

A construction site background with a blue hard hat in the foreground on a clipboard with blueprints.

Improving Upon Our Dig Laws: Framing Out A Plan For Achieving A 50 Percent Reduction In Excavation Damage

Introduction

In September, the Common Ground Alliance (CGA) published its latest annual Damage Information Reporting Tool (DIRT) Report. The Report summarizes excavation damage trends and incident numbers across the country during 2022. In addition to presenting information on damage to buried utilities, root causes of those damages, and recommendations to reduce damages, this year's DIRT Report points repeatedly to CGA's challenge to the damage prevention industry to reduce damages by 50 percent over five years.¹ The challenge, first issued in February 2023, comes as the level of excavation damage to buried infrastructure and associated harms continue to increase.

Similar to previous years, the annual DIRT Report indicates a continued upward advance in excavation damage numbers to an all-time high. While displaying the reality of the damage trend, CGA points to its recent challenge as the necessary solution. However, the Report lacks reference to a specific plan on how to achieve the needed reduction, which we had hoped to see and believe is essential for success.² The Report provides good recommendations, a number of which have been recommended for years, unfortunately without measurable progress in damage reduction.

What is needed is an actionable plan to reduce excavation damage numbers and meet CGA's challenge. For years, the industry has operated on a voluntary model with proposed recommendations and best practices agreed upon as an ideal, but without clear incentives for stakeholder groups to adopt them or for other systemic reforms to take place.

CGA, for its part, has been proactive in recent years with the acquisition of the Gold Shovel Association to form the Damage Prevention Institute and the initiation of the Next Practices working group. It is too early to tell how these initiatives will impact the landscape. However, it has been three years since Next Practices was launched, yet damage numbers continue upward, and if the Damage Prevention Institute relies solely on voluntary participation it may suffer the same limitation as past recommendations of best practices.

In our view, the needed model requires a shift away from purely voluntary stakeholder action as it has been done to date (even after *challenging* the industry). The Alliance for Innovation and Infrastructure (Aii) believes a genuine damage-reducing strategy can be accomplished from within the industry, but a new approach is needed requiring more stakeholder engagement, transparency, and accountability. This new approach must incorporate a detailed plan that brings about a concerted, transparent, and coordinated effort to reverse the damage trend and lower damage numbers. In this paper we advance a framework for creating such an action plan.

DIRT Data Summary for Calendar 2022

According to the DIRT report, damages in 2022 are up across key metrics. The ratios that help inform the level of damage specifically indicate that:

- Damages per dollar of construction spending saw a 12.35 percent increase³ since the prior year.
- Damages per 1,000 811 transmissions rose by 9.34 percent⁴ over the prior year.

These are significant increases, which not only point to continued problems for the industry, but serve as a stark warning of the difficulty ahead to not only stop the trend but reverse it.

In its 2019 DIRT Report, CGA proclaimed that “Damages are on the rise,” and that both total reported damage events and unique damages “reached an all-time high.”^{5,6} While 2020 damage numbers fell by an estimated 12 percent⁷, that year was an aberration plagued with both an economic downturn from COVID-19 and construction-hampering public policy limitations.

In its report for 2021, CGA presented findings that, based on a three-year trend (from 2019-2021), damage numbers in 2021 reached a new all-time high.⁸ Likewise, this year’s DIRT Report demonstrates a new three-year high for 2022, explaining “evidence shows 2022 damages were higher than 2021, pointing to a continued rise in damages.”⁹ In summary, we can see that in each of the years 2019, 2021, and 2022, the United States saw new record-high damage tallies.

CGA and DIRT Report Challenges

While this year’s DIRT Report is visually compelling, as mentioned above, the report in our opinion does not fully communicate the trajectory of damage incidents, namely that damages continue at unprecedented highs.

In addition, the Report could be more forthcoming in some respects. One example relates to the notation that excavators now lead stakeholders in reporting damage incidents. A casual reader may find this encouraging and believe that excavators are far more engaged in the process than ever before. It is true that excavators are submitting more reports each year, but not nearly enough to become the largest reporting group without other influences.

The primary reason that they now lead by proportion – left unstated in the Report – is that in 2021 and 2022 the historically largest reporting group (the locator industry) significantly reduced the number of damage reports submitted to CGA’s DIRT platform, cutting available data in half for 2021 and 2022 (see *Figure 1* below). In context, while excavators are making small steady strides toward increasing reporting, it is locators stepping back in their reporting that led excavators to be the largest reporting group.

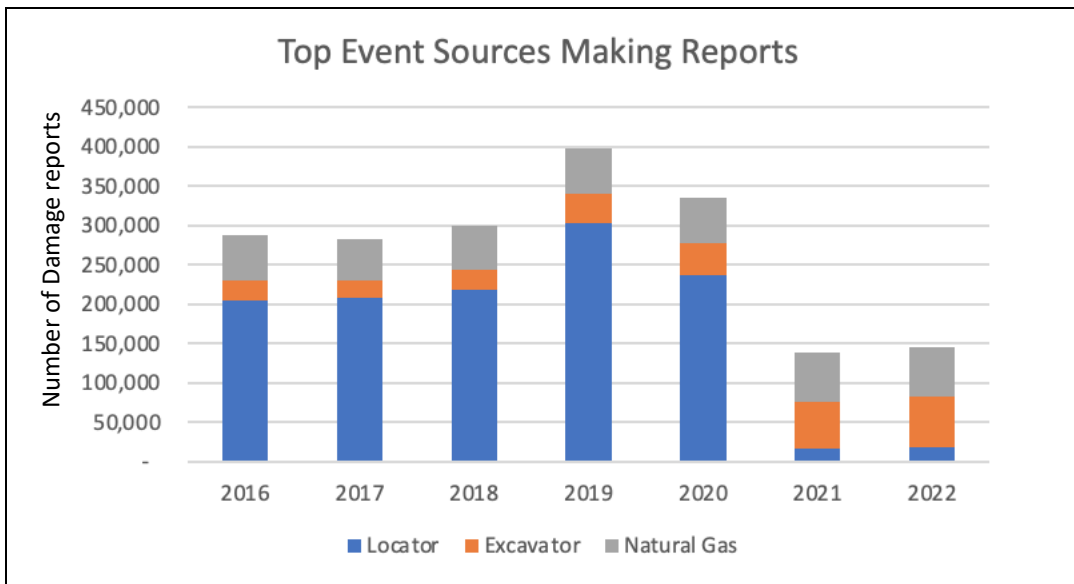


Figure 1: Top three stakeholder groups reporting, with other reporting groups omitted.¹⁰
 Source: Common Ground Alliance, DIRT Reports 2016-2022

Excavators should be commended for their increased reporting, while questions must be raised and answered about the locator industry. Preventing future damage relies considerably on drawing insights from past damages. Failure to submit damage reports holds the whole industry back and may slow the identification and implementation of needed best practices and reforms.

CGA has long been vocal on the desire for more data in its DIRT Reports. This year, while emphasizing the importance of data once again, the Report also points to a plan to address it.

Monthly reporting and near-miss data submitted by Damage Prevention Institute (DPI) participants through DIRT will provide unprecedented insights, enable timely analysis and create shared accountability across stakeholder groups.

To augment future DIRT Reports and damage prevention efforts, CGA is sourcing additional data, models and experts to create a U.S. damage prevention index that more accurately gauges the rate of damages over time.¹¹

Here again, the DPI stands out as a proactive initiative with the potential for great returns in safety. Collecting more data at increased intervals is a positive step. Figure 2 below demonstrates the level of data CGA has historically had to work with.¹²

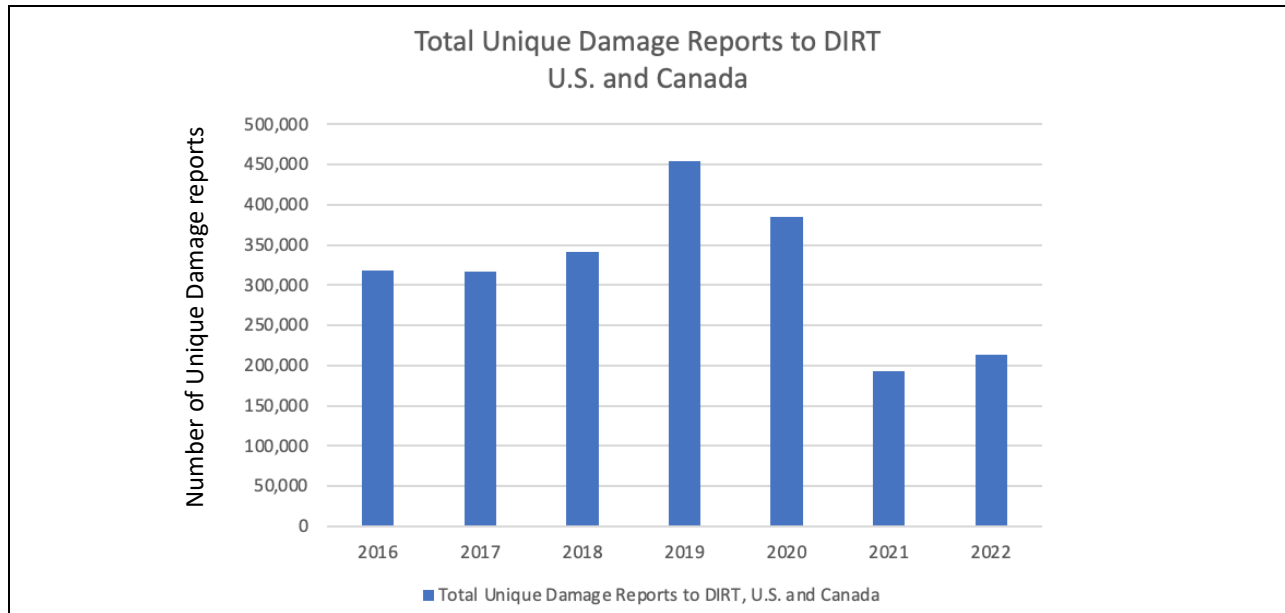


Figure 2: Graph of available data after filtering out redundant reports of the same damage event. Source: Common Ground Alliance, DIRT Reports 2016-2022

In this year’s report for 2022, only 213,792 unique reported damages are available for analysis. Last year, this metric was 192,745 unique reported damages. This marginal increase is encouraging, but it is a marked decline from the previous trend of voluntary reporting. One would have to go back 10 years to see the volume of data reporting this low. In other words, it appears that neither CGA nor the DIRT platform are receiving the same level of data as in previous years. What was a rising trend of more reports each year simply dropped in 2021, largely as a result of the drop off in reporting by the locator group noted above.

Despite continually asking for more data, CGA is getting less. Perhaps CGA could do more to acquire more data from industry participants, but every stakeholder must be committed to both reducing damage and providing data on existing damages for the industry to move forward.

The lower level of data and imperfect data quality may make new damage prevention efforts more difficult. The DIRT Report provides root cause analysis to aid stakeholders in drilling down on their practices and eliminating risky activities, but most recent Reports continue to demonstrate roughly the same root cause groupings and proportions. Better quality data may permit these root cause analyses to be more nuanced and therefore more helpful in driving down damages.

Perhaps the *50 in 5* industry challenge will leapfrog this issue of inconsistent data and poor data quality. If the challenge is met, and damages significantly reduced, the need for higher quality data may become moot. However, the question remains as to whether enough direction and accountability for change can be had without better quality data.

Ultimately, this year’s DIRT Report is a continuation of important work and demonstrates continuing increases in damages. The Report reasserts the call for bold action to address it. The emphasis on the *50 in 5* challenge is perfectly appropriate, as it shows in one document the

extent of the problem while offering a rallying cry to address it. However, lacking is a guide for achieving this challenge. What specific actions does the challenge call for? Who is it calling to act? How can effectiveness be measured? Is anyone overseeing the challenge? Is the challenge similar to the adoption of best practices – putting an ideal out there to see who adopts it?

For its part, CGA points to two examples of successfully cutting damages in half in the past. They are the decade after the implementation of the 811 program and a case study from Chicago since 2017. Both present encouraging precedents, but neither demonstrates a blueprint for a national effort to slash damages in half today. The information CGA puts forward about Chicago provides valuable details that certain stakeholders can emulate, although we believe the most effective path to achieving a nationwide 50 percent reduction is a new formalized action plan.

Forming a New Plan

To date, neither CGA nor its committees appear to have created an overall action plan for reducing damage.¹³ The diverse stakeholder organization¹⁴ has historically focused on operating by consensus and elevating best practices as ideal voluntary standards. CGA’s library of resources offers insight to stakeholders, should they choose to go looking, but if stakeholders are adopting best practices at meaningful levels (which we have little or no way of knowing) then the result has not been successful at reducing damage (as evidenced by the continued increase). Recent progress, in line with one of our own recommendations in 2020¹⁵ to implement a certification program, may yet yield results, through the Damage Prevention Institute.

In this year’s DIRT Report, CGA tells its readers, “Damage prevention progress requires reversing an established upward trend. Visit this Report’s Recommendations and commit to bold action today.”¹⁶ Committing to bold action is necessary and admirable, but simply telling the industry to be bold, while still relying on voluntary changes, is likely not enough to achieve the desired results.

At a minimum, it seems the collection of stakeholder pledges would be helpful in ensuring as many stakeholders as possible know about the challenge and to gain a metric in commitment to it. This could be done by CGA itself or another industry group or groups, but it seems that steps will be needed beyond a challenge and call to the industry to ensure the needle is moved. In the absence of a specific plan for achieving the *50 in 5* Challenge, the industry is likely not to see significant progress and may suffer from a form of the *bystander effect* – where all stakeholders assume one of the others is going to take the meaningful action needed.

Alternatively, if CGA or another representative industry group has created a solid action plan that provides measurement and accountability, we would be highly encouraged. Transparency is key to measuring success. Because of a lack of clarity around the existence or progress in forming a solid action plan to date, we lay out a framework for such a plan below. This framework sets out what actions are needed and relevant timing considerations. Unless or until there are short-term goals, measurable benchmarks, and direction for stakeholders to act on, along with some mechanism for accountability and transparency, we’ll likely continue to have merely a broad consensus on the importance of “communication and collaboration” without any measurable improvement in new or improved communication or collaboration.

Our Proposed Framework for Developing a Plan to Achieve *50 in 5*

Our recommended plan starts with the formation of a group of diverse industry participants. This group would develop a plan across all stakeholders to achieve *50 in 5* and manage the overall process towards the goal. As the industry organization, CGA may be well positioned to lead that effort. This group's mandate would be to draft a plan for cutting excavation damage to underground facilities in half in five years. The group would conduct follow up as set forth in the plan, and ultimately oversee plan implementation. These steps are outline below:

1. Identify relevant roadblocks and costs stakeholders will face to enact the plan.
 - Clearly identify impediments to cutting damage in half – including structural issues, policy issues, technology limitations and stakeholder behavior.
 - Name all roadblocks publicly.
 - Be transparent about costs that may be incurred on the path to *50 in 5*. If, for instance, the most effective way to drive down damage is to invest in a particular technique, practice, or technology, which must be built, bought, or implemented, the report must be candid, that ‘damages will only fall when all stakeholders X confront costs Y. In the end, this will result in ½ damages and cost savings of Z.’
2. Review and consolidate recommendations and information from prior DIRT reports, CGA white papers, technology studies, and input from other organizations, such as the Pipeline and Hazardous Materials Safety Administration (PHMSA), that are concerned with reducing damages.
3. Screen and rank past recommendations and input gathered for impact and achievability.
 - Identify recommendations that have been implemented or are being systemically adopted – and learn from how adoption was achieved and what their success was.
 - Identify recommendations and best practices that have been promoted repeatedly but have not been adopted systemically and similarly study and understand what has held back progress and how those roadblocks can be overcome.
 - Rank recommendations with reference to both their impact and achievability.
 - To effectively cut damages in half, some positive movement is required, meaning low-hanging but low-efficacy recommendations should be instituted first, with harder but high-return recommendations prioritized through benchmarks to ensure they successfully overcome barriers and stay in place.
4. Create any needed new recommendations after considering existing recommendations and roadblocks to their implementation.
5. Develop annual targets for *50 in 5* in light of implementation of recommendations under the plan.
 - Include target metrics beyond damage numbers (e.g., stakeholder pledges, laws or regulations changed, grant dollars allocated, technology adopted (for instance at the One-Call center level), etc).

6. Create a detailed plan for implementation of targets, including ownership of the implementation.
 - Revisit over time, but with a fixed goal: reduce damages by half within five years.
 - Include target dates for monitoring progress.
 - Determine responsible parties for each element of the plan.
7. Gain internal and external support for implementation.
 - Obtain support from other organizations (e.g., PHMSA and others).
 - Meet with and brief each of the various stakeholder groups.
 - Align resources across stakeholder groups for implementation (e.g., PHMSA for grants, states to align regulatory environments, nonprofits for educational resources, etc.).
 - Disclose the plan to the general public to further improve upon general outreach.
8. Monitor and report progress against plan.
 - Collect metrics at regular intervals to gauge system responsiveness and flexibility.
 - Hold regular meetings and produce reports on implementation, (e.g., score cards for stakeholder implementation of recommendations and best practices along with annual damage assessments.)
9. Take corrective action in areas where implementation is not meeting targets.
 - As data becomes available, the plan should evolve and be revised.
 - This active plan revision should also account for both success/progress and failure/regression, meaning that if something works well, it should be prioritized.

Conclusion

Excavation damage incidents to underground infrastructure in the United States are at the highest level ever recorded or estimated, according to available data and information from the Common Ground Alliance's recent DIRT Reports. With public policy supercharging the construction and infrastructure sectors, this will likely lead to more groundbreaking that will exacerbate the existing trends.

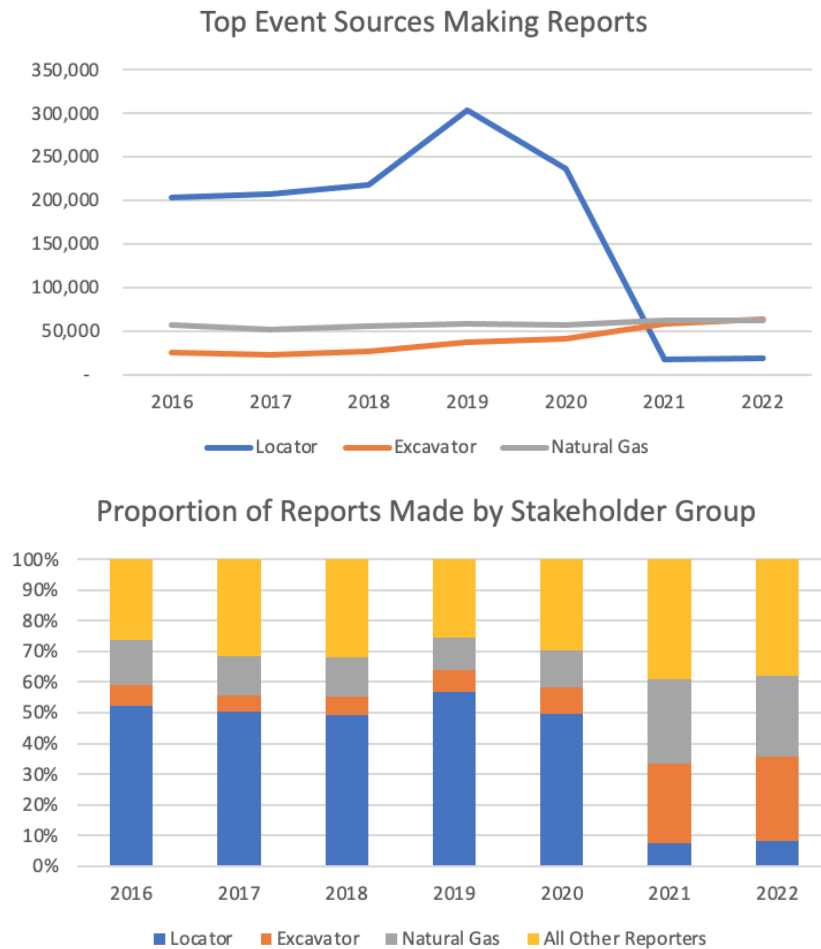
We are encouraged by the Common Ground Alliance issuing its latest industry challenge to reduce damages by 50 percent over 5 years. Seeing this high-profile member organization recognize the scale of the problem and issue a strong call not only to reduce damage, but to cut damages in half, shows the issue is being taken seriously. We would like to see CGA or another key industry group produce an action plan or supporting resources to achieve *50 in 5*.

In this paper, we have put together guiding parameters for the next steps we believe are necessary to meet CGA's challenge. We hope this is a productive framework that will enable stakeholders to form an effective and actionable plan to achieve the commendable *50 in 5 Challenge*. To the extent we can offer additional insight, Aii will continue studying and engaging damage prevention and infrastructure policy in the United States and dialoguing with regulators and stakeholders.

We recognize that, given the diversity of stakeholders and no predominant enforcement mechanism in the industry itself, that there are many inherent challenges to putting a transparent actionable plan in place that provides measurement and accountability. However, we do believe that it is necessary to make an attempt, and CGA appears to be well-positioned to lead the effort. While compulsory compliance with such an action plan is not feasible in a stakeholder-led voluntary industry, a transparent written plan with a manager who seeks commitments from stakeholders, makes routine progress checks, and applies public pressure for accountability and encouragement would represent progress from the way pure volunteerism has functioned in the past.

Appendix A:

The following graphs shows only the top three event sources (not all reporters). These visuals may help readers understand the trajectory and magnitude of stakeholder reporting, and in particular those of the excavator and locator stakeholder groups. See *Figure 1* above.



All reported damages by stakeholder group as a share of 100 percent of reports, with top three reporting groups specified.

Source: Common Ground Alliance, *DIRT Reports 2016-2022*

Citations and Notes

¹ Common Ground Alliance. (2023). *Common Ground Alliance Announces “50 in 5” Industry Challenge to Cut Damages to Buried Utilities in Half by 2028*. <https://commongroundalliance.com/Publications-Media/Press-Releases/Press-Release/common-ground-alliance-announces-50-in-5-industry-challenge-to-cut-damages-to-buried-utilities-in-half-by-2028>.

² Alliance for Innovation and Infrastructure (2023). *Infrastructure Think Tank Applauds, Challenges Common Ground Alliance*. <https://www.aii.org/infrastructure-think-tank-applauds-challenges-common-ground-alliance/>

³ Common Ground Alliance. (2023). *Damage Information Reporting Tool 2022 Analysis and Recommendations. Volume 19*. [Hereafter: DIRT Annual Report for 2022].

[https://commongroundalliance.com/Portals/0/Common%20Ground%20Alliance%20DIRT%20Annual%20Report%202022%20-%20FINAL%20\(1\).pdf](https://commongroundalliance.com/Portals/0/Common%20Ground%20Alliance%20DIRT%20Annual%20Report%202022%20-%20FINAL%20(1).pdf).

⁴ DIRT Annual Report for 2022.

⁵ DIRT Report for 2019.

⁶ Neither reported nor unique damages are a direct measure of *actual* or *total damages*. Each are voluntarily submitted numbers from industry participants that help inform the true level of damage, which must be extrapolated in a statistical model. In 2019, that model showed a peak for excavation damages. We note the high reported and unique damages here both because they do support the finding of high total damages, but also to explain a later point, that reported data has declined considerably since 2019.

⁷ CGA estimated total damages in 2019 to be 532,000, while in 2020, the estimated total damage number was 468,000. See, DIRT Report for 2020.

⁸ Specifically, CGA reported that damages had plateaued or slightly increased from 2019 (and having reported 2019 as a high, this means 2021 was a new all-time high).

⁹ DIRT Annual Report for 2022.

¹⁰ “Event Source” explains who submitted the report to DIRT. “Natural Gas” refers to the owner/operator of natural gas pipeline infrastructure being the source of a damage report to the DIRT platform.

¹¹ DIRT Annual Report for 2022.

¹² It is also important to caution the reader that the drop in unique reports is not representative of a decline in excavation damage events taking place in the real world, on the contrary, excavation damage to buried infrastructure is rising by all available metrics.

¹³ If such a plan exists, the greater transparency and publicity of it, the better its impact and quality is likely to be.

¹⁴ CGA includes 16 stakeholder groups, which they describe as: Electric, Emergency Services, Engineering/Design, Equipment Manufacturer, Excavator, Gas Distribution, Gas Transmission, Insurance, Locator, Oil, 811 Center/One Call, Public Works, Railroad, Road Builder, State Regulator, and Telecommunications. (for more, see: <https://commongroundalliance.com/Membership-Engagement/Membership>)

¹⁵ Dierker, B. (December, 2020). *Improving Upon Our Dig Laws: Proactive Steps to Combat Five Years of Rising Excavation Damage*. Alliance for Innovation and Infrastructure. <https://www.aii.org/wp-content/uploads/2023/01/Improving-Upon-Our-Dig-Laws-2020.pdf>.

¹⁶ DIRT Annual Report for 2022.



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About Aii

The Alliance for Innovation and Infrastructure (Aii) is an independent, national research and educational organization that explores the intersection of economics, law, and public policy in the areas of climate, damage prevention, energy, infrastructure, innovation, technology, and transportation.

The Alliance is a think tank consisting of two non-profits: the National Infrastructure Safety Foundation (NISF), a 501(c)(4) social welfare organization, and the Public Institute for Facility Safety (PIFS), a 501(c)(3) educational organization. Both non-profits are legally governed by volunteer boards of directors. These work in conjunction with the Alliance's own volunteer Advisory Council.

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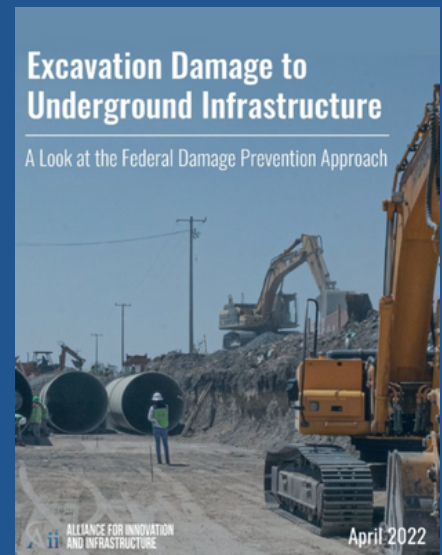
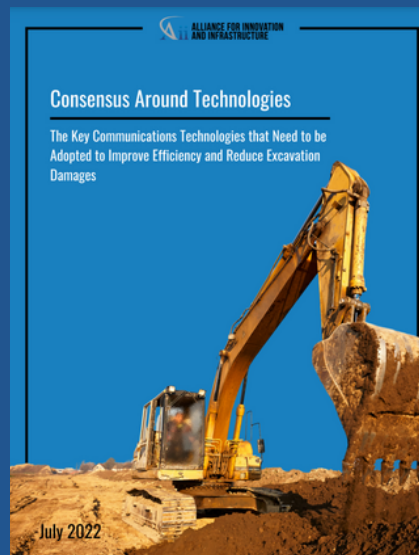
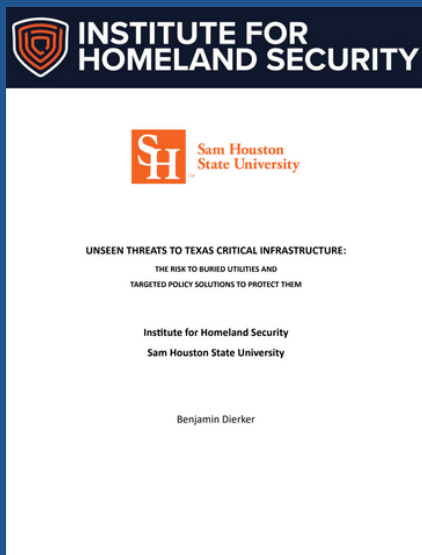
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