NOVEMBER 2021

FISCAL NOTES

Rare Earth Elements

By Jackie Benton

TEXAS RARE EARTHS SHOW ECONOMIC POTENTIAL FOR STATE

Most of us go about our daily routines without giving much thought to the devices, technology and machinery that enhance and simplify our lives. Yet many high-tech goods and services we rely on for communications, work, education, safety, energy and transportation would be rendered useless without a group of components known as rare earth elements, or *rare earths* as they are sometimes called. And though rare earth elements have become an indispensable part of modern life, most Americans are unaware of our dependence on them.

Texas is home to one of the largest deposits of rare earths in the United States, and plans are under way to bring those resources to market. As those plans take shape, Texas has the potential to lead in the domestic development of rare earths, which could benefit the U.S. economy and boost a range of growing Texas industries — from national defense to clean energy and electric vehicle manufacturing.

Texas Comptroller Glenn Hegar (pictured to the right above) chats with USA Rare Earth Senior Geologist Tim Palmer. The Comptroller visited USA Rare Earth during his Good for Texas Supply Chain Tour *in October.*

A RARE EARTHS PRIMER

There are 17 rare earth elements identified in the periodic table. All are metallic elements that possess unusual fluorescent, conductive or magnetic properties. When those elements are alloyed in small quantities with a more common metal like iron, they become extremely useful in a wide array of applications for technologies, consumer products and industrial processes. About 75 percent of the rare earths produced are used as *catalysts* — in chemistry terms, a catalyst cuts the time needed to achieve a chemical reaction, which saves time and energy.

Indeed, rare earth elements are integral to numerous commercial and national security applications and are used in everything from small-scale goods such as smartphones, lasers, LED lights, computers and other consumer electronics to energy technologies such as wind turbines, electric and hybrid vehicles and oil refinery equipment (**Exhibit 1**).

CONTINUED ON PAGE 3

A Message from the Comptroller

It's no secret that we depend on computers, smartphones and many other forms of modern technology at work, home and everywhere in between. But you may not be aware that the manufacturing of those ever-present technologies depends on a small group of metallic elements called rare earth minerals or "rare earths."

In this issue, we'll refresh your knowledge of chemistry with a brief primer on 17 rare earths that make advanced technology tick for both commercial and national security purposes. The U.S. relies heavily on importing rare earths from other countries, even as demand for them is on the rise. From 2016 to 2019, 80 percent of these minerals came from China.

For decades, the national defense industry has had a strong presence in Texas, and in recent years, commercial high-tech manufacturing, including electric vehicle production, has been expanding its footprint here. Both industries require a steady supply of rare earths and would undoubtedly benefit from a supplier much closer to home.

Recent developments in the private sector aim to create a domestic supply of rare earths right here in Texas. In 2023, for example, USA Rare Earth LLC will begin mining rare earths on 950 state-owned acres in Sierra Blanca. Once fully operational, the company is expected to be the second in the U.S. and the first in Texas to both extract and process rare earths. This major undertaking is featured in my most-recent *Good for Texas Tour* focused on supply chains.

Last year, *Fiscal Notes* highlighted the ways that breweries, distilleries and wineries adapted to the abrupt economic shutdown caused by the COVID-19 pandemic. In this issue we return to craft breweries, distilleries and wineries in Texas and the growth they are experiencing despite setbacks from the pandemic.

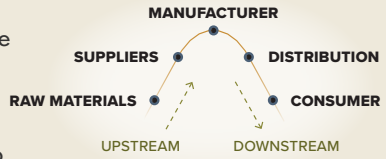
"Craft" denotes small and independent, but those businesses have a considerable impact on the state's economy. All told, craft beer, spirit and wine makers contributed $1.1 billion to our gross state product in 2020. The industry currently employs nearly 5,400 Texans, and total employment in the state is growing twice as fast as the nation — something to celebrate as we give thanks this month.

As always, I hope you enjoy this issue!

GLENN HEGAR

Texas Comptroller of Public Accounts

TEXAS SUPPLY CHAIN



Global supply chains – the networks between a company and its suppliers that produce and distribute products to the final consumers – create value and contribute to lower consumer and production costs. They are a key feature in advanced manufacturing products like automobiles and semiconductors.

ONE IN A SERIES OF REPORTS THE COMPTROLLER HAS PREPARED ON TEXAS SUPPLY CHAINS

Supply Chain Resilience

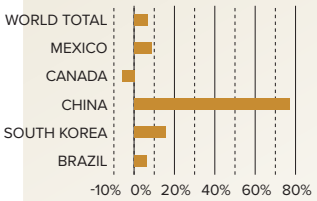
There are risks and vulnerabilities in the supply chain system, which were highlighted by COVID-19 economic disruptions. Businesses are working to overhaul or streamline supply networks. Government has proposed infrastructure funding for critical industries citing their importance to national security and national competitiveness.

Trade in Texas

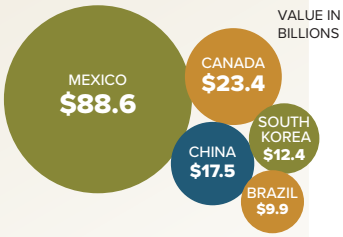
IN 2019, MORE THAN **1.1 MILLION** TEXAS JOBS WERE SUPPORTED BY EXPORTS, **BY FAR THE MOST AMONG STATES.**

TEXAS WAS THE NATION'S LEADING EXPORTER IN 2020, SHIPPING **$276.4 BILLION** WORTH OF GOODS, OR **19 PERCENT OF THE U.S. TOTAL.**

TOP 5 EXPORT DESTINATIONS FROM TEXAS, PERCENT CHANGE, 2019 (JAN.-JUNE) TO 2021 (JAN.-JUNE)

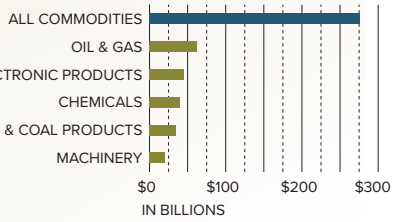


TOP 5 EXPORT DESTINATIONS FROM TEXAS, VALUE, 2020



Sources: U.S. Census Bureau, Texas Comptroller of Public Accounts

TOP 5 TEXAS EXPORTS BY COMMODITY, 2020



Sources: U.S. Census Bureau, Texas Comptroller of Public Accounts

IT'S NO SURPRISE THAT TEXAS LEADS IN TRADE ACTIVITY

Texas has 29 official ports of entry that serve as critical gateways to global trade. It shares an international border and is logistically centered with multiple interstate intersections and railway networks, as well as large hub airports providing both cargo and passenger service, making the state a good destination for reshoring initiatives.

TO SEE INFORMATION ON TEXAS SUPPLY CHAINS AND THE TEXAS ECONOMY:
comptroller.texas.gov/economy/economic-data/supply-chain/

If you would like to receive paper copies of *Fiscal Notes*, contact us at **fiscal.notes@cpa.texas.gov**

EXHIBIT 1

USES OF RARE EARTH ELEMENTS

57 La Lanthanum 138.905	**LANTHANUM USES:** Fluid catalytic cracking for petroleum refining, nickel metal hydride (NiMH) batteries, metallurgical applications, glass and polishing ceramics lighting.	66 Dy Dysprosium 162.500	**DYSPROSIUM USES:** Neodymium iron boron permanent magnets, in which it makes up generally about 0.8 percent to 1.2 percent by weight of the magnet, and magnetostrictive alloys.
58 Ce Cerium 140.116	**CERIUM USES:** Automobile catalysts and additive, Food Chemicals Codex (FCC) additives, catalysts, metallurgy, polishing, powders and glass and others such as fertilizer, paint drying and a stabilizer in plastics. Applications often overlap with lanthanum.	67 Ho Holmium 164.930	**HOLMIUM USES:** Magnets, magnetostrictive alloys for sensors and actuators.
59 Pr Praseodymium 140.908	**PRASEODYMIUM USES:** Neodymium (NdFeB) magnets, metallurgical applications, pigments, batteries and catalysts.	68 Er Erbium 167.259	**ERBIUM USES:** Nearly all erbium is used in polishing and in highly specialized glass lens applications and fiber optics.
60 Nd Neodymium 144.243	**NEODYMIUM USES:** NdFeB magnets, glass and ceramics applications (e.g. ceramic capacitors), metallurgical applications, luminophores, NiMH batteries, catalysts, lasers and other applications. NdFeB magnets are used in products such as computer hard disk drives, magnetic resonance imaging (MRI), precision-guided munitions, automotive motors, wind turbines and loudspeakers.	69 Tm Thulium 168.934	**THULIUM USES:** Portable X-ray devices, research and a dopant in solid-state lasers and highly specialized fiber optics.
62 Sm Samarium 150.36	**SAMARIUM USES:** Samarium cobalt permanent magnets, which are used in electronics (including military systems), automobiles, aerospace, pumps and medical devices. Other applications include infrared absorption glass, optical glass, fuel cells for nuclear applications and capacitors for microwave frequencies.	70 Yb Ytterbium 173.055	**YTTERBIUM USES:** Metallurgical applications for rare earth magnesium alloys and specialty aluminum alloys.
63 Eu Europium 151.964	**EUROPIUM USES:** Phosphors and luminophores, which are used in TV and computer screens, compact fluorescent lighting, LEDs and sensors. Other applications include nuclear and medical applications and some specialty alloys and lasers.	71 Lu Lutetium 174.967	**LUTETIUM USES:** Medical equipment and small quantities in phosphors.
64 Gd Gadolinium 157.25	**GADOLINIUM USES:** Metallurgical applications such as magnetic refrigeration, magnesium alloys and specialty alloys. Also used in small amounts for samarium cobalt magnets. Other uses include as a MRI contrasting agent and phosphors for dental and medical applications.	39 Y Yttrium 88.906	**YTTRIUM USES:** Fluid catalytic cracking for petroleum refining, nickel metal hydride (NiMH) batteries, metallurgical applications, glass and polishing ceramics lighting.
65 Tb Terbium 158.925	**TERBIUM USES:** Phosphors (green) for displays, LEDs and in medical applications, in permanent magnets and for other applications such as high-temperature fuel cells, lasers and magnetostrictive alloys for solid-state transducers and actuators used in sonar and other dual-use technologies.	21 Sc Scandium 44.956	**SCANDIUM USES:** Solid oxide fuel cells (SOFC), aluminum alloys for aerospace and sporting goods, scandium-sodium lamps for outside venues, laser, optoelectronic materials and LEDs.

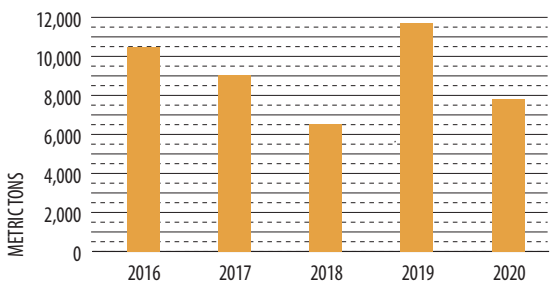
Note: Promethium (Pm) was not included in the whitehouse.gov source chart. Promethium's applications include atomic batteries for spacecraft and guided missiles (chemicool.com/elements/promethium.html).
Source: The White House, "Building Resilient Supply Chains, Revitalizing American Manufacturing, and Fostering Broad-Based Growth," June 2021

Among rare earth elements, neodymium magnets lead an ever-increasing list of high-tech commercial and military applications. One particularly important application of the powerful and permanent magnets is to improve efficiency and performance in things such as permanent magnet motors (used in electric vehicles), hard disk drives, audio equipment, microwave communication technology and even magnetic resonance imaging systems (MRIs).

Despite the necessity of rare earths for both national security technologies and consumer products, the United States was 100 percent net-import reliant on rare earths in 2018, and according to the United States Geological Survey (USGS), 80 percent of rare earth compounds and metals imported between 2016 and 2019 was from China. As **Exhibit 2** shows, before COVID-19, U.S. consumption of rare earths was once again on the rise.

EXHIBIT 2

APPARENT CONSUMPTION OF RARE EARTHS IN THE UNITED STATES, 2016-2020*



*Estimated.

Note: "Apparent consumption" is defined as production + imports – exports.
Source: U.S. Geological Survey, "Mineral Commodities Summary 2021," p. 132

Rare Earth Elements

Photos courtesy of Dr. Tristan Childress

West Texas is the focal point for rare earths exploration in the state. This includes (left to right, top to bottom) areas such as the Cornudas Mountains, Sixteen Mountains and Dog Mountain, which recently were part of a survey that included geologists from UT-Austin. The primary goal of the survey was to assess the geochemistry of each rock type to determine if any further investigation should take place.

TEXAS RARE EARTHS

The state's high-tech manufacturing industry has been gaining momentum over the past few years, as evidenced by electric car manufacturer Tesla, which recently announced plans to move its headquarters to Texas. In addition, the aerospace and defense industries have a long-standing presence in the state and could benefit from a domestic supplier of rare earths. The Texas-built F-35 joint strike force fighter jet, for instance, uses 920 pounds of rare earths material.

Currently, the only U.S. rare earths mining and processing facility is the Mountain Pass mine in California's Mojave Desert. Operated by MP Materials, the mine accounts for close to 16 percent of the world's rare earths production.

In 2023, the Mountain Pass operation no longer will be the sole rare earths mining operation. USA Rare Earth LLC, owner and operator of the Round Top Heavy Rare Earth, Lithium and Critical Minerals Project in Hudspeth County, Texas, together with joint venture partner Texas Mineral Resources Corp., is projected to begin mining 950 state-owned acres at the Round Top deposit in Sierra Blanca, Texas. USA Rare Earth has announced it will process rare earths onsite and projects the mine is likely to yield 16 or 17 rare earth elements and more than 300,000 metric tons of rare earth oxides. (One metric ton equates to 2,204.62 pounds.)

The company, which was part of the Comptroller's October *Good for Texas Tour* focused on supply chains, expects to use a new, proprietary process to produce the materials in a safe and environmentally sensitive way. USA Rare Earth also has plans to make use of solar and wind power, where possible, to operate with minimal greenhouse gas emissions.

The company has acquired the neodymium permanent magnet manufacturing system, formerly owned and operated by Hitachi Metals in North Carolina, and the only commercial-scale system of its kind in the United States. USA Rare Earth is preparing to recommission the system for production, and once operational, plans to create a domestic supply chain that produces at least 2,000 tons annually of rare earth magnets.

USA Rare Earth has announced it will process rare earths onsite and projects the mine is likely to yield 16 or 17 rare earth elements and more than 300,000 metric tons of rare earth oxides.

ALEISHA KNOCHENHAUER
USA RARE EARTH LLC

"Once we are fully operational, we will have a fully end-to-end domestic rare earths supply chain that will make our country and economy more secure," says Director of Environmental Services & Sustainability Aleisha Knochenhauer with USA Rare Earth.

"We will be the first company not only to extract, which is the mining component, but to operate the processing side in the United States," says Knochenhauer. "What makes us even more unique is we will be able to supply the entire supply chain by taking the material that we mine, processing [it] into rare earth oxides, and then creating the magnets that go into so many critical products."

Knochenhauer says an end-to-end rare earths supply chain is key to true domestic security.

"The only way we're ever going to be able to control our destiny is to really be able to develop and control the supply source. And if we do it domestically, so that it's reliable and viable, then we control our destiny," she says.

DEPARTMENT OF DEFENSE (DOD) RARE EARTH ELEMENT AWARDS

As part of the U.S. government's strategy to secure reliable supplies of critical minerals, the DoD has announced contracts and agreements with two rare earth element producers in Texas to strengthen the domestic rare earths supply chain.

BLUE LINE CORPORATION AND LYNAS RARE EARTHS LTD.

Texas-based Blue Line Corporation partnered with Lynas Rare Earths Ltd. — an Australia-based company and the largest rare earths mining and processing company outside China — and plans to open rare earths processing facilities in Hondo, Texas. In February 2021, the DoD awarded Lynas a Defense Production Act Title III technology investment agreement and contributed $30.4 million to fund the construction of the Hondo facility. Lynas plans to ship rare earths from its mine in western Australia for final processing in Texas.

URBAN MINING CO.

In November 2020, Urban Mining Co., based in San Marcos, Texas, entered into an $860,000 Defense Production Act Title III technology investment agreement with the DoD to conduct its small-scale pilot program of recycling rare earth elements from electronic waste to produce new permanent neodymium magnets.

"The only way we're ever going to be able to control our destiny is to really be able to develop and control the supply source."

— Aleisha Knochenhauer

"It's not too little, too late to go in that direction," says Knochenhauer. "The United States has the tools. We have the know-how, we have the drive [and] we have the passion. We just need to create opportunities for us to start using them."

RARE EARTHS HISTORY IN THE U.S.

Discovered in the late 18th century, rare earths were initially deemed "rare earth" because they appeared to be scarce and spread across the Earth's crust, but their scarcity turned out to be untrue. Rare earths deposits are plentiful and found around the world, although rare earths mining and processing facilities have been limited to just a few countries because often the minerals are not found in concentrations high enough to make mining and processing economically feasible.

From the 1960s until the mid-1980s, the United States was the world leader in mining and refining rare earth elements into finished products, says Dr. Philip Goodell, professor of Earth, Environmental and Resource Sciences with the University of Texas at El Paso. The Mountain Pass mine in the California Mojave Desert was the world's foremost supplier of rare earths — but by 2002, the Mountain Pass operation was out of business. (It later resumed operations from 2012-2015, and then again from 2018-present.)

"By 1980, there was more of a demand for rare earths, and things were going along pretty well for the U.S. until China entered the market in the 1990s," says Goodell, noting China's rare earths mining and processing operations were easily able to underbid U.S. rare earths production. "They don't pay [workers] very well, and they don't have the many environmental regulations that make U.S. production more expensive."

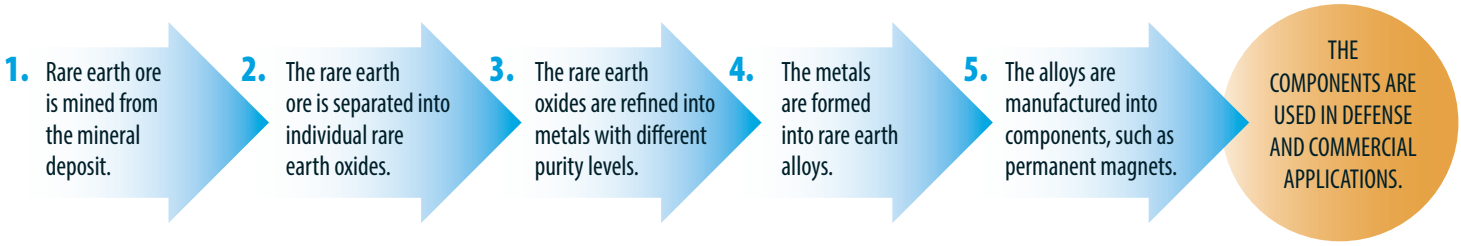
Between 2010 and 2014, China imposed rare earths trade restrictions on the United States, Europe and Japan, triggering a supply chain shock around the world. In turn, that event spurred the USGS and private companies to identify domestic rare earth element resources.

"Now that China has taken over the market, it's become an area of concern," says Goodell. "We need to perfect the process here in the U.S. and make it cheaper to produce [rare earths]."

EXHIBIT 3

PROCESSING RARE EARTH ELEMENTS

Rare earths require these key processing steps before they are ready for use in an application.



Source: Government Accountability Office

That's easier said than done, as companies entering the rare earths supply chain anywhere within the U.S. face a number of challenges. Obtaining permits to develop rare earth mines and processing facilities is complicated and highly regulated (**Exhibit 3**), and waste created from mining and processing rare earths must be responsibly discharged.

Finding workers can be problematic, too. Successfully operating a rare earths mine depends on a skilled workforce, and processing rare earths requires technicians with high-tech skillsets in AI, automation and data analytics.

A rock sample displayed in the offices of USA Rare Earth.

WEST TEXAS PRELIMINARY SAMPLES

Dr. Tristan Childress, economic geologist with the Bureau of Economic Geology at the University of Texas at Austin, spends much of his time searching for critical minerals in West Texas, exploring and analyzing the intrusive igneous rock around the hills of Dell City in Hudspeth County.

DR. TRISTAN CHILDRESS
BUREAU OF ECONOMIC GEOLOGY, UNIVERSITY OF TEXAS AT AUSTIN

"West Texas could be very important for our future mining economy in Texas," says Childress, who has taken more than 100 rock samples from the area. "We're looking into the chemistry of those samples now to determine if there is anything potentially special that's hidden underground," he says.

Childress says the USGS also has flown magnetic surveys in the area and that the USGS survey reports are fascinating. "It turns out there is a lot more varied material in the ground that we can't see — it's actually a pretty complex network down there, and with complexity comes a diversity of rock types," says Childress.

Childress' sample analysis could potentially bring more good news for companies seeking to enter the rare earths market in Texas.

"To my mind, the more complex it is, the better chance that there is something potentially useful there," Childress says. "It might be a similar situation to Sierra Blanca with Round Top Mountain, but we don't know yet. We're analyzing the samples, and we'll find out shortly." **FN**

Interested in taking a deep dive into how supply chains contribute to the Texas economy? See how semiconductor, automotive, chemical manufacturing and other industries trade, mitigate risk and move products that add billions of dollars and thousands of jobs to the state economy each year at ***Comptroller.Texas.Gov/economy/economic-data/supply-chain/****.*

Texas Craft Breweries, Distilleries and Wineries

By Jess Donald

BEER, WINE AND SPIRIT MAKERS TAP GROWTH

Despite being relatively new industries in Texas, craft breweries, distilleries and wineries contribute to the state's economy. Not only do craft alcohol producers attract a wide customer base to their taprooms and tasting rooms, but their products also line the shelves of grocery and liquor stores and bars and restaurants across the state. Craft breweries, distilleries and wineries employ nearly 5,400 Texans, with an average annual employment growth nearly twice that of the rest of the country.

DEFINING CRAFT

Although no universal definition for what constitutes a *craft* alcohol manufacturer exists, there are some general, industry-specific guidelines. According to the industry trade group Brewers Association, an American craft brewery must be both small and independent. *Small* is defined as an annual production of 6 million barrels or fewer, and *independent* means that less than 25 percent of a brewery's ownership belongs to someone in the alcoholic-beverage industry who is not a craft brewer. Craft distillers define themselves similarly in that they must produce fewer than 750,000 gallons annually and must be at least 51 percent-owned by a craft distiller to meet the definition of the American Craft Spirit Association. The Texas Wine Marketing Research Association at Texas Tech University categorizes wineries by size and does not typically use the "craft" label for wine. A small winery produces fewer than 5,000 cases of wine yearly, a medium winery between 5,000 and 40,000 cases yearly and a large winery more than 40,000 cases annually.

Each category of alcohol has its own licensing and permit type administered by the Texas Alcoholic Beverage Commission (TABC). A brewer's license allows for the manufacturing and importing of malt beverages. A winery permit authorizes the holder to manufacture and transport alcoholic beverages. The distiller's and rectifier's permit allows the holder to manufacture distilled spirits and to rectify, purify, refine or mix distilled spirits or wine. TABC also issues other permits for the retail sale of craft alcohol.

PANDEMIC EFFECTS ON ALCOHOL SALES

Craft breweries, distilleries and wineries rely heavily on restaurant and bar sales, and during the pandemic, their products sometimes lacked shelf space at grocery and liquor stores. The industry also depends on revenue collected through taprooms and tasting rooms. Tourism plays an integral part in the craft distilling business and accounts for anywhere from 20 percent to 80 percent of revenue from tasting room sales.

Wineries across the U.S., which depend heavily on revenue from weddings, wine tours and wine storage, are estimated to have lost between 36 percent and 66 percent of their revenue due to the pandemic. For craft brewers the situation was no better. According to a 2020 survey by the Texas Craft Brewers Guild, 71 percent of Texas craft brewers saw revenue decline, and 63 percent furloughed or laid off employees.

Alcoholic beverage tax collections by the state are a good indicator of how the pandemic affected

Photo courtesy of Austin Beerworks

Texans' alcohol purchases. Taxes collected by bars and restaurants on alcoholic beverages declined, while taxes paid by distributors increased.

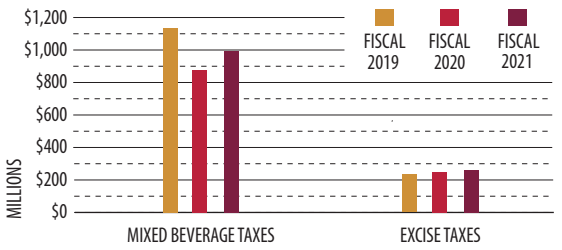
ALCOHOLIC BEVERAGES AND STATE REVENUE

As of Sept. 1, 2021, the state collects five separate alcoholic beverage taxes — mixed beverage gross receipts tax, mixed beverage sales tax, and malt beverage, wine and liquor excise taxes. The Comptroller's office publication *Sources of Revenue* attributes 2 percent of the state's tax revenue to alcoholic beverages taxes in fiscal 2020.

Excise taxes, remitted by distributors at the wholesale level, increased by nearly 7 percent from fiscal 2019 to fiscal 2020. And again, by nearly 6 percent from fiscal 2020 to 2021. Conversely, mixed beverage gross receipts and mixed beverage sales taxes (mixed beverage taxes), which are collected through restaurant and bar sales, showed the effect of COVID shutdowns and declined by 23 percent from $1.1 billion in fiscal 2019 to just more than $876.3 million in fiscal 2020 (**Exhibit 1**). Mixed beverage taxes, however, still accounted for 78 percent of the total alcoholic beverages tax revenue collected in 2020. Fiscal 2021 showed a recovery in restaurant alcohol sales, with an increase of nearly 14 percent over fiscal 2020.

EXHIBIT 1

ALCOHOL BEVERAGES TAXES, FISCAL 2019-2021



Note: Mixed Beverage Taxes include the Mixed Beverage Gross Receipts Tax and the Mixed Beverage Sales Tax.
Source: Texas Comptroller of Public Accounts

ALCOHOL TO GO

One recent measure in Texas that helped mitigate losses resulting from closed taprooms and tasting rooms was the state's new alcohol-to-go legislation that went into effect Sept. 1. It allows customers to take home some of the taproom and tasting-room experience.

In 2019, House Bill (HB) 1545 included legislation to allow craft brewers to sell a small amount of beer to go, while Senate Bill 1232 allowed beer and wine retailers to deliver their products directly to the consumer.

The beer-to-go law was further strengthened in 2021, when HB 1024 permitted the pickup and delivery of beer, wine and mixed drinks with food orders. On-premises sales to go, however, are restricted to two 750-ml bottles sold to the same customer within 30 days.

TEXAS CRAFT BREWERIES

CHARLES VALLHONRAT
TEXAS CRAFT BREWERS GUILD

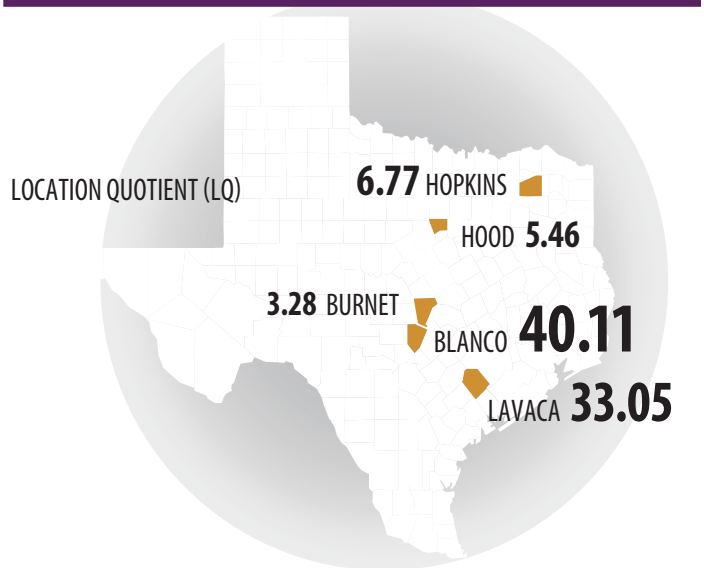
The craft brewing industry in Texas is robust, with more than 300 breweries statewide, says Charles Vallhonrat, executive director of the Texas Craft Brewers Guild. This should not come as a surprise to anyone in Texas. There seems to be no end to the variety of craft breweries to choose from, whether one wants a traditional German brew in the Texas Hill Country or a mug of cold lager after hiking through Big Bend National Park.

Texas ranks among the top 10 states with the greatest number of craft breweries. However, it ranks 47th among states for breweries per capita (i.e., per 100,000 adults ages 21 and older). Although craft breweries operate throughout the state's counties, Blanco County has more than 40 times the concentration of brewery employment compared with the national average (**Exhibit 2**). Examining the industry location quotient (LQ) by county illustrates this fact.

According to JobsEQ, a private-sector service that provides and analyzes labor market and economic data, breweries contributed $700 million to the gross

EXHIBIT 2

TOP 5 COUNTIES FOR BREWERIES IN TEXAS BY LQ, 2020



Note: An LQ represents an industry's proportionate concentration in a region. An LQ greater than 1.0 in a region means employment in a particular industry is more concentrated in that area than elsewhere in the nation.
Source: JobsEQ

Photo courtesy of Saint Arnold's Brewery

state product (GSP) in Texas in 2020 — an increase of about 3 percent annually during the last 10 years. Texas breweries ranked third in the nation for economic impact during the same period, behind California and Pennsylvania.

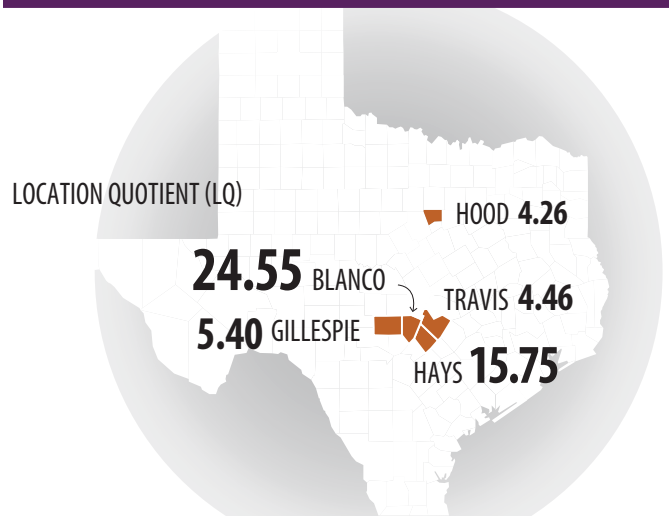
Craft breweries directly employ more than 4,000 Texans in many occupations at an average annual wage of $58,730, which is higher than the national average of $46,992 (**Exhibit 3**). During the past decade, the industry has seen an annual employment increase of more than 9 percent.

TEXAS CRAFT DISTILLERIES

Craft distilleries in Texas have experienced rapid growth during the past decade. According to a 2020 University of Texas at San Antonio Institute of Economic Development study, the number of distillery establishments in Texas grew from just 10 in 2010 to 162 in 2019, an annual increase of 36.2 percent. Blanco County has nearly 25 times the concentration of distillery employment compared with the national average (**Exhibit 4**).

EXHIBIT 4

TOP 5 COUNTIES IN TEXAS FOR DISTILLERIES BY LQ, 2020



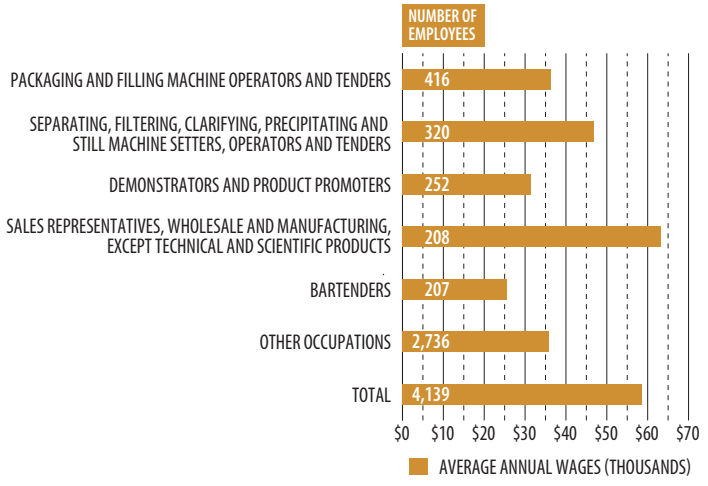
Note: An LQ represents an industry's proportionate concentration in a region. An LQ greater than 1.0 in a region means employment in a particular industry is more concentrated in that area than elsewhere in the nation.
Source: JobsEQ

In 2020, craft distilleries directly employed 1,255 Texans, with an average annual growth of 31 percent in the past decade — more than three times the U.S. average annual increase of 9.6 percent. The average annual wage for those employed by Texas distilleries is $56,463, and most of those employed work in manufacturing or sales jobs (**Exhibit 5**).

According to JobsEQ, Texas distilleries' contribution to the state's GSP — $200 million in 2020 — far exceeds the national average and represents an average annual

EXHIBIT 3

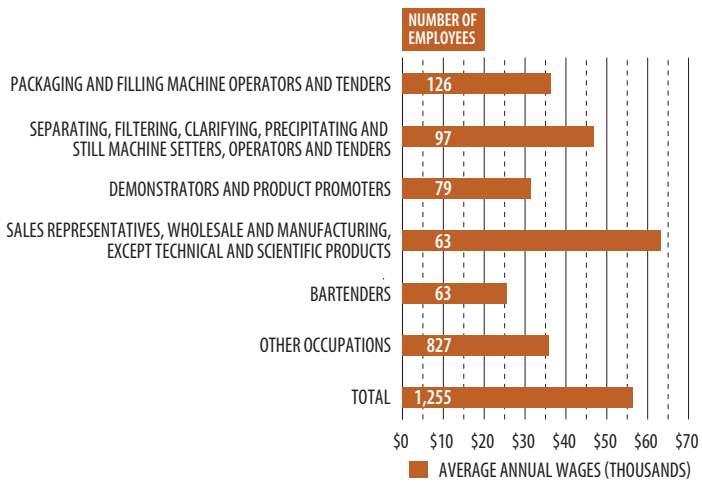
TOP 5 TEXAS BREWERY OCCUPATIONS, FOURTH QUARTER 2020



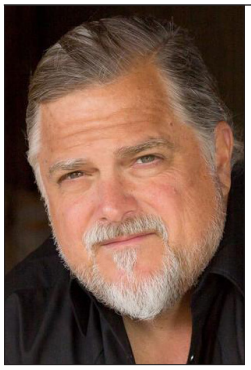
Source: JobsEQ

EXHIBIT 5

TOP 5 TEXAS DISTILLERY OCCUPATIONS, FOURTH QUARTER 2020



Source: JobsEQ



MIKE CAMERON
TEXAS DISTILLED SPIRITS ASSOCIATION

increase of more than 29 percent during the past 10 years, compared with the national average of just 6.5 percent.

Craft distilleries in Texas have a close, symbiotic relationship with other industries, including the agricultural and tourism sectors. Texas distillers purchase crops grown in the state such as barley, juniper berries, oranges and sugar cane.

Texas Distilled Spirits Association President Mike Cameron says, "Texans have a lot of pride in the Lone Star State, and their purchasing habits reflect their love for anything Texan."

Texas residents are not the only ones who prefer some products produced in the state. Tito's Handmade Vodka, produced in Austin, is the best-selling distilled spirit in the country.

TEXAS WINERIES

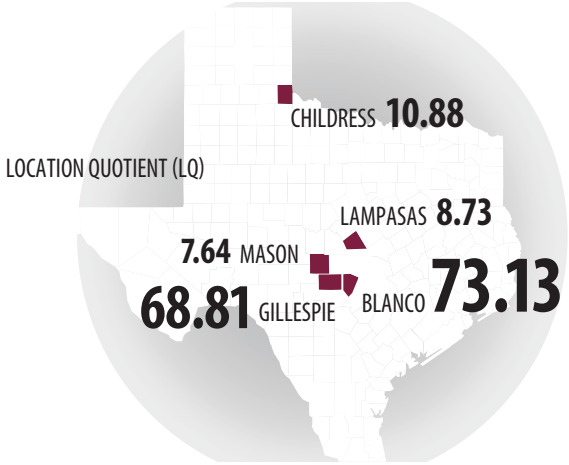
Texas is the fifth-largest wine-producing state in the U.S., with its vineyards growing more than 14,000 tons of wine-producing grapes in 2019 and adding $200 million in GSP in 2020. This represents a nearly 13 percent annual change during the past decade — more than double the national average.

Wineries can be found across the state, but Blanco County ranks No. 1 again with more than 70 times the national LQ, closely followed by Gillespie County (**Exhibit 6**).

Texas wineries directly employ almost 2,000 Texans. They make an average wage of $33,518. The average annual employment change has risen 8.7 percent during the past decade, about double the U.S. average of 4.5 percent. As with much locally produced alcohol in the state, most of those employed in Texas wineries occupy production or sales jobs (**Exhibit 7**).

EXHIBIT 6

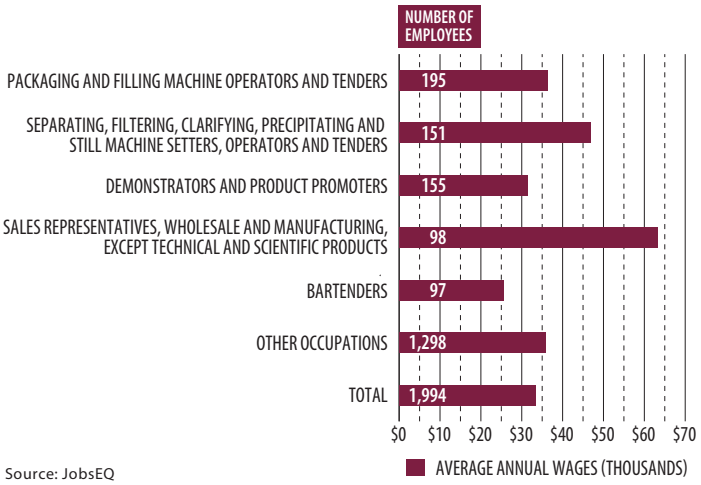
TOP 5 COUNTIES IN TEXAS FOR WINERIES BY LQ, 2020



Note: An LQ represents an industry's proportionate concentration in a region. An LQ greater than 1.0 in a region means employment in a particular industry is more concentrated in that area than elsewhere in the nation.
Source: JobsEQ

EXHIBIT 7

TOP 5 TEXAS WINERY OCCUPATIONS, FOURTH QUARTER 2020



Source: JobsEQ

The Texas Department of Agriculture, along with Texas A&M University (Texas A&M), has made concerted efforts to educate Texas wine grape growers and others involved in the state's wine industry to ensure the ongoing success of Texas' wine and wine grape production. The Department of Horticulture Sciences at Texas A&M offers a certificate program in enology and viticulture to train those interested in pursuing careers in the Texas wine industry. This training is especially important given recent weather events such as Winter Storm Uri, whose overall damage to Texas wine grapes remains unknown as plants and wineries continue to recover.

CONCLUSION

Even with substantial growth in recent years, Texas craft breweries, distilleries and wineries experienced major financial setbacks due to the COVID-19 pandemic and its subsequent economic effects. The decline in alcoholic beverages taxes collected through bars and restaurants and the corresponding increase in taxes collected on alcoholic beverage sales from grocery and liquor stores in 2020 highlight how closed bars and limited restaurant capacity during COVID-19 restrictions affected the craft alcohol industry in Texas.

Despite those difficulties, the craft alcohol industry offerings in the state remain diverse, and the industry continues to grow in Texas. **FN**

To learn more about the latest alcohol-to-go legislation and other new laws passed during the 87th Legislature's regular session, visit ***Comptroller.Texas.Gov/economy/fiscal-notes/2021/sep/session.php****.*

State Revenue Watch

This table presents data on net state revenue collections by source. It includes most recent monthly collections, year-to-date (YTD) totals for the current fiscal year and a comparison of current YTD totals with those in the equivalent period of the previous fiscal year.

These numbers were current at press time. For the most current data as well as downloadable files, visit **comptroller.texas.gov/transparency.**

Note: Texas' fiscal year begins on Sept. 1 and ends on Aug. 31.

NET STATE REVENUE — All Funds Excluding Trust

(AMOUNTS IN THOUSANDS)

Monthly and Year-to-Date Collections: Percent Change From Previous Year

Tax Collections by Major Tax	OCTOBER 2021	YEAR TO DATE: TOTAL	YEAR TO DATE: CHANGE FROM PREVIOUS YEAR
SALES TAX	$3,409,763	$6,554,976	23.78%
PERCENT CHANGE FROM OCTOBER 2020	25.22%		
MOTOR VEHICLE SALES AND RENTAL TAXES	542,807	1,090,206	19.92%
PERCENT CHANGE FROM OCTOBER 2020	19.35%		
MOTOR FUEL TAXES	321,517	642,770	10.83%
PERCENT CHANGE FROM OCTOBER 2020	12.49%		
FRANCHISE TAX	5,248	38,605	17.35%
PERCENT CHANGE FROM OCTOBER 2020	-133.95%		
OIL PRODUCTION TAX	409,824	801,617	87.46%
PERCENT CHANGE FROM OCTOBER 2020	104.80%		
INSURANCE TAXES	8,721	39,787	-25.23%
PERCENT CHANGE FROM OCTOBER 2020	-67.87%		
CIGARETTE AND TOBACCO TAXES	111,731	172,884	-26.01%
PERCENT CHANGE FROM OCTOBER 2020	8.36%		
NATURAL GAS PRODUCTION TAX	258,102	509,941	299.82%
PERCENT CHANGE FROM OCTOBER 2020	356.05%		
ALCOHOLIC BEVERAGES TAXES	129,515	251,495	51.24%
PERCENT CHANGE FROM OCTOBER 2020	46.61%		
HOTEL OCCUPANCY TAX	53,735	105,188	56.57%
PERCENT CHANGE FROM OCTOBER 2020	62.94%		
UTILITY TAXES[1]	72,780	75,402	24.86%
PERCENT CHANGE FROM OCTOBER 2020	27.87%		
OTHER TAXES[2]	12,313	-81,090	-706.52%
PERCENT CHANGE FROM OCTOBER 2020	51.99%		
TOTAL TAX COLLECTIONS	**$5,336,092**	**$10,201,780**	**28.05%**
PERCENT CHANGE FROM OCTOBER 2020	**32.69%**		

Revenue By Source	OCTOBER 2021	YEAR TO DATE: TOTAL	YEAR TO DATE: CHANGE FROM PREVIOUS YEAR
TOTAL TAX COLLECTIONS	$5,336,092	$10,201,780	28.05%
PERCENT CHANGE FROM OCTOBER 2020	32.69%		
FEDERAL INCOME	6,343,996	10,909,409	3.09%
PERCENT CHANGE FROM OCTOBER 2020	37.80%		
LICENSES, FEES, FINES AND PENALTIES	457,111	1,152,780	0.85%
PERCENT CHANGE FROM OCTOBER 2020	-1.94%		
STATE HEALTH SERVICE FEES AND REBATES[3]	1,564,694	1,586,382	156.41%
PERCENT CHANGE FROM OCTOBER 2020	156.07%		
NET LOTTERY PROCEEDS[4]	226,382	510,814	13.54%
PERCENT CHANGE FROM OCTOBER 2020	17.56%		
LAND INCOME	362,667	639,468	127.99%
PERCENT CHANGE FROM OCTOBER 2020	160.08%		
INTEREST AND INVESTMENT INCOME	217,180	248,752	-29.24%
PERCENT CHANGE FROM OCTOBER 2020	242.57%		
SETTLEMENTS OF CLAIMS	3,520	8,061	-71.03%
PERCENT CHANGE FROM OCTOBER 2020	-34.80%		
ESCHEATED ESTATES	11,750	39,501	-44.20%
PERCENT CHANGE FROM OCTOBER 2020	-77.50%		
SALES OF GOODS AND SERVICES	16,482	36,229	-33.42%
PERCENT CHANGE FROM OCTOBER 2020	-5.29%		
OTHER REVENUE	639,148	742,880	57.22%
PERCENT CHANGE FROM OCTOBER 2020	81.94%		
TOTAL NET REVENUE	**$15,179,024**	**$26,076,057**	**18.43%**
PERCENT CHANGE FROM OCTOBER 2020	**44.23%**		

[1] Includes public utility gross receipts assessment, gas, electric and water utility tax and gas utility pipeline tax.

[2] Includes taxes not separately listed, such as taxes on oil well services, coin-operated amusement machines, cement and combative sports admissions as well as refunds to employers of certain welfare recipients.

[3] Includes various health-related service fees and rebates that were previously in "license, fees, fines and penalties" or in other non-tax revenue categories.

[4] Gross sales less retailer commission and the smaller prizes paid by retailers.

Notes: Totals may not add due to rounding.

Excludes local funds and deposits by certain semi-independent agencies.

Includes certain state revenues that are deposited in the State Treasury but not appropriated.

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Texas Comptroller of Public Accounts
Publication #96-369,
November 2021