Perspectives on Facility Damage - 2021

(Volume XXI, Version -1d-)

An annual report published by Colorado 811

reviewing underground facility damages

resulting from excavation activity

- For Calendar Year 2021 -

Covering underground facility damages for years 2001-2021

Final Release: October 01, 2022

*A special thanks to Mr. Barry Miller with **Foresight Advantage** for preparing this report since 2001.*

This report may be referenced as the Colorado 811 2021 Analysis on Underground Facility Damage.

Perspectives on Facility Damage - 2021

Table of Contents

Perspectives on Facility Damage - 2021

ABOUT THIS REPORT

Underground facility owners and operators in Colorado have submitted their facility damage data for analysis in this report as required by C.R.S. 9-1.5-103(7)(b). Colorado 811 has collected and summarized the data and published this report to its membership as required by C.R.S. 9-1.5-103(7)(b)(c)(d) & 9-1.5-105(2.6)(a)(I) and (2.6)(b), as well as to the Colorado Underground Damage Prevention Safety Commission (CUDPSC - Safety Commission).

The intended audience for this report includes the following stakeholder groups: underground facility owners and operators, the underground facility location and marking industry, the excavation and construction industry, related industry associations, the One Call industry, the CUDPSC, related regulatory and compliance agencies, appropriate local, county and state governments, and the interested public. Colorado 811 anticipates that these stakeholder groups will utilize this information to create positive transformation within the utility safety and damage prevention community and specifically within underground facility damage prevention programs and efforts. Colorado 811 is not responsible for any action taken based upon the data or the interpretation of any information presented within this report.

Additional information is available in past Colorado Damage Data Reports (2001 to 2020). Please visit the Colorado 811 web site at www.Colorado811.org and navigate to the Resources Tab, click Education, click Annual Reports, and then navigate down to Damage Reports and click a specific year. Finally, click Download This Report.

IMPORTANT REPORTING INFORMATION

Colorado facility owners and operators are required by state law to submit their underground facility damage data to Colorado 811 via the *Damage Information Reporting Tool* (DIRT) within 90 days of service restoration for each underground facility damage event. Excavators are also required by state law to immediately report all facility damages directly to Colorado 811 by dialing "811" any hour of the day or night.

Please visit: www.cga-DIRT.com to register as a stakeholder and submit your Colorado underground facility damages to DIRT in 2023. The deadline for submitting 2022 facility damage data is March 31, 2023.

The methods and formulas used to determine the damage prevention metrics, regressions, scores, and grades utilize proprietary techniques and intellectual property which were developed by and are owned by ***Foresight Advantage****. The methods may not be used without the expressed written consent of* ***Foresight Advantage****, which grants Colorado 811 the right to publish the results as presented in this report. No party has permission to reveal or publish the techniques, algorithms or intellectual property used in preparing this report.*

Perspectives on Facility Damage - 2021

EXECUTIVE SUMMARY

Twenty twenty-two marks the 21st year for publication of the Colorado underground facility damage report, "*Perspectives on Facility Damage-2021*". This work involves detailed analysis of the state's damage information submitted by facility owners/operators (referred to hereafter as facility owners) to the Common Ground Alliance's (CGA) Damage Information Reporting Tool (DIRT). The Utility Notification Center of Colorado (Colorado 811 or CO811) is indebted to its facility-owner members for providing this valuable information used to assess the state's progress in 811 public awareness and damage prevention education efforts. By analyzing and monitoring the data, trending the outcomes, and publishing this report each year, industry stakeholders can stay informed of the state-wide results. It is hoped that they act to positively impact damage prevention within their organization and the state.

A limited group of between 43 to 84 facility owners (Colorado811 has 2,202 facility owner members and 19 excavator members) has submitted information regarding their underground facility damages to DIRT each year since 2001. The damages submitted by this small group of facility owners correspond to over 88% of the One Call notifications[1] requested by the state's excavating community (note that facility owners can also be excavators). The current DIRT damage dataset spans 21 years and contains detailed information on 122,228 separate damages which encompass all underground facility types in every county in Colorado.

The number of damages submitted to DIRT for 2021 (3,383 damages) increased by 5.1%, or 164 additional damages from 2020 (3,219 damages).

The increase in the number of DIRT facility damages occurred while incoming notification requests from excavators increased by 1.4% (14,941 additional requests) from 2020 to 2021. Construction activity in the state, as measured by housing permits, also increased by 39.7% from 2020 to 2021. The state's population grew a modest 0.8%; the slowest growth in over 30 years. See Table-G – State Demographic and One Call Data – 2003-2021 on page-16 for additional supporting data.

Five of the nine facility types had an increase in the number of damages submitted to DIRT by facility owners. The natural gas facility type had the largest increase in damages with 417 more than in 2020, a 29.9% increase. Next was the electric facility type with 144 more, an 37.6% increase. This was followed by the sewer facility type with 22 more damages, a 244.4% increase. Three facility types had a decrease in the number of damages submitted to DIRT by facility owners. The telecommunications facility type had the largest decrease with 388 fewer damages than in 2020, a 46.6% decrease. Next was the water facility type with 36 fewer damages, a 26.3% decrease. This was followed by the liquid pipeline facility type with four fewer damages, a 10.0% decrease.

It is unclear why there was a modest increase (164 stated above) in total damages submitted to DIRT. Improved reporting of damages by facility owners likely played a small role. Differences in reporting for each facility type from year to year are inconsistent. On a positive note, continued 811 public awareness and education by many industry stakeholders has led to a significant reduction in reported damages since 2003. Two thousand and three marked the peak in DIRT reported damages by Colorado facility owners with 13,540 damages. But since 2016, reported damages by facility owners have ranged between 2,442 and 3,730. So, the 3,383 damages reported in 2021 fall a bit above the mid-range of damages since 2016.

As a reminder, the Colorado One Call Law was modified and enacted in 2018. The new Law mandated that all Tier-II facility owners convert to a Tier-I status and receive electronic notifications starting in 2020. Before 2020, Tier-II

[1] A "notification" is often referred to as an incoming notification request. Excavators request an underground facility locate notification by either calling 811 or by accessing one of several internet web ticking applications. Additionally, a "transmission" is often referred to as an outgoing transmission to the facility owners within the dig area. The contact center processes a notification and electronically transmits the information on the notification to one or more facility owners that are members of Colorado 811.

facility owners were not electronically notified of the excavator locate request by the contact center. Instead, excavators were required to directly notify the Tier-II facility owners listed on the notification ticket. It is believed that some excavators were not adequately contacting Tier-II facility owners to notify them of their intent to excavate near their underground facility. This may have resulted in a higher rate of facility damages due to a lack of Tier-II facility owner notifications. With additional time, a clearer picture will emerge to determine if the 2018 change in the Law has made a positive impact in reducing damages in Colorado.

Of special note is that 74 facility owners submitted DIRT damage reports in 2021. The prior high-level of facility owners reporting was 84 in 2020. Detailed analysis of these facility owners provides more information:

> Twenty-four of these 74 facility owners who submitted damage reports in 2021 did not submit damage reports in 2020 and 16 of these 24 facility owners were first-time submitters in 2021. These 24 facility owners submitted 53 damage reports, or 1.6% of the 3,383 damages.
>
> Fifty of the 74 facility owners who submitted damage reports in 2021 also submitted damage reports in 2020. These 50 facility owners submitted 3,330 damage reports, or 98.4% of the 3,383 damages. For these 50 facility owners who submitted damage reports in both 2020 and 2021, there was a net increase in damages reported of 196, or a 5.8% increase. Note that 19 of these 50 facility owners reported an increase of 751 damages, while 31 reported a decrease of 555 damages.
>
> Thirty-four facility owners who submitted damage reports in 2020 did not submit damage reports in 2021. These 34 facility owners reported 85 damages in 2020 and -0- damages in 2021.
>
> See the General facility damage information on page-9 and Facility Type on page-9 for more detailed information.

To add yet another perspective to the annual change in damages; the Colorado 811 damage notifications that were called into the Colorado 811 contact center by excavators (versus submitted to DIRT by facility owners) at the time of an actual or suspected damage decreased by 2.9% (360 fewer) in 2021[2]. It is important to note that the contact center defines a "damage notification" called-in by an excavator differently than how a damage is defined in DIRT. Many suspected damages called-in by excavators are near misses, abandoned facility, exposed facility, improperly supported facilities, etc. that facility owners do not submit to DIRT as damaged facility based upon their internal operating procedures. Additionally, when Colorado 811 submits the facility damages to DIRT each Spring for the excavators, a damage to an unknown facility type is submitted to DIRT as multiple damages - one for each facility type that was notified of the damage. This process of creating multiple damage tickets for all facility owners in a dig area can result in significant overcounting of facility damages in Colorado when the Common Ground Alliance (CGA) analyzes data for the Annual CGA DIRT Report.

Excavators in Colorado are cautious with suspected facility damage. They must notify the contact center and report a damage to provide the facility owner with every opportunity to inspect and assess the potential damage. The damage count that is later submitted to DIRT by facility owners after a thorough site investigation is usually one-fourth the damage count called-in by excavators to the contact center.

As many readers might suspect, most of the damages in the state occurred in just 16 of the largest population counties, primarily the Front Range counties. 88.9% of incoming notifications and 83.8% of DIRT damages occurred in these 16 counties with an average Damage Metric of 3.3 DIRT damages/1,000 notifications. Conversely, only 0.9% of notifications and 1.9% of damages occurred in the 16 smallest population counties with an average Damage Metric of 6.2 DIRT damages/1,000 notifications. This leaves 10.2% of notifications and 14.3% of damages that occurred in the

[2] The count and percent increase in Norfield damage notifications called-in by excavators since 2015 is as follows: 12,079: 2.9% fewer in 2021, 12,439: 13.8% more in 2020, 10,933: 5.6% fewer in 2019, 11,587: 6.9% more in 2018, 10,835: 6.1% more in 2017, 10,212: 5.1% more in 2016, 9,717: 2.6% more in 2015.

middle 32 counties with an average Damage Metric of 4.7 DIRT damages/1,000 notifications. This relationship suggests that any lack of damage data reporting for the 48 smaller population counties does not materially impact the analysis and usefulness of the damage data submitted to DIRT by facility owners for Colorado. Notice that the Average Damage Metric decreased as the population increased for each of the three groupings of counties. See Table-H – %Share of Data and Cumulative %Share of Data – by County – 2021 on page-17 for additional supporting data.

While the modest increase (164 additional damages) in DIRT damages in 2021 demonstrates a modest negative impact for damage prevention in the state, taking a step back in time adds a refreshing perspective to the overall positive impact achieved by dedicated Colorado stakeholders and their damage prevention efforts. From 2003 through 2009 the number of excavator notification requests decreased 40.3% as the local and national economy contracted. The number of notification requests then increased 126.7% from 2009 through 2021 as the economy expanded out of the Great Recession – excavator notifications went above the peak level that occurred in 2002. During these 19 years (2003-2021), all-facility DIRT damages submitted by facility owners steadily decreased by 75.0% from its 2003 peak of 13,540 damages. The sub-set of natural gas + liquid pipeline damages decreased 58.9% from its peak in 2003. Over the 19 years from 2003 to 2021, Colorado stakeholders reduced the key Damage Metric from 17.2 all-facility DIRT damages/1,000 notifications in 2003 to 3.2 in 2021, an 81.5% decrease. And during the same 19 years, the secondary Damage Metric for natural gas + liquid pipeline facility decreased from 5.7 to 1.7, a 69.6% decrease.

> *By these measures, damages for both all-facilities and natural gas + pipeline facilities decreased several times faster than the excavator notifications decreased after 2003 – a time interval that included the Great Recession, negative economic growth, and slowing residential construction activity in Colorado, as well as the recovery from 2009 into 2021.*

When construction and One Call activity began to increase in 2009, DIRT damages did increase as one might expect, but at a slower pace than the excavator notifications increased for the all-facility and natural gas + liquid pipeline groupings. For a more detailed look at the trend in these metrics, see Chart-B – DIRT Damages/1,000 Notifications – by Facility Type – 2003-2021 on page-19 for a concise summary of improvements made in damage prevention in Colorado.

Perspectives on Facility Damage - 2021

ANALYST'S SUMMARY

In summary, since 2001, the influence of legislatively mandated damage reporting for Colorado has had both an absolute and relative impact in improving public awareness and reducing damages for all facility types. The decreasing trend in the number and severity of DIRT damages in Colorado from 2003 through 2010 is evidence that shared responsibility and cooperation have made a difference. But the increasing trend in facility owner reported damages through 2019 from the low level in 2010 gives rise to concerns that still more 811 public awareness and stakeholder damage prevention education and training are needed for further improvements. Specifically, liquid pipeline facility damages steadily increased from an average of two damages per year from 2001 through 2010 to high levels of 28 in 2016, 30 in 2019, 40 in 2020 and 36 in 2021. Natural gas facility damages increased after 2010 and peaked in 2018 at 1,928, then decreased to 1,393 damages in 2020, and increased yet again in 2021 to 1,810 damages. This information is listed in Table-G – State Demographic and One Call Data – 2003-2021 on page-16. The more recent reduction in all-facility damages in 2016 and 2017 (down to approximately 2,500 damages) was encouraging. Still, the 50% plus increase from 2017 in all-facility DIRT damages to around 3,700 damages in 2018 and 2019 is concerning, particularly for the regulated natural gas and liquid pipeline facility types.

In recent years, inconsistent damage reporting has been a concern, specifically, with the Cable TV and telecommunications industries. The explanation for this more recent (2019-2020) increase in damages is complex, but likely centers around two issues; 1) poor locate performance (not located and inaccurate locates) caused by staffing and training issues in the contract locating industry; and 2) ongoing insufficient excavation practices that could be improved with better operator training and damage prevention practice auditing at the company level.

Colorado was the first state to legislatively mandate the annual collection and submission of comprehensive facility damage information by all underground facility owners to the state notification center. This distinction provides Colorado facility owners, Colorado 811 and the *Colorado Underground Damage Prevention Safety Commission*[3] the ability to better understand the causes of facility damage and to implement public awareness and industry/stakeholder education and training initiatives where they can have the greatest impact to reduce facility damages, ensure public safety and maintain high availability of the public utility infrastructure. Improved targeting of these activities based upon comprehensive damage data is needed to:

1) Advance the legally mandated activity of One Call notification by homeowners and professional excavators,
2) Encourage complete and accurate facility marking,
3) Promote safer excavation practices,
4) Improve public safety, and
5) Ultimately reduce underground facility damages.

The cooperation of all industry stakeholders to facilitate the success of these actions ensures the delivery of vital utility services and creates a safer Colorado.

Colorado's industry stakeholders can take pride in their role in establishing damage prevention standards, practices, programs, and achieving bottom-line results. The public and all involved in the damage prevention industry are

[3] The Colorado Underground Damage Prevention Safety Commission (UDPSC) was legislatively enacted in 2018 through an industry-wide collaborative effort and began operations in January 2019. The UDPSC is empowered with overseeing complaints from stakeholders related to the One Call notification process, underground facility locating practices, safe excavating practices and underground facility damages while enhancing public safety in Colorado. The UDPSC has authority to levy fines to enforce the One Call Law.

encouraged to maintain their efforts and to continue improving their outcomes in future years. Colorado 811 is always open to feedback and suggestions to improve the usefulness of this report.

Please refer to page-8 to review the set of Industry Recommendations offered in 2018 with status updates for 2019 through 2021.

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Perspectives on Facility Damage - 2021

THE DIFFERENCE BETWEEN THE COLORADO 811 AND THE NATIONAL CGA DIRT DATA

CGA and Colorado 811 have encouraged all stakeholder types to submit facility damage information to DIRT each year. This means there may be multiple submissions on the same damage incident by a facility owner, a locator, an excavator, a government agency, an industry association, a loss recovery firm, and an insurance company. CGA's original intent was to analyze this information as separate data sets to provide different views on the same damage incident. Colorado 811 has additionally chosen to submit to DIRT all damage tickets that are called-in by excavators to the contact center, many of which are not classified as damaged facility by facility owners within their own damage submissions to DIRT. Colorado 811 also submits multiple damage incidents to DIRT for excavators when the facility type was reported as unknown, overstating the actual number of facility damages. Unfortunately, CGA counts all damages submitted by all Colorado stakeholders in the state's damage total. This has caused significant over-reporting of DIRT damages for Colorado in the CGA National Damage Report for 2013 through their most recent report in published in 2022 (for 2021). A special section was included in the *CO811 Damage Report for 2016 Damages* to clarify the process Colorado uses to identify a valid set of damage incidents in Colorado that are submitted by facility owners. For more detailed information on this special analysis, see the 2016 Colorado State Damage Report - *SPECIAL ANALYSIS of Damage Data Stakeholder Sources-2016*, page 10.

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Perspectives on Facility Damage - 2021

HANDLING OF DIRT DAMAGE DATA STAKEHOLDER SOURCES – 2021

The Colorado One Call Law mandates that all facility owners/operators submit specific information describing the damage that occurred to their underground facilities each year. This information must be submitted to DIRT within 90 days of the restoration of the facility service for each damage incident, but no later than March 31 of the following year, when the DIRT damage data submission is closed by CGA. CGA has encouraged other stakeholders besides facility owners to submit damage incidents to DIRT, creating data duplication and sometimes confusing and conflicting information. Table-1 below describes how the data from each submitting source was handled in the 2021 analysis.

The annual Colorado State Damage Report incorporates damages submitted only by facility owners as specified by the Colorado One Call Law. For 2021, 20,408 damage incidents were submitted to DIRT by Colorado stakeholders, but only the 3,383 damages submitted by facility owners were incorporated into the 2021 Colorado State Damage Report, as required by the Colorado One Call Law.

Table-1 – Source of 2021 DIRT Underground Facility Damage Data Set – by Facility Type Damaged

2021 DIRT Data Source	Used in 2021 Damage Report	TOTAL	Natural Gas	Electric	Telecom	Cable TV	Water	Liquid Pipeline	Sewer	Unknown
DIRT (Facility Owner Submitted)	Used	3,383	1,810	527	444	420	101	36	31	14
CO811 (Excavator Called-In)	Not Used	16,263	2,007	2,785	5,977	3,489	849	8	357	791
Stake Center (Locator Submitted)	Not Used	51	0	0	51	0	0	0	0	0
Gold Shovel (Association Submitted)	Not Used	681	148	85	212	76	68	0	20	72
Excavator (Excavator Submitted)	Not Used	30	14	2	5	0	5	0	3	1
TOTALS		**20,408**	**3,979**	**3,399**	**6,689**	**3,985**	**1,023**	**44**	**411**	**878**

The CO811 Excavator data set (potential facility damage incidents called into Colorado 811 by excavators as damage notifications) includes many damage incidents that may not be facility damages. This is partially explained by the cautious reporting by excavators of near-miss, abandoned facility, exposed facility, unsupported facility and other incidents that the facility owners may not categorize as actual facility damage and so may not include them in their own submission to DIRT. The other data sets from Stake Center (a locating service), Gold Shovel (an excavator association) and a single excavator are incomplete data sets as they encompass only select facility owners and excavation work in limited parts of the state. Most of these data are duplicates of the DIRT data set which facility owners submit. These other sources of damage data do not consistently submit their data to DIRT each year and therefore they do not provide a reliable data source for tracking and monitoring the progress in damage prevention, particularly from year to year.

Of interest in Table-1 are the differences between the DIRT-Facility Owner and CO811-Excavator data sets. Note that the excavators called-in [4] 10.9% more natural gas damages than facility owners submitted to DIRT, but they only called-in 22.2% of the liquid pipeline damages that the facility owners submitted. Since the natural gas and liquid pipeline industries are heavily regulated by the Colorado Public Utilities Commission and PHMSA, there is expectation that the two groups would provide similar counts. Also note that the excavators called-in considerably more Cable TV, telecommunications, electric, water and sewer damages than facility owners submitted to DIRT. This may suggest some under-reporting by facility owners in these other industries and over-reporting of notifications that are not true facility damages by CO811 as explained earlier in this report. In recent years it was discovered that Colorado 811 was submitting multiple damage reports to DIRT when the facility type on a damage was unknown. Colorado 811 will stop this practice in 2023.

Note that CGA reports all damages submitted by Colorado stakeholders in their annual damage report for the country. Many of these are duplicate damages submitted by multiple stakeholders or were in fact not actual damages according to internal facility-owner operating and reporting guidelines. This has resulted in CGA significantly overstating the Colorado damages since 2013 in their National DIRT Report.

This filtering process conforms with the Colorado One Call Law for the Annual State Damage Report and resulted in 3,383 DIRT facility damage records that were analyzed in the 2021 Colorado State Damage Report.

[4] Excavators are required to request facility damage notifications, or damage tickets, via a phone call to the Colorado 811 24x7x365. Facility damage and emergency notifications cannot be submitted via on-line internet ticketing applications by excavators.

Perspectives on Facility Damage - 2021

2018 RECOMMENDATIONS WITH STATUS UPDATES FOR 2019 THROUGH 2021

1) All facility owner members should be encouraged to provide accurate and complete damage information to DIRT, including the One Call Notification Ticket Number (for cross referencing with original notification).
STATUS: There has been some improvement in the quality and completeness of data in 2019 through 2021.
In 2019, 58.6% of damage records appeared to have a One Call ticket number submitted with the data.
In 2020, 67.9% of damage records appeared to have a One Call ticket number submitted with the data.
In 2021, 64.6% of damage records appeared to have a One Call ticket number submitted with the data.

2) Facility owner members who intend to submit data to DIRT should be trained on the proper use of the DIRT data options to ensure they are consistently applying the appropriate choices to the DIRT data elements. Inconsistency in how the data is reported makes interpretation and analysis less reliable.
STATUS: No additional stakeholder training was provided by Colorado 811 or CGA staff in 2019 through 2021.

3) Colorado 811 should discontinue submitting Norfield (the state's Electronic Ticket Entry and Transmission System) damage notifications to DIRT. The data is called in during a critical situation in the field and the incident is not investigated by the excavator prior to reporting the incident, nor by Colorado 811 after the incident is reported. The damage data are frequently incomplete, incorrect, not verified, and often not an actual damage. Multiple damage reports are also submitted to DIRT by Colorado 811 when the facility type is not known. The data are also improperly utilized by CGA in the national damage reports.
STATUS: 2019 Norfield damage data was again submitted to DIRT in the spring of 2020 with several months of data missing according to Colorado 811. The inability to consistently upload 100% of the Norfield damage data to DIRT is one important reason why this recommendation was made. No further was action taken in 2020 or 2021. This practice will be stopped in 2023.

2018 SUGGESTIONS

4) All facility owner members could be required to submit an affidavit each year (by March 30th of the next year) confirming the accurate number of damages they experienced. This includes those facility owner members with no damages.
STATUS: No action was taken by Colorado 811 in 2019 through 2021.
In 2020, 770 stakeholders were registered for DIRT. Of these, 219 submitted a "*Data Complete*" record to DIRT, well short of the 2,263 Colorado 811 Member facility owners.
In 2021, 801 stakeholders were registered for DIRT. Of these, 262 submitted a "*Data Complete*" record to DIRT, well short of the 2,202 Colorado 811 Member facility owners.

5) All facility owner members could submit a report of the name of every excavation company that damaged their facility and identify their action plan for the excavator (training, certification, etc.), along with a periodic status on the action plan. This report could be verified by Colorado 811, and a summary analysis incorporated in the Annual State Damage Report and submitted to the UDPSC.
STATUS: No action taken by Colorado 811 in 2019 through 2021. Colorado 811 could follow up with these excavators and offer education and training services.

6) Colorado 811 DP Liaisons could develop an action plan for a select group of targeted counties and excavators based upon the latest State Damage Report, along with a regular status of the action plan. The action plans could be managed and monitored by Colorado 811 for local improvements in damage prevention and submitted to the UDPSC.
STATUS: The Colorado 811 Damage Prevention Department is developing an excavator survey and follow-up program in 2019.
In 2020 and 2021, Colorado 811 staff began working with a few facility owners to provide 811 education services to excavators who had damaged their facility.

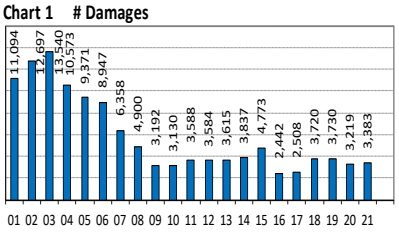
Perspectives on Facility Damage - 2021

KEY DATA REVIEW - 2021

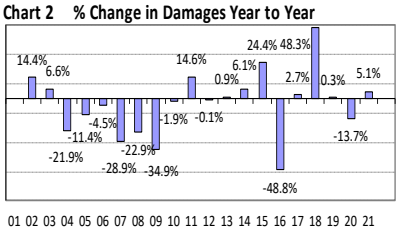
General facility damage information

- 3,383 DIRT damages submitted in 2021, a 5.1% increase from 3,219 damages in 2020 (Charts 1&2)
- The DIRT damage trend has been inconsistent since 2015 (Charts 1&2), note the large increases in 2015 and 2018 and the large decrease in 2016.
- Excavators requested a notification on 66.2% (smaller share than 2020) and did not request a notification on 26.2% (larger share than 2020) of the damages where a cause of damage option was selected (Chart-3, see Damage Cause type on page-12)
  The remaining 7.6% of the damages in 2021 were submitted as insufficient notification made.
- The share of damages submitted with an insufficient notification request has been erratic, ranging from a low of 0.3% to a high of 7.6% in 2021 (data not shown)
- Facility owners did not specify a cause of damage on 11.6% of damages in 2021 compared to 28.1% in 2020. (see Chart-A – % Data Unknown or Not Collected, page-13).
  DIRT damages were submitted by 74 One Call members (facility owners) in 58 of 64 counties and in 265 cities. There were 2,202 Tier-I One Call member codes in 2021 with 801 Colorado stakeholders registered with DIRT

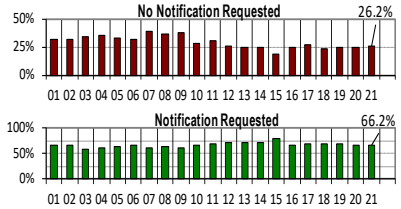
Colorado Facility Damages 2001-2021
Chart 1 # Damages



Colorado Facility Damages 2001-2021
Chart 2 % Change in Damages Year to Year



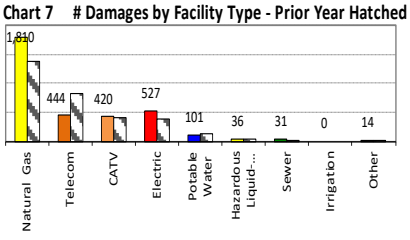
Colorado Facility Damages 2001-2021
Chart 3 % Damages Without and With Request



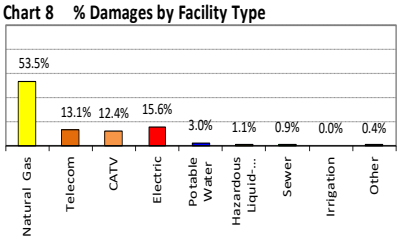
Facility type

- Natural Gas damages =1,810 (53.5% of DIRT total), a 29.9% increase from 2020 (Charts 7&8)
- Electric damages =527 (15.6%), a 37.6% increase from 2020 (Charts 7&8)
- Telecommunication damages =444 (13.1%), a 46.6% decrease from 2020 (Charts 7&8)
- CATV damages =420 (12.4%), a 0.7% increase from 2020 (Charts 7&8)
- The trend of all damages generally decreased from 2003 through 2010. For some facility types, the trend moderately increased after 2010 (Chart-9). Telecom and especially CATV reporting has been erratic
- 14 counties (21.9% of 64 counties) had at least 50 damages, and combined, these counties had 2,829 damages (83.6% of total) (see Table-H – %Share of Data and Cumulative %Share of Data – by County – 2021, page-17)

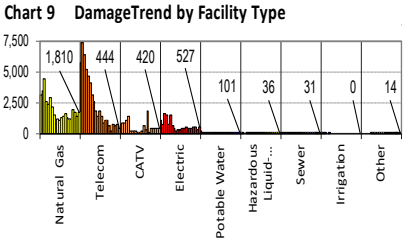
Colorado Facility Damages 2021 (All data)
Chart 7 # Damages by Facility Type - Prior Year Hatched



Colorado Facility Damages 2021 (exclude Unknown)
Chart 8 % Damages by Facility Type



Colorado Facility Damages 2001-2021 (exclude Unknown)
Chart 9 DamageTrend by Facility Type

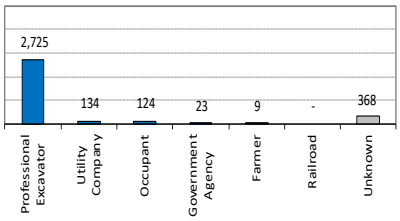


Perspectives on Facility Damage - 2021

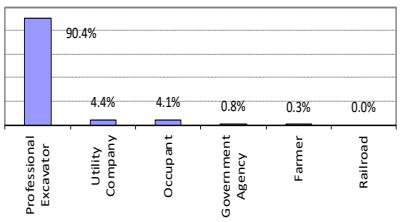
Excavator type (grouped)

- Professional Excavator (contractor)=2,725 (90.4% of DIRT total) damages (Charts 10&11)
- Professional Excavators' contribution to damages ranged between 78% to 94% over the years (Chart-12)
- Utility Company damages =134 (4.4%), a 76.3% increase from 2020 (Charts 10&11)
- Occupant damages =124 (4.1%), a 16.2% decrease from 2020 (Charts 10&11)
- Facility owners did not identify the excavator type on 368 (10.9%) damages, a 52.7% decrease from 2020 (Chart 10)
- The quality of data submission decreased significantly after conversion to DIRT in 2006. In 2005, only 2.2% of damages did not have the excavator type identified (data not shown)
- The share of damages submitted for each excavator type has been similar over the years (Chart-12), with an increasing share (up from 1.1% share) of Utility Company damages since 2018

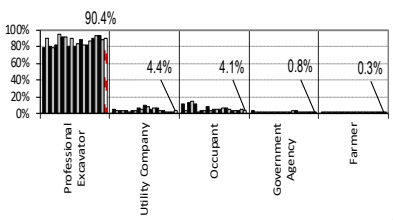
Colorado Facility Damages 2021 (All data)
Chart 10 # Damages by Excavator Group



Colorado Facility Damages 2021 (exclude Unknown)
Chart 11 % Damages by Excavator Group



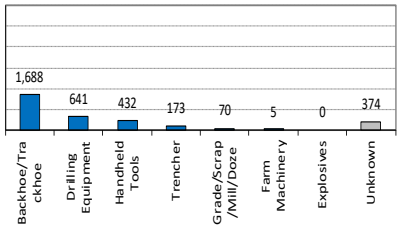
Colorado Facility Damages 2021 (exclude Unknown)
Chart 12 % Damage Trend by Excavator Group



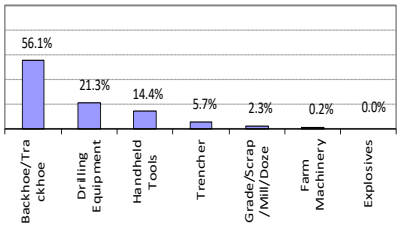
Excavation Equipment type (grouped)

- Backhoe & Trackhoe damages=1,688 (56.1% of DIRT total), a 31.6% increase from 2020 (Charts 13&14)
- Drilling (all types) damages=641 (21.3%), a 7.4% decrease from 2020 (Charts 13&14)
- Handheld Tools (hand, probe, vacuum) damages=432 (14.4%), a 21.0% increase from 2020 (Charts 13&14)
- Facility owners did not identify the excavation equipment type on 374 (11.1%) damages, a 40.9% decrease from 2020 (Chart 13)
- The share of damages submitted for each excavation equipment type has changed considerably over the years (Chart-15), with a steady increase in Drilling Equipment and a steady decrease in Trencher related damages since 2007

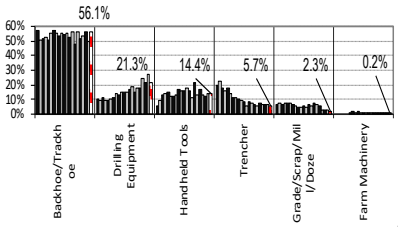
Colorado Facility Damages 2021 (All data)
Chart 13 # Damages by Excavation Equipment Group



Colorado Facility Damages 2021 (exclude Unknown)
Chart 14 % Damages by Excavation Equipment Group



Colorado Facility Damages 2021 (exclude Unknown)
Chart 15 % Damage Trend by Excavation Equip Group



Perspectives on Facility Damage - 2021

Work Performed type (grouped)

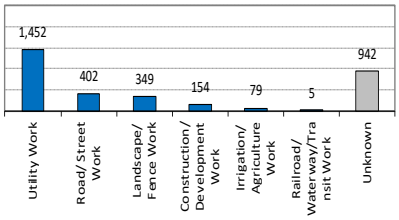
NOTE: The charts below reflect groupings of similar, not specific, Work Performed types.

- Utility Work group damages=1,452 (59.5% of DIRT total), an 10.1% increase from 2020 (Charts 16&17)
- Road and Street Work group damages=402 (16.5%), a 34.9% increase from 2020 (Charts 16&17)
- Landscaping/Fencing Work group damages=349 (14.3%), a 2.8% decrease from 2020 (Charts 16&17)
- Facility owners did not identify the work performed type on 942 (27.8%) damages, a 9.9% decrease from 2020 (Chart 16)
- The quality of data submission worsened in 2018 through 2021. Facility owners did not identify the work performed type on an average of about 500 (13.6%) damages per year from 2007 through 2017 (data not shown), while it increased from 942 to 1,261 (average of 32%) from 2018 through 2021.
- The share of damages submitted for each work performed group has changed over the years (Chart-18)
  -The share of the Utility Work group increased to and remained above 55% each year after 2007
  -The share of the Road/Street Work has remained above 13% since 2013
  -The share of the Landscape/Fence Work group averaged 24% from 2001 through 2015 but has remained below 19% since 2016
  -The share of the Construction/Development Work has ranged from 4% to 13% since 2001 and tends to move around with the growth and contraction of the building industry

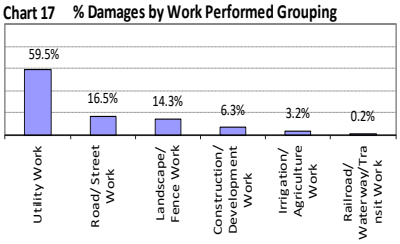
The following information reflects specific work performed types (data not shown):

- Electric Work contributed the most damages with 338 (13.8%), followed by Water Work with 277 (11.3%), (both part of the Utility Work group)
- Landscape Work (part of the Landscape/Fence Work group) followed with 243 (10.0%)
- Communications Work (part of the Utility Work group) contributed the next most damages with 240 (9.8%)
- Sewer Work (part of the Utility Work Group) followed with 210 damages (8.6%)
- Natural Gas and Pipeline Work (part of the Utility Work Group) followed with 228 damages (9.3%)
- Note again that the Utility Work Group contributes over 50% of the facility damages nearly every year

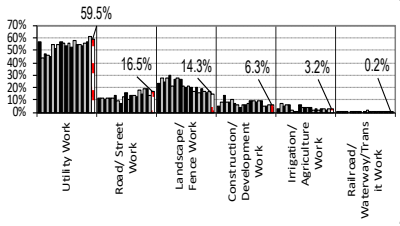
Colorado Facility Damages 2021 (All data)
Chart 16 # Damages by Work Performed Grouping



Colorado Facility Damages 2021 (exclude Unknown)
Chart 17 % Damages by Work Performed Grouping



Colorado Facility Damages 2021 (exclude Unknown)
Chart 18 % Damage Trend by Work Performed Grouping



Perspectives on Facility Damage - 2021

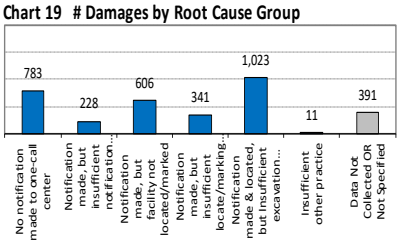
Damage Cause type (grouped)

NOTE: The charts below reflect groupings of similar, not specific, Damage Cause types.

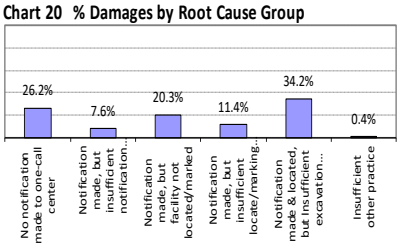
- No Notification made to One Call Center/811, damages=783 (26.2% of DIRT Total) (Charts 19&20)
- Notification Made but Insufficient Notification Practice, damages=228 (7.6%) (Charts 19&20)
- Notification Made but Facility Not Located/Marked, damages=606 (20.3%) (Charts 19&20)
- Notification Made but Insufficient Locate/Marking Practice, damages=341 (11.4%) (Charts 19&20)
- Notification Made but Insufficient Excavation Practice, damages=1,023 (34.2%) (Charts 19&20)
- Insufficient Other Practice, damages=11 (0.4%) (Charts 19&20)
- Facility owners did not identify the damage cause, damages=391 (11.6% of DIRT total) (Chart 19)
- The share of damages due to each damage cause has shown considerable variance over the years and changed considerably in 2006 and 2007 (Chart-21), likely due to inconsistent data collection and coding procedures and the switch-over to CGA-DIRT in 2006
- The best quality reporting for Damage Cause was in 2011 (5.0% not identified) and 2008 (7.0% not identified), (data not shown)

COMMENT: *Use of the options Data Not Collected and Root Cause Not Listed does not provide any clue as to the damage cause. The submitter did NOT select Locate Not Requested, so we might assume a locate was in fact requested. But we do not know if the damage cause was due to Insufficient Notification Practices, Insufficient Locate/Marking Practices, or Insufficient Excavation Practices. Facility owners are encouraged to research the damage incident, identify an appropriate damage cause, and properly code the damage cause to facilitate proper analysis of the data.*

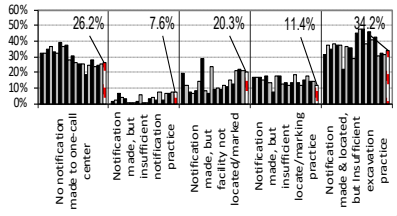
Colorado Facility Damages 2021 (All data)
Chart 19 # Damages by Root Cause Group



Colorado Facility Damages 2021 (exclude Unknown)
Chart 20 % Damages by Root Cause Group



Colorado Facility Damages 2021 (exclude Unknown)
Chart 21 % Damage Trend by Root Cause Group



Damage Cause Detail - for <u>Damages WITH a Notification Request</u>:

- Of the 228 (7.6%) damages with a notification request but insufficient notification practice:
  79=Excavator dug prior to valid start date/time
  71=Excavator dug after valid ticket expired
  61=Excavator dug outside area described on ticket
  17=Excavator provided incorrect notification information
  0=Insufficient notification practice
- Of the 606 (20.3%) damages with a notification request but facility not located/marked:
  484=Not marked due to locate error
  50=Not marked due to incorrect facility records/maps
  23=Unlocatable facility
  21=No response from operator/contract locator
  19=Not marked due to tracer wire issue
  9=Not marked due to abandoned facility
  0=Facility was not located or marked
- Of the 341 (11.4%) damages with a notification request but insufficient locate/marking practice:
  129=Marked inaccurately due to locate error
  118=Marks faded, lost, or not maintained
  36=Site marked but incomplete at damage location
  26=Marked inaccurately due to incorrect facility records/maps

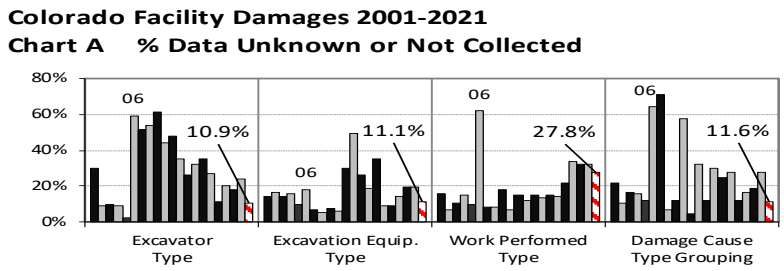
18=Marked inaccurately due to tracer wire issue
14=Marked inaccurately due to abandoned facility

- Of the 1,023 (34.2%) damages with a notification request and insufficient excavation practice:
  386=Excavator dug prior to verifying marks by test-hole
  344=Excavator failed to maintain clearance after verifying marks
  227=Failure to use hand tools where required
  65=Excavator failed to protect/shore/support facility
  1=Improper backfill
  0=Improper excavation practice not listed
- Of the 11 (0.4%) damages with a notification request and insufficient other practice:
  8=Previous damage
  2=Deteriorated facility
  1=Colorado 811 Call Center Error
  0=Abandoned facility

A note about "Data Not Collected/Unknown"

From 2001-2005, the quality of the information submitted for most of the requested data elements was improving. This means that facility owners were researching and providing a valid option for the data element instead of the Unknown/Other or Data Not Collected options. As Chart-A and Table-A located below show, when facility owners began submitting their data to DIRT in 2006, the quality of the information degraded significantly as measured by the percent of Unknown/Other or Data Not Collected options. The issue has continued through 2021. The quality of the Excavator type, Excavation Equipment type, and Damage Cause type generally improved from 2013 to 2017 but worsened between 2018 and 2021. Overall, the quality of these important data elements has been erratic in recent years.

Chart-A – % Data Unknown or Not Collected

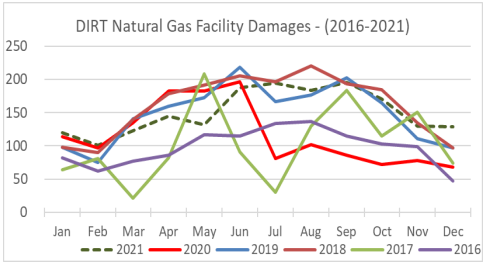


COMMENT: *Facility owners are encouraged to collect and submit accurate and complete information on all facility damages. Lack of information limits our ability to analyze the data and to draw accurate and useful conclusions about facility damage and its causes. Continued improvement in data submission is needed.*

Table-A – % Data Unknown or Not Collected

Colorado Facility Damages% Data Unknown or Not Collected																	
Table A	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21
Excavator Type	2.2%	59.4%	51.9%	54.1%	61.6%	44.5%	47.7%	35.5%	26.4%	31.9%	35.1%	27.4%	11.5%	20.7%	18.4%	24.2%	10.9%
Excavation Equipment Type	10.0%	18.5%	7.2%	5.6%	7.4%	6.3%	30.1%	49.3%	26.2%	19.2%	35.1%	9.5%	9.0%	14.3%	19.7%	19.7%	11.1%
Work Performed Type	10.0%	61.7%	8.7%	8.1%	18.1%	6.7%	14.9%	12.4%	15.2%	13.8%	15.2%	14.5%	21.8%	33.9%	32.5%	32.5%	27.8%
Damage Cause Type	12.0%	64.1%	71.4%	7.0%	12.4%	57.3%	5.0%	32.1%	11.8%	30.3%	24.5%	28.0%	12.4%	16.7%	18.9%	28.1%	11.6%

As an example of potential under-reporting, note the chart to the right that shows the natural gas damages by month for 2016 through 2021. The lines can identify under-reporting in some months by observing the trend over several years. Note the drop in natural gas damage count around March and July 2017 (green line) and sudden drop in mid-summer of 2020 (red line). This may be evidence of under reporting by the natural gas facility owners in those years.



Perspectives on Facility Damage - 2021

Analysis of number of facility owners submitting DIRT damages

Table-2 below breaks down the number of facility owners and change in the number of DIRT damages submitted in 2021 as compared to 2020. The table details the a) number of facility owners submitting damages in both 2020 and 2021, b) number submitting only in 2021 but not in 2020, and c) number submitting only in 2020 but not in 2021. This table reflects the change in damages from 2020, not the total damages in 2021 (3,383 damages) or 2020 (3,219).

Table-2 – Number of Facility Owners and Change in Number of DIRT Damages for 2020 to 2021

# Owners in 2021	# Owners submitted in 2021 and 2020	# Owners submitted Only 2021 NOT 2020	# Owners submitted Only 2020 NOT 2021	
43	19	24	0	More than 2020 Count
25	25	0	-34	Less than 2020 Count
6	6	0	0	Same Count as in 2020
74	**50**	**24**	**-34**	**Net Change 2020-2021**

Change # Damages 2020-20021	# Damages submitted	Only 2021 Not 2020	Ony 2020 Not 2021	
804	751	53	0	More than 2020 Damages
-640	-555	0	-85	Less than 2020 Damages
164	**196**	**53**	**-85**	**Net Change 2020-2021**

As the last row labeled 'Net Change' on the upper table indicates, a total of 74 facility owners submitted damages to DIRT in 2021, a decrease from the 84 who submitted in 2020. Fifty (67.6%) of these 74 companies submitted damages in both 2020 and 2021, while 24 (32.4%) of these 74 facility owners did not submit damages in 2020 but did submit damages in 2021. There were also 34 facility owners who submitted damages in 2020 but did not submit any damages in 2021. As the last row labeled 'Net Change' on the lower table indicates, these 34 facility owners submitted 85 damages in 2020 and did not report any damages in 2021. This effectively reduced the 2021 damage count compared to 2020.

The 50 facility owners who submitted damages in both 2020 and 2021 mark a group of facility owners who consistently submit damages to DIRT and provide a reporting baseline to measure and compare damages year-over-year to track progress. As the 'Net Change' row on the lower table indicates, these 50 facility owners submitted a net 196 more damages in 2021 than in 2020. Of these 50 facility owners, 19 submitted 751 more damages than in 2020, while 25 submitted 555 fewer damages than in 2020 – for a net change of 196 more damages in 2021 from facility owners who submitted in both 2020 and 2021. The 24 facility owners who submitted damages in only 2021 reported 53 damages with -0- damages reported in 2020. Note also that 34 facility owners submitted zero damages in 2021 but submitted 85 damages in 2020 – effectively lowering the damage count in 2021 over 2020 by about 85 damages.

Of the 751 additional damages submitted from 2020 to 2021 by facility owners who submitted in both 2020 and 2021, 622 were submitted by a single facility owner. This change is likely due to either poor locating or poor excavating practices or possibly improved reporting practices by that single facility owner. Of the 555 fewer damages submitted from 2020 to 2021 by facility owners who submitted in both 2020 and 2021, there were 410 fewer damages submitted by a single facility owner. This change is more likely due to under reporting by that facility owner than improvements in locating or excavation practices. This is an educated opinion of the Author as there is no direct evidence that the statement is true.

In other words, the moderate net increase in DIRT damages submitted by facility owners from 2020 to 2021 (196 more damages) can most likely be attributed to:

a) no notification made to the one-call center, 205 additional damages,

b) insufficient locating practices, 146 additional damages not marked due to locate error,

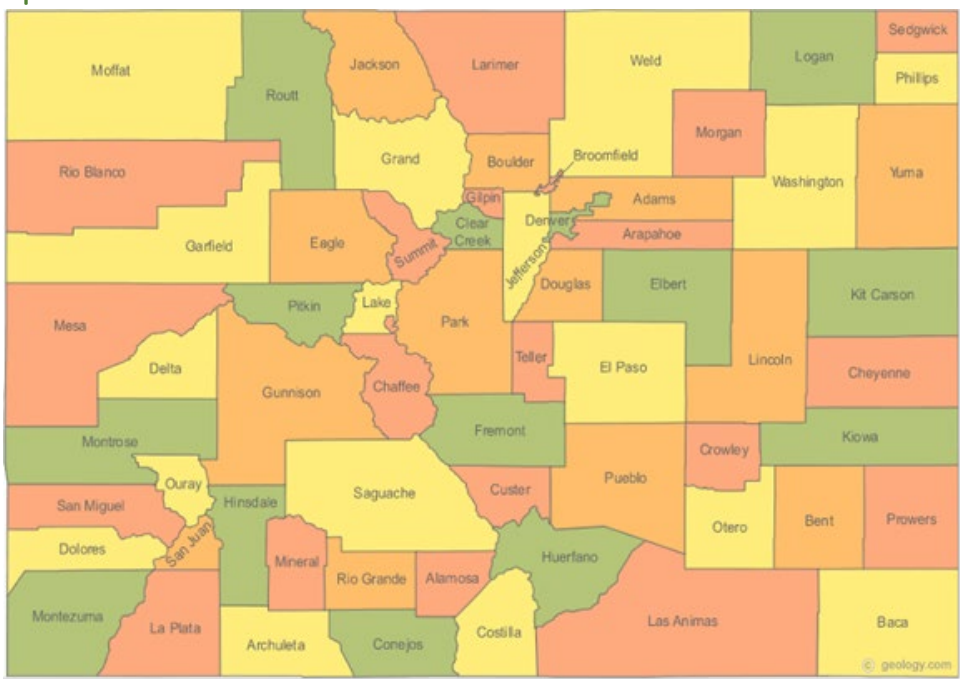
c) insufficient excavating practices, 137 additional damages with improper excavation practices.

d) various other damage causes that decreased to offset these increases.

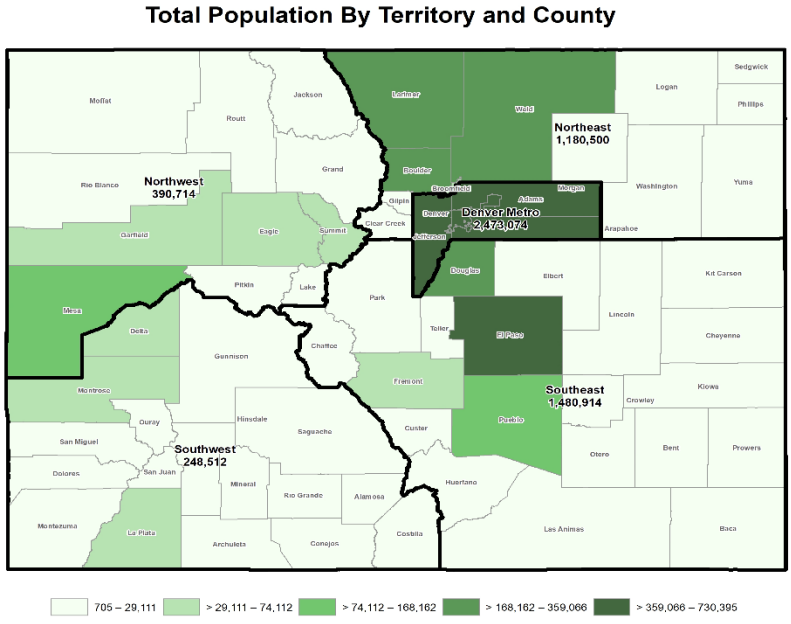
Perspectives on Facility Damage - 2021

APPENDIX A–SUPPLEMENTAL DATA TABLES AND CHARTS

County map of Colorado



Territory-county map of Colorado



Perspectives on Facility Damage - 2021

State Demography and One Call Data

Table-G – State Demographic and One Call Data – 2003-2021

2003-2021 CO811 State DIRT Damage Prevention Data																								
DEMOGRAPHICS																								
Land Area:	104,093	Square Miles																			%Change	%Change	%Change	%Change
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021		2020-2021	2003-2021	2009-2021	2003-2011
Population:	4,555,084	4,608,811	4,662,534	4,745,660	4,821,784	4,901,938	4,976,853	5,050,332	5,123,550	5,194,663	5,270,886	5,347,655	5,446,594	5,529,630	5,599,590	5,676,913	5,734,915	5,782,915	5,831,162		0.8%	28.0%	17.2%	12.5%
Population Density: (persons/SqMile)	43.8	44.3	44.8	45.6	46.3	47.1	47.8	48.5	49.2	49.9	50.6	51.4	52.5	53.4	54.0	54.8	55.3	55.8	56.3		0.8%	28.6%	17.7%	12.4%
Net Migration:	10,313	14,300	13,779	42,896	35,000	40,469	36,267	37,569	39,312	39,143	45,109	45,062	68,844	53,295	42,395	51,761	34,162	27,341	32,782		19.9%	217.9%	-9.6%	281.2%
Housing Permits:	39,569	46,499	45,891	38,343	29,454	18,998	9,355	11,591	13,502	23,301	27,517	28,698	31,871	38,974	40,673	42,627	38,633	40,469	56,524		39.7%	42.8%	504.2%	-65.9%
ONE-CALL DATA																								
CO811 Incoming Notifications:	788,314	789,539	764,883	727,039	643,647	563,041	470,716	500,622	503,408	560,366	617,608	684,863	732,861	796,695	848,040	922,061	957,745	1,052,358	1,067,299		1.4%	35.4%	126.7%	-36.1%
CO Counties w/ Submitted Damages:	56	56	52	56	56	51	55	53	59	59	53	54	53	54	51	61	59	60	58		(2)	2	3	3
CO811 Members Submitting Damages	48	48	46	43	Unkown	Unkown	Unkown	Unkown	60	74	64	74	65	70	57	67	61	84	74		(10)	26	N/A	N/A
DIRT Facility Damages: (unadjusted)	13,540	10,573	9,371	8,947	6,358	4,900	3,192	3,130	3,588	3,584	3,615	3,837	4,773	2,442	2,508	3,720	3,730	3,219	3,383		5.1%	-75.0%	6.0%	-73.5%
Telecommunications Damages	6,425	5,216	4,639	4,144	3,195	2,602	1,911	1,391	1,897	1,467	912	1,120	1,156	662	289	763	694	832	444		-46.6%	-93.1%	-76.8%	-70.5%
Natural Gas Damages	4,489	2,627	2,435	2,939	2,185	1,521	768	1,194	1,095	1,310	1,411	1,701	1,273	1,174	1,230	1,928	1,784	1,393	1,810		29.9%	-59.7%	135.7%	-75.6%
Electric Damages	1,666	1,561	790	1,497	635	472	231	349	303	430	513	522	424	480	456	527	598	383	527		37.6%	-68.4%	128.1%	-81.8%
Cable TV Damages	847	1,079	1,434	258	235	226	200	152	172	258	639	389	1,839	8	434	408	478	417	420		0.7%	-50.4%	110.0%	-79.7%
Water Damages	90	84	53	89	77	62	40	33	49	70	60	72	54	68	70	49	113	137	101		-26.3%	12.2%	152.5%	-45.6%
Sewer Damages	19	5	17	16	21	6	17	2	7	8	8	15	9	19	10	10	25	9	31		244.4%	63.2%	82.4%	-63.2%
Liquid Pipeline Damages	0	1	1	2	5	1	1	2	7	4	6	15	14	23	15	25	30	40	36		-10.0%	#DIV/0!	3500.0%	#DIV/0!
Other Damages	4	0	2	2	5	10	24	7	58	37	66	3	4	8	4	10	8	8	14		75.0%	250.0%	-41.7%	1350.0%
DAMAGE METRIC																								
Damages / 1,000 Notifications: (unadjusted)	17.2	13.4	12.3	12.3	9.9	8.7	6.8	6.3	7.1	6.4	5.9	5.6	6.5	3.1	3.0	4.0	3.9	3.1	3.2		3.6%	-81.5%	-53.3%	-58.5%
Telecom Damages / 1,000 Notifications	8.2	6.6	6.1	5.7	5.0	4.6	4.1	2.8	3.8	2.6	1.5	1.6	1.6	0.8	0.3	0.8	0.7	0.8	0.4		-47.4%	-94.9%	-89.8%	-53.8%
Nat Gas Damages / 1,000 Notifications	5.7	3.3	3.2	4.0	3.4	2.7	1.6	2.4	2.2	2.3	2.3	2.5	1.7	1.5	1.5	2.1	1.9	1.3	1.7		28.1%	-70.2%	3.9%	-61.8%
Electric Damages / 1,000 Notifications	2.1	2.0	1.0	2.1	1.0	0.8	0.5	0.7	0.6	0.8	0.8	0.8	0.6	0.6	0.5	0.6	0.6	0.4	0.5		35.7%	-76.6%	0.6%	-71.5%
Cable TV Damages / 1,000 Notifications	1.1	1.4	1.9	0.4	0.4	0.4	0.4	0.3	0.3	0.5	1.0	0.6	2.5	0.0	0.5	0.4	0.5	0.4	0.4		-0.7%	-63.4%	-7.4%	-68.2%
Water Damages / 1,000 Notifications	0.11	0.11	0.07	0.12	0.12	0.11	0.08	0.07	0.10	0.12	0.10	0.11	0.07	0.09	0.08	0.05	0.12	0.13	0.09		-27.3%	-17.1%	11.4%	-14.7%
Sewer Damages / 1,000 Notifications	0.02	0.01	0.02	0.02	0.03	0.01	0.04	0.00	0.01	0.01	0.01	0.02	0.01	0.02	0.01	0.01	0.03	0.01	0.03		239.6%	20.5%	-19.6%	-42.3%
Other Damages / 1,000 Notifications	0.005	0.001	0.004	0.01	0.02	0.02	0.05	0.02	0.13	0.07	0.12	0.03	0.02	0.04	0.02	0.04	0.04	0.05	0.05		2.7%	823.3%	-11.8%	2444.7%

Table-G lists the key One Call, demographic, and DIRT damage information for Colorado from 2003 through 2021. This information, but at the county level, is used to generate the County Damage Prevention Report Cards. The One Call information – excavator notification requests and DIRT facility damages - listed in the middle section are broken out by the eight facility types. This information is used to calculate the Facility Type Damage Metric (DIRT damages/1,000 excavator notifications) in the lower section. The last four columns indicate the %Change from five different starting years (2020-2021, 2003-2021, 2009-2021, and 2003-2010).

Note the steady decrease in the number of DIRT facility damages and the Facility Type Damage Metrics from 2003 through the 2009-2011 timeframe. These decreases occurred with the backdrop of increases in population, changes in net migration, and decreases in both housing permits and excavator notification requests. The economic, construction and excavation activity began increasing after 2009 as excavator notification requests and facility damages also began to increase. But the decreasing Facility Type Damage Metrics shows that while excavator notification requests and facility damages were both increasing after 2009, the increase in excavator notification requests was larger than the increase in facility damages - thus, causing the Facility Damage Metric (DIRT damages/1,000 excavator notifications) to continue to decrease in most years.

In 2021, note the decrease in facility damages for the telecommunications, water, and liquid pipeline facility types along with the increase in damages for the other facility types. The large changes from year to year in the cable TV and telecommunications damages are a symptom of erratic reporting by some facility owners. Also note the small decrease in liquid pipeline damages in 2021 to 36, trending up from the mid-teens in all years after 2013.

COMMENT: *The increase in liquid pipeline damages since 2011 is concerning considering the much lower number of damages prior to 2011 (from 0 to 5). Additional damage prevention efforts and resources should be directed to the liquid pipeline industry to help mitigate the potential safety and property risks.*

Perspectives on Facility Damage - 2021

Share of Demography and One Call Data – Top 16 Counties

Table-H – %Share of Data and Cumulative %Share of Data – by County – 2021

	2021											
	Colorado	5,831,162		32,782		56,524		1,067,299		3,391		
	COUNTY	%Population	Cumulative %Population	%Net Migration	Cumulative %Net Migration	%Permits	Cumulative %Permits	%Incoming Notifications	Cumulative %Incoming Notifications	%Adj DIRT Damages	Cumulative %Adj DIRT Damages	Damages / 1000 Notifications
1	El Paso	12.7%	12.7%	8.7%	8.7%	16.3%	16.3%	11.9%	11.9%	18.7%	18.7%	5.0
2	Denver	12.4%	25.1%	12.4%	21.2%	17.7%	33.9%	10.2%	22.1%	8.2%	26.9%	2.6
3	Arapahoe	11.3%	36.4%	1.3%	22.5%	9.8%	43.7%	9.3%	31.4%	10.1%	37.0%	3.5
4	Jefferson	10.0%	46.4%	0.5%	23.0%	4.4%	48.2%	7.9%	39.3%	6.1%	43.1%	2.5
5	Adams	9.0%	55.4%	2.7%	25.7%	8.3%	56.4%	9.0%	48.3%	6.8%	49.9%	2.4
6	Douglas	6.3%	61.7%	21.9%	47.6%	10.7%	67.2%	8.9%	57.2%	5.1%	55.0%	1.8
7	Larimer	6.2%	67.9%	7.9%	55.5%	5.7%	72.9%	8.1%	65.2%	8.6%	63.6%	3.4
8	Weld	5.8%	73.7%	20.3%	75.9%	9.3%	82.2%	9.4%	74.7%	5.8%	69.4%	2.0
9	Boulder	5.7%	79.4%	5.2%	81.1%	2.2%	84.4%	5.2%	79.8%	4.0%	73.4%	2.5
10	Pueblo	2.9%	82.3%	5.0%	86.1%	1.3%	85.7%	1.9%	81.8%	2.2%	75.6%	3.6
11	Mesa	2.7%	85.0%	3.5%	89.6%	2.2%	87.9%	2.4%	84.2%	2.9%	78.4%	3.8
12	Broomfield	1.3%	86.3%	4.9%	94.5%	0.9%	88.8%	1.5%	85.7%	0.5%	79.0%	1.1
13	Garfield	1.1%	87.4%	1.0%	95.5%	1.1%	89.9%	0.8%	86.5%	1.8%	80.8%	6.9
14	La Plata	1.0%	88.4%	0.4%	96.0%	0.7%	90.6%	1.1%	87.6%	1.1%	81.9%	3.3
15	Eagle	1.0%	89.3%	-0.9%	95.1%	0.8%	91.4%	0.9%	88.4%	1.3%	83.2%	4.7
16	Fremont	0.8%	90.2%	1.2%	96.3%	0.3%	91.7%	0.4%	88.9%	0.6%	83.8%	4.4
	Top 16		90.2%		96.3%		91.7%		88.9%		83.8%	Ave=3.3
	Next 32		9.0%		3.0%		7.6%		10.2%		14.3%	Ave=4.7
	Bottom 16		0.8%		0.7%		0.7%		0.9%		1.9%	Ave=6.2

Table-H lists the population, net migration, housing permits, excavator notification requests and DIRT facility damages as a %share of the state total of each measure for the 16 counties with the largest population (sorted in decreasing population order). The lowest three rows of the table summarize a similar set of data for the top 16, middle 32 and bottom 16 counties by population. The interesting observation is that the top 16 counties (25% of the counties) with the largest population represent from an 83.8% to 96.3% share of the five measures for 2021; while the bottom 16 counties with the smallest share of the population represent from between a 0.7% to 1.9% share of the five measures. While this relationship can be expected, **it suggests that any lack of damage data submission by the bottom 16 and possibly the middle 32 population counties does not materially impact the analysis and usefulness of the DIRT data submitted for Colorado as the top 16 counties represent well over 80% of the damages**.

DIRT damages were submitted in 58 of the 64 Colorado counties in 2021 (two less than in 2020). The six counties with no DIRT damages submitted in 2021 had from one to four damage tickets called-in by excavators. Cheyenne County had no damages called-in but had two damages submitted to DIRT in 2021. Note the Average Damage Metric for each grouping of counties (Top 16, Middle 32, and Bottom 16) listed in the last column. As population decreases in each grouping, the Average Damage Metric increases.

There are three observations evident in Table-H:

1) El Paso County had a proportionally larger share of DIRT damages (18.7%) in relation to its share of population (12.7%), building permits (16.3%), and excavator notifications (11.9%). El Paso County had a Damage Metric Rank of 25 of 64, and the second-worst (higher) ratio of DIRT damages/1,000 notifications (=5.0) of the top 16 counties ranked by population.
2) Douglas County has a proportionally smaller share of damages (5.1%) in in relation to its population (6.3%), building permits (10.7%), notifications (8.9%), and especially its net migration (21.9%) – which tends to drive construction. Douglas County had a Damage Metric Rank of 6 of 64, and the second-best ratio of DIRT damages/1,000 notifications (=1.8) of the largest 16 counties ranked by population.
3) In relation to the other measures for the Top 16 Counties (between 88.9% and 96.3% share of State), this group's DIRT damages had a lower-than-expected share of the state's damages at 83.8%. This result was offset by a higher-than-expected share of the state's damages for both the Middle 32 Counties (14.3%) and the Bottom 16 Counties (1.9%). **This result likely points to more effective public awareness and stakeholder damage prevention programs in a county as its population and number of excavator notifications increase.**

The third observation suggests that public awareness and stakeholder education could be effectively targeted to rural areas of the state, particularly by the Colorado 811 Marketing and Damage Prevention Departments.

Perspectives on Facility Damage - 2021

Demography and One Call Data – All Counties

Table-I – Demographic and One Call Data – by County – 2021

Colorado 2021	3,391		1,067,299		5,831,162		32,782		56,524			
COUNTY	Adj DIRT Damages	Rank: 64 is largest	Incoming Notifications	Rank: 1 is largest	Population	Rank: 1 is largest	Net Migration	Rank: 1 is largest	Permits	Rank: 1 is largest	Damages / 1,000 Notifications	Rank: 1 is Best
Adams	230	60	95,837	5	523,658	5	891	10	4,687	6	2.4	12
Alamosa	11	32	2,882	34	16,416	31	61	26	109	31	3.8	28
Arapahoe	342	63	98,747	4	658,284	3	420	12	5,519	4	3.5	25
Archuleta	30	47	3,298	29	13,540	34	177	16	193	25	9.1	60
Baca	2	9	520	56	3,450	56	6	41	3	60	3.8	29
Bent	2	9	593	54	5,590	50	48	29	8	52	3.4	23
Boulder	136	56	55,214	9	332,897	9	1,699	6	1,237	9	2.5	15
Broomfield	18	39	15,819	12	76,280	12	1,609	8	501	13	1.1	5
Chaffee	10	29	3,770	27	19,637	26	146	20	349	20	2.7	17
Cheyenne	2	9	461	57	1,730	59	(7)	47	12	49	4.3	33
Clear Creek	6	19	1,835	39	9,380	39	(12)	51	97	33	3.3	20
Conejos	7	24	1,237	45	7,320	42	(113)	61	45	38	5.7	45
Costilla	14	34	834	51	3,475	55	(11)	50	0	64	16.8	64
Crowley	6	19	706	53	5,861	47	54	27	14	46	8.5	58
Custer	1	1	946	50	4,725	53	32	33	146	29	1.1	4
Delta	26	45	4,265	24	31,079	18	111	22	223	21	6.1	48
Denver	278	61	108,886	2	725,109	2	4,079	3	10,000	1	2.6	16
Dolores	2	9	455	58	2,093	58	27	36	6	56	4.4	35
Douglas	173	57	94,471	6	368,862	6	7,169	1	6,059	3	1.8	8
Eagle	44	50	9,315	15	55,687	15	(284)	63	439	16	4.7	39
El Paso	633	64	127,252	1	737,865	1	2,867	4	9,186	2	5.0	41
Elbert	10	29	10,255	14	26,473	21	264	15	413	18	1.0	3
Fremont	20	42	4,595	22	48,971	16	386	13	174	27	4.4	34
Garfield	62	53	8,958	16	62,339	13	324	14	631	12	6.9	52
Gilpin	4	16	969	49	5,823	48	26	37	22	41	4.1	31
Grand	24	43	5,447	21	15,720	32	(9)	49	467	14	4.4	36
Gunnison	18	39	3,890	26	16,946	30	(50)	56	197	23	4.6	38
Hinsdale	1	1	241	61	792	63	(1)	44	14	46	4.1	32
Huerfano	8	25	1,265	44	6,810	44	89	23	57	37	6.3	50
Jackson	2	9	209	62	1,366	61	(3)	45	2	61	9.6	62
Jefferson	208	59	84,824	8	582,978	4	173	18	2,515	8	2.5	14
Kiowa	1	1	188	63	1,461	60	3	42	6	56	5.3	43
Kit Carson	6	19	1,320	43	7,026	43	(36)	54	6	56	4.5	37
La Plata	38	48	11,390	13	55,791	14	142	21	415	17	3.3	21
Lake	10	29	2,982	33	7,380	41	(57)	57	64	36	3.4	22
Larimer	291	62	86,182	7	362,616	7	2,606	5	3,221	7	3.4	24
Las Animas	3	15	2,277	37	14,442	33	(42)	55	41	39	1.3	6
Lincoln	9	28	1,064	47	5,674	49	34	32	10	51	8.5	57
Logan	2	9	4,110	25	21,334	25	50	28	14	46	0.5	2
Mesa	98	55	25,815	10	156,702	11	1,163	9	1,231	10	3.8	27
Mineral	1	1	322	59	890	62	28	35	8	52	3.1	18
Moffat	4	16	2,109	38	13,301	35	30	34	15	45	1.9	9
Montezuma	18	39	3,634	28	25,860	22	83	24	22	41	5.0	40
Montrose	53	51	8,549	17	43,306	17	641	11	451	15	6.2	49
Morgan	11	32	4,542	23	29,082	20	(97)	59	195	24	2.4	13
Otero	8	25	1,478	42	18,705	27	149	19	16	44	5.4	44
Ouray	16	37	2,496	36	4,873	51	(8)	48	146	29	6.4	51
Park	15	36	2,556	35	17,349	28	(74)	58	193	25	5.9	46
Phillips	4	16	528	55	4,551	54	45	30	8	52	7.6	54
Pitkin	25	44	3,010	31	17,313	29	(100)	60	97	33	8.3	56
Prowers	8	25	1,102	46	12,017	36	36	31	8	52	7.3	53
Pueblo	74	54	20,520	11	169,372	10	1,646	7	742	11	3.6	26
Rio Blanco	1	1	2,995	32	6,535	45	13	40	12	49	0.3	1
Rio Grande	14	34	1,752	41	11,510	37	(6)	46	35	40	8.0	55
Routt	54	52	6,233	20	24,723	24	(182)	62	215	22	8.7	59
Saguache	6	19	993	48	6,464	46	63	25	101	32	6.0	47
San Juan	1	1	92	64	706	64	1	43	17	43	10.9	63
San Miguel	17	38	1,795	40	8,075	40	(19)	53	80	35	9.5	61
Sedgwick	1	1	315	60	2,399	57	19	38	1	62	3.2	19
Summit	42	49	8,078	18	30,836	19	(358)	64	407	19	5.2	42
Teller	26	45	6,452	19	24,879	23	174	17	149	28	4.0	30
Washington	1	1	718	52	4,824	52	16	39	1	62	1.4	7
Weld	197	58	100,650	3	340,018	8	6,668	2	5,268	5	2.0	10
Yuma	6	19	3,056	30	9,992	38	(17)	52	4	59	2.0	11

Table-I lists the demographic and the One Call data along with the Rank Order for the 64 Colorado counties, sorted alphabetically. Note that Rank Order is where 1=largest and 64=smallest, except for DIRT damages, where fewer damages have a Rank=1. Each county includes data for Adjusted DIRT Damages, Excavator Notification Requests, Population, Net Migration and Building Permits. Note that 58 of the 64 counties had one or more damages submitted in DIRT in 2021. The six counties with no DIRT damages had from one to four damage tickets called-in by excavators to the Colorado 811 Ticket System. Six counties with no DIRT damages were adjusted by ½ of the Colorado 811 Ticket System damages. Cheyenne County had no damages called-in to the Colorado 811 Ticket System but had two damages submitted to DIRT. The maximum Adjusted DIRT Damages/1,000 notifications metric for the 64 counties was 16.8; the minimum was 0.03; and the average was 4.7. The average damage metric was lower in 2021 than the 4.9 average in 2020, the 5.2 average in 2019, and the 5.5 average in 2018.

NOTES: Adjusted DIRT damages may not include all facility damages that occurred in the county as facility owners may not have submitted all damages to DIRT. These values are NOT density adjusted as they are with the County Damage Prevention Report Cards and are therefore slightly larger.

Perspectives on Facility Damage - 2021

Chart of DIRT Damage Metric by Facility Type

Chart-B – DIRT Damages/1,000 Notifications – by Facility Type – 2003-2021

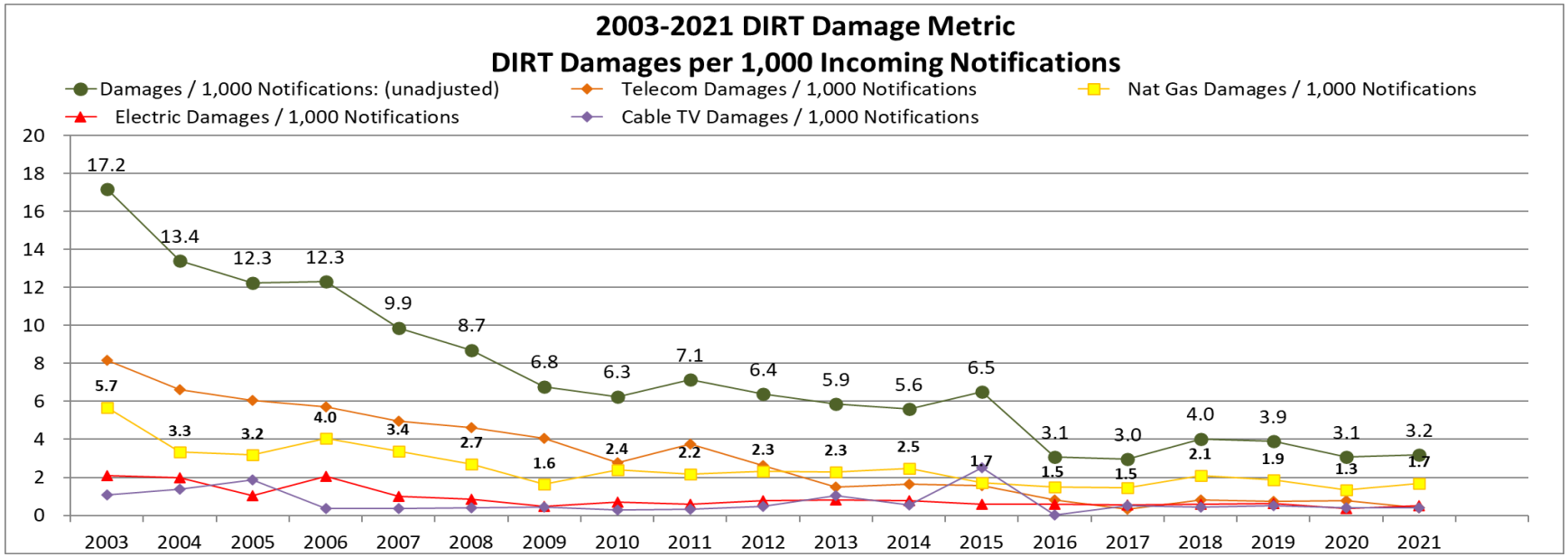


Chart-B shows the DIRT damages/1,000 notifications for all-facilities and for each of the four major facility types in Colorado from 2003 through 2021. While there were small increases in several of the Damage Metrics in 2021, note the strong decreasing trends in the Damage Metrics over the 19 years. Natural gas, electric, cable TV, and sewer damages increased in 2021, while telecommunication, water, and liquid pipeline damages decreased in 2021.

For all-facilities (the green line with circle markers), the Damage Metric has decreased from 17.2 DIRT damages/1,000 notifications in 2003 to 3.2 in 2021, an 81.5% decrease over 19 years. The all-facility damage metric may be lower than would be expected since several of the industries may be under-reporting DIRT damages. Note the large increase in 2018 from the lows in 2016 and 2017. Also consider the higher damage ticket count called-in by excavators to Colorado 811.

For the natural gas facility type (the yellow line with square markers), the Damage Metric has decreased from 5.7 in 2003 to 1.7 in 2020, a 70.2% decrease over 19 years. There is consistently high confidence in this metric for the natural gas industry as it often aligns closely with the number of natural gas damage notifications called-in by excavators to Colorado 811 and the number of damages facility owners report to PHMSA.

For the liquid pipeline facility type (not shown), the DIRT damages steadily increased from four in 2012 to 40 in 2020, and then decreased to 36 in 2021. The recent increasing trend in damages is concerning considering the regulated nature of the pipeline industry.

Evidence suggests that the telecommunications, cable TV, water and sewer industries may have been under submitting damages to DIRT in prior years.

End of Report

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