RAILROAD COMMISSION OF TEXAS

OIL & GAS | PIPELINES | ALTERNATIVE FUELS | NATURAL GAS UTILITIES | SURFACE MINING & RECLAMATION | CRITICAL INFRASTRUCTURE

LEADING TEXAS ENERGY

2022
YEAR IN REVIEW

When we think of service, the millions of Americans who are in the military, public safety departments, education and healthcare often come to mind.

There are also many people do jobs that make our lives the way we know it possible, including the thousands of workers who make up our state government fulfilling vital roles, including regulatory functions, such as with the Railroad Commission.

The 900-plus employees of the RRC serve critical roles regulating the oil and gas industry; intrastate pipelines; the alternative fuels LNG, CNG and LPG; natural gas utilities, surface mining of coal and uranium and more in order to protect Texas residents and the environment while enhancing the vitality of the state's ever-important energy industry.

This includes inspectors positioned at district offices throughout the state who ensure compliance with statewide rules and the safety of oil and gas operations, pipelines and alternative fuels. It includes staffers who process drilling permits and completions, review geological conditions for oil and gas well casings, provide necessary training to propane installers and handlers and much more.

The work of the Railroad Commission helps propel an economic engine that supplies billions of dollars that help to fund our schools and universities and state government. The work of the agency helps ensure the delivery of raw resources that are used to power electric generating plants and gas stoves and other systems around homes and are also refined into gasoline and diesel, plastics, fertilizers, medicines and much more.

In this 2022 Year in Review, I invite you to read more about the RRC's role serving Texans with sections of grouped articles, including "Expanding Role," "Above and Beyond," "Protecting Public Safety and the Environment," "Around the Agency" and "Improving Efficiency."

I am honored to serve with so many capable and committed public servants, and I am proud of all of the work they have done for Texans in 2022.

Wei Wang
Executive Director

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COMMISSIONER VIDEOS

"That's where I think you've seen Texas continue to be a leader when you look at what's going on in world politics, particularly Russia and Ukraine. We've all recognized now how important natural gas is to keep people warm in the winter. Europe has some real challenges."

CHAIRMAN CHRISTI CRADDICK

"Texas has been blessed beyond all states. We right now have the largest discovery of oil probably on the planet Earth."

COMMISSIONER WAYNE CHRISTIAN

"I would say today, in my own perspective, that Texas has moved up to No. 1 as far as being reliable and providing that energy not only to our domestic needs but on the world stage as well."

COMMISSIONER JIM WRIGHT

RRC GROWING FOLLOWING EXPANSION OF DUTIES

When Winter Storm Uri wreaked havoc on Texas in early 2021, the Legislature looked to the Railroad Commission to secure the flow of natural gas to electric power generators.

As part of its new regulatory responsibilities, the RRC established rules for critical natural gas facilities, created a map of the state's electricity supply chain and associated gas facilities with the Public Utility Commission, and will administer weatherization rules of those facilities.

To accomplish these tasks, the Legislature granted the RRC with 130 full-time position equivalents, and the agency created a new Critical Infrastructure Division with inspectors in regional offices throughout the state.

"The agency is growing," said Wendy O'Neill, RRC's Human Resources Director. "We hired 30 employees in May, 30 in June, 16 in July, and 26 in August. In my time with the agency, we have never had this many new hires."

The hiring boom, which also includes additional personnel to support an increase in well plugging, has seen the number of employees at the agency grow from 828 in July 2021 to 928 by the end of FY 2022 on Aug. 31. And the agency has continued to hire.

The state's trust in the RRC to help solve problems of the day is not something new. Whatever the tasks, RRC's employees have taken on the challenges and done the jobs asked of them.

"Working for the state of Texas provides a sense of pride not found anywhere else," O'Neill says. "While someone may be loyal to their company, it feels different to think you are being loyal to the great state of Texas."

From a human resource perspective, undergoing a major expansion, including creating completely new jobs for a completely new section of the agency, poses unique challenges.

"Creating a new division is no easy task. The overall recruiting strategy was developed early in the process, but as with any new venture, things change," O'Neill said. "The HR team had to adjust quickly to changes in positions posted and the number of each position. We also had to shift work throughout the team to ensure that we were able to support the recruiting efforts. New managers were hired to lead the new division, and those managers had to be trained on HR processes."

The hiring climate, as seen throughout the country, has changed since the pandemic. Fewer applicants are available for open positions.

"In the past, we may have had 100 applicants for one job posting," O'Neill said. "Today, we are seeing about 20 applicants for those same positions, and many may lack the education or experience required for the position."

And, she added, the agency is competing with private industry and other state agencies for top candidates.

"With the agency growing and the current recruiting climate, we are in somewhat unchartered territory," O'Neill said. "In years past, we have had an exorbitant number of applicants to choose from, so we have had to be more creative with our job postings."

While private businesses may be able to offer larger salaries, serving the state and providing much-needed work for fellow Texans has its own advantages.

"Before joining the RRC, I worked in private industry, so I can say from personal experience that working for state government and the RRC is very rewarding," O'Neill said. "The ability to balance your work life with your home life is unheard of in private industry, and with the state and the RRC, you can easily balance the two. The benefits offered are second to none, which includes generous time off and a pension plan."

To ensure candidates understand what the agency has to offer, including job benefits, Human Resources updated its careers page on the RRC website. The team also created a flyer to summarize the benefits.

Another strategy to fill open positions has been to address the language in the job postings.

"HR is working with hiring managers to ensure that our job postings clearly state what is required of the position," O'Neill said. "There is a big difference between what is required in the job versus a nice to have. In addition, we have updated our job postings to ensure that applicants know the outstanding benefits package that the RRC and the state offer."

HR has also worked to broaden the pool of candidates by posting positions on industry-specific websites.

With a hiring frenzy and a growing workforce, Human Resources staff have had their workload increase. For O'Neill, a growing workforce is better than other types of challenges human resources departments often face.

"In my 20-plus years in human resources, I have had the pleasure to work for a variety of industries, and in most cases, we had to let employees go due to restructuring and downsizing," she said. "Our growth and rate of hiring, albeit a huge task, is exciting and reinvigorates my love for human resources and creating a positive and engaging work environment for employees."

Employees from RRC's Critical Infrastructure Division and the senior trainer from the Oil & Gas Division attended a specialized weather training course.

NEW RULE PRIORITIZES NATURAL GAS SUPPLIES FOR WEATHER EMERGENCIES

In anticipation of future weather emergencies in Texas, RRC's commissioners in April issued a new curtailment rule that prioritizes gas supplies and transportation during such events.

The adopted amendments to 16 Texas Administrative Code §7.455 went into effect on Sept. 1 and replaced Order 489, which had been in place since 1973.

The action by the Commission continues efforts to ensure Texans that in energy emergency events, like Winter Storm Uri, their life-saving natural gas for food and heat will continue to flow.

The new curtailment rule is similar to an emergency order commissioners issued during Uri to prioritize natural gas deliveries for human needs, which in turn helped 99.95% of gas utility local distribution residential customers to maintain natural gas service during the storm. Similar to last year's emergency order, the new rule also cements gas deliveries to electric generation facilities as a top priority.

The curtailment rule is triggered when a gas utility is unable to deliver all the gas it is contractually obligated to deliver (through what's known as firm contracts) during emergency events and has to curtail its firm customers. In such situations, the rule sets the following order of priorities for firm deliveries:

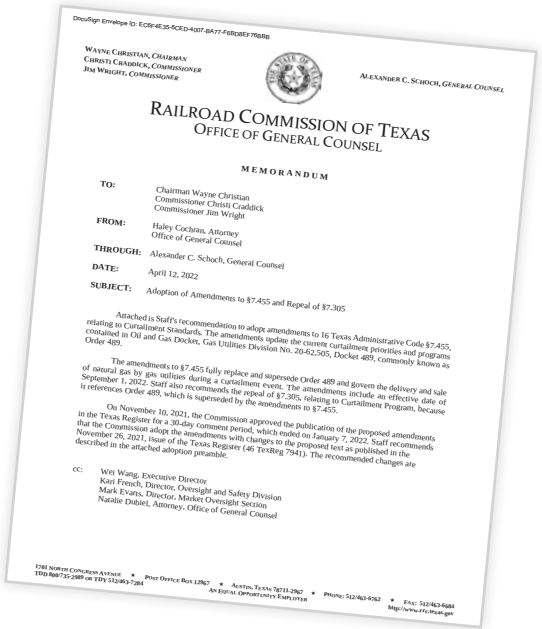
1. Human needs customers and local distribution systems which serve human needs customers.
2. Electric generation facilities.
3. Industrial and commercial users of the minimum natural gas required to prevent physical harm and/or ensure critical safety to the plant facilities, to plant personnel, or the public when such protection cannot be achieved through the use of an alternate fuel.
4. Small industrials and regular commercial loads that use less than 3 million cubic feet of gas per day.
5. Large industrial and commercial users for fuel or as a raw material where an alternate fuel or raw material cannot be used and operation and plant production would be curtailed or shut down completely when natural gas is curtailed.
6. Large industrial and commercial users for fuel or as a raw material where an alternate fuel or raw material can be used and operation and plant production would be curtailed or shut down completely when natural gas is curtailed.
7. Customers that are not covered by the priorities listed above.

The priority list helps ensure the availability of gas for human needs customers, and electricity generation facilities powered by natural gas. Human needs customers include residences, hospitals, water and wastewater facilities, emergency responder facilities, and locations where people may congregate in an emergency such as schools and places of worship.

"The Commission's curtailment order during Uri saved countless lives by ensuring the 99% of Texans that needed life-saving natural gas during the freeze – got it," said RRC Chairman Wayne Christian. "It's vital to have an action plan for emergencies, and that's what curtailment does. The Commission today strengthened that plan by placing it in our rules and focusing on firm supply and transport of natural gas. This will give market participants certainty of the plan and encourage them to obtain firm contracts, increasing the reliability of the natural gas system in Texas."

"One of the fundamental principles of the Railroad Commission of Texas is to prioritize the health and safety of Texans," said Commissioner Christi Craddick. "Through the adoption of our curtailment order, we have honored the mission of this agency by prioritizing human needs natural gas customers. I am proud of the hard work by agency staff and stakeholders to ensure that natural gas is available to those who need it most during an emergency."

"As we saw during Winter Storm Uri, it is essential that the delivery of gas is prioritized for human needs and electrical generation in emergency situations," said Commissioner Jim Wright. "Today's rulemaking updates longstanding Railroad Commission practices to ensure that those with firm contracts have the gas they need to keep our citizens safe."



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WAYNE CHRISTIAN, *CHAIRMAN*
CHRISTI CRADDICK, *COMMISSIONER*
JIM WRIGHT, *COMMISSIONER*

ALEXANDER C. SCHOCH, *GENERAL COUNSEL*

RAILROAD COMMISSION OF TEXAS
OFFICE OF GENERAL COUNSEL

MEMORANDUM

TO: Chairman Wayne Christian
Commissioner Christi Craddick
Commissioner Jim Wright

FROM: Haley Cochran, Attorney
Office of General Counsel

THROUGH: Alexander C. Schoch, General Counsel

DATE: April 12, 2022

SUBJECT: Adoption of Amendments to §7.455 and Repeal of §7.305

Attached is Staff's recommendation to adopt amendments to 16 Texas Administrative Code §7.455, relating to Curtailment Standards. The amendments update the current curtailment priorities and programs contained in Oil and Gas Docket, Gas Utilities Division No. 20-62,505, Docket 489, commonly known as Order 489.

The amendments to §7.455 fully replace and supersede Order 489 and govern the delivery and sale of natural gas by gas utilities during a curtailment event. The amendments include an effective date of September 1, 2022. Staff also recommends the repeal of §7.305, relating to Curtailment Program, because it references Order 489, which is superseded by the amendments to §7.455.

On November 10, 2021, the Commission approved the publication of the proposed amendments in the Texas Register for a 30-day comment period, which ended on January 7, 2022. Staff recommends that the Commission adopt the amendments with changes to the proposed text as published in the November 26, 2021, issue of the Texas Register (46 TexReg 7941). The recommended changes are described in the attached adoption preamble.

cc: Wei Wang, Executive Director
Kari French, Director, Oversight and Safety Division
Mark Evans, Director, Market Oversight Section
Natalie Dubiel, Attorney, Office of General Counsel

1701 North Congress Avenue • Post Office Box 12967 • Austin, Texas 78711-2967 • Phone: 512/463-6362 • Fax: 512/463-6684
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VIEW THE ADOPTED RULE

NATURAL GAS SUPPLIERS BEGAN REPORTING CRITICAL DESIGNATIONS IN JANUARY

Natural gas suppliers were required to start filing forms related to critical infrastructure designation in January as part of the RRC's implementation of Senate Bill 3.

Suppliers filed critical infrastructure designation forms (Form CI-D) and filing forms for exception (Form CI-X) as authorized in legislation and required by RRC's rule approved in November 2021.

For the inaugural filings in January 2022, 438 companies filed Form CI-D designating at least 38,471 assets as critical. Assets include, but are not limited to, gas wells and oil wells that produce gas, gas processing plants, underground natural gas storage facilities, natural gas pipelines and saltwater disposal facilities.

Forty-one companies also filed Form CI-X for 726 assets. Some companies filed both Form CI-D and Form CI-X depending on their assets.

Reporting continued following the inaugural filings. For FY 2022, the total number of critical assets numbered 73,500.

Form CI-D filers who need electricity to operate also submit their critical infrastructure information to electric utilities to help ensure that electric companies do not inadvertently cut the power off to the state's critical gas infrastructure during a load shed event.

RRC staff send out notices to companies who do not file forms with the agency. If confirmed that these companies have critical gas facilities as defined in rules, the RRC will assess the maximum amount of penalty, $10,000 per day for each violation, as allowed in statute.

"We are encouraged by the number of operators who have filed forms to designate their facilities as critical. This helps ensure natural gas supply during weather emergencies," said Wei Wang, RRC Executive Director. "RRC staff will conduct thorough reviews on the accuracy of the forms that have been filed, especially on those applications for an exception. Staff will carefully examine the evidence provided by the applicants to determine eligibility as well as the adequacy of the evidence itself. Applications for an exception that do not meet rule requirements, whether it is for lack of objective evidence or basis for eligibility, will be denied."

Some oil and gas operators, such as those with only low, non-critical production volume wells that did not meet critical gas supplier definition, are not eligible for critical designation or required to file forms.

Critical infrastructure filings were utilized in the development of the state's Electricity Supply Chain Map, which the RRC and other state agencies worked on.

FORM CI-D: ACKNOWLEDGEMENT OF CRITICAL CUSTOMER/CRITICAL GAS SUPPLIER DESIGNATION

Attachment

Operator Name	
P5 number	
Version Number	Rev 6.3

General Facility Information		Gas Well Information (§3.65(b)(1)(A))		Oil Lease Information (§3.65(b)(1)(B))		Gas Processing Plant Information (§3.65(b)(1)(C))		Pipeline Information (§3.65(b)(1)(D))		
Facility Name	Facility Type (Select from drop down)	Gas ID (6-digit, ######)	Average Daily Gas Production (Mcf/day) calculated as specified in §3.65(a)(3)	Oil Lease (2-digit district and 5-digit lease, ##-#####)	Average Daily Gas Production (Mcf/day) calculated as specified in §3.65(a)(3)	Gas Plant Serial Number (2-digit district and 4-digit serial, ##-####)	Plant Output Capacity (MMcf/Day)	T-4 Pipeline Permit Number (5-digit #####)	Does this pipeline directly serve a natural gas electric generation facility?	Does this pipeline serve a Local D Company or a c from Drop down

FORM CI-X: CRITICAL DESIGNATION EXCEPTION APPLICATION

Attachment

Operator Name	
P5 number	
Version Number	Rev 3.2

			Gas Well Information (§3.65(b)(1)(A))	Oil Lease Information (§3.65(b)(1)(B))	Pipeline Information (§3.65(b)(1)(D))	SWD Well Information (§3.65(b)(1(H))			
If Facility Previously Received Exception Approval, Date Exception Was Approved DD/MM/YY	Facility Name	Facility Type (Select from drop down)	Gas ID (6-digit, ######)	Oil Lease (2-digit district and 5-digit lease, ##-#####)	T-4 Pipeline Permit Number (5-digit #####)	UIC number (9-digit, #########)	Facility Service Address Line 1 Number	Facility Service Address Line 2 Street	Faci

MAP OF CRITICAL INFRASTRUCTURE FOR STATE'S ELECTRICITY SUPPLY ADOPTED

The first map of Texas' electricity supply chain was adopted on April 29 to assist with disaster and emergency planning and response.

The map approved by the Texas Electricity Supply Chain Security and Mapping Committee plots critical infrastructure around the state, including the natural gas supply chain for electric generators.

"This map will save lives in Texas," said Thomas Gleeson, Public Utility Commission of Texas Executive Director and chairman of the mapping committee. "Our agencies have collected an enormous amount of critical information in one place, available to state emergency officials with a click of a mouse. That means better coordinated preparedness before a disaster and faster response times in an emergency, to protect the Texas grid."

"This map is an important tool to protect all Texans during weather emergencies.," said Wei Wang, Railroad Commission of Texas Executive Director and vice chair of the committee. "It is also a great example of how the agencies have been collaborating. Our teams worked shoulder to shoulder together and exchanged a very large amount of data and information. All the layers of facilities on the map will help the state's planning and response to fix problems real-time and prioritize electricity service during emergencies."

The map identifies critical infrastructure facilities that make up the state's electricity supply chain, including electric generation plants and the natural gas facilities that supply fuel to power the plants. State emergency management officials will use the map during weather emergencies and disasters to pinpoint the location of critical electric and natural gas facilities and emergency contact information for those facilities.

The map adopted in April included more than 65,000 facilities including electricity generation plants powered by natural gas, electrical substations, natural gas processing plants, underground gas storage facilities, oil and gas well leases, saltwater disposal wells, as well as more than 21,000 miles of gas transmission pipelines and approximately 60,000 miles of power transmission lines.

In addition to infrastructure layers, the Electricity Supply Chain map includes elements such as Texas Division of Emergency Management regions, emergency contact information for facilities, as well as visualization of weather watches and warnings as they occur in any part of the state. The map is a living document and will be updated twice a year, or more often if necessary.

Creation of the map was required under Senate Bill 3 passed by the 87th Texas Legislature and signed into law by Governor Greg Abbott. The legislation prohibits public release of the map and corresponding data to protect the safety and integrity of the electricity supply chain.

The Mapping Committee is comprised of the Public Utility Commission, the Railroad Commission, the Electric Reliability Council of Texas and the Texas Division of Emergency Management.

TEXAS PURSUING PRIMACY OF CLASS VI INJECTION WELLS FOR CO2 STORAGE

With its success in injection well regulations, the RRC in August took a major step forward toward obtaining enforcement primacy over another class of wells – Class VI injection wells for geologic storage of carbon dioxide.

The need for such injection wells has increased in recent years as more and more government organizations and businesses have focused on carbon dioxide emissions.

The agency's commissioners on Aug. 30 approved amendments to statewide carbon dioxide geologic storage rules, which cleared the way for the state to pursue primacy from the EPA.

The amendments approved by the commissioners implemented House Bill 1284, which became effective in June 2021 and consolidated jurisdiction over geologic storage of carbon dioxide in the state to the RRC. Previously, statewide jurisdiction was shared with the Texas Commission on Environmental Quality.

Because the state does not yet have primacy, EPA has the final say on Class VI permits, and applicants must apply to both the RRC and EPA.

After RRC's commissioners adopted the necessary carbon dioxide geologic storage rules, in December, the Texas Attorney General reviewed the rules and certified that the state's statutes and regulations met minimum federal requirements, and the state's application was submitted to the EPA for primacy.

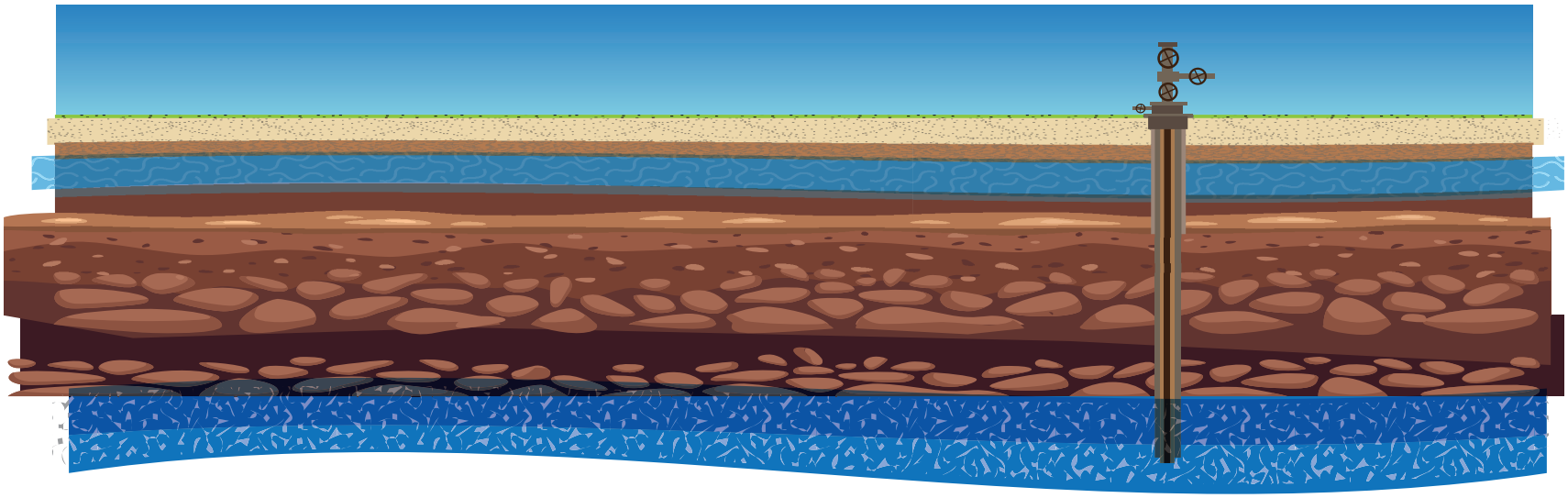
"The federal requirements for the Class VI program are much more complex than the requirements for the Class II oil and gas program," said Leslie Savage, RRC's Chief Geologist.

RRC's Underground Injection Control program – which currently oversees Class II injection wells that are primarily used for enhanced recovery and the disposal of water produced from oil and gas operations – has repeatedly been recognized by EPA Region 6 for its effectiveness.

As was the case with Class II wells, the federal Safe Drinking Water Act acknowledges states' knowledge of their geology and conditions and provides for delegation of enforcement primacy from the EPA to the states. Given the variety of geologic settings in which storage will be applied, the RRC is in the best position to evaluate local conditions posed by a Class VI well, including well depth, geology and hydrogeology.

Until primacy is granted, RRC staff are processing permit applications in parallel with the EPA, so when the transition occurs, it will be seamless, and operators will not have to resubmit any paperwork, Savage said.

In order to ensure that primacy is granted as soon as possible, Savage says RRC staff have been coordinating through a work group with the Ground Water



Protection Council over the last two years with the EPA, North Dakota and Wyoming, which have already been granted primacy, and Louisiana, which is in the application process.

Commission staff also have been in discussions with EPA Region 6 for the past year and a half on various issues, including pre-application meetings with companies planning projects and issues that were not clear in EPA's regulations.

Class VI wells pose a different kind of challenge and require tougher standards, Savage said.

"With respect to the difference between Class II and Class VI, the greatest influence on risk is the pressure and volume," she said. "There will be a larger area of influence with Class VI, and therefore, the potential for more conduits to allow the CO2 to escape from the permitted injection interval."

As part of a Class VI permitting program, the RRC will ensure that there are no such potential conduits allowing for the release of stored carbon dioxide and will require that all wells associated with such a project are properly plugged before a closure certificate is issued. Similar to federal regulations, the RRC's Class VI rules require that closure costs include the cost of plugging all wells associated with the project.

The amount of financial assurance required to be filed under this subsection must be equal to or greater than the maximum amount necessary to perform corrective action, emergency response and remedial action, post-injection monitoring and site care and closure of the geologic storage facility at any time during the permit term in accordance with all applicable state laws, rules and orders and the permit, Savage said.

Closure costs will continually be reviewed and can be adjusted up or down, as needed.

VIEW THE ADOPTED RULES

WORK ON CENTURY-OLD ABANDONED MINE IN EAST TEXAS EARNS RRC NATIONAL AWARD

The RRC received national recognition in October for reclaiming an abandoned lignite mine more than a century old in East Texas.

The U.S Department of the Interior's Office of Surface Mining Reclamation and Enforcement presented RRC's Abandoned Mine Land Program with its Small Project Award.

The $380,000 project, which was less than a half mile south of the historic courthouse in Center, Texas, addressed voids left by a hand-dug mine dating back to the 19th century.

Among the challenges of the project under the properties of two homes included a 20-foot-deep sinkhole that opened up in one of the backyards and damaged part of a fence. Extensive geotechnical work was conducted to locate voids, which were filled with cement.

Following the work underground, the fence and landscapes were repaired, as well. The project was completed in July 2021.

"We are very honored to receive this national award from our federal counterparts," said Brent Elliott, Director of RRC's Surface Mining and Reclamation Division. "Community safety is our number one priority. I'm very proud of the work our Abandoned Mine Land Program does to protect public safety. Their exemplary efforts are recognized nationwide. Time and time, the RRC team delivered the results expected by Texans."

NATIONAL MINING COMMISSION RECOGNIZES RRC DRONE TRAINING PROGRAM

The RRC collected a national award in April for a drone safety program put the Surface Mining and Reclamation Division.

The Interstate Mining Compact Commission, which comprises 26 states, presented the RRC with its National Mine Safety and Health Training Award in the State Category for Coal Surface Mining. The IMCC noted that the RRC promotes "a safe work place within the Lone Star State's mining industry through innovative and effective training programs."

The award recognized RRC video training that highlights the SMRD's use of drone technology in the field, including pre- and post-flight procedures, drone inspection efficiency, how drones and maintain safe distance between multi-ton mining equipment and inspectors.

"We are extremely honored to receive this award," said Brent Elliott, RRC's Director of the SMRD. "We are not just committed to adapting new technologies that improve on our ability to protect public safety and the environment, but the award shows our willingness to share what we know to help both industry and regulators alike."

Jason Corley, then Manager of SMRD Inspection and Enforcement, credited Inspector Cade Harris for putting the training together using video conference software.

SMRD, which has three drone pilots, has been using drones since July 2020 and have logged more than 100 mission flights.

"Drones have made a portion of what our inspectors do much more efficient than in recent times," Corley said. "For instance, in collecting annual regrade lines and suitable material haulback placement progress – a task that could take half of an inspection – drones can now be flown effortlessly in mere minutes versus the hours of work it used to take. They allow us to see the big picture of ground conditions in a bird's eye view."

RRC, BUREAU OF ECONOMIC GEOLOGY WIN AWARD FOR IMPROVING SEISMIC MONITORING

Midland College in May recognized the RRC and the University of Texas at Austin's Bureau of Economic Geology for work improving the TexNet Seismic Monitoring Program.

The annual Bruno Hanson Environmental Excellence Award, presented at the Permian Basin Environmental Regulatory Seminar, recognizes exceptional achievements in environmental stewardship and is named for Hanson, a pioneering geologist who developed environmentally friendly procedures for the energy industry.

The Midland College Petroleum Professional Development Center works closely with community leaders to identify superior environmental practices in the oil and gas industry.

The RRC has been helping BEG expand its TexNet Seismic Monitoring Program, which has been a critical tool used by the RRC to monitor seismic activity near injection/disposal wells throughout the state and which was instrumental in the creation of RRC's Seismic Response Areas (SRA) in West Texas.

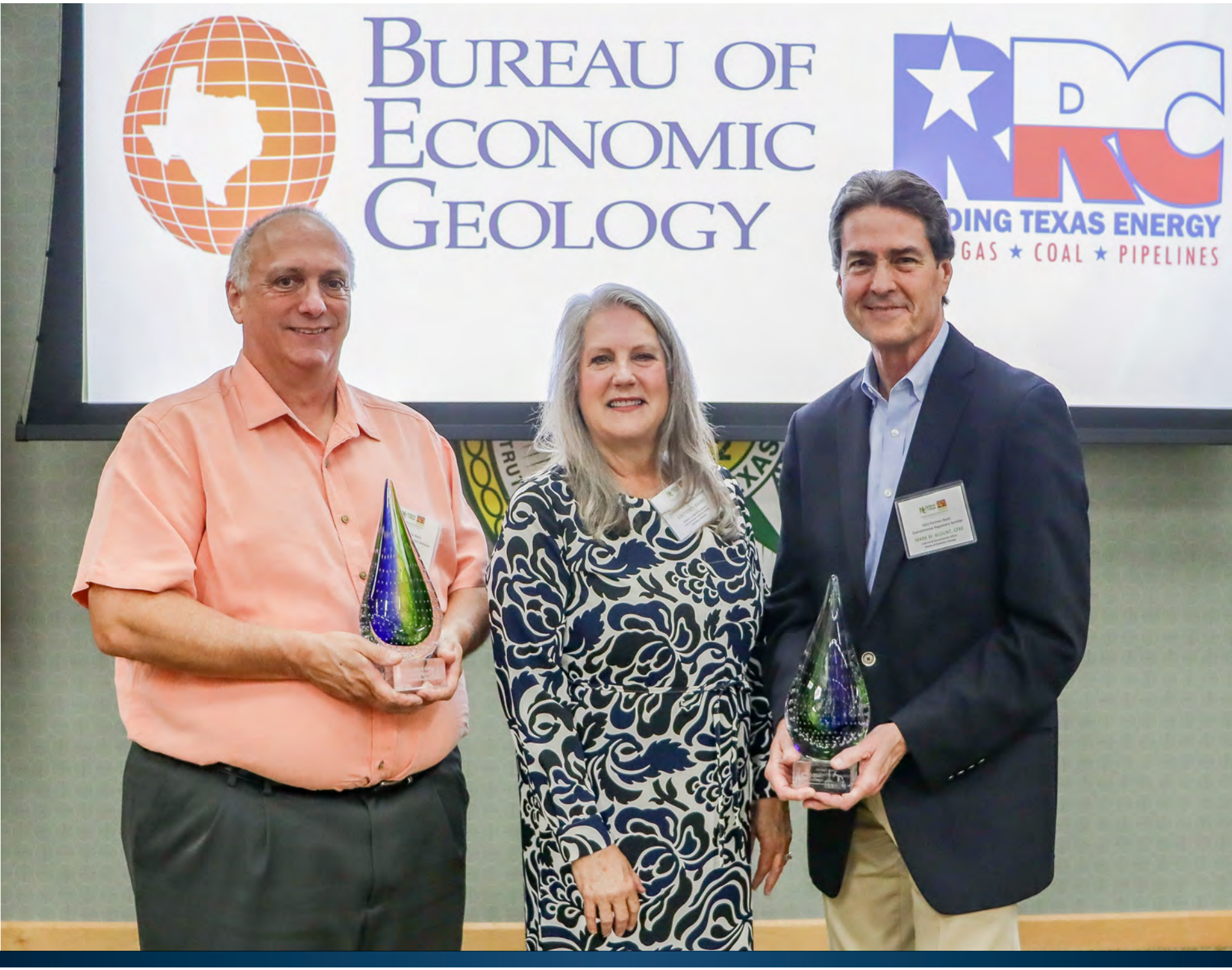
The RRC worked with stakeholders, including operators, to develop response plans for the SRAs to reduce the frequency and intensity of injection-induced earthquakes.

"We are honored to receive this award," said Paul Dubois, Assistant Director of RRC Technical Permitting. "We've put a lot of work into the response plans and developing best practices for disposal well permitting in seismic areas to better protect the residents of the Permian Basin and the environment. And we will continue to do this important work."

The first response plan, which was effective at the end of December 2021, was for Gardendale SRA, which is north of Odessa and northwest of Midland, prohibited deep injection below the top of the Strawn Formation, which occurs at around 10,000 feet in depth but can vary.

For the Northern Culberson-Reeves SRA – which is adjacent to Guadalupe Mountain National Park and is near the border of New Mexico to the north – the RRC began implementation of the first-ever operator-led response plan, which provides variable reductions in disposal volumes of produced water (water that comes out of the ground with oil and gas during production) across all disposal wells and allows for the seismic monitoring stations in the area to provide better data on the precise location of earthquakes.

In May, a similar operator-led response plan was approved for the Stanton SRA, which is north of the Midland area in Martin County. That plan addressed both shallow and deep disposal and improved data collection of seismic activity.



RRC Assistant Director of Technical Permitting Paul Dubois (left) poses with BEG's Mark Blount and Gretchen Bakke, daughter of Bruno Hanson.

ARTIFICIAL INTELLIGENCE EARNS RRC AWARD FROM NATIONAL GROUND WATER PROTECTION COUNCIL

RRC's Underground Injection Control Program earned national recognition in July for developing and using artificial intelligence for seismicity reviews for injection/disposal well permits.

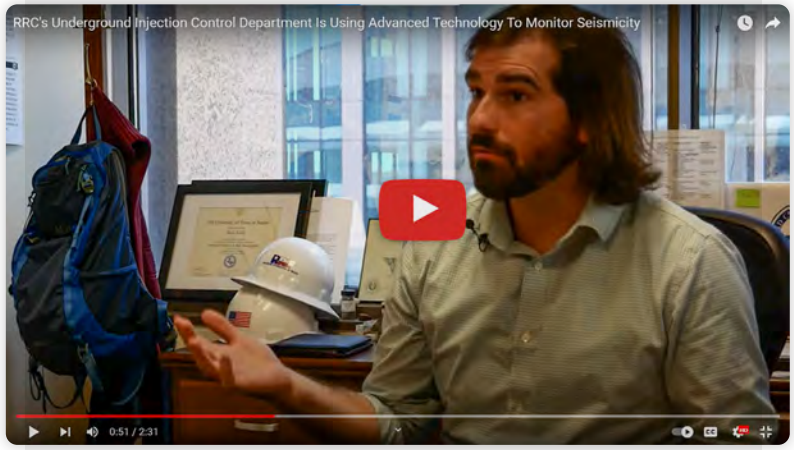
The Ground Water Protection Council, a nonprofit with membership from 34 regulatory agencies from 24 states, presented the RRC with the Excellence in UIC Award at its annual forum.

RRC's UIC program uses artificial intelligence to help with injection/disposal well permits in areas susceptible to earthquakes and in certain geologic zones.

The machine learning program weighs hundreds of data points, including underground water resources, nearby disposal wells, as well as the number, severity and proximity of earthquakes and more. The program produces a recommendation via its decision tree, but the technical analyst reviews the data and results and ultimately makes the final judgment.

In the award letter sent to the RRC, Dan Yates, the Executive Director of the Ground Water Protection Council, stated that the agency's use of artificial intelligence in UIC permitting "is a very impressive advancement that I think many states could benefit from and emulate."

An explanation of the technology and how it has allowed staff to optimize their time is in this video.



Pictured from left to right include RRC staffers with GWPC President Nick Tew in the gray jacket, including Jim Moore, Bryce McKee, Paul Dubois, Danny Sorrells, Sean Avitt, Nagi Mabruk and Lauryn McFarland

RRC GEOLOGISTS MAY HAVE FOUND SOLUTION FOR A TEXAS CITY'S WATER NEEDS

Geologists at the RRC may have found just what the city of Eagle Pass needs to quinch its water needs with the discovery of an unusually deep and plentiful aquifer last year.

The city's only source of water thus far has been the Rio Grande, which, like most of the state, has been affected by drought this year and with the water system close to implementing water restrictions.

"We were very excited to learn about the aquifer," said Jorge Barrera, general manager of the Eagle Pass Water Works System, which serves a population of about 60,000, including Eagle Pass and other communities in Maverick County from Elm Creek, a couple miles north of the city, to El Indio, which is 17 miles south. "I just wish we had known about it earlier."

The Maverick Basin Aquifer, which is more than a mile deep in some places, is not impacted by the Rio Grande at all. Rather, its recharge zone is via karsts in the hills more than 50 miles west of the river in Mexico. The water crosses into Texas under Rio Grande and is stored in the Glenn Rose Formation under Maverick, Kinney, Zavala, Dimmit, Uvalde and Webb counties.

The aquifer is known to be at least 3,000 square miles with the Glen Rose formation about 1,000 feet thick throughout most of the area. RRC geologists in the Geologic Advisory Unit, which first identified and mapped the aquifer, shared its information with the Texas Water Development Board, the University of Texas at Austin Bureau of Economic Geology and the Texas Water Resources Institute at Texas A&M University, which are conducting their own research, including how much freshwater it contains and how quickly it is replenished.

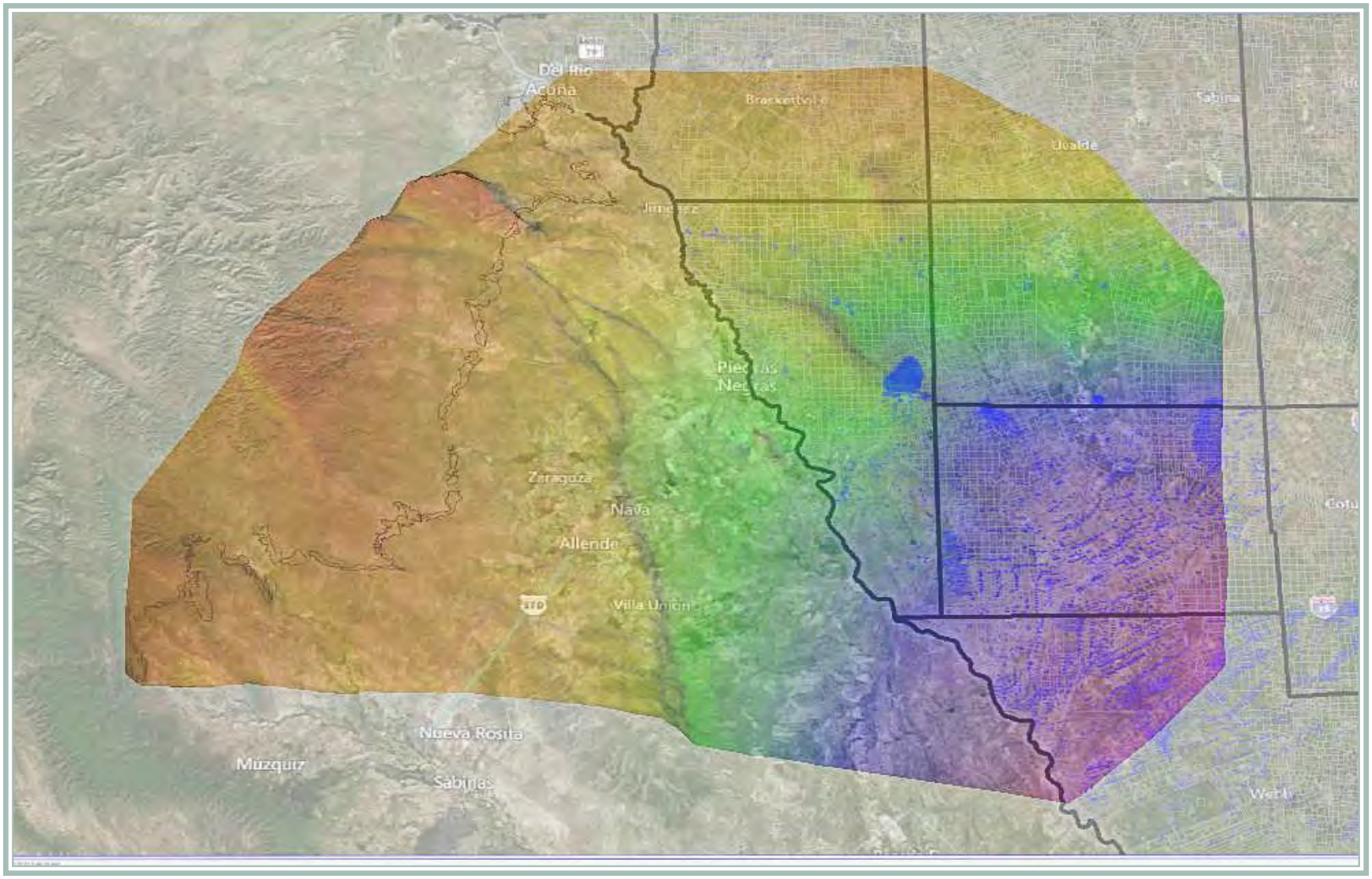
"We need to know where the aquifer is, so we can protect it," said Cristian Astorga, GAU's lead technical geologist.

The GAU reviews data from operators, academics, government agencies, groundwater conservation districts and other sources to ensure that oilfield activities and well designs are protective of freshwater.

Because the freshwater of the Maverick Basin Aquifer is so deep, it might not have been ideal for Eagle Pass to consider using it.

"The only reason why this is economical is because the water is under so much pressure," said James Harcourt, manager of the GAU. "To pump water from a mile underground would be very expensive. Because it is under high pressure, it tells us there is more water under there than might otherwise be suggested."

Because of the depth and pressure the water is coming from, it arrives at the surface quite hot at around 130-150 degrees Fahrenheit, he said, noting that oilfield and/or geothermal well drilling technology is required to drill new wells and to convert to water production.



Harcourt and Royce Massey, lead technical GIS project manager for the GAU, have both volunteered outside of their jobs to help geologists from Texas A&M and the Bureau of Economic Geology with research on the aquifer, including the recharge zone in Mexico.

"To us, it is interesting," said Harcourt, who, along with Massey, went to Mexico and worked with the A&M and BEG geologists on their own time just to see the geology of the recharge zone. "When I go on vacations, it is to look for fossils, scuba dive or climb a volcano. It helps me understand geology better."

The RRC supplied Eagle Pass Water Works with a letter of support for its application for matching grant funding from the U.S. Department of the Interior. The water system applied for about $7.5 million in funding to help with the Maverick Basin Aquifer, including for testing and future infrastructure.

"We're doing testing right now to see how we can use that water," said Barrera, the water system's general manager. "If everything is good, including if we have enough flow and if it is not too saline, we hope to be able to use it in the future. It is right under our feet."

News about RRC's work on the aquifer was so important to the water system that it suspended work on developing a pipeline until it finds out whether the water in the aquifer will suit its needs.

"An aquifer is a lot less money" than piping in water, Barrera said. "It is a lot less politics. It is a lot less issues to deal with."

When the RRC identified the aquifer last year, the agency hired a San Antonio laboratory to conduct tests on the water, which showed it meets or exceeds federal and state drinking water standards. Most water occurring so deep under the surface of the earth is extremely salty or has other constituents.

More careful testing by the water system is necessary to determine if any constituents need to be removed and if it impacts water corrosivity, which would need to be accounted for before allowing it into the distribution system, Barrera said.

The water system is also testing to determine how much water the aquifer could reasonably supply.

"I think it is a really good bet there is a lot of water down there," said Harcourt, GAU's manager.

The RRC has processed and is issuing nearly a dozen P-13 applications to convert these Glen Rose Formation wells, originally drilled for oil and gas, into water wells that could benefit Eagle Pass' water system, he said. Wells applying for conversion either produced small amounts of oil or gas or were dry holes (meaning no hydrocarbon production).

Most oil and gas wells in the state, about 90%, actually penetrate a major or minor aquifer, Harcourt said, which is why understanding exactly where the Maverick Basin Aquifer is is so important.

"You can extract oil and gas without harming the aquifer," he said. "That's what we do in Texas."

RRC INSPECTORS LEND HELPING HAND AS VOLUNTEER FIREFIGHTERS

In the small North Texas town of Burkett, the family of Golsons, including Justin and Travis, are passionate about fighting fires.

The brothers, who are both inspectors for the Railroad Commission, have been fighting fires since they were old enough to do so.

Their father runs the department, and their wives are also volunteers.

"During the recent devasting wildfires in Eastland and other surrounding counties, Justin spent approximately 36 hours and Travis approximately 30 hours actively fighting these fires," said Tammy Shelton, a team leader for RRC's Critical Infrastructure Division who previously worked alongside the Golsons in the Oil and Gas Division's Abilene District. "These gentlemen put their own lives in danger without hesitation every time the call comes in, and without men like Justin and Travis, the rural communities of Texas would be without any fire protection."

Both of the Golson brothers are among many at the RRC who spend time volunteering to help their communities. Texas Government Code §661.905 and RRC policy allows employees who volunteer as firefighters, emergency medical service workers and search and rescue staff to attend up to five days of training per year and can be granted time off for emergency situations.

"You don't do it for the money," said Justin, who is the Abilene District's H2S coordinator. "It is about just getting out and helping people."

The area around Burkett, which is southeast of Abilene, is part of the state's rolling plains and has abundant grasslands and farm fields, which can be subject to wildfires during windy and dry conditions.

That's partly why the Burkett Volunteer Fire Department, which was created in 2003, is so important to the community. When the need arises, people living in the area come together to help each other out.

"It is truly amazing to see people do that, to save a neighbor's house or a stranger's house," Justin said.

Without the volunteer fire department, response time would be double or even triple what it is now, the brothers said.

The people who volunteer understand local conditions very well, and the vehicles they use are specific for the terrain.

"A lot of the big departments can't get off pavement," said Travis, who is the Abilene District's cleanup coordinator. "The volunteers are mostly off road."

Because of the volatile nature of hydrocarbons, fighting fires is also important part of the RRC's mission of protecting public safety and the environment. Statewide Rule 21 specifically addresses fire protection and is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among the items inspectors are looking out for when on oil and gas leases.

"When you go to tank batteries, and you are looking at the tanks and there are trees growing over the top, if that tree caught on fire, it could burn up and drop on the tank and blow up the tank," Justin said. "If you have these pumpjacks with electricity and motors running, and Johnson grass that's up to your neck, that's a fire hazard. I had one in which I told the pumper he had to spray his weeds and get that stuff out of there, so it does not pose a fire hazard. When I came back the next time, it was all starting to turn yellow."

When the grass dies, it dries out, which is even more of a fire hazard, he said.

The RRC is often called into command centers by the Texas Department of Emergency Management when there are large fires.

"Being from the area and from inspecting oil and gas wells, we know where things are," Travis said. "When we have a fire, we can let incident command know: 'Look, this is what's over here. Just keep an eye on it and make sure you do not drive over the top of a flow line when a fire is burning there.' They may not know there is an oil well in the back of a pasture that has a fire burning through."

It is not just hydrocarbons that pose a threat. In sour oil fields, if hydrogen sulfide is released, the Occupational Safety and Health Administration notes that just 700 parts per million of H2S would knock a person out instantly, and above 1,000 ppm would result in "nearly instant death."

"Probably a month ago, there was a fire at Pioneer on the old lease we used to pump. We knew the lease was sour," Travis said, so the district notified the TDEM coordinator about the hazard. "They pulled their resources out for fear if a flow line caught on fire, it could vent sour gas and threaten the firefighters working there."

In that fire, the brothers coordinated with the Texas A&M Forest Service and shared maps of where all the oil wells were.

The inspectors also coordinate with oil and gas operators to make sure they are doing what needs to be done to mitigate fire risk.

"In the Pioneer fire, I called the pumper and said, 'Hey, there is a fire out here,'" Travis said. "He immediately went out and start shutting wells in to stop the flow of the gas and the oil. If something did catch on fire, it was just going to burn whatever was in the line and not continuously flow product out. That is one of the major things they do is shut wells in to minimize the amount of product that could be burned."

Being on the volunteer fire department means they know when something happens, and they use that knowledge as RRC inspectors.

"If there is a fire on an oil lease, the operator is supposed to call it in and let us know, and sometimes, they don't always do that," Travis said. "A lot of times, it is because they don't know because they are not out there. When we get the page [as a volunteer fire firefighter], we know it's there. Then we can start calling operators and say, 'Hey, your tank battery is on fire or you have a fire burning through your lease. You need to get out here and call the commission and get everything started.'"

Working on a volunteer fire department is not without risks.

"You don't get paid for this," Justin said. "You don't get insurance. If you get hurt, you are on your own."

But it is worth it to help the community when it needs it, he said.

And with the RRC supporting them, they know they can depend on their salaries and health insurance.

The brothers worry that many rural volunteer fire departments are in danger of shutting down because they don't have new people stepping up to keep them staffed.

"We need the volunteers," Justin said.

EAST TEXAS COAL MINE WINS RRC'S ANNUAL RECLAMATION AWARD

RRC's commissioners in May recognized work done at the Marshall Mine in East Texas with its annual Texas Coal Mining Reclamation Award.

Commissioners noted Caddo Creek Resources' efforts to return the area back to its natural state.

The mine was transformed from full operation to complete reclamation in less than 18 months. To do this, they moved about 4.5 million cubic yards of material, including 2.5 million cubic yards of spoil and 2 million cubic yards of soil suitable for plant growth and replanted the area.

Most of the mine (77%) was converted to fish and wildlife habitat, and the rest of the area includes pasture, industrial space and reclamation ponds that provide water to wildlife and future cattle or livestock and sedimentation control for any surface runoff before vegetation is fully establishment.

"Caddo Creek Resources exemplified responsible ownership and deserved to be commended for what they accomplished," said RRC Director of Surface Mining and Reclamation Division Brent Elliott. "The mine, while short-lived, served a useful purpose, but now it has been returned to a state as good as or better than before mining started."

The mine received its permit in March 2012 and ceased mining in March 2021. Lignite from the 2,400-acre mine was converted to activated carbon and used in a wide variety of filtration and purification products manufactured by the mine's owner, Cabot Norit Americas.

Over the life of the mine, 1.12 million tons of lignite were produced with a yearly average of 207,055 tons.

The mine will continue to be monitored for at least five years to ensure water quality standards are met and vegetation quality and quantity has been demonstrated.

A reclaimed area at the Marshall Mine with furrows of planted trees.

RRC WORKS TO PROTECT ENDANGERED TOAD DURING RECLAMATION OF ABANDONED COAL MINE

Before the RRC could address a century old, abandoned coal mine in Central Texas, it had to develop a plan of action to protect an endangered species during work.

RRC's Bailey-Stevenson Project, located between Bastrop and Camp Swift, is in the middle of known habitat for the Houston toad.

"The site had to have extensive Houston toad mitigation," said Katie Upham, Abandoned Land Mine Program Manager. "We put up an exclusion fence, and we had a biological monitor, a biologist who is permitted to pick up endangered species."

Before construction could begin to dig out and fill in nearly two dozen sink holes, the exclusion fence – which, as the name suggests, was designed to keep toads out – was set up where the construction would take place, Upham said. Once up, the interior of the fence had to be extensively surveyed for any toads present and remove them, if needed.

And construction could only occur during a narrow window to minimize any harm to the toads.

The sink holes were the result of underground tunnels from what is believed to have been part of the Miley Spur Mine, which operated from 1919 to 1929, and was operated by the Belto Mining Co., according to survey work conducted by the Colorado River Authority and published as the "Mining History of the Powell Bend Lease Area" in 1982.

The tunnels used to extract coal averaged about 30-35 feet under the surface and eroded over time, eventually collapsing and creating sink holes, said Joe Parks, Assistant Director of RRC's Surface Mining and Reclamation Division.

Because the sink holes were not near any buildings or other structures, the AML program was able to use sandy-clay subsoil material to fill the excavated holes rather than cement, which provides more structural support.

The actual construction work and other site remediation efforts, including revegetating the areas with grasses known to benefit the toads and other species, cost less than the development work beforehand: $127,000 versus $175,000.

Because the work had to be done within a narrow window between toad breeding season and migratory bird movement, AML staff relied upon the timely

help of other RRC staff, Parks said, including Patrick Shelton from General Counsel, Matt Bowman from Procurement and Theresa Lopez, the Procurement Director.

“Otherwise, we might have had to wait another year to get this project started,” Parks said.

The work removed any potential threats to public safety and the environment, providing both prime habitat for the toad and useable property for the landowners.

Adjacent landowners, who are also being impacted by the same historic mine, came forward during construction and will likely be part of a future AML project, Parks said.

RRC FINISHES FIVE-YEAR, $14.7 MILLION EFFORT TO CLEAN UP ABANDONED OIL WASTE RECYCLING FACILITY

A five-year project to remediate an abandoned East Texas oil waste recycling facility was completed at the end of January.

RRC's $14.7 million cleanup of Enviropave's abandoned East Texas Reclamation Plant, a few miles southwest of Kilgore, had been ongoing since August 2017.

The abandoned site not only had contaminated soils and other products that had to be removed, but there was also a stream which was threatened by the unmanaged waste left behind.

The former facility previously had a stationary treatment permit for reclamation and would take wastes contaminated via oil and gas operations, such as drill cuttings and soils, and turn them into usable products, such as road base. The facility failed to uphold the requirements for its permit and had its permit revoked in 2016 by final order after a series of violations were cited during RRC inspections.

After the permit was revoked, the company filed for bankruptcy, leaving the mess in the hands of the State Managed Cleanup Program.

"The effort was so large that cleanup coordinators from around the state and technical staff from Austin had to travel to Kilgore to help oversee the cleanup," said Art Correa, RRC State Managed Cleanup Program Team Lead.

Correa explained that contractors cannot work unless RRC staff are onsite, approving and inspecting all jobs.

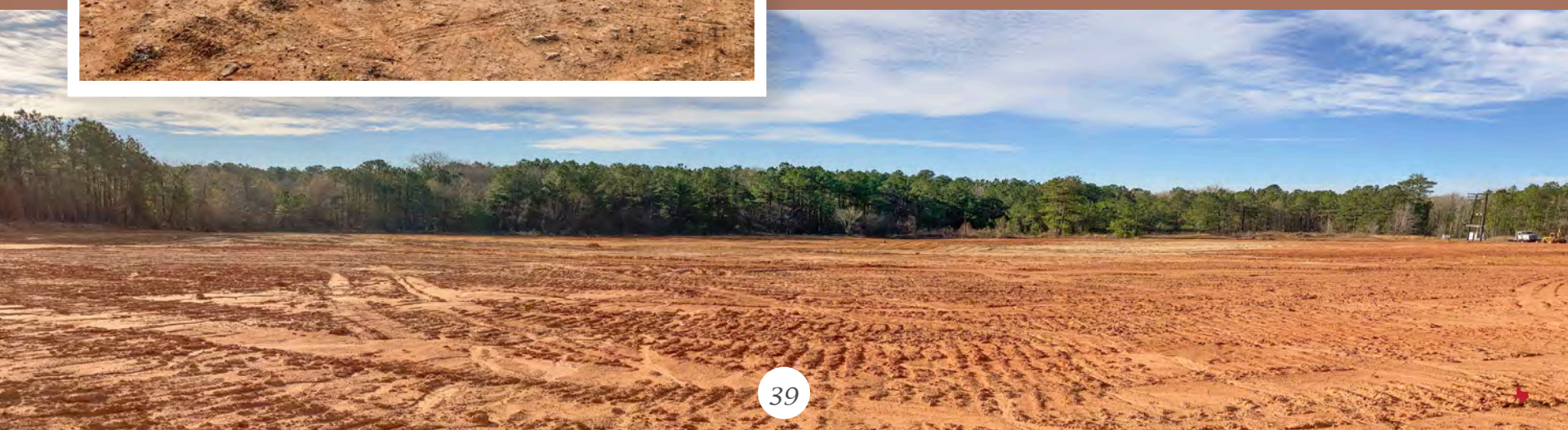
"We're the first ones in the gate and the last ones to leave," he said.

The first phase, which focused on the removal of waste, was completed in August 2018. The final phase of cleanup involved the removal of an additional waste, subsurface excavation, confirmation sampling and backfill so that the surface could be contoured and hydromulched with native grass seed. This final phase of waste removal and backfill was completed December 2021.

The largest challenge for the cleanup work was dealing with the rain.

"Rainwater that falls on the waste becomes contact waste water," said Peter Pope, Manager of RRC Site Remediation. "We are protecting the environment by eliminating the accumulation of rainwater in a fairly wet part of the state by removing this waste and backfilling with clean soil. Now, we've permanently protected the creek from the threat of contamination."

The RRC is maintaining monitoring wells at the site and keep watch for any impacts to groundwater.



RRC APPROVES OPERATOR-LED RESPONSE PLANS TO ADDRESS SEISMICITY IN PERMIAN BASIN

The RRC approved operator-led response plans to address seismicity in two areas of the Permian Basin.

The plans call for variable reductions in disposal volumes of produced water (water that comes out of the ground with oil and gas during production) across all disposal wells. It will provide the RRC with additional information with the expansion of the seismic monitoring stations in the area, which will provide better data on the precise location and depth of earthquakes.

With cooperation from operators of injection wells in the Northern Culberson-Reeves Seismic Response Area (SRA) – which is adjacent to Guadalupe Mountain National Park to the west and is near the border of New Mexico to the north – the agency began implementation of the first-ever operator-led response plan on March 1 to address the seismicity and ensure the safety of residents and the protection of the environment.

The plan is meant to reduce the intensity and frequency of earthquakes, such that recurrence of 3.5 or greater magnitude events is decreasing by December 31st, 2023.

In May, the RRC approved an operator-led response plan for the Stanton SRA, which was created in January and has had more than nine earthquakes exceeding 3.0 magnitude, including a 4.2 earthquake north of the eponymous city in December 2020 and 4.6 in December 2021. The response plan is designed to reduce the frequency and intensity of earthquakes, including a goal to eliminate 3.5 magnitude or greater earthquakes no later than May 15, 2024.

"Having the operators leading the effort to create the response plans allows for quicker actions that should ultimately lead to a reduction in the number and intensity of earthquakes," said Sean Avitt, Manager of RRC's Injection-Storage Permits Unit. "However, we made it clear if circumstances change, the Commission may have to take further actions to reduce seismicity."

In fact, following a 5.4 magnitude earthquake in Reeves County in November, the RRC implemented several revisions to the seismicity reduction response plan for the Northern Culberson-Reeves SRA.

The SRA boundary was expanded northward to the New Mexico border, which increased the size of the SRA from 2,366 square miles to 2,601 square miles. There are 78 active disposal wells in the revised SRA.

The target for reducing daily injection volumes in deep disposal wells is being reduced even further. Operators of deep disposal wells in the Revised Response Plan agreed to reduce the collective volume of disposal from the original target of 298,000 barrels per day by June 30, 2023, to 162,000 barrels per day by that date. This would be about a 68% drop in disposal volume compared to January 2022 before the plan went into effect.

More changes will be on the way as RRC staff continue to study revisions to the shallow disposal well injection volume schedules in the SRA and will be looking at changes along with possible new data collection efforts.

VIEW RRC'S SEISMICITY RESPONSE PAGE

Northern Culberson-Reeves and Stanton are two of three seismic response areas the RRC created to address injection-induced seismic activity from disposal wells. The other is the Gardendale SRA between Odessa and Midland, where deep disposal was indefinitely suspended by the RRC in December 2021.

WHEN THE NEED ARISES, RRC TURNS TO OPERATOR CLEANUP PROGRAM TO HANDLE SPILLS

When complex spills need to be cleaned up at oil and gas sites run by active operators, the RRC hands such projects over to its Operator Cleanup Program to ensure public safety and the environment are protected.

In the spring of 2016, a particularly violent storm over the Eagle Ford Shale east of San Antonio damaged a tank battery at an active well site, causing the release of about 840 barrels of crude oil into a corn field and adjacent residential neighborhood.

Crude oil mixed with rainwater, and the mixture migrated through a corn field onto a county road and into culverts, roadside ditches and two retention ponds within the neighborhood.

Response actions were initiated by the operator under RRC district office oversight. However, because of the extent of the release, oversight of cleanup efforts was eventually referred to the agency's five-person OCP, which oversees cleanup of such sites.

"Most of the time, the sites are referred to us from the district offices," said Amanda Kindt, a toxicologist and team lead for the OCP. "There's other times when the operator voluntarily enters into the program."

The Operator Cleanup Program ensures compliance with Statewide Rules 8 on water protection and 91 on cleanup of soil contaminated by a crude oil spill.

"We have a pretty seasoned group," said Peter Pope, Manager of RRC's Site Remediation Section, which the OCP is part of. "We have dedicated staff who apply their knowledge and experience in environmental investigations to overseeing operator-led and complex-area, sensitive cleanups."

The OCP is currently overseeing about 480 active sites around the state. The group also helps district staff with some investigations, such as water well complaints.

Most cleanup sites are overseen by inspectors in district offices around the state; however, some spills are too complicated and time-consuming to oversee with district staff alone, which was the case for the site east of San Antonio impacted by a crude oil spill caused by a storm in the spring of 2016.

In that case, the operator responded immediately upon discovery of the leak, which had left oil-stained vegetation in its wake and partially flooded a converted-garage turned into an interior-living/game room with the crude oil mixture.

The operator deployed vacuum trucks to remove as much of the water and oil mixture as possible. Then the operator's environmental contractor worked on removing oil-covered vegetation and soil and steam cleaned the surfaces of affected sidewalks, driveways, roadways, buildings and fences.

By year's end, the operator concluded the cleanup of the neighborhood, corn field and tank battery site. Sampling overseen by OCP and district office staff confirmed

the successful cleanup of the impacted areas, and the OCP program issued a no-further action letter to the operator.

Contaminants at OCP sites, which can affect soil and groundwater, are cleaned up to appropriate risk-based concentrations using the Texas Commission on Environmental Quality's Texas Risk Reduction Program standards.

When a program enters into the program, OCP staff, which includes geoscientists, will evaluate all aspects of a spill using their knowledge of geology to understand how it is moving through affected soil and/or groundwater, what the risks are to the public and the environment, how natural processes impact a chemical and more.

"It takes time," Pope said. "Environmental investigation is an iterative process where you have some information about the release, and you have ideas about where things might have gone, but then you got to put the holes in the ground to map all this stuff out to figure where it went. Then you need to come up with a remediation plan based upon that."

OCP staff will provide the operator with a letter describing the regulatory requirements and expectations for assessment and cleanup and may require certain monitoring to be done, such as drilling a groundwater monitoring well. The operator will provide a detailed action plan to OCP.

Before final release and a no further action letter can be provided by OCP, the operator submits a final report describing the corrective actions and final sampling performed to confirm it has been properly cleaned to appropriate risk-based standards.

Operator Cleanup Program projects throughout the state can be viewed as a data visualization.

VIEW OPERATOR CLEANUP DATA VISUALIZATION

KEY RRC UNIT HELPS PROTECT UNDERGROUND SOURCES OF WATER FROM OIL & GAS

RRC's Geologic Advisory Unit plays a crucial role in understanding the state's geology and protecting underground sources of freshwater from oil and gas operations.

Its functions began as part of the Texas State Board of Water Engineers, which was formed in 1913 as a result of House Bill 37 with "the broad mission of conserving state waters 'in the greatest practicable measure for the public welfare,'" according to the Texas State Library and Archive Commission.

The TSBWE changed its name to the Texas Water Commission in 1962. Then, what is now known as RRC's Geologic Advisory Unit bounced around as the Texas Legislature sought to find where it fit best: from the Texas Water Development Board, the Texas Department of Water Resources, back to the Texas Water Commission, the Texas Natural Resource Conservation Commission, the Texas Commission on Environmental Quality and finally to the RRC in 2011.

While the RRC is very much a regulatory agency that handles energy issues, such as oil and gas, surface mining of coal and uranium, pipeline safety and other related issues, the RRC must also have expertise in geology in order to effectively manage the production of energy resources from the ground.

The RRC started requiring that operators provide groundwater protection determination letters in 1950, which at that time had to be obtained from the Texas State Board of Water Engineers. This led to the formal creation of the Surface Casing Team at the TSBWE in 1955, which became the GAU.

RRC's requirement for groundwater determination letters, often called water board letters, would later be codified into law by the Legislature.

Today, operators request the groundwater determination letters from RRC's GAU by submitting a Form GW-1. The letters, which are good for five years, determine where casing and cement needs to go for any wells drilled within the area described in the document.

"Most gas and oil wells, about 90 percent, penetrate a major or minor aquifer," said James Harcourt, P.G., Manager of the Geologic Advisory Unit. "A majority of the water used in state, about 60 percent, comes from groundwater. If we don't engineer oil and gas wells properly, much of the water our state uses could be at risk."

Instead of relying on individual operators to make their own groundwater determinations, which is the case in some states, having RRC complete the task ensures consistency in approach, allows for a bigger picture view of the geology and speeds up the process by not having the agency trying figure out the approach of each operator. Any requests for groundwater determination letters are usually completed in fewer than two days, depending on the complexity.

The GAU also takes other information into account for operators, such as zones used by Class I hazardous waste injection wells that are permitted by the Texas Commission on Environmental Quality or salt dome structures, which are technically challenging. In addition to freshwater, the GAU verifies the suitability of geologic zones for Class II injection and storage of oil and gas byproducts.

Part of the secret of its success is the sheer volume of geological information that the GAU has collected over the 109 years since the board of water engineers was formed. When an oil and gas well operator needs a new groundwater determination letter, it typically provides the GAU with applicable geophysical data that has been collected.

Information is added to GAU's library, much of which is available for the public to research. Also, some data that the GAU receives is proprietary by request of the operator and is kept confidential for a period of three years for land-based wells and five years for offshore.

Much of the GAU's information is available online via the Surface Casing Estimator, which the RRC and the University of Texas at Austin's Bureau of Economic Geology maintain.

Royce Massey, GIT, lead technical GIS project manager for the GAU, has been working to improve those online records by digitizing older GAU records and rescanning documents that were previously scanned at lower resolutions.

RRC is part of a greater network of agencies that conduct geological work, including the Texas Water Development Board, the Bureau of Economic Geology, Texas Commission on Environmental Quality and the United States Geologic Service. Information is shared, as needed, between the agencies to improve geological understanding connected to what that agency is doing.

Key geologic staff of the respective agencies meet regularly to update one another on new and ongoing projects, technology, tools and techniques. These types of meetings are encouraged by the Legislature and called groundwater coordination meetings intended for both information exchange and to promote efficiency in the allocation of state resources.

In 2021, the GAU identified and mapped then Maverick Basin Aquifer in the Glen Rose Formation in a semi-arid area along the U.S.-Mexico border, which is an unusually deep freshwater aquifer more than a mile under the surface in some places. That information was shared with the TWDB, which officially designates aquifers and conducts statewide water planning and facilitates funding for water works projects.

The GAU also helps with geological investigations, such as with RRC's seismic response areas. The unit will also play a role in the future if RRC is granted primacy by the federal government to permit the underground storage of carbon dioxide.

Cristian Astorga, P.G., GAU's lead technical geologist, has been working to provide RRC's Underground Injection Control Program with detailed geological maps of the seismic response areas with every well plotted.

"The underground is really dynamic," Astorga said. "Every time we get new information, we add a piece to the puzzle. It gives us a better understanding of what the underground looks like."

EFFECTIVENESS OF UTILITY LOCATING SERVICES SHOWS IN PIPELINE DAMAGE STATISTICS

RRC's pipeline damage prevention efforts showed continued improvement in 2021 thanks to utility locating services. The statistics also revealed increased pressure from fiber optic line installations.

Since RRC's Pipeline Damage Prevention Program started on Sept. 1, 2007, it has kept various statistics on pipeline damage to both show where improvement needs to be made and also to measure progress.

State law requires people to call 811 before digging, and more and more people are doing just that.

In 2021, the total number of calls to get underground utilities located was 4.31 million, up from 3.78 million in 2020.

Yet, despite the increased volume, damages per 1,000 calls was down. In 2021, an all-time low of 2.21 incidents per 1,000 calls was achieved, down from 2.5 incidents in 2020. And that is way down from 6.44 pipeline incidents per 1,000 in 2008.

The total number of pipeline incidents, however, increased slightly from 9,444 in 2020 to 9,531 in 2021.

"While we don't see the reduction in the number of damages having occurred year after year that we'd like to see, the fact that the number of locates being called in year after year has increased, which can be mostly attributed to the increased excavation occurring in our growing state," said Ricardo Gamez, a compliance analyst with the Damage Prevention Program. "The fact that we aren't seeing a significant jump in the number of damages is proof that our outreach is working."

According to estimates from the U.S. Census Bureau, the state grew from 29.1 million people in 2020 to 29.5 million in 2021.

Other types of statistics kept by Damage Prevention help make sense of what is occurring.

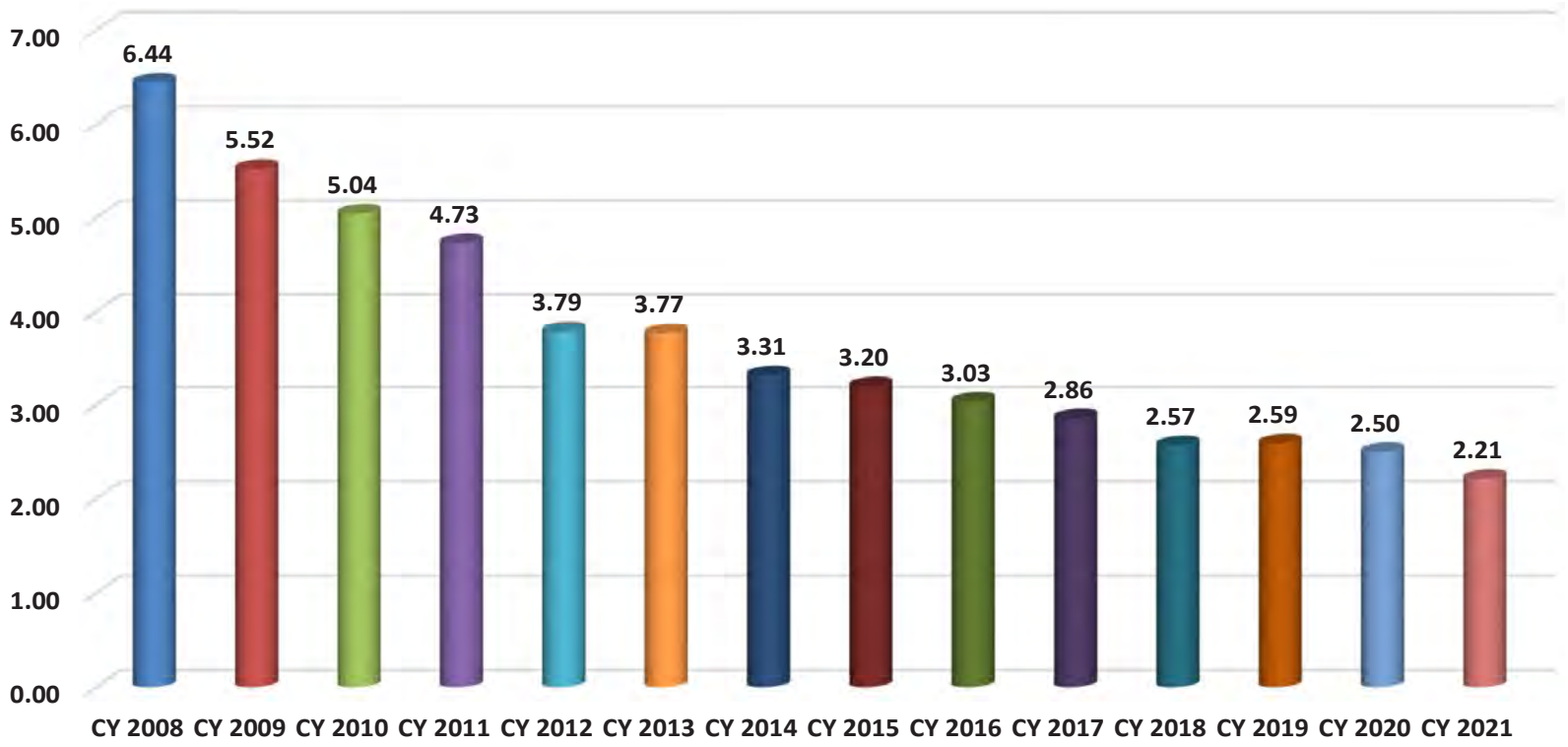
One of the categories includes Top 10 Root Causes. Not surprising, the number one cause for damage at 41% is not calling 811. The second leading cause is not keeping proper distance from utility locator marks at 22%. Utility locator error accounted for 13%.

Compared with 2020, the top cause for damage was also not calling 811, but the number was higher at 43%. Gamez believes that educational outreach efforts likely contributed to the number dropping.

Another category is Top 10 Types of Excavator. Contractors led the category at 79.12% in 2021, up from 75.5% in 2020.

"This is mostly attributed to the increased excavation in our growing state," Gamez said.

The second leading type of excavator in 2021 was municipalities at 4.72% followed by utilities at 4.42%. Homeowners accounted for just 2.74% of incidences.



The other categories of statistics kept by Damage Prevention include types of work performed and types of equipment used.

The top types of work causing pipeline damage in 2021 include telecommunications at 18%, sewer at 16%, water at 14% and fencing at 13%.

In 2020, telecommunications was just 12%. Gamez says the increase was due to an increase in fiber optic lines being installed.

Not listed in the 2021 top 10 list was landscaping, which was at 5% in 2020. Also, seeing drops was fencing, which was at 15% in 2020, and sewer, which was at 18% that year.

Gamez says Damage Prevention has made strides with excavators in those areas through educational outreach.

The top type of equipment causing damage in 2021 was the backhoe at 42% followed by hand tools at 25%. A number that jumps out from 2020 to 2021 was for boring, which went from 9% to 14%.

This is also attributable to the increase in fiber optic lines being installed in the state, Gamez says.

To see the 2021 statistics in fuller detail, visit this Damage Prevention webpage.

VIEW THE DAMAGE PREVENTION STATISTICS

KEY LEGISLATIVE GOALS EXCEEDED IN FY 22

The RRC once again exceeded key measures that protect public safety and the environment and facilitate the growing of oil and gas resources in Fiscal Year 2022.

The performance goals set by the Texas Legislature range from plugging abandoned oil and gas wells to conducting inspections and facilitating an increase in drilling permits during a year in which international conflict amplified the importance of the state's energy production.

"RRC staff's strong performance helped keep Texans' safe, while at the same time ensuring the vital oil and gas industry continued to support national and international energy demand and boosted the Texas economy," said Wei Wang, RRC Executive Director. "We continue to leverage cutting edge technology such as artificial intelligence and drones to improve efficiency for staff and operators, and we will use our experience to extend our success through the next year."

Legislative goals the RRC exceeded in FY 22 include:

Category	Target	Achieved
Number of orphaned wells plugged with the use of state-managed funds	1,000	1,068
Number of abandoned pollution sites investigated, assessed or cleaned up with the use of state-managed funds	200	245
Number of oil and gas well and facility inspections performed	345,000	359,278
Number pipeline specialized program evaluations performed	1,600	2,153
Number of coal mining inspections performed	400	405
Average number of LPG/CNG/LNG safety inspections per inspector	1,200	1,270
Number of drilling permit applications processed	12,300	13,551

RRC PROJECT IN REFUGIO COUNTY FIRST TO TAKE ADVANTAGE OF FEDERAL ORPHAN WELL FUNDING

RRC was able to quickly take advantage of federal funding to plug orphaned wells Infrastructure Investment and Jobs Act.In fact, the agency was the first in the country to begin such work in mid-October with the plugging of an abandoned gas well in Refugio County in South Texas, which was completed on the 18th.

The RRC anticipates the initial grant will be used to plug approximately 800 abandoned wells in FY 2023. These would be in addition to 1,000 wells the agency anticipates will be plugged this fiscal year by the successful State Managed Plugging Program (SMP), using industry fee and fine revenue from the Oil and Gas Regulatory and Cleanup Fund.

"The RRC's success and expertise with SMP was instrumental in quickly standing up the plugging project using federal funds," said Clay Woodul, RRC Assistant Director of the Oil and Gas Division for Field Operations. "Our established workplans and contracting will continue to help ensure neighborhoods and the environment across Texas are kept safe through our well plugging work."

The RRC has a web page on the federal grant funds for abandoned oil and gas well plugging. That page also includes information on the wells being plugged.

VIEW THE FEDERALLY FUNDED WELL PLUGGING PAGE

RRC GUIDED BY FY 23 OIL & GAS MONITORING AND ENFORCEMENT PLAN

RRC's Fiscal Year 2023 Oil and Gas Monitoring and Enforcement Plan helping agency focus its efforts to improve transparency and build upon measures that protect public safety and the environment.

The plan, which was approved by commissioners on June 9, outlines strategic priorities and provides statistical data highlighting the agency's enforcement efforts in its oversight of the oil and gas industry, including violations cited by rule. The plan was effective on the start of the new fiscal year on Sept. 1.

Among new information in next year's plan is an expansion of statistical data to include the previous fiscal year for progress and comparison purposes.

The plan explains RRC's inspection processes and enforcement procedures and affirms the agency's commitment to inspecting every oil and gas facility at least once every five years.

"Texas' oil and gas industry has become increasingly more important to maintain economic stability in the nation during global conflicts," said Wei Wang, RRC Executive Director. "The RRC is also committed to ensuring any expansion of oil and gas in the state is done responsibly in a manner protective of Texans and the environment, which the Oil and Gas Monitoring and Enforcement Plan helps to ensure."

Plugging orphaned wells is a critical component of the RRC's mission to protect public safety and the environment. The State Managed Plugging Program, which has exceeded legislative goals for six consecutive years, has the goal to plug another 1,000 orphaned wells in fiscal year 2023 using state appropriations funded with revenue from the oil and gas industry. Thanks to an infusion of federal infrastructure funding, the agency plans to plug an additional 800 orphaned wells.

In the next fiscal year, the RRC will deploy knowledge from its strategic analysis of flaring data. The resulting study will evaluate additional measures the agency can take on flaring and clarify any data discrepancies. Findings, including any recommendations for regulatory or statutory changes, will be shared with the Legislature and the public.

The agency is continuing to update its computing systems, which will result in more information being available online. Also, in the interest of transparency, the agency plans to provide more information via its social media channels demonstrating what oil and gas inspectors do, including how potential violations are cited.


LEADING TEXAS ENERGY
OIL & GAS ★ COAL ★ PIPELINES
RAILROAD COMMISSION OF TEXAS
OIL & GAS MONITORING & ENFORCEMENT PLAN
Fiscal Year 2023
CHRISTI CRADDICK
COMMISSIONER
WAYNE CHRISTIAN
CHAIRMAN
JIM WRIGHT
COMMISSIONER

RRC TAKES PROACTIVE STEPS TO HELP KEEP GAS FLOWING DURING WINTER 2021-22

Even before Weatherization rules went into effect, the RRC took proactive steps to ensure natural gas supply was flowing during Winter 2021-2022 to protect Texans.

Those steps helped ensure that there were no major disruptions that occurred in January and February.

One of the measures taken was site visits to oil and gas facilities. RRC inspectors conducted thousands of site visits beginning in the fall of 2021 to observe weatherization processes and tests.

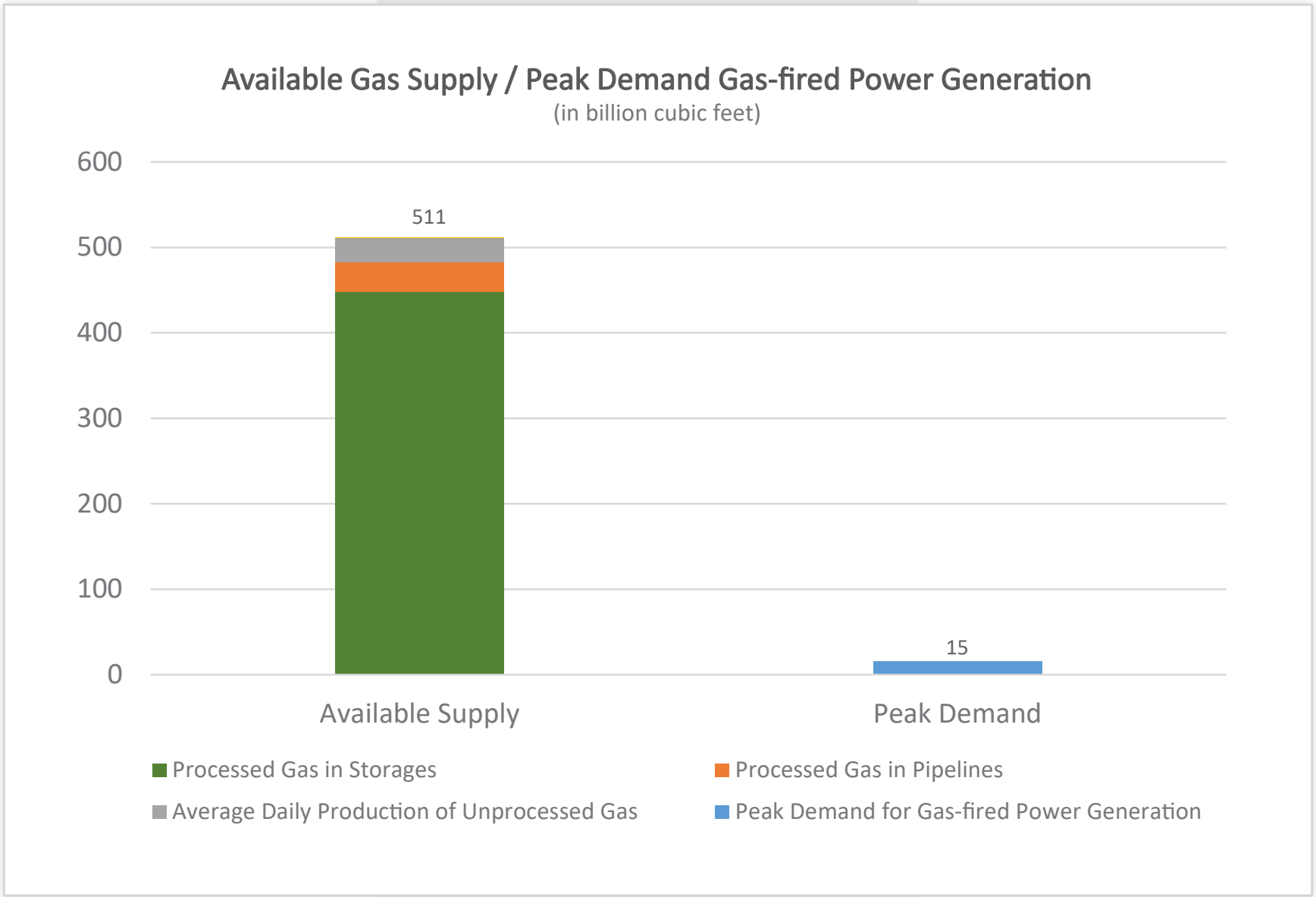
The visits were a boots on the ground, eyes on the assets approach for inspectors to see winter preparations. Inspectors also surveyed operators' field staff during the site visits, and the surveys included a list of weather preparedness procedures to gather real world information on the different methods being used by industry for the various types of facilities visited.

In additions to the visits, RRC staff conducted operational calls with major producers, pipeline companies, and gas utilities during the freezing events that occurred.

During the calls operators provided updates on winter precautions they were taking such as round the clock shifts at facilities and pipeline operators storing gas inside the pipelines. The calls were also helpful for operators to let the RRC know about any road problems for the RRC to send information to TxDOT to help operators get their crews and trucks in and out.

The RRC had also sent out a Notice to Operators asking them to delay any scheduled maintenance this week – if it was safe to delay – to help ensure adequate gas supply.

These took, and will continue to take, all measures necessary to help protect residents in weather emergencies.


Available Gas Supply / Peak Demand Gas-fired Power Generation
(in billion cubic feet)
600
500
400
300
200
100
0
511
15
Available Supply
Peak Demand
Processed Gas in Storages
Processed Gas in Pipelines
Average Daily Production of Unprocessed Gas
Peak Demand for Gas-fired Power Generation

RRC SEES SIGNIFICANT GROWTH IN DRILLING PERMITS OVER PREVIOUS YEAR

Growth in the Texas oil and gas industry can be seen a significant uptick in drilling permits over the previous year.

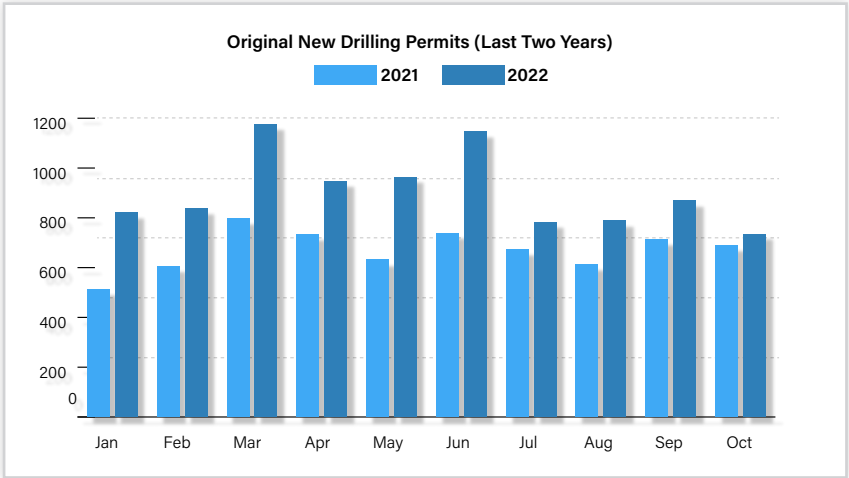
Compared to the same months in 2021, new original drilling permits have been up between 7% and 60% so far this year. In June of this year, for instance, the RRC granted 1,146 new original drilling permits, up from 739 in June 2021 or 55%.

Compared to June 2020, which only had 262 new original drilling permits, this month is up by 337%.

"I think that the reason we are seeing an increase in drilling permits is the fact that the price of oil is so high," said Lorenzo Garza, RRC Deputy Assistant Director for Administrative Compliance in the Oil and Gas Division.

Much of that can be attributed to demand. When the COVID-19 pandemic struck beginning in March 2020, demand for oil, especially, went down because a significant number of people were working from home and not travelling. This year, people are returning to normal activities.

Since February, pressure on oil and gas prices has also increased following global boycotts in response to Russia's invasion of Ukraine.



"With the increase in the price of oil, we are seeing some operators filing for recompletion permits to recomplete and downhole commingle production in older fieldwide units that they operate," Garza said. "We are seeing operators permitting in the Spraberry (TA) multiple wells to target the Middle Spraberry, Lower Spraberry, Wolfcamp A, and Wolfcamp B formations."

In May and June 2022, original recompletion permits were at 93 and 117 respectively, which were up from 75 in May 2021 and 84 in June 2021.

The increase in total permits being issued also includes staff approval of applications that do not need special notifications within three business days.

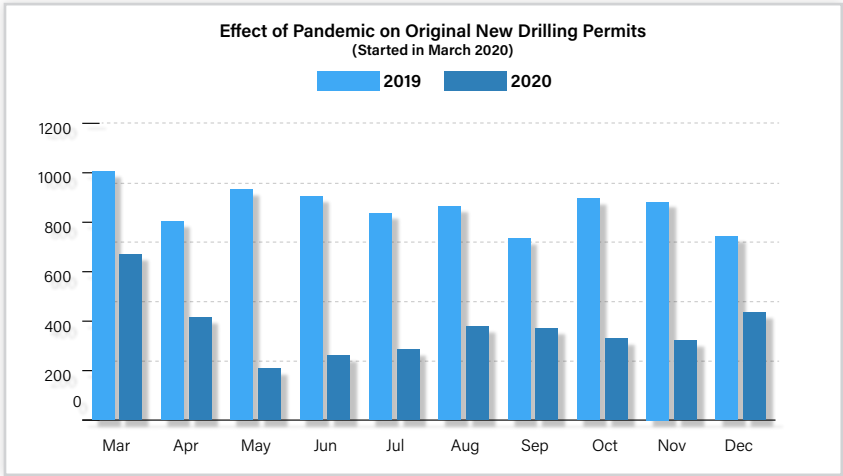
Among the various items they look for, drilling permit staff ensure geographic location on applications is correct, that the field being applied for is reasonable, if bottom hole information is correct, if well pooling information is correct (if needed), and they compare this information against the plat used in support of the application.

"We have been keeping up with the permits by releasing enhancements to the system that allow us, as well as operators, to file for exactly what they want," Garza said. "So that if an exception to Statewide Rule 40 (on acreage assignment for pooled development and proration units) is required, they can apply for it, and if no exception is required, they don't need to provide to us with depth severance information."

Notices for some drilling permits are needed to protect the interests of mineral owners, such as exceptions for Statewide Rule 37 on well spacing and Statewide Rule 38 on well densities.

"If a notice is sent out for an exception, it will take 21 days at a minimum before the application can be approved," he said. "This allows for any unleased mineral interest owners the chance to protest."

The quick turnaround on RRC issuing permits is necessary to keep up with the demand and to ease rising



inflation, which is has been attributed to high fuel costs, the result of high oil and gas prices.

"It is important to review the applications quickly so that operators can begin operations," Garza said. "With the state with the most operating rigs, we need to be able to let operators take advantage of openings in drilling schedules when they arise."

While new original drilling permits are up significantly this year over the last couple of years, they are still below earlier booms, such as 2,741 new original drilling permits in October 2014, which is more than double of what was granted by the RRC this month. Records dating back to 2009 can be found on this page.

FY 2023-27 STRATEGIC PLAN APPROVED

In May, RRC's commissioners authorized the agency's Strategic Plan for the Fiscal Years 2023 to 2027.

The primary section of the strategic plan is "Agency Goals and Action Plans," which shows the planned direction of the agency in our ongoing mission to protect public safety and the environment across Texas.

Among the key changes to this strategic plan is the inclusion of critical infrastructure. Following Winter Storm Uri in 2021, the Texas Legislature approved Senate Bill 3, which, among other requirements, mandated rules for the designation of critical gas infrastructure, creation of the Electricity Supply Chain Map of Critical Infrastructure followed by weatherization rules for critical gas infrastructure.

Objective 3.4 in the plan calls for establishing critical infrastructure compliance standards, regulating natural gas supply chain entities for power generation requirements and mitigating system outage risks during extreme weather events.

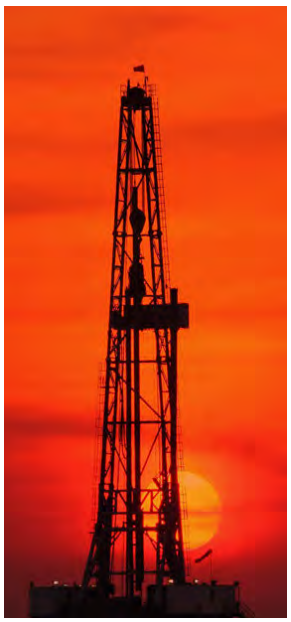
Strategy 3.4.1 has the RRC ensuring designated facilities incorporate weatherization and reliability standards and practices through communication, inspections, processing applications and monitoring reports.

The plan includes various measures for RRC to track, including:

- Number of weatherization inspections conducted
- Number of facilities out of weatherization compliance
- Percent of facilities that are required to weatherize that are non-compliant with weatherization standards
- Total number of designated critical infrastructure facilities

SB 3 and a future influx of federal funding for well plugging are having an impact on staffing levels at the agency, which is addressed in the Future Workforce Profile. Creation of RRC's Critical Infrastructure Division will result in 130 new positions, and federal well plugging funding will likely mean the addition of 35 new inspectors to help oversee plugging efforts.

VIEW THE 23-27 STRATEGIC PLAN



LEADING TEXAS ENERGY
OIL & GAS ★ COAL ★ PIPELINES

RAILROAD COMMISSION OF TEXAS

STRATEGIC PLAN

Fiscal Years 2023-2027

CHRISTI CRADDICK
COMMISSIONER

WAYNE CHRISTIAN
CHAIRMAN

JIM WRIGHT
COMMISSIONER

WARE TAKES CHARGE OF CRITICAL INFRASTRUCTURE DIVISION

The RRC hired its second director of its young Critical Infrastructure Division in May

Jared Ware earned a Bachelor of Science degree in Geography from the United States Military Academy and a Master of Science degree in Engineering Management from Missouri University of Science and Technology. He later earned a Master of Science degree in Geographic Information Science from Cranfield University in the United Kingdom.

Prior to joining the Railroad Commission, Ware was the deputy director of the Program Support and Environmental Assistance Division at the Texas Commission on Environmental Quality.

He also worked as the senior engineer (infrastructure, energy, and the environment) at the Army Futures Command G4/9 Directorate headquartered in Austin. He previously worked at the RRC in the Oil and Gas Division managing the Well Mapping Department.

Ware served as a Corps of Engineers officer in the United States Army with operational assignments as a deputy district engineer, battalion commander and division engineer. His academic assignments were at the National Geospatial-Intelligence Agency and the United States Military Academy West Point.

DARDEN IS NEW CHIEF FINANCIAL OFFICER

The RRC hired Pamela Darden as the new chief financial officer in September.

She has more than 27 years of experience in state government, including time with the School for the Blind and Visually Impaired, the Texas Military Department, the Texas Youth Commission, the Texas Residential Construction Commission, the Office of the Attorney General, the Texas Education Agency and the General Land Office.

She earned a Bachelor of Business in accounting from the University of Texas and is a certified public accountant.

"I was drawn to this position at RRC because I felt it was an ideal fit for my experience in state government," Darden said. "I saw it as an opportunity for me to continue my service to the State of Texas and to grow both personally and professionally. My goal is to continue the success of the Financial Services Division. I know I have big shoes to fill with Corey Crawford's departure from the division, but I am excited to take on new challenges."

Crawford remains with the RRC and is now project manager for the federal well plugging program in the Oil and Gas Division.

AMODWALA HIRED AS RRC'S FIRST CHIEF DATA OFFICER

In January, the RRC hired Alkesh Amodwala its first Chief Data Officer as the agency implements legislation on data governance.

Amodwala brings more than 15 years of experience in supply chain development, business intelligence, analytics and data governance/strategy to the RRC. Among his roles, he has worked for General Motors IT Branch – Global Purchasing and Supply Chain, Hewlett Packard and Home Depot.

Amodwala leads a new team in the RRC's Information Technology Services Division focusing on data projects. The 10-member team consolidates experts in the agency and is working on data initiatives as well as supporting the work of the agency's ongoing development of a map of the electric grid supply chain.

AGENCY DIVISION HIGHLIGHTS

OIL & GAS DIVISION

Drilling Permits

FY 22

Drilling Permits Processed: **13,544**

Average Time: **3.34 days**

Field Operations

Oil and gas well and facility inspections performed: **359,278**

Average number of oil and gas well and facility inspection performed by district office staff: **2,140**

Percent of Wells not inspected in last five years: **0.49%**

Total well population inspected: **36.5%**

Orphaned wells plugged with the use of state managed funds: **1,068**

Abandoned pollution sites investigated, assessed or cleaned up with state managed funds: **245**

OVERSIGHT & SAFETY DIVISION

Alternative Fuels Safety

Performance Measure	FY 2022 Total
Inspections performed	19,471
Violations cited	22,032
Exams/licenses/certifications /registrations	34,580

6,557 - Exams administered

532 - New exempt registrations

12,178 - Certification renewals

3,592 - Registrant renewals

7,255 - Licenses issued/renewed

4,466 - Trucks registered/renewed

Individuals Attending LPG Training/CE **5,203**

99.8% Completion reports processed within 30 business days

Completion reports processed **2,471**

92.8% Plans processed within 30 business days

Plan applications processed **69**

Current stats

- **4,685** currently licensed/registered companies/individuals
- **12,499** currently certified individuals
- **4,082** currently registered individuals
- **89,008** current alternative fuel installations

Rule changes

On June 28, 2022, the RRC adopted amendments to 16 Texas Administrative Code (TAC), Chapter 9, relating to LP-gas safety rules.

The amended and new rules were adopted to incorporate provisions of Senate Bill 1582 and Senate Bill 1668, both enacted by the 87th Legislature, and to make other updates.

SB 1582 amended Natural Resources Code §113.087 and §113.088 to allow required license examination to be performed by a proctoring service. SB 1668 added Natural Resources Code §113.0955 to require the RRC to waive its dispenser operation certification requirements for an individual who completes training and examination consistent with the guidelines established by the Propane Education and Research Council.

In conjunction with the adopted rules, the RRC has also amended one form and adopted four new forms related to 16 TAC Chapter 9:

- LPG Form 7, Cargo Tank Registration/ Re-Registration
- LPG Form 7A, Container Delivery Unit Registration/Re-Registration
- LPG Form 7T, Cargo Tank and Container Delivery Unit Transfer
- LPG Form 16P, Application for Dispenser Operations Certificate Exemption
- PERC-Based Training Application

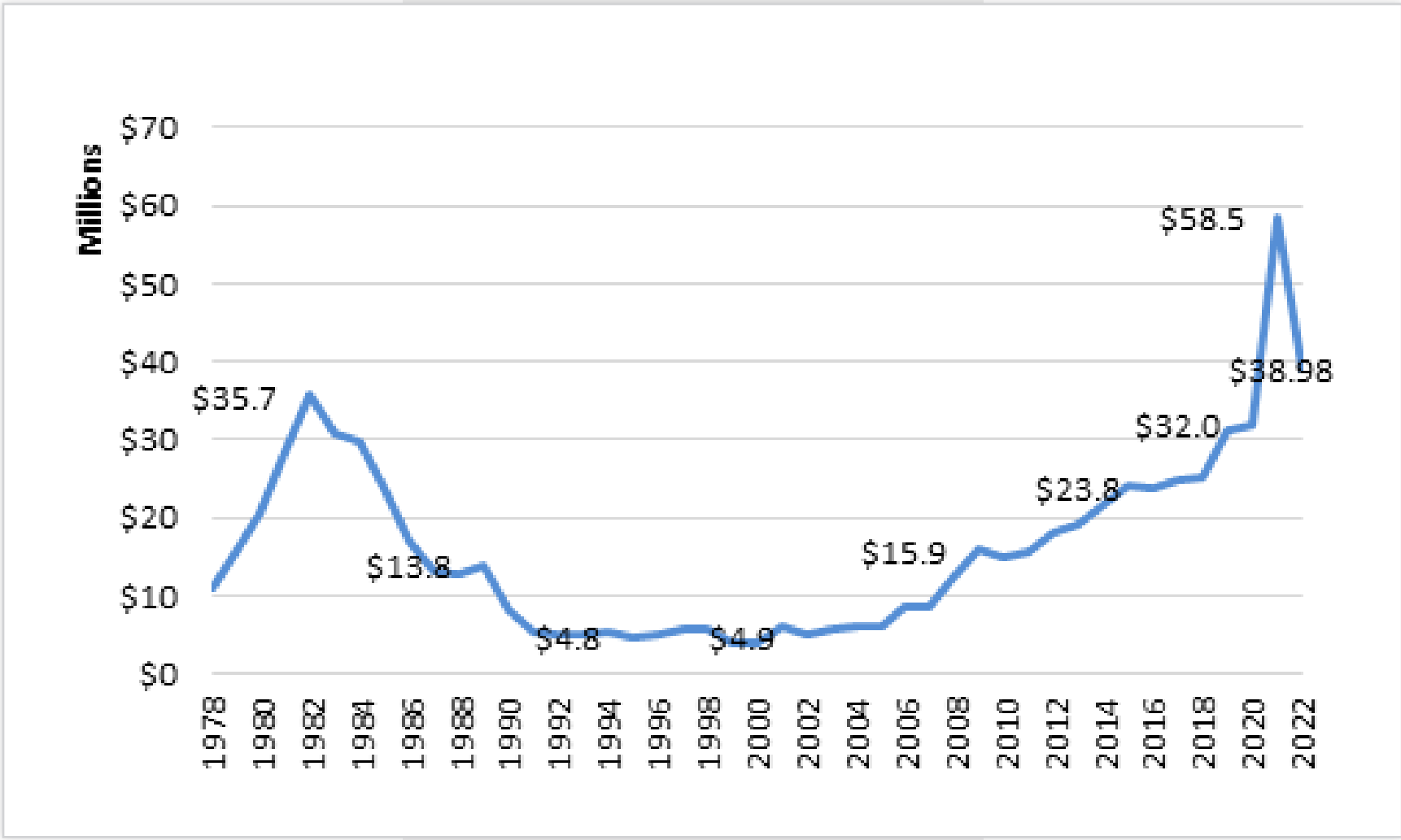
Market Oversight Section

The Market Oversight Section is responsible for responding to natural gas distribution utility customer complaints, reviewing gas utility tariffs, participating in gas utility statement of intent rate cases and administratively handling various other natural gas utility cases.

The section responded to **699** customer complaints and reviewed more than **140,000** tariffs. Also, the section participated in three statement of intent rate cases and processed more than **50** administrative gas utility filings. Staff also participated in the agency's curtailment rulemaking.

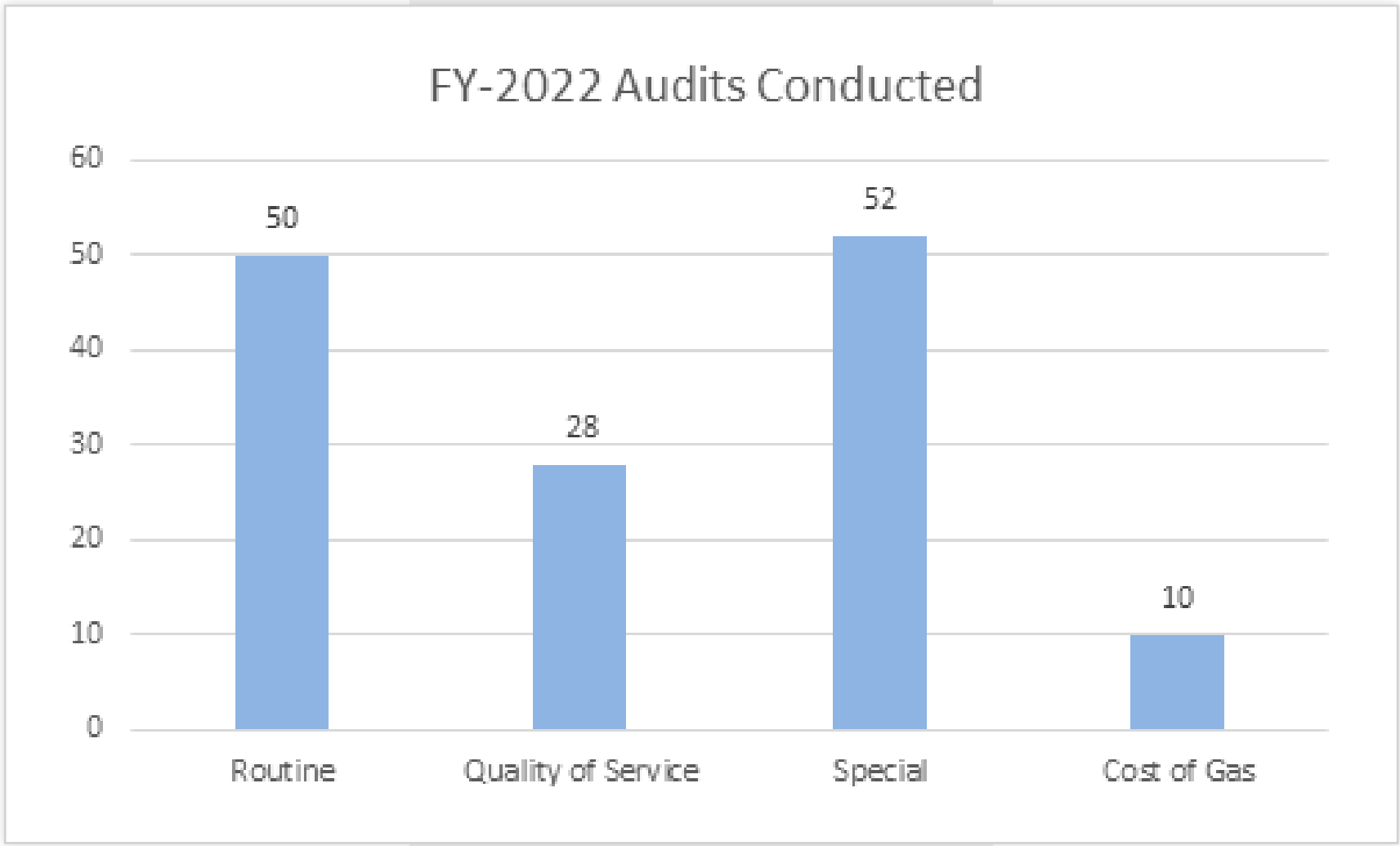
Utility Audit Section

Quarterly Gas Utility Tax collected: **$ 38,977,232**.



Audits Conducted

The Utility Audit Section's eight auditors conducted a total of **140** audits during FY 2022. This was 100% of the performance measure goal and an average of **17.5** audits per auditor.



Pipeline Safety

Pipeline Safety continued its focus on program inspections and new construction inspections, exceeding its goal for FY 22.

Number of pipeline specialized program inspections: **2,153**

Average pipeline field inspections per field inspector: **86**

Damage Prevention and Pipeline Support

The Pipeline Damage Prevention Program continued its mission of education in FY 2022. As more in-person events were scheduled, the program was able to pick up new outreach opportunities, such as the Texas Nursery and Landscapers Association Expo, the National Hispanic Contractors Association Expo and presenting at the RRC's Regulatory Conference in August.

Damage Prevention continued to work closely with Texas 811 staff on outreach efforts, attending in-person and virtual safety meetings. Combined with the increased Expo presence, Damage Prevention was able to get out in front of an estimated **8,000-plus** attendees in FY 2022.

The RRC's Pipeline Permitting team processed **3,963** permit actions and collected **$4,957,495** in fees this fiscal year.

CRITICAL INFRASTRUCTURE DIVISION

Notable goals set in FY22 as the division worked to become fully operational:

CI-D processed: **2,500**

CI-X processed: **375**

Emergency Operations Plans (EOPS) reviewed: **900**

Percentage of Weatherization Preparedness Training completed: **100%**

Total number of Desk Audits: **74** Operators and **194** Facilities (99% Completion Rate)

Total number of designated critical infrastructure facilities in FY22: **73,500**

Number of site inspections set to be performed: **7,000**

As for Nov. 1, the division had onboarded **87** employees for **96** total CID positions (90% fill rate)

SURFACE MINING & RECLAMATION DIVISION

Coal mining permit actions processed: **406**

Coal mining inspections performed: **405**

Percent of coal permitting actions completed within statutory review time frames: **97%**

HEARINGS DIVISION

In FY 2022, the Hearings Division returned to in-person hearings, while maintaining virtual Zoom hearings as an option. Although most hearings conducted in FY 22 were by Zoom, the number of in-person hearings increased toward the end of the fiscal year. The division is in the process of upgrading its hearing rooms to improve audio-visual capabilities, which will allow it to go forward with a hearing, even when a participant scheduled for an in-person hearing tests positive for Covid-19.

Stats for FY 22

- **1071** new cases docketed
- **800** hearings conducted
- **1,439** docketed cases considered and completed
- An average of **156** docketed cases completed per Oil & Gas examiner

INFORMATION TECHNOLOGY SERVICES DIVISION

This year has been a very productive year for the Information Technology Services Division. In addition to continuing our technology modernization efforts that include Mainframe Transformation and the Inspection Enforcement Tracking and Reporting programs, ITS has deployed new applications, supported existing applications, fortified the agency's security posture and strengthened the agency's data management practices.

In response to the need of an events management system for multiple RRC business areas, ITS started its events management project in late 2020. ITS worked with Alternative Fuels Safety, Oil and Gas Division and Pipeline Safety to develop a flexible event management system framework that can be customized by adding functionality to meet the needs of the multiple business areas. In April 2022, individuals registering for the agency's alternative fuel training, continuing education and exam events started registering using the Certification Exam Registration and Training System or CERTS. In May 2022, the events management system for RRC's Regulatory Conferences went to production. The final product interfaces with the RRC payment portal, and in addition to AFS, it supports event planning and management coordinated by the RRC Regulatory Conference Committee, Oil and Gas Division and Pipeline Safety.

In 2022, the Data Management and GIS team was added to the ITS division. The team hit the ground running and started working on several major initiatives. With support from the IT Support and Delivery the Planning, Sourcing, Governance, and Architecture teams and the Critical Infrastructure division, the Data Management and GIS team collaborated with the Public Utilities Commission to deliver the first version of the Natural Gas Supply Chain map that fulfills the Senate Bill 3 requirements. This map is leveraged by Texas Division of Emergency Management (TDEM) and is helping to resolve state's emergency response.

In the 87th session, SB 475 was passed which strengthens the state's standards on agencies' data management practices and storage.

The bill allows the agency to take a more proactive approach to data governance. The data governance program includes forming the agency's Data Governance Council. The Data Governance Council is a standing subcommittee of the IT Steering Committee. On May 3, 2022, the Data Governance Council held its first meeting and continues to meet monthly.

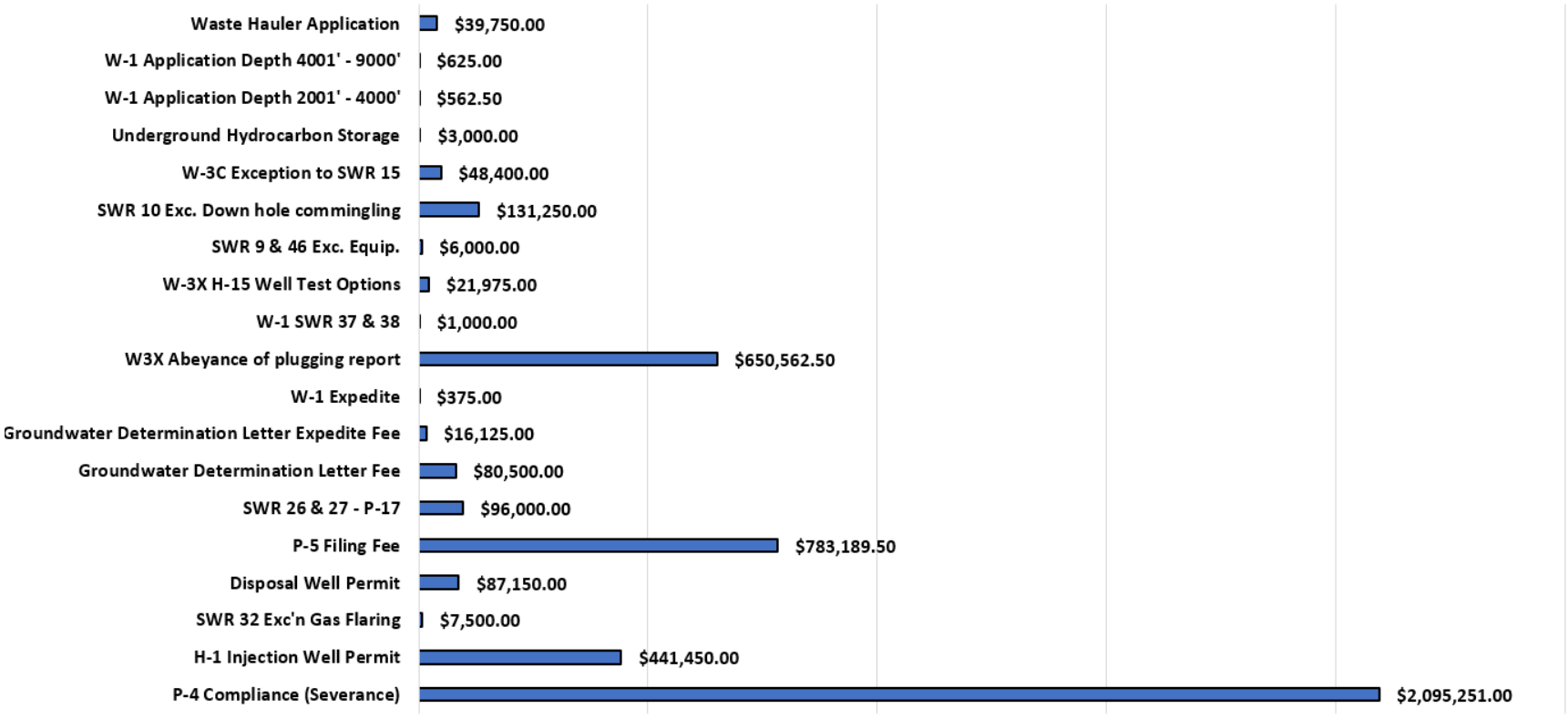
In June 2022, the RRC was onboarded to the Texas Open Data Portal. The portal is the official State of Texas repository for publicly accessible open data published by state agencies and higher education institutions. This data can be viewed, analyzed, visualized and exported on one platform. RRC has shared four datasets with the public via the portal and plans to share additional datasets in the future.

Central Records

Central Records has been open to the public, and the division is providing all services. The research area completed **614** research requests in FY 22. Researchers continue to assist the public in person, by phone and also by email.

The files and research teams had a banner year imaging a record **10,040,212** documents from paper and microfilm. Since August of 2012, ITS has imaged **60,262,967** images from non-digital formats.

The public sales team accepted payments totaling **$5,440,709**, some of the most frequent payment types are listed below.



HUMAN RESOURCES

- Trained **28** new managers during FY 2022. Training topics included: Interviewing and Hiring, CAPPS Training, Employee Handbook Overview, FMLA and Performance Management, Annual Evaluation and Merit process, Incident Reporting, Compensation policy, FMLA review, and Separations.
- Hired **212** new employees and handled more than **90** internal movements.
- Supported the efforts from the creation of the Critical Infrastructure Division, including hiring **90** new employees.
- Participated in veteran career fairs.
- Implemented changes to the HRIS system and trained employees on the usage.
- Continued to monitor COVID cases and support employees through accommodations.
- Conducted Manager Refresher Training on HR topics.
- Implemented Wellness Leave for the agency.
- Trained managers on the Performance Management process.
- Improved language on job postings and created benefits summary for job postings to increase candidate pool.

RRC HOLDS FIRST IN-PERSON REGULATORY CONFERENCE IN TWO YEARS

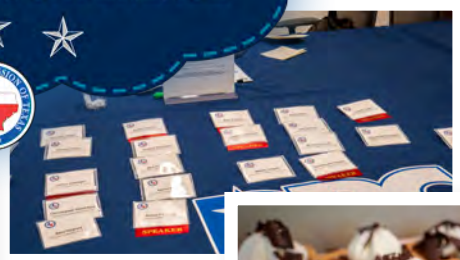
The RRC Regulatory Conference returned to in-person following a two-year hiatus because of the COVID-19 pandemic. In 2020 and 2021, the conference was held virtually.

The 2022 conference, which was held Aug. 8-9 at the AT&T Hotel and Conference Center in Austin, provided training and information to more than 680 attendees.

The conference, which featured more than 50 sessions, offered three tracks: Critical Infrastructure, Oil and Gas and Pipeline Safety. The conference included RRC presenters and also presenters from coastal and marine operators, EnLink, G2 Integrated Solutions, the Pipeline and Hazardous Materials Safety Administration, RCP Inc. and RegSafe.

2022

REGULATORY CONFERENCE



FLARING/VENTING APPLICATIONS CAN NOW BE VIEWED ONLINE

The RRC once again raised the bar for transparency with the launching in February of an online database of flaring and venting applications.

The Flare/Vent Exceptions Query, which is updated every night, makes available all applications for exception to Statewide Rule 32 (SWR 32) that were filed electronically with the agency from May 2, 2021, to present.

SWR 32 specifies exempt and authorized flaring in which an operator can flare, including for safety reasons, without going through the application process to obtain an exception to the rule. Any other flaring request would go through the application for exception to the rule and reviewed.

The RRC launched a new form, Form R-32, Application for Exception to Statewide Rule 32, for operators to apply for an exception to SWR 32. The new form provides specific guidance on when an exception to flare would be permissible, under which circumstances and for how long.

The online version of the form launched in May 2021, providing the necessary data to populate the query.

"The query shows our commitment to making the RRC an open book," said Wei Wang, RRC Executive Director. "Flaring has been a much-discussed topic, and we want our information to be publicly accessible as we continue to work to reduce flaring in Texas."

The flaring query has several fields for which a user could search including operator name, county, and exception status. All search results have an Actions button for more information on the applications.

VIEW THE FLARE/VENT EXCEPTIONS QUERY USER GUIDE

NEW PERMITTING PROCESS HELPS IMPROVE WATER RECYCLING EFFORTS

The RRC in July improved upon its permitting that lets oil and gas operators recycle domestic wastewater or wastewater produced by mobile drinking water treatment systems.

The new process helps operators avoid unnecessary paperwork, giving them the option to apply for a district-wide permit. The new process provides operators with the opportunity to take advantage of water recycling at multiple oil and gas well sites in an RRC district rather than applying for a separate permit for each location.

Operators can either use the treated water down hole or apply it to the surface. Allowable uses of such water recycling include the making of cement, for creating hydraulic fracturing fluid, dust suppression and controlled irrigation.

Under the location-specific program, operators can use up to 5,000 gallons of treated wastewater for up to 60 days at each site. There were 733 such permits in 2021, saving the state (using the permitted volumes) an estimated 165 million gallons or so of water.

The new district-wide permit will be good for one year and have the same limit of 5,000 gallons of treated wastewater at each oil and gas pad.

"Developing oil and gas wells requires water," said Paul Dubois, Assistant Director of Technical Permitting. "Water recycling allows operators to be more efficient in their use of this vital resource, especially with a growing need for the state to produce more oil and gas. Our new permitting process gives operators the flexibility to use our program at multiple sites without having to repeatedly submit the same paperwork over and over."

VIEW THE PERMITTING CHANGE NOTICE

NEW DATABASE COMPLETES RRC EFFORT TO MAKE HISTORIC OIL AND PRODUCTION RECORDS AVAILABLE ONLINE

The RRC in August made all historical oil and gas production data dating as far back as 1931 available via a new online database.

The Historical Imaged Annual Production Records database includes oil production dating back to 1931 and gas production going back to 1937. More than 1,300 rolls of microfilm containing about 2.2 million images housed in RRC's Central Records were digitized for the project.

While RRC Central Records is available for the public to research historic documents using microfilm, the digitized production records can be searched and downloaded anywhere and anytime you have an internet connection, not just when you are available to make a trip to Austin.

The move to convert historic records into digital formats is part of a broad effort to improve efficiency at the agency and to provide easy access to the vast amount of information held by the RRC, which was founded in 1891.

Production records, which are the most accessed microfilm in Central Records, are used by researchers, landowners, royalty owners, energy companies, public information requesters and others.

"We are excited to have our historic production records available on our website now," said Matthew Herzog, Manager of Central Records. "This is a significant undertaking and a historic moment for the Commission. Not only does it give the public quick and easy access to the information, but it can also save staff time that's spent researching for public information requests. Requesters can now get historical production information with the click of a mouse if they wish, and our staff can devote time for other tasks."

Production information from 1993 to present were already available on RRC's website in the Production Data Query.

The newly-digitized historical production records, prior to 1993 dating back to the 1930s, can be found by scrolling to the bottom of our Imaged Records Query web page. It includes a User Guide and a video tutorial to help new users search for historical records.

DECADES WORTH OF MISCELLANEOUS OIL & GAS RECORDS ALSO PUT ONLINE

For a 35-year period during RRC's mostly paper-based filing system, some records ended up in a miscellaneous folder.

This occurred when records came in that did not fit with others or were waiting on additional paperwork before being filed or even contained an error that prevented it from being properly filed.

Records such as these went into a system referred to as Wildcat and Suspense Records, which the RRC has now made available online.

For the last year or so, RRC's Central Records had 785 rolls of microfilmed suspense files containing 2.85 million images digitized. The files date from 1965 to 2000.

"Imaging this series of film ensures that online records of permits, completions and plugging from 1965 to present is much more complete," said Matthew Herzog, Manager of Central Records. "There is now even less of a need for someone looking for records to have to search through microfilm located only in Central Records."

Think of the suspense files as miscellaneous records that did not have a proper home, sometimes because of the length of time between a permit being issued and a completion being recorded.

"What happened back in the day was that people noticed that sometimes there'd be permits hanging out or sometimes there'd be other reports hanging out in that filing system not connected to something else," Herzog said. "Every few years, they'd pull those records put them on film."

This ensured a record was properly recorded.

The digitizing of these records will be a huge boon to RRC district staff searching for information about a specific well, such as a plugging report. Instead of having to put in request for Central Records staff to manually search for information through microfilm, now those records can be easily accessed through the new online system.

The digitizing of the suspense records follows the recent completion of an effort to put all of RRC's historic production records online.

A person interested in the suspense files cannot conduct a word search of the files; however, the files are ordered chronologically by API numbers as they were recorded, meaning they are automatically grouped by county.

The online version of the Wildcat and Suspense Records includes a user guide and an index.

ARTIFICIAL INTELLIGENCE HELPING RRC PROCESS SEISMICITY REVIEWS FOR INJECTION PERMITS

As part of an ongoing effort to leverage technology to improve processes, the RRC turned to artificial intelligence in 2022 to help conduct seismicity reviews for injection/disposal permits.

Technical analysts in the Underground Injection Control (UIC) Department perform seismicity reviews for injection/disposal well permits in areas susceptible to earthquakes and in certain geologic zones. UIC staff programed a machine learning algorithm to help with the large amount of information that needs to be processed and digested.

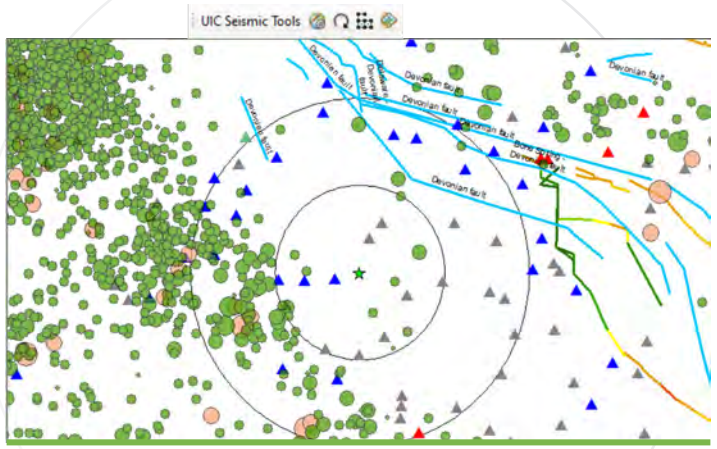
Along with some other changes, tasks performed by the machine learning algorithm have enabled UIC to wipe out a backlog of seismic reviews to zero today.

Like the technical analyst, the AI program weighs many factors related to the number, severity and proximity of earthquakes and uses a decision tree to assign a grade to the review. The higher the grade, the more the permit would be allowed to inject.

If AI grades the seismic review with low grades, the technical analyst will consult with the agency's seismologist on whether the permit request should be denied or be allowed a minimal amount of disposal (10,000 gallons per day). The AI process, which has a high accuracy rate, assists the technical analyst, who reviews the data and ultimately makes the final judgment.

"Over time, since we are accruing more data every day, we will be able to produce more accurate models by feeding the machine learning algorithm more data," said Sean Avitt, Manager of the UIC Department. "It's not a replacement for our technical analysts. It's a tool that not only allows them to do their jobs more quickly, but it helps them make the best possible decision on each seismic review."

By embracing technology, including the automation of certain tasks, the time it takes for injection/disposal well permits went from more than 100 days in November 2018 to about 20 days presently. More importantly, AI also ensures consistency in permitting decisions and how seismic and other factors are considered.



VIEW THE SEISMICITY REVIEW WEBPAGE

RRC WORKING TO IMPLEMENT NEW SOFTWARE FOR OIL & GAS

The RRC is working to transform the way its Oil and Gas Division handles its business functions.

As part of efforts to modernize its computing systems to improve performance and transparency of data, the agency has been developing a new software system, LoneSTAR (State Tracking and Reporting)

LoneSTAR is being built on the Risk-Based Data Management System (RBDMS) platform, which was developed by the Groundwater Protection Council, of which Texas is a member. It will allow for online filings and tracking of regulatory Oil and Gas Division information.

The first phase of LoneSTAR is processing filings for the *Form P-5, Organization Report,* which operators need to operate under RRC regulations; *Form W-3C, Certification of Surface Equipment Removal for an Inactive Well;* and *Form W-3X, Application for an Extension of Deadline for Plugging an Inactive Well.* Other Oil and Gas forms and permitting processes will follow in later phases.

The first phase of LoneSTAR was launched internally in mid-January with hardcopy forms being inputted by staff into the program. A few months later, a handful of operators were given access to the system to file P-5 and W-3C forms.

"We are gearing up to enter the final phase of the implementation. This will allow all operators access to file P-5, W-3C, and W-3X forms within LoneSTAR externally," said Jennifer Gilmore, Manager of the P-5 Financial Assurance Section.

As the agency implements LoneSTAR, it will be transitioning away from its mainframe system developed in the 1970s.

"The process to file forms with the mainframe was very antiquated," Gilmore said. "All forms were required to be submitted in hardcopy. Any correspondence sent between staff and operators was also sent via letter/ snail mail."

LoneSTAR aims to transform that experience for operators and automatically have data directly available to staff once submitted.

Moving away from the mainframe entails a lot of work including making sure that the data rules from the mainframe are translated appropriately to the new environment.

The new system has generated a lot of interest from operators.

"We have had a high attendance in classes pertaining to the new LoneSTAR system at webinars and during the 2022 RRC Regulatory Conference in August, so I feel like that is a good sign that industry is showing interest," Gilmore said. "The operators that we have allowed into the system early during the walk phase have provided invaluable feedback to help identify and troubleshoot issues, which was a wonderful opportunity to fine tune things from an external perspective prior to releasing to everyone."

When it launches externally, operators will have the ability to log do the following things in LoneSTAR:

- File annual P-5 renewal forms
- Pay filing fees
- File W-3C and W-3X forms pertaining to their inactive wells
- Update pertinent information related to their P-5 (such as addresses, officer info, phone numbers, etc.)
- Track SWR15 compliance
- Request a release of their financial assurance documents
- View/Track information related to their financial assurance documents
- View Snapshots, Scanned images of hard copy documents submitted, and events related to their organization

For RRC, it simplifies access to data by keeping all information related to a company in one secure spot.

"We will no longer have to send off hardcopy forms to be microfilmed or dig through boxes for paperwork to complete open records requests," Gilmore said. "LoneSTAR provides staff as well as industry a convenient hub to view all pertinent information related to their P-5 and inactive well compliance."

Stay tuned for the next phase of LoneSTAR when it launches externally.

ANSWERING QUESTIONS ABOUT LONESTAR

To help provide insight, RRC's Information Technology Services answered questions about LoneSTAR:

Why is RRC basing LoneSTAR on the Risk-Based Data Management System?

ITS: This platform was designed specifically for oil and gas regulatory processes. It has been implemented in close to 30 states within the United States, and during an initial assessment conducted by the RRC, it proved to be a good fit for what we needed.

What will be the ultimate scope of LoneSTAR?

ITS: The current plan is for all Oil and Gas Division business applications in the mainframe to move into RBDMS LoneSTAR by the end of 2028.

How will operators interact with LoneStar?

ITS: LoneSTAR is an online system that will enable operators to conduct their oil and gas regulatory transactions online and in a secure manner.

What are the advantages of LoneSTAR over the mainframe?

ITS: It is expected that LoneSTAR will move the RRC toward a more flexible and scalable platform and will provide the industry additional visibility on their application status, provide self-service capabilities, as well as improved and more timely reporting.

Mainframe is good for the number of transactions and calculations needed but hinders our ability to interact in a modern way with industry and the public, and more important, resources/support for the mainframe will cease to exist in the near term.

What challenges have the RRC had moving from the mainframe to the new system?

ITS: Understanding the processes within the mainframe has been a challenge. There are 12 million lines of code that have been written over the last 50 years, and it is crucial to understand that when moving these processes to new systems. Also, the amount of time needed from the program area and ITS staff to support the entire effort has been monumental.

LONESTAR
RAILROAD COMMISSION - STATE TRACKING AND REPORTING

RRC IMPROVES PROCESSES WITH NEW ONLINE REGISTRATION, PAYMENT SYSTEM

In yet another improvement on its processes, the RRC in 2022 launched its Certification Exam Registration and Training System or CERTS, which allows people to register and pay for Alternative Fuels Safety classes and other events online.

Before the new system took effect, the LPG, LNG and CNG industry would visit an older version of RRC's website and fill out a request form for a spot in a class or in an exam.

"They could put in information for an event that did not exist because there was not a direct relationship between what they were filling out and what we were offering," said April Richardson, Director of Alternative Fuels Safety. "Also, we may have been full between the time they submitted their request, and we processed it. So, people would make their request and find there's no room and start the process over again. That was very frustrating for them."

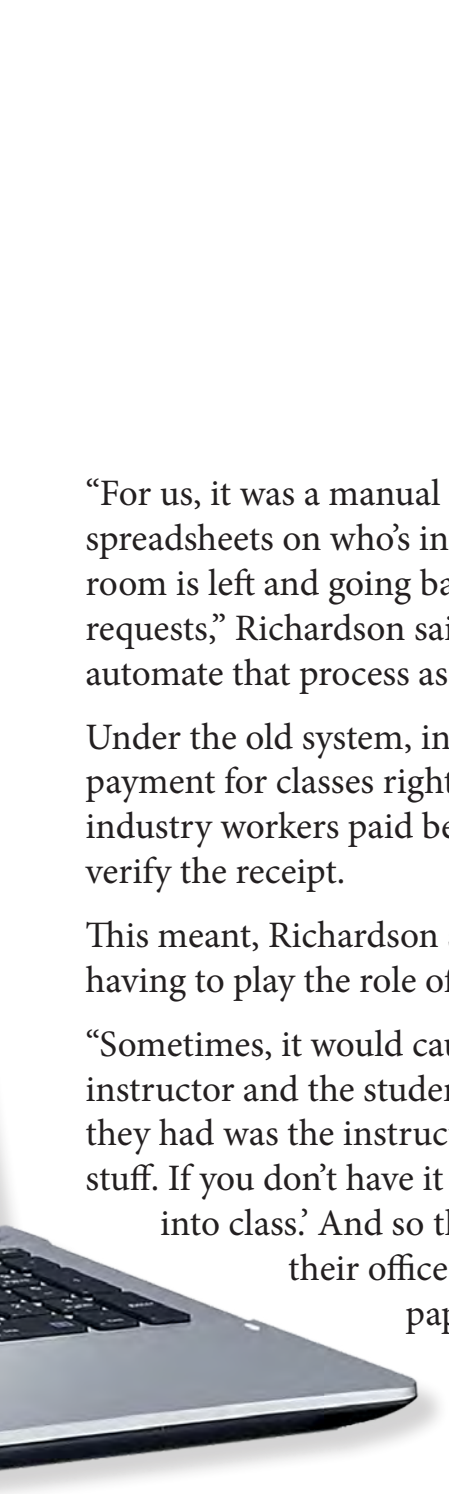
With the new system, industry can only register for an existing class that has availability.

"For us, it was a manual process tracking with spreadsheets on who's in what class and how much room is left and going back and forth via email on requests," Richardson said. "We were looking to automate that process as much as possible."

Under the old system, instructors would typically take payment for classes right before they taught them, or if industry workers paid beforehand, the instructor would verify the receipt.

This meant, Richardson said, that instructors were having to play the role of accountants.

"Sometimes, it would cause friction between the instructor and the student because the first interaction they had was the instructor saying, 'You don't have your stuff. If you don't have it by 8:15, you're not going to get into class.' And so this person would scramble with their office trying to find out where the paperwork was. Now, you're on the list, or you are not."



When AFS started offering online classes toward the beginning of the pandemic, Richardson said that her group started requiring industry to have to pay for their classes ahead of time; however, all of the payments still needed to be accounted for manually. With CERTS, it's all automated.

With more than 80,000 locations in the state handling LPG, CNG and LNG and fewer than 40 AFS staff, including four instructors, becoming as efficient as possible has been important.

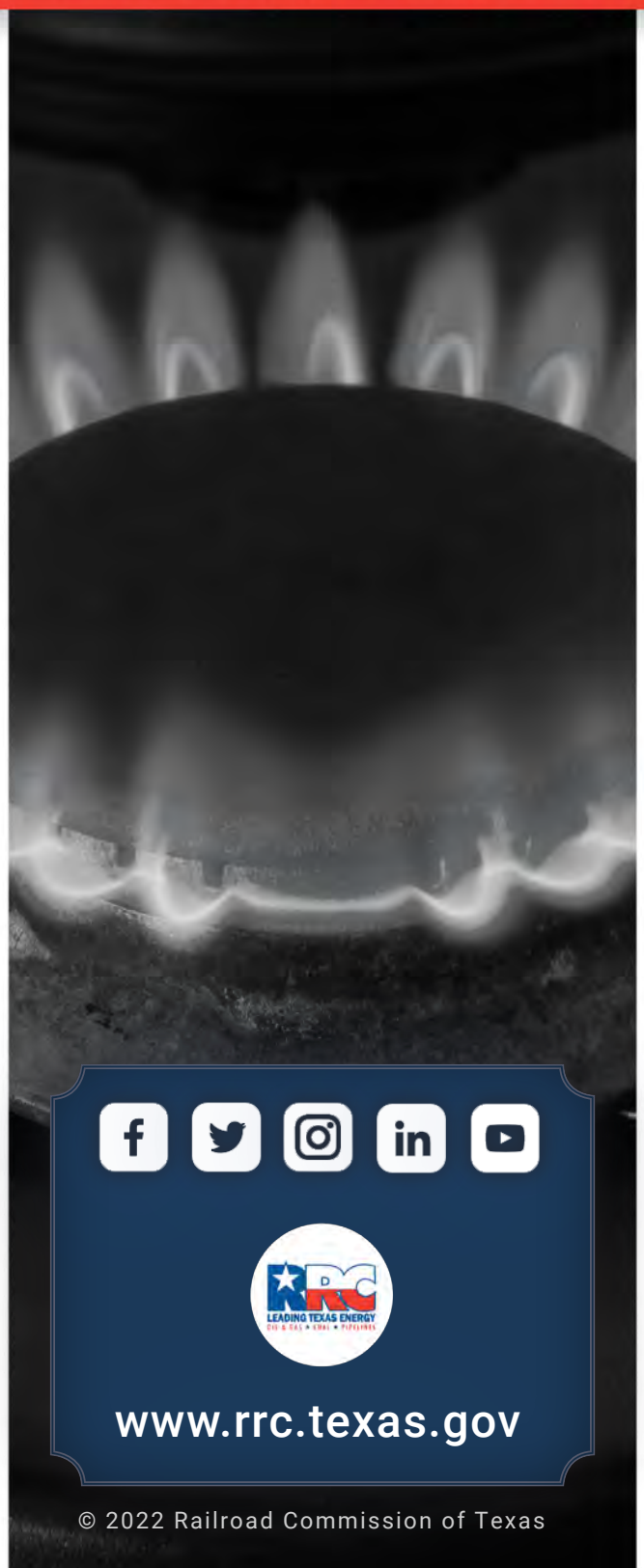
"Before we had online classes, it was the pony express," Richardson said. "We were sending instructors to all corners of the state."

The entire registration and payment process has not been fully automated, and the RRC is continuing its efforts to ensure the process is much smoother than it had been before.

And beyond that, AFS is continuing to work to make all of their processes and systems seamless. An ongoing project will eventually eliminate the need for the submission of any paper forms.

VISIT AFS CERTS

OIL & GAS | PIPELINES | ALTERNATIVE FUELS | NATURAL GAS UTILITIES | SURFACE MINING & RECLAMATION | CRITICAL INFRASTRUCTURE



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