

# Safety and Reliability

Safe, reliable delivery of natural gas is our greatest responsibility to our customers, our employees, and the communities we serve.

2021 FEDERAL REPORTS

# ZERO

- Reportable pipeline incidents
- Corrective action orders
- Safety-related condition reports
- Notices of probable violation

# Safety Highlights

## Consistently low damages

- Received Gold Shovel Standard certification in 2021 for comprehensive damage-prevention actions
- Used a risk-assessment model that reduced NW Natural's already low rate of damages from dig-ins

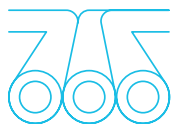


80% 

## OF TRANSMISSION PIPELINE INSPECTED

- 2.8 times the rate required by regulations
- 87% performed through inline assessment

## OUR MODERN SYSTEM



- No cast iron pipes since 2000, no bare steel pipes since 2015
- Leading the industry with one of the lowest ratios of leaks per 100 miles of pipeline in 2021, a fraction of the industry average

## LOWEST NUMBER OF WORKPLACE INJURIES IN OVER A DECADE



ZERO 

reportable information  
security breaches in 2021

## Our Tight, Modern System

NW Natural operates one of the tightest, most modern natural gas distribution systems in the nation. In the mid-1980s, NW Natural worked with our public utility commissions to proactively create a pipeline replacement program. In 2000, we became one of the first companies in the country to eliminate cast iron pipes, and by 2015 we replaced all cast iron and bare steel pipe. We believe we are the first pure-play local distribution company to completely remove these legacy pipelines. Among U.S. natural gas utilities, NW Natural had one of the lowest ratios of leaks per mile of pipe in 2021.<sup>2</sup>

**Having eliminated vintage materials from our distribution system years ago, we're able to invest more of our resources in the next wave of innovations, including renewable energy and other environmental advances.**

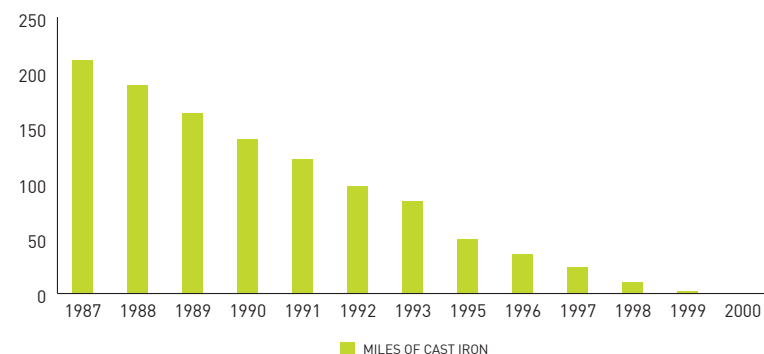
## Continuous Inspection and Monitoring

We vigilantly manage our 736 miles of transmission pipelines and approximately 14,200 miles of distribution pipeline. That means proactive monitoring, preventative maintenance, and prompt identification and repair of potential issues. Our employees performed approximately 200,000 routine field visits in 2021. We operate a 24/7 emergency hotline so we can immediately dispatch responders if there is a problem, and on average, we respond to damage and odor calls across our service territory in about 30 minutes or less.

In 2021, we performed safety inspections on our transmission system at about 2.8 times the rate required by federal and state regulations. Our system makes it possible to perform a majority of our inspections through an inline approach—the best available today, as it can assess pipeline integrity from inside the pipe. At the end of 2021, we had inspected nearly 80% of our transmission system—588 miles—primarily through inline inspection.

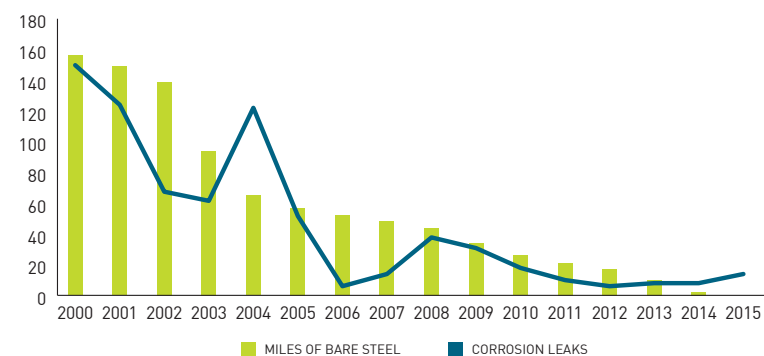
<sup>2</sup> Based on DOT Annual Report data for natural gas operators reporting more than 7,000 miles of distribution main

CAST IRON PIPE REPLACEMENT COMPLETED IN 2000



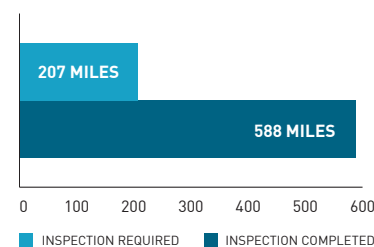
Source: Annual Department of Transportation (DOT) reports

BARE STEEL PIPE REPLACEMENT COMPLETED IN 2015

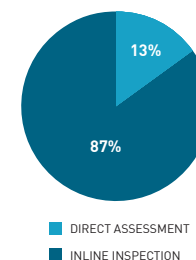


Source: Annual DOT reports

EXCEEDED TRANSMISSION INSPECTION REQUIREMENTS



MAJORITY OF TRANSMISSION PIPELINE INSPECTED USING INLINE APPROACH



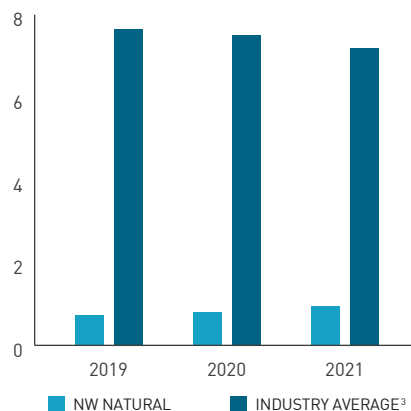
## NW Natural consistently leads the industry in the lowest number of leaks per mile of distribution pipeline.

We strive to perform a leak survey on 20% of our gas mains every year and to survey each main at least every five years. We also strive to perform leakage and atmospheric corrosion surveys annually in business districts and high-occupancy buildings, and every three years on residential service lines—which exceeds the federal requirement.

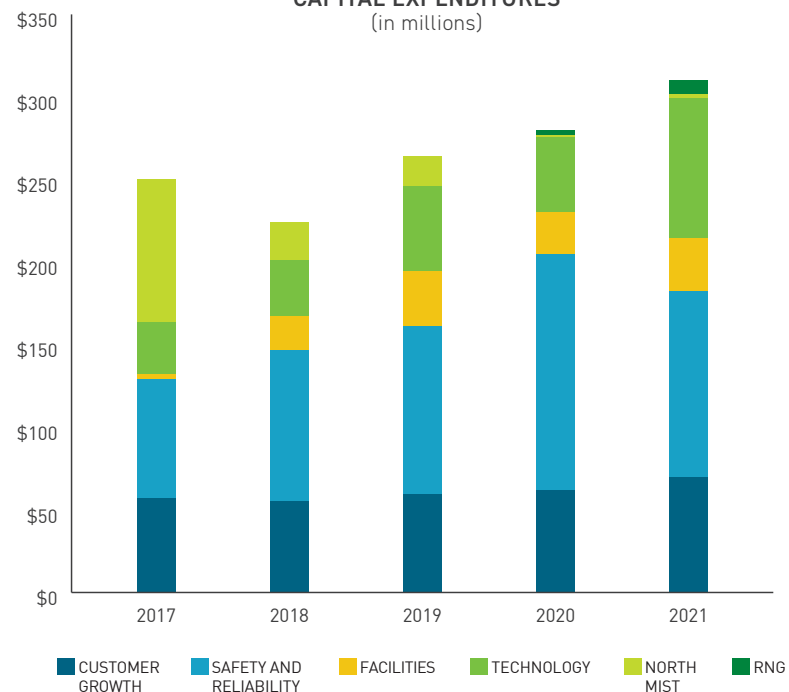
### System Improvements for Safety & Reliability

In 2021, NW Natural invested over \$300 million<sup>4</sup> in our natural gas infrastructure to support system safety and reliability. Those investments included system reinforcement projects and renovations to ensure we can continue serving our growing service territory well into the future. We also invested in our storage facility in Mist, Oregon, which supports reliable service on the coldest winter days. To protect our critical systems and customer data we enhanced our cybersecurity protocols and systems in 2021 and took important steps to upgrade our enterprise resource planning system, which is expected to go into service in 2022.

LEAKS PER 100 MILES



CAPITAL EXPENDITURES  
(in millions)



Total investment in capital expenditures is calculated on an accrual basis and includes cloud-based software.



Doug Martin pictured third from left

### Doug Martin, national award winner for system safety

In 2021, Doug Martin, NW Natural's leakage supervisor, received the [Milton W. Heath, Sr. Memorial Award](#). The award goes to one person in the nation who has made an outstanding contribution to leak detection, prevention or repair. Martin was recognized for leading the industry in the use of advanced technology for leakage surveys and vapor extraction. Upon receiving the award after 36 years in operations at NW Natural, he said, "It is a highlight of my career to know that things I've been working on all these years are getting attention."

<sup>3</sup> Based on DOT Annual Report data for natural gas operators reporting more than 7,000 miles of distribution main

<sup>4</sup> Cap-ex is on an accrual basis and includes cloud-based software

# Reliability and Resiliency

## Reliable Delivery

More than 2.5 million people depend on us to deliver the energy and essential services they need to heat their homes, cook their meals and keep their businesses running. NW Natural has developed a risk-based method for determining how to provide this energy to serve customers without interruption even when demand is at its highest. This modeling is done through a process of evaluating different energy-demand scenarios and resource-acquisition strategies, and is outlined in our current [Integrated Resource Plan](#) (IRP). These planning capabilities will continue to be essential as we transition to renewable fuels for the pipeline. To help lower costs for our customers and mitigate the risk of interruptions to our supply, we:

- Purchase natural gas from geographically varied sources
- Maintain a diversified portfolio of supply contracts
- Own and contract with natural gas storage facilities

## NW Natural has abundant storage capacity in or near our service area—a unique and valuable resource for reliable energy delivery.

We expect to meet about 55% of our projected energy requirement with gas from storage in or near our service area. Underground gas stored at our facility near Mist, Oregon, can supply natural gas to the Portland metro area for approximately one month during an average winter.



## Resilient Infrastructure

The need to maintain the resilience of the US energy system is imperative. Compared with above-ground infrastructure, the underground gas delivery system is [less vulnerable](#) to disruptive events from extreme weather such as hurricanes and snowstorms. Our modern pipes are also designed to withstand stress from ground movement associated with earthquakes, landslides and other natural disasters.<sup>5</sup> A study by Portland State University's Center for Public Service suggests the natural gas system could be a crucial resource in the event of a major disaster that disrupts power to the Pacific Northwest.



**IN FEBRUARY 2021**, a record-breaking snow and ice storm hit Oregon, leaving hundreds of thousands of people without power. NW Natural customers were able to use their stoves to cook meals and gas fireplaces to keep warm without interruption because of our careful planning and resilient infrastructure, including storage facilities. These same assets can be used to deliver renewables in the future.

We take measures so that in the event of a disaster we can continue to operate critical business functions, including gas control and emergency response. Our operations and training center in Oregon is built to withstand an earthquake, and it meets the same seismic standards as essential facilities such as emergency operation centers, hospitals, and police and fire stations. Our Portland headquarters, opened in March 2020, is also designed to remain operational after an earthquake. In 2021, we completed construction of another NW Natural building that is designed to be operational after a large-scale seismic event. The Vancouver Resource Center in Southwest Washington is built to Level 4 seismic standards, which apply to structures that are most critical to resilience.

<sup>5</sup> 2019 study by consulting firm ICF

## Intensifying our Focus on Cybersecurity

Reliable service requires investing in technology to protect our critical systems and customer data. Our vigorous cybersecurity program is a significant and growing piece of our investment portfolio—about 5% of our total capital expenditures were related to cybersecurity and nearly 17% was IT related in 2021.

Our audit committee, currently comprised of four independent board members, oversees management's efforts with respect to cybersecurity, including strategies, investments and risks related to the company's IT systems, cybersecurity and compliance. Our executive team, with leadership by our vice president and chief information officer, is responsible for implementing the company's information technology and services (IT&S) strategic plan and setting the tone at the top with respect to cybersecurity, while specialists in particular business areas (for example: information technology, security and procurement), apply their specific expertise to the company's strategy. In 2021, the audit committee was provided with a cybersecurity update three times during the year. The full board is briefed on matters reviewed by the audit committee, including cybersecurity, and received one additional cybersecurity update during 2021.

At NW Natural, we believe that cybersecurity is everyone's responsibility. Starting in 2019, the information technology and business integrity and compliance groups teamed up to create an online cybersecurity and information security training, which all employees are required to complete annually. The course demonstrates how to identify potential cybersecurity risks and protect confidential information at work and what to do if employees suspect a possible information security incident. In 2021, 100% of our active employees participated in this online training.



**In 2021 we had zero reportable information security breaches**

In 2021 we launched a comprehensive set of measures to help secure technology systems and ensure the safe flow of gas to our customers. The program strives to align with federal security directives issued last year to address ongoing cybersecurity threats.

We continually review and update our cybersecurity strategy. The latest version, released in 2021, defines our path through 2025. It focuses on four key objectives:

- Increase visibility of security-related events and their causes
- Upgrade and simplify cybersecurity infrastructure
- Proactively manage security across enterprise, mobile, cloud and industrial control systems (ICS) environments
- Enhance governance and risk-management capabilities

While implementing new policies and plans, we continued adhering to process controls, performing security assessments and working to align our program to the NIST Cybersecurity Framework and other key standards. For example, we use multiple layers of security technology and follow cybersecurity frameworks like the Department of Energy's Cybersecurity Capability Maturity Model (C2M2). In addition we use a variety of technologies and processes like multifactor authentication (MFA) that allow us to have multiple verification factors and adds a layer of protection to the sign-in process, and endpoint protection that shield servers and laptops from cyber threats. We've also expanded our detection capabilities, and routinely test response actions. To further reduce cyber risks, we adhere to process controls, perform periodic maturity assessments and execute third-party penetration tests to expose vulnerabilities. In addition, we work closely with numerous local and federal agencies, including the U.S. Department of Homeland Security, Department of Energy, Transportation Security Administration and the FBI. Our cybersecurity operations received an excellent rating of 750, as of March 11, 2022, from BitSight, the world's foremost cybersecurity ratings platform.

## Taking System Safety to the Next Level

NW Natural leverages new technologies and best practices to keep our employees, our system, and the public safe.

- We're active in the American Gas Association (AGA) Best Practices Program, a voluntary peer review forum for local natural gas utilities across the US to share information on safety and reliability. We support holistic safety management efforts at the industry level as a member of the program's steering committee.
- We are a member of the U.S. Environmental Protection Agency's (EPA) [Natural Gas STAR Program](#), which promotes safe and environmentally conscious practices for pipeline maintenance activities.
- We're taking our safety program to the next level by implementing a Pipeline Safety Management System (PSMS), a voluntary industry-developed framework for continuously improving safety performance. PSMS is designed to create a holistic and comprehensive approach to system safety by building on our existing procedures and risk management activities to enhance our ability to prevent small problems from becoming significant events.

## PIPELINE SAFETY MANAGEMENT SYSTEM FURTHER MITIGATES RISK



### Installing excess flow valves to extend system safety

Excess flow valves (EFVs) can automatically stop the flow of natural gas to a home or business if the service line is damaged by a seismic disturbance or other catastrophic event. We're installing EFVs on new service lines and planning to retrofit EFVs on existing service lines meeting certain specifications. To date, we've installed more than 287,000 EFVs on about 39% of the service lines in our system, which compares to an industry average of 24%.<sup>6</sup>

<sup>6</sup> Based on 2020 Pipeline and Hazardous Materials Safety Administration (PHMSA) data for natural gas distribution companies with more than 400,000 service lines.

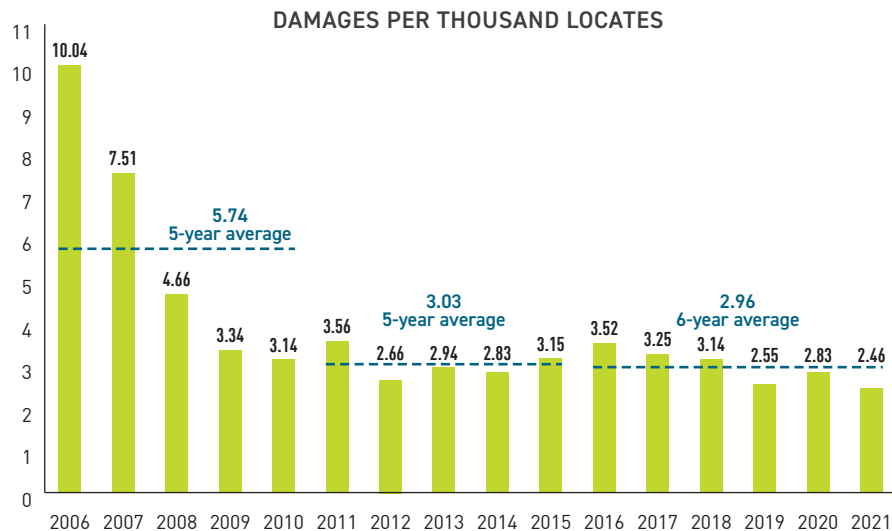


## Damage Prevention

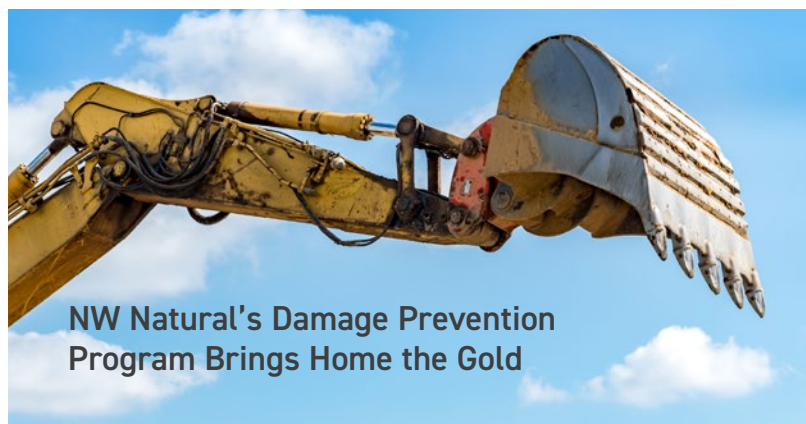
Damage to gas distribution pipelines by excavators is a leading cause of injury, and digging by third-party contractors is the most common cause of pipeline damages. NW Natural began comprehensive efforts to address this issue in 2006, working with our state regulators to implement more rigorous dig laws, and providing online training to help contractors excavate safely. Since then, **damages due to digging have declined by about 70%.**

Our damage rate dropped further in 2021 after we fully implemented a new prevention model supported by sophisticated technology that makes it possible to assess the risk level of every locate request. This data-driven approach helps us understand where the potential for damage is highest so we can effectively prioritize and intervene where necessary. We also rolled out a robust multimedia campaign, in Spanish and English, reminding landscapers, contractors and homeowners how to avoid damaging lines.

NW Natural's damage rate due to digging in 2021 was the lowest in the history of our program, and we saw a 16% drop in the number of incidents attributable to insufficient excavation practices—historically the largest cause of damages.



Source: Annual DOT Report



## NW Natural's Damage Prevention Program Brings Home the Gold



In 2021, NW Natural became the first Oregon-based utility to earn a Gold Shovel Standard certification for its commitment to practicing and promoting safe excavation practices. The widely recognized credential

certifies that the company is taking specific, comprehensive actions to prevent underground infrastructure damages. NW Natural's damage prevention team spent a year completing the requirements for certification, which involved extensive documentation of work the team was already doing in multiple areas, including investigation procedures, policies, corrective action plans and training curriculum. The next step: "Reaching out to other large-scale excavators in our community and advocating for them to become certified," said Jamie Lemke, NW Natural damage prevention supervisor. "It's another tool we can use to promote safe excavation practices."

"This industry certification is a tribute to our damage prevention team, and a step forward on the path to our ultimate goal of zero damages."

— Jon Huddleston, NW Natural vice president of engineering and utility operations

## Employee Safety

NW Natural is engaged in a company-wide initiative to reduce safety incidents to zero. Our Journey to Zero program, launched in 2020, focuses on preventing injuries and building a safety culture based on open communication, collaboration, and a strong service ethic.

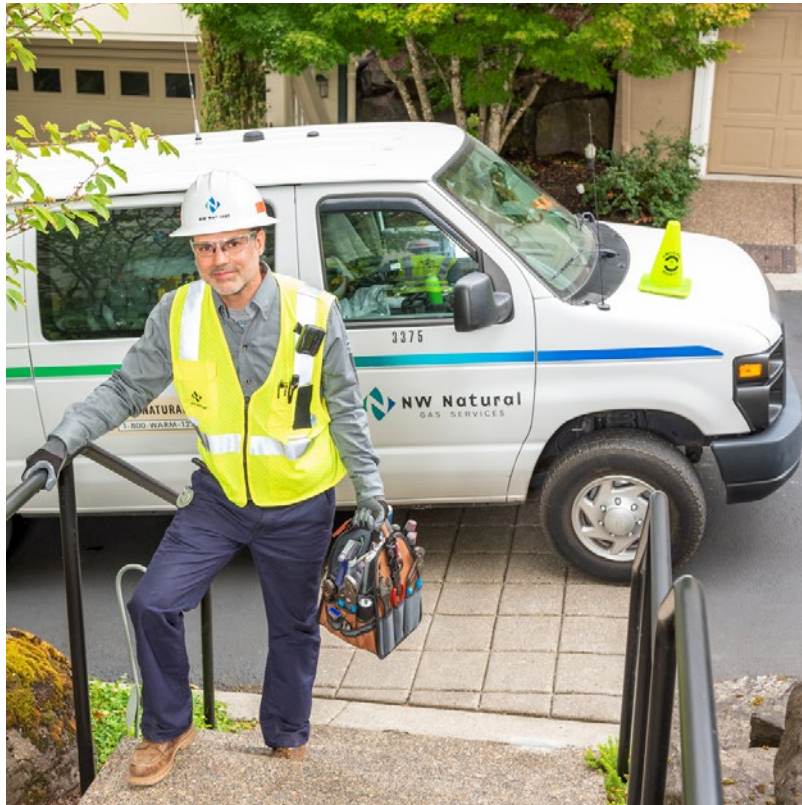
### A Year of Strong Safety Results

Employee safety remained a top priority in 2021, and we continued to see the positive effects of our ambitious safety initiative.

- We ended the year with the lowest number of workplace injuries in over a decade—a 9% decline from 2020, and the second-lowest in 20 years.
- We also saw a 42% increase in safety observations reported (near-miss frequency rate or good-catch rate), which improved from 8.91 in 2020 to 12.64 in 2021—a leading indicator that reflects our expanded focus on field safety.
- Although there was an uptick in injuries that resulted in lost time or restricted duty, results were still among the lowest LTIR and DART numbers we've recorded in two decades.

These are encouraging results—and we know we have more work to do. Keeping employees safe requires sustained effort, and we're continuing to emphasize critical on-the-job safety practices and root cause analysis to reduce on-the-job injuries. To build on the progress we've made since 2020, we plan to:

- Implement an industrial athlete program. We're preparing to launch a program that uses the same techniques that keep athletes at peak performance to keep our employees healthy. Ergonomic-related injuries such as strains and sprains are the most common workplace injuries, and we aim to reduce lost time and days away/restricted duty numbers (LTIR and DART) by reducing these types of injuries through the implementation of this program.
- Double down on measures to prevent serious injury and fatality (SIF) incidents. NW Natural had no SIF incidents in 2021 and there have been zero fatalities every year for more than a decade. We have a low SIF rate, and we want to keep it that way. We plan to increase our focus on:
  - » Tasks that have the most potential for causing serious injuries and fatalities, including high-pressure lines, high-voltage environments, heights, and vehicles.
  - » Analysis of near-miss events that could have resulted in serious injury.



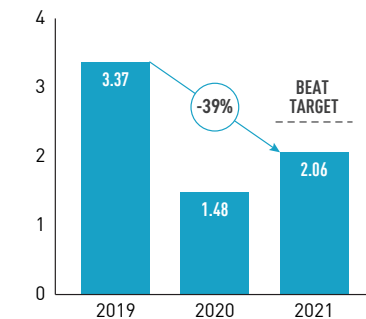
## Our Safety Management Program

NW Natural's health and safety policies and procedures are designed to comply with all applicable regulations—and we strive to go beyond compliance.

- We have a strict stop-work policy when an employee is involved in an accident, and a 24/7 nurse care line available to all employees. We provide alternative working opportunities that allow employees to recover while continuing to contribute.
- A portion of our executives' compensation is tied to achieving our safety metrics, and our board of directors regularly reviews company safety metrics.
- We have a safety steering committee overseen by our executives, as well as a dedicated safety team led by our VP, chief human resources and diversity officer, who reports directly to the CEO.
- We monitor safety performance to help us understand the origins of incidents and develop root-cause trend analysis.
- We work to incorporate industry best practices and benchmarking, including peer analysis and assessments done by the AGA.
- Our internal auditors periodically audit our safety department and health and safety policies. We also conduct third-party assessments on a periodic basis to audit aspects of our safety management system.

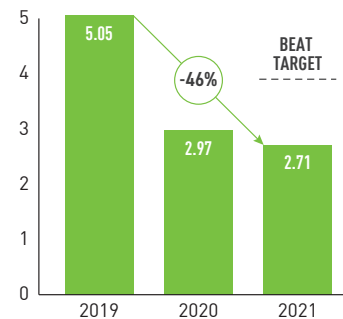
We seek to work with contractors that meet or exceed safety standards and practices for their industries. We use ISNetwork's contractor management services to help us evaluate contractors' safety performance and policies, including criteria such as insurance and drug and alcohol testing standards.

**DAYS AWAY OR RESTRICTED TIME RATE (DART)**



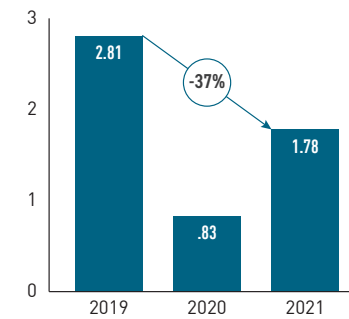
**DART** =  $\frac{\text{\# of incidents with lost time or restricted duty} \times 200,000}{\text{Number of hours worked}}$

**TOTAL RECORDABLE INCIDENT RATE (TRIR)**



**TRIR** =  $\frac{\text{\# of incidents requiring medical attention} \times 200,000}{\text{Number of hours worked}}$

**LOST TIME INCIDENT RATE (LTIR)**



**LTIR** =  $\frac{\text{\# of lost time injuries} \times 200,000}{\text{Number of hours worked}}$

# Focus on Training



## Comprehensive Safety Training

We maintain training programs for compliance, emergency preparedness, identifying hazards and handling high-risk situations. Every year employees complete classroom instruction and hands-on training at our state-of-the-art Training Town facility, which features a simulated neighborhood complete with functioning underground natural gas lines. We also offer virtual training through our new learning management system.

We increased safety training hours for employees in 2021, even as class sizes were reduced to meet COVID-19 protocols. We also enhanced our training for contractors and continued to host immersive safety training to prepare firefighters to respond to emergencies that involve or affect the natural gas system.

## Rigorous and routine training

Field staff also attended quarterly, annual, and scenario-based safety trainings, as well as monthly safety presentations



## 57 firefighters trained

in emergency procedures involving gas lines (external training was suspended for the majority of the year due to COVID)

## Quality Assurance Program

Our quality assurance program, which has been in place since 2006, follows up on training to check the work employees and contractors are doing across field operations. In 2021, the Quality Assurance team completed more than 3,000 inspections of work performed by NW Natural employees or contractors. Since implementing the program we have seen consistent improvements in work performance, and we have data that helps enable us to provide timely feedback for employees and improve training, policies and procedures. Our leading practices in this area have allowed us to serve as a resource for companies looking to implement similar programs.



## FOR MORE INFORMATION SEE ALSO:

[Residential Safety](#)

[Our Safety Measures](#)

[Pipeline Safety](#)