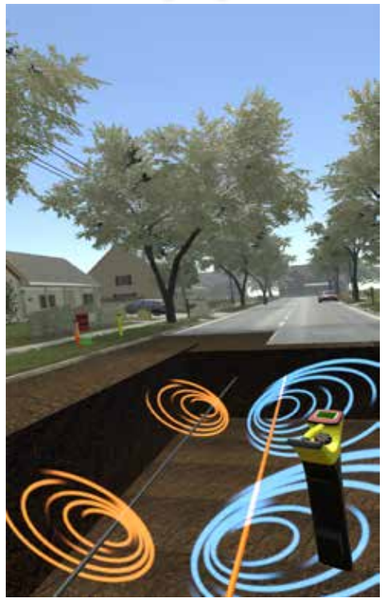
VIEW from the STREETS

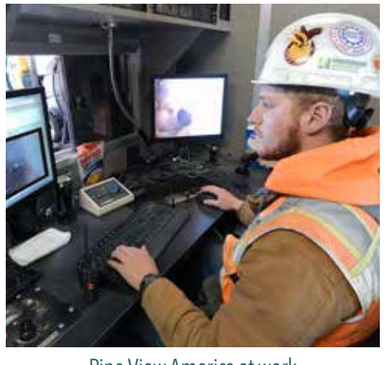
with Matt Streets, Editor

# Technology Will Force Change: Are We Ready?

After reading the previous issue of American Locator magazine, one of the key concepts that emerged from the Roundtable was the idea that technology will force change in this industry. Not if, but WHEN it will happen is up to debate, but consensus says that it will be within the next ten years or so. The things we are looking for now are those products, ideas and organizations that are striving to commit to the "sea change" ideology of technological improvement. We can continue to build better mousetraps, but mice will be extinct in this industry before long. What will the damage prevention world look like in ten years? In 20 or 30 years? How soon until we are done with the already tired and antiquated one-call systems, and everyone is walking around on job sites with VR head gear, looking at fully realized 3-D digital maps of underground utilities?



UTTO Virtual Locate Simulator



Pipe View America at work

The idea that a backhoe will dig into the ground without knowing EXACTLY what is underneath them is frankly ridiculous-sounding to the average citizen, who must deal with these underground damages on an ever-increasing basis. As always, we are searching for those things that will be making these changes, those moments that cause us to view the damage prevention world in a fundamentally different way. A product like UTTO's Virtual Locate Simulator is one of those things that seems like an industry game-changer (take it for a test-drive on page 6), while the new approach that software company Opvantek is bringing to underground damage metrics uses a concept that did nothing less than change the entire sport of baseball forever! Read about these companies, and others, in our annual Tech Trends issue. Hopefully, it can help you more clearly visualize an underground utility world free of damages!

## April Fools!

April is the cruelest month, and as the dull roots stir underground from the spring rain, we are reminded of many things, not the least of which is: APRIL IS NATIONAL SAFE DIGGING MONTH. Yes, with April comes the easiest press release ever printed, the most harmless corporate social media post, and the quickest signature and accompanying photo-op ever made by a grinning politician to tell us, the supposedly unassuming public, to please call 811 before planting our lilacs.

So, while our eyes glaze over at the anthropomorphic gopher in a hard hat dancing around on our television screens, perhaps we should ponder if damages to underground utilities really do go DOWN in the month of April in the onslaught of all this awareness and proclamations? If so, shouldn't EVERY month be Safe Digging Month? Or will we find out in August with the new DIRT report that we are suffering through another year of record damages? Will the answer be to continue to chant the "Call 811" mantra like a broken record, or will we actually try and do something about it? Obviously, there is still a need for one-call centers with the way the system is designed now, and for better or worse, they will still be around for a while, but is there maybe a better way to get the message out there to excavators?

One such person attempting to shake things up is Lindsay Sander, creator of the National Excavator Initiative. Read her interview on page 12 to find out how the NEI is striving to deliver the 811 message in different and more direct ways to the excavator, who as we here at Planet Underground believe, is the solution to damage prevention–not the problem.

Another thing that April brings into our lives, despite the very wintry weather we've had lately, is baseball! And the connection to damage prevention is NOT all those 811 signs you see on the outfield walls, but the advanced techniques of predictive analytics, which could be a potential game-changer in the way we most efficiently allocate locating resources by looking at damage data and metrics.

Come along as we go underground for a sewer inspection in the city of Chicago with Pipe View America, look at fiber hits in Nashville, and bring you more great Roundtable highlights! Don't forget to write with any comments, damage photos, or story ideas to: mattstreets@planetunderground.tv.

"We point fingers and place blame, and all the while the root cause goes undetected. And the excavators begin to dig." *-Alan Haddy, President, UTTO*

# PUTTING SMART TECHNOLOGY TO WORK

## UTTO's Virtual Locate Training Simulator

It's an all-too-familiar scene: the locator is onsite and pushing against a tight deadline–frequently against the laws of physics. The field technician is doing his best to get an accurate locate on a pipeline. It could be here, but then again, it could be there. He's working hard in the midday heat and feeling stressed and somewhat overwhelmed. The technician finally sprays the ground and wipes his brow. Was it a successful locate? Time will tell, as the excavators begin to move in.

Unfortunately, business as usual is racking up quite the tab, and not just in human safety and health. In 2016, there were an estimated 379,000 underground facility damages in the U.S. alone. Most of the damages that occurred in the pipeline sector were caused by insufficient locating practices. What's worse is that the societal burden carries a price tag of at least $1.5 billion. That's right, $1.5 billion.[1]

> "If we could visualize a locate, then train and certify our field techs in a controlled environment...well, that would be a game changer."
>
> *-Regional Training Director, major contract locating company*

So who's to blame? Certainly not the field technicians, right? After all, their locate skills are a product of their training. If it's not the field-tech's fault, it must be the trainers or management. Not so fast. We point fingers and place blame, and all the while the root cause goes undetected. And the excavators begin to dig.

The problem is not any one party. It's not the field techs, the trainers, or even the managers. The problem is the training process itself. That's right, the locate industry lives and dies by a line locator training system that is not standardized, subjective, has not changed much in the last 40 years, and is in desperate need of an overhaul.

Year after year, many locate companies shell out tremendous amounts of money, time, and energy in attempts to train and equip field technicians for the massive responsibility of facility locating. First, students sit through hours of PowerPoint presentations or whiteboard discussions. Next, they jump into the field with complex electronic devices, and they follow their teachers and parrot their actions. Finally, they must be supervised for weeks or even months in the field before they are arbitrarily deemed "ready" to locate on their own. Other companies decide to forego the extensive training altogether. They roll the proverbial dice and often end up paying the steep price when damages inevitably occur. In either case, there's no telling the technician "gets it" until it's too late.

In the end, even the most well-intentioned training assessment is subjective at best, as there are no performance metrics or standards to confirm the student can safely and accurately complete a locate, time after time, and on a variety of asset types and situations. Rather, when the opposite is confirmed, it often results in real-world asset damage, or worse. It's no wonder the cost of business as usual is reaching into the billions.

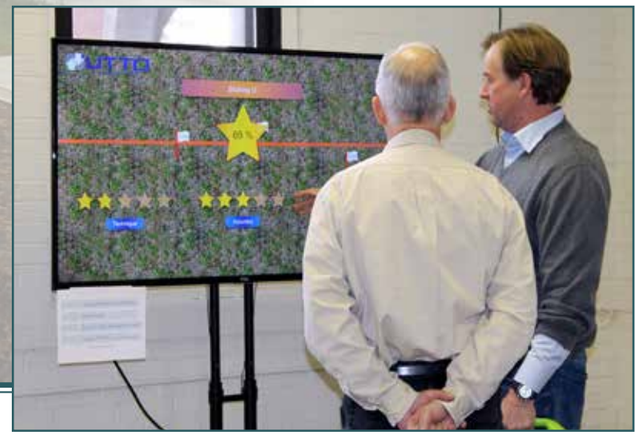
"If we could visualize a locate, then train and certify our field techs in a controlled environment–well, that would be a game changer," quoted from a regional training director of a major contract locating company.

Now imagine the next era of facility locating. Imagine having the ability to measure and qualify technician training in an immersive, controlled, and asset-free environment. It's an environment where you can reinforce all the right training, skills, and attention-to-detail required for a successful locate operation. And it's an environment that enables you to evaluate technician performance based on actual data.

1 Common Ground Alliance; 2016 Annual DIRT Report

### This is UTTO®, and this is buried asset locating... reimagined.

While UTTO's real-world Locate Assurance™ product has begun to address the industry's problems by measuring performance in the field, it became evident that training techniques could also benefit from shifting from a traditional "hope the student gets it" to a more measured "data model" approach. So, we began to ask–how can we support and optimize performance improvement behind-the-scenes? And how can we best prepare the student for the challenges of field work? The answer came in the form of UTTO's groundbreaking training simulator.



Alan Haddy explains the assessment scoring of the UTTO Virtual Locate Simulator at The Roundtable, December 2017 at Planet Underground.

Attendees of the 2018 Common Ground Alliance Excavation Safety Conference had the opportunity to try out the UTTO Virtual Locate Simulator.

UTTO's innovative Virtual Locate Simulator completely revolutionizes field-tech training. Our virtual reality training studio uses smart technology to simulate real-world scenarios under true electromagnetic signal conditions. The 3D portable studio can be set up anywhere in as little as 15 minutes, and it allows students to detect buried assets such as pipes and cables across multiple scenarios, just as they would in the field.

The Virtual Locate Simulator is truly an end-to-end digital service solution using mixed reality (real devices, virtual environments and multiple electromagnetic locate scenarios). Students learn with a practical, immersive hands-on approach, and in both transmitter and receiver scenarios. Simply attach an UTTO tracker to any locate device, and it seamlessly links to your virtual locate environment. This increases the quality of training and dramatically decreases training time. Now you can send your techs into the field with confidence, knowing they are expertly trained and equipped with pinpoint-accurate locate skills.

Using X-ray vision to understand the cause of field distortion and resulting locate offset.

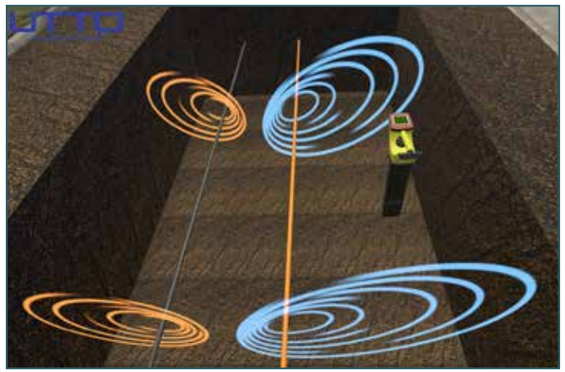
But the real innovation behind UTTO's Virtual Locate Simulator is how it taps into the human desire for feedback and healthy competition. As your technician advances through the simulator, they are given personal performance metrics – the metrics that matter. This eliminates human bias, and it empowers the technician to take ownership of their training and results. Naturally, this inspires a boost in morale, as students continue to raise the bar and excel beyond best-practice standards. And all the while, you're presented with the quantitative data at your fingertips. Now you can incentivize peak performance and create a suite of interactive certification programs. It's truly a win-win.

You've just taken an abstract skillset and made it concrete. But more importantly, you can now identify your field tech's strengths and weaknesses and make the necessary improvements, in a controlled environment, long before costly asset damage occurs in the field. And as your techs transition into the field, leverage UTTO's Locate Assurance to get an accurate and a crystal-clear measurement of your team's onsite performance, day after day.

It's no secret that field technicians don't work in a world of accurate or perfect GIS map layers or black and white information. Rather, they work on the front lines under tremendous stress and pressure, much the same way they have been doing for decades. As a new, tech savvy workforce takes over the responsibility for damage prevention, market forces and industry pressures will demand innovation along with the ability to measure, incentivize and reward best practice.

So, it's time to level up and put smart technology to work. It's time to bring our facility locate operations into the 21st century. And it's time our industry moves away from antiquated practices, and toward the excellence that is asked and required of it.

The next time your crew is on-site for a locate operation, imagine the peace-of-mind as you watch your field technicians standing tall with confidence as the heavy machinery rolls in, knowing with absolute certainty their locate was on-point and delivered with best practice.



VR environment showing buried asset target and interfering conductor. Resulting field distortion is visualized. A field tech can "see" how locates can easily be inaccurate if best practices are not followed.

VR environment showing how to hook-up a portable transmitter and earth stake. A user is scored based on successful hook-up.

*Don't leave it to chance. Leave it to UTTO. Get in touch today to schedule a free demo of our Virtual Locate Simulator and upskill your team. Learn more at www.utto.com.*

PLANET UNDERGROUND.TV

# THE ROUNDTABLE Transcript

## 2017 REVIEW

*Tim Ayers—Director, Occupational Health & Safety - INTREN*
*Cory Mass—Sales Manager, Intelligent Worksite Solutions - Vermeer*
*Eric Swartley—Sr. Manager, Pipeline & Public Safety - UGI*

L to R: Tim Ayers (INTREN), Cory Mass (Vermeer), Eric Swartley (UGI)

*In this Roundtable session, we put together an excavator, an equipment manufacturer and a utility safety director, and filmed as they discussed: the challenges of a crowded underground, the use of increasingly more advanced heavy equipment to help meet those challenges, and the training advances involved in integrating more high-tech methods of equipment maintenance and monitoring. As always, they mutually concurred that the goals of any new technology should include improved safety first, and then productivity.*

### *We bring you an excerpt of the full transcript mid-conversation...*

**Tim:**

We're putting all this cable into the ground and just leaving it there, abandoning it. It's making it hard to locate, hard to do our jobs. We're running out of tolerance zones and easement, so I wonder if anyone has looked at pulling that stuff out of the ground and mining it, recycling it, freeing up that space?

**Cory:**

You're right, utilities have been abandoned, and people don't know where they're at. So we're having to be a lot more precise with our placement of HDD or even open cut installations. There's a lot more work on the front end with planning, and then a lot more re-work during the job.

**Tim:**

A lot of times I think the guys figure in that safety factor, and they work right up to it. It's certainly not something we encourage–we try to steer away from that. I imagine we destroy a lot of your equipment (Cory), and that's probably one of your pet peeves. I know my son works in the shop at our company as an intern and that's something he's learning, how hard the guys use the machines. It's easy for us to be critical of that, but we're also probably pressuring them to be productive. And you know, they are just trying to get the job done. They take a lot of pride in what they're doing, but at the same time they're working really hard out there, and they're trying to get the job done quicker and more productive every time. We need to make our equipment 'bulletproof' so they can live within those safety factors and still get the job done.

**Cory:**

And it's tough. From a design standpoint, we've gone over a lot of different changes over the years to try and make things more reliable so that the contractors, when they're installing products, they can rely on the machines that much more. But as you point out, as you've seen, people run the equipment very hard. Sometimes there are things we can't account for, but every day we're trying to understand what those are and account for them as we go forward.

**Tim:**

We've gone through a couple iterations on the GPS for trucks. One that we implemented not only now has GPS, but it has the points on your truck to inspect to make sure that your equipment is good to go, and makes paperless logging of your inspections. One thing that I've heard about recently though, is it doesn't actually go past the trucks and get to the equipment, so while we do an inspection of our trucks through this tool, we walk through an inspection as we remember how to do it, on our equipment.

And you know obviously for this equipment, this high-tech stuff, it goes through a lot of abuse, so there are things about the operation that our employees need to learn to make sure that it's ready to be used today. As its operating, if they get feedback on how it's being used, they might react better if they understood problems before they actually shut down the machines.

**Eric:**

You mentioned the tool you're using to enhance the level of experience that people have. That's one of the challenges of bringing new workers in–you can't train experience. You can give them the education, but a year's experience takes a year, unfortunately, in that scenario. The other thing that probably parallels technology, especially in the last 30 years I've been in it, is the focus on safety–the employee and public safety component. Technology has really helped to achieve a lot of enhancements in the safety area, as well as in the productivity arena.

**Tim:**

Well you know, it's also important keeping people like myself getting out in the field, and seeing what's going on, so that I remain educated. It's been a long time since I've been out in the field, and just trusting these guys to be out there working is probably not the right thing. I think you need to get out there, and find out what their hardships are, and then it's our job to eliminate those hardships, eliminate the barriers so that they can stay productive.

**Cory:**

One of the things at Vermeer that we've done–I mentioned the training classes and programs we have–but we've also created an HDD simulator. It's the actual operator station off a directional drill, and at Vermeer we keep the bulk of our operator stations very similar, if not exactly the same. So, with this simulator, you can put operators in there and they can start learning the repetitive practices of the drill, learning the concepts of horizontal directional drilling before you put them out on one of those $500,000 pieces of equipment where they could do some real damage. They're not using up hours of warranty, not using fuel, just a little electricity, and they're able to do it in a more controlled environment, versus on the machine where they could potentially get injured.

They can now do this in a classroom setting, but they're still getting that muscle memory, that motion control, learning the ins and outs of operating the drill on a regular basis. We see that as a big benefit to customers starting to bring in new employees, as you said, out of those apprenticeship programs, who maybe have a little bit of exposure, but not a lot. They're able to start using those tools and learn how the machine operates before they have to go out in the cold weather where they may be more prone to have an accident before they've had enough training.

> "[Our people] are working really hard out there, trying to get the job done quicker and more productive every time...we need to make our equipment 'bulletproof' so they can live within those safety factors and still get the job done."
>
> *-Tim Ayers*

> "That's one of the challenges of bringing new workers in—you can't train experience."
>
> *-Eric Swartley*

# Searching for Better Ways: Creating The National Excavator Initiative

*One of our taglines here at Planet Underground is: "The excavator is not the problem, they are the solution." We repeat this phrase over and over like a mantra because it still hasn't seemed to sink in yet—that the answer to lowering damages lies with the excavator. Providing the excavator with as much information as possible, from accurate underground maps to updates on local laws and regulations, will lead to better damage prevention across the board.*

Lindsay Sander, Director - National Excavator Initiative

*To that end, we are proud to introduce to our American Locator readership, Lindsay Sander and the National Excavator Initiative. The Sander Resources team launched the NEI in October 2016 with the goal of delivering key and timely damage prevention information to excavators and contractors, starting with the all-important 811 message. Here, Lindsay talks about the origins of NEI, the problems with damage prevention today, and the need for alternate forms of delivering awareness messages.*

### Ok Lindsay, could you give us some background about yourself, and tell our readers how you got involved in the industry?

After working in the pipeline industry for 17 years, damage prevention has always been near and dear to my heart. The operator I started my career with experienced an incident with a farmer where they lost nearly a quarter-million gallons of crude oil, and it was one the first topics I learned about when coming into the industry. Since that time, I've been involved in a number of law changes, both at the state and federal level, as well as the progression of topics that are happening within the industry right now.

### What exactly is Sander Resources, and what functions does it perform?

We are a full-service consulting firm that specializes in communications around energy issues, in particular dealing with pipelines. We help companies address risk. We try to mitigate risk through additional communications, whether its shaping policy around various issues including damage prevention or outreach to various stakeholders during or in anticipation of construction projects, or during educational efforts to make them aware of pipeline safety issues. We look for policy changes that expose companies to various issues. We get involved in a lot of different issues depending on what our clients need.

### What needs of the industry drove you to create the National Excavator Initiative? How did it come about?

We had a client come to us several years ago requesting help. The operator had a substantial number of damages that were occurring, and frankly increasing, and said, "Can you come at this from an outside perspective to look at all the data, all the information that we've got, our policies, our procedures and tell us what is happening? Why have we seen such an increase? Make some recommendations that will address the increased risk we are seeing, and what we can do to help mitigate it going forward." A lot of takeaways came out of that project.

One finding in particular was that excavators are highly mobile, and that pipelines have traditionally communicated with excavators around a buffer area that surrounds their pipeline. But we found that to be misleading in the sense that many excavators are traveling from far beyond that buffer, and we needed to find a new way of approaching them and to provide information on a national basis. We wanted to try to give them better resources to dig safely.

We have seen a lot of information being delivered by stakeholders, but the stakeholders often talk at each other rather than with each other. We wanted to find a way to bring the parties together, to engage in a massive communication effort that all parties could get behind and see results from.

### What are the biggest obstacles facing the NEI? How do you respond to excavators who are wary of another safety group telling them what to do?

There have been some tremendous hurdles. A lot of people see so many efforts underway already, so anything new immediately draws questions as to

why it's necessary. Secondly, until you have proven results, or actually have a product out there, I think people question it until they see what the path forward is. People maybe want to test drive it a little bit before the purchase, I think we're still in that phase, but more and more companies and organizations are jumping on board because of the outcomes we accomplished in 2017, and what they see coming in 2018.

In terms of the reluctance from the excavation community, I think it's a great question. It's very important, because excavators are the clients and we want to provide tools and resources to make it easier for them to do their work and keep themselves safe. Obviously, there's a concern to keep underground facilities safe too, but the safety of people is our number one goal.

There have been many efforts recently discussed and vetted by the excavation community that have drawn criticism. And it was really important for us to not blame anybody, and not engage in finger pointing. We wanted to go beyond that. One of our team members, Sarah Shamla, has a favorite saying that "a rising tide lifts all boats," and between the different educational materials we have, and will continue to develop, and the launch of our new Safe Excavator app, these are intended to help excavators do their jobs more easily and safely every day. We also avoid preaching to them, which is something they've seen in the past.

> "The message has always been short and sweet—'Call Before You Dig'—implying that you'll be safe if you just call. But people have learned as time goes on that's not always the case."
>
> -Lindsay Sander

### *What are the inherent problems in spreading the 811 message? Are there still professional excavators out there that aren't calling 811? Is there a lack of faith in the system?*

If you can believe it yes, and I think there are a lot of reasons why, in all honesty. Some don't want to wait the required time before they start digging. Some feel pressure from either their client or their bosses to proceed whether they're ready or not, or whether the wait time is provided for or not. Sometimes there is just miscommunication, where everyone in the field thinks that someone internally has contacted 811 to have underground lines marked, where assumptions are made, but it hasn't happened. Another issue is that while many excavators initially contact 811, problems arise in the field afterwards. The markings may disappear, there are inaccurate markings, or there is a failure of the positive response system in some way so that the excavator doesn't make the second one call as kind of an alarm to say to the facility operators, "Hey you need to come take a look at this, we haven't gotten a response from you and we need to." The message has always been short and sweet –"Call before you Dig"– implying that you'll be safe if you just call. But people have learned as time goes on that's not always the case. Additional steps must be taken after 811 has been contacted, and just because you've called, doesn't mean you're done.

At the end of last year we conducted a national phone survey with excavators. One thing we learned is that excavators felt they had a significant amount of safety-specific training on the job. But when they were asked about training around specific topics – damage prevention, or trenching… very few of them had actually received training about these issues – a very interesting disconnect of perception versus reality.

Also, there are still a tremendous number of people that don't know what 811 or the one call system is. People may be surprised by the number of new employees in the industry who haven't received proper training, or just as many in the general public, who are unaware of vast amount of underground infrastructure that exists. They need a reminder of what could potentially happen in the event they don't take proper steps before they dig. We've come a long way, but we still have a long way to go.

### *Has the 811 message reached its maximum saturation point? Where do you think 811 advertising money and marketing efforts can be better spent?*

Call Before You Dig programs have been around for decades. 811 came into play in 2007, so we're on year 11. There's been tens of millions of dollars spent during that time, and we've seen results from our own polling and others, that indicates only 55-58% of excavators can identify what 811 stands for. And if you look at the general population, only about 10% can identify that 811 is the Call Before You Dig program–unless they're prompted with other clues. So for the money spent, the question is, "Are we really seeing the value?" We start asking: "Is there a better way of going about this?"

### *Do you feel excavators take an unfair share of the responsibility when damages to underground lines occur? What are the routes available to excavators to help balance the scales?*

I know there are hard feelings among the different groups — the facility owner, the locator and the excavator. What's very clear, is that there's plenty of blame to go around from a lot of different perspectives. But we aren't here to blame anyone. We're here to educate those who don't know about the system — what it is and how to use it properly. And secondly, for those already using the system, what are steps they can take to better equip themselves to address problems that arise. Overall, it's about bringing a greater awareness and providing more resources.

One example is the new Safe Excavator app we've launched, which is available to download for free on Apple and Android products. The app outlines excavation laws by state. You can determine wait times, tolerance zones, when to make a second one call, and confirm who the local enforcement agency is as well as the 811 notification center. From there you can file on online locate ticket. There's even a link to the full text of the law.



# The Safe Excavator App

**State laws pertaining to excavation (or digging) vary – and finding the specific information you're looking for quickly can be a challenge.**

**The Safe Excavator App makes it easy to find state-specific excavation information including the following requirements or events:**

- Advance notice or wait time
- Pre-marking ("whitelining")
- 811 ticket information
- Names of local enforcement agencies and 811 call centers, also connecting you electronically to submit a locate request
- Includes safe digging tips + checklist

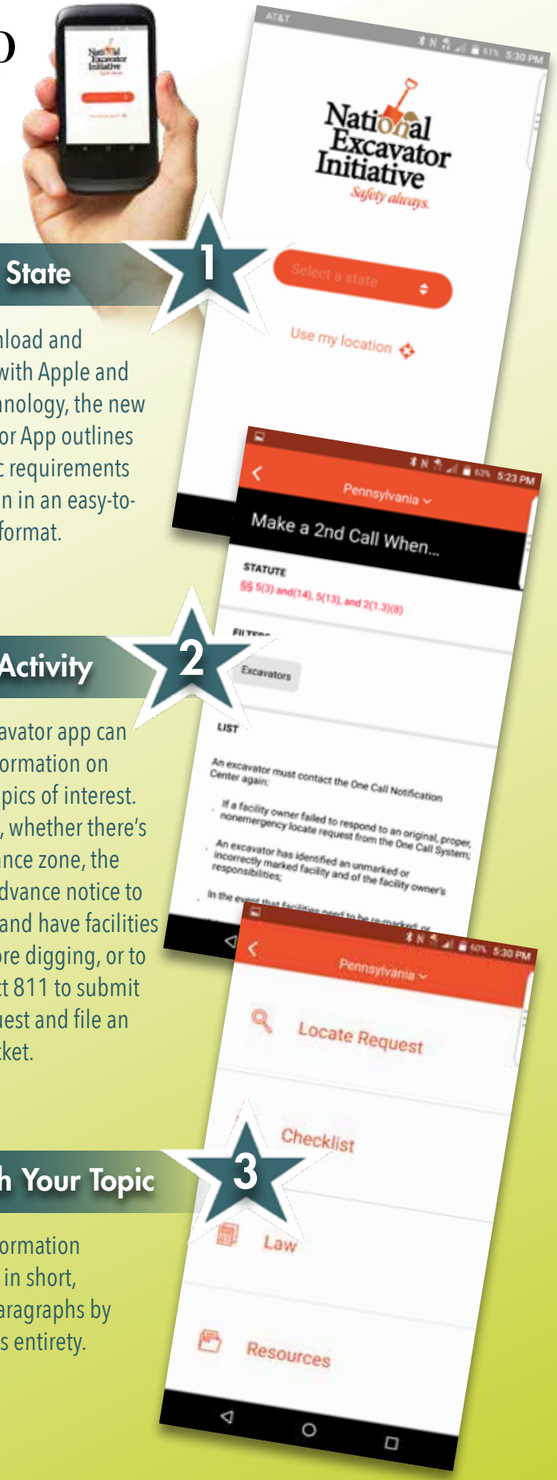
National Excavator Initiative
*Safety always.*

### *What has reaction to the Safe Excavator app been like so far?*

We've recently started getting the word out about the app and it's been amazing to see the number of downloads to date. Our hope is that people give it a try and pass it along to their colleagues. Taking it a step further, we hope they list it as a free resource on company materials, and also present it at safety meetings. At the CGA conference in Phoenix this past March, several one call centers found out about it, and after looking at it, were really impressed. They felt it would be a great resource.

### *Are you looking to develop any other new software products in the future?*

Yes, we're always looking at new and innovative products and services. We recently found a training company that engages high school seniors, helping them get their 10-hour OSHA card. The OSHA course had never focused on underground damage prevention messages before: the basics of what 811 is, what the color codes are and how the one call process works. We




## Select a State

1

Free to download and compatible with Apple and Android technology, the new Safe Excavator App outlines state-specific requirements for excavation in an easy-to-understand format.

## Pick an Activity

2

The Safe Excavator app can help find information on important topics of interest. For example, whether there's a local tolerance zone, the amount of advance notice to contact 811 and have facilities marked before digging, or to easily contact 811 to submit a locate request and file an electronic ticket.

## Research Your Topic

3

State law information is presented in short, digestible paragraphs by topic, or in its entirety.

provided them basic messages that will be implemented in 3,000 schools. The fact of the matter is, we're not afraid to try things. We're nimble, and we're innovative.

***With underground infrastructure work looking to be very busy over the next few years, what does the future hold for NEI? Where would you like to be in five or ten years, and do you feel those goals are attainable?***

> "So for the money spent, the question is, are we really seeing the value? We start asking, is there a better way of going about this?" *-Lindsay Sander*

We hope that through our efforts, significant changes are made that result in decreases in damages and increases in overall safety to those digging. We want to see the trends improve to better reflect all the hard work going into damage prevention. We think the new technology that people are starting to implement will keep the professional excavator safer as we move into the future, and yet at the same time we also must educate the general population as to the purpose and location of underground facilities.

***What are the next steps for the National Excavator Initiative?***

We are really excited as we have some big projects on the horizon. Contracts are in the process of being finalized and once that occurs you will be the first to know. In the meantime, we want to thank everyone who has gotten us this far. We continue to seek out additional supporters, and would love to have more companies engaged. Frankly, the more people helping, the further we can go and the more we can do.