hydraulic fracturing (fracking) **is not affecting drinking water** supplies.

Learn more at <http://news.yale.edu/2015/10/12/study-elevated-organic-compounds-pennsylvania-drinking-water-hydraulic-fracturing-surface>

3

Thanks to fracking, air quality is improving as we use more clean burning natural gas for electricity. In fact, the United States **led the world in CO2 reduction** in 2015, thanks in large part to the increased use of natural gas in the energy mix.

Learn more at <http://sm-energy.com/docs/default-source/misc-documents/ambassador toolkit.pdf?sfvrsn=2>

4

Comprehensive research shows that **air quality around oil and natural gas facilities is safe**.

Learn more at http://fortworthtexas.gov/uploadedFiles/Gas_Wells/AirQualityStudy_final.pdf

5

Misleading and false information about oil and natural gas development is currently being shared.

Learn more at <http://ac.els-cdn.com/S0048969713010073/1-s2.0-S0048969713010073-main.pdf?tid=f11b162e-02aa-11e7-83ed-00000aab0f6b&acdnt=1488832067f51430a7f19808000653a3b22d08eac1>

Urge your neighbors to be savvy consumers of information!

REGULATION



There are many regulations governing Texas oil and natural gas exploration and production. **The Railroad Commission of Texas (RRC)** and the **Texas Commission on Environmental Quality (TCEQ)** are the two state agencies that establish standards and enforce regulations for oil and natural gas exploration and production as well as pipelines and refineries. **Local governments** also play a role in the permitting of certain aspects of the industry in the areas of lighting, noise, and roads. Oil and natural gas operators that don't follow strict regulations can lose their permit to operate in Texas. While there are federal and local regulations for operating in the oil and natural gas business, the **Texas regulations often exceed even the federal rules**.

The RRC oversees all aspects of the drilling activity such as well spacing, well design including depth of casing and cement, groundwater protection during drilling and completion, water protection, wastewater handling and disposal, and operational and public safety.

TCEQ's primary role relates to **control of air emissions, water quality control** and other regulations related to **public health and safety**.



Sources: Texas Railroad Commission - <http://www.rrc.state.tx.us>
Texas Commission on Environmental Quality - <https://www.tceq.texas.gov>

PROTECTING AND IMPROVING THE ENVIRONMENT



WATER

Protecting Aquifer Water: Texas law requires that wells be constructed with multiple layers of industrial-grade steel casing (pipe), surrounded by multiple layers of solid cement. The steel casing and cement serve as barriers that **ensure the integrity of the wells and protect freshwater zones**. Additionally, system pressure is monitored throughout the drilling and completion stages to ensure that the well is operating safely.

Water Used in Fracking: Many Texas oil and natural gas companies are leading the way to develop **new technologies that are reducing water usage, expanding water reuse and increasing use of naturally-occurring saltwater** (brackish water) in their operations.



LAND

Engineering breakthroughs are always improving drilling operations. Thanks to horizontal and directional drilling, the average well site today is 30% of the size it was in 1970 and has significantly higher capacity. This benefits the land because there are **fewer access roads** to the well site, **less surface disruption** and **fewer pipelines** needed. Once drilling is completed, companies **return the surface land to its previous state** prior to operation. In addition to land remediation, the oil and natural gas industry is very supportive of ongoing research to better understand earthquakes.



AIR

Oil and natural gas companies abide by federal and state regulations regarding air quality. Carbon dioxide emissions associated with energy production **dropped 12% between 2005 and 2015**, and today, natural gas production has the **smallest carbon footprint** compared to all other traditional fuel sources. Methane emissions associated with natural gas development have also **declined 18.6 percent** from 1990 – 2015 at the same time as natural gas production increased by over 45 percent.

SAVING TEXAS WATER

- Pioneer Natural Resources Company recently kicked off a **\$25 million water recycling project** with the city of Odessa.
- Concho Resources Inc. is working with the Gulf Coast Waste Disposal Authority (GCA) on a **water reuse system** in GCA's Odessa South Facility for its drilling operations in West Texas.
- Anadarko Petroleum has invested **\$550 million** in recent years in **water management, conservation, recycling and water infrastructure** projects.
- In its West Texas operations, BHP Billiton has **reduced its freshwater use to 20 percent** of total water use.
- In the Eagle Ford, ConocoPhillips **water wells are drilled twice as deep** as residential wells to **avoid competition with domestic water consumers**.

Sources: Fueling Conversations – SM Energy - <http://sm-energy.com/docs/default-source/misc-documents/ambassador toolkit.pdf?sfvrsn=2>

GIVING BACK

All across Texas, companies implement programs or make efforts to **support communities** that welcome their business. **TELL PEOPLE WHAT YOUR COMPANY DOES TO GIVE BACK!**



HOW WE GIVE

- In 2015, ExxonMobil employees, retirees, directors and surviving spouses contributed **\$2.8 million to 83 Texas colleges and universities**, which was matched with \$7.4 million in unrestricted grants from the ExxonMobil Foundation.
- BHP Billiton donated **\$2.4 million for an educational park** to be built on the south side of San Antonio.
- Chesapeake **supports the arts** through organizations like the Cliburn, which funded two classical concerts in Fort Worth using a company donation.
- Three Anadarko Petroleum Corporation platforms in the Gulf of Mexico that are no longer in use have been **transitioned into artificial reefs** that create thriving ecosystems for fish and other aquatic life, and act as additional means of conserving, managing and developing fisheries' resources.
- In 2016, Valero employees **contributed 148,558 volunteer hours** companywide for a variety of activities such as building homes for families, mentoring and educational support, helping young people read and feeding the hungry.
- In 2016, Valero and its employees **raised \$12.3 million** companywide for United Way charities across the nation, with **nearly \$8 million** dedicated to Texas. Overall, since its first United Way campaign in 1980, Valero and its employees have contributed **nearly \$175 million to United Way chapters** nationwide.
- In 2016, the Valero Energy Foundation **contributed \$12.4 million** to support four primary pillars: **basic needs, education, health care, and arts/culture**.
- In 2016, with tremendous support from business partners, the Valero Texas Open and Benefit for Children **raised a record \$10.5 million for children's charities** and ranked among the top PGA TOUR charity events.
- In 2016, ConocoPhillips **contributed \$9.7 million to over 700 organizations across Texas**, from volunteer fire departments to conservation organizations.
- In 2016, ConocoPhillips **contributed to 40 organizations in the Eagle Ford area**, primarily those focused on **health & safety, natural resources, and education**.

USES/BENEFITS

While the oil and natural gas industry in Texas **creates jobs, generates revenue** and **funds our schools, roads** and **emergency services**, it doesn't stop there. The oil and natural gas industry is central to our lives, producing products and materials that we use every day like **plastics, medicines, computers, life-saving devices** and much more.

Oil and Gas Products in Your Life:



Auto

Gasoline, steering wheels, tires, seat belts, motor oil, antifreeze, coolant, battery cases, floor mats, windshield wipers, keys, speakers, car seats, bumpers (plastics, polymers and petrochemicals make up more than 70% of today's automobiles – ACC)



Bathroom

Toothbrush, contact lenses, makeup, toothpaste, soap, shampoo, moisturizer, deodorant, nail polish, hairbrush, toilet seat, cleaning supplies, eye glasses, sunscreen, conditioner, lotion



Clothing

Rubber boots, umbrellas, zippers, Velcro, raincoats, shoes, flip-flops, eye glasses, bracelets, sunglasses, purses



Electronics

GPS Devices, cameras, DVDs, monitors, TVs, headphones, computers, laptops, tablets, toner cartridges, phones, game controllers, keyboards, video games, cam recorders, projectors



Household

Trash bags, drinking straws, mops, sponges, measuring cups, cooking utensils, plastic dinnerware, garbage cans, rubber gloves, drinking cups, spatula, oven mits, sandwich bags, refrigerator shelves



Medical

Heart valves, bedpans, stethoscopes, artificial limbs, disinfectants, catheters, tools, safety seals, syringes, aspirin, gloves, oxygen masks, anesthetics, medicines, bandages, pillows, trays, hearing aides, Vaseline, IV bags, pill cases, antiseptics, rubbing alcohol, capsules, cotton swabs



Sports

Football, life jackets, boxing gloves, skates, cross country skis, buoys, soccer balls, tackle boxes, climbing ropes, tennis balls, helmets, artificial turf, inflatable rafts, surf boards, protective gear, snowboards, golf bags, fishing rods, water skis, paddles, sleeping bags, hockey pucks, tire patches, wrestling mats, skate boards, basketballs, canoes, bike tires, tents, tennis racquets, yoga mats, kayaks, goalie pads, windsurfers, speed boats



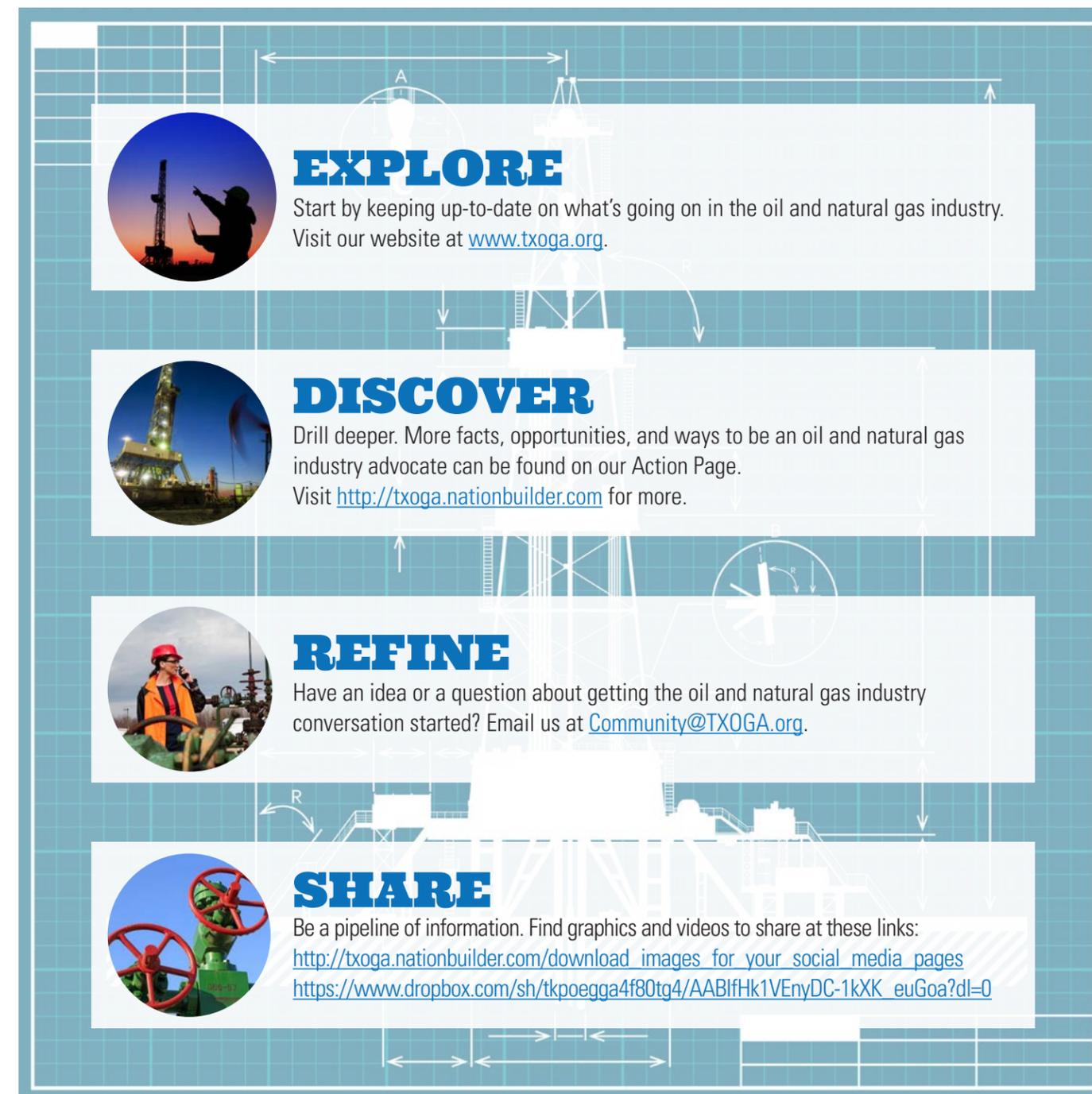
Yard

Paint, patio furniture, garage doors, glue, propane, pesticides, tool boxes, lawn chairs, air mattresses, safety goggles, hoses, beach balls, insect repellent, fertilizers, gardening tools, pool liners, lawn mowers, irrigation piping

Sources: Oilandgasinfo.ca - <http://www.oilandgasinfo.ca/oil-gas-you/products/>

TIME TO TAKE ACTION

With the help of this guide, you can **start having conversations** with your friends and neighbors about how the work you do in the oil and natural gas industry **benefits everyone** across the entire state of Texas. While we appreciate everything you do, you can become even more involved by **taking the following steps**:





"Let's Talk" is prepared and distributed by the Texas Oil and Gas Association (TXOGA). The mission of TXOGA is to promote a robust oil and natural gas industry and to advocate for sound, science-based policies and free-market principles. **If you're not a member, visit www.txoga.org to become one today!**

Sources: SM Energy, Fueling Conversations • Conoco Phillips, Power in Cooperation • Chevron, Chevron Advocacy Network • Chevron • Shell, Doing Things Right • Texas Railroad Commission • Texas Commission on Environmental Quality • Petroleum Services Association of Canada (PSAC) • Propell Technology Group • Joint Association Education Initiative • TXOGA Website