U.S. DEPARTMENT OF TRANSPORTATION

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PIPELINE AND HAZARDOUS MATERIALS SAFETY ADMINISTRATION

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PIPELINE LEAK DETECTION, LEAK REPAIR, AND METHANE EMISSION REDUCTIONS PUBLIC MEETING

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WEDNESDAY, MAY 5, 2021

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The Pipeline and Hazardous Materials Safety Administration met via Videoconference, at 10:30 a.m. EDT, Sam Hall, Meeting MC/Host, presiding.

PHMSA STAFF PRESENT
SAM HALL, Meeting MC/Host
TRISTAN BROWN, Acting Administrator
LINDA DAUGHERTY, Moderator
STEVEN FISCHER, Meeting MC/ Host
JOHN GALE, Moderator
DAVID LEHMAN, Meeting MC/Host
ALAN MAYBERRY, Associate Administrator, Office of Pipeline Safety
SAYLER PALABRICA, Meeting MC/Host
MASSOUD TAHAMTANI, Moderator

ALSO PRESENT
DOUG BAER, Ph.D., ABB Inc.
DAVID BULL, Gas Piping Technology Committee

BILL CARAM, Pipeline Safety Trust

PAT CAREY, Interstate Natural Gas Association of America

MARK DeFIGUEIREDO, Environmental Protection Agency

PAUL HARTMAN, American Petroleum Institute

MATT HITE, Gas Processors Association

PAMELA LACEY, American Gas Association

ERIN MURPHY, Environmental Defense Fund

ERIC OLIVIER, Arkema

CHRISTINA SAMES, American Gas Association

BROOKE SINCLAIR, American Public Gas Association

KATE SMITS, Ph.D., University of Texas at Arlington

SANDRA SNYDER, Interstate Natural Gas Association of America

MELISSA WEITZ, Environmental Protection Agency

MARY ZANTER, National Association of Pipeline Safety Representatives

C-O-N-T-E-N-T-S

P-R-O-C-E-E-D-I-N-G-S

10:31 a.m.

MR. HALL: Welcome to the PHMSA Pipeline Leak Detection, Leak Repair, and Methane Emission Reductions public meeting. My name is Sam Hall. I am a program manager in PHMSA's Office of Pipeline Safety and I will serve as your master of ceremonies for the next two days.

We thank you for your attendance and for your participation and we extend a special thanks to our presenters.

I want to cover some housekeeping items for your consideration. All audio is being handled by AT&T. The AT&T operator will provide instructions regarding how to make comments at the appropriate time. Until that time all lines are muted.

In order to make a comment with your voice you must be dialed into the teleconference. You can see the instructions in the window on the top left of your screen for dialing into the audio conference.

If you are not dialed into the conference call, you will be able to hear the proceedings through your computers, but you will not be able to make a comment with your voice. If you wish to make a comment without being dialed into the AT&T conference line, you may use the Q&A box on the bottom left-hand side of your screen. Please be aware that that Q&A box is a moderated question and answer box, so not everyone will be able to see your comments or what you type in there until a response is provided.

If you're having technical difficulties please tell us that in the Q&A box on the screen and we will address IT issues as quickly as possible.

We do intend to adhere to the agenda as strictly as possible, so we will be motivating speakers and others to adhere to the agenda as it's set out and we also have not scheduled any breaks. We're all at home likely or in our offices and we can take our breaks as we need to, so please take breaks on your own as necessary.

The proceedings today and tomorrow are being recorded. The recording and the transcript of the proceedings will be available on the meeting website in approximately 10 days. The meeting website is available in the agenda box at the bottom of your screen. You can see the complete agenda at the meeting website, the URL that's listed there, and you can also see a simplified agenda for the next two days in that box.

The purpose of this two-day public meeting is to engage stakeholders on gas pipeline leak detection and repair issues as an important step in fulfilling the requirements of Sections 113 and 114 of the PIPES Act of 2020.

During the meeting stakeholders, including environmental and public safety groups, federal and state governments, and the pipeline industry, will have the opportunity to share perspectives on improving gas pipeline leak detection and repair. Topics discussed with include the scope of the current problem as well as advanced technologies and practices to address methane emissions from natural gas pipeline systems. The agenda on the screen again is available for your reference at the bottom of the screen.

It is now my pleasure to introduce Alan Mayberry, PHMSA's Associate Administrator for Pipeline Safety.

Mr. Mayberry?

MR. MAYBERRY: Thank you, Sam. I appreciate that.

And good morning, everyone, and thank you for joining us today for our virtual public meeting to discuss pipeline leak detection and repair and methane emission reductions technology and practices.

I'm pleased to have the opportunity to introduce PHMSA Acting Administrator Tristan Brown. Now Tristan's been with us a few months now and his leadership and influence can already be felt in a positive way.

Tristan comes to us with a background of working on pipeline safety issues. He has practiced energy law as well as transportation law, which included issues related to PHMSA. He served as legislative counsel to Senator Gary Peters of Michigan focusing on some of PHMSA's sister modes of transportation overlapping issues as well.

Additionally Tristan served as Deputy Associate Administrator of the Environmental Protection Agency where he worked on a number of issues related either directly or indirectly to this sector. So Tristan is very familiar with the issues facing this industry and he has dived right in to help PHMSA meet the current opportunities for us.

So now it's my pleasure to introduce Acting Administrator Tristan Brown.

So, Tristan, over to you. Thanks.

MR. BROWN: Right. Good morning, Alan. Thank you, thank you.

And thanks to each participant and all

the panelists for joining us today to listen and share your perspectives.

As many of you may know, the Pipeline and Hazardous Materials Safety Administration's mission is to protect people and the environment by advancing the safe transportation of energy and the hazardous materials that are essential to our daily lives. Public meetings like this are a vitally important tool that we at PHMSA use to seek input from all stakeholders as we work to continuously advance safety and inform our regulatory agenda.

Over the next two days we look forward to hearing from perspectives and representatives of the public interest organizations, labor unions, private sector, state and federal agencies and the technology sector on key issues related to methane leak detection and repair and the ongoing research and technology development in these areas.

Now just a few weeks ago President Biden pledged a major reduction in greenhouse gas emissions. Contemporaneous news reports echoed countless previous reports that have emphasized global climate change threatens our economy to the tune of trillions of dollars. Numbers in the trillions are abstract for the human brain because our brains are not capable of conceptualizing such quantities.

In that context discussing problems and solutions at meetings like this can seem abstract as well. The impacts that we foresee and are attempting to mitigate are distant and in the future, but for the countless lives that will experience upheaval and devastation as a result of global climate change now and over the next few decades climate change will not be abstract. That is why Congress is urging effort to pass the PIPES Act last December demanding progress in reducing methane emission matters and it's why your participation over the next few days to discuss emissions reduction matters.

The Biden/Harris Administration is focused on a whole-of-government approach to climate action while also promoting environmental justice. Towards these ends PHMSA is committed to making regulatory choices that are based on data and to ensuring transparency and engagement with all stakeholders.

With that in mind we see this meeting, which I understand we have hundreds -- as many as 700 registrants, we've got hundreds and hundreds of participants already logged on and continuing to log on. We consider this a first step, an important step towards meeting one of the congressional mandates in the PIPES Act.

We look forward to hearing your perspectives on what PHMSA should consider while we evaluate leak detection, quantification, evaluation and mitigation efforts to advance safety and reduce methane emissions from the jurisdictional pipeline infrastructure.

As we know, natural gas is composed primarily of methane, therefore gas pipeline leaks and other releases of natural gas emit methane into the atmosphere and change our climate with an impact that pound for pound is multitudes more significant than carbon dioxide pollution. In fact the onshore oil and gas sector is the largest domestic industrial source of methane emission.

With this in mind the PIPES Act of 2020 requires that by December of this year PHMSA issue final regulations requiring certain classes of operators to conduct leak detection and repair programs in order to, quote: (A) Meet the need for gas pipeline safety; and (B) protect the environment. Another PIPES Act mandate found in Section 114 of the Act, to work to minimize releases of natural gas from pipeline facilities. This is a tremendously important self-executing provision of the law.

PHMSA is in the process of issuing an advisory bulletin to remind all pipeline operators that they must comply with this provision by no later than December 27, 2021. Keep in mind the concept of a, quote, acceptable level of release into the environment is a long-outdated concept for gas or hazardous liquids. We must change how we think about small releases because they too add up and can and do have a big impact on the environment.

Section 114 also requires PHMSA to conduct a study then report to Congress on the best available technologies and practices for preventing or minimizing the release of natural gas.

Section 113 of the Act Congress also required PHMSA to prioritize completion of our rulemaking on gas transmission and gathering pipelines. PHMSA looks forward to receiving your input on ways we can improve safety and cut emissions through this rulemaking.

Clearly these mandates require all of us to work together to promote pipeline safety and take aggressive actions to reduce methane emissions from pipelines, both fugitive and vented.

We're also considering these mandates in conjunction with how our rulemakings and agency decisions affect under-represented communities. This whole-of-agency approach to environmental justice is something that many other agencies and departments are focused on and we welcome your input on how we can do this effectively and efficiently. As we discuss options during the next two days and into the future we will keep a strong focus on using transportation as an engine for equity.

We know for example that our nation's aging and higher-risk infrastructure is primarily located in less-recently-developed and often disadvantaged communities and urban areas. Through our safety work we will continue to promote the upgrading, replacement and repair of aging high-risk infrastructure. This especially includes infrastructures such as cast iron pipelines. We will do all of this and more in collaboration with all of you to help position the energy sector and our nation to adopt the infrastructure of the future.

This includes upgrading systems that

transport hydrogen and other renewables to support our growing economy and create good-paying union jobs for American workers.

PHMSA looks forward to learning about proven technologies and best practices to help meet our mutual goal of zero incident and reduced emissions. We expect this meeting will provide valuable information we can use to inform our rulemaking.

Thank you for joining us and all that you're doing to combat one of the most dangerous and complex challenges our species has ever faced. Thanks.

Alan, back to you.

MR. MAYBERRY: All right. Tristan, thank you very much for that.

And again welcome, everyone. I think you got an extended view of me. I hope you enjoyed that. We had a technical issue there, but we'll move right on.

Our focus over the next two days is pipeline leak detection, leak repair and methane emissions reduction. Addressing the opportunity to make meaningful revisions to one of the oldest parts of our gas code, which is how operators find and repair gas leaks, requires everyone's perspective and participation. For this reason we have gathered a broad group of stakeholders including federal and state safety regulators and commissioners, advocacy groups, pipeline operators and technology providers.

Our goal over the next two days is to have an informed dialogue of the challenges our industry faces specifically regarding methane emission reduction, to communicate how state and federal agencies are working with private and public partners to address this important issue, and to engage in technical conversations regarding the research and development of new technologies and initiatives aimed at effectively and efficiently addressing leak detection and repair as well as methane emissions reduction.

Now in December Congress passed the Protecting our Infrastructure of Pipelines and

Enhancing Safety Act, or PIPES Act of 2020, and with it Congress shifted our authority beyond protection of people and property and directed us to consider the environmental and social cost of carbon and how we justify our policies.

Now we're all aware that pipelines can leak and that there is intentional venting of natural gas or methane during pipeline operations. With the PIPES Act we're being directed to consider the best available technologies and practices to prevent or minimize these releases whether they occur during planned repairs, replacements or maintenance, when operators intentionally vent or release natural gas including blowdowns or due to leaking or damaged pipelines.

There are two types of methane emissions that the PIPES Act is concerned with: One -- the first one, fugitive emissions, which is methane that leaks unintentionally from equipment such as from pipelines, flanges, valves and other equipment. And then there's also vented emissions is released through equipment design or operational maintenance procedures such as pneumatic devices, purging, blowdowns, incomplete combustion or equipment venting such as relief valves.

The vast majority of fugitive emissions come from distribution pipelines and the vast majority of vented emissions come from transmission pipelines. While transmission and distribution pipelines are not the largest emitters of greenhouse gases in the pipeline industry, it is PHMSA's mandate to reduce and eliminate the sources of greenhouse gases where we can.

Now let's talk about the PIPES Act mandates more specifically. The primary sections, as Tristan had mentioned, we'll be focusing on over the next two days will be Section 113 and 114. Both are mandates that address the reduction or elimination of hazardous leaks and minimization of releases of natural gas from pipeline facilities.

As Tristan mentioned, the Section 113 mandate requires that in year one final regulations will be issued requiring regulated gas gathering operators and transmission and distribution operators to conduct leak detection and repair programs in order to: (A) meet the need for gas pipeline safety; and (B) protect the environment in Class 2, 3 and 4 locations.

While there is a current notice of proposed rulemaking for valve installation and minimum rupture detection standards, this rulemaking only pertains to new and replaced transmission hazardous liquid pipelines and is directed toward detecting and mitigating ruptures, but not all leaks.

Section 114 is self-executing, which means that the new law directly requires operators to take action rather than directing the Secretary of Transportation to issue regulations first. This section requires operators to revise as necessary their inspection and maintenance plans to ensure they are written to contribute to the eliminate of hazardous leaks and minimizing releases of natural gas from pipeline facilities. To reiterate what Tristan mentioned, PHMSA's working on an advisory bulletin to highlight this provision reminding affected pipeline operators that compliance is required no later than December 27th of 2021.

Another requirement of Section 114 is for operators to consider replacement or remediation of pipelines that are known to leak based on their material design or past operating and maintenance experience. Specifically it says, as has been discussed for many years, the replacement of cast iron, unprotected steel, wrought iron, plastic pipe with known issues should be areas of focus.

Addressing the issue of this legacy infrastructure is imperative both from a safety standpoint and an environmental justice standpoint. In taking the whole-of-agency approach to environmental justice that Tristan mentioned PHMSA makes every effort to promulgate policies that will address equity to make sure that the policies are fair and equitable and to keep pipeline safety top-of-mind to everything we do.

Public meetings like this are very important in order to have an open exchange of ideas bringing together thought leaders from different sectors and to establish a public record of this exchange. I encourage each of you to participate in the discussion as directed by Sam and I look forward to continued engagement with all of you as we move forward on policy and rulemaking efforts. Thank you very much and thanks again for being here.

So with that, Sam, I'll turn it back to you.

MR. HALL: Thank you, Alan. I appreciate that.

We will now transition to our 11:00 a.m. portion of the agenda, which is a federal and state government panel discussion. Please note that we will take questions at the end of the panel discussion, so all questions will need to be held until the very end after all presenters have had an opportunity to speak.

It is now my pleasure to introduce Massoud Tahamtani, Deputy Associate Administrator for Policy and Programs in the Office of Pipeline Safety, as the moderator of our next session.

Mr. Tahamtani?

MR. TAHAMTANI: Good morning, everybody. The Acting Administrator Brown and the Associate Administrator Mayberry have clearly defined our goal for the next two days. We appreciate everyone's participation, especially our presenters, to help us begin this very important effort to advance pipeline safety and the protection of our environment.

With that said I am pleased to introduce two colleagues from the Environmental Protection Agency. Our first presenter is Mark DeFigueiredo and our second one is Melissa Weitz.

Just a few words about Mark and Melissa before we turn it over to them for presentation.

Mark is team leader of the Greenhouse Gas Reporting Program at the U.S. Environmental Protection Agency. He's a graduate of MIT where he received his bachelor's degree in mechanical engineering and master's degrees in civil, environmental, and system engineering. He's also received a Ph.D. in system engineering from MIT. He then received a J.D. from the University of Virginia's School of Law where my daughter hopes to attend and get her law degree. Prior to joining EPA he was an associate with Simpson, Thacher & Bartlett in New York.

And a few words about Melissa. Melissa is a physical scientist in EPA's Office of Atmospheric Programs where she focuses on quantification of methane emissions from oil and gases for the inventory of U.S. greenhouse gas emissions and effects. She is the lead reviewer for GHG inventory for the United Nations Framework Convention on Climate Change and was the coordinating lead author for the

Energy Volume of the 2019 Refinement to the 2006 Intergovernmental Panel on Climate Change Guidelines for the National Greenhouse Gas.

With that I'll turn over to Mark.

Thank you, Mark.

DR. DEFIGUEIREDO: Thanks, Massoud, for that kind introduction and for the invitation to be here today. I'm grateful for the opportunity to speak with you all virtually and look forward to the time hopefully very soon that we'll be able to meet again in person.

So this morning my colleague Melissa Weitz and I will be providing some thoughts that I hope will be helpful for not only framing the discussion over the next two days, but also framing the tasks that PHMSA has ahead of it on the regulatory side. We'll be primarily speaking to the greenhouse gas data that EPA has published. This includes data from the past nine years that has been reported directly to EPA by facilities as well as national estimates that EPA has developed over the past 25-plus years. That includes national estimates that we just published a few weeks ago. So you're in for a treat because that inventory data is hot off the presses.

We'll also be speaking to our voluntary methane programs for the oil and gas industry at EPA, the National Gas STAR Program and the Natural Gas STAR Methane Challenge Program.

And then finally we'll speak to upcoming regulatory activities that we have under Clean Air Act Section 111.

So there are a lot of industries and activities large and small that emit greenhouse gases in the United States. And at the EPA we have two complementary programs for characterizing greenhouse gas emissions, and they're designed to help the public and policy makers understand both the sources of greenhouse gas emissions as well as the magnitude of those greenhouse gas emissions. Sometimes the two programs, they get conflated, so I want to spend a little bit of time to talk about them and how they compare.

The first is the inventory of U.S. Greenhouse Gas Emissions and Sinks. Over the next couple days you may hear it referred to by speakers as the Inventory or the GHG Inventory, or the GHGI. The Greenhouse Gas Inventory is a document that we prepare every year at EPA, and we've done it for over 25 years, and it estimates the total greenhouse gas emissions across all sectors of the economy using national level data.

So this includes estimates of greenhouse gas emissions from fossil fuel combustion, from industrial processes, from agricultural sources. And the greenhouse gas data that we present in the Greenhouse Gas Inventory, that comprises the official U.S. estimate of total national emissions that the U.S. submits to the United Nations in accordance with the Framework Convention on Climate Change.

The second program that we have is the Greenhouse Gas Reporting Program. It's sometimes referred to as the GHGRP. And since 2010 the GHGRP has been collecting detailed facility-level emissions data from large facilities across the U.S. It includes most but not all U.S. emissions. So generally it includes large suppliers of greenhouse gas-emitting products or facilities that emit more than 25,000 metric tons of CO2 equivalent per year.

There are some entire sectors, such as the agricultural sector, the land use sector that are not required to report to the GHGRP. Our most recent data was 2019, and over 8,000 facilities and suppliers reported greenhouse gas data for that most recent year of published data. That covers about 85 to 90 percent of total U.S. greenhouse gas emissions.

So while the Greenhouse Gas Inventory provides high-level perspectives to understand total emissions from greenhouse gases across the United States, the GHGRP, it provides detailed information to understand sources and types of greenhouse gas emissions at individual facilities.

The GHGRP, it's an important resource for developing inventory, so it provides annual emissions information, it provides other annual data like activity data and emissions factors that we use to refine our national emissions estimates and determine the trends in greenhouse gas emissions over time.

The GHGRP information can be used to help facilities identify opportunities for emissions reductions, help identify nearby sources of greenhouse gas emissions, to compare facilities, to track emissions from one year to the next.

The Greenhouse Gas Inventory covers estimates from 1990 and each subsequent year, and so we have a trend of emissions data for over 25 years. The GHGRP, it's a more recent program. It was developed in response to a congressional mandate from 2008, so there's years of data available. We have annual data for 29 industries starting in 2010, and then annual data for 12 additional industries starting in 2011. But both the Inventory and the Greenhouse Gas Reporting Program, they're helpful for answering common analytical questions related to U.S. greenhouse gas emissions.

So for example, the Greenhouse Gas Inventory, it can help determine the contribution of natural gas systems or petroleum systems or individual oil and gas industry segments to total U.S. methane emissions. The GHGRP is helpful for understanding large facilities or large stationary sources of greenhouse gas emissions in your region.

So next I'm going to dive a little deeper to talk about the Greenhouse Gas Reporting Program or the GHGRP. As I mentioned before, it was mandated by Congress in response to the fiscal year 2008 Consolidated Appropriations Act, and the GHGRP requires facilities to report data from large emission sources across a range of industry sectors: fuel and industrial gas suppliers and CO2 injection sites across the

United States.

So the GHGRP has annual reporting of GHGs by 41 different source categories. This includes 33 different kinds of direct emitters, 6 kinds of fossil fuel and industrial greenhouse gas suppliers, and facilities that inject CO_2 underground.

In general there is a reporting threshold of 25,000 metric tons of CO_2 equivalent or more per year. That means facilities above that 25,000 metric ton threshold are required to report GHG data to the EPA, to the GHGRP. And then facilities below the reporting threshold are not required to report to the GHGRP.

When reviewing the data; and I'll be diving into the data in a little bit more detail in subsequent slides, it's important to understand the reporting requirements and the impacts of those requirements for the reported data.

So all the methodologies and data reporting requirements that we have for the

GHGRP, they've gone through a public notice and comment rulemaking. So they're all specified in the regulations. Those are at 40 CFR Part 98.

The calculation of methodologies, they include direct measurement, they include engineering calculations or emission factors and in some cases facilities, they have a choice of what calculation method to use.

The data, they're reported directly to EPA Headquarters electronically. The reporting deadline is March 31st of each year. And we have a pretty rigorous multi-step data verification process. It includes automated checks during the entry of data. It includes statistical analyses that we do on completed reports. And there is EPA staff review of the reported data.

And then based on the results of that verification review we follow up with facilities to resolve potential areas that may have occurred. And so that verification process ensures that the data that we receive to the GHGRP, that it's accurate, that it's complete and that it's consistent across facilities.

And then after that verification process we make the data available to the public. All the non-confidential data is all publicly available typically in the fall each years through several data portals, and I'll talk about that a little later.

So the petroleum and natural gas industry, that's one of several industries that we cover within the GHGRP. The source category, it's often called Subpart W because of its regulatory citation, which is 40 CFR Part 98, Subpart W.

Looking at this slide, on the right side of the slide you'll see Subpart W. It's shown in red in the graphic. And there's 10 industry segments that comprise the Subpart W source category going from the well head all the way down to the local distribution company.

I'll be diving into a few of the industry segments that I think are the most relevant to PIPES Act and PHMSA. They include gathering and boosting transmission compressor stations, transmission pipelines, underground natural gas storage and natural gas distribution. Subpart W, it's very technically detailed. It covers a number of different emission sources within the various industry segments.

Because there is a reporting threshold of 25,000 metric tons CO2 equivalent our coverage of national emission, it can vary. In some cases an industry segment for the GHGRP, we may cover the vast majority of emissions or activities in an industry segment, but in either case it may be less so. So when my colleague Melissa Weitz discusses the Greenhouse Gas Inventory in a little bit, the Greenhouse Gas Inventory, that's our official national number for all the emissions across all emission sources in an industry segment.

For certain parts of the oil and gas industry that are covered by Subpart W, they began recording starting in 2016. Others began reporting in 2011.

So the ones that started in 2016, that includes the gathering and boosting industry segment, transmission pipelines, among other things.

In terms of how facilities are defined, Subpart W is a little bit unique. It defines facilities different depending on the location in the oil and gas value chain. In general within the Greenhouse Gas Reporting Program a facility is all the collocated emission sources that are commonly owned or operated, but there are a few industry segments within the petroleum and natural gases system category of the GHGRP that have unique facility definitions.

So for gathering and boosting, that's all the gathering pipelines and other equipment that's along those pipelines that are under common ownership and control by an owner/operator that are located in a single hydrocarbon basin. Basin is defined as a geologic province by the American Association of Petroleum Geologists. Facilities and onshore production, they're also defined at a basin level.

For natural gas transmission pipeline facilities, they're defined at a national level, and so the facility is the total mileage in the United States of the natural gas transmission pipelines and operated by the transmission pipeline owner/operator.

And then for natural gas distribution the facility is the local distribution company, sometimes called an LDC, as regulated by a single state's public utility commission.

So this table shows our most recently published data which is for the 2019 reporting year and it shows greenhouse gas emissions by oil and gas industry segment. It includes both process emissions as well as combustion emissions. Combustion emissions that are reported under Subpart W as well as combustion emissions that are reported under another source category of the GHGRP, the general stationary combustion source category, which is Subpart C.

So the largest industry segment in

terms of reported emissions, that was onshore production with 117 million metric tons of CO2 equivalent, followed by gathering and boosting which had emissions of 92 million metric tons of CO2 equivalent in 2019. And that was followed by natural gas processing, which had emissions of 58 million metric tons. And then transmission compression, which had emissions of 31 million metric tons.

For natural gas distribution total emissions were 13 million metric tons of CO2 equivalent. And then for all the other remaining segments they totaled about 30 million metric tons of CO2 equivalent in 2019.

So next what I'm going to do is I'm going to dive a little deeper into a few industry segments that I think are of most relevance for this public meeting.

I'm going to start with gathering and boosting. So as I mentioned before, gathering and boosting for GHGRP, it's defined at a basin level and includes gathering pipelines and other equipment that are used to collect petroleum and natural gas from onshore production wells, the equipment that's used to compress and transport the gas to a gas processing facility to transmission pipelines or a distribution pipeline. And this industry segment again, it began reporting in 2016.

So with respect to gathering pipelines, we collect information on mileage of gathering pipelines for each material type, and then there are material-specific emission factors that are used to calculate emissions. The emissions for gathering pipelines, those are included in miscellaneous equipment leak source of Subpart W.

All in all within gathering and boosting we received annual reports from 354 basin-level facilities in 2019. Those total reported emissions were about 92½ million metric tons of CO_2 equivalent.

Combustion emissions, combustion equipment were the largest top -- were the top reported emission source. That was followed by atmospheric storage tanks, equipment leaks and then other flare stacks.

On the right side of the screen you'll see this trend over time starting with about 82 million metric tons of CO2 equivalent in 2016, which is when we first started with gathering and boosting within the GHGRP, and then rising to about 92 million metric tons in 2019.

Next the natural gas transmission compression segment. So this comprises any compressors, the stationary compressors that move natural gas from production fields, processing plants, other transmission compressors through the transmission pipelines to the natural gas distribution pipelines, to LNG storage facilities or to underground storage tanks.

So EPA, in 2019, we received annual reports from 619 facilities in the natural gas transmission compression segment. The total reported emissions were 30.8 million metric tons of CO2 equivalent. Combustion emissions were larger than process emissions. Those were -- the combustion equipment were the top reported emission source. That's all by blowdown, vent stacks and then reciprocating compressors.

On the right side of the screen again you'll see the trend in reported emissions since 2011, which is when this industry segment began reporting to the GHGRP. In 2011 the emissions were about 24 million metric tons of CO2 equivalent. And then you can see the trend to 2019 when reported emissions were about 31 million metric tons of CO2 equivalent.

Next, natural gas transmission pipelines. So these are the pipelines that deliver gas from the processing plants to the local natural gas distribution systems and often passing through one or more compressor stations. This industry segment, it began to report in 2016 and it only reports transmission pipeline blowdowns to EPA under Subpart W. Blowdowns are for physical volumes that are greater than or equal to 50 cubic feet.

The quantity of emissions and the number of blowdowns, they're reported on a state-by-state basis. So you can see the heat map on the left related to the most recent reported data in 2019. We also receive information that categorizes blowdowns into different categories, so for transmission pipelines that could include pipeline integrity work or it could include emergency shutdowns, among a number of other different categories.

In 2019 we received annual reports from 43 national-level facilities in the natural gas transmission pipeline segment, so again these are defined facilities at the national level reporting emissions on a state-by-state basis. The total national reported emissions were about 2.8 million metric tons of CO_2 equivalent. Those emissions were almost entirely methane. And then on the right side of the screen you'll see the trend in emissions, which has generally been just under 3 million metric tons of CO_2 equivalent.

I just lost my Adobe Connect screen,

so if I could as Melissa Weitz to move the slides to the next slide, which is slide 10.

MS. WEITZ: Yes.

DR. DEFIGUEIREDO: Thanks. So on slide 10, this is natural gas distribution. So local natural gas distribution companies; we'll sometimes call them LDCs for shorthand, they report emissions that are caused by leaks from distribution pipelines, from regulating equipment, transfer stations, emissions from stationary fuel combustion. Again as I mentioned earlier, these facilities are defined at a state level. It includes all the distribution pipelines and meter regulating stations that are operated by an LDC within a single state. That's regulated by a public utility commission or operated as an independent municipally-owned distribution system.

So EPA, we received annual reports from 163 facilities in the natural gas distribution segment. Reported emissions that totaled about 12.7 million metric tons of CO2 equivalent.

The primary emission sources for natural gas distribution were distribution mains at about 9 million metric tons of CO_2 equivalent and distribution services at about 4 million metric tons of CO_2 equivalent. The emissions for maintenance services, those are categorized in the equipment leaks. And they're calculated by multiplying the mileage of pipelines by default population emission factors that are specific to the pipeline material.

Melissa, if you can move to the next slide?

So EPA provides a number of ways to access the Greenhouse Gas Reporting Program data, and I encourage you to check out these websites when you have time. At the top of the slide you'll see a link to our Greenhouse Gas Reporting Program website. It has general information about the program, it has links to copies of our regulations, and it also has a number of data summaries for different industries including oil and gas.

We also have a really easy to use publication tool. We call it FLIGHT, or the Facility Level Information on Greenhouse Gases Tool. And it allows you to view greenhouse gas data in a lot of different ways. So you can view data by an individual facility, you can look at aggregated emissions across industry segments or across geographical regions, or you can search for a particular facilities like by name or location of corporate parent or NAICS code. It's a really neat tool for both practitioners as well as the general public. You can access FLIGHT at the website ghgdata.epa.gov.

We also make more detailed data available on EPA's Envirofacts website. So Envirofacts provides all the publicly available data that we collect in the GHGRP and it does it in a searchable downloadable format for a facility. So it includes GHG emissions data for facilities as well as much of the underlying data that facilities use to calculate their GHG emission values and other reported data elements.

And then finally I've included an email address to our help desk. So if you have questions about the GHGRP, I encourage you to contact our help desk at ghgreporting@epa.gov, and we'd be happy to help you.

So with that I'll turn things over to my colleague Melissa Weitz.

MS. WEITZ: Great. Thank you, Mark.

Hello, everyone. I will see if my web cam works, but will probably end up shutting it off if it closes things down.

So I'm going to talk today about our National Greenhouse Gas Inventory. This is the official report that the U.S. submits every year to the United Nations Framework Convention on Climate Change to fulfill our obligations under that treaty.

We at EPA are the group that compiles the inventory, but we do work with other agencies as well across the USG, including use of DOT data such as on the number of pipelines from various sectors. We also work with academic groups and research institutions and industry associations. The Inventory covers all antinogenic or manmade emissions in the U.S. including kind of the main greenhouse gases, CO2, methane, N2O and fluorinated gases. It's developed in a way that is policy-neutral, so it's presenting data that can be used to analyze a number of policies or to track emissions over time from a number of different options.

We started this report, as Mark had mentioned, in 1993, and so we've been developing this annual report every year since then. And as Mark also mentioned, it covers a time series started with 1990. The most recent report that we published a few weeks ago covers 1990 to 2019.

I'll note also that the Inventory involves a review process, so every year we put out the Inventory for public review and also for expert review. We have a review conducted by the United Nations Framework Convention of Climate Change as well. I'll mention a separate stakeholder input and review process that we have for our oil and gas on some later slides.

I'll also note here that the report that covers 1990 to 2019 -- as we collect new data and make improvements to our estimates we want to be sure that the report estimates are comparable over time, so we do recalculate the full time series every year when we submit the report. So if we had a great new data source that we think improves estimates over the full time series, we'll incorporate that over the full time series. So whenever you're looking at trends of emissions data it's important to look at the most recent Greenhouse Gas Inventory as opposed to comparing estimates from the most recent Inventory to one several years ago because they won't quite be on the same basis.

I'll talk first about the emissions overall in the Inventory and then dive into oil and gas sources.

So every year CO2 is about 80 percent of U.S. emissions, largely from fossil fuel combustion. It's increased a bit since 1990 by about three percent. Methane, which is here in this red area, that is 10 percent of emissions and it's decreased by about 15 percent since 1990. N2O, kind of the large emissions category, is about seven percent of emissions and increased -- or decreased about one percent since 1990.

There is an area kind of under the zero million metric tons of CO2 equivalent piece here. The purple area of that is for the CO2 that's uptaken by trees and other landscapes. So that's also -- if it's in a human-managed area, we consider that to be part of the emissions data calculated in the report, and that's taken into account here as well.

So the rest of my slides will focus on oil and gas in the Greenhouse Gas Inventory. I note here that we are calculating them with an IPCC tier 2/3 approach. That simply means an advanced approach compared to using (audio interference) international default data.

So we look at emissions from specific

equipment types and processes. We associate each type and process with an emission factor and calculate emissions data across the time series with that information.

The Inventory estimates in our National Gas and Petroleum System section covers leaks, vents and flares, so that means that it doesn't cover on-site fossil fuel combustion, which is one difference with what the Greenhouse Gas Reporting Program covers. Those numbers are in the Greenhouse Gas Inventory. They're just in a separate section that covers all of fossil fuel combustion. So if you see numbers from the Inventory looking a bit different from in GHGRP, that's one of the reasons.

Within natural gas and petroleum systems we develop separate estimates for the different segments such as production, processing, transmission and storage. Within each we do break it down to look at different types of equipment covering about 100 types of sources such as different types of compressors, different types of pipeline by material.

Our general approach is to multiply national activity data by emission factors. So for example, for cast iron pipeline in the distribution segment we have national data on the miles of cast iron pipeline. We have an emission factor per mile. We apply that to get our numbers.

It's a little bit straightforward, but I'll note that we do try to make these calculations as dis-aggregated as we can to show mitigation over time. The factors for the cast iron pipeline for example vary about bit across the time series based on data that was collected recently and reflects emissions in recent years, data collected in the 1990s, which reflects emissions in those years. So in addition to just the mileage of pipeline by material type there is some information on trends based on changes over time other than just the materials.

So the overall trends for both methane and CO2 from oil and gas systems are shown on this slide. Again this is just the leaks, venting and flaring here. Methane over time from 1990 has decreased by about 17 percent. CO2 has increased by over 100 percent, largely due to increases in flaring in the oil and gas production segment. I'll note also that while trends in different segments have changed over time, trends of the different gases has changed over time, it looks like at this point the 2019 emissions are similar to the 1990 when looking at the total emissions from all of the segments.

Because 2019 is the latest year of the Inventory we're interested in also looking at the latest change in annual emissions between 2018 and 2019. For methane there has been about a four percent increase, largely in the oil and gas production segment. For CO2 between those two years an increase of about 19 percent due to increased flaring of associated gas largely in the oil production segment.

So now I will dive into the segments that I think are of most interest to this group.

So we do cover production through distribution and refining, but here I'm focusing on gathering and boosting, transmission, storage and distribution all within natural gas systems. I'm presenting here the methane emissions separated for each of those segments by pipeline and other.

So generally emissions from some of the transmission and storage and distribution segments have decreased over time. The gathering and boosting segments have increased over time along with production when looking at just the non-pipeline emissions.

Pipeline gathering and boosting and transmission pipelines look fairly steady over the time series. For the distribution segment, as pipeline materials have changed over time and as new study data become available, we incorporated that information into the Inventory and it shows a decrease over time in the distribution segment pipeline emissions.

The next few slides will focus in on what makes up the emissions in each segment. So for the gathering and boosting segment that's about 20 percent of oil and gas methane. Those emissions have increased quite a bit over time. The largest sources of emissions in that segment are compressors, so both the exhaust and then venting and leaks there, tanks, pneumatic controllers and finally pipeline leaks and blowdowns. The largest increases have occurred in the largest sources, so in compressor exhaust and compressor venting and leaks.

For transmission and storage; sorry this is blurred together a bit, but that segment is also about 20 percent of oil and gas methane emissions. These emissions are largely due to compressor venting, leaks and station leaks. This is one where the emission factors we have sort of combine a number of things. So this category isn't broken out by station leaks versus compressor leaks, but just one number for both.

The next largest source is compressor exhaust and then followed by -- or sorry, the next largest source is pipeline followed by compressor exhaust and then station venting. The emissions there have decreased since 1990, increased a bit since 2010. Compressors and station leaks are the largest sources with the largest impacts on trends.

Finally for distribution this segment is about seven percent of oil of gas methane. Those emissions decreased by about 70 percent since 1990 and by about 13 percent since 2010. Those emissions break down into customer meters being the largest fraction of emissions followed by pipeline mains and then services and then maintenance, and all of that. The largest decreases over time have occurred in the M&R stations and then the pipeline mains and services.

I'll note here that, as I mentioned before, we do have a stakeholder process to incorporate new data and stakeholder input into the Greenhouse Gas Inventory. There's been a lot of interest in oil and gas methane information and a lot of new studies in recent years, and so we started a process to get feedback on those sources of information early in the inventory process. We have a website that provides information on any workshops or webinars that we'll hold. We also in advance of the development of the Inventory put out memos on updates we're considering that have targeted questions for stakeholder feedback.

We include on our website Excel spreadsheets with the full time series of data so you'll see information for each source in the Inventory. So for example, if you wanted to know what emissions from 1993 from cast iron pipelines in the distribution look like, that information is there along with information on the methods and references for the Inventory. We wanted to provide as transparent as possible information so that others can see how the Inventory estimates are put together.

For this year's Inventory, which was published last month, we held two webinars: one in September; one in November. For our stakeholder series we generally include EPA presentations on GHGRP data and then updates that we're considering for the upcoming Inventory. We also invite stakeholder presentations which sometimes focus on the updates we're considering or sometimes provide new data and new analyses.

So we have wrapped up the 2021 Inventory, so we are now getting started on the 2022 Inventory stakeholder process. We will likely be holding some of the first webinars for that process in the summer of 2021, so fairly soon.

So I will briefly cover our voluntary programs here. We just wanted to mention that we have two outreach programs that partner with the oil and gas industry. The Natural Gas STAR Program began in 1993. That provides a flexible framework for EPA to partner with U.S. oil and gas operators to identify and promote methane-reducing technologies and practices.

In 2016 building on National Gas STAR we developed the Methane Challenge Program which provides a mechanism for companies to make more rigorous and transparent commitments to voluntarily reduce methane. All the information provided by Methane Challenge partner companies is available on EPA's website in aggregate and then also as individual partner profile pages.

Since 1993 these partnerships have been very successful in developing an extensive suite of technologies and offer technical information on cost-effective opportunities to reduce methane across the value chain and have been effective sharing that information across the oil and gas industry. The partners have achieved emissions reductions beyond what was required by any relevant regulations.

So for example, in 2019 about 25 million metric tons of CO2 equivalent was reduced. Over the full history of the programs we're looking at about 800 million metric tons of CO2 equivalent reductions.

And my final two slides will cover the regulatory status at EPA for oil and gas emissions. So on January 20 of 2021 President Biden issued Executive Order 13990 protecting public health and the environment and restoring plans to tackle the climate crisis. The executive order directs us to consider taking two actions by September of 2021 focused on reducing methane from the oil and gas sector.

So those two actions are proposing a rule to reduce methane emissions in the sector by suspending, revising or rescinding previously issued standards known as the New Source Performance Standards. You may hear them referred to as NSPS. Also proposing new regulations to reduce methane and VOC emissions from existing operations in the oil and gas sector including the expiration, production, processing, transmission, storage segments.

EPA is working to complete the review directed by the executive order. We will engage broadly with stakeholders to develop a proposal that achieves ambitious and cost-effective reductions in climate and health-harming pollution and encourages continued development of innovative technologies.

EPA plans to reach out to hear from a broad group of stakeholders as we put that proposal together. You can expect to hear more about the opportunities and share your input and concerns about that very soon. Once the proposal is issued you'll also have the opportunity to submit formal comments and participate in a public hearing.

So I think that concludes our slides. Sorry if we went a bit over. Thank you again for the opportunity to present today.

MR. TAHAMTANI: Thank you, Mark and Melissa. Thank you so very much for sharing so much valid information with us.

I will now go to our next presenter. And our next presenter is Sayler Palabrica. Sayler is a transportation specialist with the Office of Pipeline Safety Standards and Rulemaking Division.

Sayler has been with us for five years

and has experience with regulatory evaluation and rulemaking project management with the OPS. I know, Mark and Melissa, you will stay with us because at the end of all the presentations for this session we have a question and answer segment that we hope you participate in.

With that, I will turn it over to Sayler.

MR. PALABRICA: Thank you, Massoud. So just to start off with, again, I'm Sayler Palabrica with the Standards and Rulemaking Division.

And my presentation will primarily go over data on leak repairs that PHMSA maintains and collects from operators.

So, to start with, the picture you see on the slide here, this gives you an overview of the different types of facilities that we're talking about. Note that this graphic is in the FERC concept so it doesn't necessarily capture all of the nuances of the definitions in Part 192.

But in general you can see that, like on the upstream portion in the box marked production, you see the gas gathering pipelines that collect gas from production fields, take it to the gas processing plants, to transmission lines that carry the gas across country. And then that goes to local distribution companies, which are the companies that ultimately deliver gas to your house via mains and service lines.

And that's relevant here. This is the overview of the annual report that PHMSA requires operators to submit under 49 CFR Part 191.

We received about a thousand gas transmission annual reports and about 400 gas gathering annual reports. And that covers approximately 300,000 miles of onshore transmission, and about 11,000 miles of onshore regulated gatherings.

Note that this is Type A and Type B regulated gathering, as defined in Part 192.8. It doesn't, we currently do not collect data on gathering lines in Class 1 locations, although we propose changes to that in the safety of gas transmission and gas gathering role.

Additionally, we require operators to submit gas distribution annual reports. And we get about 1,300 of those covering about one million miles of gas main and 70 million services, which is approximately another million miles of pipeline. So, just keep those in mind as we talk about the leak repair data in the slides to come.

Okay. So like I said, we collect data on the number of leaks that operators repaired within the previous reporting year. And we show those in addition to the annual report data, which is available online.

We have data summaries which are also available. And these are primarily intended as integrity management performance measures. And these are examples of the summary data that's available at that webpage.

This slides summaries the information that's available for gas transmission. And that includes regulated gas gathering and gas distribution pipelines.

Note that we do not collect loss and unaccounted for gas for gas transmission pipeline, hazardous leaks repaired by cause for transmission or outstanding. And one of the limitations in the data that we currently collect is that we do not collect data on leaks that are not currently scheduled for repair. Yes, so here we summarize that again.

So the releases that are nonhazardous and that can be eliminated by lubrication, adjustment or tightening are not required to be reported. And neither are leaks that are not scheduled for repair.

Additionally, intentional releases, so that's the vented emissions that EPA and Alan had talked about, are not included in those numbers. However, they are a significant share of emissions.

So now we're going to go into some of the summaries of the leak repair data. So on gas transmission, on gas transmission pipelines, and again, that's covering approximately 2.3 million miles of pipe, operators reported a repair of approximately half a million leaks.

Of those, 200,000 were what are defined as hazardous leaks. And that term is defined in the DIMP regulation as a leak that possess and existing or probable hazard to persons or property and requires immediate repair, continuous action, to make safe.

That mere language used in a document called the leak rate, described in a document called the GPTC guide, which you will hear more about throughout the rest of the day. So that corresponds to a, roughly to a Grade 1 leak. And then Grade 2 and 3 leaks are lesser in order of safety severity, but not necessarily in potential environmental impacts from emission.

So as you can see, approximately most of the leaks are on service lines, which is not terribly surprising based on what we just heard from the EPA. And the largest category is service line equipment failure, which again, corresponds to not surprising based on the data on emissions from customer and commercial meters that EPA mentioned.

These slides just go into some additional detail on gas distribution, leak repairs. Splitting it out between mains and service. And it also shows you by cause.

So again, you can see, on the total leaks there are a lot due to corrosion, excavation damage, especially on service line, and equipment failure on service lines, again.

And then when you get to the hazardous leaks you see a lot more due to excavation damage. Which, again, is the leading source of both hazardous leaks as well as reportable incidents and serious incidents that result in casualty.

So for gas transmission and gas gathering lines, again, this is based on information that operators submitted on their 2020 gas transmission and gas gathering annual report. There is about 1,700 leak repairs on gas transmission lines and approximately 160 on Type A and Type B regulated gathering lines. So, many, many fewer than on distribution, however, it's also less mileage.

In addition to the leaks that were repaired, operators reported at the end of the reporting year having 380 leaks on gas transmission pipelines that were scheduled to be repaired in the next calendar year, and 41 on gas gathering.

And here, again, you can see the leaks by cause. And the leading cause of reportable leaks on transmission is equipment failure, whereas on gas gathering pipelines you see much more proportionally leaks caused by corrosion. And if you dig into that, that's mostly external corrosion.

So one of, again, one of the limitations of the data that we have collected is that we have not historically collected the number of leaks that are either discovered, nor the leaks that could be categorized as nonhazardous under the GPTC guide or annual report instructions. But nevertheless could result in significant emissions.

However, we did find data from the State of New York that did collect some of this information to sort of fill in the denominator. Now, one thing to keep in mind is that this is going to be focused on distribution. And due to various reasons, New York may not be representative of distribution in the rest of the country.

However, if any other states collect similar information, we invite you to make comments and provide that information to us because it would be very helpful for this rulemaking.

So again, here you see those GPTC leak grades. And based on their data, 37 percent of leaks that were discovered fell into that Type 3 or Grade 3 category. And they've also reported significant reductions in leak backlogs since

2003.

And in the interest of time I'm going to go through these pretty quickly. But this shows the leaks discovered over time on mains and services, and then the leaks repaired.

So there are a lot of Grade 3 leaks that are repaired but, especially in earlier years it let fewer than what were being detected. Which leads to a backlog over time. However, that's been on a decline in the State of New York.

So the next section addresses legacy materials identified in the act. So this includes cast iron and wrought iron, bare steel and pre-1970 infrastructure.

And basically this represent a small portion of the existing infrastructure, however, as we have seen in the EPA report and our own incident data, it results in a disproportionate leaks incident than emission.

And again, I'm going to go through these quickly and I apologize.

On transmission, bare steel is not as significant as a share of infrastructure compared to on the distribution side. About one percent.

However, what is predominant in transmission is pre-1970 infrastructure. And that's approximately 160,000 miles. That's pipeline that was installed prior to the, basically the creation of the pipeline safety regulation. And that has also been on the decline since 2005.

The last topic we'll discuss is loss and unaccounted for gas, which has been a lot of discussion in this context. We started collecting loss and unaccounted for gas on the gas distribution annual report.

However, this is reported on an operator level as a percentage. As basically as a percentage of loss and unaccounted for gas of total consumption. So keep that in mind with that 2.1 percent. That's just the average percentage across all the operators.

No total volume information is

submitted on the report form, however, on a larger scale this information is available from the EIA in their gas annual report. And they further break it down by lost gas, which is leaks, blow downs and basically the source of emissions that we're talking about in these proceedings, and unaccounted for gas, which can be caused by a number of factors, such as measurement error or just accounting differences.

In the EIA data, the loss and unaccounted for gas, as a percent of total of consumption, was about 1.2 percent. And if you click through that link it includes reports by states.

So moving forward we're looking for information on how many leaks are neither repaired nor scheduled for repair, as well as how many leaks are discovered. And whether any other states or entities collect this information.

Additionally, information on the leak volumes. Currently we collected only the count. It would be useful for these proceedings, especially the share of super emitting leaks that result in a disproportionate amount of information.

As well as the location and failure mode for equipment and corrosion related leaks. As well as the frequency and volume of intentional releases from venting, blow down and the other factors that EPA has described.

So the rest of the presentation provides links to a lot of these reports and the raw data if anyone is interested. And these slides will be posted onto the meeting page as well. So that's it for me.

MR. TAHAMTANI: Thank you, Sayler, appreciate your presentation.

Let me see. Our next to last presenter for this panel is Mary Zanter. And a few words about Mary.

She is a pipeline safety program manager for the State of South Dakota Public Utilities Commission. Mary is the current chair of the National Association of Pipeline Safety

Representatives, or NAPSR, which is the association made up of all the states pipeline safety managers and inspectors.

Mary has a bachelor's degree in electrical engineering, a master's degree in business administration. Prior to joining to the QC staff in 2012, she worked for natural gas operator for 14 years in both engineering and operation.

And with that, I'll turn it over to Mary.

MS. ZANTER: Thank you, Massoud. I'm very happy to be here today. I'm glad that we have so many participants and looking forward to hearing from all the other panelists.

So, just to share a little bit about NAPSR. It was established in 1982, comprised of the state pipeline representatives from each state, and they're organized into five regions that align with the PHMSA regions.

Hawaii and Alaska are not NAPSR members because there is not state program there.

And PHMSA is responsible for the intrastate pipelines in each of those states. But we do have some programs that have both hazardous liquid and natural gas programs. And we also include Puerto Rico.

Generally, we represent 75 percent of the state and federal inspection workforce. So, a large number of the inspectors are part of the state and part of the NAPSR organization.

And for more information about NAPSR I am sharing the website. It's simply napsr.org.

The mission of NAPSR is to strengthen pipeline safety programs by improving pipeline safety standards in promoting education, training and the integration of new technology.

So, when we look at the state leak detection regulation, approximately one half of the states have additional regulations above what the federal regulations are.

So some of these include a requirement for identifying leak classification and action on leaks, with a criteria for action, some repair time frame. We have enhanced or more frequent reporting of leak status to the regulatory agency. Sometimes specify the equipment used for the detection of leaks.

Many of the states defined hazardous leaks, which follows, what is defined in the DIMP section. And also what is defined in the GPTC guide.

Prior to DIMP there really wasn't a definition of hazardous leaks, so that's been defined by states.

Sometimes states require a response time criteria for the gas order complaints that they receive. They might require more frequent leak surveys. They extend the record retention requirement for each of the operators.

In some cases they define business districts in a more precise manner than what the federal code requires. And they require public awareness efforts. And also may have mandatory replacement projects.

One of the things mentioned on that

list before was more frequent leak surveys. So in general, here is some of the reasons or some of the background to those more frequent leak surveys.

They may have a general system, leak survey requirement that is more frequent. Sometimes they may have a material specific area that are requiring more frequent leak surveys, such as bare steel, unprotected steel, cast iron, copper, Aldyl-A or PVC.

Occasionally it's a location specific area that is requiring the more frequent leak survey, such as a high occupancy building, public building, theaters, arenas, hospitals, schools, bridges and areas of movement.

And they also may be having a condition specific area for more frequent leak surveys. For instance, if it is a frost area with cast iron, they may require more frequent surveys. Or high pressure systems, such as pressures greater than 250 pounds. Possibly high heat regions with a Drisco8000 HDPE. And also, on unodorized line.

As I mentioned before, the hazardous leak definition is only defined in the DIMP section of federal code. Most operators have used the GPTC guide materials appendix for defining the criteria for leaks. And also for the definition of leaks.

And that definition, as I had mentioned, which is also what is in the DIMP section, a hazardous leak means a leak that represents an existing or probable hazard to persons or property that requires immediate repair or continuous action, until the conditions are no longer hazardous.

So the operators have relied on this guide material for a number of years. Even prior to when DIMP was implemented, they have used this guide material. And it's pretty widely utilized by operators.

So, we also want to look at some of the barriers that we have to advance leak detection. And some of these are pretty general, but I think it kind of gives you a general overview of what barriers may exist.

It could be cost, training, performance of the technology in the field, a lack of data and results, the lack of experience, the effectiveness, regulations and uniform enforcement, and also the high number of excavation damages.

Excavation damages was pointed out previous as a number of reasons, one of the highest reasons for gas leaks. Especially on a gas distribution system.

And no matter how many other efforts we have for leak detection, until the excavation damages are reduced, there is always going to be that particular problem with having leaks on the system.

There are few systems currently being used for advanced leak protection programs. One of them is the Picaro system. And there are operators who are also using drones to more easily access the pipeline for leak detection purposes.

So, we've talked about the PIPES Act of 2020 and I just want to make a few general statements about that that NAPSR generally supports any regulation that could potentially increase pipeline safety. And also, NAPSR generally supports best practices associated with improved leak detection and repair.

So, my section was much shorter. I think we have a lot of distribution facilities that NAPSR is responsible for, but we certainly encourage questions and comments during the question and answer period. Thank you very much.

MR. TAHAMTANI: Thank you, Mary. I appreciate your presentation, we all do. Sam, I'll turn it over to see if we have any questions from our public participants.

MR. HALL: All right, ladies and gentlemen, we're going to handle the question and answer process in a very specific way. We will not be monitoring hands raised through the Adobe Connect software, so please don't expect to be called upon if your hand is raised in the software.

If you wish to make a comment with your voice, in a moment the AT&T operator will give instructions for how to enter the queue.

If you wish to make a comment in the Q&A section you may do that as well, and I will read those comments aloud. This may be a bit hiccupy as we do this for the first time during this questions and answer period, so we certainly appreciate your patience.

And now I'll turn it over to the AT&T operator for instructions on how to make a comment.

THE OPERATOR: Thank you. And if you wish to make an audio question, please press 1 then 0 at this time. 1 followed by 0 on your telephone keypad.

MR. HALL: And in addition, if at the beginning of your comments if you would please state your name and spell it for the record as we are recording this presentation, and we will have a transcript of the proceedings available on our public meeting, after the meeting.

THE OPERATOR: And please standby, we do have a question coming through queue. One moment please.

Okay, we'll go to the line of Pamela Lacey. And just a quick reminder, for the record, please spell your first and last name. One moment please. And, Pamela, your line is open, please go ahead.

MS. LACEY: Thank you very much. This is Pamela Lacey, that's, P-A-M-E-L-A, Lacey, L-A-C-E-Y, with the American Gas Association.

I have a question for Mark DeFigueiredo. Hello, Mark.

Could you explain to the audience about how Subpart W reporting, for mains and services for distribution, is based on emission factors that were developed based on the 1990s GRI EPA methane study whereas the inventory uses updated emission factors?

DR. DEFIGUEIREDO: Sure, I can. This

is Mark DeFigueiredo. Thanks for the question.

Yes. So, for the greenhouse gas reporting program, Subpart W, within the natural gas distribution segment there is recording of emissions and leaks from distribution main and services.

The calculation methodology that the facility has used, is they take the mileage of pipeline, based on material types, and that's multiplied by a pipeline specific emission factor. And so it's an emission factor specific to the type of pipeline materials.

So there is emission factors for plastic pipes that are different than, say cast iron pipe or unprotected steel.

The emission factors that are currently Subpart W, are the ones that we essentially finalized at the beginning of the program. They were the best available data at the time. And are essentially based on gas research institute, environmental protection agency study from, I believe, 1996.

And since that time there have been a lot of studies related to the oil and gas industry. Including, with respect to, distribution mains and services, including studies by the Environmental Defense Fund, Colorado State.

The greenhouse gas inventory that my colleague, Melissa Weitz, mentioned has gone through a stakeholder process to update the emission factors that are used in the inventory, with respect to the distribution mains and services uses a study by Brian Lamendola, that was sponsored by the Environmental Defense Fund. And he's at Washington State.

And we have received stakeholder feedback about making regulatory revisions to the greenhouse gas reporting program to also update our emission factors and calculation methodologies to update to the more recent studies. And so that's something that's under consideration at EPA.

There is a slightly different process

that we have to go through with Subpart W in that we need to go through a rulemaking, public notice and comment process whereas the greenhouse gas inventory has a different stakeholder and public and expert review process that they go through for making changes. Thanks for the question.

MS. LACEY: Thank you.

THE OPERATOR: Okay. Now at this time, we have no further questions in queue.

MR. HALL: Operator, will you please provide the instructions again just in case someone didn't hear them and would like to make a comment?

THE OPERATOR: Absolutely. And once again, if there are additional questions, please press 1 then 0 at the time on your telephone keypad. 1 followed by 0.

MR. TAHAMTANI: So, I have a few questions for the panelists, just to get the conversation going. I'll start with Mary.

Mary, you talked about excavation damages. Obviously these are damages that can be prevented. And they do cause the hazardous leaks.

What else can the states and PHMSA and others, such as CGA, do to continuously reduce these damages to our pipeline infrastructure?

MS. ZANTER: Thank you, Massoud. I think that in general we need more awareness of both our one call laws and what the effects of damage to pipelines actually, what it creates.

It creates not only a public safety hazard, it also creates a hazard for the excavator who is digging. It also creates a hazard for the operator whose had their line dug into. And as we know now, we also have an emissions issue that also becomes a factor.

So, excavation damages are really bad for all parties involved. And the most important factors, given the information to the excavators, to the locators, to everybody involved with excavation, to make sure that those facilities are protected.

MR. TAHAMTANI: Thank you, Mary. I'll

move on to a question for our EPA friends. Mary, from your data it was obvious that compression is one of the larger sources of emission.

And the question that I have for you, and even Mary here is, what is the role of DOT versus the EPA versus states, to reduce emissions on compressor stations and how do we make sure that there are no gaps in overlaps in methane leak management between our agencies?

Mark or Melissa?

MS. WEITZ: This is Melissa Weitz. I'll note generally what the current regulations cover at EPA, and Mark can jump in to correct me or add anything.

So the concern with compressor stations, the regulations that we have for gathering and boosting do cover venting of the compressors. So, equipment, seals and rod packing. Those are standards that apply to new sources. That's what's currently on the books.

I'll note, again, that we do have the executive order that we mentioned that proposes that EPA considers taking actions by September 2021, that we propose a rule to reduce the methane emissions in the gas sector by suspending, revising, rescinding previously issued standards known as new source reform standards. And then also proposing new regulations for methane and VOC from existing operations in the oil and gas sector, including exploration production, processing, transition and storage.

So that would be potentially looking at transmission and storage, which isn't in the current rule.

DR. DEFIGUEIREDO: This is Mark DeFigueiredo from EPA. I'll add that. I think what your highlighting, Massoud, is the role of coordination is really important.

And actually, EPA staff and PHMSA staff, we have been in regular communication since the enactment of the PIPES Act. And I think it will be important for us to continue to work together.

You know, highlighted by EPA's participation, for example, at this public meeting, to ensure that we're coordinated in parallel regulatory efforts moving forward.

MR. TAHAMTANI: Thank you both. Sam, I'll come back to you in case there are questions from the public.

MR. HALL: Operator, do we have additional questions from the public?

THE OPERATOR: No additional questions in queue at this time.

MR. HALL: Back to you, Massoud.

MR. TAHAMTANI: I'll ask a couple more questions then. Have EPA addressed technology performance standards in other pollution and control or leak management programs?

One of the things that we have to do as part of the PIPES Act, we need to come up with some performance standards for advance leak technology or technology that's used to detect, quantify and prepare leaks. Any comments on that?

DR. DEFIGUEIREDO: This is Mark DeFigueiredo at EPA. Within EPA's Office, it's actually a sister office within in your office, a sister to where Melissa and I work. There is in an office of Air Quality Planning and Standards that includes a measurement policy group and a measurement technology group.

And they're focused on analyzing the technologies that are used in regulations, such as EPA's new source performance standards. So I think coordination with that group will be important.

There has also been a lot of work within the federal family outside of EPA. So for example, the U.S. Department of Energy has been doing a lot of work with respect to advance leak detection technologies in the methane space through various R&D programs that they have.

We think the information from DOE will also be informative to these efforts.

MR. TAHAMTANI: Thank you, Mark. Another question for Mary.

Are there ways that states can encourage small operators to adopt advance leak technology in their practices?

MS. ZANTER: Thank you, Massoud. Small operators are always, I would say, have a bit of a challenge simply because they don't have some of the same capital for investments into new technology as larger operators may have.

So I think as an incentive we have to be creative in ways to do that. And I don't know that I have the answer necessarily as to how that can happen, but I think certainly regulations will force operators in the right direction.

And possibly, maybe there is some sort of financial incentive, either from the state level or from a federal level. I wish I had the answer but I'm not sure that I do.

MR. TAHAMTANI: Thank you, Mary. Again, Sam, I'll check to see if there are any questions from the public.

MR. HALL: And before I do that I'd like to remind the audience also that you can enter questions in the Q&A chat box on the bottom left of your screen.

Operator, are there any additional questions?

THE OPERATOR: Yes. We have a follow-up from the line of Pamela Lacey. Please go ahead.

MS. LACEY: Thank you very much. I actually entered a couple of questions in the Q&A and apparently you all can't see them, so there may be others that the audience is trying to get to you.

I have a question about lost and unaccounted for gas, LOUF or LAUF, depending on what you want to use.

In the main factor in the difference between the gas that's metered in and what goes out to customers is really driven by the difference between the more sophisticated large, really expensive meters at custody transfer stations that can adjust for temperature, and they continuously, versus those smaller, simpler and more affordable meters at customer locations that are read only periodically and under different temperature weather conditions during the month.

And would you agree, and this is for our EPA speakers, would you agree that LAUF is not a good measurement of actual methane emissions?

And I'm sorry, this is Pamela Lacey at AGA.

MR. HALL: And that question was for our --

MS. WEITZ: I can --

MR. HALL: Go ahead.

MS. WEITZ: Oh I can, this is Melissa Weitz, I can jump in for EPA. I'll note that we've looked at a lot of data for distributions within, in the inventory in the past. The most recent update that we did for distribution pipelines was in 2016.

And prior to our stakeholder discussions, this issue of loss and unaccounted for gas did arise. And we, it seems that kind of the definition can vary.

And it's not really known what fraction of that loss and unaccounted for gas is actually emissions versus other items. And so for that reason for, because this is a time, across a time series and transparency we use miles of pipelines to estimate the distribution of pipeline emission versus loss and unaccounted for gas.

MS. LACEY: Thank you.

MR. HALL: This is Sam Hall again. I apologize, thank you, Pamela, for noting that there are questions in the Q&A box. I suspected we might have a hiccup here.

We do see those questions now and I will read those out loud. If that's okay with you, Massoud, is that all right?

MR. TAHAMTANI: Please go ahead, Sam. Thank you.

MR. HALL: From Heidi Wray, H-E-I-D-I, W-R-A-Y. We have the question, where is the emission data prior to 2016 polled?

MS. WEITZ: This is Melissa Weitz from EPA. I believe this is a question on the greenhouse gas inventory.

So we use a number of data sources for the inventory. We do use a lot of data from the greenhouse gas reporting program.

For most sources in the oil and gas sector, they started reporting in 2011. Some sources were newly reporting in later years, but in general, most of those emission sources started in 2011.

We use the greenhouse gas data where we can. And we scale it up to the national level so that we're not just reporting only the facility level emissions but getting an estimate of the total national numbers.

For a lot of the sources we rely on data from earlier studies for early years of the time period. So there was a large effort in the 1990s to collect data across the oil and gas systems infrastructure and develop methane and future emissions estimates for those. So, in a lot of cases we used those data.

In earlier years it varied from source-to-source. We do a lot of interpolation of emission factors between the early '90s and the start of the GHGRP data.

We do use year specific activity data also. So, in general, there is a lot of different answers because it varied from source-to-source.

But in general, we use data from either research studies, the 1990 study. Or we sometimes develop emission factors from the greenhouse gas reporting program. And if it seems to represent data across the time series, we will apply those emission factors back through the time series also.

So there are a number of references that we use to pull together this data.

MR. HALL: Thank you for that answer. We do have several more questions, multiple more questions, here in the Q&A. And we have until about 12:45 before we break for lunch so hopefully we can get to all of these.

The next question is from Stephen Price, S-T-E-P-H-E-N, P-R-I-C-E.

Stephen asks, on the local distribution side of the industry, is there data on mains and services that distinguishes emissions due to leaks versus emissions due to third-party damages?

MS. WEITZ: I will answer for the greenhouse gas inventory and others can jump in. This is Emily Weitz for the greenhouse gas inventory.

The study that we used for the distribution pipelines focused on leaks. We have a separate estimate for what we call mishaps, and it's based on a research study.

It doesn't, at this point, vary from year-to-year, it's added in as a default factor there. So there is a distinction, but there is not a lot of data to develop a year specific methane emission estimate for the third-party damages category.

MR. HALL: Thank you. Would any other members of the panel like to comment?

DR. DEFIGUEIREDO: This is Mark DeFigueiredo from the EPA. I don't have anything to add on the greenhouse gas reporting program but I did want to note that the natural gas STAR Methane Challenge Program, to the various best management practices, one of which relates to excavation damages from the local distribution companies.

And so, there is some activity information that is reported as part of that transparent reporting of the methane challenge DIMPs related to excavation damages.

MR. HALL: Thank you. Sayler or Mary, any other comments? All right, not hearing any.

Lindsey Fitzgerald, L-I-N-D-S-E-Y, F-I-T-Z-G-E-R-A-L-D, asks, how do you know that the vented intentional releases are significant if they are not included or reported?

MR. PALABRICA: This is Sayler with

PHMSA. So that statement is based on the greenhouse gas inventory data on the vented emissions, as well as compressor station fugitive emission.

For gas transmission and gas distribution operators on the greenhouse gas inventory report, what we don't collect is the number of events that those, basically the number of leaks from those releases on the annual report like we do for leak repairs. But the emission volume is based is on the EPA data.

MR. HALL: Okay, very good. Lindsey Fitzgerald has a follow-up question. How do you define super emitter?

MR. PALABRICA: So one of the challenges of this rulemaking is going to be defining what are those, like, Grade 2 and Grade 3 leaks that, due to the emission volume or the amount that it's been releasing, has to be repaired. And that's not something that we've decided yet.

But it is those releases that are

perhaps nonhazardous under leak grade, but result in a large amount of emissions. But we haven't settled on what number that is.

MR. HALL: Okay, very good. David Heldenbrand.

MR. TAHAMTANI: Can I --

MR. HALL: Oh yes, please.

MR. TAHAMTANI: I'm sorry, Sam. Super emitter, is that something that EPA defines? Can you comment on that?

MS. WEITZ: Hey, this is Melissa Weitz from EPA. We don't have a definition for super emitter, we are very interested in studies that look at emissions. Oil and gas and other methane sources.

We note that there are a lot of different definitions for super emitters, depending on the studies. So sometimes it's defined as a certain percentage of methylene leakage compared to other facilities.

Sometimes it's defined as a large anomalous event. So it can really vary from study-to-study.

MR. TAHAMTANI: Thank you, Melissa. Back to you, Sam.

MR. HALL: Thank you. The next question is from David Heldenbrand, D-A-V-I-D, H-E-L-D-E-N-B-R-A-N-D.

Better soil gas migration analysis might be a more effective way to analyze risk rather than more frequent surveys. We'll take that as a comment and not a question. Thank you, David.

Next question comes from George Ragula. Pardon me if I'm mispronouncing. G-E-O-R-G-E, R-A-G-U-L-A.

Curious why a manufacturer was used to describe CRDS technology, which is available through multiple sources. Anyone able to answer that?

MS. ZANTER: This is Mary Zanter with NAPSR. I think this might be directed to me, but I'm going to show my ignorance in response to this question.

I think it might be referring to the fact that I used the statement of the Picaro system. And I used that manufacturer name because I'm not familiar with any other technologies done by another manufacturer.

So I think that's simply because of my ignorance that I didn't reference other types, that I didn't reference the technology rather than the manufacturer.

MR. HALL: Thank you, Mary. I've just been informed that I don't need to spell the names of the folks who have submitted comments so I'll stop doing that.

We have a question from David Bull. Will NAPSR be publishing a new addition of the state regs compared to the federal regs?

MS. ZANTER: This is Mary Zanter with NAPSR. We are working on a new addition of what we call the compendium, which has all the state regulations identified that are above and beyond the federal regulations. So we do expect that to be published in the near future. Thank you.

MR. HALL: Thank you, Mary. The next question is also directed to you from Steve Allen.

Do you know how many states require all leaks to be repaired when discovered?

MS. ZANTER: Thank you, Steve. I believe that we are working on a survey for more definitive information about our requirements on leak detection. At this time I do not know the exact number of states that require all leaks to be repaired but I know that there are a couple that do. So, sorry I don't have the exact answer for you. Thank you.

MR. HALL: Thanks. Thanks, Mary. Randy Knepper asks, why does the recent executive order discuss VOCs, volatile organic compounds, as most of the slides were centered on methane and carbon dioxide?

MS. WEITZ: Hey, this is Melissa Weitz from EPA. So the executive order discusses both VOCs and methane. The current regulations focus on VOCs.

The executive order instructs us to consider looking at both methane and VOCs. While Mark and I work closely with the sister office that does work qualifying VOCs, we focus on the greenhouse gas emissions. So our slides focused on methane and Co2.

We'll also note that a lot of the sources of VOCs are the same as the sources of methane.

MR. HALL: Thank you. Rebecca Craven asks, does PHMSA expect to include a requirement for quantification of individual leaks in the Section 113 rules and will it now, or in the future, be requiring some quantified level of reduction for operators? I'm happy to repeat that.

MR. PALABRICA: Those are things that we could consider in the rulemaking, although we are aware of challenges with quantification.

MR. HALL: Okay. Thank you for your question, Rebecca.

MS. ZANTER: And this is Mary Zanter

with NAPSR and I would agree. I think that we need to look at a lot of different things when it comes to what the rule making will actually state.

MR. HALL: Thank you, Mary. Thank you, Sayler.

Rick Weber asks, how will upcoming Section 113 rule take into account data and report produced under Section 114?

In other words, will this year's rule be seen as the first step to be revised based on updated inspection and maintenance plans under Section 114?

MS. ZANTER: I can try to answer that. This is Mary Zanter with NAPSR.

I think in general, until the rules are established as to what steps are required for enhanced leak detection and mitigation, you can't necessarily update an O&M manual. Operations and maintenance manual.

And so, once the rules are established then we can move into the inspection criteria of ensuring that all the operators are following the applicable rule.

MR. HALL: Thank you.

MR. PALABRICA: And to add on to that, and Massoud can stop me if I'm wrong, we see them as two separate rulemaking. And the rulemaking required after the report for 114, which won't take place for another year, that would be subsequent to the rulemaking under 113.

MR. TAHAMTANI: Sayler, you're correct. 113 clearly says, we have to have a final rule by this December that addresses leak repair, detection and repair and a number of other provisions.

114 is the self-executing provision that says, by this December, operators have to revise their O&M to have hazardous leaks repaired. And then to basically minimize the release of all releases from pipeline facilities.

And I think these questions will be addressed this afternoon by other panelists.

MR. HALL: Thank you both.

MR. PALABRICA: Thank you, Massoud.

MR. HALL: Randy Knepper has a follow-up question. He says, we heard environmental justice mentioned a few times in introductory remarks. What does, or how does, environment justice get factored in by PHMSA as pertaining to Section 113 and 114?

MR. TAHAMTANI: I'll take a stab at that, even though as the moderator I'm not supposed to answer any questions. I don't think.

Clearly as we're looking at the mandates in 113 and 114, one of the areas we would be focusing on is to make sure that these leaks are repaired in all areas. Including areas that may be underserved, if you will.

And again, no evidence to say that they're not being repaired, but we're focusing on making sure that the rulemaking and our overall plans to help replace the leaking legacy infrastructure goes ahead or progresses with environmental justice in mind.

MR. HALL: Thank you, Massoud.

MR. PALABRICA: And environmental --

MR. HALL: We do have --

(Simultaneous speaking.)

MR. HALL: Go ahead, Sayler.

MR. PALABRICA: Go ahead.

MR. HALL: No, go ahead.

MR. PALABRICA: And environmental justice will also be brought into account under the NEPA process.

MR. HALL: Thank you for that. We do have considerably more questions in the Q&A but I want to take a pause and see if the operator has any questions from the audience?

THE OPERATOR: At this time, no questions from the audience. But a quick reminder, please press 1, followed by 0, if you do have a question. 1 then 0.

MR. HALL: Thank you, sir. Next question comes from David Heldenbrand.

And I do want to note that I think some of these questions will be answered through other panel discussions. And if you're dissatisfied with the answers that you're hearing now, perhaps it will be a good opportunity for you to ask those questions again under other panels.

In the meantime I'll try to go through these questions as quickly as I can.

From David Heldenbrand we have a question. Excavation damage certainly needs to be minimized in every way, but the consequences after an incident also need to be addressed.

We'll take that as a comment, David, as there is no question included.

Pamela Lacey from the AGA asks, oh, I think Pamela, we may have answered this question for you. Regarding loss and unaccounted for gas. If not, please chime in with the operator and we'll be happy to answer that question.

Brent Shuler asks, or comments, regarding the super emitters that were mentioned, most technologies are able to determine where super emitters exist, pulling in all data from the survey and only report out the super emitters.

There have been concerns mentioned around pulling in this additional data, non-super emitter indications, and not taking actions on it even when the super emitter surveys are supplemental. Can any clarity be offered on this?

MR. PALABRICA: So, I don't think that we can necessarily offer clarity at this point, we'll be talking more about technology in the next day. And one of the provisions in the act is that as a part of this rulemaking we have to consider how to adopt, basically some of those advance leak detection technologies that you're talking about.

Including ways to address any concerns like that. So thank you for your comment as a part of the rulemaking.

So that's one of the things that we'll have to consider when we think about how to incorporate those technologies and survey practices in this rule and the 114 mandate. And this is Sayler Palabrica.

MR. HALL: Thank you, Sayler. And we have a question from Julie Halliday.

Cast iron was mentioned a few times. Does the emission data consider cast iron pipe that has been rehabilitated versus that which has not?

MS. WEITZ: This is Melissa Weitz --

DR. DEFIGUEIREDO: This is Mark --

(Simultaneous speaking.)

DR. DEFIGUEIREDO: Go ahead, Melissa?

MS. WEITZ: Can I cover it?

DR. DEFIGUEIREDO: Go ahead.

MS. WEITZ: So, I'll just note that for the greenhouse gas inventory we do not make that distinction. A number of studies have tried to collect data both from cast iron that has not been rehabilitated versus those pipelines that have. There has not been a lot of data available on that. Anything to add, Mark?

DR. DEFIGUEIREDO: No, I was going to say the same thing. Thanks.

MR. HALL: Okay, very good. Dirk Smith asks, while the EPA does not have jurisdiction over LDCs, the local distribution companies, if it did, is it correct that their term facility would include the entire local distribution company systems within a system?

DR. DEFIGUEIREDO: This is Mark DeFigueiredo from the EPA. I believe you're referring to the definition of facility for purposes of the greenhouse gas reporting program.

The greenhouse gas reporting program is quality neutral. It's intended to inform different regulatory efforts.

So I wouldn't necessarily read into it with EPA, because of the way that the greenhouse gas reporting program is defining facilities, necessarily, that's the way that, for example, PHMSA PIPES Act regulations jurisdiction should therefore be defined. There are different policy purposes that the GHGRP, as well as the greenhouse gas inventory's data are intended to inform.

MR. HALL: All right, thank you. We have a comment from Michelle Mendoza.

The use of emission factors for the GHGRP does not reflect companies who are proactively using AMLD technology to identify and repair leaks. The EPA provides options for these companies to report in a way that better reflects their system experience.

DR. DEFIGUEIREDO: This is Mark DeFigueiredo from EPA. Thanks for the comment, Michelle.

For Subpart W we do have to go through a rulemaking process in order to make any changes to our calculation methodologies, but I appreciate the comment and we'll take that back for consideration for future rulemaking revisions.

MR. HALL: Okay, thank you, sir. Question from Ben Dori with Ameren.

Newer technologies, such as Picaro and drones were mentioned. Are these options considered the best option for advance technologies, is their industry confident in these technologies? I think that may be directed to you, Mary.

MS. ZANTER: Sure. This is Mary with NAPSR.

And I would say that there has been a significant amount of discussion with Picaro. And if there are other similar systems that use that same technology, such that there is pretty good confidence with that. More of a, how it's implemented with each of the operators to take the data that's provided and then use that for mitigating leaks.

As far as drones, in most cases drones are not being a primary source of leak detection, it's more used as a supplemental source. So, I think drones needs to have more acceptance in the industry yet, but I think it's getting there. I think technology is constantly improving. Thank you.

MR. TAHAMTANI: Hey, Sam, I think that may be a good question for tomorrow's session on technology.

MR. HALL: Yes, it may well be. There are several questions in here that are probably better questions for technology. I'll refer to Mr. Ryan Streams. Perhaps you'll want to ask your question tomorrow.

We've answered that one. Forgive me while I work through these. Dirk Smith asks a question again.

If EPA doesn't have LCD emissions jurisdiction, how does PHMSA, how is PHMSA expected to provide emissions guidance, will it be EPA standards?

MR. PALABRICA: So we are definitely looking at all the facility types that are included within the scope of both our jurisdiction, as well as those specifically called out in the PIPES Act. And that would include local distribution companies.

I won't speak as to what EPA's jurisdiction is over those facilities. But we certainly have jurisdiction.

MR. HALL: Okay. Okay, thank you, Sayler.

We have a question from Philip, although I don't know that anyone will be able to answer this question. I will just pose it, and if no one can answer it we can move on.

What incentives are being offered by the Biden Administration to encourage and reward responsible operators for replacing leaking pipelines instead of just repairing leaks? Is anyone able to address that?

MR. TAHAMTANI: Sam, I don't think so.

MR. HALL: Okay.

MR. TAHAMTANI: We can try to get back to the individual that asked the question.

MR. HALL: Indeed. Sorry we're not able to answer that question now.

Corinne Byrnes asks, what's covered within the combustion category? Does it include heaters, turbines, et cetera?

DR. DEFIGUEIREDO: This is Mark DeFigueiredo. I believe that's addressed at me.

So, combustion is reported to EPA's greenhouse gas reporting program for certain industry segments, such as gathering, inducing and natural gas distribution that's reported under the Subpart W. So, 40 CFR Part 98, Subpart W is the regulatory citation.

And then for other industry segments, such as natural gas transmission compression or underground natural gas storage, it's reported under 40 CFR Part 98, Subpart C.

And so the regulations at the different citations that I mention layout what's required to be reported for the category, but yes, things like compressor, combustion associated with compressor engines and internal and external combustion engines, those are the kinds of equipment that would be reported under the combustion category.

MR. HALL: All right, thank you. Ms. Byrnes also asks, how do you differentiate EPA requirements from PHMSA requirements?

MR. PALABRICA: I don't totally

understand the question.

MR. HALL: It may not be one that we can clearly define. Perhaps the question could be better posed.

Let's move on from that one. Let's see. Sonal Patni asks, from the American Gas Association, can someone from the EPA talk about if there are any incentives underway, especially given the new focus on the environment from the new administration, to updating existing emission factors or allow comparable methodologies?

MS. WEITZ: This is Melissa. I think we can answer this both from the greenhouse gas inventory and the GHGRP perspective.

For the greenhouse gas inventory, we are considering our process as making updates to the greenhouse gas inventory annually. So, probably every year for the past ten past years we've made updates to emission factors as new data have become available.

I will note that I did mention some previous studies from the early '90s that are used in certain parts of the time series, and for some of the emission factors throughout the time series. But I should clarify that for the most part, for recent years, we're using new data.

Especially for the sources that we discuss today for gathering and reducing transmission storage and distribution. Almost all of those emission factors are based on either the greenhouse gas reporting program or new studies.

So we are going to continue looking at new data and continue to make annual updates where new data would be improve the greenhouse gas inventory.

MR. HALL: Perfect. Thanks, Melissa. I'll just point out that we have about six minutes left in this session so we're nearing the end. We're not going to be able to get to all of your questions, but please feel free to pose them in future sessions.

Operator, do we have anyone on the line?

THE OPERATOR: No questions in queue at this time.

MR. HALL: Thank you, sir. Pardon me while I read through these questions.

Ben Dori asks, is there a good resource to reference in order to calculate Co2 equivalent emissions?

If we have a leak with known flow rate, how does that convert to meaningful emissions?

DR. DEFIGUEIREDO: This is Mark DeFigueiredo from EPA's greenhouse gas reporting program.

The GHGRP we have a table within 40 CFR Part 98, Subpart A, called Table A1. And it provides a list of global warming potentials to convert greenhouse gases to carbon dioxide equivalence.

It's that table that's used for purposes, when I was talking about Co2 equivalent emissions reported to the GHGRP, that's the table that that's referenced to do those conversions.

That particular table relies on an intra-governmental panel on climate change for its assessment report. Which is consistent with inventory guidelines on global warming potentials for Co2 equivalence.

MR. HALL: Thank you, sir. Steve Allen offers a comment.

Operators will typically attempt to calculate the amount of gas that is lost from an excavation damage. This might be a good source of information to explore in order to better inform the direction on this type of emission. Thank you for the comment, sir.

And he has a follow-up comment that says, operators do this in order to bill the excavator for the lost gas.

Pamela Lacey offers a comment. Here is an idea that can help smaller gas utilities achieve lower emissions at no cost to them. Their state legislature could impose effective penalties against third-parties who excavate and damage gas lines without calling 811 first or paying attention to line markings. Especially for repeat offenders. Thank you, Pamela.

And here's a good question, perhaps, from Philip. What provisions are being made to penalize excavators who dig up gas pipelines?

Shouldn't digging up a pipeline that is reported to PHMSA and EPA be a federal offense?

MS. ZANTER: This is Mary Zanter with NAPSR. I can take a stab at this question.

In general, the excavation damage, it's excavation damage prevention, is handled by the state unless the state doesn't have an adequate damage prevention program. And in that case it is handled by PHMSA.

Basically there are, in most cases, penalties associated with damaging a gas facility or any other underground facilities. So these are each handled separately by each state.

And some states have different regulations on that than others, so I can't make a general statement as to how that's being done.

But there, in general, regulations associated with that. Thank you.

MR. HALL: All right, thank you, Mary. I'm challenged to read the next question. Forgive me a minute.

A question from Udeozo Ogbue. Will PHMSA provide more guidance on assessment of civil penalties on large operators who repeatedly violate the new leak detection and repair rule?

For example, a fine or suggested breakdown of the new daily fine maximum in a spreadsheet to state programs.

MR. TAHAMTANI: Sam, we can talk to Udeozo on that one. Put him in touch with our Director of Division of Enforcement.

MR. HALL: Very good. Thank you, sir.

MR. TAHAMTANI: Thanks.

MR. HALL: Let's see. Lindsey Fitzgerald asks, one of the barriers to advance leak detection was presented as lack of data on results and effectiveness. Could you please expand on that?

MS. ZANTER: This is Mary Zanter with NAPSR. I believe that is directed towards me.

I'm trying to wrap my words around this without just kind of repeating it. So, sometimes there is a lot of things that are being done that we don't always have data on what is being done or what the results of it are that is being done. So that's what I meant by lack of data on results.

You know, there is a lot of technology being developed, but I don't know that we've got firm results on it yet. And effectiveness, once again, it's kind of that bridging technology of what's happening.

You know, there is a lot of things being developed, but what is it? Is it really effective at this point or not. And so, it's just some general terms associated with those technologies.

MR. HALL: Well thank you, Mary. The remaining questions we're going to need to hold. And I would encourage you to ask them in future sessions if they haven't been answered today.

We did get one question that says, will there be a PDF of all questions and answers available after the meeting?

To reiterate, we are recording this meeting and so you'll be able to hear those questions if you watch the recording.

And we're also producing a transcript of the spoken word during the meeting. So you'll be able to read the transcript and get the answers to these questions.

With that, Massoud, we are the time for lunch. And I'd like to go ahead and offer instructions for next steps, if it's okay with you?

MR. TAHAMTANI: Sam, let me thank all the presenters. Mark, Melissa, Sayler and Mary.

And also thank all those people who both posed questions in writing and in voice. And again, I think it's been a very exciting start to our two day program, just by the measure of the number of questions that are coming in.

I thank you all very much. And again, look forward to hearing you and being, seeing you online, if you will, over the next day and a half. Back to you, Sam.

MR. HALL: Thank you, sir. All right, ladies and gentlemen, we are breaking for lunch until 1:30 p.m. Eastern time.

Please return from lunch promptly by 1:30 so you don't miss any of the proceedings. The web meeting and the conference line will stay open during lunch, so there is no need to disconnect.

So, enjoy your lunch, please be back by 1:30 Eastern. Thank you.

(Whereupon, the above-entitled matter went off the record at 12:47 p.m. and resumed at 1:32 p.m.)

MR. HALL: Ladies and gentleman, welcome back from lunch to the Pipeline Leak Detection, Leak Repair, and Methane Emission Reductions Public Meeting.

I'd like to give you some reminders

just about housekeeping issues for those of you who may have joined after these things were covered this morning.

All of the audio is being handled by an AT&T-moderated telephone call, the AT&T operator will provide instructions regarding how to make comments at the appropriate time, and until that time, all lines are muted.

In order to make a comment with your voice, that is in order to speak you must be dialed into the teleconference. The instructions for dialing into the teleconference are in the window in the top left of your screen.

If you are not dialed into the conference call you'll be able to hear the proceedings through your computer but you will not be able to make a comment with your voice.

In that case, you may make comments in the Q&A box on the lower left portion of the screen. We intend to adhere to agenda as strictly as possible and we have not scheduled any breaks because we're all at home and we're all accessing this remotely so please take breaks on your own as necessary.

The proceedings are being recorded, the recording and a transcript of the proceedings will be available on the meeting website in approximately 10 business days.

With that, it is now my pleasure to introduce Linda Daugherty, Deputy Associate Administrator for Field Operations in the Office of Pipeline Safety as the moderator of the next session, which is a public interest panel discussion.

Ms. Daugherty?

MS. DAUGHERTY: Thank you, Sam. Welcome everybody and hopefully you all had a really nice lunch and didn't eat too many carbs so you'll be ready to listen and really hear what people are saying here.

I have the pleasure of moderating the public interest panel. You heard this morning, you've read documents, you know this is a complex issue that we're tackling today and we need to hear from everybody.

And we need to listen to what they tell us, some of us come from a perspective we think we have, we review the topic, but we need to open our ears and we need to really look into what others have to say and think about it and truly consider.

My pleasure today is to introduce two different speakers, two different panelists, we had a third panelist but he had a family emergency and will not be able to join us.

So, what I'm going to do is I'm going to introduce the first speaker, which is Erin Murphy and ask her to give her presentation, and then I will introduce Bill Caram, who is our second speaker.

And then we'll open it up for Q&As and discussion and I do encourage you to take notes and ask some really good questions. So, first of all, Erin, are you about ready to go?

Do you mind if I read your bio and get us going?

MS. MURPHY: Yes, go right ahead.

MS. DAUGHERTY: Okay, so Erin Murphy is a senior attorney with the Environmental Defense Fund's Energy Markets and Utility Regulation Team.

She represents EDF, the four federal and state agencies, advocating to reduce methane emissions from gas distribution and transmission network, and to improve the gas utility planning framework to ensure alignment with climate policy.

Previously, Erin worked on Clean Air Act litigation, clerked for the main Supreme Court and graduated from Georgetown Law and the University of Florida. Welcome, Erin, we look forward to hearing what you have to say, over to you.

MS. MURPHY: Thanks, Linda, good afternoon, everybody, and good morning to the Mountain Time and Pacific Time folks. I really appreciate the opportunity to speak to this group today about opportunities to reduce pipeline methane emissions.

So, reducing methane emissions is critical to addressing climate change. Methane has 87 times the warming power of carbon dioxide over the first 20 years after its release and what that means for us right now is that about 25 percent of the warming that we are currently experiencing today is attributable to methane emission.

Very new research that actually just came out a couple of weeks ago from EDF and others indicates that a rapid, full-scale effort to reduce methane emissions could slow the worldwide rate of warming by as much as 30 percent.

And I want to contract that with another element to the analysis of this research which shows that a go-slow approach that does start now but stretches out full adoption on a longer term could result in a 5 percent increase of average worldwide warming.

So, we're at a really pivotal moment

to reduce methane emissions and have a real impact on climate as we're seeing it play out today.

I'm going to perhaps echo some of what Acting Administrator Brown said earlier this morning and I really appreciated Tim elevating these issues. We know right now that onshore oil and gas in the United States is the largest domestic industrial source of methane emissions.

That sector emits about 13 million metric tons of methane per year based on EDF analyses and research, and that equates to about a 2.3 percent leakage rate from the system.

Extensive peer reviewed research has indicated that methane emissions associated with U.S. oil and gas production are more than 60 percent higher than EPAF.

This slide, I won't go through every element but just wanted to briefly summarize EDF's extensive methane work and in particular, I'll point out that in addition to working to really understand and quantify methane emissions from the oil and gas system in the United States and globally, we've also really tried to focus on encouraging and incentivizing the development and the commercialization of methane detection technology.

PHMSA as an Agency has an important role in addressing climate change, the Pipe Act of 2020 reaffirms and expands such responsibility to protect the environment as part of pipeline oversight.

And Congress issued clear direction to the Agency to develop strong, comprehensive, advanced leak detection standards to reduce climate pollution from gathering transmission and distribution line.

And building on that, President Biden very recently announced ambitious new U.S. climate targets including to reduce greenhouse gas pollution 50 percent by 2030. And I know we can all do math, 2030 is less than nine years away.

So, we really have a mandate to act

quickly, and finally, a note that I think is not new information to this group but of course, since we know that methane is the primary component of natural gas, efforts to reduce methane leakage from gas pipelines, simultaneously fight climate change, and improve the safety of the gas system.

So, to zoom in a little and think about methane leaks specifically from distribution pipelines, I want to thank the incredible EPA team for sharing the wealth of data that they collect and see constantly.

I'm in awe of the work that Agency does and to build on that information, I want to point out that recent research estimates that a national methane leakage rate from gas distribution mains is approximately five times greater than what's currently estimated and reported in the EPA greenhouse gas inventory.

And the study that this is based on was looking at the 2017 values from the GHGI. And the chart in the bottom right corner of this slide shows that there's a clear connection between pipe material and pipe age, and the leakiness of those pipes.

So, you can see, you might have to squint but I know this presentation will be made available later for zooming-in purposes. But you can see that cast iron, particularly older cast iron pipes, is significantly leakier and to contrast that, newer plastic pipe tends to be less leaky.

So, the largest leaks are responsible for the most emissions and this chart is pulled from a study that's cited at the bottom of the slide and shows that looking at several gas distribution systems found that 50 percent of the methane emissions from the system were resulting from the largest 16 percent of the leaks.

Which I think can at least sound intimidating but I view it as really just an incredible opportunity because by identifying those large super-emitting leaks and acting quickly to remediate them, we can quickly reduce many of the methane emissions on the gas system.

And that significance of large leaks is something that we see play out across the oil and gas sector, so this Branch study did a meta-analysis looking at 15,000+ measurements from 18 different peer-reviewed studies, and again found that about 5 percent of sources accounted for 50 percent of total methane emissions across various equipment and facility types in the oil and gas sector.

I'm going to actually jump one slide ahead and I'll get back to that one. I want to talk a little bit about the benefits of advanced leak detection. Research has indicated that advanced leak detection finds more leaks in distribution systems compared to traditional survey methods.

So, one study found that traditional surveys in two cities failed to find 65 percent of the leaks that were identified by advanced leak detection, and that included multiple Grade 1 leaks.

Advanced leak detection can also estimate the leak size and therefore the greenhouse gas emissions rate attributable to an individual leak and, therefore, can be used to also estimate the system-wide emissions or future of emissions from the gas distribution system.

So, that information on Leak 5 and greenhouse gas emission is essential to the next bullet point which is that data-driven decision-making can help an operator guide leak repair.

I should say can help an operator guide and prioritize to maximize both safety and near-term methane emissions reductions in their leak repair decisions as well as leak-prone pipe replacement and possible leak-prone-type retirement decision.

And finally, I know this is something that's going to be discussed by a number of smart folks over today and tomorrow but we know that advanced leak detection is widely commercially available on a variety of platforms and survey methods.

I'm going to jump back and I wanted to just talk a little bit about EDF PermianMAP project as a helpful example of the diverse array of survey technologies.

And so this is important because there's not a one-size-fits-all approach, we're talking about multiple segments of the pipeline system in the United States that cross different types of terrain and there's a lot of different things that can influence what technology might be the best fit for understanding leaks from that system.

So, the EDF PermianMAP project is an effort by EDF as well as industry and academia and other stakeholders to really try to map out, understand, and publish information about the methane emissions from a defined geographic area.

And so we focus here on the Permian Basin and what's really helpful and interesting to note is the number of data sources we're compiling to map out these emissions.

So, there have been numerous lights over the region, including fixed-wing aircraft and helicopters with advanced leak detection or some might refer to it as LiDAR technology mounted on an aircraft.

There are also a number of stationary towers at strategic locations around the basin that measure methane emissions, as well as the ground team that's been driving various routes around the basin using mobile methane detection mounted on a vehicle.

And so all of those data sources are being compiled and used to publish methane emissions estimates and leak information for this area. And that analysis is also going to be cross-referenced with satellite data and the full methodology is available at that link.

Another benefit that advanced leak detection implementation can bring is transparency and improved leak and emissions reporting.

So, transparency around gas leaks

including leak location, size and duration, by which I mean the days the leak was first identified, allows for public accountability, which we believe can improve safety and encourage responsible management.

And just a couple of examples include the gas utilities in New York and California that have already published their leak maps online, and the EDF methane mapping project was an effort by EDF, Colorado State, and Google Street View to map a number of cities around the country using advanced leak detection and publish that detailed leak map online.

In addition, accurate climate disclosures and demonstrable improvements in reducing methane emissions can enhance shareholder value for gas companies.

I've linked here to an EDF report that goes into greater detail but I think the top-line piece to think about there is that shareholders and investors are increasingly concerned about beginning gas companies' Act on Climate Change.

And I know many gas companies in the United States have announced impressive climate commitment.

But one thing that advanced leak detection really brings to the table is that being able to report real-time data rather than an estimate that's based on pipe mileage and outdated emission factors can be really powerful and help a gas utility or operator demonstrate year over year reductions based on actual on-the-ground surveys.

And the final piece that maybe almost goes without saying is achieving and tracking the greenhouse gas emission reductions on the system.

So, the application of advanced leak detection can allow a utility or an operator to quantify those emissions and then again compare them year over year as leaks are repaired or pipe is replaced or retired to really see those emissions go down hopefully.

So, PHMSA needs to adopt clearer, performance-based advanced-leak detection standards. I'm just going to walk through a couple of core elements that we've identified for what comprised advanced leak detection technology.

One is the instrumentation itself which is the center of technology that allows parts-per-billion level sensitivity while capturing a number of other data-points that are all then put together in an algorithm to really understand that size and the location of the leak.

The technology is deployed through a variety of platforms. As I talked a little bit about before, this can be handheld, it can be vehicle-mounted, drone-mounted and others.

Next, the defined deployment strategy or a work practice is an important element of ALDs. As anyone knows who thinks about leak detection, it matters that the folks on the ground using the sensor technology are following the right practices to ensure that accurate data is collected effectively.

And then finally, the data product that result from the leak survey and these include the leak location, estimated leak flow rate, or the gas emission rate, a coverage map showing what areas were successfully surveyed and weren't.

Additional contextual data and then that can include summary or a cumulative loss estimate for the total area of the survey. And one element that we think is essential for advanced leak detection standards set by PHMSA are that they ensure an ongoing process for continuous technology improvement.

So, we want to set a floor, we don't want to set a feeling, we want this technology to be able to improve and I think the adoption of federal standards would create a space for additional development of new ideas and improvements to the technology over time, which we hope could then be incorporated.

Advanced leak detection is in use by utilities right now around the country and around the world and it's also already supported by policy in a number of states.

This slide is just summarizing on a high-level some of those policies that we would point to.

And I think this is something we're happy to share more information about later, maybe the one that I'll highlight is SB1371 in California has established a really comprehensive reporting system for gas utilities to submit annual methane leak abatement reports and compile emission reduction plans.

Another example is that New Jersey recently adopted an energy master plan relating to their overall statewide climate goals that specifically direct the Utility Commission to establish a standard for all utilities to use advanced leak detection.

To hone in on a specific utility example, I'm going to talk a little about PG&E in California. So, this slide is really just summarizing the information that PG&E reports to the State of California as part of its methane leak abatement program.

The utility has employed aerial advanced leak detection on transmission pipelines since 2018 and in a switch to improve leak detection technology between 2017 and 2018 they found 16 percent more leaks.

Looking at their distribution system, PG&E, starting in 2018, conducted a system-wide advanced leak detection survey using vehicle-mounted technology.

And this utility works with Picaro and so that image you're seeing is a diagram from Picaro that just shows you what their technology looks like in a vehicle-mounted system.

And so the utility did this system-wide survey to look for super emitter leaks and to assess their system-wide emissions.

And this is one example, I think there are many ways this could be structured but this may respond to some of the questions that were being asked on the earlier panel.

So, the way that PG&E does this is they're currently on a program to do a full compliance survey of their service territory every three years, which means each year they're doing a compliance survey of about a third of their service territory.

But then this annual system-wide drive, the other two thirds of it was for the purpose of surveying for emissions data to understand system-wide emissions and to identify super emitting leaks, which are those greater than 10 standard cubic feet per hour.

So, that survey was able to be conducted without triggering sub 10 standard cubic feet per hour leak indications, which I know can be important for a utility to think about as they think about the size of their leak backlogs.

And one other element of PG&E's program is that they conducted a special leak survey on vintage materials, which was ultimately able to achieve significant reductions in methane emissions.

I'll close with one other example which is National Grid in New York. As early as 2014 EDF was doing this Google methane mapping project with Colorado State, and that map image you see on the screen is on the EDF website and part of that mapping effort.

National Grid has since started publishing its own leak maps and more recently, the company proposed an enhanced high-emitter methane detection program in its rate cases in New York, which would use advanced leak detection to identify and remediate super emitting leaks.

Thank you so much for the opportunity to share this information and I'll look forward to answering any questions.

MS. DAUGHERTY: Thank you, Erin, I have to tell you, as you were speaking I was taking notes and I have lots of questions that I would love to ask you. I do encourage the audience to avail yourself of the opportunity to ask questions.

We need your input so please do use the methods that Sam described earlier and let me go ahead and introduce Bill Caram.

Bill, it's good to see you this afternoon or this morning, as the case may be, I would like to introduce you and I'll go ahead and read your bio, are you ready?

MR. CARAM: I'm ready.

MS. DAUGHERTY: Okay. So, this is Bill Caram, he is the Executive Director of the Pipeline Safety Trust, a national nonprofit organization that acts in the public interest to promote fuel transportation safety through education and advocacy.

Bill served as a pipeline safety advocate while working with impacted communities, other NGOs, and regulators including as a public member of the Liquid Pipeline Advisory Committee, which we call the LPAC for PHMSA, and by the way, thank you for your service on that LPAC Committee, Bill.

With that, over to you.

MR. CARAM: Thank you very much and thank you for the invitation to participate today.

Eliminating methane leaks and emissions is an incredibly urgent need from both a safety and an environmental perspective and we're excited to help make these rules as effective as possible.

We're really encouraged by the attitude and the energy from PHMSA behind this effort and I want to thank Acting Administrator Brown and Alan Mayberry for their remarks this morning.

For those of you who are not familiar with who we are and why we exist, the Pipeline Safety Trust was formed in the wake of the 1999 Olympic Pipeline Tragedy in Bellingham, Washington.

Because of negligence and a lack of organizational and regulatory oversight, three boys died after a quarter million gallons of gasoline emptied out of a pipeline and into a creek in the heart of our town exploded.

And you can see the heartbreaking note that Liam Wood left on the family fridge that day. And as part of the criminal settlement, Judge Rothstein ordered that part of the fine be awarded to an endowment of a watchdog organization that would become the Pipeline Safety Trust.

You can see her quote from the sentencing hearing here and she says, no industry polices itself very well, you need outside people and these are going to be the people who will pay attention to them. And I want to thank you for doing that today.

Now looking at Sections 113 and 114 from the Pipes Act, I want to just make some broad observations on some important pieces here. The first is that we have an explicit recognition that methane emissions from pipeline facilities are hazardous to the environment.

We also have for the first time explicit recognition that pipeline methane emissions are PHMSA's responsibility and not the EPA's.

We have statutory requirements that are aimed at both fugitive emissions and intentional emissions, and as already discussed, fugitive emissions are leaks and the intentional emissions are venting or blow-down planned emissions.

We have direction for PHMSA to produce leak detection rules with minimum performance standard and we here at the Pipeline Safety Trust are big fans of having performance standards as part of the rule.

I also want to comment that NTSB first identified the need for this 50 years ago and it has long been on their most wanted list, and I quote, every day we wait to enhance our mitigation systems is the day we put the public in danger.

The roles should use the capabilities of the commercially available advanced leak detection technologies as guides for developing these performance standards. And as that technology improves, performance standards should as well.

And finally, the last big-picture observation is this recognition that pipeline safety, environmental protection, and public health are interconnected and inextricable.

We have often thought of these in silos and think that by addressing one we're taking away from another and this legislation I think does very well and look at all three of these in the true way they are, which is interconnected and inextricable.

I put together this graphic just to show how strong this legislation is, it's unusually strong and it's not just about rulemaking. We have many different tools all working together to eliminate leaks and minimize emissions.

We do have rulemaking as a big part of this, of course, but outside of rulemaking we have the operators needing to update their inspection and maintenance plans, the Secretary needs to review those plans, the GAO needs to audit the review of the plans and make further recommendations on how to eliminate leaks and minimize emissions.

And the Secretary needs to respond to that, all of that is outside of rulemaking and this really is many tools working together towards one goal and that is a clear mandate from Congress to eliminate leaks and minimize releases of natural gas from pipeline facilities.

This is what we see as the mandates from Sections 113 and 114 and a timeline. This is a tight timeline for a very big job and we recognize that, but it's necessary, it's an urgent job which needs to done quickly and it needs to be done well.

We are in a climate crisis and I'll re-read the NTSB's quote, every day we wait to enhance our mitigation systems is the day we put the public in danger. So, we're very happy to see this timeline.

We are talking about rulemaking under Sections 113 due a year from the legislation becoming law and the rulemaking under Section 114 a year after that, but there's also the operators needing to update their inspection and maintenance plans to find and eliminate leaks and minimize intentional releases, also due a year from the legislation becoming law.

And that brings up a couple of observations. One, operators, may need to update their plans more than once. First, as we said, within a year they need update the plans according to the legislation, but then they may perhaps need to do that again.

If PHMSA adopts rules under 113 and again as PHMSA adopts rules under 114. Another observation is that, and this was mentioned by both Acting Administrator Brown and Alan Mayberry this morning, many of these operators' obligations, especially under 114, are self-executing.

Many of these statutory obligations

are in effect without any PHMSA promulgated rules. And the way we look at that is that means when PHMSA looks at the cost-benefit analysis of any proposed rule, they should assume that many of these measures are already being done by operators and the rule is therefore adding any new costs.

And it's just another example of how powerful this legislation is, with very clear mandates. Find them and fix them has become a mantra around our office around this legislation and the upcoming rule.

PHMSA's required in its regulations to include minimum performance standards to identify, located, and categorize all leaks that are hazardous to human safety or the environment, or have the potential to become explosive or otherwise hazardous to human safety.

And this really is going to require a culture change both with regulators and with the operators. Repair and replacement schedules must include plans for each leaking pipe, except a pipe with a leak so small that it poses no potential hazard.

And we are in a climate crisis, Erin and the EPA have demonstrated how incredibly potent methane is, a greenhouse gas, and we believe there is no leak that poses no potential hazard.

One of the goals of this legislation is to activate a culture change in the industry to acknowledge that we are in a climate crisis and that the product that is leaking and venting from their systems is a contributor to that crisis.

That's not to say that prioritization won't be important, of course it will, and the risk of explosion needs to remain a very high priority, but also super emitters, as we learn more about the capabilities of ALD and we start getting some data from the advanced leak detection, also need to be a high priority.

But the message remains clear that operators may no longer ignore leaks just because they are not likely to explode.

As far as intentional emissions of blow-downs and venting, Pipeline Safety Trust and EDF commissioned a report from MJ Bradley when we were going to the gas mega-rule rulemaking and that identified cost effective practices and technologies to reduce intentional methane releases.

You can see those mitigation options that were analyzed in the report there, you can find the report at that link on the presentation here. It's also in the mega rule docket.

We hope that PHMSA and the operators will consider this report and other sources when updating their plans and adopting rules to prevent or capture methane emissions during repairs, maintenance, or replacement projects.

The report concluded that blow-down mitigation options are highly cost-effective and will result in several orders of magnitude greater benefits than cost.

Erin touched on this as well, this

legislation really calls for continuous improvement. This isn't just a one and done rulemaking effort.

We have many tools working together towards this common goal and they really all also work towards this idea of continuous improvement. Operators will need to update their inspection and maintenance plans multiple times as regulators work through their process and new technologies develop.

PHMSA is going to need to revisit their performance standards regularly as commercially available technologies improve. And PHMSA is going to need to revisit its plain review process after feedback from the Comptroller General.

Congress also directed the GAO to not only audit the plan review but also provide recommendations to further minimize releases of natural gas from pipeline facilities.

And PHMSA's going to need to incorporate that, and Congress further directed the Secretary to report on the best available design technologies and practices to prevent minimized methane emissions. And that will need to be incorporated into the rulemaking as well.

And so again, all these different tools working together towards a common goal of eliminating leaks, minimizing emissions, and a continuous improvement process to continue to do that as technology improves.

These sections really call for an overhaul of how PHMSA and the industry thinks about leaks and emissions. Operators need a real sense of urgency in finding and fixing leaks and reducing intentional emissions.

They need to start looking at leaks and venting the way they now look at potential hazards, and the way the liquid industry looks at spills and ruptures. Find them, fix them, and stop emitting for convenience.

And I wanted to bring this slide back one more time as I just think it demonstrates really well how powerful this legislation is and that this change starts now, independent of rulemaking.

We have an incredible opportunity in front of us, we had the opportunity to answer a 50-year NTFB recommendation, one that could have saved the life of a 12-year-old girl in Dallas recently, and many other lives over the years.

And at the same time, make a meaningful difference in our generational challenge of climate change.

And we need to see this effort through with the urgency and diligence that's been displayed today, but we're just at the beginning and we have a lot of work ahead of us and we can't let up.

I'm excited to see this through and grateful for the invitation to share our perspective. Thank you.

MS. DAUGHERTY: Thank you, Bill, thank you for the presentation. For those of you that have questions, please start queuing those up, we'll go to a Q&A.

I do want to comment, though, that the slide that you have up right now, earlier today I spoke with our Western Region State partners. They were having their meeting, their regional meeting, and I spoke about this very issue.

In Section 114 Congress has directed a very robust timeline for review of these updated plans that were requiring operators to update their plans within one year of the Act, and then the following year, federal, PHMSA and state regulators are required to evaluate those updates.

And so again, for us to get out and see every operator and review their plans within 12 months is going to be a challenge, and I think we're up to it but it is, as you said, a signal from Congress on their intent.

And following that, the GAO is going to come after us and review what we've done to see if we have implemented that directive. So, it is quite aggressive but thank you very much.

Sam, over to you, do we have any

questions from the public at this time?

MR. HALL: Thanks, Linda, let me just reiterate how this works for those of you who may have joined late.

If you are on the telephone call with your telephone, the telephone number is in the upper left corner, if you're on the telephone, in a moment the operator will give you instructions for getting in the queue to ask your question.

If you are not on the telephone, you can ask your question through the Q&A box on the lower left corner of your screen. Operator, would you please provide instruction for getting in the queue?

OPERATOR: Thank you, and to ask a question over the phone, please press 1 then 0 on your telephone keypad. 1 followed by 0.

MR. HALL: While those folks on the telephone line queue up, we do have several questions that have come in from the Q&A panel.

We also have lots of time to answer these questions because we did have one panelist who was not able to join us today.

So, we've got about 50 minutes for Q&A, first question that came in through the Q&A text box is from David Banner, he asks can you explain what performance-based standards would include?

Erin, I believe this would be a question for you.

MS. DAUGHERTY: Yes, I think this goes to Erin, actually, that was in her presentation. Erin, do you want to take a stab at that?

MS. MURPHY: Sure, I'm happy to. Is there any way I could go back to a slide or would that be too complicated?

MR. HALL: Not too complicated at all but it will take a moment, just one second for me, please.

MS. MURPHY: I think that might be helpful, I just wanted to go back to -- I'm looking at it on my computer.

I had a slide that sought to identify what maybe some of the core elements of advanced leak detection needed that laid out -- here, let me jump to it.

So, this is certainly not a comprehensive assessment that's ready for the books, but this is our initial effort to identify what we view as the core element of advanced leak detection.

And so the combination of these elements, I would say, result in what we view as an effective technology that provides the information that is indicated as necessary in the language of the Pipe Act of 2020 for PHMSA's standards.

So, this is starting which instrumentation that's effective at collecting these data-points.

Obviously, the instrumentation needs to be conveyed on some sort of platform, I've laid out here really just all of the platforms that are currently in the mix for methane detection, different systems require different solutions so I'm not saying that all of these are going to be effective for gathering transmission and distribution systems but probably some combination of them are for different systems.

And then that defines deployment strategy or work practice, which is really how the technology needs to be utilized and implemented, particularly in the field, to ensure the data collection is effective.

And then last but absolutely not least would be the data products that result, which are of course the real information, some aspects of think would need to be reported to PHMSA and tracked by the operator.

I hope that's responsive.

MS. DAUGHERTY: Bill, do you have some additional comments on this particular question? I know you also referenced performance-based standards.

MR. CARAM: No, I largely agree with what Erin had to say. I do believe that a handheld sniffers and borehole testers, qualities that really can't quantify or locate leaks should only be used in very limited circumstances.

And there's really no one-size-fits-all and that the performance standards need to allow and encourage operators to use different technologies for different situations in different locations.

MS. DAUGHERTY: So, let me ask you both a follow-up but related question. When PHMSA looks at its regulations, we often put them in two different buckets, one is the more prescriptive type where we define exactly what an operator must do.

Do X by this date or do this so many times a year, or use this type of program or approach, or use this type of equipment, those are prescriptive.

When we talk about performance-based regulations, it's more about identifying what needs to be achieved and then operators find their way towards achieving that performance level.

When you talk about performance-based

standards, are you thinking of a mixture of prescriptive saying some type of instrumentation must be used so that the degree to which it detects is open based on available technology, or what combination are you looking at?

I go back to you, Erin, first and then to Bill.

MS. MURPHY: Thanks, Linda, that's a really helpful follow-up question and I realize that perhaps my effort to lay out our view of what comprises ALD sounds less like a performance-based standard and I hope that's not unhelpful.

I think these four elements of advanced leak detection are trying to describe what we view as the current technologies that are commercially available and out there and operating that fulfil the need of the standard that PHMSA's going to need to issue to follow-up on the mandate from the Pipes Act of 2020.

But we do recognize that act calls for performance-based standards so I think that just signing the performance elements that the technology needs to provide is perhaps a subset of what's included here, and maybe even additional elements as well.

But I think one example of that, for example, is that we view that part-per-billion level sensitivity to be really important and to be something that's commercially available right now to provide the most accurate understanding of the scope of the methane leak.

MS. DAUGHERTY: Thank you very much, Erin. Bill, thoughts on that?

MR. CARAM: Yes, and I want to agree with Erin on that, parts-per-billion level sensitivity being incredibly important to us.

But we do also firmly believe in prescriptive minimum regulations as well and just as important as strong enforcement in meeting those minimums.

So, we don't want to overlook strong enforcement as an incentive so I see it as a combination of both.

MS. DAUGHERTY: Fair enough, thank you very much, Bill. Sam, do we have our next question queued up?

MR. HALL: We do indeed, we have quite a few coming into the Q&A box but before we go there, Operator, do we have anyone in the queue?

MS. DAUGHERTY: No one in the queue at this time.

MR. HALL: Thank you, sir.

MR. HALL: From Dan Miller we have these advanced leak detection methods that are very sensitive take into account that there are natural sources of methane not related to pipelines.

But it would be a better process to look for sources of ethane, which would point to pipeline-sourced gas.

MS. DAUGHERTY: What an interesting question, we'll reverse the order and this time go to Bill first, and then we'll go to Erin. Bill, what are your thoughts on that one?

MR. CARAM: I apologize, can you

repeat the question one more time?

MR. HALL: Certainly, let me get it. Do these advanced leak detection methods that are very sensitive take into account natural sources of methane not related to pipelines.

Would it be a better process to look for ethane, not methane, which would point to pipeline-sourced gas?

MR. CARAM: Thank you for repeating that. I have to say, that is beyond my technical expertise and hopefully Erin can have a good answer for you, there.

MS. DAUGHERTY: Fair enough, thank you Bill. Erin?

MS. MURPHY: Yes, I'll just say briefly that I know that the research that EDF has been involved with to understand methane emissions from distribution systems using advanced leak detection technology, in that research it's clear that advanced leak detection technology can differentiate between those background sources versus gas from the pipeline.

So, we believe that this technology is capability of making that distinction. I'll caveat my technical statements here with the admission that I am not a scientist, I am a lawyer, that's my best summary of the research that I reviewed.

MS. DAUGHERTY: Thank you, both. I think the challenge is very real, I was earlier today asked about propane releases.

Propane is transported in liquid form by hazardous liquid pipeline and if you look at the molecule, you've got methane, ethane, and then you get up to propane so you're talking about the size of the molecule and looking at whether it's impactful to the environment.

Our discussion this morning was that propane, at least by some sources, has not been determined to be adversely impactful to the environment.

I'm not weighing on that personally, that's just what was told to me but I think the question is appropriate when you look at if ethane is a marker for a pipeline release, whereas methane could be either.

It might be useful information to look into. So, thank you, I think it was an excellent question, thank you, Dan Miller. Sam, next question?

MR. HALL: Given your responses to the fairly technical question that was just asked, I'm not sure that you'll able to respond to this so perhaps we can take this as a comment from George Ragula, pardon me if I mispronounced your name.

How do you respond to independent studies using measured volume releases confirm advanced leak detection real-time estimated emission rates are incorrect by an order of magnitude 30 percent of the time?

MS. DAUGHERTY: Erin, I think you spoke to this in some degree in your presentation about underreporting or lower estimates, or estimates were greater in some of the studies you reviewed than EPA estimates?

Is that correct and are you comfortable addressing this one? It's okay to pass, by the way.

MS. MURPHY: I'll just respond briefly and say my understanding of the question was that it was referring to some studies that have made findings about the effectiveness of ALD.

And so I would just say we would need to take a look at those studies and we're happy to do so before responding to their finding.

MS. DAUGHERTY: Fair enough. Bill?

MR. CARAM: Same as Erin, I would need to see those studies before commenting. And we'd be happy to --

MS. DAUGHERTY: I appreciate the comment, we'll take some of the questions that maybe we need to get back to you on. We'll take those down and we will do our best to review and respond to those.

Sam, can we go to the next question?

MR. HALL: Certainly, and I'll also mention to the audience that we do have an open docket that you are invited to comment on, May 24th is the deadline.

So, if you have comments that are of concern and questions that can't be answered in today's meeting, we welcome your comments on the docket and at the end of the day today, we will have a half-hour public comment period that is not a question-and-answer session but simply an opportunity for those on the line to make comments.

So, if you do have a comment related to a technical issue, we invited you to make that comment either on the docket or during the public comment period this afternoon.

The next question that comes in is from Ryan Streams and this is a question for Erin, it is I think technical perhaps, but you may be able to answer it.

What is the basis for parts-per-billion sensitivity being the appropriate target for instrument sensitivity? Why not use a more direct measurement like emission rate?

This would be more broadly applicable to many types of instruments and has the advantage of being directly applicable to climate targets.

MS. MURPHY: Yes, I feel like this is going to be an incomplete answer and I'll admit that part of this is the challenge of our virtual world because, Ryan, I feel like there could be a lot of conversation there.

I would say that the parts-per-billion sensitivity is an element of the ability of the center itself in terms of the level of gas it detects in the air.

And I would describe that back end receipt of information as distinct from what we think is an important piece of information for leak detection technology to be able to produce, which is estimating the emissions rate from the leak.

And we absolutely think that's a really important element of this, as described in the PIPES Act.

MS. DAUGHERTY: Bill, do you have anything you'd like to add to that?

MR. CARAM: No, I see this as coming out of the language around commercially available technology, that's in the Act.

MS. DAUGHERTY: Thank you. Sam?

MR. HALL: We have a question from Dirk Smith. Mr. Smith, your question or your comment may be more appropriate for the next industry panel, it's related to prioritizing leak repair based on grades ranked by safety.

You question I think would be more appropriate for the next industry panel and I invite you to ask your question. Lindsey Fitzgerald has a question for EDF. You mentioned advanced leak -- I'm going to have trouble with this.

Forgive me that your screen is going to alter for a moment. Question for EDF, you mentioned advanced leak detection benefits and include that it is real-time.

Is it an ongoing measurement or a

single point of time? If it's a single point in time, do you have any view on getting credit for emissions eliminating before the advanced leak detection survey is completed?

This would be applicable for many utilities that repair leaks much quicker than it takes to complete a survey similar to find-and-fix thinking mentioned by pipeline safety trust. And I'm happy to read that again if that would be helpful.

MS. MURPHY: I think I got it, I'll take a stab, and I think that's a really good question, Lindsey, and something we're giving a lot of thought to.

Because at the end of the day, the objective of the development of these standards is to improve the safety of the system and to reduce methane emissions from the system.

And so we want to find, when I say we, EDF at least hopes that the standard result does find ways to recognize elements of utility operations that are reducing methane emissions in different ways.

I think it gets really complicated in terms of how does the reporting connect with the different leak repair programs that are being undertaken by an operator.

So, I would say first of all, the first part of your question, you're correct that an advanced leak detection survey is producing information about leaks and emissions on a gas system at the point in time when the survey is conducted.

One thing I'll note is that it isn't necessarily a single day in time, one element of vehicle-mounted ALD that we've seen with gas utilities is that the technology providers typically recommend doing several passes through an area with the vehicle-mounted technology, just because of variations and it would be other factors.

So, to ensure that the data is collected thoroughly you'll sometimes drive through three times or four times to make sure that is right. But so at the end of the day, that is information about that point in time when the data is collected, unless you had a continuous methane emission monitor located somewhere.

So, what we really view, and I'll point I think to the PG&E example I was providing where they're doing an annual system-wide ALD survey to get a sense of the system-wide emissions. And so that type of survey provides -- I'm hearing a little bit of echo, I'm sorry.

So, the type of survey provides the ability for an operator to present the data that shows that they are reducing emissions year over year, which is what we think is essential and would be distinct, for example, from the existing GHGRP program that's based on bottom-up emission factor calculation.

So, this was probably a pretty long answer and I know I haven't directly answered the question of how we would give credit for leak repairs that were done before the survey was conducted.

But I think that's something we're really interested in thinking about and finding ways to make that work.

MS. DAUGHERTY: Bill, did you have anything you'd like to add to that?

MR. CARAM: Yes, sure, I think there's no real way to provide credit if PHMSA isn't requiring overall quantification and reduction, and operators will need to find and fix their leaks following their updated plans.

And they can continue to fix leaks while they are continuing the survey.

MS. DAUGHERTY: Thank you both very much. Sam, do we have more questions?

MR. HALL: Yes, operator, do we have anyone in the queue?

OPERATOR: Actually, just to repeat those instructions for participants on the phone, please press 1 then 0 if you have a question at this time. One moment, please, we do have a question queuing up.

MR. HALL: While that question is queuing, Operator, I will move on to one that's already in the Q&A section, please feel free to interrupt after this.

I'll come back to the operator and we'll make sure that we get the question from the caller.

Our next question was from Wallace McGaughey, I'm sorry if I'm mispronouncing your name, it's a question regarding terminate how the regulation will be structures and I'm not sure it's an appropriate question for the panel but I do believe it's worth mentioning.

Most of the discussion is around regulated pipeline facilities or their plans to extend the federal pipeline regulations to those currently non-regulated facilities.

MS. DAUGHERTY: I'll be real quick on this, there are proposed regulations that are looking at things like gathering gas lines or gas-gathering lines? So, I don't know if that's what Wally is looking at.

Erin, do you want to take this? Have we lost Bill? I know his camera disappointed and we may want to check if he's still connected. But while we do that, Erin, do you want to take a stab at that?

MS. MURPHY: Sure, I'll just say briefly that EDF does support expanding the regulation of gathering lines beyond the current framework. And we also think it would be valuable for the Agency to have a national inventory of gathering lines to better understand the existing pipeline system.

MS. DAUGHERTY: Thank you, Erin. Bill, you are there, I was afraid we'd lost you off the system entirely.

MR. CARAM: I am here and I think this is a really critical piece of this. We need gathering lines to be brought in and regulated for a whole host of reasons, methane emissions being one of those.

MS. DAUGHERTY: Thank you, and I'm hoping my comments didn't misdirect the question but it was the natural evolution, at least for me.

Sam, do we have our caller online ready to go?

MR. HALL: Operator?

OPERATOR: Yes, we do have Pamela Lacey, please go ahead. One moment, Ms. Lacey, your line is open now.

MS. LACEY: This is Pam Lacey, L-A-C-E-Y, at AGA. This is for Erin mainly and following up on the discussion earlier about the capabilities of the mass spectrometers and the algorithms, I notice on your slide that you say there is an ability to estimate leak flow rate.

I think that's a good way of putting it because the study that was mentioned before, I believe it was by NYSEARCH, at least that's one of them, showed that there was inability to generally get a ballpark feel of, okay, this Grade 3 leak is larger in volume and this one's kind of medium and this one's really small.

And that allowed companies to then

prioritize going after the ones that were the larger emitters of the non-hazardous leaks but it didn't give a flow rate.

For that, you really do have to have a flow meter, and also, just to let people know, there is work underway in order to create a modernized version of a flow meter and then get that into the market so that it's more readily available and more affordable.

But I think that's a distinction that this technology, it has been used and has been found as useful by some of our member companies, SoCal Gas and trying to get that feel for which ones do we prioritize, which ones are the larger emitters?

Would you say that's about right, that's what people have been using?

MS. MURPHY: Hi, Pam, it sounds like you're asking if I'm aware of that other technology that's been used by some gas utilities, and I think you did describe another technology that's available and in use by some gas utilities.

I think in terms of our view of the best standards that could be set by PHMSA, the Pipes Act lays out a standard for commercially available advanced leak detection technology and we'd like to see a standard be set that really uses the best and most accurate technology that's available, particularly because as we move forward it becomes more and more important that we really tighten up methane emissions from the gas system to address climate change.

So, I recognize there are definitely a broad array of technologies available on the market and what we're trying to do here is articulate what we think are really the most accurate technologies available for this purpose.

MS. LACEY: Could I follow-up? Because actually, my point was that this ALD technology is not as accurate in measuring the flow rate but it is a useful tool in order to get at the relative volume of gas leak and estimate that it can actually measure the flow rate.

And that flow rate technology has been around for quite a while. There's going to be an updated version of it but it is commercially available, it's very tested and it's used in all of the emission studies, the peer-reviewed science including the EDF series of studies.

So, we're just saying they're different tools for different purposes and --

(Simultaneous speaking.)

-- will submit evidence in the record for this.

MS. DAUGHERTY: Thank you, Pamela. Erin, did you want to respond to that? I would also recommend, Pamela, that the same issue might come up very well on the technical panel.

I think this is one that we probably need to have a discussion on because there's lots of different opportunities we have before us. Erin, did you want to respond since the question was posed to you?

MS. MURPHY: I'll just respond briefly and say that I would need to take a closer look and be sure I understood exactly which technologies we were distinguishing and referring to.

So, I don't want to make a further comment about the relative value of one over the other.

MS. DAUGHERTY: Thank you, and thank you, Pamela, for promising to submit information on the docket because that will be very useful for PHMSA as we go forward.

The more information we have on a docket, the more we can take into consideration and chart a good path forward, which is one of the purposes of this meeting, to gather information from all of you, because everyone on this call is a stakeholder.

Sam, over to you for questions?

MR. HALL: We have a question from Greg Tilley. In the EDF presentation, there was mention of their timeline for a satellite to do methane leak detection in 2022.

What is the timing in 2022, what is

the anticipated fidelity of the cameras on that satellite, and how will EDF use that data as its collected? Again, a technical question to a degree.

MS. MURPHY: Thanks for asking, I am not an expert on the scale of the EDF methane stat project, I know it's something we're really excited about, particularly for its ability to really shine a spotlight on global methane emissions and places where measurement and monitoring might not be happening.

But of course, as we know, a satellite is orbiting the planet and so we're going to be getting information about a lot of sites in the United States as well. But I am not sure about the exact anticipated launch date or how that data is going to be utilized.

I do know that one of our commitments with the launch of that satellite is to really try to democratize and make methane emissions data more widely available to everyone so there is a strong commitment to transparency there.

And I'm happy to share more information as it becomes available or if you want to email me, I can connect the methane stat LLC folks who know far more about it than me.

MR. HALL: Several of the questions that we're receiving are related to how do different technological products compare to one another?

And I'd just like to point folks to the agenda, tomorrow we will have two technology and R&D panels that will be focused on technologies that are available for this.

And I would invite you to make those comments regarding comparison between products during those two sessions. Jeremy Grimes?

MR. CARAM: Sorry, this is Bill at the Pipeline safety trust, I just wanted to add on that I'm looking forward to the technology session and we just really want to encourage PHMSA to adopt performance standards that encourage multiple technologies.

As I said in my presentation, there's

no one size fits all, different technologies are good for different circumstances and they need to be used in tandem.

And they need to complement each other in order to find these leaks, fix them, and minimize emissions.

MS. DAUGHERTY: Thank you, Bill, that's good input.

The more input we have the better, we make better decisions and also, you both commented in your presentations that PHMSA needs to make sure that whatever comes forward has flexibility for improving technology.

Because we all know that the technology that's available today will be surpassed in 2, 3, 4, 5, 10 years and we don't want to be stuck with old technology as a requirement.

So, we've got to make sure we work that in. Sam, do we have any other questions that don't belong to the technical or R&D panel?

MR. HALL: I am scanning through the

questions now.

MS. DAUGHERTY: And can we make sure that we get those questions to the panel? I don't want to lose the question.

MR. HALL: Absolutely, the questions, as a reminder to all, that are asked through the comment will be made available on the public meeting page after the meeting.

We will export those questions and again, we'll have a transcript of these questions and answers available after the meeting.

The meeting is also being recorded and I'll remind all that if your comments or questions cannot be addressed today, they still are very important and we do encourage you to make comments on the docket.

I'm scanning through some questions now that appear to be somewhat repetitive, past questions, please standby. Operator, do we have anyone on the line?

OPERATOR: Yes, we do, from the line of Doug Baer. Just a quick reminder, for the record please spell your first and last name. Your line is open.

DR. BAER: Yes, Doug Baer, D-O-U-G, B-A-E-R.

At tomorrow's technology conference I wanted to emphasize that we'll be discussing the value of parts-per-billion detection and emissions volumetric flow rate determination and mapping, and point out that not only wind direction but wind velocity is required to detect leaks and to quantify their emissions rate.

So, that's important in a flux determination and also, not all weeks are above ground and so detecting hidden leaks are equally important because they could be below ground.

And so that's why you need really good sensitive detection because sometimes you have a very hazardous leak that's buried under the street but the gas that permeates through the street can be a very small level.

But it's hidden and so that's why you need very high sensitivity and I'll be discussing that tomorrow afternoon.

MS. DAUGHERTY: Thank you, Doug, did you have a question that you'd like to ask Erin or Bill, or was that more in the line of information -- were you advertising for your panels tomorrow?

DR. BAER: Yes, sorry for that. I wanted to point out that regarding the flow rate or the flux rate uncertainties, those measurements and surveys, when I searched, were done several years ago and as pointed out numerous times by Bill and you, Linda, and Erin, technology is advancing, we're getting smarter, not dumber.

And so we'll be able to be a lot more accurate and we're allowing ourselves to provide these very advanced leak detection systems on board a variety of different vehicles including trucks and drones and all the like.

So, again tomorrow afternoon I'll talk about that more.

MS. MURPHY: Thank you, this is Erin,

if I could just briefly add onto what Doug said, I appreciate that comment and I guess just want to emphasize that these core elements of advanced leak detection that are shown in my presentation today were really just a preliminary effort to outline what we view as the elements of this technology that deliver the best result.

But this is certainly not intended to be an end-all-be-all explanation. So, for example, Doug just mentioned that wind velocity is valuable in addition to wind direction and we certainly don't disagree with that.

MS. DAUGHERTY: Thank you. Bill, did you want to add anything?

MR. CARAM: Sure, I think we're going to see a lot as operators update their inspection and maintenance plans, I think we're going to see a lot of what is working for them and what isn't and I think we will learn a lot from that.

Another piece of technology we haven't talked about that's not ALD or anything, this came up during the NTSB hearing on Atmos' tragic failure in Dallas, and that's in home methane detectors.

And consolidated Edison of New York is installing them in customers' homes I believe after the 2014 tragedy in Harlem.

They are simple, inexpensive, and effective and we would love to see that go into some operators' plans and see how that rolls out and possibly make it into some of the regulations.

MS. DAUGHERTY: Great, thank you very much, Bill, that's some information I was unaware of so thank you for sharing that. Sam, do we have any more questions?

Can I get to some of the questions I have?

MR. HALL: We have several more here, operator, are there any others on the line?

OPERATOR: No further questions in the queue at this time.

MR. HALL: We do have just a couple more questions. Linda, would you like me to go through those or would you like to ask?

MS. DAUGHERTY: No, please do.

MR. HALL: Will do. From Philip, are leak detection drones allowed to fly in populated areas where distribution pipelines are prevalent?

MS. DAUGHERTY: Bill, you want to take a stab at that one and then go to Erin?

MR. CARAM: I am not able to answer that question, I apologize.

MS. DAUGHERTY: So, I am not an expert on the FAA drones standards but I will just at least briefly say that in EDF's experience, the vehicle-mounted advanced leak detection technology seems to be the best approach for local distribution systems, largely because so many of those distribution mains and pipes are tracking along roadways so it's fairly easy to drive with a vehicle.

So, again, not trying to prescribe a specific solution but I would just say that in general it's been our experience that vehicle-mounted option is best suited for local distribution systems and then we've been thinking more about the drone and aerial options for transmissions and gathering lines, particularly where the rights of way are more challenging to drive.

And there's actually an example of that, a study that came out a couple years ago that was a gathering line leak assessment where they were using a vehicle-mounted leak detection survey tool and ran into some issues.

Because some of the rights of way along the gathering lines were either really overgrown or had really steep embankments that couldn't be navigated by a regular car.

So, to me that's an example where we want to think about all the different options on the table and think about drone or aerial options for those areas that are tougher to drive.

MS. DAUGHERTY: Thank you, Erin. We are aware that many pipeline operators do use drones to do certain aspects of their continuing surveillance functions.

I think many of them use a line of sight approach and there are challenges to that so it's something that I'm sure as things develop we'll get a little bit more insight into but it's a great question, thank you.

Sam, any more?

MR. HALL: From Bill Murtaugh a question for Erin Murphy. As super emitters have a supersized effect on methane emissions are the rate of super emitters going down year over year?

Also, are you surprised that the super emitters are not discovered via an odor complaint before the ALD discovery?

MS. MURPHY: Yes, so what we've seen with utilities that have started incorporating advanced leak detection into their operations, particularly for the purpose of doing these super emitter focused surveys, we are seeing decreases over time in terms of the number of super emitter leaks that are identified, which is really great news.

So, the way that might play out is

that a gas utility starts a super emitter program and does a system-wide survey with that objective, in that first year they might find significantly more of those super emitting leaks compared to the second and the third year where they may still be some that pop up inevitably on the system.

But hopefully that initial pass through would do a lot to identify some of those long-lasting big leaks on the system. And then as for the odor question, absolutely, you would hope that leaks would be identified through odor calls but that's not always the case.

I think also something that we've been trying to give thought to, there was a little bit of discussion earlier about the need to incorporate equity and environmental justice objectives into these rulemaking standards.

And one thing we've given thought to is what we think of as linguistically isolated communities where English might not be the first language and where there might be some reticence to call into an official hotline, and that could be the type of area where odor calls may be less likely to be reported.

And so more frequently surveys could have a greater value in those areas.

MS. DAUGHERTY: Thank you, Erin. By the way, my comment about suggesting that I have questions, we would much rather hear from the audience.

These questions I think are very informative and the questions that I have, standard questions that we came up with internally so we would much rather than hear from you.

Sam, do we have any other questions from the audience?

MR. HALL: We do, and for the audience, please forgive me while I momentarily adjust your screens so that I may read this comment. This comment comes from Kate Smith and it is a comment not a question.

Although sensitivity is an element of

ALD, the sensitivity should be directly linked to deployment strategy.

If industry does a good job in a walking-driving survey along the pipeline extent and do this walking-driving survey on nights that are conducive to detection, low radiation, low wind, I would argue that using parts-per-million instrumentation is superior to a daytime parts-per-billion sensor used improperly.

Putting a sensitivity requirement on the standard without leaking that sensitivity with a deployment strategy pushes the technology towards very, very specific technologies and puts a very, very large price tag on ALD.

Again, that's a comment, thank you for that comment, and I'm moving onto the next one, please bear with me. We have a comment from David Heldenbrand, iGas detectors are fine but the interpretation of the data is more complex.

Many people with carbon monoxide detectors and gas detectors just report false positives or do not know how to correct the possible issue.

Again, a comment from David Heldenbrand, thank you for your comment. Let's see, this last question from Paul Wehnert may be a technical question.

He asks, what is the percentage of actual confirmed natural gas leaks versus indications with advanced mobile technology? Anyone have a comment on that?

MS. MURPHY: So, I believe we have that type of information in some of the research that EDF has been involved with but I do not know it off the top of my head. So, that's something we can follow up on.

MR. HALL: Operator, do we have anyone on the telephone line?

OPERATOR: Yes, it looks like a follow-up from the line of Pam Lacey. Please go ahead, your line is open.

MS. LACEY: Thank you very much, this is Pam Lacey, AGA, and I was going to pass along something that we've heard year over year from various experts that have been at the annual methane connections.

The word super emitter tends to imply especially something used in the gas utilities context. It sounds more alarming and what we're really generally talking about is locating Grade 3 non-hazardous leaks that would otherwise not be scheduled for repair typically.

But trying to prioritize those, in a number of studies people have been using the term larger emitters rather than super. Just a comment just to let you know and I think that might be a more useful term that isn't as inflammatory-sounding.

Thanks.

MS. DAUGHERTY: Thank you, Pamela.

MR. HALL: Operator, other commenters?

OPERATOR: None further in the queue at this time.

MR. HALL: And Linda, there are no further comments or questions in the queue at this time?

MS. DAUGHERTY: All right, Erin, Bill, you ready?

I should share with everybody that we sent out the questions so we're not totally blindsiding Erin and Bill with this, and you may hear these questions on another panel because it's a theme and we want to get different perspectives.

So, here's the question I have for you, other than prescriptive minimum regulations, what do you believe might incentivize operators to adopt advanced leak detection and repair technologies?

How can you motive operators to get ahead of the curve and be more proactive? So, Bill, do you want to go first and then I'll ask Erin to follow?

MR. CARAM: Sure, and I want to start off, I said it before and I'll say it again that we firmly believe in prescriptive minimum regulations and using strong enforcement to meet those minimums.

And so I don't want to overlook strong enforcement as an incentive but in addition, ALD technology is going to give all of us, operators and PHMSA and the public, new data on how much methane really is being leaked and released out of which natural gas facilities.

And we want to see that publicized, allowing the public to understand the climate impacts of the industry and to help them make informed consumer choices.

I think that would be another way to motivate the right behavior.

MS. DAUGHERTY: In a follow-up to that, Bill, do you think operators will be more willing to to be more transparent with this information without regulations or do you think it will necessitate regulations to prompt that transparency?

Just your opinion.

MR. CARAM: Sure, I think most operators absolutely would but unfortunately, you need regulations to ensure you get 100 percent participation.

And that's really what we need, this is too critical and too vital and so I do believe regulations are the way to do that.

MS. DAUGHERTY: Thank you, Bill. Erin, what do you think?

MS. MURPHY: Yes, I think Bill made good points and I'll just build on what he said and what you just raised, Linda, to emphasize that I think strong reporting requirements as part of the standard are going to be incredibly valuable in really, first of all, allowing operators to demonstrate the progress that they are making in reducing methane admissions and improving the safety of their system.

And also allowing for comparison amongst operators to look at their implementation of these efforts. And I would hope that that transparency and comparison would help motivate better actions.

MS. DAUGHERTY: Thank you very much, thank you both. I want to do a quick check with

Sam to see if any questions have come up other than I think we have time for one more question.

MR. HALL: Standby. We have a question from Jason Samara, there's been repeated mention of find-and-fix leaks, much of these find-and-fix processes are defined by regulations that define response and repair times and include O&M manuals of operators.

These requirements are based on traditional leak discovery methods and daily leak discovery volumes.

Regulatory changes can be expected to support operators to use these technologies in their use that would allow operators to develop processes to accommodate the data collection phase and leak investigation phase and discovered leaks when using ALD technologies.

Worse-case is a discovered leak that is not investigated in a timely manner, the result's an incident, this has a very poor outcome for the operator.

I'll just mention that we have I think

it may be more of a comment, there is a question regarding how regulations would change.

Mr. Samara, I would recommend that you provide a comment to the docket certainly if you have some concerns about that and some ideas. And as part of my duties as MC I do need to do a time-check, our next panel is very full so we do need to wrap up this panel.

MS. DAUGHERTY: Thank you so much, Erin and Bill, you've provided some good food for thought I think.

Thank you for your comments, your presentations, and I thank all of the workshop participants, everyone out there in the audience for thinking through these issues, being open to new ideas, new thoughts, and really put some thought into it.

Let's not go along with the way we've thought for the past, I don't know, however many years, 40 years, let's be open. So, with that, thank you very much, Sam.

MR. HALL: Thank you, Linda, and thank

you, I'll reiterate Linda's comments, thanks to our panelists and to those of you who have provided comments and questions.

For our next panel, it's now my pleasure to introduce John Gale, Director of Standards and Rulemaking as the moderator, and he will be moderating the industry panel discussion. Go ahead, Mr. Gale.

MR. GALE: Thank you, Sam, and good afternoon, everybody. As Sam said, my name is John Gale and I'm the Director of Standards and Rulemaking in the Office of Pipeline Safety, PHMSA.

And not only is my office responsible for a vast portfolio of rulemakings affected pipelines and safety, from a remote controlled valves and transmission lines, regulating gas gathering lines and repair criteria for both hazardous liquid and gas transmission lines.

We were also responsible for those rulemakings resulting from the Pipes Act of 2020, which includes the topic we were discussing today, leak detection and repair.

In my several decades of rulemaking work, I've been proud of the fact that I've been able to work on many rules that have had a direct impact on the safety of the citizens of our country.

And now I'm very fortunate to work on this very important topic as it has the potential to impact the lives not just of the current citizens of this country but the generations to come.

At the panel this afternoon, we will hear from representatives from the Gas Piping Technology Committee, the American Gas Association, the American Public Gas Association, and the Interstate Natural Gas Association of America, and the Gas Processes Association.

You can see we've got a very full panel this afternoon and at this panel we will hear and learn about the GPTC grading system for leak repairs, which is obviously a very important part of this project and commitment from operators to address the risk of methane and leaking pipeline infrastructure.

Focused discussion on cast iron and bare steel pipe, causes of leaks in the gas distribution world, pipes of leak detection equipment commonly employed in the gas industry and thoughts on the use of advanced leak detection technologies.

As Sam mentioned earlier too, we have already received several questions about the whole rulemaking initiative, which is going to be something that folks in my office working with a variety of different other folks are going to be looking at as we move forward with this rulemaking.

We want to get your comments, we want to get your thoughts on these issues and we do have an open docket that is available on this rulemaking and on this public meeting.

So, we really greatly encourage you guys to submit your comments, the comment period ends on May 24th and please provide us your ideas on things from super emitters to survey frequencies, standard frailties, defining super emitters and high emitters, and changes to the reporting requirements.

We really want to hear your ideas and your initiatives on how to address this very important issue. So, that's enough from me for right now.

I'd like to go into our first panelist and our first panelist is from GPTC or representing GPTC, Mr. David Bull.

Mr. Bull has over 46 years of experience in the pipeline industry helping pipeline operators to assess regulatory compliance programs and manage their risk and liability exposures.

He started his career with Heath Consultant and has held his position at the Transportation Safety Institute, now PHMSA's T&Q, and has been a member of GPTC for over 25 years. He is currently the Chair of Davis Prevention and Emergency Response Task Group.

In addition, Dave has been a member of the GPTC's Operation and Maintenance Task Group and Distribution Division.

Dave, I'm going to turn it over to you, sir, welcome aboard.

MR. BULL: Thank you, John, and I would like to thank PHMSA for inviting the GPTC here today to discuss our guide and leak classification system.

We've heard through the morning sessions GPTC mentioned several times and I hope to be able to describe what our Committee is and some of the work that we do.

The GPTC is an American National Standards Institute accredited Committee, ANSI Z380 the Gas Piping Technology Committee. It operates under a consensus process, it is technically based and independent, its members represent their profession and our publication, the guide, is designated as an ANSI Z380.1 document.

So, who is the GPTC? We have

approximately 100 members and 40 of those are main-body voting members, you can see the breakdown there on the screen.

But we have representatives from all facets of the gas industry, distribution operators, manufacturers of gas-related equipment, transmission storage and gathering operators.

We have regulatory people on our Committee from federal and state regulatory agencies, we have an NPSB Committee Member and we have members with a general interest group interest.

So, the history of the GPTC, it was formed in the late 1960s under the auspices of the American Society of Mechanical Engineers and the first guide was published the same year as the regulations in 1970.

Those of you of my generation may well remember when it was called the ASME Guide.

In 1990, the American Gas Association became the Secretariat for the GPTC providing administrative support.

The GPTC provides guidance to operators for compliance with the DoD regulations in 49 CFR Part 191 and Part 192. It's often references, as we've heard today, by many of presenters but on its own it is not an enforceable document.

However, we do find that some states have adopted all or portions of the guide into their regulations, which then their particular state agency would enforce.

And the full name of our publication is Guide for Gas Transmission Distribution and Gathering Piping Systems.

How is the guidance created? Well, the guide is under continuous review, it is a living document and we review our guidance material in response to rulemakings, NTSB reports, requests from members or the public, and requests from PHMSA or NAPSR.

And when these requests or these rulemakings or reports occur, we review them, a task group is created if necessary to write draft guidance called a transaction.

And currently we have over 100 transactions in progress in our system. And this includes four transaction in response to the recent NTSB recommendations assigned GPTC in the Atmos Energy Report from the incident in Dallas, Texas.

There are many users of the guide across the entire spectrum of the gas pipeline industry. Obviously, we see the federal and state regulators using the guide transmission pipeline gathering and storage operators.

Distribution operators including propane and petroleum gas systems, gathering lines, municipalities and master meter operators, many of these operators, large and small, incorporate sections of the guide into their owner manuals as part of their operating procedures.

As I said, we write guidance for a vast majority of the regulations in Part 191 and

192 but we also have a number of appendices that provide detailed procedures, if you will, or guidance for various actions to comply with the regulations.

One such appendix is Appendix G 192-A for the distribution and integrity management programs that are promulgated under 192 Subpart P.

And you can see that we do address leak management programs and developed this mnemonic to help operators understand what an effective leak management program may be using the word leaks.

Locate the leaks in the distribution system, evaluate the actual or potential hazards, act appropriately to mitigate the hazards, keep records, and self-assess to determine if additional actions are necessary.

Another appendix in the guide is the gas leakage control guidelines for natural gas systems, Appendix G-11 and its companion, Appendix G-11(a) for petroleum gas systems.

This 23 pages of guidance includes definitions, guidance for leakage detection, leak investigation and classification pinpointing and other procedures that would be used in a leakage control program.

And within Appendix G-11 and G-11(a) comes perhaps to the heart of our subject here today is leak classification.

And we have developed guidance for three categories or grades of leak, the first is a Grade 1 leak, a leak that represents an existing or probable hazard to persons or property and requires immediate repair or continuous action until the conditions are no longer hazardous.

You may recognize this language as it is in the definitions of a hazardous leak in 192.1001. And this Grade 1 leak classification goes directly for guidance 1927039(C) which states hazardous leaks must be prepared promptly.

So, this provides operators with guidance on what a hazardous leak might be. Not only do we provide a definition for a classification but the guidance includes action criteria of what to do when such a leak is found.

The action criteria, as you can see here, requires prompt action to protect life and property and continuous action until the conditions are no longer hazardous. And what is that continuous action or action criteria?

It would be any of these items and not necessarily in this order. The implementation of an emergency plan written under 192615, evacuation of the premises, blocking off an area, rerouting traffic, eliminating sources of ignition, venting the area by removing manhole covers, bore-holing or installing vent holes or other means.

Stopping the flow of gas by closing valves or other means, notifying the police and fire departments. So, now we have the definition, we have action criteria and we also provide guidance on examples of what might be a Grade 1 leak.

Any leak which in the judgment of operating personnel at the scene is regarded as an immediate hazard, escaping gas that is ignited, indication of gas that's migrated into or under a building or into a tunnel.

Any reading at the outside wall of a building where gas would likely migrate, any reading of 80 percent of the lower explosive limit or greater in a confined space.

Any reading of 80 percent of the lower explosive limit or greater in a small substructure other than gas-associated substructures from which gas would likely migrate to the outside wall of a building.

And any leak that could be seen, heard or filled, and which is in a location that may endanger the general public or property. So, this is a Grade 1 leak, a definition, action criteria, and examples.

Next, we have a Grade 2 leak, a leak that is recognized as being non-hazardous at the time of detection would justified scheduled repair based on probable future hazard.

Action criteria for a Grade 2, leak should be repaired or cleared within one calendar year but no later than 15 months from the date the leak was reported.

In determining the repair priority, consider the following, amount of migration of gas, proximity of gas to buildings in sub-surface structures, the extent of repavement, the soil type and soil conditions such as a frost cap, moisture, or natural venting.

Continuing with action criteria, Grade 2 leaks should be reevaluated at least once every six months until cleared. The frequency of re-evaluation should be determined by the location and magnitude of the leakage condition.

Grade 2 leaks may vary greatly in potential. Some Grade 2s when evaluated by the above criteria may justify scheduled repair within 5 working days, others will justify repair within 30 days.

During the working day on which the

leak is discovered, the situation should be brought to the attention of the individual responsible for scheduling the repair.

However, on the other hand, many Grade 2 leaks, because of their location and magnitude can be scheduled for repair on a normal routine basis with periodic reinspection as necessary.

Again, to provide examples for what a Grade 2 may be, leaks are requiring action ahead of ground freezing or other adverse changes in venting conditions.

Any leak which under frozen or other adverse soil conditions would likely migrate to the outside wall of a building.

Leaks requiring action within six months, and you can see there are a number of examples here, depending upon the gas concentration and the location, any reading of 40 percent of the lower explosive limit or greater under a sidewalk in a wall-to-wall area, a paved area that does not qualify as a Grade 1.

Any reading of 100 percent LEL or

greater under a street in a wall-to-wall paved area that has significant gas migration and does not qualify has a Grade 1.

Readings based upon percentage in small substructures, readings between 20 percent of the lower explosive limit and 80 percent LEL in a confined space.

Reading on a pipeline operating at 30 percent SMYS or greater, in Class 3 or 4 which does not qualify as a Grade 1.

And finally, any leak which in the judgment of the operating personnel at the scene is of sufficient magnitude to justify scheduled repair.

Finally, we come to a Grade 3 leak, a Grade 3 leak is a leak that is non-hazardous at the time of detection and can reasonably be expected to remain non-hazardous.

The action criteria for these are these leaks should be reevaluated during the next scheduled survey or within 15 months of the date reported, whichever occurs first until the leak is regraded or no longer results in a reading.

And again, examples of Grade 3, leaks requiring reevaluation of periodic intervals, any reading less than 80 percent LEL in a small gas-associated substructure, any reading under a street in areas without wall-to-wall paving where it is unlikely gas could migrate to the outside wall of a building and any reading of less than 20 percent lower explosive limit in a confined space.

We see these three leak classifications incorporated into many operator-owned plans and used by personnel that are involved in detecting, investigating, and classifying leaks.

So, this is a summary of what GPTC is all about, our guidance material, particularly as it applies to the leak management programs and leak classification and we'd like to thank the PHMSA team, in particular John Gale and Chris McLaren for the opportunity to share this information.

If you're interested in more information about GPTC or would like to join the Committee, please go to the following website as listed here or contact our Secretary at AGA Betsy Tansey with any questions to join the Committee.

That concludes my presentation, thank you very much.

MR. GALE: Thank you, David, thank you very much for that excellent presentation. The GPTC guide and their repair criteria that's in there is obviously of the utmost importance to my rulemaking team as we get you down this road of looking at methane reduction.

Repair is obviously a very important aspect of that and we greatly appreciate that overview.

And our next presenter, a lady that I've had the pleasure of working with for a couple decades now was actually one of the recommendations to have GPTC lead off this panel, which was an excellent presentation.

We adopted that change here. Our next

presenter is Ms. Christina Sames, Christina is the Senior Vice President of Safety Operation and Security at the American Gas Association or AGA.

In this role, she works closely with AGA's members, government, and other stakeholders to improve safety, resiliency, and security to the promotion of sound regulations and legislations, leading practices, forums to exchange information and the development of a wide range of publications.

Christina's team is responsible for pipeline, employee, and contractor safety, natural gas physical and cybersecurity, integrity management, pipeline safety management systems, the national fuel and international fuel gas code and executing operations and engineering initiatives related to distribution, intrastate transmission, and building energy codes and standards.

With that said, Christina, I'm going to turn it over to you.

MS. SAMES: Thank you, John, can you

hear me, just to confirm?

MR. GALE: Yes, I can.

MS. SAMES: Excellent, I want to take the opportunity to thank you and PHMSA for holding this workshop and really providing the opportunity for such a wide range of perspectives to be heard.

On January 20th, President Biden signed Executive Order 13990 and one of the core principles of that executive order was to listen to the science.

This rulemaking, the rulemaking that PHMSA will create, has the opportunity to focus in on the science, to use real data, and to promote solutions that use reduce emissions.

My presentation is going to focus on the natural gas distribution sector, those pipelines that deliver natural gas to 76 million residential, commercial, and industrial customers here in the United States.

I'm also going to cover some proven technologies to reduce natural gas leaks, thoughts on how to leverage technologies, and then expound upon what EPA presented this morning on measuring emissions.

So, with that, let's get started.

I'm going to start pretty much where Dave left off, which is an overview of GPTC's different classifications of leaks.

Now, hopefully you took away from his presentation, at least I did, that not all leaks are the same.

There are large, hazardous leaks, there are leaks that are really small, and for these small leaks an operator may have to actually apply a soap solution, wait several minutes before you can see an indication that a leak exists.

So, not all leaks are the same. Traditionally, classifications and repair timelines are based exclusively on the risk the leak poses to pipeline safety, to public safety. They're not focused on the environment, at least not yet.

Hazards and potentially hazardous leaks to the public at GPTC's Grade 1 and Grade 2 leaks do have explicit repair timelines.

I should probably note that PHMSA's regulations don't cover that, although most states do use the GPTC to guide, some have their own regulations, which was brought up in an earlier presentation.

So, if PHMSA works to create a regulation that really takes into account the environment, we have to ensure that all measures continue to put public safety first and foremost.

Now, what do I mean by that? Let me give you an example.

Earlier, you heard a little bit about excavation damage so if a pipeline emergency like excavation damage is occurring and the pipe must be repaired or replaced quickly due to an integrity issue, operators need to act quickly and we may need to release natural gas to the atmosphere in order to keep the public safe.

There are times when we need to take

very quick action, other times, maybe we have an opportunity to wait.

What we don't want to do is to wait for equipment that might be able to capture methane in a pipeline to arrive on the scene before we're taking action to keep the public safe.

So, these work activities and the promptness of completing these activities, in my opinion, should always take first priority and always should be considered in this rulemaking.

Sorry, for some odd reason the clicker didn't work right away. Hopefully you're all seeing the same slide I am.

So, I want to make it clear that AGA supports moving beyond public safety to a focus on protecting the environment and we believe that can be done several different ways.

The first, and I think we've heard other speakers home in on this, is focusing in on immediate sources of methane emission so larger emitters. Another opportunity is to address repair timelines for larger leaks, which are currently considering non-hazardous to the public.

We're already addressing the hazardous leaks, now let's focus in on some of the non-hazardous. And then finally, supplemental leak surveys that are focused on larger leaks, again, which are non-hazardous to the public.

These are just a few ways that we believe can move pipeline safety, public safety, and environmental stewardship forward. I want to get to some of the proven test strategies and the very first one I'm going to cover is pipeline replacement.

Now, all of the what I'm going to show, all of the statistics really come from PHMSA's data set, and I should probably give a little bit of additional background.

There's no specific way to tie cast iron, bare steel to specific leaks so I had to look at it at a higher level.

But what we see from PHMSA data is

that cast iron and bare steel are prone to leak, we already know that, and replacement of these pipes that are known to leak support pipeline safety, reliability, and a reduction in emissions.

So, let me give you a few statistics, when we did a deep dive into PHMSA's statistics, what we found is that just 21 percent of the distribution operators have cast iron or bare steel.

But those operators, when you look at the leaks, account for 95 percent of the corrosion leaks on mains, 92 percent of the natural forest leaks on mains, 91 percent of the pipe weld and joint failures that result in leaks, 97 percent of other caused leaks, and 76 percent of all known leaks.

Those are really large statistics and I want you to remember this slide later because in my opinion, pipe replacement is one of the leading tools that we should continue to use to reduce methane emissions.

It's improving safety, reliability, and it is reducing emissions. These are just a few charts that I pulled from PHMSA's website, the first shows the decline in cast iron main. The second is the reduction on cast iron services.

You see the miles of main have been cut in about half since 2005, services are down by about 80 percent. If I move on to bare steel, again, since 2005 miles of main are down 42 percent, number of services are down 62 percent.

I'm going to go to my second proven strategy to reduce methane emissions and this has also been touched upon and it's reducing excavation damages.

This continues to be a leading cause of at least the distribution pipeline incidents. It's pretty significant in other areas but for distribution, this is one of the top ones, BRA. The other one is corseting our pipeline.

In 2020, and again, we just did a deep dive in one year but what we found was excavation damage amounted to 29 percent of the serious distribution incidents. Those are the incidents that result in a death or an injury.

They result in 36 percent of the significant distribution incidents. Those are the ones that are death, injury, or significant property damage.

46 percent of all hazardous leaks from distribution main and when I add it up, just the total that had been provided to PHMSA, it was about 245,000 MCF of gas.

I then had to play around a little bit, I want to thank EPA's website for giving some fun little statistics.

I put in what the heck is 245,000 MCF of gas equal to? It translates to about 34 million miles driven by a vehicle, 50 million pounds of coal burned or net electricity to really power over 2400 homes for an entire year.

That's just what's been reported to PHMSA. Not everything is excavation damage, a lot of these smaller and since not everything is reported it gives you an idea of the magnitude of this issue.

Now, the operators are doing a heck of a lot to reduce excavation damages. We're regulated, we're required to use one call, we're required to call before digging, we're required to work at our line.

We have a number of requirements and I'm not saying that we can't improve, because I always think there is room for improvement, but what we find is that many of these incidents that are being caused are in states that have either lax one-call laws or lax one-call enforcement.

Or they exempt certain industries. So, we need a little bit of help from the states on this particular one. I want to move on to leveraging technology.

As we move from a focus on public safety to a focus on the environment, we want to make sure that we're effectively using the resources by focusing in on the repairs of the larger leaks that could become hazardous to the environment.

Again, not all leaks are equal so let's focus our resources where they're going to make most impact.

I think we've heard various speakers earlier today talk about those high emitters, and the studies indicate that about 80 percent of the leak come from a small number of sources. That, therefore, should be our focus.

We also need to understand the technology constraints. A technology that works well in a more rural environment may not work well in a Metropolitan area where you have a lot of concrete.

The weather has an impact on the technology, whether it be wet weather, whether it be windy, and the size of the leak. So, understanding the technology constraints is extremely important and I know we'll hear more about that tomorrow.

The other thing that needs to be brought up is what I call beware of false positives. The industry has worked hard to implement a number of new technologies and test new technologies.

And what we find is going back to that location of where the equipment is used for the conditions. You may end up with an indication of a leak where there is absolutely no leak. You may not get an indication of a leak and, yes, there is one.

So, there's a variety of factors that come in play and so as I stated, beware of the false positives.

That's one of the reasons why a pairing of technology is used by many operators where you may have something more general, something like the drones or the satellites or the vehicles.

But at the end of the day, you're probably going to need some handheld equipment.

Moving on still with leveraging technology for the non-hazardous 303 leaks, again ways we believe we can focus on the environment is performing supplemental surveys to identify leak flow rates or how big an actual leak in a general sense.

And then repairing or mitigating those larger leaks. Our recommendation, as always, is to stay flexible, we did hear some of that already, there are a whole host of strategies and technologies that can be used to minimize leaks that could potentially be hazardous to the environment.

And those strategies and technologies change over time so regulations should not pigeonhole the operators into the use of one specific technology.

Everything needs to be flexible, and then remember those statistics back on replacement, don't detract from current replacement programs.

They're effective, they're doing their job and we need to continue them. What I don't want is for resources to be pulled from replacement programs to something that's less effective.

On measuring emission, and we heard, again, some of this earlier, leak detection technologies only really provide an indication of a leak. We heard earlier today about emission factors, which is an expected rate of leakage per component.

We know that the accuracy of the emission factors really vary based on the research that was done to create the emission factor, how much was done. Were there just a few places that the research was done or was it pretty extensive?

All of that gets to the emission factors and how good or bad they are. What we also know is that emission factors alone may not show where repairs or mitigation is needed because they don't consider what's been repaired or replaced for the age of the pipe.

And I'll give you just one example, meters have an emission factor. If an operator replaces a meter, it's still going to have the same emission factor, it doesn't matter.

The number of emission factors by the number of meters so the estimate of the emissions, even if you have all new meters, it's going to be exactly the same before and after the replacement, same thing with new pipes.

Again, because you are using the emission factor. I want to end with just a few commitments that AGA's members have made. We've been working with EPA and a variety of others for a really long time on efforts to reduce methane emissions.

There's the EPA Natural Gas STAR program, where we have 37 large members participating, the EPA methane challenge with 48 members.

We have participated in a wide variety of studies to improve methane detection, accuracy, measurement, emission factors, I've looked at just a few.

We also had last year new commitments, and I apologize that this is a little blurry, but these were commitments that AGA's Board has made specifically for members to further reduce emissions.

There's ten points, you can find this on our website. When you get the slides, this link down here at the bottom on climate change, this statement will take you right to the commitments. But if you go to AGA's website you can easily find it.

And then finally, just an indication of how quickly things are changing. So, April 2020 we had 16 member companies with net-zero carbon-neutral or 100 percent clean energy goals. That's up to 26 and actually, I think that number's already outdated even though I just did these slides.

45 percent back in 2020 said that the proof comes from a utility with a carbon-neutral net-zero commitment for up to 64 percent. So, just an indication of how quickly things are evolving and when we talk about net-zero I will offer this particular form.

What we're talking about is primarily three things, maybe four, the use of renewable natural gas, which would be emitted to the atmosphere if it's not captured with the use of hydrogen.

So, adding that to the natural gas network to create a new energy blend, energy efficiency, which is so important to get us to our goals, and then the direct use of natural gas instead of creating electricity first.

With that, AGA's website and I know we will have questions later so I'll turn it back to you, John.

MR. HALL: John, you may be muted.

MR. GALE: Thank you, Mr. Hall. I appreciate that. And, Christina, again, thank you for that outstanding presentation.

I know as my team has dived into this very important issue, the issue of cast iron replacement, bare steel pipe replacement, age of the pipe and especially then also damage prevention laws and enforcement are important aspects of this overall process and project and if we're going to be successful in minimizing or reducing methane emissions. So I greatly appreciate that presentation.

Next up is Ms. Brooke Sinclair. She's representing the American Public Gas Association. Brooke is currently the Director of Construction at the Knoxville Utilities Board, or KUB, which encompasses about 350 employees performing emergency response, repair, new construction and maintenance programs focusing on system integrity for KUB's natural gas, water, wastewater and electric systems.

Ms. Sinclair began her career as a consultant for local and environmental consulting firms and transitioned to KUB in 2003. Over time, Ms. Sinclair was the manager of several departments, including station management services, gas system engineering and safety security and technical services.

Ms. Sinclair also served as the Assistant to the Chief Engineer at the KUB. With

22 years in the industry, Ms. Sinclair has an extensive regulatory, safety and environmental compliance background and holds several certifications, such as certified state professional and a certified hazardous materials manager. Brooke, we'll turn it over to you.

MS. SINCLAIR: Great. Thanks, John. Again, I'm Brooke. I'm with the Knoxville Utility Board, or KUB, but I'm representing the American Public Gas Association, or APGA, as one of their 750 member utilities to talk about our leak management and survey and response program.

So just to give you a concept of KUB's size, out of about 1,250 U.S. gas utilities, we're ranked 120th. And if you look at U.S. public gas utilities, we are ranked 9th largest.

So we're a distribution company only. No transmission. We have about 107,000 services over about a 300 square mile territory. About 90 percent of our system consists of polyethylene, and we run at about 60 pounds.

The rest is made up of a small portion

of steel at 60 pounds and two higher pressure loops, a 200 pound line that we call our north loop and a 450 pound line that we call our south loop. These loops feed the rest of the system to our three gate stations.

So when we look at any type of work that we're performing, we look back to our blueprint and how it really aligns with the blueprint. You know, this is not a document that we created to aspire to but instead this really documents our actual culture and how we do business.

As you can see from the red boxes on the screen that I've highlighted on the blueprint, safety and environmental responsibility and sustainability are two of our seven shared values. They are also a big component of our key to success as we outlined in our meeting or exceeding regulatory standards and being environmentally responsible.

I'll talk specifically about our distribution integrity management program. I actually pulled this slide from a 2015 presentation that I did to our board, one of many, because we talk about DIMP all the time. And this slide really sums up what DIMP is for KUB.

It's really more than a regulatory program. We, like many utilities, have been focused on some form of integrity management for years. Our previous program was called Gas Asset Management for instance. We have a Century 2 program. This is all about renewals and renewing our systems.

But with implementation of this performance-based regulation, we've been able to let the data feed into our risk decision-making that really dictates our actions as opposed to just focusing on one or two factors like age or leaks per mile. You know, we focus on very accurate data because data really influences our decision and shapes our work practices and our path forward, which really directs where and how we spend our budgetary dollars.

The data coming from our leak surveys is a key factor in determining our replacement program. And on the next slide, I'm going to talk about how leak survey is critical for integrity management.

So we perform a significant amount of leak surveying throughout the year. All of these green items that you see are in some way above and beyond what's required in the Code of Federal Regulations. For residential, for instance, we accelerated from a five year cycle to a three year cycle.

We also have several annual surveys that are important for the KUB system. But it's important to remember every system is different. For instance, some states have to worry about a freeze-thaw cycle. Not really an issue here in East Tennessee.

But some of our two inch steel pipe was installed with coupling instead of welds, a perfectly acceptable installation practice. But through our leak surveying, we started to see small leaks in our very limited cold weather season.

So DIMP identified this as a risk. We created a targeted leak survey program to dive deeper and determine the best time to leak survey to identify the most leaks. We looked at areas within the steel system to target where couplings may be as opposed to welding. And then we used that data to define triggers for more aggressive leak surveying.

And we've collected data every year. It's been fed into our replacement programs, and it's significantly impacted our budget and timing over the last four years.

This has shown up that we really don't need a full blown steel replacement program in our 60 pound system. In fact, when we pull steel out of the ground, it looks great. But steel is not the issue. It's the couplings, just over time, degrade.

So, let me click to the next slide. So when you look at Knoxville, we're a growing city. We're a big mix of downtown, commercial, neighborhoods. We have rural areas. So to perform a leak survey at this level in all those areas, we have a pretty robust program with four full-time leak survey technicians.

You can see from the full complement of equipment for each leak surveyor on the list in the right there. Although each of these devices detect methane, there are situations where a device is just going to be more suitable. So that's why they have more devices on the truck.

And in general, we survey the services by walking or segwaying using a handheld laser leak detector. And we're mobiling the mains with a traditional laser detector mounted in a vehicle. So just a note, we're not using advanced leak detection technology as you heard earlier.

With our method, we are using lower speed and surveying major roads at night for what we believe are really quality leak survey results.

We've continued to try new equipment. We've tried drones. We tried laser detection attached to helicopters and just haven't gotten the leak survey results that we were expecting from that so far.

With our current approach, our techs are performing several tasks real-time. So they'll find a leak area. They'll pinpoint the leak. They'll make minor repairs if it's something they can tighten, adjust or lubricate onsite. And when they find a Grade 1 leak, they will stay onsite and focus on site safety until the repair crew can come to make the repairs.

But for KUB, it's really about making those timely repairs after the leak is either found or reported from a customer. You can see our typical repair time frames here. With a Grade 1 leak, obviously it's going to be immediately. A Grade 2 leak, they're typically repaired at the latest 90 days, usually much earlier than that.

Grade 3 leaks are repaired within six months. But, again, many of these Grade 3 leaks, they are all meter set. They're going to be typically at a connection. And those are going to be repaired immediately by either the leak survey tech or a first responder by tightening, adjusting or lubricating.

These repair frequencies are really made possible because of all of those previous replacements of pipe that we've made in the past, you know, things like cast iron and other metals that typically leak more.

So in some instances, our distribution and integrity management program will lead us to replace an entire system.

Again, please remember, every system is different. For KUB, we were early adopters of polyethylene in the 1970s. And our growth periods were in the 80s and 90s. So we didn't have a large amount of cast iron to remove from the system. In fact, we just lumped it together. We consider cast and ductile together historically and tracked leaks that way.

And this is one chart that we've used for several years to track pipe replacement and leak rates, which obviously as pipe is removed, leaks go down. And you can see that in the chart.

We leak surveyed all remaining cast and ductile quarterly as we went through this process for many years to direct those replacement programs and where would we go and begin replacement next until it was completely removed.

Cast iron has been out of our system since 2015. And we've been monitoring a little over a mile of ductile iron that's wrapped up into a Tennessee Department of Transportation project that's a multiyear active project now until we get that last mile completed.

So as cast and ductile mileage was decreasing, we kicked off that two inch coupled steel replacement program that I mentioned earlier in 2013.

So we've seen that DIMP works for reducing integrity-related leaks. With all of this proactive leak surveying, we are finding more small leaks like the leaks that are in that PAO category. And you can see that here on the right of your screen.

Most of these are going to be a small bubble leak on a meter center. And those are repaired usually immediately. But virtually all Grade 1 leaks are coming from dig-ins, which we really see as our highest release of uncontrolled methane.

When you look at this chart here, that's all of our leak causes, one of our many charts that we use in our DIMP program. And you see that red represents a Grade 1 leak. And almost all the Grade 1 leaks are under excavation.

So as we look at this data and if we want to meet those shared values and keys to success from the KUB blueprint as I mentioned earlier for environmental responsibility and safety, we need to turn our focus to improving our damage prevention programs.

So that's kind of the next step for us is putting a more -- we have a very active program, but just really expanding that and making it more robust, especially with the significant amount of construction that's going on in East Tennessee. So with that, that was my last slide.

MR. GALE: Thank you, Brooke. Thank you for that excellent presentation. You know, whenever we do a rulemaking activity that involves gas distribution operators, it's really important as part of the team is to consider the impact on the small municipal utilities represented mostly by APGA when we establish these new standards.

Some of these operators, as you are probably well aware, have fewer than five employees. So it's something that we look at very seriously as we develop any rulemaking activity affecting those groups. And I greatly appreciate your comments on the excavation damage as we mentioned earlier as we've been diving into this issue. Excavation damage is obviously one of the tools we have to look at as we go forward in this initiative. Thank you again.

MS. SINCLAIR: Thank you.

MR. GALE: Next up is a representative from the Interstate Natural Gas Association of America. And there will be two presenters for this part of the panel. But first, one of the presenters will be Sandra Snyder.

Sandra Snyder is the Vice President of Environment at the Interstate Natural Gas Association of America. And before joining INGAA, Sandra was an attorney at Bracewell LLP's Washington D.C. office, where she represented clients in various environmental rulemaking and permit challenges and provided regulatory compliance advice.

From 2006 to 2008, Sandra was an attorney at the New Jersey office of K&L Gates where she handled CERCLA litigation and represented manufacturers of industrial materials and equipment at product liability depositions.

The other person representing INGAA will be Mr. Pat Carey. Pat is currently a Director of Operations with Kinder Morgan. He is a mechanical engineer from Western New England College and a professional engineer in Texas with over 40 years in the gas transmission industry.

His career includes plan operations, engineering design and measurement, project management on domestic and international projects and management roles in DOT compliance and operation.

He has been a member of INGAA, the Pipeline Safety Committee, a member of INGAA's Pipeline Safety Committee for over 20 years.

Pat is also member of the industry team that supports the implementation of pipeline safety management systems. With that, I will turn it over to Pat and Sandra. Welcome.

MS. SNYDER: Great. Thank you so much for that introduction, John. INGAA appreciates the opportunity to participate in this meeting to discuss PHMSA's leak detection rulemaking.

So a little bit about INGAA and who we are. We are a trade association that represents the interstate natural gas transmission and storage industry. We have 26 members that own and operate pipelines that transport natural gas from areas of production to areas of consumption. But we're not the ones that are delivering the natural gas directly to your home. We're kind of like the long haul truckers moving things from one part of the country to another.

Our members operate an extensive and interconnected underground network of nearly 200,000 miles of natural gas pipeline across the U.S.

Our members are very grateful to Congress for passing the PIPES Act, which we supported because we believe that natural gas is essential to addressing climate change.

Our members see natural gas as part of the solution to continue to drive down emissions and to support the growth of renewable energy by providing fast ramping generations at times when renewable energy is unavailable.

We also recognize that we have a role to play in addressing climate change. And we will look forward to working with PHMSA as well as other stakeholders to develop a leak detection role that is safe, protects the public as well as the environment.

Climate change and methane emissions are not new issues to INGAA's members. In fact, we've been very focused on this issue for quite some time. In 2018, members of INGAA agreed to adopt voluntary methane commitments to minimize our methane emissions from our transportation and storage assets, including our pipeline.

You can see the full suite of commitments that we made back in 2018 on INGAA's website. But as to the pipeline, our members committed in 2018 to reduce emissions from their blowdowns, which is when the gas leak could be evacuated from the pipeline, such as when we would need to make a repair.

Our members are committed to assessing whether recommendations from EPA's Natural Gas STAR Program could be used to reduce the emissions that are released during those blowdown activities.

Our members are also committed to install air-driven, low bleed or intermittent pneumatic controllers, which are used to open and close valves unless a different type of pneumatic controller is needed for safety reasons.

In 2021, members of INGAA went further by committing to not only reduce our methane emissions but also our CO2 emissions from our operations where natural gas is combusted at our compressor stations.

Specifically some of the highlights of our commitments that we made earlier this year are to working together as an industry to achieve net zero greenhouse gas emissions from our natural gas transmission and storage assets by no later than 2050.

In order for us to be successful, new technologies will need to be developed, and policies are going to need to change. We're also committed to lowering the combustion intensity of the gas we're transporting not only by reducing the leak, but also by looking for opportunities to transport lower carbon fuel, like renewable natural gas, which could be manufactured from methane, produced at landfills, dairy farms or hog farms. And some of our members are also conducting pilot programs to explore blending hydrogen into natural gas.

Obviously, we're a highly regulated industry, and we are required to report a lot of information to EPA. I believe that you all saw some of that data earlier today regarding emissions.

We do review those data very frequently to try to assess opportunities to continue to minimize our emissions so that we can do that in a very cost effective as well as productive way so that we can make progress on getting those emissions down.

Overall, I would say that we've had good success. According to data that we have reported to ETA, the natural gas transmission and storage sector has reduced its methane emissions by 35 percent from 1990 to 2019, even though at the same time U.S. production of natural gas had gone up 91 percent. So we're transporting obviously a lot more natural gas now through our system. But our emissions have still gone down significantly.

Aside from INGAA's voluntary commitments, many of our members do belong to other voluntary programs that are focused on reducing methane emissions. One of those such programs is EPA's Methane Challenge Program.

According to EPA, the companies that participated in the Methane Challenge Program reported around 3 million metric tons of CO2 equivalent reduction in 2018. Obviously, that's not all from our sector transmission and storage. But participants did report that in 2018, they reduced methane emissions from pipeline blowdown activities in over 600 instances. And they're also repairing and replacing leaking equipment components.

From here, I'd like to turn things over to Pat Carey, who is going to discuss some of the specifics about leak detection.

MR. CAREY: Thank you, Sandra. Before I get started, I have two slides to really kind of go through some methods and some considerations that we'd like to have as part of this rulemaking process.

But one of the things I wanted to mention before I get started is that Kinder Morgan has been a participant in these programs that have been mentioned, STAR Program, Methane Challenge as well as the One Future Program for several years. I can remember being involved with the STAR Program back in the mid-90s when it first got going.

You know, being part of that, you know, it demonstrates our commitment to taking the steps that are required in order to reduce our methane emissions. And like INGAA, we look forward to addressing the requirement of the PIPES Act through this rulemaking process.

For my part of the panel, what I'm going to do is talk about some leak detection methods that are listed here and then go into some considerations that we would like to have included as part of the rulemaking process.

This slide really just provides a summary of current practices of INGAA members. We put out a survey amongst the members, and this represents the responses that we got across the board.

And you can see that a lot of the discussions that we've had on some of the panels before, including the industry panel before us, has discussed some of these same methods.

One of the things that I wanted to talk about is that these overall methods, I think that the NAPSR, Mary had mentioned this this morning, is that, you know, how you develop these into compliance programs is a key part of that.

So we've been looking at these methods and using them for a lot of research and then trying to look at it from an efficiency perspective, where the price points are, given the data that's available and how we drill into the specifics of, you know, a compliance program that would be associated with that.

For Kinder Morgan, our base compliance program, you know, really evolves on our patrols, both aerial, fixed wing and helicopter as well as foot patrols. We do supplement that where we have access to the right-of-way by driving with vehicles with centers mounted on those. That's not something that's common across our entire footprint as noted before. Some of our right-of-way just isn't accessible with equipment that we can drive the right-of-way.

In specific cases, we've used sensors on some aircraft in the past for compliance programs and have had some pretty good results with those. However, in trying to develop that across the board as a compliance program, we just haven't hit an efficiency. But we have been, you know, noting some of the same issues that EDF brought out in some of their presentation regarding some of the components that would be required for the advance leak detection program that they noted.

Some of the solutions that may not have been mentioned before amongst the industry, but I think EDF brought it up, were regarding the satellites.

You know, we've looked at satellites, trying to balance the cost of obtaining the data, the resolution and size of tiles. The pixel resolution that we get are balance points in order to develop a compliance program as I noted. And we just haven't found something that really meets our regulatory obligations at this point in time.

Along those same lines, continuous monitoring systems are encouraging results. And it's very similar to satellites. And we anticipate as the methods mature and deployment costs improve that these systems could help to address specific issues in areas where we have a higher risk for concern for that particular area.

A good example that we have for the development of new technology over time is deployment of our infrared cameras. When we first started using these, they were very expensive, and we had limited numbers of those.

As the technologies improved, the cost points have come down, and we're using those on a wider basis as there's now a lot more of them in the field and being able to use those both for our compliance program and some of the other uses that we have in order to meet the commitments that we've made for methane emission reduction programs under STAR, Methane Challenge and One Future.

Okay. We'll move to the second slide. As we, you know, move into the rulemaking process, INGAA would like to offer some considerations. We've heard a lot about flexibility. I think Linda mentioned it relative to the deployment of new technology. That's obviously a point for us.

But we also look for some flexibility relative to the site specifics that we're trying to address as well as the risks and setting frequencies that are for leak monitoring that are based on threat levels that are out there.

You'll hear from a lot of the industry that, you know, we're patrolling on a higher frequency. As I noted, patrolling is our primary means of doing our leak patrols. But a lot of that frequency while we start with the requirements of 192, we supplement that as required -- sorry.

We supplement that in order to address the issues with excavation, dig-ins and damage prevention. That was mentioned in Sayler's presentation this morning as well as some of the other presentations that excavation damage is one of the primary concerns from releases and incidents. And that's true for transmission pipelines as well.

The added benefit of having the increased patrols is that we're doing a leak survey at the same that we're out there looking for encroachment activity on the right-of-way.

INGAA welcomes the development to the rules that provide clarity and regulatory certainty for us. New regulations should offer flexibility for technologies to develop, exactly what Linda was saying before. And, you know, we want to be able to use the efficiency of those programs to be implemented in our leak detection programs where they offer the most benefit to us.

The industry has taken significant steps to detect and reduce emissions as demonstrated by some of the EPA numbers that we are seeing this morning under voluntary programs that we have going. The key to these programs is that they offer flexibility to the participants.

While being on the cutting edge of technology is an ideal situation, certain technologies are costly. Additionally, some of this technology may never mature and remain too expensive to implement while others improve and become more cost effective.

For instance in the infrared camera example I mentioned earlier is one of the technologies that we have seen improve over time and is being used on a much wider basis for us.

We look forward to the technology developing and other technologies developing into solutions as well.

Thank you for the opportunity to be part of this panel. John, that's all I had.

MR. GALE: Thank you, Pat and Sandra. And I have to say, you know, we greatly appreciate the commitment that all the gas line pipeline operators have made to address this very important issue well before any rulemaking is published.

So that being said, our next panelist is representing the Gas Processors Association. It's Mr. Matt Hite. Matt Hite is the GPA Midstream Vice President of Government Affairs and leads the Association's federal advocacy activities in Washington, D.C.

Prior to joining GPA Midstream in January of 2015, Matt served as policy counsel and committee executive to the Environmental Technology and Regulatory Affairs Division at the U.S. Chamber of Commerce.

In that role, he handled a variety of environmental issues and also managed the Chamber's environment and agricultural committee, the policymaking body for environmental and agricultural issues and initiatives.

Before joining the Chamber, he spent close to a decade working on Capitol Hill. He was senior counsel to ranking member Jim Inhofe, a Republican from Oklahoma, on the U.S. Senate Committee on Environmental and Public Works where he handled a number of environmental and agency oversight and regulatory issues.

Prior to that, he worked on energy and environmental issues for Congressional members from Alaska, Idaho and Ohio. Matt, I'll turn it over to you, sir.

MR. HITE: Hey, thanks, John. Can you hear me okay?

MR. GALE: I hear you fine, sir.

MR. HITE: Great. Thank you very much. Good afternoon. My name is Matt Hite, and I'm the Vice President of Government Affairs for GPA Midstream Association.

I wanted to start out by saying thank you to PHMSA for giving me this opportunity to speak to you today. I also wanted to thank John Gale for picking us and also wanted to thank my fellow panelists for sharing their insights on this very important topic.

I think everyone involved in this public meeting shares PHMSA's commitment to pipeline safety, and its desire to establish reasonable risk-based requirements for improving pipeline leak detection and repair and reducing methane emissions.

So in terms of my presentation, I'd like to spend a few minutes discussing some of the topics related to leak detection and repair that are important to the midstream industry.

First I'll provide a brief introduction that describes the membership of GPA Midstream Association, an important role that the midstream sector plays in the nation's energy transportation network.

Second, I'll provide a brief summary of the two statutory provisions in the 2020 PIPES Act that are relevant to the issues under consideration today.

Third, I'll provide a quick overview of PHMSA's current safety standards for onshore gas gathering lines, including the leak detection and repair requirements that apply to the two types of regulated gathering lines.

Finally, I'll close with some thoughts from a midstream perspective on the factors that PHMSA should consider in establishing leak detection and repair requirements for gas gathering lines.

GPA Midstream Association is a trade

association that advocates on behalf of the midstream industry. We represent nearly 70 corporate members engaged in midstream activities, and our members account for more than 90 percent of the natural gas liquids produced in the United States.

For those in the audience who may not be familiar, the midstream industry performs a critical function in the nation's energy transportation network. Midstream companies primarily operate pipelines that are known as gathering lines.

As the name suggests, gathering lines are used to collect the oil and gas that is produced at the well and transport those products to a centralized location that typically contains what is known as a processing plant.

Processing plants are used to remove impurities and create merchantable energy products, including natural gas liquids and pipeline quality natural gas.

These energy products are transported

from processing facilities by pipeline or other modes of transportation, like trucks and rail cars, and eventually delivered to customers for use in heating homes and small businesses, running power plants and factories or serving as feedstock for petrochemical plants.

The Pipeline Safety Act -- sorry about that. I'm a little slow on the slides here. The Pipeline Safety Act is the law that authorizes the Federal Pipeline Safety Program. Like many other similar laws, the Pipeline Safety Act is subject to periodic review and reauthorization by the United States Congress.

Congress passed the latest reauthorization of the Pipeline Safety Act in December of last year. That law, known as the 2020 PIPES Act, was enacted as part of a broader appropriations and COVID-19 relief package.

The 2020 PIPES Act reauthorizes the Federal Pipeline Safety Program through September 30, 2023, which is the end of the 2023 fiscal year for the United States government.

GPA Midstream Association and other midstream industry stakeholders supported the passage of the 2020 PIPES Act and made significant contributions to the leak detection and repair provisions that we are discussing here today.

So Section 113, I'm sure you've heard a lot about that today, Section 113 of the 2020 PIPES Act contains what is known as a rulemaking mandate.

In a rulemaking mandate, Congress typically directs a federal agency to issue a new rule or regulation to achieve a particular policy objective. The rulemaking mandate in Section 113 focuses on gas pipeline leak detection and repair and directs PHMSA to issue final regulations on that topic by December of this year.

However, the applicability of Section 113 to gas gathering lines is limited. The rulemaking mandate only applies to regulated onshore gas gathering lines in Class 2 locations, Class 3 locations and Class 4 locations. That limitation is important and coincides with the risk-based approach that PHMSA currently uses in regulating gas gathering lines.

Section 113 contains additional criteria that PHMSA must consider in establishing leak detection and repair requirements for regulated gas gathering lines, which I'm not going to review in detail here.

Finally, and it's worth noting that Section 113 does not otherwise restrict PHMSA's authority to regulate gas gathering lines under the definitions provided in the Pipeline Safety Act.

Those definitions require PHMSA to consider certain factors in exercising jurisdiction and establishing safety standards for gas gathering lines.

Section 114 contains what is known as a self-executing mandate. In a self-executing mandate, Congress typically creates a legal obligation that applies directly to a regulated party without further agency action.

This self-executing mandate in Section 114 requires jurisdictional gas pipeline operators to make certain updates to their inspection and maintenance plans by December of this year.

Consistent with the limitations of the Pipeline Safety Act and PHMSA's regulations, it is GPA Midstream Association's understanding that the self-executing mandate in Section 114 only applies to regulate onshore gas gathering lines in Class 2 locations, Class 3 locations and Class 4 locations.

PHMSA currently exercises jurisdiction over two categories of regulated onshore gathering lines. The first category known as Type A gathering lines, include higher stress or higher operating pressure pipelines in more populated Class 2 locations, Class 3 locations or Class 4 locations.

The second category, known as Type B gathering lines, include lower stress or lower operating pressure pipelines in Class 2 locations, Class 3 locations and Class 4 locations.

PHMSA applies different risk-based rules to Type A gathering and Type B gathering lines, including for purposes of leak detection and repair, a topic that I'll discuss in more detail on the next slide. PHMSA's rules do not currently apply to gas gathering lines in sparsely populated Class 1 locations.

Different leak detection and repair requirements apply to Type A gathering lines and Type B gathering lines under PHMSA's operations and maintenance regulations.

Type A gathering lines, which generally present a higher potential risk to public safety, are subject to the same requirements as gas transmission lines.

The relevant requirements include promptly repairing hazardous leaks, conducting pipeline right-of-way patrols and leak surveys as specified in the rules, performing repairs and keeping and maintaining certain records.

Type B gathering lines, which generally present a lower potential risk to public safety are only subject to two specific requirements. The requirements include promptly repair hazardous leaks and conducting leak surveys at specified intervals.

Type A and Type B gathering line operators are using a variety of practices to comply with leak detection and repair requirements. In PHMSA's operations and maintenance regulations, for example, operators are using aerial vehicle or foot patrols to conduct visual surveillance and perform leak surveys of the pipelines right away.

Operators are also performing leak surveys with a variety of equipment including infrared, flame, ionization, laser gas detection and other technologies.

I wanted to conclude my presentation by highlighting some of the factors that GPA Midstream Association members who would like PHMSA to consider in establishing leak detection and repair requirements for gas gathering lines.

First, gathering lines are different from transmission and distribution lines in several important respects. As indicated earlier in my presentation, Section 113 only applies to regulated gas gathering lines in Class 2 locations, Class 3 locations and Class 4 locations.

PHMSA needs to be mindful of that limitation in evaluating the cost, benefits and other impacts of applying new leak detection repair requirements to gathering lines.

As important, gas gathering lines are generally not subject to regulation as public utilities. Unlike gas transmission and distribution operators, gas gathering line operators cannot shift the cost of additional regulation onto captive ratepayers.

The midstream industry functions in a much different market environment. And these costs will be absorbed by gas gathering line operators more directly, particularly in the near-term.

Finally, and perhaps most importantly, any new leak detection and repair requirements should be risk-based and effective. And with that, that concludes my presentation.

MR. GALE: Thank you, Matt. And thank you for that excellent presentation. Seeing we only have about 15 minutes left, I think we're going to turn it over to Sam and the operator and see if we have any public questions right now.

I don't know if we're going to have any time for our seed questions, but we'll see as time permits. Sam, I'll turn it over to you and the operator.

MR. HALL: All right. Thank you, sir. As a reminder to our audience, if you are dialed into the conference line on your telephone, the operator will give you instructions for getting into the queue in just a moment.

If you're not dialed in, please enter your question or your comment in the Q&A box that's on the left side of your screen.

Operator, would you please give instructions for how to get in the queue?

OPERATOR: Hello, ladies and gentlemen. If you would like to ask a question, press 1 then 0 on your telephone keypad.

MR. HALL: While we wait for folks to queue up, we have a comment from let's see, Udeozo Ogbue from DC. He has a question for Mr. Bull.

Sometimes operators make a temporary repair to a Grade 1 leak to justify downgrading the leak to Grade 2. I know no one size fits all, but what are your good examples of temporary repairs to a Grade 1 leak to justify downgrading it to a Grade 2 leak?

MR. BULL: That would certainly fall to the operator's discretion where our guidance in a leak classification allows a leak to be monitored until repaired or regraded.

So without going back and skimming through the guide itself, those specific examples of downgrading would really be up to the operator because there's many ways to do that.

MR. GALE: And, Sam, if I may, I know as we've developed the rulemaking, we're looking at the issue of downgrading and concerns have been expressed by many on an operator's ability to downgrade a leak by performing certain tasks. So that's definitely something we're looking at as we develop that rulemaking.

MR. HALL: Very good. We have a question from Alan Septoff. Why should we trust emissions factor assessments when bottom-up direct measurements show that estimates like EFs systemically undercount actual emissions?

MR. GALE: Thank you, Sam. Christina, any comments on that?

MS. SAMES: Yes, hopefully you can hear me. We're in the middle of a major thunderstorm right now so.

MR. GALE: We hear you good. Yes.

MS. SAMES: Okay. Good. You know, what we have found is -- and we've done studies. And some of those studies were listed in my slides where we've done top down and bottom-up. And what you're trying to figure out is where do things meet and where are they just connecting?

And so I -- you know, the emission factor portion, I think what we've heard throughout the day is they're not perfect. And there are other ways to get to something that may possibly give a better indication. But they're the best we have right now.

You heard certain individuals talk about moving technologies to do quicker assessments for exactly how much is being emitted from a particular source. And all of those are progressing and progressing pretty nicely. I'm sure we're going to hear a lot more about this tomorrow.

But I would say my takeaway is really -- you know, the top down kind of gives you an indication of where things may exist. The bottom-up, that on ground measurement, is going to give you things that are very more specific.

And the emission factors, they're,

again -- not again. They're an estimate based on the knowledge that we have of how much is being emitted from various sources. Some emission factors are good because there was a lot of research into it, a lot of examples. Other emission factors need to continue to be updated. Hopefully, that helps.

MR. GALE: Thank you, Christina. Sam, I think we're ready for the next question.

MR. HALL: We have a follow-up from Mr. Septoff, Alan Septoff. He says, similarly, how do you connect these goals to reality? What direct measurements are being done to determine if AGA member companies are achieving their goals?

MR. GALE: Christina, I think I have to turn to you again on this. I'm sorry.

MS. SAMES: Yes. Hey, not a problem. So, you know, what we've done, and I really recommend that people go to AGA's website to get additional information, because I'll try to convey at a high level all the things we've been doing and how we're measuring. And that includes reporting that we worked on with the Edison Electric Institute and others to show actually our greenhouse gas emissions to report that in a public form.

We have a lot of information on our website on what's now being reported. So there is public information that we're putting out. We also have commitments. And you can go onto the individual company website to get more information.

They do very -- we're still working through all that standardization. I think you saw from my very last slide how dramatically things are moving in just a year. So this is something that we're taking unbelievably seriously.

One of our key missions is environmental stewardship. And, you know, some of this is EPA data. Some of this that we're reporting to EPA. But I would say that there's a variety of ways right now that you can do a deep dive into companies to get information that is exactly what you're looking for. And start with the AGA website.

MR. GALE: Thank you, Christina. Sam, back to you.

MR. HALL: Pamela Lacey has commented in the Q&A but she can add to Christina's remarks on emission factors. Operator, is Pamela in the queue?

MS. SAMES: That's great --

MR. HALL: Yes. Sorry, Christina.

MS. SAMES: -- because Pam's one of my experts.

MR. HALL: Go ahead, operator.

OPERATOR: Pam, your line is open for asking a question.

MS. LACEY: I can fill in a couple of things. Actually, on that last point, if folks want to look at the sustainability environmental social governance link on our website, you will find a template that we've put together with EEI for members to report their ESG metrics.

And then under about us and investor relations, look for the Natural Gas Sustainability Initiative, NGSI, and that provides methane intensity metrics that we put together with MJ Bradley and coordinating with One Future.

And that includes not just what's reported under the Subpart W EPA reporting rule but also sources and emissions that fall below the reporting threshold. There's a lot of information there. And there's actually an initiative by RMI called MiQ, and they're using the NGSI metric. Sorry about all the acronyms.

And then on emission factors, the peer reviewed scientific study that was published by the Colorado State University, Dan Zimmerle's group, did a study for DOA that compared top down emission measurements on an airplane, fixed wing, with bottom-up measurements, using all of the technologies available, and found that the differences that are being found in the bottom-up measurements that are the basis for the emission factors are based on accurate measurements. It's just that there's a difference in the timing.

So the airplane flies overhead. It gets a snapshot of an hour or less of operations at a particular site. But it might be at a time, and this was found in the study, sometimes it was, that there were intermittent emissions that was higher, like, from manual liquids onboarding. And then the other studies that only did that kind of flyover then could assume that that higher emissions level would be something that would continue 24 hours a day, 365 days a year and then end up saying, wait a minute, that bottom-up measurement must be off when in fact it was a difference in timing.

That isn't to say that all of the emission factors are perfect. Some of them are overcounting emissions because they are still based on that 1996 study that our EPA panel mentioned. But as we get more data from more peer reviewed science, those data gaps are reducing and the emission factors are getting more accurate.

And one more thing there's also a new rather exciting thing happening that members or companies can do company specific bespoke emission factors based on measurement campaigns in their own service area. So more on that. We'll put that in the record. But there's a lot of exciting information out there. Thanks.

MR. GALE: Thank you so much. Sam, I actually do think I'm going to ask my panel a question. I know we're running a little short on time. But I think this is an important question to ask. And I want to share the wealth a little bit.

And, Matt, I think I'm going to start with you on this one if it's okay. Under Section 114 of the PIPES Act, it requires operators to revise their O&M plans to eliminate hazardous leaks and minimize release of natural gas.

What specific steps do you think operators should in their O&M and follow in order to eliminate hazardous leaks and minimize fugitive embedded emissions from the gas pipelines knowing that this is something that goes into effect at the end of this year? Matt?

MR. HITE: Hey, John. Sorry about that. I guess we're looking at 114 more as this is something that you guys will be completing by the end of this year, and it would be more for members to not only step up to comply with it but also to -- I'm trying to think. I've lost my train of thought here. I'm sorry.

We think that this is probably going to be more of a continuation of what they're already doing or as the section requires an update, so what they're supposed to be doing.

MR. GALE: Okay. And just one thing to point out. As Mr. Tristan mentioned earlier at the very beginning of this, we plan on issuing an advisory bulletin here in the coming weeks pointing out this requirement, making sure people are aware of this.

I know some of the trades have sent out information to the operators and some of the presentations today have talked on this issue. So thank you for that feedback, Matt.

Pat and Sandra, any comments there from INGAA on Section 114 and vented and fugitive emissions?

MR. CAREY: Sure. Sandra, I assume that you want me to take this one.

MS. SNYDER: Yes, please.

MR. CAREY: Okay. When I look at 114, the example that comes to mind is going to be when an operator needs to perform an O&M process that would require a blowdown or something that, you know, we would want to use, possibly a pump down, where we're going to remove the pressure from the line or recover the gas into adjacent lines or draw down to a particular LDC that we could lower the pressure.

Having procedures address those, it would be a key part of what should be in those O&M procedures. And we need to consider various factors as part of that O&M process.

How quickly it can be done and if you

have a leak that, you know, it's a hazardous leak and it's going to take you three weeks in order to get the equipment in place. Doing so requires an outage on a vendor -- I mean, on the LDC for, you know, an additional four days in order to allow the pump down. Those are things that all have to be part of the evaluation process. If this is something that happens in a winter environment, that additional outage for the LDC is something that would tax their system, then it may not necessarily make sense.

Those evaluations need to be done and should be laid out in an O&M procedure that would cover that.

MR. GALE: Thank you, Pat. Brooke, any comments, any thoughts, on Section 114?

MS. SINCLAIR: Yes. I think, you know, we've worked to have a pretty aggressive repair schedule. As it is, I think we would take another look at that and just focus on leaks with a higher rate.

But I would say in general if we have

a Grade 1 hazardous leak, it's being repaired within about two hours in general.

So we look at ways that we can make more improvements there. And one of those is where we install a lot of valves. So we've got about 24,000 valves on our system in a 2,500 mile system. So there might be some other options related to that as well that we would look at.

MR. GALE: Thank you. And if I remember right from your slights, KUB repairs all leaks, right? All Grade 3 leaks have a time period for repairs, is that correct?

MS. SINCLAIR: We repair everything.

MR. GALE: That's very proactive on your part. Thank you. Christina, any thoughts on Section 114, ma'am?

MS. SAMES: Yes. It really gets to some of the things that I already had in my slides. So it's taking a different look. Instead of looking at it solely through the lens of public safety, now you're taking into account the environment.

So we'll want to continue our efforts to replace pipes, look at ways to if at all possible to do that faster, to reduce the number of years to get rid of the cast iron and the bare steel and adding that into your plans.

Looking at different ways to increasing further your excavation damage efforts. But really then looking at using what you're already doing, those leak surveys to now look for those higher emitters.

And I think that really is the key here. We're already doing the leak surveys. We're already out there. Unlike some of the other parts of the system, we're adding odorants. You know, we're capped into the system so that members of the public can smell that there's a potential issue so that we can investigate it. We're not catching it on our own. And as we're going out there, if it's a higher emitter, okay, well now take that into account.

So a different way of looking at things. But, again, a lot of it is things we're already doing just in a slightly different fashion.

MR. GALE: Thank you, Christina. And, Sam, correct me if I'm wrong. I think I'm getting a flag to say that it's time to wrap-up. Is that correct?

MR. HALL: I see it is indeed, sir.

MR. GALE: All right. Thank you. Again, I want to thank all of my panel members for participating in this. I want to thank everyone that's been involved in this initiative from the public meeting to the rulemaking to the legislation. Your input, your advice and your guidance is very important as we move forward.

I just want to close with a couple of statements real fast. An aspect of this rulemaking which I find a little different than most rules that we developed is that we're not looking at this issue from a singular rulemaking development focus, but it's an overall methane reduction strategy.

As we continue to examine this issue,

we're bringing it to our executive leadership. And I have to tell you, it's a very receptive leadership team I might add. There are a variety of possible solutions to this complex issue, some of which don't address regulatory changes or even areas within PHMSA's authority.

And some of these areas have been brought up several times today. And some of these include the self-executing provisions of Section 114 that we just referred to and the impact of the rules as we develop them, the use of home methane detectors, cast iron and bare steel pipe replacement, the use of rates in mitigating methane emissions and additional focus on the excavation damage prevention.

To be perfectly clear, our goal is to reduce methane emissions, the answer which is not singular nature or that involves a multitude of tools to address.

Thank you for your time. And, Sam, I'm going to turn it back over to you, sir.

MR. HALL: Thank you, John, and thank

you to our panelists and to those of you who provided comments and questions. We do apologize that we weren't able to get to all of the written comments on the Q&A.

And if there were any folks queued up in the telephone call, we apologize that we were not able to get to you. Please rest assured that your questions that you enter into the Q&A box are recorded and will be reviewed by PHMSA staff as we undertake our future efforts.

We're now going to transition to the public comment period of the day's agenda. Again, my name is Sam Hall. And I'm a Program Manager in the Office of Pipeline Safety. And I'll be moderating this comment session.

This session is not a question and answer session. The reason for that is that the technology really doesn't support all of our panelists being on the call at the same time to answer questions as they're received.

So we're using this opportunity so that people that are dialed into the conference or viewing this conference to make comments without the opportunity to have questions answered.

Again, if you wish to make a comment with your voice, you must be dialed into the conference line, which is available to you in the top left corner of your screen. And the AT&T operator will provide instructions regarding making a comment.

If you're not dialed in, you can use the Q&A box on the lower left side of your screen. And we'll try to reiterate your comments to the audience.

We ask that you keep your comments to two minutes or less. We want to provide opportunity for all to comment within the time allotted on the agenda, which is until 5 o'clock.

And I'll be encouraging commenters to wrap up their comments within two minutes. I'll do that politely.

Of course, please keep your comments professional and within the scope of this public meeting. We, of course, do reserve the right to cut off any commenters who refuse to yield the floor or who cause a deliberate disruption to the proceedings. But, of course, we do not anticipate having to do that.

Once again, to reiterate other opportunities for comment, we do have a docket that is open for public comment. And we strongly encourage you to submit your comments to that docket by May 24.

With that, I'll turn it over to the AT&T operator, who can provide instructions on how to ask a question over the telephone conference line. And we'll begin monitoring the Q&A box for your comments.

OPERATOR: Once again, if you do have a question through the phone, press 1 then 0. We do have a couple people that have queued up. One moment as their names are gathered.

It looks like our first question is from the line of Eric Olivier, please go ahead.

MR. HALL: Mr. Olivier, if you would

please, say your name and spell it please for the record?

MR. OLIVIER: Of course. My name is Eric Olivier, E-R-I-C O-L-I-V-I-E-R. And so I'm from Arkema. We're a specialty chemicals materials manufacturer. And one of our product lines is actually gas odorant. So we've been manufacturing and supplying odorants to the natural gas industry for several years now. And today there have been a couple of brief references to odorization.

Arkema would simply like to offer ourselves as a resource to PHMSA and any other participants with any questions regarding odorant. And we're looking forward to supporting PHMSA as you consider these issues further.

MR. HALL: Thank you for your comment, sir. Operator?

MR. OLIVIER: Thank you.

OPERATOR: And our next question and comment is from Paul Hartman. Please go ahead.

MR. HARTMAN: Hi. Good afternoon.

Paul Hartman with the American Petroleum Institute. First I want to thank PHMSA for proactively holding this workshop and providing a forum where all stakeholders have an opportunity to provide feedback and recommendations on any future rulemaking regarding leak detection and repair.

As many of my colleagues have stated previously, our industry is committed to playing our part in reducing environmental impacts from our operations and maintenance.

Our industry remains devoted to the development and deployment of new technologies and practices through industry initiatives such as the Environmental Partnership to better understand, detect and mitigate emissions.

Under the partnership, nearly 90 participating companies, including many industry operators, are taking voluntary action to further cut methane emissions beyond the 70 percent emission rate reductions already achieved in the largest producing U.S. regions.

The partnership is a voluntary program that focuses on solutions that are technically feasible, commercially proven and will result in significant emissions reductions.

Specifically, the partnership is focusing on reducing emissions from pipeline blowdowns used to depressurize the pipeline for repairs, operations and compressors.

Additionally, EP recently announced a new climate action framework that serves as an economy-wide blueprint to further reduce emissions and advance low carbon technologies.

In addition to endorsing a carbon price policy and advancing cleaner fuels, the framework also looks to reduce emissions by accelerating technology innovations, further mitigating emissions from operations and driving climate reporting.

With respect to leak detection requirements, PHMSA should also make a clear distinction in its rulemaking between pipeline leak detection and repair requirements at facility LDAR requirements.

Also PHMSA should not overlap its LDAR regulation with existing or planned EPA LDAR regulations that cover midstream compressor stations, transmission compressor stations and natural gas processing plants.

If PHMSA plans to prioritize risk mitigation efforts associated with LDAR, the agency should focus on cast iron and cathodically unprotected steel pipelines, which are widely regarded to be more prone to leaks.

Additionally, leak survey frequency criteria should be reflective of the relative risk of the pipeline involved with respect to material of construction and cathodic detection.

As PHMSA looks to update leak detection regulatory requirements, there is also a number of pending regulations supported by the industry through the public comment and advisory committee process that would support the reduction of NG emissions and environmental impacts simply by expanding the breadth of pipelines covered by the regulations and changes in the law for the use of advanced technologies for repairs and additional valve installations to provide for more rapid shutdown of pipelines.

The comments from my colleagues earlier are reflective of our position on leak detection, specifically ensuring that PHMSA considers a risk-based fit for purpose framework that allows for operator flexibility in determining the right technologies and practices for carrying out a programmatic approach to leak detection.

Thank you again for hosting this forum today.

MR. HALL: Thank you for your comments, sir. Operator, next commenter.

OPERATOR: We currently have no other commenters. But once again if you do, press 1 then 0.

MR. HALL: Thank you, sir. We have a comment from George Ragula, R-A-G-U-L-A, on the Q&A box. He says performance based regulations are key as opposed to prescriptive based. There are a number of options available to meeting emission goals -- emission goal reductions without specifically requiring the use of ALDs but still have issues associated with their practical use.

Thank you for that comment, sir. Any other comments?

OPERATOR We have no further comments on the phone.

MR. HALL: Thank you, sir. We'll give it two or three minutes. If someone wishes to make a comment on the telephone call or the Q&A box, please do so. If we don't receive any in the next two to three minutes, we'll wrap up.

OPERATOR: It looks like someone else has just queued up. Just one moment as her name is gathered.

MR. HALL: Very good. Thank you.

OPERATOR: And we have a comment from the line of Kate Smits.

DR. SMITS: Hi. My name is Kate, K-A-

T-E Smits, S-M-I-T-S. And I'm a professor at the University of Texas, Arlington.

And I want to thank PHMSA for hosting this session today. It's been very informative from my perspective with doing research. And I wanted to offer a comment about when we think about and define ALD, advanced leak detection, that it really should take a three axis approach to link the instrument capability with the deployment method and then, of course, the analytics behind it.

And it seems today there was a lot focus on defining the capability. So, for example, the discussion on the sensitivity of an instrument. But this really needs to be linked with the deployment method and then the third component of the analytics, which is key. And the analytics can be anything from a complicated model to an analytics solution or even someone's brain that's taking in data and making real-time decisions with that information.

I wanted to add also that key for leak

detection is understanding the environmental conditions in which the leak detection is performed. And I've done quite a bit of research on this and demonstrated how emissions are widely affected by both above and below ground conditions. And these effects should be incorporated into the deployment method. And by not including such information, it can potentially lead to misclassification of leaks.

What I wanted to offer PHMSA, and it seems there's been a little discussion on what we need to do going forward. We have yet to develop and test different protocols that can reliability assess natural gas leak detection and quantification solutions under a range of representative field conditions for pipeline leaks and areas. And it seems that we are relying instead on a few select studies in order to make these clear performance-based standard.

So I think until we do that, until we develop and test these protocols to reliably assess the leak detection and quantification solution, it is a difficult goal to define clear performance-based standards. Thank you very much.

MR. HALL: Thank you for your comment. Operator, do we have any others in the queue?

OPERATOR: No more people are in queue.

MR. HALL: No more people in queue, and we have not yet received any further comments in the Q&A. We'll give it just a few minutes. Operator, again, to make a comment, it's dial 1, 0, correct?

OPERATOR: Absolutely correct, 1 then 0.

MR. HALL: We'll give it one additional minute. Thirty seconds to jump in and make a comment if you have one. Dial 1 and then 0 on your line or make a comment in the Q&A box. Okay.

Not hearing any additional comments, we thank you very much. This concludes the public comment period. We do appreciate the comments we received. And those will be entered into the record.

We're now going to transition to the closeout and wrap-up for the day. Again, please welcome Alan Mayberry, Associate Administrator for Pipeline Safety. Go ahead, Alan.

MR. MAYBERRY: Well, thank you, Sam. And, you know, a big thanks to you for participating today and to our panelists and moderators. I'm going to claim victory today on a very productive session that we've had. We'll be back again tomorrow.

But just to summarize today, I was very impressed with -- we had three panels. The first panel in the morning, the government panel that included the EPA, PHMSA and states and that was marked by a discussion of data. Something that's very informative from the EPA and the various programs that they have there.

And then with Sayler with PHMSA talking a good bit about the PHMSA data that's out there. And, of course, Mary representing

NAPSR and the state perspectives on where we go with all of this.

A lot of questions related to technology that I think will be covered tomorrow. So I look forward to that.

The second panel after lunch included the public. We had two members of the public, one, the Environmental Defense Fund. And, Erin, I appreciate your discussion of best practices. And I believe you had the discussion there about, or mention of, a minimum leak size that I took note of.

And then with Bill from Pipeline Safety Trust, you know, thank you certainly for underscoring the power of the legislation as far as the paradigm shift that it represents and certainly the shift in culture or the challenge that you recommended that, you know, we all undertake as we move to, you know, transition or focus from solely public safety, protecting people and the property to also including, you know, reducing greenhouse gas emissions. And certainly your mention of using all the tools on the table was a fair point as well.

And then moving on to the industry panel. Bull, thanks for your discussion of the GPTC guide. And, Christina, you know, a review of the commitments made by the local distribution companies I took note of and, you know, encouragement of policies that were flexible.

I think Brooke with KUB, you know, it was interesting to hear your journey through managing risk. I was quite impressed. You know, interesting, you know, with your newer system it's probably understandable that your main source of Grade 1 leaks would be from third-party damage with perhaps susceptibility of plastic pipe.

I wanted also to note that thanks for -- you know, I saw where University of Tennessee, my alma mater, was on an annual leak survey cycle so thanks for that.

And then next we had INGAA, represented by Sandra and Pat Carey. And Sandra covered commitments to reduce the emissions and then further commitments to reducing operating emissions. And, of course, Pat did a good job of covering methods and, you know, considerations to encourage that, you know, address frequency appropriate to the thread and then site risk specific application of policies as well.

And then finally Matt with GPA Midstream, thanks for your discussion as well. You know, good discussion, you know, on the limitations I think you noted and certainly encouraging the addressing of risk. Certainly risk was the theme throughout the discussion today as well.

There were questions about the regulations, you know, what's coming exactly. We don't have that laid out yet. That's why we're doing this. I think we've laid out a lot of interesting pieces of the puzzle on the table. And it's, you know, we'll get down to work to putting this together into what a national policy would be.

Now before we have day two, which is tomorrow, which is focused on technology and also research and development, I look forward to that. And I'm trying to think what else do I have here. Make sure I cover my notes.

Tomorrow we'll start at 10:30 Eastern Daylight Time sharp. And so we look forward to having you back tomorrow.

I don't think I've missed anything, Sam. Is there anything else to cover? I think that's it.

MR. HALL: That's about it thoroughly. That's right. Just a note for all of our viewers who have remained until the end of the day here, the URL for the meeting will remain the same. So you'll just need to log in using the same link that was provided to you before from the public meeting page. Thank you, Alan.

MR. MAYBERRY: Very good. Thanks, Sam. And thanks for just being a great MC today. So I look forward to having you back as well tomorrow. You're so unflappable. So nice work today and the rest of the PHMSA team as well.

So with that, we will adjourn the meeting. And we will see you back tomorrow at 10:30 Eastern Daylight Time. So thank you. And I wish you a safe evening. Goodbye.

(Whereupon, the above-entitled matter went off the record at 4:54 p.m.)

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C E R T I F I C A T E

This is to certify that the foregoing transcript

In the matter of: Pipeline Leak Detection, Leak Repair and Methane Emission Reduction

Before: USDOT/PHMSA

Date: 05-05-21

Place: teleconference

was duly recorded and accurately transcribed under my direction; further, that said transcript is a true and accurate record of the proceedings.

Neal R Gross

Court Reporter