U.S. DEPARTMENT OF TRANSPORTATION

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GAS PIPELINE ADVISORY COMMITTEE
(TECHNICAL PIPELINE SAFETY STANDARDS COMMITTEE)

AND

LIQUID PIPELINE ADVISORY COMMITTEE
(TECHNICAL HAZARDOUS LIQUID PIPELINE SAFETY STANDARDS COMMITTEE)

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JOINT MEETING

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WEDNESDAY
OCTOBER 22, 2014

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The Joint Meeting convened in the Washington Georgetown Marriott, West End Ballroom, 1221 22nd St., N.W., at 9:00 a.m., Colette D. Honorable, presiding.

GAS PIPELINE ADVISORY COMMITTEE MEMBERS:

COLETTE D. HONORABLE, Chair
DENISE M. BEACH
LINDA K. BREATHITT
MARK BROWNSTEIN
CHERYL F. CAMPBELL
J. ANDREW DRAKE
SUSAN L. FLECK
ROBERT W. HILL
DONALD J. STURSMA
RICHARD L. WORSINGER
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CHAD J. ZAMARIN

LIQUID PIPELINE ADVISORY COMMITTEE MEMBERS:

VADM BRIAN SALERNO (Ret.)
LANNY W. ARMSTRONG
C. TODD DENTON
TIMOTHY C. FELT
MICHELE F. JOY
RICHARD B. KUPREWICZ
CHARLES LESNIAK, III
RONALD G. McCLAIN
CRAIG O. PIERSON
CARL M. WEIMER

DEPARTMENT STAFF PRESENT:

JEFF WIESE, Designated Federal Official
LINDA DAUGHERTY, PHMSA
STEPHEN DOMOTOR, PHMSA
JOHN GALE, PHMSA
DAVID LEHMAN, PHMSA
ALAN MAYBERRY, PHMSA
DAVE MURK, PHMSA
STEVE NANNEY, PHMSA
KATE ROSENBERG, PHMSA
CAMERON SATTERTHWAITE, PHMSA
CHERYL WHETSEL, PHMSA
DAVE MURK, PHMSA

ALSO PRESENT:

DR. PAULA GANT, Deputy Assistant Secretary, Office of Oil and Natural Gas, Department of Energy
PAUL ROBERTI, Commissioner, Rhode Island Public Utilities Commission
DR. JAMES WHITE, University of Colorado, Institute of Arctic and Alpine Research

T-A-B-L-E O-F C-O-N-T-E-N-T-S

P R O C E E D I N G S

9:06 a.m.

MR. WIESE: Good morning, everyone. Hope you had a fun night last night; I know the bulk of you were here in the hotel. Some people like us decided, let's take the Metro yesterday and so we got soaked between here and the Metro. So I would recommend today, take a cab, use Uber or something like that.

But I apologize for bringing you into a town where the weather is so bad; but thank you again so much for your service. Before we go on the record and start the transcription, I thought I would just mention a couple of things really quickly. Again, for those of you who yesterday put up, please just put up with me.

I want to point out that there will be some new people in the crowd. Every time we start a meeting by telling people how to get out of here in the event of an emergency. Our safety moment of the day is use the doors to your right, over here; not the ones behind you. Those take you into some hallways for the staff. So go down the escalators or the fire door in the far corner there, gather in the lobby and there will be people from the hotel up here and in the lobby directing you. But that's the general route out. The comfort moment is restrooms are just out the door right over here, so that should be no problem.

Today we've got a number of interesting panels. The first one, in particular, I think that you will find fascinating, but my goal today and I want to work for you; because most of you are from out of town, is to get you out of here at 3:00. That's our goal. I know a number of you have to catch flights. So if you want to adjust your flights and get home a tad earlier, that's up to you; but I know I have the able assistance of the Commissioner from Arkansas.

We will, she will nicely manage to get us to a 3:00 close.

So I think with that, Cheryl any other housekeeping matters that I, no?

MS. WHETSEL: No.

MR. WIESE: Okay. Adjust your phones. Okay? Besides that, there are, there is a sheet on the registration table with restaurants nearby for lunch. We'll give it a reasonable lunch; we'll gauge out the progress we're making about whether it's an hour and a half or an hour. But I'm very much looking forward to today, so with no further ado, I will turn it over to my colleague from Arkansas.

CHAIR HONORABLE: Thank you, Jeff, and good morning everyone. I hope you had a good evening, not too much fun, okay? We've got a lot of work to do. And while we do want to get you home safety and in an expeditious way, I certainly don't want to cut off any dialogue or the questions that you might have, this is what we came here to do.

So I greatly appreciate your attention yesterday and most of all, your involvement and your participation. It's great when we have a lot of tent cards up. So this is your day as well; this is why we're here. So I don't want to limit discussion or questions in any way.

But to the extent that we're able, we would like for you to be able to return home, particularly with the rainy weather that we're having today. And also, please remember than when you speak, we would like for you to please state your name first, because we are making a record of the proceedings here today, and I'd like to welcome you back to the Joint Meeting of the Gas Pipeline Advisory Committee and the Liquid Pipeline Advisory Committee.

And we'll begin with agenda item number one, a briefing on Methane Emission Reduction and I'll turn it over to Jeff for introductions, but I wanted to thank the panelists who made time to be here today; some of them who I know very well. And this is a great, great topic for this joint committee to take up. So without further ado, Jeff.

MR. WIESE: Great. Thank you so much, Colette. I just have a couple of quick remarks to set this up. We asked to establish this panel because it's a topic that the committee, it's very germane to the work that we do; but we haven't ever talked about it in the past, other than just as a side note on other discussions we've had.

Yet, my guess is many of us in this room have been involved for some time in this topic. So it seemed appropriate, you know, for us to kind of collect advice from you, but to start, I assume we'll have continuing discussions on this topic, given its importance I think that everyone here as well as to the administration, but I thought we would start with some basics.

Again, I don't like to assume that

everyone is at the same point of knowledge, so to begin with, what I'd thought we'd do is kind of a primer. So I reached out, I thought, who would do the primer? I reached out to the National Academy of Sciences. We do business with them a lot and I said, who's really good fact-based, science-based, neutral sort of person? And it was immediately they recommended Dr. Jim White. So I called Jim and he was kind enough, after some badgering from me to agree to come in and I consider it a high accolade if the National Academy is referring him.

So, just real a quick bio, I've got a panel that's comprised this morning for you of Dr. White, Dr. Paula Gant from the Deputy Assistant Secretary at DOE and friend of many of ours for many years, and Paul Roberti, another one of our friends. Paul is Commissioner from Rhode Island. So I thought we would start out with Professor White, we'll go to Paula and then to Paul.

But I will pause, I think, after each of these speakers and, you know, take some questions for the speakers. And when that's done, I've asked a couple of people here, Mark Brownstein will be speaking as well on this panel, forgive me, since I recruited him for the committee on this topic and this. Sorry, Mark. It's early. I did go down and get coffee. So Mark will be presenting as well in EDS interests in measurement and monitoring. Sorry about that.

So we'll do that. Let's pause and let you take questions of all these people and then I've asked a couple people on the committee to kind of talk a little bit about the work that they've been doing; that we think that contributes.

So I'll start out with Dr. White. Dr. James White, Professor of Geologic Sciences, the University of Colorado/Boulder and Fellow and Director of INSTAAR, the Institute of Artic and Alpine Research. I'm not going to read through the long cycle, but Jim has talked to me before. He's been involved in methane monitoring and measurement for quite a few years. I'll let him give you any other quick tips on himself, but again I consider it a high accolade to be referred by the Academy and I want to thank him for taking time out of his schedule.

DR. WHITE: Thank you very much, Jeff. Thank you, Madame Chairwoman. I would point out that Jim White is a very common name, so you probably should check to make sure you got the right one. I don't know, I have worked with the National Academy.

Jeff asked me to give you sort of a very brief overview on climate change, what we know, what we don't know. So I'm going to stick to the basics. I'm going to stick to simple physics. I'm not going to try to go into models and stuff like that. I don't do modeling. I go to places like Greenland and Antarctica and drill ice cores and look thousands of years into the past to try to understand how our climate system works. I've also since the early 1990's measured the isotopes of methane in the atmosphere. I've been affiliated with NOAA's monitoring of methane in the atmosphere. So I'll make some comments specific to methane as I go through my talk. But I will also talk broadly, more broadly about climate change in general.

I always like to start with a slide of where we are; actually, this is a picture of the other side of the world. You can make out India on the left there. I like to show pictures like this for a couple of reasons: One is this is Typhoon Haiyan from last year, from 2013; this is a pretty big storm. If you actually lay it over India, it's about half of India. But you also see all these orange things, and these are lights, obviously; and those are powered almost all, as you know, by either coal, oil or natural gas. And India and China are countries that use far less energy per capita than the industrialized countries. So a global view would show you that the industrialized world lights up the night even more than these countries do, but these countries are the places where growth is happening; China in particular. Huge growth in use of fossil fuels; and India is not far behind, and with a billion people moving into the use of fossil fuels, they'll need something like four to five times more energy, total energy in the future because just growing from where they are and their use of fossil fuels, which is very low per capita, up to some level in the future.

With all the environmental changes, we want to know a lot, but three basic things: How fast are things going to occur, how big is the change going to be eventually, and how likely is it to happen? These are the same sort of questions we ask when we buy insurance. So knowing these things, we can do very important things, like manage risk, provide resilience, etc. So as I go through my talk, I'm going to move back to these issues of fast, how far or how big and how likely. So we'll keep moving back to those. And again, I'll try to keep it simple; and that's why I threw in this slide to remind myself to keep it simple.

So let's start with, you can actually understand how our climate system works in about three minutes. So in the next three minutes, we're going to understand how our climate system works. Not getting into the details of, how Washington's weather works or Colorado's weather works or South America, whatever. Just looking at the globe, if you wanted to determine the temperature of our planet all you would need to know are three things: You would need to know how much energy we get from the sun, because we're a sun-driven planet. There's very little energy that comes out of the Earth, some by radioactive decay and some by friction between tectonic plates, but we'd be a very, very cold planet if it weren't for the sun.

You need to know then how much of that sun's energy is reflected back to outer space; and that's reflected by things like clouds, aerosols, volcanos when they go off are very good at producing sulfate aerosol, which makes ice crystals and cools the planet off. And the obvious one is things like sea ice and land ice, etc. So, and that's what we call a positive feedback; because the colder the planet gets, the more ice you have, the more snow you have and the colder the planet gets.

A third thing you need to know is the amount of greenhouse gases. The greenhouse gases are just sort of a colloquial term for those gases that absorb the Earth's energy; not the sun's energy, the Earth's energy. So the sun's energy as it passes through the atmosphere, warms the planet up.

The planet warms up to some point and then radiates energy into outer space. Everybody radiates energy. I noticed on TV this morning, they were pointing little thermometers at everyone's head who was coming into the United States, for obvious reasons. And those thermometers are simply reading the radiation emitted by those human beings; and you can calculate your temperature quite well by knowing what frequency of radiation we all radiate.

So greenhouse gases don't care about the sun's incoming radiation, they absorb the Earth's radiation as it goes back, as it tries to go back to outer space. They absorb infrared radiation. The number one greenhouse gas with a bullet is water vapor; it makes up about half of the greenhouse effect. CO2 is about a quarter. And then the other quarter is made up by methane, which is an important part of that quarter. Nitrous oxides, CFC's, other smaller amounts of gases.

In terms of how they're growing, methane is actually one of the ones that we're watching very, very carefully; because it is growing faster than CO_2 and given it's about twenty to thirty times more powerful than CO_2 per molecule, likely to take over CO_2 at some point in the future. And I'll talk about that, because I think there's good reason to believe that it might actually happen.

So if you know those three things, you can actually, I should back up. You actually calculate the temperature of the planet; and physicists did this back in the 1800's. There's a lot of really classic physics worked out at that time. We do get variations in all of these things, so the amount of energy we get from the sun that varies because the orbit of the Earth varies. So if we're farther away from the sun, we have ice ages; if we're closer away from the sun, we have warm periods, like we're in now. And the pacing of the elliptical shape of the orbit is a very important part of climate, particularly the last million years. The Earth has the amount of reflectivity on the planet changes so when a volcano goes off, it's very obvious. You can look at the temperature pattern over the last hundred years, you can spot all the major volcanos that occur.

And the amount of greenhouse gas in the atmosphere varies. You go back sixty million years ago and greenhouse gases were, CO_2 for example, which today is 400 parts per million, pre-Industrial, about 280 parts per million. Sixty million years ago was probably a couple thousand parts per million. So it's been high in the past. It's not gone much lower than 180 parts per million for interesting reasons that we can talk about.

This slide just reminds us that we don't get enough energy from the sun to be a liquid planet; we're too far away. So the Earth's temperature without greenhouse gases are essentially without an atmosphere, if you want, is about -18 degrees C. You can measure that with satellites; that's what physicists calculated. I think it's too cold for advanced life. And I do ice core work, so. The Earth's temperature, however, that you can take with thermometers or with satellites around the world is about +15, which is a nice cozy planet. It's not too hot at the equator and it's pretty darn cold but not too cold, at the poles.

And the difference between that -18 and that +15 is greenhouse gas. We can calculate that, we know that quite well. It raises the temperature of the planet by about 33 degrees Celsius, about 60 degrees Fahrenheit; and really makes the planet habitable. So if somebody complains about greenhouse gases, just pause for a moment and think, well they actually make it possible for us to be here.

So it's a very, greenhouse gas is

a very integral part of the energy balance of the planet and the energy balance of the planet or the energy at the surface of the Earth, is indeed climate. That's the simplest definition of climate is how the energy at the surface of the Earth, how much there is and how it's distributed. Whether it's evaporation, whether it's sensible heat, whether it's leaves moving, whether it's that rain that's pouring outside.

So if we add lots of greenhouse gases to the atmosphere, the Earth's climate will definitely change. We know this; this is, again, simple physics. Because the physics of greenhouse gases absorbing energy is actually we know better than gravity, and we all, you know, next time you feel the urge to deny simple physics, try denying gravity. I do a little exercise in the class I teach on energy and the environment where I have a student stand on a chair. And I have, I talk about this thought experiment. What if I push the student off and the students will say, well she'll jump off and land on her feet. Well, we'll tie her feet together. Tie her hands together, you know, we'll do whatever. And they, you know, this is 18 to 22 year old set; they love this stuff. You know, they talk about you'd smash your face, blood, guts, you know. Definitely an injury here. And then I point out to them that in twenty-something years of doing this exercise in class and countless times in public, no one has ever raised their hand and said, so and so won't fall.

So we, and we get that. We understand that you simply cannot deny physical laws; you know, this is not something you can pass a law against, this is not something you legislate. If Congress could pass a law against gravity or could change the gravitational constant, we could all lose weight immediately. And they haven't done that, so.

This is a context of human change. I put CO_2 on here, it's in red; and your CO_2 is up about 30 percent from where it was. This is CO_2 levels going from today, going back 400,000 years; each of these high periods, what we call interglacial periods. A couple things you can notice on here. Most of the time in the last million years, has been cold. We spent time in what we call glacial periods, large glaciers covering Canada, wiping out the National Hockey League, stuff like that.

Methane also follows a similar pattern, although with more excitement; and methane has that excitement because it's very tied to the hydrologic cycle. Methane is primarily produced by anaerobic bacteria in swamps and places like that. It has, however, increased much more than CO_2. Methane has tripled in the atmosphere since the Industrial Revolution. So our impact on methane is much larger than our impact on carbon dioxide; in part because methane is lower in concentration. But also in part because our production of methane mostly by rice cultivation and by domesticated animals burping their brains out, has a larger percent of the flux relative to natural.

So what are the impacts? What do we know will happen? So I've broken the impacts into what we know will happen and what do we think will happen. And you know, if you read the IPCC and these other reports, you get words like very likely and probabilities and stuff like that. I'm going to talk to you like a human being and not a scientist. We know these things are going to happen, right? The physics are so simple that this is going to happen. So, 50 percent of the energy in the lower atmosphere is expressed as heat, sensible heat. So if we increase the amount of greenhouse gas in the atmosphere, we know we're increasing energy in the atmosphere, the odds of it warming up are very, very, very,

very, very high. All right? So it's going to get warmer.

It will also mean more evaporation. So more energy in the atmosphere means there's actually going to be more rain globally. Now that rain might fall in the ocean, might not do as good on the land, but it will on the whole, rain more in the future. And it has been raining more. Another thing that will definitely happen is that sea level will go up. And I'll talk more about that, because that has implications for infrastructure along the coast that I think you folks in the pipeline world ought to know about. But again, the physics are so simple here that when you warm the planet, you are going to raise sea level. The ocean's going to acidify, because we're putting CO2 in the atmosphere; that's happening today.

And the other thing that's going to happen, and it happens slowly, fortunately, because I don't think this is going to happen rapidly. Is that carbon in the form of CO2 and methane is going to be released as permafrost melts in cold regions of the world. That's something that has normally happened as the planet has warmed and cooled in the past. Interestingly, it's the ratio of methane to CO2 that's really important here. And we don't know what that ratio's going to be.

What do we think will happen? There's a whole bunch of things that we think will happen; here's just ones I've listed. We think it's going to get drier in the western U.S. I live in Colorado, that's very important to me. We think there will be changes in the weather. It's going to be both colder and warmer because of the changes in jet stream, changes in circulation patterns. We think it will be drier in some places, wetter in others. We think there will be bigger storms; there's actually evidence for this today, as there is more energy in the atmosphere, you'll have bigger storms that rain more per event. That has implications for infrastructure in terms of sewer runoff and stuff like that. And we think there's going to be more heat waves. There's a bunch of other stuff that we think's going to happen, but that energy's going to be redistributed around the planet in interesting ways.

Is it surprising that human beings are changing the planet? I get this question a lot. I used to get this question from my dad, and we used to have long conversations about this. So I started to collect metrics for humans running the planet. We're very impressive. We're the biggest cause of change on the planet by far. Here's just a couple of, you know, there's a bunch of them in here, I'll just talk briefly about the first one here and if we have time, I can come back to the second one. This surprised me. My friends in the geological science business added up how much dirt flows through rivers and through dust in the atmosphere, and they compared that to the amount of dirt that we move by mining activities. Just by mining activity. We move ten times more dirt than nature does every year. So the natural erosive processes that wear mountains down and keep these mountains from getting higher and higher, we move ten times more dirt per year than nature does. Which impressed me. And I can come back to this. This has to do with nitrogen fertilizer and I don't know if I'll have time to come back to it; but this is, I think the one that really makes my jaw drop is the fact that we human beings really are equal to all the bacteria on the planet in terms of fertilizer production. Nitrogen production, which is like, that's really strange.

We can try this. So how fast, so we did, the National Academy probably fingered me because I was the lead author on a report in which we looked at abrupt change. And one of the abrupt changes is happening today is, is sea ice loss. And this is a little movie prepared by NASA and NOAA and I like it because it makes a couple of examples here. So what you're going to see here is the movie cranks up is the circulation of the Arctic Ocean and the Arctic atmosphere circulation as ice spins around. And in the natural, in the world before it got warmer, ice would come around Greenland here, it goes out in the Atlantic, it sinks the Titanic, it does other stuff. But the white stuff here is old ice, and the blue stuff is young ice; and what's happened as time goes by and you'll see a big change in 2007. It's episodic. Is that the old ice, which is meters and meters thick, is being shoved out and it's not been cold enough to replace the old ice with more old ice. And we end up with an Arctic Ocean that has pretty much one year ice covering a lot of it. So if you remember what that looked like in the beginning, it was mostly white, which is multiyear ice, able to survive a warm winter.

And what we have now in the Arctic in the wintertime, it still freezes over in the wintertime. We have mostly one year ice, which is capable of melting, to a large extent, any given summer when you have enough warmth and when you have the right wind conditions.

An example of this, this is the Great Lakes, to give you an example. So this is Lake Erie, which I used to pick on Rhode Island, but not anymore, so. This is New Jersey, roughly. And this is February 27, 1973; Lake Erie is frozen over. March 13, two weeks later; Lake Erie is almost entirely ice free. And if you've lived in an area where you have lakes, abundant lakes, you'll know that this happens in the springtime, it just seems as though the ice goes away very quickly. And that happens because the atmosphere warms, the water also is melting the ice, and then the wind comes along and stirs the drink and you end up with ice being removed very rapidly. That's what's happening in the Arctic today. And now keep in mind that the three things, class, that controls climate: How much energy from the sun, how much reflectivity there is. So we're trading white ice in the Artic for blue ocean; which is about the biggest trade you can make from an energy-absorbing point of view. That's why a lot of climate scientists are focused on what is going on today in the Arctic; because what happens in the Artic doesn't stay in the Arctic. It's totally the opposite of Las Vegas. It begins to impact the entire northern hemisphere, because it changes the energy budget of the northern hemisphere.

So why should you care about Arctic sea ice? There's a bunch of reasons why you should. This thing that you folks have lived through called the Arctic Paradox; where cold air leaks out of there because the jet stream slows down and can't bottle up cold air anymore. A lot of political stuff. The

Russians dropped a flag at the North Pole. Whoopee. There's more ships, there's more resource extraction going on up there; and in red here, I put the permafrost is melting. And it's being aided in warming up by the fact that you now have blue ocean in the summertime along the coast much longer into the fall than you used to have. And the folks who live in Alaska can, I mean, this is something they know. This is very real change, a very easy change to see. This is a distribution of permafrost. Just pointing out a couple things. One is that most of that permafrost is in Russia; the second amount is in Canada. But we in the United States have a lot of permafrost; and I've talked about folks, talked about this with folks in the State Department; pointing out that, you know, as we talk about carbon agreements globally, we own a lot of stock here that is going to be coming out. And how this stuff gets counted in the future is an interesting question. Just to scale you, this amount of carbon is equal to all coal, oil and natural gas put together. And it will, as the planet warms up, melt; because it did it in the past. And we have very good evidence. At warm periods in the past, only a couple of degrees warmer, trees were growing all the way up into these islands right here, on both sides. So this was, very clearly, a much warmer place and permafrost was gone because trees don't grow that well in the really frozen permafrost.

Just pointing out to you that we are monitoring very carefully what's happening here. We don't have enough sites, I think, to do that very well, but we have enough that we can tell you that even though methane is now increasing in the atmosphere, this is methane from since 2000 from the NOAA data. It actually plateaued for a while and there was a whole bunch of papers written, including some by me; and we don't really know why this happened, which is an interesting problem.

But methane is going up in the atmosphere again since 2006 or 7, it's been going up again. It's going up again, and this is the isotope, I won't go into details here, but basically if this goes down while this goes up, this has to be anaerobic. It has to be rice, it has to be swamps, it has to be more rain. It is not Arctic permafrost that's melting and putting that methane into the atmosphere. We all think that this is going to happen in the future; as a matter of fact, it's going to happen in the future. But it isn't happening yet.

Some thoughts then. Ours is a water planet. It takes time for water to heat up. One of the most, I'd say, the second most important message I have to give you today about climate change is that the impacts, that is, it will be warmer, come after the causes, which are increased greenhouse gases by at least fifty years or more. And that's because water is out there. And it doesn't take a whole lot of experimentation. I have students, another thought experiment. Put two pots on the stove. Put two cups of water in one and no water in the other. Turn the heat on equally. Walk away for a couple minutes, come back. Thought experiment. Put your finger in both and you will burn your finger in the one with no water, and the one with water in it, you barely feel it's a little bit warmer. Energy is neither created nor destroyed. So where did all that energy go? That, on the water side? Well, it goes into warming water up because water has an enormous heat capacity. So this is an interesting problem, because it creates, even though today we have about 400 parts per million CO_2, and I'll show you what that means from a climate point of view. We don't have a 400 part per million CO_2 climate yet. It will take a long time for the ocean to warm up to express that 400 part per million CO_2 climate. And it's always going to be a lag of at least a generation; and that causes what's called intergenerational inequity. And a lot of what we talk about in climate change today has to do with ethics. What we're doing to our, with the problems we leave to our kids. And will they do the same thing? Will they leave our grandkids the same kind of problems? So this is an interesting problem. And it's, the time frame is long enough, it's certainly longer than the political time frame. But the time frame is long enough, it's really an interesting problem.

Let me talk a little bit about sea level rise. This is probably the most inevitable result of a warmer planet. And this one, I want to talk about it because the, as a paleoclimatologist, I sort of yawn when I look at sea level rise curves. But the, it's something that we haven't gotten out into the public domain, the importance of a dynamic sea level on our planet. So the physics behind sea level rise are simple. So as you warm water up, water expands; and that's not trivial in an ocean that's several kilometers deep. So as the ocean warms up, sea level rises. The other thing that happens is that a warmer ocean and a warmer air melt land ice. And on our planet, there's a trade always going on between water on land, as ice, and water in the ocean. And that trade goes back and forth as our climate changes. As our planet cools off, we tend to grow ice on the land. That ice came from the ocean and so the sea level drops. During the last glacial period, for example, sea levels were 120 meters lower than today; almost 400 feet. All right? So that's a lot of water that got taken out of the ocean and made into ice. As our planet warms up, sea level rises. So 120,000 years ago, we were slightly warmer than today, maybe a degree on average for globally. Sea level was about 5 to 7 meters higher than today. Meters. So that's 15 feet. So then I'll show you what that looks like in the next few slides. But this is very important, because the small changes in temperature eventually translate into large changes in sea level and that's just the way our planet functions, because of this trade between land ice and the ocean.

This is just a figure showing you the fidelity, I've used CO2 here, by temperature can be substituted for this; and sea level showing that over the last 500,000 years, I apologize the direction of time is now going this way. That's what climatologists do. These are again the interglacial periods that you see here. But the, what's important to note on this is that these are the difference between an interglacial period and a glacial period, which is about 6-7 degrees Celsius. Sea level changes here are on the order of 120 meters. All right? So you can get a scaling right away that, at one degree of sea level, one degree of temperature change is something on the order of 15 to 20 meters of sea level. And keep in mind that the IPCC target is 2 degrees Celsius, all right?

Sea level is rising, a meter by the end of this century is a conservative current estimate. It's conservative. And there's a whole lot of implications for this. In the Abrupt Climate Change report, we talked about this infrastructure failure is a key threshold in sea level rise. So as, you can talk about, okay, Miamians will move from these wet spots here to these drier spots. But you all know how cities work, and you know the underground pipelines, the power lines, the sewer systems. The infrastructure of cities are really what begin to fail as sea level rises. And that becomes a real serious problem. And these failures could indeed be abrupt changes in the system; that's probably one of the biggest fears we have is that you will have problems in the infrastructure, the system not functioning abruptly.

Interestingly, current plans. For example, there's a big meeting in New York City recently. Typically go out to 2050 with little or no recognition that sea level rise will continue. So sea level rise is not going to go a meter by 2100 and then stop there. The how far part of this is really important. And how far is in the neighborhood of 10 to 20 meters. So with 400 parts per million CO2, I'll show you a curve here in a minute; that's the sort of level we'll expect in, and it will take a couple hundred years, a few hundred years, to do that. But what's really important is that sea level rise, if we allow this to go unchecked, will mean a continuous and strategic retreat to that how far level. So, it's interesting that folks are thinking of building twenty billion dollars' worth of hardening against sea level rise, and at that point, you go, okay now what? You guys spend another, we all know the number will be even bigger. But it's going to be a continuous fight. And at some point, you think, well, you know, are we going to, we're going to give up. Miami, for example, is a city that you simply can't save. It's a city that's built on sand and coral and you put a dike around Miami and water just comes up underneath it. It's completely porous under your feet. The City of Miami actually hired some Dutch engineers who told them that and charged them a few hundred thousand bucks, so. Wish I had that gig.

This is a nice compilation, just showing you very briefly and roughly speaking that here's the global mean temperature; our average today of 15. Here's sea level. Again, if you go back to the Glacial Period, which was about 6 or 7 degrees colder, about 120 meters. Going forward to a warmer planet. If you melt all of the ice, if you melt Antarctica, here's the Eocene, forty million years ago, that's when the Antarctica began; it's about 80 meters of sea level rise. The last time the Earth had 400 ppm CO_2, which is what is in the atmosphere today, is a period called the Pliocene, which was about three million years ago. And you can sort of gauge across here; that's about 20 meters of sea level rise. This is the IPCC forecast for the year 2100 temperature. There's no reason that we can think of for this point not to migrate up towards that line. It will take hundreds of years to do so, because fortunately, ice doesn't melt quickly. But again, it's a strategic and phased retreat that we're thinking about, rather than, I still think we can do something about this. But it is interesting that this is something that a lot of people really don't want to hear about, but if you look at, if you study the history of the planet, this is just how our planet functions.

So I point out to my class, don't get depressed, you can have some fun with this. This is what 20 meters of sea level look like. I always ask them what's really important about this part of Florida? I'll ask you folks that. Disney World. Right. I heard the words, Disney World, right? So it turns out that Disney World is high and dry at 20 meters of sea level and really importantly, you can sail the Disney Princess right up to the Magic Kingdom. All right. So there are winners and losers in climate change. I always get sad because I learned that Louisiana looked like a foot and it's unfortunately, you know, I hate to say it, but an amputated foot at that point. Nonetheless, you get the picture. And I also like to show this slide, because as I tell people, this is the only thing you'll remember about what I say. There's a state lurking over here and you folks in the northeast know which state that is? Delaware. Right. Now what was the first State of the Union? Delaware. They're really, really, really proud of that. So if you want to remember ultimate sea level rise, all you have to remember is first in, first out. Okay? If you can remember FIFO, you can remember ultimate sea level rise.

I had to pick on Rhode Island here. This is just a little bit of me getting up on a soapbox here. I think it's time to rethink the global conversation; and it's certainly a national conversation, and really stop blaming fossil fuels. Yes, CO2 is causing a lot of climate change, but the fossil fuel providers get a lot of grief for that and I find that rather odd; for two reasons. One is, it's not just about fossil fuels. And this is a really important message for methane. Methane, the human methane fluxes are primarily rice cultivation and domesticated animals. So we have a little program where we drive around the front range of Colorado and we have a little Piccaro Methane Analyzer in the back and we're trying to ground truth the aircraft measurements. The biggest signals we see are feed lot operations; concentrated feed lot operations. CAFO's. We do see some leakage from pumping operations from methane, natural gas operations; we also see landfills. But the biggest spikes we see are CAFO's. And the nitrous oxide is produced by bacteria when they get an abundance of fertilizer. As I told you, the one example I had to skip there is that human beings have doubled the amount of nitrate and ammonia in the Earth's system. And some nitrous oxide is going up and it's going up rapidly. These two things together roughly equal CO_2; and they're largely tied to food. Not energy. So one of the key messages for the future is that we're going to have to deal with climate change. We have a large environmental footprint. We got to deal with it. Because we're not going to get out of the food eating business. We may get out of the fossil fuel business at some point down the road, but we're not going to get out of the food eating business. All right? You simply can't, I can't imagine a world like that, although some of my futuristic friends talk about it.

So I think, you know, whatever strategies we have to deal with climate change in the future has to get out of being wrapped around the axel of just fossil fuels. The other important point I want to make here is that fossil fuels supply 80 percent of our energy. And I've always found it odd that blaming the supplier of a basic need is odd. All right? In other words, I ask my class this: I mean, do we blame farmers for obesity? Farmers are out there producing calories. Right? Why aren't we crabbing the farmers, you're producing too many calories? And I think we know the answer. We know it because we know that there's a lot that happens between the production of calories and how we consume it. We inject ourselves, and we say, I need to be responsible for how I consume those calories. We don't have a sensible energy policy, and so we can't inject ourselves in between the providers of that, of energy and the result of that energy. So my big message here is, we certainly need a sensible energy policy and we need a sensible approach to what is really happening; and it is really happening. So I will stop there.

MR. WIESE: Very good; thank you, Professor White. I actually have some questions myself, but I think we've conferred and think that we won't get through our agenda if we don't save questions for the end of the panel.

So with your permission, I just ask you to queue them up. Okay? So what that, I think we'll shift now to Dr. Paula Gant. I haven't been calling her Doctor, I realize I'm going to have to become more formal, Paula.

Paula is the Deputy Assistant Secretary for Oil and Natural Gas in the Department of Energy's Office of Fossil

Energy. Deputy Assistant Secretary, Dr. Gant, administers domestic and international oil and gas programs; including policy analysis, liquefied natural gas import and export authorization.

Paula has a long history, I think many here in the room probably know her. She worked with the American Gas Association and Duke Energy in the past, has served as faculty on Louisiana State University, University of Louisville. So with that, I think I would ask you to welcome Dr. Paula Gant. Thank you, Paula.

DR. GANT: Thanks, Jeff. Five minutes-ish?

MR. WIESE: Whatever, five, ten.

DR. GANT: Great. Good morning, everyone. It's nice to see a lot of friendly and familiar faces, and it's great to get a current primer on the climate science. I thought that was really insightful and makes me glad that I don't have to try to make this interesting to college students. I don't know that I have the innovation that you do, Dr. White.

So I'm going to talk about methane from a couple of different angles; focusing on not bovine flatulence, but natural gas, our domestic natural gas abundance; and talk about why from an administration perspective, methane matters in that regard. And then how that relates to some of our objectives around, addressing climate change and working to mitigate the impacts of it.

So, why does methane matter? It turns out that we have a lot of natural gas, a lot of proven reserves of natural gas in this country. And thanks to decades of continual innovation and technological advance, we can get it out of the ground very effectively and thanks to the 2.4 million miles of pipeline infrastructure we have in this country, we can get it to markets around the country very safely, efficiently and reliably. And because of that, we have an incredible opportunity to make good use of this resource in ways that allow us to underpin our economic security, our national security, and our environmental quality. And when I think about what the challenges for us at this point in time from a policy perspective, and my opportunity to serve on behalf of the President, it's really to help insure that as a country, we realize that promise. And that's what President Obama has us focused on, is making sure that we're thinking about our natural gas resources in ways that insure that we are developing them prudently. By prudently, we mean that we get the most out of the resource, we produce it efficient and that we also minimize impacts on other natural resources; our air, our land, our water, and our local communities.

And the upside is tremendous; the downside risk we think is completely manageable; and it's our responsibility now as policy makers to insure that we're conducting the basic science and analysis and constructing policies based on that that insure that the resource is developed prudently. And that it's used efficiently.

So when we think about why methane matters, one of the things that I want to point to is the President's Climate Action Plan, where he called out the importance of reducing methane emissions as a powerful way to take action on climate change. As Professor White pointed out, methane is a much more potent greenhouse gas than carbon, particularly in the short term. And the challenge for us is to make sure that we put that methane to good use and derive an economic growth in providing energy, rather than having it released into the atmosphere.

So, to that end, the President directed an interagency group to develop a methane strategy for reducing methane emissions across the economy. Within that strategy that was released this past spring, the Department of Energy is very much focused on reducing methane emissions from natural gas systems; and that's what I'm going to talk about today. And the driver here is the understanding that our domestically abundant natural gas resources are going to underpin our economic growth and our quality of life for decades to come. And we're expanding our use across our economies, whether it's heating homes and buildings, industrial processes, or for large scale power generation. And we want to make sure that that expanded use of natural gas is actually a win for the climate, not just for our economy.

So our work is focused on looking at ways that we can accelerate reductions in methane emissions from natural gas systems. And at the Department of Energy, we're currently primarily focused downstream of production; so this is largely focused on the pipeline infrastructure that you spend a lot of time thinking about. And the Environmental Protection Agency is very actively engaged, looking right now at how to best reduce methane emissions from production.

So the Secretary of Energy, Secretary Moniz convened a series of round tables this past spring, that were really intended to focus a conversation downstream of production, looking at natural gas storage, transmission and distribution infrastructure. And get an understanding of what the data tells us, what we know about where those methane emissions, leakages are occurring, and what efforts are underway to continue to improve what we know. And the good news is that we know quite a lot. The data on methane emissions, leakages from natural gas systems has improved greatly in recent years, in some part due to the mandatory reporting required by the Environmental Protection Agency, but also due to actions that natural gas utilities and pipeline transmission companies have taken to get a better sense of where these leakages are happening, some of it driven by the types of regulations that you discuss here, the regulatory approaches that are driven from a safety perspective. So while there are always things that we can do and are continually underway, as Dr. White mentioned, to get better understanding of what leakages are actually occurring and how you true up these measurements that you do at the source of the leakage with these atmospheric measurements. So these top-down versus bottom-up analysis. Well, there's a lot of work that continues to go on to improve what we know. We know a good bit. And in this regard, I'll also give a nod to the work that Mark Brownstein and the team have been doing at EDF over the past couple of years; teaming with companies across the natural gas value chain as well as many academic institutions and national labs across the country. That has contributed greatly to the science in understanding what leakages are occurring.

And it's been very helpful, and that collaboration, in I think helping to center this conversation and bringing it out of conjecture or hyperbole into a science-based understanding of where leakages are happening so that we can focus our conversation on continuing to take actions to reduce those. So, thanks to Mark and the team on that.

The other thing the Secretary wanted to make sure that we had a conversation around was what are the leading practices? I mentioned the voluntary actions that companies have taken as well as, as you know, from a pipeline perspective, the things that you would do to reduce leakages are driven first and foremost by public safety. So getting an understanding of how pipeline and the distribution companies commitments to safety are actually are resulting in, how is that impacting the trend of methane leakages from natural gas systems?

And again, the news is quite encouraging there. There's a great deal of leadership happening among companies as well as since the President's call to action with the Department of Transportation in 2011 on accelerating infrastructure, modernization and replacement efforts, I think the data demonstrates that we're seeing great results from that in reducing leakages from the systems. And I know I'm sort of preaching to the choir on this one; because this is the work that you're focused on. So leading practices and industry leadership.

And then the third thing that the Secretary wanted to hear from the broad group of stakeholders that were convened is, what can DOE do to help this? And we'd like to be able to continue our work on measurement so that we can demonstrate what the trend is. Many of us believe there is a declining trend of methane leakages from natural gas systems.

And we want to know what we can do to focus the conversation on how we can accelerate that decline. Where can we invest smartly to accelerate the rate of leakage reduction, if you will. Because we know there are so many efforts that are already focused on doing that.

So some of the things that came out of the Secretary's efforts, where we're focused is, there's a request for information and comments on the possibility of doing a compressor efficiency rulemaking. There is also an effort underway with the Office of Fossil Energy, where I work; and the Advanced Manufacturing Office in EERE. We're having a workshop in Pittsburg in November that's going to look at the technologies available and needed for leak detection and repair for pipelines. And our focus here in on remote leak detection and measurement in particular, as well as alternatives to, for example, hydrostatic testing. So you wouldn't have to blow down these pipelines in order to do the testing.

And we're going to be taking input from the industry and stakeholders on what is next needed and what is the best type of research for the Department of Energy to be conducting in this area. And we have a new infrastructure R and D program that assuming Congress gives us all budgets that we very much hope to be able to kick off next year.

And all of that feeds into a partnership that we have elevated with NARUC, thanks to Chairman Honorable's leadership, and Commissioner Roberti; where we're going to look specifically at how our R and D program can contribute to improved safety outcomes and efficiency for our natural gas distribution infrastructure. And PHMSA is a partner with us in that as well. So we're very much looking to make sure that one, we know what the research gaps are and we've identified the ones where the Federal government should be working; and that ultimately, those research outcomes are useful in supporting regulator's efforts to enact good sound public policy. Whether that's with a regulatory requirements that PHMSA is considering from a safety perspective, or whether that is the efforts that NARUC commissioners are making to insure continued safe, reliable, efficient and adequate infrastructure; serving our homes and communities.

So we're in the process of receiving inputs on where that R and D should focus. We expect by the end of the year, well, not expect, will be required in December to submit a recommendation to the Secretary and he's very eager for us to get busy on it.

The final thing I would say is, when we think about reducing methane leakages across the natural gas system, again, the goal here is to insure the full promise of this incredibly clean and abundant domestic fuel. But when we think about how best to do that, I would offer that there are, along the natural gas value chain, there are a spectrum of levers or tools or approaches that can be brought to bear. And we're very much thinking about not a homogenous approach to that value chain. But what is the right tool and what is the right approach, depending on which piece of equipment, which operational model, which commercial or regulatory incentives that you're looking at.

And I raise this because as you all well know, when you work your way down from exploration and production to delivery and you look at pipeline infrastructure, the primary driver for investments in pipeline infrastructure, whether it's ongoing maintenance or new expansions; is primary driver is public safety.

And when we talk about public safety and how we best maintain our systems, that is informed greatly by the conversation you have here with PHMSA, and the regulations that come out of PHMSA that then get implemented at a State level as you all know. And those investments happen with the approval of State regulators around the country.

So we're very much interested at the Department of Energy of understanding how our technology and our research can be brought to bear to inform that conversation as well. Because we think that a prime driver in achieving the maximum benefits for natural gas is reducing methane leakages; and the way you get there is thinking about safety first. Which is what you're doing here in all of these conversations.

So I'm happy to take questions later, and thanks for a chance to be here. I appreciate it.

MR. WIESE: Thank you, Paula. I think you can see the relevance of what we're talking about. Paula, I think captured it very well. I'll use that as a segue way to talk about, just for a second abut Mark

Brownstein and invite him for his comments.

We've been in this conversation for a while; we've got people in the room, I know Bob Smith is here. Our R and D program has been involved in this for probably five or six years. And the EPA used to come to our forums and we would talk about these issues.

We funded a few projects in the area, but as I mentioned to the Committee yesterday, it just, we have an opportunity where a lot of things are coming together right now that can really kind of snowball on each other and allow us to make significant progress on multiple fronts at one time. I think Paula did a great job of capturing that; but one of the keys in her remarks were the science-based understanding. And honestly, I think we make progress faster when people start agreeing on the facts, and we get out of the hyperbolic realm. I was attracted to Mark on that basis. Mark was doing some really interesting work as far as I was concerned, in terms of trying to take a science-based approach to better understanding methane measurement and monitoring. I'll let him describe the work that they were doing, but it's sort of what attracted me to him and I knew this would be an issue we'll be talking about for years. So, he was kind enough, I invited him to join the Committee and he was kind enough to volunteer.

So Mark will be with us for a while and you'll get a chance to get to know him better. He introduced himself quickly, but for the record, Mark is Associate Vice President and Chief Counsel of the U.S. Energy and Climate Program at the Environmental Defense Fund, where he leads EDF's natural gas efforts. He specializes in utility-related issues, including transmission development, wholesale and retail electric market design, rate reform, power plant siting, investment. I would just say that Mark also, kind of interestingly, has a background in utilities.

So I think he understands the world that we're talking about on a daily basis.

So I'll close on my introduction to Mark, but also I apologize for saying, I forgot to mention, it would be discourteous of me not to thank Paula. Paula has been very helpful to us in trying to get other people mindful of the importance of the regulations that this group is entertaining and will entertain hopefully soon. But with Paula's help, we're really hoping to push that to you very soon. So these conversations will go on. So with no further ado, Mark, thanks so much. Appreciate it.

MR. BROWNSTEIN: Well, thank you. So I already moved up my train by an hour, so I will talk quickly. Cognizant of the fact that we do want to try to end on time, but if you'll indulge me for just a few minutes. We already had, you know, a great presentation on the science, so I won't dwell on this because I won't even be able to do it justice, given the excellent presentation we had. But this is just a way that we often use to try to represent to policy makers what we were talking about just a moment ago.

Methane is far more effective at trapping the Earth's, you know, radiation than carbon dioxide itself. Now one thing, the other thing that we do know about methane is that it does decay in the atmosphere much quicker. Right? This is one of the reasons why historically we have focused as a community on reducing carbon dioxide emissions. This is the gas that the basically stays in the atmosphere over many, many generations; some of it as we now know settles out into the ocean, but much of it stays in the atmosphere.

Methane disappears much quicker. But for the time that it is present in the atmosphere, and I should say by the way, that methane breaks down to carbon dioxide, all right? So it's not like it disappears entirely it turns into something else. But for the time that methane as methane is in the atmosphere, it is far more effective at trapping the Earth's radiation than carbon dioxide, and so therefore, right, we argue that a comprehensive strategy to deal with the climate issue requires you to address both CO2 and methane emissions. For all of the reasons we talked about.

This is a graphic from a paper that was released in December of 2013 in the Journal of Science, and it basically is making the argument, that you need to focus both on the long term climate forcer, carbon dioxide; and what we now call the short term climate forcers, methane, black carbon, others; but primarily methane. And that you get a synergistic effect.

We talked a moment ago about you know, what happens when more open ocean is exposed, you know, is exposed. You lose the reflective surface of the ice, okay? You get, you create more dark surfaces that absorb more solar radiation and reflect more back up into the atmosphere, right? The reason why we focus so much on methane is that methane can accelerate. Because it's a short term warmer, it can accelerate those phenomena. And so we talk about methane as a strategy to controlling the rate of warming. Carbon dioxide is ultimately controlling the total amount of warming that we see over generations. And that's the reason why we want to do both.

The other reason why we focus on methane is because, frankly it's relevant to the whole conversation of whether or not switching to natural gas is a good thing or a bad thing in terms of a climate strategy. My colleague, Ramon Alvarez, authored a paper with a number of his colleagues; this was in the proceedings in the National Academy of Sciences back in April of 2012, that tried to take a look at, what do methane emissions mean in the context of our efforts to switch to natural gas as a strategy to reduce greenhouse gas pollution overall. And the conclusion that Ramon came to is that, because of the effect that methane has, both in the short term and the long term, relative to carbon dioxide, the argument is that leak rates across the natural gas supply system are relevant, to whether or not switching to natural gas is good or bad strategy for reducing our overall impact on the climate.

Ramon concluded that a leak rate of 2.7 percent is about the breakeven point between coal and natural gas, for example. If you're talking about switching from natural gas from diesel to natural gas, which is happening in many parts of the country today simply on the price differential between natural gas and diesel fuel, at least up until recently. The leak rate has to be below 0.08 percent.

Now, there's a great deal of

debate right now as to what is the actual leak rate across the natural gas supply system. And what do I mean when I say the natural gas supply system? I'm really talking about from well to burner tip. So that's everything, right? That's the well, that's the gathering and processing, that's transmission and storage, that's local distribution and in the case of the natural gas vehicles, it's even, we've even taken a shot at trying to figure out what are the leak rates with the fueling infrastructure and with the vehicles themselves. Okay, and I'll talk more about that in a minute.

But suffice it to say, right, that EPA's current estimate is, is that the leak rate is somewhere about 1.2 to 1.3 percent. That's based on the greenhouse gas inventorying that they do. Much of that is based on reports that many of you in industry file. Now, many people think that the rates are higher than that. The basic concern is that we don't, other than these estimates that EPA have done, we don't really have good data, and so one of the things that we embarked on two years ago was a project to try to get better data. Paula alluded to this, but basically, we've got sixteen different studies that are in process. Some of them have already been published, some of them are well on their way to being published and they look at each point in the value chain. Production, gathering and processing, transmission and storage, local distribution and as I said, we even have a study now looking at vehicles and fueling infrastructure.

Each one of these studies is being led by a major research university, so in this case, University of Texas, here, Colorado State University, here, Colorado State University, Washington State University. This one is University of West Virginia. In each case, we were partnering with relevant players in that part of the business. So for example, on local distribution, we've been working with our friends at National Grid, with Xcel, here and transmission and storage, Kinder Morgan has played a role. And what we're doing is, is we're getting access to sites and we're doing basically bottom-up measurement. And each study is being done using a protocol that is peer reviewed by science, by scientists. The results, the interpretation of the results are also peer reviewed. All of the results wind up in papers that are published in peer reviewed scientific journals. So we're trying to keep this as straight down the middle, as fact based as possible.

At the same time, we understand the bottom-up studies, going out to actual facilities and doing measurement may not give you the full picture. You're only as smart as what you know. You could only be as effective in understanding the footprint of an industry based on bottom-up measurements when you have a reasonable understanding of all the places where leaks could occur. But to gut check our work, we have also been doing overflight work, where we outfit aircraft with methane sensors and they will fly over a basin and we use these top-down measurements to compare to our bottom-up measurements. And sure enough, we see a difference.

When we do the overflights, we see leak rates, you know, in the 2 to 4 percent range; where the bottom-up might suggest a leak rate closer to what EPA's estimating. So what accounts for the difference? How much of that is difference in methodology? How much of that is overflight's capturing sources that the bottom-up studies don't capture? We're in the process now of working with NETL in what we call a synthesis paper; taking a look at all the data that we've collected, both from the overflights and from the bottom-up work to better understand why those differences in readings occur. And to try to create a synthesized view of what the overall emission rate across the region would be.

We expect that most of these papers, if not all of them, will be submitted for publication by the end of this year and therefore hopefully, all of them will be out in the public domain within the first or second quarter of next year.

At the same time, we are also looking at what we currently know about methane emissions, where they come from and the technologies that are available to address it. Our view is that yes, we can always get better data, but we already know enough to know that there are opportunities to reduce emissions across the system, even if you accepted EPA's, what I'll call low end estimate of 1.2 or 1.3 percent. That's telling us that we still have work to do, if we want natural gas to be a low carbon alternative to oil or coal.

And so, that begs the question, well what can we do? So we commissioned ICF

International to do a study in which they looked at a range of reduction opportunities again across the industry, the technologies that were currently available. We asked them to make no heroic assumptions about cost of technologies or effectiveness of technologies. They worked with over forty different participants in industry to ground truth their assessment of the technologies and the cost. And what you have here is a cost curve. This is in dollars per ton of CO2e reduced. So that's the metric. The width of the bar is the magnitude of the opportunity. And I'm sorry it's a little hard to read, but for example, this wedge here is substituting high bleed pneumatic devices for low bleed pneumatic devices.

Here, this has to do with going from wet seal compressors to dry seal compressors. And what you notice is, is that for some of these opportunities, there's a net payback. In other words, the gas that you're saving at four dollars an Mcf, make it profitable to engage in these reduction opportunities. These actually imply that there's some additional cost to industry. But we would argue that this is marginal at cost to industry. The ICF study concluded that we could make a 40 percent reduction in methane emissions across the natural gas supply chain, well to burner tip. 40 percent reduction for a penny per thousand cubic feet of gas reduced. A penny. Now that's not to say that any one company's compliance costs would be a penny. But if we're sitting here as policy makers, if we're thinking about here what our cost effective opportunities to solve the problems that we were just talking about, this is pretty damn cheap.

Now I will note that some of the most expensive stuff you can do in this panoply of, is reducing leaks on local distribution. So if you were doing this in step ways, step fashion order, you would spend much more of your time early on the production side, on the gathering and processing side on the transmission and storage side; the more cost effective opportunities are there. But even still, changing out or tightening up or metering and regulation stations yields a cost of $41 per ton of carbon reduced. That's actually pretty cheap when you're talking about carbon abatement.

So local distribution is not the first thing you would do, if you're talking about reducing leaks across the natural gas supply chain. But if you're taking a step back and you're looking at all of the things that we have to do to get to a low carbon economy, it's still a pretty good bet.

For that reason, we have spent a lot of time thinking about how to do a better job of understanding emissions from across the natural gas supply chain including local distribution. I should say parenthetically that one of the things that we hope our studies do in addition to gaining greater insight into the total amount of emissions across the natural gas supply chain, is the studies are also helping to pioneer new ways of monitoring methane emissions, which are good, I think, not only for the science, but we hope ultimately lead to process improvements in industry itself.

Better measurement techniques lead to better management techniques. We often say, you can't manage what you don't measure; and so improving measurement is a way to improve management. The work that we're doing now with Google is an example of that. We have outfitted three of their street view cars with methane monitoring technology. And we have been driving city streets monitoring methane emissions across utility systems.

I'll quickly walk you through. This is a screenshot of the methane maps that we have produced to date. You can see here, it's a little hard to see, this is Boston.

Staten Island got cut off here. This is Indianapolis, so the first thing that I can tell you is, Indianapolis is an example of the system that has spent the last twenty years investing in replacing its older cast iron pipe. They're largely done. As a consequence, when we drove their system, we got four leaks. Boston, older infrastructure, much bigger challenge. I should note that, both national grid and regulators of Massachusetts are acutely aware of this and taking steps to address it. But it's a big challenge. Older system, more leaks. The good news is, is that we know that with investment we can address this problem.

The second point I make about these maps is, is that we not only worked to map leaks; that in and of itself is not particularly innovative. We know that the industry already does this. The value that we think we add with this work is, is that we've worked with Colorado State University to develop an algorithm that helps bin the leaks.

And why is that important? Because our view is, is that aside from knowing the inventory of leaks, if we can do a better job of sizing the leaks, right, we can being to think in a more sophisticated way about where to deploy limited capital dollars. If you only have so much money that you can spend in any given year for leak repair and replacement, number one, by all means, let's fix the ones that are immediate safety problems. Utilities already do that. But to the extent that you can go beyond simply a safety approach, focus your resources on those leaks which are greatest; and thereby work down your inventory getting the, pardon the expression, the biggest bang for the buck.

We have worked very hard to express this data, not in terms of safety, but in terms of climate. So for example, if you went to this site and you clicked on what high means, you would learn that a high emission, here's an example of one. A red dot. The emissions coming from this site is the equivalent of driving a car more than 9,000 miles every day. That's the greenhouse gas pollution equivalent of what that red dot means. The yellow dots are between 9,000 and 1,000 miles, I'm sorry. The orange ones are 9,000 and 1,000 miles, the yellow ones, is basically the equivalent of driving a car between 1,000 and 100 miles a day. So even the quote-unquote "small leaks" represent big greenhouse gas pollution reduction opportunities.

The map, you can click down and you can see with specificity where the leaks are and again, the sizing. So again, if we were advising National Grid on where to devote their first dollar in fixing a leak, we'd say let's get after this one over here. And again, the whole idea behind these maps is first of all, to raise public awareness. We often find that when we're working with public service commissioners, they're challenged by the fact that they get folks coming into rate cases who say, hey, why are we putting any money into the gas system at all? I'm senior on a fixed income, I'm a large commercial or industrial customer; I don't want to spend one dollar more on rates than I have to. Our view is that you can't ask the public to invest in new infrastructure if they're not aware that there's a problem to be solved; so part of the reason for these maps is to raise awareness so that people understand the challenge and also the opportunity that's in front of us. But then also to use this technique to help the utilities develop strategies that are very easy to explain to customers as to why we're devoting money here as opposed to here or here.

And so again, the whole idea behind our work is yes, let's better understand the magnitude of the problem. Let's understand the opportunities that are in front of us, but let's also create some methodologies that can help us do this in the most cost effective way possible. Thank you.

MR. WIESE: Okay, thank you very much, Mark. Trying to be mindful of the need for a break, but I think what we'll do is with your permission, we'll go through at least, we have three quick presentations from stakeholder groups, starting with Paul Roberti. And with your permission, we'll try to go through those quickly and then take a break. It seems like logical and we'll come back and quick questions for people before we move on in the agenda. But thank you all.

So if I can, I'll introduce Paul Roberti to those of you. I don't have a formal bio for Paul, but I've known him for some time. Paul's a Commissioner from the State of Rhode Island, but as importantly to this committee, Paul is the head of the Pipeline Safety Task Group at the National Association of Regulatory Utility

Commissioners. So Paul and I run into each other all over the place. I know Paul has worked with Colette for a very long time and some of the other Commissioners on the committee on these issues, and I welcome him. Thank him for coming.

MR. ROBERTI: Good morning. Thanks, Jeff for that introduction. It's really good to be here today. Again, my name is Paul Roberti; I'm a Commissioner with the Rhode Island Public Utilities Commission, and I serve as Chair of the National Association of Regulatory Utility Commissioners, their subcommittee on pipeline safety, and I'm speaking in that capacity today.

As you know, much of the pipeline safety work at NARUC that we've accomplished over the last five or six years is because of Colette's leadership and passion for this issue. And I think we have accomplished a great deal in the last five years, and I personally want to thank her for all that she has done for the organization in bringing this issue front and center in prime time before the organization.

CHAIR HONORABLE: Please forgive my interruption, but I would have to share that with you, because you've been an incredible, incredible spokesman for the Association and advocate. Please forgive the interruption, but I had to share that with you.

MR. ROBERTI: Thank you. Now before I get started, I should probably provide a little bit of background on NARUC as an organization. We are a national association representing more than two hundred utility regulators in all fifty states. Our members are responsible for assuring that consumers pay fair, just and reasonable rates for safe and reliability service. We are a nonpartisan, consensus-driven organization that brings together our members so that we can educate and share best practices between and amongst the fifty states.

With PHMSA, NARUC, NARUC members play a key role in insuring natural gas companies deliver their product safety to consumers. The majority of our state pipeline safety inspection work force personnel are employed by the respective public service commissions. Through our meetings and committees, NARUC gives staff and commissioners across the country a venue to share best practices and lessons learned so that we can assure that the utilities we regulate are putting safety above all else.

We share with PHMSA the mantra of safety first; but there are environmental benefits to running a safe and efficient system. For the safety inspectors, their core responsibility is making sure that the regulated companies are following applicable requirements and constantly checking for leaks throughout their systems. Having spent time with inspectors and commissioners over the last several years in my role as Chair of the subcommittee, I know personally how committed we are to safety and insuring that the utilities we regulate are operating a safe and reliable system.

No one understands more than our inspectors that leaks in general are problematic; but we also understand that not all leaks are created equal. For instance, the leak in a densely populated urban setting is very different and poses a much greater risk than a leak in a cornfield. So when it comes to methane emission reductions, we believe that safety programs can and do have an environmental benefit on the natural gas system as a whole. After all, a safe system is a clean and efficient one.

Over the last several years, nearly all states have focused on accelerating the pace of pipeline replacement. Thirty-eight states now have some kind of rate mechanism encouraging utilities to proactively replace and repair outdated infrastructure. And those that do not already have replaced their outdated pipes or they have other approaches to doing so. Either way, these programs provide utilities with dedicated revenues that are being used to target the highest risk segments of the system. This insures that the leaks with the potential to cause the most damage are fixed at the outset, while providing enough resources to replace other sections as needed. These programs are an important element of our safety programs, but the onus is still on the utilities to operate and manage their systems safety, no matter what kind of regulatory mechanism is in place.

I am confident that we are making progress at replacing the outdated infrastructure, which I have said, translates into environmental benefits. NARUC is also involved in some Federal efforts aimed at reducing methane emissions from the pipeline system. As we heard from Dr. Gant this morning, President Honorable and I also have participated in the White House-sponsored roundtables on methane emissions from pipelines. We expressed to them what we are expressing to you today; safety is job number one. NARUC members are economic and safety regulators, but again, the more outdated pipe we replace, we will inevitably make the system cleaner and more efficient.

An important outgrowth of these discussions was a new arrangement we signed with DOE on natural gas infrastructure modernization. The partnership is still in its very early stages, but the concept is for DOE to provide and fund resources, grants, workshops and other forms of technical assistance to NARUC and its members, so that new technologies and practices for measuring system leaks and making repairs can be put to work. There's not a lot more that I can offer on that front, except to say that we are looking forward to working with DOE on what I think is going to be a very important and productive initiative.

To conclude, going forward, I see NARUC, PHMSA and our inspectors at the National Association of Pipeline Safety Representatives continuing our focus on the safe and reliable operation of the nation's natural gas infrastructure. NARUC and State agencies have been at the forefront of safety regulation for decades and all of our members are pursuing policies aimed at replacing the highest risk pipes first. On behalf of NARUC, thank you for the opportunity to speak to you today, and I certainly look forward to answering any questions you may have.

MR. WIESE: Thanks so much, Paul. Paul is actually a good example, between Paul and Colette, I can't think of two Commissioners I would rather work with. Honestly. I have worked with both for a long time. I think the work that we have just been talking about is going to rely on us working together and having good partnerships. And so strengthening the relations as these two have done for the past five-plus years, is going to be critical to our success.

So, with your indulgence, we've got two more. I have asked both presenters if they would be succinct, so that we can get to you a break and come back for some Q and A. But maybe we'll start, in deference start to Sue. Just ask Sue to talk a little bit about what gas distribution is doing in this area and then Chad, I've asked to speak a little bit about what gas transmission is doing, just to kind of queue it up. So Sue?

MS. FLECK: Thank you, Jeff. Sue Fleck with the Gas Committee. The natural gas distribution companies have been doing a great deal around emissions reduction, not on purpose. It's about safety and driving safety. But certainly the voluntary efforts through the EPA STAR programs for more than decade have had many companies engaged voluntarily doing things above and beyond pipeline replacements, to drive down the amount of gas that's being emitted into the atmosphere accidentally. But some of the things that we are really focused on going forward around, you know, coupling safety with emissions reduction is modernizing of distribution systems. We've talked about it on many different forums, but it's really all about getting that older leaky pipe out of the ground. When I look at the maps that Mark just showed, Boston versus Indianapolis, I have Indianapolis envy. I want Boston to look like that. And when I look at the maps, I know those are cast iron mains and I know that they're capturing little leaks at every joint. I wasn't surprised to see it; I'm very disappointed, but certainly we're all driving the modernization to improve safety and you get that great emissions reduction benefit along with that safety improvement.

In addition to that, we are laser focused on damage prevention programs across the industry. It's something that we've talked about in these committees over and over again. Every damage, I mean, any damage releases a lot more gas to the atmosphere than an unfortunate leaking cast iron joint. So you got to drive damages down to nothing, and we're doing the best we can around that. We're working on new and increasing methods to reduce the amount of gas lost during blow-downs. As we replace these systems, the old pipes have to be blown down for the new pipes to get in. So we're using draw-down compressors and trying to drive some research in that area to find other ways to capture that gas and put it back in the pipe. We're improving on our directed inspection and maintenance programs at gate stations and reg stations. We're using composite wrap, we're looking at using composite wrap to improve pipeline defects rather than blowing down the system to perform a permanent repair. So we're looking at ways to do that. Obviously, getting rid of the high bleed pneumatic devices. The bang for the buck there is pretty tremendous and I think a lot of companies on the distribution side have done that through their voluntary efforts in the EPA STAR Program over the years. So we've already kind of gotten pretty far ahead on that.

Repairs. We can't replace all the pipe. I can't replace all that pipe you saw in my map in five years or ten years; it's going to take me twenty years, so in that interim period, we're going to use some of this volumetric measurement on leaks to figure out which ones to repair in the meantime. We're going to try to do that really well. And we're hoping to be able to get to move forward with opportunities to line pipe instead of having to replace it all. When we talk about those larger diameter cast iron mains that are 24 inch, 48 inch; these big gigantic pipes. Replacing them may not be the right solution, but if we're going to go with lining methodologies then we need to find some way to be able to report that differently and get credit for those efforts where the existing EPA reporting programs would still count that pipe as legacy pipe, as cast iron or bare steel or whatever.

So I think there's some real opportunities here to continue to modernize with replacement programs where appropriate, repair, until you can get that replacement done. Drive research to help us get new lining methodologies, better blow-down control methods, and better measurement of leakage, so we know where to point our resources. And then to continue with our inspection and maintenance programs and damage prevention programs.

So that's kind of really, I'm talking fast, I've got my New York hat on today. But what I'm trying to indicate here is distribution companies are doing a lot, have been doing a lot, and will continue to do a lot to drive safety; and along with safety, you get that great environmental benefit, so thank you.

MR. WIESE: Thank you.

MS. FLECK: Was that short enough?

MR. WIESE: Yes, that was great. Excellent. Chad?

MR. ZAMARIN: Thanks, Chad Zamarin with Cheniere Energy. I'll try to be even shorter. Because I think one key message at least that I've seen in the transmission industry is that a targeted approach is important. So I think that the presentations earlier about data is key. What we see when we look at a transmission system is, that there is a less than 0.01 percent leakage and emission rate across transmission volumes.

Leaks are down over 94 percent over the last thirty years, so the work that's been done that the PHMSA team and the industry has been partnered on, it has been effective and when you take a step back and look at the transmission industry, we see that the vast majority of remaining emissions come from the compressor stations. It's from either operational blow-downs that, if you've ever seen one, will put to shame any leak that you're going to try to attack. It's really remarkable, actually, the amount of gas that we have to vent at times to do certain activities.

So when we think about regulations, it's a different facet to consider that, for example, we're going to be spending a lot of time on the testing of legacy pipelines. And to pressure test a pipeline often requires a blow-down or evacuation of that pipeline, and that's a significant emitter, much more impactful than anything else that happens along a pipeline system. And key to keep that in mind as we think about activities that we're going to be driving from a regulatory perspective.

So for us, the two main factors, so of that 0.01 percent of emissions that occur more than 70 percent of that is due to operational blow-downs and exhaust emissions from compressors. So if we focused on two key areas, it's how can we better, more efficiently operate transmission systems to reduce evacuations of pipelines and how can we continue to improve the emissions, controls and efficiency of our compressor fleet. By far, the most impactful.

So with that, I will also mention just one last thing. The interstate transmission companies are going to be putting out a guideline. There's a standard referred to as a Directed Inspection and Maintenance Program, an EPA recognized methodology for targeting your investment and activities to better reduce emissions and while most operators do that already, one of the efforts that are underway inside of INGAA is to put out a formal guideline that will help operators to understand the data, target the activity and better reduce emissions. That's it, thanks.

MR. WIESE: Very good, Chad. Thanks so much. And then you, Sue. One of the things I'm hoping, by queueing this discussion up and inviting your questions in just a minute, Colette and I have conferred, by the way, and decided that if you have to take a break, you're going to have to take it when we're going to go to Q and A, wrap this panel up before we take a formal break. And she is the boss, so I'm listening.

But one of the things that I'd like to continue the conversation in future meetings, I would like your advice on how to focus the conversation. Because listening to Chad and listening to Sue and others here, it's the role of technology. What's the role of technology? And some of you have heard me, my soapboxes were really grossly underinvesting in that. You know, we really need to step up our game in R and D. The technology can be part of the solution that leads to a far more efficient outcome?

I agree with you entirely the opportunities instead of blowing down fifteen miles of pipe how to capture that, how to reduce that impact is important. So let's at least one of the topics we'd like to talk about in the future is the role of technology and how can we kind of amp that up? Thank you.

CHAIR HONORABLE: Thank you, Jeff. And I'd like to thank all of our presenters. Wonderful, wonderful presentations. A lot of great information. Thank you, Professor. I made lots of notes. All right, now's your time. Please put your tent cards up if you have questions for any of the speakers. And I see Don can't wait. Go right ahead, Don.

MR. STURSMA: Surprise, surprise,

ain't it? Don Stursma, Gas Committee. As an Iowa farm boy, I can attest that the digestive systems of cows and horses have gaseous byproducts. But whenever I hear animal contributions to methane, raised as a climate change issue, there's, the first question I have, which I need to set up a little bit; is that for much of the history of land life on Earth, we've had vast herds of herbivores roaming the planet.

I know enough about dinosaur digestion now, I know the Jurassic was a very noisy, smelly place. So is there any, has anybody attempted to figure out whether domesticated animals produce a methane level that's any way outside of the normal background level for having herbivores on the planet?

CHAIR HONORABLE: Sounds like a professor question.

DR. WHITE: It's a great question. And it's always a struggle to figure out what's natural and then what is anthropogenic on top of that. The short answer is that globally, there's a lot of domesticated animals; and when we add, we've added large numbers. That has, and when we add those domesticated animals, we certainly add little methane producers.

Probably the question then would be how many methane producers have we removed from the system, in the natural sense; and that's a harder number to get a handle on. But we do know that when you add cows and when you add other ruminants, you will add methane to the atmosphere. So the short answer to your question is we know we're adding more methane. We don't, the balance between the loss of the natural methane producers and the growth of the, those that we use for food, that's a really interesting question. I don't think we know the answer to that.

CHAIR HONORABLE: All right, Rich, and then Jeff.

MR. WORSINGER: Thank you. Rich Worsinger, City of Rocky Mount, representing APGA. Excellent, excellent presentations; thank you so much. I think just as I looked around the audience, you had captured everybody's attention. Obviously these are topics we all read about and hear about and it was great to have, especially for you Professor, a down to earth explanation of it. Thank you.

Just two comments. The public gas industry typically repairs all the leaks that we encounter, whether they are Class 1, Class 2, or Class 3 leak. We've just learned through the years that it's best for our customers. Even if there's that Class 3 that we just have to monitor every six months, we typically repair them. So we're ahead of the curve I think, on that.

Second thing. Just to I guess, a point of information. Lost and unaccounted-for gas, as we call it in the gas industry, that does not mean its gas leaks. A lot of that is simply the accounting difference between the large meter, large sophisticated meter at our supply point, our gate station; and then the various meters at our customer homes, which are not as sophisticated. A lot are not temperature compensated.

And one other thing that DOT can help us with, I believe when we report our losses, sometimes they are not a loss; it's simply the difference, the accounting difference between one year you had what appears to be a large loss. The difference between when you're billed from your supplier and then the month later when you bill your customers, and sometimes it appears you make gas. It just balances everything out. But if I'm correct on this, DOT, if we are reporting it as a negative loss, has us report that as a zero. And that could help, if you allowed us to actually report that as a positive number, it will indicate that it's not as large a number as you think it is.

CHAIR HONORABLE: Thank you. Jeff, and then Cheryl.

MR. WRIGHT: Jeff Wright, FERC. Dr. White, that was a great presentation. One thing stood out in listening to Dr. Gant's presentation, you know, it articulates the administration's position and where we're going. What tantalized me at the very end, you said, what is a sensible energy policy? Do you have, I mean, in a very brief time, do you have a couple idea there?

DR. WHITE: No. No. Policy is not my area of expertise. I can, as a scientist, I can help provide policy makers with the facts and information they need; and I hope they use those facts and information.

I think though, that the, one of the problems we have is that we, and we always seem to like to blame the boogeyman, you know? Ebola's a nice example of that. I don't see, a hundred people a day die from the flu. So there are big problems and then there are the flashy problems. And I think the argument today seems to be about flashy things, the bright, shiny objects. And so I guess my one policy contribution would be, let's go back to the basics and let's actually look at what's really out there. And then try to do something about that. Privately, maybe I can unleash a whole bunch of stuff on you, but as a private citizen, but no.

CHAIR HONORABLE: Professor, your restraint is quite admirable. We don't see that too often around here. Cheryl?

MS. CAMPBELL: Cheryl Campbell with the Gas Committee. Not a question so much as probably more of a statement. First of all, I just cannot agree more that the gas in the pipes is the best place for it. That's my favorite place for it. And we talk about that a lot internally.

We've worked a lot with EDF and others on the data side; we're very interested in getting the numbers right and understanding that information so that we can all make the right decisions. So any work that we can continue to do to get the data and understand the data correctly, we're very much interested in collaborating and participating with.

And Jeff, we're very interested in more technology to help us continue; so I appreciate PHMSA and others trying to, you know, push that R and D and that technology side. Frankly, I've been known to say regularly, I need technology to help save me in a couple of areas, and I think this is one of them that we're very interested in. But I also want to throw one comment out that's just a perspective for Xcel Energy. We're a combo utility and we have limited resources. I mean, we talked about that before. And when we look at our carbon footprint, less than 1 percent of our carbon footprint comes from our gas systems. And we are a top ten gas utility in the U.S. on the basis of size. So we do spend a lot of time focused on our other issues around carbon footprint and have done a lot in the last five or ten years to reduce that, continuing to do that going forward. And we do participate in EPA Gas STAR and all those voluntary programs.

I think we've made a lot of progress, but we do still struggle with that dynamic, right? Of the vast majority of our carbon footprint on our issues are not related to our gas systems at all. And I would suspect that most other combo utilities have similar, have a similar balance.

CHAIR HONORABLE: Thank you. Carl?

MR. WEIMER: Carl Wiemer, Pipeline Safety Trust. I think one of the gorillas in the room that I get addressed with all the time and I'm going to try to put Dr. White on the spot a little bit. Is we've heard a lot of things. The presentations were great. I'm glad to hear that all the utilities are doing what they can to keep the gas in the pipe; that's important.

EDF's doing some great work. But I know even EDF has come under criticism from others within the climate discussions about if all we're talking about is keeping the gas in the pipe, we're kind of ignoring a larger problem which Dr. Gant addressed about insuring the full promise of our fuels. Well, the full promise at this point seems to be, I was intrigued with your map to begin with, where you showed India and China kind of in the dark. Well, the full promise right now seems to include export of these fuels to light up China and India. And I wondered if you had an opinion about the wisdom of that.

DR. WHITE: Okay. Can't get me to step in something here, huh? Yes, as a fellow human being on the planet, I find it very difficult to say to India and China, you cannot industrialize. And industrialization today, given the technology we have, is largely driven by fossil fuels. So just from a, I guess a fairness point of view, I would argue that it's very difficult for me to understand how we could do that. How we could limit that. On the other hand there's certainly capability of developing alternative technologies, being a leader in that; and then exporting those technologies. We should be an exporter of wind technology and solar technology, etc. Other countries are doing that and making a lot of money doing it. And we're not. So I think we're leaving some money on the table there in terms of industry.

But the basic answer to your question is that for, I can't see a good strong reason for saying no we should not export that, other than, as you folks know, these are limited resources and there's, some strategic reasons for keeping what we have. Or at least keeping a lot of what we have, in order to keep our energy future brighter and safer and easier to handle. Because we all know the disruptions can handle, so. There's a couple of sides of that, but. Does that answer your question?

MR. WEIMER: Partially.

MR. WIESE: To be continued. Now, we're going to have a lot more discussions on this and be happy to have Dr. White back. I found that fascinating as well and I appreciate your contributions. I know we have one more comment. I'm stepping in temporarily as the Chair to acknowledge our friend Rick Kuprewicz for his question.

MR. KUPREWICZ: Friend, okay. A couple observations, excellent discussions and presentations this morning I fully support those. A couple references I think to kind of put everything in perspective from a public, and the public has a hard time understanding that.

First of all, it's not illegal to leak natural gas. End of subject. It's not even illegal to leak hazardous leaks in natural gas, okay? And so that's kind of the mind frame that you have to kind of put everybody on all sides of the fence on. Because to be fair to industry, some are way ahead of this curve; others are trying to get up to it. So it can be a real challenge if you're trying to have that debate. A lot of this was uncovered in terms of the hazardous leaks, the many years of discussion and the development of DIMP regulation.

And finally, the definition of a hazardous leak in that regulation was a, it didn't just happen. There was a lot of interaction that was going on there, a lot of push back, give; and even today, there are operators despite the great advances made in the DIMP efforts, who still don't map their hazardous leaks. And I think they're rare, I hope they're rare; many of others in the room here are probably way ahead of that curve. So that's a big place that you have to move, whether you be the public, PUC, a rate payer, or a company.

The other thing, and I've said this many times, is in all this technology discussion and all this, hoping for a magic bullet? One, safety isn't free nor is it a blank check to go ask for two or three billion dollars and you can't defend it. So as a public person, I have to just kind of watch everybody. I live in Microsoft Country and they always live on software's great. Okay. Well, why is it not bug free? And they're making great, they're making billions of dollars, so I'm not taking that away from them. So be careful in trying to set up the public that you have this magic bullet. Given the challenges of you'd need to understand where your problem is and whatever.

I really like the discussions I hear again, I like to think of a success story involving many people over the years in the DIMP of the collaboration and the constructiveness. I cannot emphasize the importance of trying to solve a problem working together; knowing that no one solution will get you there. You've got to watch for what I call junk science; and I didn't see any of that today. And I'm not making those kinds of things. But it's an easy, dangerous trap if you're looking for the magic bullet especially.

And I love the analogy of the gravity example. I've seen that used in cases where people were under oath, and experts, and having to have them point it out, well you just committed something called perjury. Or you've just, you've got to explain why you repealed the law of gravity. And those people were under oath. So it's an easy trap to fall into. So I think there's some real willingness on all sides here to move this ball forward, but understand the ballgame's just kind of getting started here and you may be trying to work out the rules. That might take a while.

So I think the public needs to understand while these are generational issues, there's no real quick fix here and if someone comes across saying we have one, they're going to probably get challenged. Anyway, I appreciate the extra chance to have a presentation today, I thought it was very informative. And thanks again.

CHAIR HONORABLE: Very good. I don't see any other tent cards. Okay.

MR. BROWNSTEIN: I know I've probably overstayed my welcome, but I just want to offer two thoughts. Since we're on the topic and since Jeff teed up the idea of so what can we take away from the conversation? I fully agree that a focus on technology is important. As we have talked about, it's not just technology to fix leaks or new technologies that prevent them, but it's also the monitoring technologies.

I think it's incredibly important. But I go back to the conversation we were having yesterday about management systems being a technology. All right? And one of the things that we're finding universally across our studies is that you can basically put this into two buckets. Do you have the right technology in place to minimize emissions? And then do you have the right management systems in place to make sure that operation and maintenance is being done?

There is a, the evidence has increasingly showing, that what I'll characterize as poor operation and maintenance practices leads to emissions. You'll hear in the popular press about fat-tail emissions or a few sources are responsible for a majority of emissions. That's largely because we're finding out in the field that valves get stuck open and they stay open for two or three days until someone finds them. Maybe someone doesn't even find them. And it's that sort of stuff. So if we could make sure that as we talk about technology, we also go back to the conversation we were having yesterday about management systems and operation and maintenance. I think we will make a big contribution. So that's number one.

Number two is, I can't emphasize enough how important it is to get a regulatory approach. The rule that's currently stuck in limbo, we need to move that forward; in particular we need to focus on gathering lines. I hear anecdotally repeated from producers, the gathering lines are inadequate to the task. This is not only a question of how much gas we're flaring as opposed to putting to constructive use. But it's also the fact that gathering lines are either undersized for the volumes of gas that are currently being sent through the system and that is causing pressure relief valves to be working overtime.

Or we're risking catastrophic failure of gathering lines because they're being over pressurized and they weren't meant for what they're being currently asked to do. The fact that we don't even have a good inventory of gathering lines in this country is like incredible to me. Even more so now because so much of this gas production is taking place in populated areas. And I only invite some of you to come join me for a tour of the Marcellus and you see all these gathering lines running past people's farms and small communities. I mean, gas production is no longer a out in the hinterlands kind of deal. And the gathering lines are in close proximity to where people live and the fact that we don't have a handle on this is just a huge challenge.

So I would just, for the record, would urge that whatever needs to happen in order to get forward progress on your regulations as it relates to gas infrastructure that we need to really get a move on with that.

CHAIR HONORABLE: I'll give Jeff

the last word.

MR. WIESE: Hear, hear. That's all I have to say is hear, hear. So.

CHAIR HONORABLE: Brian?

VICE ADMIRAL SALERNO: Thanks. Actually, I have a question; it's probably an ill-informed question. But in all of the discussions, what I'm hearing is there's a great societal need, you know, to solve the problem of emissions. But also it's a relatively small percentage of the volumes that are transmitted.

So I guess my question is, is there, is are the percentages so small, and I heard 1 percent, that it doesn't really represent a significant economic loss to the operator to be a compelling reason to invest in the R and D and the technology to capture it. So what's the driver here? Is it a societal need to prevent the emissions because of the issues that were discussed on climate change? Or is there an economic reason to invest in fixing this problem? And I haven't really heard anything that really addressed the economic component.

MR. BROWNSTEIN: So a little, so let me just give you, so the ICF study, which I commend to you, suggested that 40 percent of the reduction opportunity that they identified, had a net payback for industry making the investment. Okay? 60 percent by extension, 60 percent was a net cost. Okay?

Now, of that 40 percent that had a net payback, then you have to ask yourself the question, what's the opportunity cost? Because we often get asked this question, and sometimes industry even offers this as a reason why we don't need regulation. Look, hey, we produced a product, our job is to get the product to market. We have every incentive in the world to deliver it. That's true up to a point. But the fact that you can earn an 11 or 10 percent return fixing a leak, has to be taken into consideration; if you could take that same dollar of capital and put it into drilling a new well that gives you a 30 or 40 percent return.

So yes, both activities are profitable, but the opportunity cost causes you to put the capital into drilling the new well as opposed to investing and maintaining your existing infrastructure. So even where you see that the opportunity is quote-unquote "profitable" there's a reason why companies wouldn't invest the money. And that's the fundamental reason why we think at the end of the day, you need a regulatory approach; whether it's through safety standards such as PHMSA could do or EPA is currently considering regulations under the Clean Air Act.

CHAIR HONORABLE: I'm going to call on Sue. I think she has, I thought you guys would want to pipe up, here.

MS. FLECK: Yes. I think, and this is Sue Fleck, representing the Gas Committee. I think this safety driver is innate in the companies, in most of the companies, distribution companies across the business. We want to keep the gas in the pipe because we want to sell it; but we want to keep the gas in the pipe because of the risk to the public, the risk to our employees, and safety regulations help us do things in a more programmatic way. But we would be doing the right thing largely in absence of regulations. The environmental benefit is a different thing. It's kind of a layer on top and it's a great thing that's moving forward. But safety drives us and it's in our DNA. It's, we want to fix those leaks, we don't want our product in the atmosphere and we are, most companies, most employees and most companies are laser focused on doing that, so.

CHAIR HONORABLE: I'll call on Chad. Thank you. I would also say, we should remind ourselves that we're talking about different buckets. The production bucket, transmission, distribution. So you've heard, I think, a distribution point of view. Chad?

MR. ZAMARIN: Thanks. Chad Zamarin, Cheniere Energy. And yes, I just want to reinforce that I fundamentally disagree with the concept that we would trade activities based on just economic drivers. We are absolutely, I think we've said it as an industry, committed to zero from a safety perspective.

We're also, as a company and I think generally as an industry, committed to environmental stewardship. And that's not in the context of whether it's a good profit center. That is the fundamental ticket to do business in our industry and I think we generally believe that being a good operator, a safe operator from an environmental and a safety perspective is just the cost of admission to get to compete for the projects that earn us a return. So I fundamentally think that if we focus on regulations and activities around this table, I would dispute that that would be a bad framework to apply to how we need to regulate. We should regulate based on what makes sense as an industry from a safety and environmental perspective; not because we believe that decisions aren't going to be made from an economic perspective.

I think we've come a long way from those days. Certainly, I think that we've proven that in the safety arena and I think this conversation that we're starting, we should start collaboratively in good faith from an environmental perspective as well. So I just would say that that's how we make those decisions and I think also to Colette's point also, most of us around this table are not involved in upstream production; we're not kind of competing internally against different places to put our money. But again, I still think that I can tell you I've never sat in a room and thought about whether or not I could make more money, you know, not spending, you know, not trying to save a life or minimize a release versus going and putting that investment somewhere else. Thank you.

CHAIR HONORABLE: All right. I know you all will be back after our break, but before we do--

DR. GANT: Chairman Honorable, Chair Honorable, can I have a beg for you for the last, last, last word very briefly?

CHAIR HONORABLE: Oh, indeed.

DR. GANT: I'm sorry.

CHAIR HONORABLE: Dr. Gant, of course.

DR. GANT: Just to extend out some of this last discussion and Jeff's question about what's next. And the point raised about management systems. We're very interested, in addition to our technology work, in the conversation around how do we take the data that we're gathering and apply it in a way that allows us to improve our decision making about operational practices?

And this gets down to very unsexy

things like work force scheduling, how you schedule crews, how you get to more modernization, get beyond the leaks. So we're very interested in this. And this is a big data question, right? We're gathering a lot of data.

So to the point, how do we bring it to bear to actually get more out of the current investment dollars we're spending? Because we're spending a lot already. And so this isn't a, this, the implication is not that nothing is being done; it's how can, to Mark's point and Cheryl's, there's competition in the board room for capital. We all know that. So let's start with how we get more out of what we're already spending, given that that has been accelerated.

So I just put that call there, we're very interested in this, and this is a key part of the conversation that we're having with NARUC and PHMSA; is again, how do we get more out of what we're already doing. Thank you.

CHAIR HONORABLE: Thank you, and that really is a great note on which to end, because I think it brings us back to a point that maybe Rick or someone made about collaboration. And so I think something we share around this table is doing what we do better. So thank you for helping us wrap it up.

With that, we will take a break until 11:15; but before we do that, I want to ask you to help me thank this great panel. It was a great discussion.

(Applause.)

Well done. I think we could have gone on another hour. But in the interest of time, we'll take a break now and return at 11:15.

(Whereupon, the above-entitled matter went off the record at 11:05 a.m. and resumed at 11:18 a.m.)

MR. WIESE: I'm going to reconvene

the meeting. Colette had to step out for a call that she couldn't avoid, so she said she would be back as soon as she can; and she's deputized me to act in her stead. I know it is scary for people, but fortunately my deputies are next, my trusty deputies. We're going to be talking about the subject Performance Metrics. You heard, correct?

MS. DAUGHERTY: Yes.

MR. WIESE: Okay. You heard a lot of discussion about data and fact-based. We have been working with the industry, some of the advocacy community and others to try to establish a suite of performance metrics that we could agree to and we have asked Alan and Linda to come in and give us an update on that project. So with no further ado, I'll turn it over to Linda. Thank you.

MS. DAUGHERTY: So we had a great opening this morning. We've talked about very controversial issues. This will be a step down in controversy, I hope. But you heard several people talk about the importance of the safety of pipelines and how that leads to, if you can keep a pipeline, keep the gas or the liquid in the pipeline that leads to overall safety and good environmental stewardship.

Well, what we're going to talk about is a task that Jeff assigned to Alan and I last year. He said to us, he would like us to identify six to twelve metrics that reflect the performance of the national pipeline infrastructure. And the part in the parens and the regulator was added by the teams later on that said, hey, overall performance needs to look at how well the regulator is doing their job as well.

So, by the way, we're going to move really quick. We have way too many slides for the time allotted; and this is going to be a tag team between Alan and I, so we'll just keep rolling. So when we started looking at the various issues, we identified that we needed to look at the infrastructure performance, regulatory oversight and we needed to consider what data we have and what data we needed in the future. There were two teams that were developed: One has been much more active, Alan's gas team. The liquid team has intermittently been active. Recently we had some proposals from individuals that I think we're going to be looking at.

I'm going to flip through this. You've seen this before; basically the composition of the teams. We had regulators, we had industry representatives, trade association representatives. We also had some pipeline safety advocates, which we very much appreciated their input. An interesting fact is that performance measures are the topic of the day; everyone is interested in measuring how well an entity does. Companies have performance measures for their companies. PHMSA has measures for how well PHMSA is doing. As a regulator, when we look at how well the infrastructure is doing, we look at both national trends and we look at operator trends. We use data in a variety of ways. These measures primarily look at the national level approach. The liquid team started with identifying what the big questions are. What do, if we want to get six to twelve metrics to describe to all stakeholders how the hazardous liquid pipeline infrastructure is doing, we want to know what the big questions are. What do people want to know, and then try to figure out what metrics would provide answers to that question. And then, do we have the data that supports those metrics? And if we don't, what are the gaps? What do we need to fuel long range? You want to talk about the gas here?

MR. MAYBERRY: Yes. In light of the gas team, which I led, we started with the data we currently collect and then we identified, what are our objectives? And then what's the data available? And screens that you would use for the data and you'll see that in some of the examples we'll have. And then what are the normalizers? That's a topic we'll talk about, too; because that's one we had a lot of debate about. And that's really how we came up with how we proceeded. In the end, we kind of end up in the same place, though.

MS. DAUGHERTY: Yes. That's the ironic part; it just kind of migrated towards each other.

MR. MAYBERRY: Right. And I just, I might add to that, we were lucky enough; I know we met, we had a pretty good productive day when we last saw Carl Weimer one day over at the AGA office. Christina, my co-chair, we were just able to get a lot of work done. So we did identify a number of measures that we wanted to get your input on. And by the way, we have a lot of slides here; we're not going to go through every one, but it's there for you to look at outside of this meeting. But we just, to establish the record.

MS. DAUGHERTY: And the slides are not final nor are they completely agreed-to by the teams; but they are arranged in a way where you can see similarities between the liquid and the gas.

MR. MAYBERRY: And also, we're going to mention too, that we talked about the membership of the teams. Also within PHMSA, I know Linda led the liquid team and then I was the gas. We also had representatives from PHMSA on the team as well, and I think here today we've got Kate Rosenberg from our office, the Chief Safety Officer, who is represented on the gas team. And the liquid team, too.

As far as, and we went over this, this is a review of last time. It's different types of data we collect. We'll just in the interest of time, move on. As far as the objectives, now this is where Linda and I threw what we, what I will call a conference committee; we kind of merged the objectives that both teams had, which were very similar. First off, protect the people and the environment. I think on the gas team, we called that protect human safety but it's the same, same picture there. On the gas side, we had maintain pipeline safety. We're going to show examples under each one of these objectives of what the measures would be. Protect high consequence areas through integrity management. And then monitor, smart modernization of infrastructure. And then last but not least, effective regulatory oversight. That one continues to be a challenge. Linda and I have some, we have some examples here today but that's one that we're really pushing to get, to show some good measures on.

MS. DAUGHERTY: We also have, before we go to this slide, we also have a lot of questions for the advisory committee; and I don't think we're going to have sufficient time to really vet these out, so we would, as we present them or as we mention them or as other things come to your mind, please do write them down. Alan and I and the teams would like to really mull over your advice and thoughts on this. Some of these are kind of thought-provoking. So the first part we talked about of that set of objectives was protecting people.

MR. MAYBERRY: Yes. Protecting people, or human safety. What we've got here is an example, just from the very top of one of the metrics we came up with, involving incidents. And these are what we classify at PHMSA as serious incidents or incidents involving a fatality or inpatient hospitalization.

And this just shows you the trend from 2005 to the last full year. We have normalized it, incidents per a thousand mile; and then also have a breakdown there. We anticipate that this metric, if it ends up being a final metric and we're kind of, this is kind of one we came up with; would be a static metric that resides on our website. Initially, all these metrics would be ones that are just static on the website. Our idea down the road is that within these metrics, you could click, do a lot of clicking to get down levels to get deeper into the data. Here, obviously you have the overall metric of numbers or rate of incidents, and then the causal factors there over time.

MS. DAUGHERTY: By the way, some of these do not have the causal factors, just in the interest of time. It's something that can be readily supplied.

MR. MAYBERRY: Right. And another thing, by the way. We debated, there's just so much data out there. Even though we discounted saying, okay, we're not going to consider that for this dozen or so metrics, didn't mean that we weren't going to use it, it just wouldn't be a top tier metric.

What we're talking about here are

really top tier metrics. Another one on gas transmission and protecting human safety or people, were significant incidents. This is a larger grouping of incidents that happened out there. These were basically reportable incidents. Again, normalized per thousand miles and the time of constraint was 2005 through 2013.

Again, looking at, this is one that was a later metric we developed, I know, working with Carl and his people, is what I refer to as the bathtub curve. It looks at the vintage pipe and the incidents that occur, the rate that occurs in the particular vintage pipe. As you can see, there is a higher occurrence of pre-40's, in pre-40's pipe and then later, modern pipe as well. And that reflects in what we're saying, as far as incidents that happen out there; either early in the life cycle or very late in the life cycle.

Another one, protecting HCA's; now

this is another objective through integrity management here again on gas transmission. We have rates on the left hand chart, significant instance outside of HCA is represented by the red and then inside HCA is represented by the blue. And then the causal factors, working down as well. Another one. Same objective. Looks at number of repairs made. Now you can't read that, I apologize for the--

MS. DAUGHERTY: Fine print.

MR. MAYBERRY: Fine print. But we have immediate repair conditions, which are the, or one year conditions which are the blue which we started collecting in 2010. And immediate repair conditions, represented by the red. Again, this deal with integrity management and repairs that are made. This is not leaks, or it could be leaks, but it's repairs that are made within the HCA or outside of an HCA. Or within an HCA, sorry.

MS. DAUGHERTY: One issue, when you look at repairs made, you have to keep in mind is that integrity management is cyclical. ILI runs, various things are done on a periodic basis. So when you see the up and downs on the repairs, that may be because certain runs were not conducted in a period of a few years.

A company, for example, may run a ILI tool once every five years. Well, they're going to have a peak in when they do the repairs. So you're going to see, it's not a consistent steady flow year after year. Although on a national level, you would think it would eventually kind of merge down to a nice little cycle; you're still going to have some carry-over from the initial cycle requirements when operators must to their initial runs and then do it every five to seven years.

MR. MAYBERRY: And another thing you don't see with these charts right now are narratives explaining; you just hear us kind of giving an initial perspective, if that.

The assignment right now, the gas team is to assign narratives to these charts and okay, what is this telling us? What does this mean?

Okay, and this is again with high consequence areas. The breakdown of ILI detectible and ILI or non-ILI detectible leaks that are repaired in those areas. ILI detectible would generally be something like a corrosion leak. ILI non-detectible would be say, third party damage. Just examples of those. Again, going back to 2005. We kept consistent with that time frame of going back to 05.

Protecting people, another objective. This relates to, I mean, similar to what we started with. Incidents on gas distribution. Again, similar to transmission. We have this per million miles. I mean, with gas distribution, your normalizer is per million miles. We had a lot of debate over how to do that, but ended up with million miles just because the numbers become more reasonable that you're dealing with on the Y-axis there.

MS. DAUGHERTY: One of the things, I'll jump in and mention, you will have seen a lot of charts that talk about significant incidents. That is a standard term that we use on our website relating incident results. We did not use that here. We separated significant incidents have fatalities and injuries, plus an environmental compact on the liquid side, which might be a spill volume release. And there's also a cost issue. The cost of the impact of the incident. And so, in these particular slides, both teams have a proposal which we're all reviewing about considering separating that. Looking at the impact to people, the impact to the environment and we haven't yet looked at the cost side. I'm looking at Alan, I'm not sure if the gas team has done that.

MR. MAYBERRY: We did.

MS. DAUGHERTY: But that is a

change and we do, the liquid team has a proposal from the liquid industry to not include cost.

MR. MAYBERRY: By the way, just as a general metaphor, on the gas side, as you might expect and as you've probably seen before, excavation damage is the leading cause in those pie charts we have there. Similarly, on gas transmission, actually excavation damage was the leading cause here, too now. We are dealing with very small numbers, especially on the gas transmission side, as far as numbers of incidents. So you're dealing with ones, tens, very small numbers over the network.

MS. DAUGHERTY: Okay, so here's something that's really interesting. When you look at the liquid incidents involving a fatality or inpatient hospitalization and you normalize it per thousand miles on the liquid side, what I did is I took the thousand miles, which the gas team did. And we're trying to come up with metrics that people can look across the industry and say, okay, it's normalized by a thousand miles here, it's normalized by a thousand miles on gas side. The rates look a little awkward. And one of the questions that we'll pose her to you in a minute is about normalization; whether a thousand miles or a million miles, what is best for the reader to understand what's actually going on relative to the infrastructure?

So here you've got rates. Again 2005 to 2013, for the hazardous liquid lines. National level. Okay? So, I mentioned this, you've also got to look at context and think how the reader will understand what's actually going on. So, a moment ago I showed you the rates. For the liquid side, look at these numbers. These numbers are fairly low. Is it easier for the reader to understand the impact of the hazardous liquid pipeline infrastructure to people by listing the number of people that were either a fatality or an inpatient hospitalization?

So to be specific, in 2007, there were fourteen people that were either fatally injured or ended up in the hospital because of a hazardous liquid incident. Versus the rate we had a few pages back. So to put it in context, this whole issue of trying to explain what does this actually mean. The lighter gray color is the actual number of people that died due to lightning strikes over those time periods. I got that from a NOAA website. So when you look at the overall impact to people, you can see the relative amount of fatalities.

Now, I can tell you, if you were one of the fatalities that occurred, if your family member was involved in one of those pipeline incidents, that other lightning strike doesn't matter. I'm not saying this to take away from the impact; we have to get to zero. But it does put it into context. So the question to the group is, do we want to consider using context measures when we put things up on our website?

I'm going to move right into protecting the environment. Now when we traditionally think about the impact of pipelines on the environment, we automatically go to hazardous liquid pipelines. They can contaminate with spills from liquid pipelines can contaminate the soil. They can contaminate water with some pretty tragic incidences. And very serious context to our sensitive areas. However, we heard this morning about potential impact to the environment from gas lines, and I think Alan will talk about that in a minute. So many of you are going to look at this and you're going to say, well that's a funky number up there.

Hazardous liquid accidents over 238.1 barrels. How the heck did you come up with that? That is actually the ten thousand gallons which is referenced by other agencies; we just picked that out of the air. It could be fifty barrels. It could be 200 barrels. It could be 500 barrels. We don't know what the right number is. So obviously, input would be good. Our current reporting criteria, we have a 5 gallon, we have a 50 barrel, we have different definitions. But for reporting on a national infrastructure level, what would be appropriate? Look at that beautiful trend. I had to tell you, I should have cut that down to keep with the 2005 through 2013, but I couldn't help myself; I thought that was such a nice downward trend. I kept it.

The other issue that we'll be talking about is what do you exclude from the reports? If you were looking at impacts to soil and liquid, you might want to exclude CO2, HVL's. HVL's traditionally don't have a whole lot of impact on the soil or waterways. You can have an anhydrous ammonia spill that kills a lot of fish, but traditionally, generally, the major impact is from the non-HVL. So the question is what do you include and what do you exclude?

I already mentioned here, another major issue on the liquid side; the other proposal we have is should we separate releases within an operator's control versus releases into the long distance right of way? For example, if a company spills a thousand barrels of gasoline on the right of way, it might get into a river. It might be close to the public. It could have a very close impact to the general public, okay? If they spill a thousand barrels into containment at a pump station, does it have the same impact? And is it important to distinguish between those two? Another question for the advisory committee to think about and provide feedback to us on. This is the normalized significant accidents. That is the people and the environment piece put together. You see that the trend is just kind of wobbly. This is a rate, this is not the actual numbers. This is per thousand miles.

There is a proposal, I already mentioned this earlier, there's a proposal to remove the significant definition and just talk about fatalities and injuries and then also a release volume.

So just to recap and talk about this. The cost factor. If we produce metrics on our website that say this is how the hazardous liquid and the hazardous, excuse me, natural gas pipeline infrastructure is performing, should we include cost? Should that factor in or should we just look at the impact to people and the environment? Also, I mentioned a moment ago, liquid releases should be excluded. CO2 or HVL's? And then the onsite/offsite. And Carl, as a note, I had kept in my mind a comment you made, and I think it came up earlier. Is this whole idea is, let's say you do have a thousand barrels that spills into containment on a pipeline operator's property. You're going to have fumes, you're going to have vapors and that can migrate off site.

If you have containment in the vicinity of the public. In other words, in the middle of a city or close by. Some of those fumes are going to migrate. You can have migration of impact. How do we capture that? How do we think about it? What is the overall impact? Something to mull over. You want to add?

MR. MAYBERRY: Yes, I mean, really what we, as far as the gas team really worked with the data we had and we didn't really consider the cost factor. I mean we, down the road we're looking at, you know, additional data that we need to collect and consider. And perhaps cost could be one of them.

MS. DAUGHERTY: The one bullet I would like to point out here, we had a question about how could we develop a metric to assess operator's response time. That was an item in our last reauthorization. This was an issue that's come up on several major pipeline incidents, San Bruno, Marshall, Michigan. How long does it take an operator to respond to an incident and how can we minimize that? That has an impact on the impact to people. Well, we know that might be a good idea to report on. How do you capture that data? What should we be measuring? What are the ticks that we start counting? Something to think about.

MR. MAYBERRY: By the way, just a two second time out. I know we're feeding you with a fire hose and as I recall from some of our meetings when we flip through metrics and go a little bit too quick, it's like a lot to take in. So we realize we're feeding you with a fire hose, but you know, outside of this meeting if you have input, we'd welcome that.

MR. WIESE: I wonder if we might just not send their presentation out to the members and give them some time to think about it in a calmer moment, too.

MR. MAYBERRY: Yes. Because there

was at least one or two meetings where, hey, there's feedback and we're moving a bit too fast, because we're working on it.

MR. WIESE: Who said you we removing too fast?

MR. MAYBERRY: You said move fast, though. That's the charge. Okay, and this one really relates to methane emissions if you will. Related to leaks eliminated. This is a number that's reported to PHMSA; here again normalized for a thousand miles. These are at least repaired in the distribution system; again going back to 2000, well goes back to 2005 but in this case we started collecting for the hazardous leaks in 2010. And then these are causal factors for the pie charts that cover the cost for those. Again, corrosion is a big one related to leaks eliminated.

Maintain pipeline safety excavation damage. A key issue, this is the leading cause of injury and harm to people in all of pipelines, so here's a measure for that that we felt was important to have there. Per thousand tickets shown on the, of course, this is one where we have two normalizers per thousand tickets on the right Y-axis. And then the left is just the number of incidents involving excavation damage.

MS. DAUGHERTY: On those, we'll just flip real quickly through a bunch of slides here that looks at HCA's. You know, this is, how do we provide additional protections for high consequence areas? So reassessment intervals, how often are they assessed? What about repairs? And then a moment ago I mentioned that, assessments go in cycles. You see that in the numbers. It's a natural and it shows up.

The other thing is, any time you produce data, it's subject to misinterpretation. People won't know what it means. And so we have to do a very good job of providing the narrative of what this does say and what it doesn't say. Does it mean that, you know, a bunch of companies were slacking off in 2011? I don't think so.

MR. MAYBERRY: This just relates to the inventory of what's out there in the trends obviously modern infrastructure is rising or you know, the gradual decline in older infrastructure. Again, moving on. The amount of bare protected, unprotected steel. For transmission. Here's for distribution, casts and wrought iron. We already have this information on our website, by the way. Many of you are familiar with.

MS. DAUGHERTY: And that applies to the conversation we had this morning.

MR. MAYBERRY: Right.

MS. DAUGHERTY: We've got to the two. Here's the two interesting ones. How do you measure, how effective a regulator is? You could probably say whether you think that PHMSA is doing a good job or is not. How do you measure our effectiveness? Well, we struggled that with ourselves. So we have up there compliance actions. Well, what does that really tell you? You look at those numbers, they go up and down. Does that tell you if an operator, excuse me, if that trend is going down, meaning fewer enforcement items; does that mean operators are more compliant or does that mean that PHMSA is not doing as aggressive or thorough inspection?

What does it mean? You don't know. Jeff, says don't go there, don't go there. So what, think about what you would think is a meaningful measure of regulatory performance. Congress asks us every year, or they used to ask us every year, how many civil penalties did you assess? What does that mean?

Civil penalties, if you have a major pipeline accident and you have harm to people. You can have one incident that can really skew your overall results and it can be a large civil penalty. What does that mean relative to everything else?

The other item is how many times do we send people out? Okay, what this tells you is that we send out people to do a lot of inspections; it doesn't tell you how big the inspections were. Right now we have inspections that may run from five days to a team of five people that spend eight weeks with an operator; depending on the size of the system and what we're looking at. So they vary. So what information is useful to you to evaluate whet her PHMSA is doing its job or not? Things to think about.

MR. MAYBERRY: Our goal is to get this done by year's end, as far as finalizing these metrics. Right now, we're assigning narratives to the metrics, at least the ones you've seen on the gas side. The gas team does have a meeting right before the Pipeline Safety Trust Conference on November 19th. Hopefully, we'll address final loose ends, but you never know and hopefully by that point, I expect by that point, we'll have enforcement metrics to have a good robust discussion on. And then the liquid team is still looking at the acceptability of what you've come up with so far. And again, by year's end is our goal.

MS. DAUGHERTY: That's it.

MR. MAYBERRY: So anyway, our goal is to give you an update. We had spoken about this last time and that's about it.

MR. WIESE: Great, thank you, Ms. Daugherty and Mr. Mayberry. I still want to know who said you were going too slow, so. Since I gave them the end of the year to finish this up and we keep checking back in, I know they're working really hard on it; I'm just teasing them for a moment in public. And I myself have a lot of views on some of those measures.

I'll just say one and then I'll go to anyone who wants to ask, make a comment or ask a question. I've long wrestled with this notion of enforcement metrics as a measure, performance measure; and the reason for that is, I believe the right goal for enforcement is zero. And that means it's very, until you talk it through, people get shocked by that. But if the system is performing, people are protected, they are safe, they are not being injured, we're not losing product into the environment. The operator's fundamentally, probably in compliance. Our goal is to protect people and the environment. So we had a four hour argument with the Government Accountability Office on this and I lost; and they put out a report saying that we ought to be tracking our civil penalties. Well hey, I issue a couple more civil penalties and to them it's a success. But to me, and I think Brian shares our pain; I'm not sure that that's really societally that that's a very effective measure. So I'll get off my soapbox and invite the members of the committee if you have a comment or question for these two. I'll start with Chad.

MR. ZAMARIN: Chad Zamarin, Cheniere; I thought it was a really good presentation and I just, to your comment, Jeff, I think we all, I like the idea that the proof is in the output. And so the statistics you were showing on actual incidents, you know, that's something that we're all accountable for and that's how I think we measure ourselves.

It's hard to think of inspection as a leading indicator that we're inspecting safety into the system. I think generally that's not kind of the case, so I like the idea that those more operational metrics be both for your sake and ours. So when people measure us as an industry and as a regulator that that's really what matters. What's the end result? How many tickets did you issue, but how many people did we send home safe every day. Thanks.

MR. WIESE: You'd be surprised though, on the operational measures how people will gauge their regulator's failure by an industry failure. You know, you failed. How did you fail? You know? As I point out to them, we don't operate pipeline systems. We're here as a deterrent, but we don't operate the pipeline systems. The responsibility is, I know you guys believe that and own it as the operators. The regulators to try to shift behavior. So I think Sue was next?

MS. FLECK: Sue Fleck on the Gas Committee. Just two comments, basically: Appreciate the update and it looks like we're moving in the right direction, but it does look like you have predominantly lagging indicators and not so many leading indicators. So that's something that you want to work on, because maybe that's why we see a gap sometimes in the performance. But the indicators aren't showing why. So I think you need a better mix.

And my second comment is really a

suggestion. Look at safety management systems. We're looking at safety management systems and we're looking at the different risk control categories and we're trying to find metrics that tell us how we're doing in each category; and it's helping us kind of quit measuring the stuff we can measure and measure the stuff we ought to be measuring. So you're trying to use existing data and I applaud you for that, because you're collecting it, you want to use it; but look at the safety management system stuff and it might trigger some ideas of other metrics that would have some real value around evaluating the performance of a company and why they get the results they do. And I think there could be some value there. We're finding it.

MS. DAUGHERTY: I completely agree with that. As a matter of fact, I know the liquid team did try to look at leading indicators. You know, ideally we'd be at predictive; but we're not there yet. But some of the things that were brought up were the near-miss reporting, you know? How do we get there? We're going to have to collect data. What kind of data do we collect on that? Who holds that? Who holds that information? Does PHMSA need to collect it or is there another mechanism to have someone else collect it? How do we get to those where we can have uniform information?

MS. FLECK: That may be a way to engage the NAPSR folks and have the states they're collecting some of that kind of information and have them bubble it up to the State pipeline safety regulators. I don't know, I'm just spitballing here, but there may be an opportunity there to engage them.

MR. MAYBERRY: On the gas team, we did look at leading indicators and actually we still have to have more discussion on some of the indicators, like assessments, integrity management assessments by IOI and other methods like that. We've had a pretty robust conversation about that. We do have the repairs made which you could say is like the leading indicator, the way of integrity management.

MR. WIESE: As I shift over to Chuck, I'll just add in, remember the goal of this particular project was to identify six or twelve measures that will be across everyone. Kate and then Chief Safety Officer's office at PHMSA are also looking at a lot more measures, working with us, that we're going to put on the PHMSA website. But we expect these measures to be transparent to an operator level. You should be able to see how the operator is doing on that, once we agree on that metric. The rest of them, I think we all realize are a little loosey-goosey, you know? It's really hard to hold people accountable to some of those measures, but they're worth looking at, at an industry level. So with that, maybe I'll turn to Chuck.

MR. LESNIAK: Chuck Lesniak,

liquids committee. Just a couple of responses to some of the questions you posed. And I'll take a look at the presentation and maybe provide some more feedback. But on the whether or not costs ought to be included, I think yes. I think it's an important management tool and it's also, those costs get passed on to the rate payers. And so, I think that's important. It's not that you're prioritizing costs over public safety or environmental protection, but I think it's an important management tool.

Whether or not spills within an operator's property should be included, I think yes. There are air impacts. Just because you're in containment doesn't mean that there's not a release. One the largest environmental contamination incidents I've ever deal with, all the spills were within the operator's property. There were pipelines coming into a tank farm, there had been decades of releases. They had ten feet of product on top of groundwater. So, and a lot of those were spills within containment. Their containment was really crummy.

Response time? Yes. It's one of the biggest indicators, in very large releases, response time is so often related to that. And so it measures how effective a pipeline company is operating their system. And the inspections are tough. I like the concept of inspection days, inspection man hours, that kind of thing. But I like what you're doing. I think you're going in the right direction. And I think there also ought to be a narrative to go with each of these that you put up; because, to provide context. Some of these numbers change dramatically based on regulatory or policy initiatives, and I think it provides that context. It's important for the reader.

MR. WIESE: Okay, thank you, Chuck. Mark?

MR. BROWNSTEIN: So let me second

the idea that spills within an operator's property should definitely be included. The fact that containment catches the product and therefore you don't have a bigger problem is really of no consequence in the same way that you say the air bag deployed and I wasn't hurt. Right? But you still had a crash. And so I think you need to look at this. If part of the goal here is to create not only public accountability, but also give companies information that they can use to drive process improvement. I think you have to go right to the source and hold them accountable for that.

The other point that I would make is, I apologize, I walked in a little late and I saw that slide up there that compared, you know, leaks to, or spills to lightning strikes. I'm not quite sure what the point of that exercise is, but I don't think it's a very useful one. You know, comparing, you know, comparing something to an act of God, okay? I don't think is a very useful metric.

You know? We have to all live with acts of God; there's nothing we can do about that. But we can definitely do something about the rate of discharges to the environment or spills. And I think the point is that we are trying to drive this down to zero. And to that widow, to that child who's now motherless or fatherless, it really is of no consequence that the risk of lightning strikes are that much greater.

MR. WIESE: And I think Linda acknowledged that. That slide was about fatalities from different sources and I think we sort of agree with you. We wrestled with that forever. The point of it is, she was asking is it useful in a context setting to say it's not the greatest risk on the face of the earth, and that's how much effort do you put into it. But I think we do recognize and we have not ever used those publically for the same reason that you just said.

MR. BROWNSTEIN: Yes, I don't

think it's, I don't think it's PHMSA's place.

MR. WIESE: Right, yes.

MR. BROWNSTEIN: Much less a smart thing to do politically.

MR. WIESE: Right. I will say to both Chuck and to you on the issue of containment. I want to make sure that we weren't unclear. We do intend to report that; but what we were asking was in the top six or twelve measures, should we do ones into containment if in fact the job was to protect the public and the environment. I'm with you that some of them go bad, but other tank farms have a liner underneath in it, impermeable liner. There's a lot of money involved in cleaning that up, and it is a failure that should be measured and monitored. The question was, should it be one of those top six or twelve metrics that are reported transparently. But they should definitely be tracked. So I think with that, wait a second, I think Carl was jumped, yes, I think Rick was up there. And Chuck will put his down. Thanks.

MR. KUPREWICZ: Just a couple observations. You have to be real careful about the response time. I think it's important that you have some sort of parameter there, because people are going to ask that anyway. The problem is in the qualification. And then I want to be sure to inject here, it's easy to overreact to response times. If you have a conflict, this is for the liquid pipeline operators, between emergency response plan and an oil spill response plan. Which one gets priority, folks? Do I have to answer that? Okay.

You may be in a situation where you are not going to be allowed to enter an oil spill response teams. They're that dangerous. And so a lot of the public doesn't understand that, but if you've got a choice between saving lives or spilling oil, you don't want to be in either one. But you better be focusing on saving lives, first, because you get into all kinds of complications there. And there will be places where you just cannot send, the nature of where it is or what it is; and so that's going to be something you're going to have to wrestle with as you try, if you move that metric up to response time, which sounds like you do need to do that. But it's going to be a real Pandora's box here. Thank you.

MR. WIESE: Thank you, Rick. Maybe we'll go to our friend here, Ron.

MR. MCCLAIN: Ron McClain, liquids committee. I thought it was very interesting presentation. I have to say that a couple of those terms and trends are puzzling. I'm sure you're puzzled by the data, too; but you know, I hear a lot of focus on trying to get these metrics right, and I think that's important. But it's also a case where the perfect is the enemy of the good. And we should be able to pick a few metrics that are meaningful and normalized for either throughput or mileage. And I would lean toward having six rather than twelve, Jeff. But just pick some things that are very meaningful. Let's not set in stone that you can't come back and learn and improve. So I think the meetings you have scheduled with gas and liquid is a very positive way to go about that. Lean toward fewer, but also it's not set in stone. So we just pick them and move on and see does that tell the story or not.

MR. WIESE: Thank you, Ron. And I note your use of the phrase meaningful, for those of you who don't recall, we have recommendations from the National Transportation Safety Board to develop and deploy and use in shaping individual operator's performance, a suite of meaningful metrics.

MR. MCCLAIN: And they are required as part of the Safety Management System as well.

MR. WIESE: Agreed.

MR. MCCLAIN: You have to build those in to measure yourself. So this thing kind of fits together perfectly in the end.

MR. WIESE: It does. Carl?

MR. WEIMER: Carl Weimer, Pipeline Safety Trust. I just wanted to say first off to Linda and, that I didn't script my fellow public members today. I'm the only public member on both the gas and the liquid data teams and it was quite heartening to hear some of the public members haranguing on some of the same things I have been saying. So there you go. I was the one that was kind of pushing for some kind of a metric on regulatory performance, because I think that's only fair. And I don't think we've really come to any agreement on what that metric would be some of the things about field days and inspection days might be valuable.

The one reason I just wanted to make the committee clear on why we thought that was important is, PHMSA's put up some data on metrics on like the State Regulatory Authorities. And if you look at that, it's pretty kind of unfounding because you'll see some states that will find hundreds of probable violations and then there will be kind of a corresponding number of compliance actions. You'll see other states that will find hundreds or even thousands of probable violations and then it lists no compliance actions. So it seems like probable violations to compliance actions is some sort of a metric that tells you something. I'm not sure what at this point, though.

MR. WIESE: Okay, I think I'm going to; I'm going to exercise my privilege as Chair of closing this out and adjourning you for lunch by saying that we've had that conversation, Carl, with the states for the past couple of years. The states operate in a different manner than we do. I should be clear, just so we're all on the same wavelength, we are not economic regulators. We are safety regulators. So we're going to lean in to that. The economic regulator has the opportunity of inducing a change in behavior in other ways. And so the states are right now working on that. I think you invited some to your annual meeting. By the way, Carl's annual meeting is in New Orleans, the 18th and 19th?

MR. WEIMER: 20th and 21st.

MR. WIESE: I was close. 20th and 21st. It's always a good time. I would encourage you, if you haven't thought about going down to his meeting, to do so. We'll be webcasting the meeting for Carl so that if you can't go, you can see a lot of the stuff that's happening. But I think the states are going to come forward in your meeting and talk about some of what they're doing that's not a civil penalty, but is still really an enforcement and a change in behavior. So, at any rate, I'm going to exercise a little discretion here since the Chair is not here. She might get even with me later, but I'm going to beg Dave Lehman's indulgence. Dave's back here somewhere. And say we'll take up oil spill response plans when we get back here at, I'm also going to cut it a little short, 1:00 o'clock. How does that sound? Very good. Thank you so much. See you at 1:00 o'clock.

(Whereupon, the above-entitled matter went off the record at 12:03 p.m. and resumed at 1:05 p.m.)

MR. WIESE: Okay, welcome back everyone. We'll get going so that we can get you out in your appointed flights and trains. So I think, I really don't have much to add other than we're going to try to be a little more punctual than I was when Colette had to step out for a teleconference. Things went to hell and of course Jeff of course mismanaged the meeting, things went long. So I'm looking forward to having her back here. I'll turn it back to Chairman Honorable.

CHAIR HONORABLE: Thank you, Jeff. You really know how to make a Commissioner feel wanted. I hope you all had a great lunch. Thank you for those of you who returned promptly. I'm sure the stragglers are en route. We'll begin now with what is listed on your agenda as Agenda Item 3, Oil Spill Response Plans by David Lehman.

MR. WIESE: With your permission, I'm going to set Dave up and then let him do the presentation. That way, Carl can beat on me or instead of Dave. Oil spill response plans, Dave will kind of get into a lot of what we have done to sort of modernize this program.

But my two seconds are to segue way into this for Dave is to say that this is a program that we have administered for over twenty years. We have worked pretty studiously over time to make it a process. And I think the process, to be honest with you, went stale. Our world has changed in that twenty years and this didn't keep up.

After Deep Water Horizon, the administration asked every agency to go back, anyone who touched oil, go back and look at how you're doing this. One of our reauthorization hearings from right around that time, must have been 2010; one of the Congressmen in one of our jurisdictional committees made Administrator Quarterman promise him that she would go back and look through the whole program. We did that. We engaged some people, outside expertise, we began talking with the other agencies to find out what they were doing to benchmark what we were doing and where we needed to fix it.

And it's my pleasure to introduce Dave Lehman. Dave sort of had a lot of this dumped in his lap and I think he has just done a stellar job of really pulling it out of the spiral. So with that, I'll turn it over to Dave.

MR. LEHMAN: Thank you, Jeff. Again, Dave Lehman, I'm the Director of the Emergency Support and Security Division. I have been in this position permanently for about nine months now. And when I came to be the Director, Jeff basically says, what we're trying to do is revisit, revitalize and reengage with the oil spill response plan. So I'm using Jeff's words here; and the flow of this will go towards to what we're doing in each of these areas. I'll touch upon each of those areas, some of the accomplishments that we've had, and some of the challenges we still have to face.

In revisiting it, Jeff had mentioned a lot of that was done when the work had already begun, when I showed up, to really review and re-engineer the Office of Pipeline Safety's oil spill program. In revitalizing it, we did dedicate resources. We also had a backlog, so we brought some additional resources to bear on a temporary basis, to get rid of the backlog. And then we're also re-engaging. As Jeff had mentioned, we had moved towards working with our other Federal partners; also the regulated industry and the response community. And we're also getting out there and participating in more oil spill response drills and exercises.

In revisiting it, we came in and we found that there was over, PHMSA had over eight hundred plans in its inventory; and when they really went through the plans, we found that nearly four hundred of them were unique plans in the sense that they weren't duplicates, they weren't plans that had been superseded by others. And so we found that there was four hundred plans that needed to be reviewed. And when I showed up, there were twenty-four of those plans that had been reviewed completely from the end to end. We streamlined the program and made it repeatable procedures, and that's through standard operating procedures that we created. They're in near-final form right now. We are still working on a few of the little kinks with them, but.

The previous program had nearly a hundred questions they would go through to try to answer whether or not the oil spill response plan was appropriate in the sense that it met the OPA 90 Oil Spill Act of 1990. And also the regulations found in 49 CFR Part 194. And what we found is, they were asking several. Questions and looking for areas that were really outside the scope or outside the bounds of the regulations. So we really streamlined those and focused on what the regulatory requirements were.

And then we also, in the process of it, determined, looked at performance measures. Not as the performance measures that we were discussing earlier this morning, but in the sense of what's the appropriate number of people, how much time should it take to review the plan, what are the key items that must be in the plans. What are areas that, if you will, are gray areas in the regulations. The regulations, for instance, say that you need to have training, everyone has to be trained in the plan. Does that mean that the plan needs to have a section on training? The regulations are gray there. Fortunately, all the plans do have sections on training.

So those are areas that we recognize and started to look at performance measures. And we found how much time it took to review an average plan. And part of it, we also, as Jeff had mentioned, went to benchmarked, what other agencies are doing. We use a similar process as what the Coast Guard has implemented and that is having a two tier review process. So the first review is done by one individual and the secondary review is done by a separate individual, so you're not checking your own work, in essence. And all the reviews are now being conducted by

Federal employees, so that's kind of a key point. In the past, we have had contractors do this; but in the revamped program, it is Federal employees that are performing the reviews.

The primary reviews really were looking for the, do they meet the regulatory compliance aspects of it? Do they have all the required elements? So when you go through Part 194, do they have what it states in 194? The second review is first for quality assurance. Did the primary reviewer get things right? And if you found deficiencies, did they really, how egregious were the deficiencies? And also did they sufficiently review certain key elements. And I'll discuss about the key elements a little bit later on.

Then we also trained a cadre of headquarters' staff. And we trained them both on what the OPA 90 requirements were, how we fit within the regulatory framework in the National Contingency Plan, what the National

Response Teams responsibilities are; regional response teams. So we trained folks on that. Then also, then we trained them on 49 CFR. What do the regulations require? And then, of course, on our standard operating procedures and the processes and procedures we use to review the plans. So we trained 26 staff within PHMSA and we also brought in some help from the Federal employees up at Volpe on a temporary basis. Trained them to perform reviews and in the reviews, we had the more experienced individuals performing the secondary reviews and then the, if you will, the newer, newer to the review process, reviewed, did the primary review. So that gave us a good checks and balances in the quality control.

We also established policy for, we've had numerous requests, FOIA requests, for facility response plans; and under 49 USC 60838, it says that we need to protect some of the information in these plans. So following along with that, we protect, to exclude from public disclosure proprietary security sensitive information, specific resources and then the worst case discharge, both in volume and location. We needed to strike a balance between what is the public's right to know and also to protect any responders as well as the organization, to make sure that they can have a successful response to an oil spill. So we were trying to balance that.

We will soon be posting that policy on our website. There's a site within the PHMSA website that has lists of all policies that are publicly disclosed, disclosable. To show it's real, there is a copy of it. If anyone wants it, they can look at it; it is available to take a look at. And also, one of the other things that came bout in the last year is we can now enforce 49 CFR Part 194, because previously the OPA 90 had been left out of our enforcement abilities.

As mentioned, we streamlined the

review process. This is kind of a condensed down, so this rolls up into the standard operating procedures. Really, I won't go into great detail; this is available in the proceedings for this. But I kind of wanted to note a few things. When we check for completeness, it's not the same as the primary and secondary review, did we get the files, did the electronic files come in with all the parts that they said they were supposed to have and the like. The other thing is assigning priority. We have a first in/first out policy on that one. However, we do recognize that there are certain times when, if it's a brand new, unique plan for a new pipeline that's becoming operational, we would like to get that reviewed in a very timely manner. So those go to the front of the line.

We also, in mentioning with the performance appraisal, just performance measures, I wanted to say that it is our goal to have a plan reviewed and some type of recommendation out of it within two months of receipt. And so that's from the time it's logged in, we do a primary review, secondary review, and you see under the review, really the secondary reviewer provides a recommendation to me, whether or not the plan should be approved or whether or not corrections, deficiencies were found that require corrections. Also, during the review process, those plans that we found have deficiencies and the secondary reviewer who made those recommendations, will review any incoming plans with corrections to make sure that the corrections were made in accordance with the recommendations that we have made.

So, moving on the revitalized part of the program. What we've done is really created more of a sustainable program. We have dedicated staffing, both, we have contractors to help us with some of the preliminary redactions. It is still the FOIA Officer, a Federal employee that applies redactions and my staff also reviews to make sure that they follow the policy documented I mentioned earlier. We've also better integrated the oil spill program with other aspects of our program. One of the bigger pieces, and I understand you had a discussion about this in the information collection.

We have integrated with our National Pipeline Mapping System, and one of the items in the information collection is to sit there and look and see if we can get the FRP's associated with the pipelines, and that really helps with, in many instances, specifically with identifying the correct spill plan, should a spill occur, in order to provide it to the Federal on-scene coordinator that might be going to that.

We've integrated into the inspection enforcement, as I mentioned, we now have the authority to enforce this. And we've identified key items that the inspectors should look at when they have them. The first one is, do you have a plan? And then also one of the items in the plan is to look at, it has a qualified individual. Who's the qualified individual? Is that person current? Are they available when contacted? And then throughout this whole process, working with the Volpe staff, the other agencies and also internal staff and the enforcement staff, we've collected and shared and applied the lessons learned so we continually improve the program. If we have a question in our standard operating procedures, does this make sense? Is this understandable what we are looking for? We are continuously improving that.

And then as noted, we have the policy so that we can increase the program transparency and we have produced the plans online, once they have been approved. And here's an example of the National Pipeline Mapping System. What we've done is, we linked response plan to the pipeline units; so if an FOSC, Federal On Scene Coordinator needs a plan, we can use the NPMS to rapidly identify which plan, if it's not readily apparent to us when that occurs. We also use this as a way to sit there and find plans that might be missing. So were there operators out there that had not provided a plan to PHMSA and this process identified four or five companies that had not provided a more recent plan. So this allowed us to bring them into compliance. Also it helps the inspectors determine which FRP is associated with the lines that they were inspecting. So that was a very good undertaking and it's one that we plan to continue.

In the area of re-engagement, we have re-engaged with our Federal partners. We have been engaged in many ways with many of the organizations, Coast Guard, EPA and BSEE; but through the ICOPAR Program and also the National Response Team, but the pipeline safety has really reengaged in the sense of the National Response Team and also with the

National Scheduling and Coordinating Committee, and that's the one that looks at exercises in spills. But we've been expanding really the role of that coordinating committee because really you have all the players in oil spill in that one committee, so that is our opportunity to vet ideas as well as concerns that we have had in oil spills. And we've also, with the National Response Team, our regions have engaged more with the Regional Response Teams. Right now, the Regional Response Teams, many of them are updating the area contingency plans. They've asked for oil spill response plans so that they can look at the worst case, discharges, locations, and where the pipelines are. So we've provided access to the National Pipeline Mapping System, the FPR, so that they can better create area contingency plans.

And we have improved communications, we believe, with the regulated industries. First of all, we have an open dialogue now, when we find deficiencies and such. We will work through with the regulated industry to make sure that their plan meets the regulatory requirements and has the key elements in it. And we have been more engaged and documenting our participation in drills and exercises; and both from my staff's participation on it as well as our inspectors in the field offices.

Hopefully, all of you are aware of, in our reengagements, part of the reengagement is to better communications. We have issued two advisory bulletins that are directly related to the FRP's. The first one, as Jeff had mentioned, is right after the Deep Water Horizon and most recently this January, we had the advisory bulletin for improvement. And the five key elements, which I think I thought I had a slide in here, if not, I will go back; were mentioned in that advisory bulletin. With the National Coordinating Scheduling Committee, we've been working to update the National Preparedness Response Exercise Program guidelines or PREP Guidelines. Most plans submitters say that they follow the PREP Guidelines, and so we are a member and we represent DOT on that Committee. And as I mentioned, it's the key players with oil spill response plans.

The Coast Guard has taken the lead on publishing the guidelines and we expect that there will be, there has been one Federal registered notice already, saying that the requesting comments and now a draft will be soon submitted, probably within the next sixty days. So I highly recommend you keep an eye out for those. The more substantial changes really were in the area of the Coast Guard and BSEE; although some minor changes were made for DOT including for our other modal partners in Federal Motorcarrier and Federal Railroad made some minor edits to their sections as well.

Drills and exercises: We

participated during fiscal year 2014 in more than twenty oil spill exercises. The exercises include those that were operator-led. We participated in an area exercise up in Michigan; several of the pictures of the two top pictures are actually from an area exercise from Michigan, and the operator involved was Enbridge. And we participated in that. Linda Daugherty was also there.

We've been invited to participate in other Federal agencies government-initiated, unannounced exercises, or GIUE's. The photograph with the individuals in it, that was actually from a GIUE exercise that we participated in, in the Santa Monica area. It also included our State partners in California.

We've also been participating in planning for the 2015 Spills Of National Significance, or SONS. And what's really unique about this SONS exercise is that it's one of the first times that I can remember, I've been associated with the National Response Team since the last nineties. They've always either been arctic or gulf or off shore; this one's inland. And several scenarios were presented, some from pipeline and also from rails. And I'm not, the committee that the decides which of the SONS, decided it will be an inland SONS. I do not know the specific scenario at this time that they have chosen; but look forward to that as well.

So some of the results, we have SOP's now. Standard Operating Procedures for reviewing; and we've eliminated the backlog. Of the four hundred plans that we cataloged, 97 percent of them have been reviewed. And close to 90 percent have been approved at this time. The others are in the state of working out deficiencies that we identified. Approximately half of the plans that we reviewed had deficiencies that we identified in them, and we have asked the operators to correct them. And here are the key elements that I had mentioned earlier. These are also in the Advisory Bulletin. First of all, did they have a qualified individual and alternate; the one that can say, yes bring the resources. I always call it the bellybutton for the operator. Did they have appropriate worst case discharge calculations? And that's the areas, do they have the pipeline worst case historical discharge as well as breakout tanks? We expected to see all three of those in their plans, and that was one of the key areas that we looked at. And then once they determine the worst case discharge, did they have their appropriate resources to respond within the time frame required under the regulations? So the 6-1/2 hours or 12 hours, based on the location. So we looked at that. And we would, if we did not feel comfortable that they had the resources, we would not approve their plan.

We also, borrowing upon the Coast

Guard with response resources, we really looked at the U.S. Coast Guard's classification, OSRO Classification. So if you have an OSRO, that was Coast Guard classified, and this is specifically really good along the coastal regions that we look at making sure that they have the response resources. There, they would not be required to provide us a copy of the whole list of elements for those that are more inland. If they did not provide us a list of the response resources, then we would require them to provide that to us beforehand. And then also, did they identify the sensitive areas? And then a key was, and kind of it was mentioned earlier today, did they understand what safety is at the site? We don't want people getting hurt during a response. So those, if you missed any of those, I would not approve a plan.

Others, there might have been, we've had a few plans that they still had RSPA in them. I'm going to approve the plan, but I'm going to tell them please fix RSPA, get it out of there. Some of the others might have had the instance of the training, the regulations that's kind of a grayer area in their regulations. If they mentioned training but they said we're going to submit it any time it's changed, we would tell them, no, this is the real requirement; but I'm not going to sit there and deny approval for that reason. We will note the deficiency, but it was not one of the areas that would cause a failure.

Another thing we have created is the ability to provide these plans to on scene coordinators. The on scene coordinators, we were able to get a plan for a recent spill down in Caddo Parish within five minutes of the request. So, and they were able to review it before they were even on scene. So that's, I think that's a great capability that we've been able to establish. And then insuring more compliance and as we noted, the redacted plans, we have a hundred and eighty plans currently posted. It's a laborious effort. We have had plans that are anywhere from four hundred plans, but we've actually had one plan that was over five thousand pages. And that's a lot of pages to look through to make sure that sensitive information, and also private information is not in there. Home phone numbers and such as that. I do question whether or not a five thousand page plan is implementable or you could train your staff to use it. Our regulations are silent there. So, but that's one of the areas through outreach, we believe we can do.

So, what's our path foreword? We're going to continue to address the NTSB. I think you've seen some of these before. We wanted to continuously improve the review process, continue to integrate with the other areas of pipeline safety and to continue with drills and exercises. And we are engaging with regional response teams, area committees, and others; both in drills and also in helping them in their planning activities.

With that, do you have any questions?

CHAIR HONORABLE: The floor is yours.

MR. KUPREWICZ: Rick Kuprewicz, on the liquid committee. I apologize for the rude interruption I had earlier with your presentation. One of these days I'll figure out how to work that iPhone. As long as Apple quits changing the damn operating systems.

I thought I heard you say that on the worst case discharge cases, you focused in on three areas? If I heard that correctly could you just reiterate those please?

MR. LEHMAN: Yes. First, if there was a break in the pipeline, how much time it would take, it goes to the response time as a little bit discussed earlier. How long before they detect it and shut it down? And then how much would drain down from that? And we did question some of the responses. We also found one operator that said, well this one site that has the worst case discharge, we leave it at Friday afternoon and we won't know there's a spill until Monday morning. And I said, I'm not going to approve that plan. They changed their operating procedures, thankfully and worked with our enforcement folks as well, because that also violated other sections of our regulations.

So the pipeline piece, so the drain down. Some used very sophisticated models. California has very sophisticated models for determining the pipeline worst case discharge; we accept that. Those type of models. We do want them to provide a description of the models they used. The other one is historical discharge, worst case discharge. We've only had one instance where the historical discharge was greater than that were calculated, but we do require them to show us that information. Then the other one would be break out tanks, according with the regulations.

CHAIR HONORABLE: Thank you, Rick. Any other questions? Well done, Dave. Thank you. I think I'll defer to Jeff, here.

MR. WIESE: I just wanted to thank Dave for continuing my habit of alliterating, so. We have alliteration for all aspects of our business; this was on our oil spill response plan. It's the R's. We're working our way through the alphabet. Dave's done a great job. I just want to thank him for all he has done; he really reengaged that program.

MR. LEHMAN: Thanks.

CHAIR HONORABLE: Hear, hear. And we're right on schedule. I understand now we'll take up Agenda Item Number 4. We'll have a briefing on constructions issues, both reversal and conversion of service by Alan Mayberry.

MR. MAYBERRY: Thank you, Madame

Chair. The topic I'm going to discuss; we thought it would be important to come back to you today to give you an update on where we stand related to oversight on construction and particularly as it relates to, you know, as far as the replumbing of America, as I've heard it called. These are being done out there with pipelines, especially in regards to reversals, conversations and then also part of changes. Since we last met, there has been some activity in this area as far as things that we've done to deal with this issue.

I might also add, last year I was on a panel with the Pipeline Safety Trust. I think, Rick Kuprewicz, you were on that panel. I found that you were very entertaining panel mates, so I'm sure you'll have some input on this topic, too. I know last year, it was certainly very relevant on this. Just sort of what I plan to go through, will flow, just various topics. I only have a few slides here. There are a few pictures, I thought that since we're after lunch, maybe some pictures will help here; especially related to construction.

For this one here, perhaps you've seen it before. This is a slide we use quite often. It's like motherhood and apple pie for us. Some people might even call it the liturgy of the agency, I guess. But how we hold operators responsible for operating safe systems. We do influence that operation, obviously, through oversight, through the issuance of regulations, through inspections, and then we also strive for, to impact operator performance beyond the regulations; because as we all know, the regulations represent a minimum standard. So we did that through participation in teams, or in Standards Committees and issuing advisory bulletins, for instance; which is one thing that I will be talking about here as far as something we have done in the last couple of months.

So what are we talking about? Like I said, this is a replumbing of America that's going on right now, and its related to the new sources of oil and natural gas; either pipelines that are being reversed to pipelines that are being converted from natural gas to crude oil or natural gas to other products and vice versa. Although I must say what I have seen the most of is conversion to liquid products transportation, particularly crude oil. And obviously, there's increased importation of Canadian crude as well as the domestic production has been a particular focus these days.

We've been monitoring the situation and we're out there. Related to construction, traditionally, and some perhaps have heard me say this, traditionally before about 2007, we spent about 8 percent of our inspection time on construction inspections. And here more lately, it's been more in the 30, well 20 to 30 to 40 percent range of inspection time. And that is actually a metric that Linda and I are talking about, too; as far as how much inspection time we're spending on things like construction, incident response and O&M. But we do have that and it's definitely ramped up in the last several years.

Of course, more recently, just for the energy boom that's going on and the pipelines are being built and pipelines are being converted in service. Here's a map. Perhaps you've seen this before. I grabbed this from the EA website. Just shows you where all the shale plays are in the lower forty-eight. In particular, you've heard of Marcellus, you've heard of Bakken, Eagle Ford, Barnett, you know, and others. There are numerous plays that are going on out there, which is contributed to the influx of energy and we're flushing energy right now in the U.S.

A little primer on sort of the

code behind what we're talking about. Well, first I'm going to talk about reversals, which is one, like I said; conversions and then product changes. Reversals are not, and this is where pipeline, our flow is going in one direction and either supply changes or market condition changes where you need, instead of moving to the Philadelphia area, for instance, you need to move product to the Gulf Coast region. Pipelines are reversed to account for the changes in the market, and where the product needs to go to the end user.

Our code doesn't specifically address, the term reversals, however, in our Integrity Management Plans, in an O&M, operators need to consider that. Certainly an integrity management, as a reversal changes the threat profile of the pipeline, such as in the impact on cyclic fatigue in particular for liquid lines. We need to take that into account in their Integrity Management Program. And just what that impact is on the pipeline.

Certainly with overpressure protection and the location of where you're monitoring pressure, also can change with a reversal. A control and management, just how the pipeline is operated obviously changes. And operator qualifications and other issues, as far as you need to make the program relevant to the product that's being transported.

What Dave covers, spill response plans, certainly that needs to be addressed, too. Related gas pipelines, especially with how MAOP may have been determined, Maximum Allowable Operating Pressure, if it was determined using pressure gradient, that needs to be looked at as well and considered in whether or not it's even a good thing to do for that particular pipeline. And then we as an agency have been dealing with special permits and addressing, and actually have a few more questions that we have relevant to reversals when they come up for renewal.

Service conversions are addressed

in code and what are we talking about with service conversions? That is when a product or when a pipeline changes from liquid to natural gas, or from natural gas or gas to liquid. So that is covered in certain procedures an operator must go through; not unlike some of what I just talked about. It's things you would expect related to integrity management. There's also a records requirement in there as well. I'll come back to that, because I have an order issue here.

Product changes. Where we're going from say, refined products to crude oil; that was a project that we dealt with that some are familiar with, in Texas, with the Longhorn Project. That was a reversal project that involved that, just that right there as far as refined products to crude oil and reversal in direction, too. Again, that's not specifically addressed in code, however, and that is like from one liquid product to another liquid product. However, again, like reversals, it needs to be considered in the plan and in your spill response program.

Now, let's shift gears here a bit. Oh, I'm sorry, I need to go back to one I skipped. In September, we issued an advisory bulletin, and this is in the aftermath of a couple failures, or more than a couple of failures. A few failures and then inspections where the inspectors; we thought it would be important to remind operators of what considerations need to be made when they're considering reversing a pipeline or changing the product. We outlined a couple points in particular that were important to consider, like I mentioned grandfathered lines and natural gas lines; as far as considering the pressure test that was done. You know, perhaps that validation of MAOP is not relevant if it was established using a pressure gradient.

The second bullet there is, there's some other legacy pipe, particularly like low frequency ERW pipe or lap welded pipe, pipe of unknown seams, where you might have a seam factor that's considered in your design formula of less than one, that needs to be considered as well. And then there are other perhaps they are obvious if the pipeline has a failure history, a leak history, perhaps stress corrosion cracking or internal corrosion. Maybe that's one that wouldn't be a good candidate for a reversal; maybe it would be better to replace the pipe.

And then finally, pipelines, natural gas lines that operate above 72 percent SMYS. No, I'm not really talking about the newer ones that were installed under the alternate MAOP rule, but these are primarily the grandfathered lines that operate above 72 percent. You need to consider that as well. Of course, going into that, I know a lot of those were tested, rigorously tested; but none the less need to consider the operating history, how it was tested, and whether or not it would be a good candidate for reversal.

Now I'm going to shift gears and go on to construction observations. Another aspect of this replumbing is building new pipelines. Certainly, we've seen a big influx of that; certainly our inspectors are quite busy in that area, as are our operators who are out there building these lines. We see a lot of pipelines that are sort of short haul pipelines, medium haul, not that long, maybe a couple hundred miles but pretty active nowadays. We did recently issue as far as that second bullet points out, we issued another advisory bulletin related to construction notifications.

Now, we don't regulate through advisory bulletins, but we did ask that, and remind operators that yes, there's a sixty day notice out there, but if you could, would you please notify us sooner? And this is really to help us be engaged in the project sooner;

because there are a lot of activities that go on, like weld procedure qualification, qualification of welders, just a variety of things that are relevant to the integrity of the line that we'd like to be involved in earlier. So that's why we put that out. And plus, a number of operators have really cut it close in notifying us, so it was really a reminder about that.

A lot of these issues that we're seeing, and I'll point some of them out, they're not really solvable through added regulation. It's really up to the operator to do the right thing and have the controls in place and expectations and oversight of the contractor to do it. Looking back to 2007 and since then we've had a workshop and a lot of discussion. I know There was a tendency to contract out a lot of construction including the inspection; and one of the items that was pointed out, or we saw, that was, there needed to be really good oversight of the contractor.

Since then, I know a lot of work has been done related to building best practices for how to improve construction quality and I'm going to go through a couple of those in a minute.

It's just a kind of a collage of different issues that are out there, but kind of the different areas that it covers, perhaps you've seen this before. It's really consistent with what we tend to always see out there, just something we need to focus on related to the life cycle. Because if you look at it, you think about it, the failures that we've seen over the last few years, especially like in 2010, there is an aspect of new construction that you can implicate in those failures. If you look at San Bruno, they have the issue with the pipe that is of questionable manufacture. In Marshall, Michigan, you had the tape coat, it had a coating, the selection of coating that was used, of course, when it was built, we didn't know. But these issues, these decisions did impact the long term integrity and we're living with those, really decisions made early in the life cycle, today and having to deal with them. So it's important to get it right up front.

And then, of course that curve I showed you earlier, the so called bathtub curve shows that early in the life cycle of a pipe is when you do have failures. And then the older pipes as well. Issues like handling and storage of pipe. On the left there, that's probably stacked too high. In this case, we've got a good example. See, that regulator doesn't always show the bad examples. Here's a good example of storage and handling of pipe. Here's I guess, a not so good example. Another thing we've seen here, just looking at side booms and moving pipe and lowering in pipe, is and that's a side boom turned over, if you can't make it out. But you need to have enough side booms to handle the pipe, because that is a factor in how much stress you put on that weld. A weld will undergo the most stress following its lifecycle when it's being lowered in the ditch.

And when the weld procedure is qualified, it does assume or it does figure in that it's going to have a certain stress level. And that stress level is determined by how much support it has when it's going in the ground. So that's an issue we've seen, that we've had to address. Pipe that's resting on rock is a common issue, and has been implicated in a number of failures involving general corrosion. That's probably one of the more prevalent issues that we see later in life and just different handling of the coating. Things like that that can long term impact the integrity of the pipe.

One thing I like to say is we don't have throw away regulations and usually I say that in response to somebody where you have a coating issue and there's an assumption that, well, the cathodic protection will protect the pipe long term, so it doesn't matter. The CP that you add later will take care of that holiday that may be in there. But that doesn't mean we don't expect perfection up front. Certainly the CP system is there to provide that protection, but we do expect proper handling of the coating.

I know I'm preaching to the choir, especially with operators. But it's an issue that really warrants close focus on projects. Probably coating issues were the biggest one we see. I hear some others that I won't really get into it. Another one, a newly installed line with no markers. And then another issue that's popped up, I know we've talked about this a few years, is related to interference currents causing corrosion on pipelines. This is where you have pipelines that might be parallel and you have interference between CP systems.

In a lot of cases, we see it's

with parallel transmission power lines, so it can really cause extensive corrosion in a short period of time. So the moral of the story here is there is what I have up there is don't put off your AC surveys and then just material verification. It is one that we've been focusing on. Certainly, there are requirements in the code. I might add that in our rulemaking on gas, as we deal with some of the recommendations and mandates, we are dealing with record keeping issue there as well.

As far as looking forward, the first bullet up there; we've already done. We issued an advisory bulletin and that's probably the main extent of our policy work right now other than some items we have that are in pending rulemaking that we're considering. We are in the throes of integrity management 2.0 that, with our rulemaking that's in progress right now. We also considered the same one of those rules that

John talked about yesterday, operator qualification for construction. And QMS for construction, that was a topic that's been talked about. I know there's been a lot of good work in that area done. I know industry has a number of initiatives that has produced some good results in that area, as a way to manage quality and insuring that you have quality product in dealing with these issues that you've seen there. To insure quality in product. I know there's still a lot of work in progress and we're expecting to see some of that from industry; but then also we have an R&D project right now on quality management systems for construction.

And finally, that integrity verification process. Like I said, one of the rulemaking's deals with record keeping. That one specifically to gas, deals with that issue. And that's it. Just a quick update on where we stand, and be glad to answer any questions you might have.

CHAIR HONORABLE: Thank you, Alan. Are there any questions? Comments? All right. We'll move along to our next agenda item. Just a moment.

MR. WIESE: Are you really letting him off that easy? Come on. Chad, I was looking at you.

CHAIR HONORABLE: Chad?

MR. ZAMARIN: Chad Zamarin, Cheniere. Just a question, maybe; because I think as an industry, we've seen that the next three to five years, I think, I'm sure the FERC folks would tell us the same. It's really going to be a remarkable period of time in our industry from a construction perspective. A lot of the last few years has been a lot of upstream and midstream activity, but a lot of repiping the existing infrastructure and we've kind of run out of the ability to do that. And so we're going to be building a lot of greenfield pipe and it's going to be a very active time. Just put it out there, what are your thoughts and what would PHMSA look to do differently? We're thinking about it as an industry. How do we manage this workload safely and effectively, but are you also seeing that same demand on your resources coming over the next three to five years?

MR. MAYBERRY: Good question. Yes. We expect to increase the focus on construction, so as projects increase, one thing we're finding is it has been difficult to catch the number that we want to inspect. We are looking at our resources and just even the skillset that we hire to, because we, at the same time, we're also looking, we are getting additional staffing that would come to bear on construction inspections in particular.

With that, we are looking at, because of the challenge in hiring that we have, we are looking at the skillset and people that may be more focused in the construction area versus integrity management.

So that's one area we're looking at. And Linda, I know this is kind of her bailiwick, so. That's dealing with staffing. And we're also looking at curriculum changes at our T&Q office to sort of change with the times as far as dealing with construction.

MR. WIESE: With the Chair's permission, I want to just take a small swing at that one, too. I appreciate the question. We have a fixed box like you, a fixed box of resources; we have to parse it out and some parts of our turf are growing. Others, not many of them are shrinking; they're generally growing. One of the things that we've adopted and I think you'll, it's obvious to everybody, but I'm just going to state it so we're on the record here. You know, we believe the operator is responsible. We believe it's a process that needs to be managed from the beginning to the end. There, it is part of why we're talking about things like QMS, you know, we should all be comfortable when we see a monogram, for example, on a pipe, what you're getting and what we're getting. I have raised questions on that.

I think the industry is responding in terms of quality control at the mill. A lot of companies sending their own people there. So I would say that the industry can manage this process by stepping up its level of quality control from the beginning to the end. I would also say that its part of your SMS. QMS is nothing more than are you achieving quality underneath the management system you have put in place? The last thing I'll say to you is that we will probably never be resourced to cover what some people, including some people in the public want us to do and still cover our other bases.

So I think you'll see an increasing use of us asking for third party, independent third party verification out on the right of way. I don't know how else we do it, you know? I don't think we can cover all the bases without that. I know operators aren't thrilled to hear that; but it's either that or we triple our staff. And I don't think you probably want that, either, though.

CHAIR HONORABLE: Jeff?

MR. WRIGHT: Going back to Chad's comment, just so everyone knows--

CHAIR HONORABLE: I'm sorry, will you introduce yourself?

MR. WRIGHT: Oh, I'm sorry; Jeff Wright, FERC. Just so everyone knows out there in the public, too; it's a tremendous load that's coming. It's like a tsunami of pipelines. I can say since 2000, we've approved over 16,000 miles of pipeline, most of which has been built. I'm looking on my plate right now, whether pre-filing or currently under application, we have several thousand miles more. And then the potential is slightly ridiculous, so. You still want to come over, Chairman Honorable?

That said, we do as agencies look

into novel ways of processing, at least from my perspective, processing, using contractors, delegating, that kind of thing. Same thing with PHMSA, it's going to be a constant battle to look for novel ways to meet the public's need for gas, at least in my perspective, and also being responsive to all of our stakeholders at the same time.

MR. WIESE: And with your permission, I'll just say we've had a good relationship with FERC. We've worked on the L&G, the same thing, right? We did the import wave and then it all died off; now we're on the export wave, you know, and eventually the market will be met there and that will sort of die off.

And pipelines, the same way, they come in waves in the construction cycle. So we'll continue to collaborate and to Jeff's point, he's talking about interstate gas alone. We're not even talking about oil, which is also huge; and all the intrastate growth around some of these plays. So I think that as a country, I think your point is well taken and can be extrapolated wider. It's huge.

MR. WRIGHT: I was just going to add, and eventually they're going to make me die off with all this going on.

CHAIR HONORABLE: We sure hope not, Jeff. Well, thank you for that, and thank you for the questions and for the discussion. It really helped put this in context, both for where we are now and where we're headed. I think we're ready now for Agenda Item Number Six; which is a briefing on the Subcommittee Report on Midstream Regulatory Jurisdiction from Linda Daugherty and Chad Zamarin.

MS. DAUGHERTY: Thank you, Chairman Honorable. Well, with great pleasure, I'm going to introduce Chad to give an update from the Subcommittee group for Midstream Safety. Just to kick it off, as a refresher.

A while back some operators approached us and said look, we have a dilemma. There are some facilities in which there appears to be dual oversight from OSHA and from PHMSA, and there's a lot of confusion about who regulates what, who regulates both, how to make a good decision going forward on how to regulate these, or how to prepare for inspection on these facilities. And so we established the group to look at basically, what is the best way to achieve a safety outcome without wasting resources from both OSHA and PHMSA, and to get to an outcome we can all agree to. Chad is going to give us an update on how we reach that point and where we are right now. So I'll turn it over to Chad.

MR. ZAMARIN: Thank you. Chad Zamarin, Cheniere Energy. And as Linda mentioned, I think this is a good example of how we as a group can work to solve real issues. We have put together a subcommittee that's really operating on behalf of this group. Todd Denton is also a part of the group; he's not here today. Also in attendance, we've got a couple of our subcommittee members from industry as well as Linda and members of her team have also been involved. But if we've got any detailed questions, we've got Graham Bacon from Enterprise Products and Francis Foret from Targa Resources, who are on the subcommittee. But what I'll do is just briefly kind of go through what we were chartered to do, refresh the group's memory and then where we are today and where, I think we're heading and then if Linda wants to add or correct anything that I put out there, she'll do so.

We formed this, it's a collaborative group. We've got PHMSA, we've got OSHA, and we've got industry representatives working together to work this issue. And the initial scope I think, of our effort is summed up in terms of we need to make sure that we have adequate regulatory coverage for the types of midstream assets that we're looking at. We need there to be clarity. There are assets in infrastructure in our industry that have historically been designed and operated under an OSHA set of standards; and obviously, we have a large set of infrastructure designed and operated under a PHMSA set of standards. And there have been areas of potential overlap or confusion as to which assets fall under which framework.

And so we've worked to try to delineate what fits where, make sure we've got the right regulatory framework for the right set of assets and provide some clarity. We've all come to the, I think, agreement that it makes sense for there to be no gap, but also no overlap. Let's make sure we've got a well-established regulatory structure that matches the infrastructure. And so the process that we've gone through is first we've worked to insure and convince ourselves that we've got good solid regulatory processes and frameworks for each of the asset types; so that not one side or the other feels like we're not being adequately taken care of if one set of assets are being regulated under a PHMSA or an OSHA set of standards. We've also canvassed the industry and regulatory experts for common ground regarding what should fall under OSHA, what should fall under PHMSA. And we've looked at different design and operating scenarios. I'll show you in a little bit that there's some, these are complex facilities. So it can be difficult to come up with a very simple definition of what constitutes an OSHA PSM facility versus a facility that is just a PHMSA regulated asset.

And so we've worked to try to at least identify the boundaries. And then to propose a method for formal communication and clarification that the industry can understand and that also regulators can understand, and staff members when they come to a facility, it's clear if they're visiting, that they understand where the assets that should be applied under a PHMSA regulation end and where an OSHA facility set of regulations begins. And oftentimes, that happens in the same footprint. So, we need clarity for our inspectors and for our folks to know where that occurs.

So far, our progress, we've had several meetings; have had a good cross section of PHMSA, OSHA and industry folks in those meetings. We've had several conference calls as well. And we've also done outreach to stakeholders outside of the subcommittee. I know that Linda has MC'ed meetings with her staff across the PHMSA regions and we've taken work that we're doing back to operators, to educate them, get input in, you know, hopefully create as much of a collaborative process as possible. I've kind of sat through this process and tried to identify some of the general areas of alignment, and it looks like a relatively short list, but I think these are pretty significant. The first, that both are good strong regulatory frameworks, PHMSA, Part 192, 195, 49 CFR, and the complementary OSHA PSM framework. And we spent quite a bit of time educating ourselves, because on both sides, there wasn't always a full appreciation of the differences or similarities between the two. Clear consensus that it makes sense not to have overlap and certainly to insure that there are no gaps.

We've also been working to navigate the statutory authority and the ability to kind of allow for or clarify where one regulatory framework would hand off or take over from the other, and so that's an issue we're still working to, to further clarify but I think what I would say is, from my perspective, there's general agreement I think technically, we still have to work through some of the process-related issues, some of the more legal issues about how we memorialize that.

The last point is, there is a desire to memorialize an understanding of where a PHMSA-regulated facility ends, where an OSHA/PSM facility begins. But we've still got some work to do to figure out exactly the best means for that. I'll just do a quick OSHA PSM 101, since most of our time is spent looking at PHMSA-related regulations. But what you'll see here is not surprisingly, I think, consistent with a lot of what we've already been talking about. In particular, the PSM framework looks a lot like the API 1173 work that's being done. It's a safety management system that consists of what you would expect, some very common core elements. I would say that it's got a very robust set of technical standards and procedures. It has a lot of process elements that are important to insure safe design and operations. And then it has those cultural, behavioral elements, employee engagement doing a job hazard analysis. Doing the things that you would do from a behavioral perspective that drive good safe facilities.

In addition, and this is just an example of a few that I've put up here. But I'm, the safety management system is supported by a large library of technical standards and specifications that support the design and construction and operation of these facilities. You can see obviously, a lot of ASME boiler and pressure vessel code, ASME B31.3, process piping; and then a host of API and other consensus standards that are incorporated by reference into the PSM structure. But when the rubber hits the road, the challenge that we have is that these are very complex facilities that vary from one to the other. These pictures don't really do them justice. But the take away is that these are processing facilities primarily; these are not interstate transmission related facilities.

Now there may be interstate and regulated facilities that run to and/or from these facilities and making sure we can delineate where one asset exists versus the other is the challenge. How does an inspector walk into one of these properties and know how to trace the regulated transmission line versus the infrastructure that's really there to support a PSM operating facility. That's the challenge. And when I look at it, the hardest deliverable of this group is to make sure that we don't get caught in the trap of trying to define every possible technical scenario. It's how do we have a definition or a standard that someone can interpret and accurately apply each and every time they walk into a facility of varying complexity and design.

So that's really the core challenge that we have as a group, that we're still working through; but I think we will figure out. Just to give folks a quick idea of what we're talking about; I know this is elementary to everyone here. But these are processing facilities primarily in the midstream space that we're focused on for this effort; so dehydration facilities, natural gas processing, NGL separation, cryo units, fractionation, petrochemical operations, storage associated with these facilities. There is a need, and we're working through defining those storage assets that are related to interstate commerce, because there is a vast network of storage facilities across the country that is intended to support interstate transmission and delivery of products. Those are clearly PHMSA facilities that are of interest.

There are also storage facilities that are primarily or solely intended to support processing and midstream operations. And making sure that it's clear what facility is which. Many of those facilities were built and operated under an OSHA PSM standard; and so we need to be careful to properly define each of those different types of facilities. So, to achieve no gap, no overlap, we're working through criteria that we would need to delineate the transition from a 49 CFR-covered facility to an OSHA PSM facility; and some of the examples, some of the ideas that we're working to further define and clarify and just as a point of process, our goal is by the next advisory committee meeting to have this drafted for the group's final review. I certainly want to take any input at this meeting.

But the idea of is it a pressure control device that when you move into a facility, there is some piece of safety equipment that helps to identify where you've transitioned from your pipeline to a midstream facility. Is it an isolation valve? A meter skid? The pig trap that delivers into the facility? I think a combination and it may be different for different facilities, so again, coming up with a clear criteria that could be used is what we're trying to accomplish. There are other devices that may be shown to transition that again, there's going to have to be a definition that allows for some interpretation; because it's going to be very different in different facilities, and so, there's always that last catchall that you may have to sit down and work through a process to understand whether you've now transitioned into a OSHA PSM facility.

I mentioned the storage issue. I think clearly facilities solely used to transport/storage in and out of, to transfer products in and out of storage for interstate commerce are clearly subject to 49 CFR. We need to make sure we're clear on those storage assets, that are OSHA PSM designed, built and regulated. And then clearly, a lot of infrastructure was built under an assumption of an OSHA PSM framework and we need to test whether any of those facilities need reconsideration, but I think our general technical view has been that that has been an effective tool for building midstream infrastructures, so if we can get it right, then we think there's a good marrying of the PHMSA-regulated facilities and the OSHA-regulated facilities.

There's still a bit of work left to do. We're going through the process right now. Linda and the PHMSA team are working through their stakeholders; we're working through the industry stakeholders to craft a definition that again, I think will likely not define every possible scenario, but hopefully provides guidance that allows someone to walk into any given facility and clarify where the 49 CFR framework ends, where the OSHA PSM framework begins. Kind of the next steps.

We obviously want to get any input, answer any questions from this group. Our view is we're working on behalf of this committee and we want to make sure we deliver back a good result. We need to finalize the definition of the parameters that delineate the transition from an OSHA to a PHMSA facility. We need to figure out how we memorialize this group's output and whether we can do that through a letter agreement between PHMSA and OSHA, or a clarifying publication from PHMSA or some other means, will, I think, have better determined by the next meeting. And then we want to present that deliverable at the next joint advisory committee meeting, so our goal is that this is, hopefully a helpful update, and that by the next meeting, we will have kind of these remaining questions answered and the detail ready to present. Linda, anything I missed there?

MS. DAUGHERTY: Yes, I'd just add, first of all, thank you for that excellent recap. It's a lot of information. Sometimes when you're a regulator, you have to think back to the advice that says, sometimes you can do something, but you have to think about whether you should do it. And in this case, we had some people approach with an issue. They said, hey let's work on a solution together. I want to call out some of the people, Graham Bacon, Francis Foret, Todd Dent and Chad. There's other members of the committee. Some of them may be here. But the point is, if they came to us with a challenge and they said, this is how we perceive the issue, let's work together on a solution. And so we're going to get to a good place.

What Chad tactfully didn't mention is that we've all agreed, I think pretty much, that we want to get there, the no gap/no overlap. We just have to navigate some of the legal challenges. We've had OSHA attorneys and PHMSA attorneys on a phone call, talking about how do we achieve where we want to go? And how do we make this work? And I think that's the best way to solve issues like this, where we believe there's a good safety standard in place, either through OSHA/PSM or through Part 195 or 192; let's figure out how we can save resources and get to where we want to be. So, thank you.

CHAIR HONORABLE: Well said; I would defer now to Jeff in case he has any other comments.

MR. WIESE: Thank you, Colette. I just wanted to add my thanks to the group. And I know, by mentioning names, you always leave people out, so it's not my intent; but Jerry Barnhill was another person who was heavily involved, and I wanted to thank him as well. I would just say, I think it's smart government, we have a choice here. We can go fight, and go to our opposite corners and take off our gloves, right? And fight it one by one. Or we get smart and sit down in a room and haggle it out. I think as long as we agree to the primary principles, no gaps/no overlaps early on.

So I think it's a really good group; it's a good example of how we can collaborate. Some people think that's a dirty word, I don't. We have our own set of ethics, trust me; I don't think anybody thinks we're shy. But OSHA, too. So we'll, it's a smart way of doing business, and I just wanted to add my thanks to everyone, Chad included, for their leadership in helping us do this in a smarter way.

CHAIR HONORABLE: Hear, hear. And thank you, Chad, for an excellent presentation. And also I'm just very pleased to see the progress from the time that this issue was first presented to the Joint Committees and it seemed like a tough nut to crack, but we have very capable people involved and I'm confident that we can arrive at no gap/no overlap. I learn a new slogan at each one of these. All right. Any questions for Chad or Linda? All right? Please proceed, Jeff.

MR. LESNIAK: Chuck Lesniak, liquids committee. Just a quick comment.

It's something that I didn't hear in the presentation. Did you all talk about the goals of the two sets of regulations? OSHA is primarily a worker safety, which you can translate to public safety; but I would suspect it's primarily focused on worker safety and the pipeline regulations, I think are broader. And have you all looked at the two sets of regulations in terms of goals of the regulation? And I agree with the concept of no gap/no overlap, but if there are areas where the goals are different, maybe there should be overlap. And did you all look at that?

MR. ZAMARIN: No, that's a good question. Chad Zamarin, Cheniere. We did. Even from, for my own sake, I think each of us took a fresh look at that; and the OSHA, I think the overarching OSHA framework, I agree is primarily focused on personal safety. But the PSM framework is very much a process petrochemical safety management system that is very robust, has been in place for many decades. There are many clear PSM facilities across the United States that are built under the design and maintenance and operating standards that PSM has had in effect for a long time.

So I think the OSHA umbrella can sometimes lead us to think, to not realize that there is a very detailed set of specifications and standards, specifically designed for petrochemical and processing midstream facilities. So there are facilities that have been operated well away from, you know, PHMSA jurisdiction; because they don't even touch the interstate grid. They're down along the coast or they're solely focused on petrochemical operations. And that PSM framework has been the standard for designing, building and operating those facilities safely.

And so we took some time to convince ourselves that there were complementary equivalent goals and adequate tools in place to achieve the same result. And I think we unanimously as a group came to that conclusion that we're not giving anything up by having one versus the other. And that was our first step. That's where we started as a team, because that would have been kind of hey, we weren't going to have, we would have considered that a gap. If there was a goal that wasn't being met by PSM handling a certain piece of infrastructure versus PHMSA then that would have been a gap that we would have, I think, as a team, concluded you know, we're still going to have to apply both or we're going to have to do something differently. So we did spend quite a bit of time looking at that.

MS. DAUGHERTY: I would also add, we took it a step further; because this is a very valid question. And, PHMSA has statutory responsibilities, OSHA has statutory responsibilities. So when the first few meetings, I kept saying over and over, broken record, you know, we could not step back if OSHA didn't cover the statutory responsibilities. We just couldn't do it. I couldn't walk away knowing something was going to be left uncovered. So we actually went in a little bit farther and we looked at accident rates at facilities inspected by PHMSA and those by OSHA. And then we also looked at inspection rates. One of the first concerns I had is, OSHA is overwhelmed with a number of facilities they inspect. Will they get out there frequent enough? If you say OSHA can't get to all of its facilities but once every hundred years, that's not good enough. So we wanted to make sure that they had a reasonable inspection cycle for these facilities. And in fact, they are risk-based. They have a different system than we do. But they do get out on a fairly frequent basis. So, valid concern.

MR. WIESE: I just wanted to add

one comment, because it's actually, I think it's a good question. But I think about and I bet Ron would pick up on this; one of the things that we've noticed in our development of the safety management systems is that competition between process safety and worker safety. I think we agreed unanimously, there should be no competition. A properly executed safety management system ought to be covering all of these issues. PSM has a really good hazard identification section. But I would just say, we brought OSHA in, we did talk to them. We're mindful of where they're headed. They put a proposal out three or four months ago about the future direction of PSM, which we're interested in, but we're collaborating with them. I think the smart thing about talking with your partners is you end up heading in the same direction and not off like that. Fair question, though.

CHAIR HONORABLE: Don?

MR. STURSMA: Now as I understand

it--

CHAIR HONORABLE: And you are?

MR. STURSMA: Don Stursma, gas committee. Excuse me. I should know better by now. As I understand it, OSHA cannot exert its jurisdiction if another agency has already exerted jurisdiction in a particular safety area. And a number of years ago, we had a conflict like that in the pipeline business over who had primary jurisdiction for sending a worker into a bell hole with gas blowing. Where OSHA had a whole different idea about how things ought to be done versus the way the industry actually did it. That was resolved with a rulemaking clearly putting it in PHMSA's, under PHMSA's jurisdiction. Is there anything like that going on right now where there's kind of a conflict over who has jurisdiction and maybe some regulatory action would be needed to address that?

MS. DAUGHERTY: Yes, there is. Did I mention we have lawyers involved? So what we came down to at the end, we figured out which way we wanted to go generally. And we convened with our lawyers and said, can we do this? And they came back and said no. What, the strict reading of the rule says that according to both the OSHA lawyers and the DOT lawyers, is that PHMSA has statutory authority and we inspect, and we have regulations, and we inspect. We have a history of inspecting. Therefore, the pre-emption clause that boots OSHA out of a facility applies. However, we knew that that may not be the best safety approach. So what we went to our lawyers and we said, okay, knowing all that is in play, is there a way for us to come to an agreement where OSHA would continue to inspect these facilities?

And we do have an approach. It beats the legal hurdles, so I'm told. We are looking at how we are defining certain facilities. In our regulations, we identify regulations applied to, I won't use the term, because, but certain facilities. What we are doing right now is we are setting up a team within PHMSA that will later work with OSHA and industry that will perhaps redefine the boundaries of those facilities. So basically, PHMSA may be changing where we are going to exert our authority. That will allow OSHA to step into that area. So we are looking for a solution. It's not an easy solution, but we think we can get there.

CHAIR HONORABLE: Thank you, any other questions? Craig?

MR. PIERSON: Craig Pierson, liquids. Linda, in that regard, have you contemplated a similar exercise in refineries where we've got pipelines going into refineries?

MS. DAUGHERTY: You know, Craig, that issue really hasn't come up. We haven't had much discussion specifically about refineries. I would say in general that various regulatory agencies, BSEE and PHMSA play very well together. You know, we have an old MOU where we defined where we stop and where they begin. We have a clear understanding. We are working with OSHA to try to figure out where we can have no gaps, no overlaps. As has been mentioned, there are places where different agencies will have different focus of the regulations and their safety oversight.

So for example, there may not be a good place for EPA in PHMSA, to define that; because we have slightly different objectives. But in those places where you have regulatory agencies that are looking at safety issues, there may be approaches. And we are reaching out to our other partners and trying to reach that. Refineries specifically has not come up.

MR. PIERSON: Where it occurs is where you've got typically where you've got a crude pipeline that delivers into the refinery and you've got a relief system. And all that plumbing that reaches back the relief plumbing and the tank itself and there's a pretty good overlap there that we work through in a number of locations. Just something to consider.

MS. DAUGHERTY: Well, let's get this one figured out.

MR. PIERSON: Yes, I know.

MS. DAUGHERTY: And then let's talk.

MR. PIERSON: Yes, yep, thanks.

CHAIR HONORABLE: Thank you; any other questions? Well done, Chad and Linda. All right. We're ahead of schedule? I'm fearful to say out loud. It looks as though our last briefing today will be on Class Location Study, by Steven Nanney. Steve?

MR. NANNEY: Good afternoon. My name is Steve Nanney and I'm with PHMSA. And I'm going to give an update and it's not of a regulation; it's of a report on class locations and could we use integrity management principles for class locations on gas transmission facilities.

First of all, we did this as a statutory mandate on class locations from the Pipeline Safety Act of 2011, Section 5(a), which asks us to evaluate and issue a report on whether integrity management requirements could be extended beyond HCA's and could we use that to mitigate class location requirements. Some of the milestones of this. As we started in August of 2011 with an Advanced Notice of Proposed Rulemaking, with some questions that we asked. Then we, in early 2012, we got the Pipeline Safety Act of 2011; and then going on down through this, April 16th of this year, we had a class location workshop.

And I know several of you that I see in here today were at that workshop; and it was a lively experience, with a lot of comments and viewpoints. And they were all over the spectrum; it wasn't anything, there was a lot of pro's and con's for whatever option you wanted to consider. And then from that, we completed a Congressional report in the summer; and that was routed to our Administrator and we have proceeded to route that to OST, OST and they are in the process of sending it to OMB. And by the way, we haven't had any comments to date, so I think that, so far, is good news. But I'm sure we'll get some feedback as we go through this process.

The report contents, just a quick overview of those. We have an executive summary in there, which I think John and Cheryl sent you a briefing paper that has some tidbits of that, three or four pages, to just give you an overview of what our thoughts were. An introduction, and expansion of IMP requirements beyond HCA's. Does the expansion of IMP requirements beyond HCA's? Does the expansion of IMP mitigate the need for class locations? And that's the key question. And then we looked at alternatives to class locations. There were a number thrown out at our workshop. There were several that we were considering and you'll see as I go through this, what those are. Then a conclusion and possible future actions. Again, this is only a report; this is not a regulation that we're working on.

As far as integrity management, just a quick overview of that. Again, we were looking at HCA, a High Consequence Approach, in lieu of class locations. And to just give you an idea, to just see it in a slide, if you look at an HCA approach of the circles, the red circle you see there would be an HCA. An illustration. Where the small red line that you see behind the homes there, that would be a Class 2 location. So just to give you an idea in this particular example, if we used an HCA approach, the homes that would be protected would be the ones in the circle under integrity management. And then if we did come up with some type of approach using integrity management, we would extend that circle some way. Now, we haven't come up with how we would do that, but that would be one of the type of approaches. Where today under the class location methodology, all of that area there with the red line would be a Class 2 location.

Class locations, what are they? Class locations for gas pipelines are from 1 to 4. The design factors are, if it's a Class 1, it's 0.72, Class 2 it's 0.6, Class 3, 0.5, and Class 4 would be a 0.4. And that would be applied to whatever design pressure or pressure you come up with, it would derate that pressure for your maximum allowable operating pressure. It was derived in the 1950's from B31.8 and when the code came into play in 1970, that was put into the code. As far as class locations for gas transmission pipelines, they impact 28 Code sections. So there's a lot of impact, not only for gas transmission but also for our distribution partners, too.

From our class location workshop, just a quick overview. Our State partners, they preferred class locations. Some of the comments we got from AGA, APGA members and a majority of the transmission operators, were that they were comfortable with a class location system for existing pipelines, but wanted us to consider different approaches for new pipelines.

A quick overview of what a Class 1 location is. A Class 2, 3 and 4. Just have some pictures up there with lines so you'll get an idea when we talk about the various class locations, what each of them look like. And by the way, the Class 3 up in the upper right hand corner, that would also be an HCA. And the Class 4 would also be an HCA. The Class 1 and 2, probably would not be HCA's. To just give you an idea.

Why are we having this discussion? Well, one reason is when the code was put into place in 1970, probably most of the, and in the 1950's when B31.8 put the class location factors in, most pipelines were probably of the thirty inch diameter max variety and a thousand pound operating pressure. So the 660, if you look at the line we've got there, most of the pipeline mileage would be below that line. It would fall in that category. Well today, we've had pipelines forty-two inch, thirty-six inch, that have operating pressures well above 1,000 pounds; 1,440, some 1,600, maybe up to 2,100 pounds. So your PRR's are now above that dark red line. So that's why we're having the consideration, should we be using a 660 for a class location for all the pipe sizes? Or should we be looking at a different methodology?

And then in the next few slides, I'll go through. Again, some of the comments that we got from the public, you can see: Revise IMP to include the entire Class 3 and 4 locations and beyond. Expand class location definitions to reflect high density areas. Some of the comments we got were that we needed a Class 5 and a Class 6 location; in other words, a 0.3 design factor and a 0.2, where you have a lot of high rise buildings and a lot of people in the area. But State partners said class locations are a much broader concept than just IMP. In other words, how does it affect distribution systems? How does it affect gathering? How does it affect gas transmission? That we needed to look at everyone that it affects.

The industry, mainly the transmission operators, they wanted to keep mostly keep the class locations intact for existing pipelines and to consider or allow a PIR approach to be used for new pipelines when the class locations change. And to use integrity management principles for these class changes and non-HCA areas. And then some of the conclusions that we got from our workshop and like I said, it was some lively debate and lively presentations there. But there was a broad perspective from the industry and the public on expanding these integrity management regulations. There was little support for changing class locations for existing pipelines. I'm not saying that there weren't a few that wanted it changed, but the overall majority was no change for existing pipelines.

The third bullet was there was support for changing class locations and going to some form of a PIR approach, a Potential Impact Radius approach, HCA approach; however you want to term it. And some of those alternatives that we discussed and considered was; number one, we heard from some public interest groups that we needed to expand class locations, a Class 5 and 6. Some others we saw, we heard from, was modify the HCA definition; in other words, go to some type expanded HCA definition. Then we also had comments on the potential impact radius sliding mile, is instead of using the sliding mile which is what the code is based upon now. In other words, you look for a class location, you look at a one mile and it slides down the pipeline. Instead of using that, should we go to a potential impact radius or impact circle that actually slides down the pipeline based upon the diameter and the pressure of the pipeline. In other words, if you had a forty-two inch, 2,000 pound pipeline, it may have a 1,500 foot PIR; where if you had a twelve inch, 200 pound pipeline, it may only have a 150 foot PIR. In other words, doing something based upon consequence based upon diameter and pressure.

Then we also heard comments on a single design factor. In other words, where we've got four design factors now, should we consider one design factor like on the hazardous liquid pipelines, the design factor is 0.72. Is what's used out on the pipeline. Where on the gas pipelines, there's the class locations. Now we didn't discuss whether to use 0.72 or 0.6 or 0.5, but consider a single design factor. Then another approach that we looked at and considered and talked about, was the bifurcated approach that INGAA came to us on, and what that would be is on existing pipelines, you would leave it like it is today.

On new pipelines, you would look at a single design factor and then you would look at something maybe incorporating a PIR or sliding mile into it as far as using the integrity management principles. So it would be a combination of some of all of it. And looking at new pipelines in that regards leaving the existing pipelines alone. And then there's always no change. In other words, keep the regulation as it is. No reason to make a change. So that's the things that we looked at, what we came down to in the report, were the key alternatives to discuss and to consider.

Now, possible future actions, and again, PHMSA hasn't written a rule, we're not in the rule writing business on this at this point. We're in, in sending this report through OST through OMB and to Congress, and then getting feedback from it; and feedback from this committee. But again, any future actions on revising class locations that we would do, of course we will consider all safety concerns of all the affected stakeholders. Whether the public, industry, everybody involved. Some of the possible future rulemaking considerations, and again, we haven't done anything on this; but you know, some of the things that we've heard is you know, number one is, I think we heard loud and clear to leave existing pipelines alone.

We've also heard loud and clear that we need to make sure that if we're doing it for one segment of the gas code, is make sure you realize that it affects more than just one group. In other words, if we do something on the transmission side, to make sure we understand what it does on the distribution side. So we hear that loud and clear. But one of the things that I know in going through and looking at it, is this last bullet. More efficient and practical class location approaches that improve safety and avoid minor pipe replacements where safety can be maintained with other robust measures, such as incorporating IMP principles.

And just to throw it out, it's like what Chad said earlier. Is PHMSA is, here's everybody as far as the blowdowns and taking pipelines out of service, where you don't need to. And one type approach that, we may want to consider going forward is where an operator's gone in and they've got an existing pipeline or a new pipeline and they've changed out the pipe and put new pipe in, but they have a few outliner homes to be built near that area, that when you look at the sliding mile, makes that change class locations to where they have to change out pipe and increase it. There may be some things there that we look at, that here's from the public side of maintaining a high level of safety, but also looking at the environmental impacts and looking at what industry is telling us on cost. So you know, we're trying to hear all sides and trying to consider things that take that into place.

But again, this is just a bullet throwing out to hear comments. It's not something that we have discussed fully or even planned at this point to write a regulation on.

But anyway, this is a summary of the report. Again, we're finished with it; it has been routed. And again, any of you that attended our workshop in April and gave us comments in May, we appreciate it. And thank you. That should be it.

CHAIR HONORABLE: Thank you, Steve. Are there any questions regarding the class location issue? Don?

MR. STURSMA: Don Stursma, gas committee. I'd just like to point out that this is actually kind of one piece of a larger puzzle; and one of those pieces is perhaps, shouldn't some of the integrity management principles be extended to any pipeline in Class 3 or 4 area? Even if it's not an HCA? Which all of a sudden makes you want to make sure that the class location actually represents risk.

There are a lot of talks on the big lines, and they have a PAR in excess of 660 feet. I've got a lot of 4, 6, 8 inch lines. Some of the smaller lower pressure ones, the PIR may not really get in outside the easement. So now you're, if you impose an expensive new regulations on lines in a Class 3 or even a Class 2 area, but my PIR is 100 feet and the nearest house is 300 feet away, you know, what purpose is served by spending additional regulations and the additional finances of the company on that piece of pipe? So it's almost like maybe there should, something like was done with the integrity management rules where you can figure your HCA's either way, either in a class location basis or on a PIR basis.

Maybe some system could be devised where you can determine class location in the traditional way; or some PIR-based method that would do a better job of accounting what is actually at risk from this pipeline instead of just what's within a certain distance of it. So I think that is maybe something down the road that should be considered, especially if it ties into increased requirements for Class 3, 4 or even 2 areas. Like one of the things that was thrown around for a Class 2 location would be a house. Or building within 660 feet of the pipeline, certain integrity management things would kick in. One house is 500 feet away from a 200 foot PIR, I'm sorry, that's not going to make any sense. Anyhow.

Something for future consideration.

MR. WIESE: All right. Thanks, Don. And reminding everyone, if we actually go anywhere, if we ever get the report out, you know that we'll go through rulemaking so the committee will be fully engaged in that whole thing. But, and I'm taking over temporarily again. I'm doing my Al Haig. So with that, I'll recognize Chad Zamarin.

MR. ZAMARIN: Thanks. Chad Zamarin, Cheniere. So just we end on an exciting note, I figured this is an area of passion. I think Don's point is an example of why I would beg that you do something with this; because to even continue talking about class locations, a concept that dates to the fifties, that does not as effectively as PIR analysis and other tools, quantify where we have added risk or potential impact; using it to make decisions around pipe replacement, around integrity assessments, around risk assessments, is just fundamentally flawed.

We've learned so much since the fifties. So at one company alone, we spent over three hundred million dollars in the last ten years replacing perfectly good pipe in areas that in many cases, would never have impacted a home in its radius. And that needs to be fixed.

So I would beg that we address this issue, not just publish a report. Because I think there is one area that we've demonstrated we've learned a lot. I think it was part of the original cost benefit analysis of the IM Rule and we can do way better than class location. I know it's complex, and it's all over the code, but it just drives me crazy when we talk about a Class 3 location as inherently being a risk to your area, when it could be a 6 inch pipeline with a, 50 pound PIR that would never touch a living home. So, thanks.

MR. WIESE: Now look what you did. You made him put his card back up.

MR. ZAMARIN: I told you I wanted

us to end on an exciting note.

MR. WIESE: And I'll just say, it's a good topic for the committee to talk about in the future because a lot of things come into play with you. And we have said publically by the way, that philosophically, we agree. Okay? The problem is, in a practical sense, some operators lack the information necessary and they don't apply the conservatism they need to in order for us all to feel comfortable if that house that's a hundred yards outside of the PIR is okay.

So I think it's really, so I just wanted to say, I agree with you philosophically and I think most of us do. With good sound information and conservative applications where your information is less certain, then I think it works, right? But it's, there's a lot in inertia on this for those who haven't been involved in class location discussions; largely because it has been around for so long, and so many parts of the code are predicated on it. So the liquid guys are saying, thank God. But with that, I'll butt out of it, sorry.

CHAIR HONORABLE: Rick and then Don.

MR. KUPREWICZ: Just real quick. And I appreciate the assistance in getting the report out, get it all going here. But from a public perspective, one way to get something and having a productive discussion moving forward, is the public needs to see where we're at on IMP 2.0. If you don't have that out clearly or some semblance that there's an improvement in the integrity management rulemaking or integrity management process, the public's going to come at you in spades. They're going to have no confidence in the process and I think you have a very good discussion here. We don't want you to waste your money. We don't want ineffective, inefficient regulation. We want effective regulation that's productive. And right now, we keep getting a lot of questions, I know myself, I won't speak for Carl, but along the lines of where in the heck?

We know 2.0 is needed. We don't quite understand where it's going to be finalized. And so that could be an obstacle to this discussion. Very good comments here. Support both sides of this. But until we have some other understanding of how effective the next step's going to be, there's a lot of people in this room, the companies, they did IMP 1.0 very effectively. But also, there are companies who did not do it very effectively and we've had some very expensive, serious tragedies in the last ten years. And I'll shut up. Thank you.

CHAIR HONORABLE: Don?

MR. STURSMA: Don Stursma again. Real fast. One of the issues with the whole class location thing is the concept is so imbedded in Part 192, if you start mucking with the class location definition, you start risking a total rewrite of Part 192 and I at least, don't want to go there. But I think if we look at different ways of defining class location along the lines of what I talked about earlier, I think we can come up with something that would leave the rest of the code intact and we wouldn't have that issue. At least that would certainly be the goal.

CHAIR HONORABLE: Thank you. Don? Are you done? Okay. Anyone else? I just have to check with Don; you never know. He might want to say, and another thing. Anyone else? Now's your chance.

Well, we've had a robust couple of days here at the Joint Committee; even though we haven't taken up a rulemaking, I've really been very glad to be here. I've learned a lot in the last couple of days, and also a lot of progress that we've observed as well on some ongoing issues. So thank you for your dedication and thank you for your service; because it's making the work that we do collectively better. And I will yield to Jeff.

MR. WIESE: So, officially, I think the meeting is over. We can stop the transcript.

(Whereupon, the above-entitled matter went off the record at 2:57 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: Gas Pipeline Advisory Committee

Before: US DOT

Date: 10-22-2014

Place: Washington, D.C.

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

Agenda

JOINT MEETING

Gas Pipeline Advisory Committee
and
Liquid Pipeline Advisory Committee

October 22, 2014
(9:00 am – 5:00 pm)

9:00 am	**<u>Call to Order</u>**	Jeff Wiese & Committee Chair
9:10	**<u>Agenda Item 1</u>**: BRIEFING: Methane Emission Reduction	 Dr. James White, U-CO Paula Gant, DOE Mark Brownstein, EDF
	<u>Committee Discussion and Q&A:</u>	Committee Chair
10:45 Break		
11:00	**<u>Agenda Item 2</u>**:	
	BRIEFING: Performance Metrics	Alan Mayberry Linda Daugherty
	<u>Committee Discussion and Q&A:</u>	Committee Chair
11:45	**<u>Agenda Item 3</u>:** BRIEFING: Oil Spill Response Plans	 David Lehman
	<u>Committee Discussion and Q&A:</u>	Committee Chair
12:15 Lunch		

1:30	<u>**Agenda Item 4**</u>: BRIEFING: Construction Issues (Reversal and Conversion of Service)	Alan Mayberry
	<u>**Committee Discussion and Q&A:**</u>	Committee Chair
2:15	<u>**Agenda Item 5**</u>: **(Moved to the end of Tuesday's agenda)** BRIEFING: Liquefied Natural Gas	Alan Mayberry Ken Lee
	<u>**Committee Discussion and Q&A:**</u>	Committee Chair
	Break	
3:00	<u>**Agenda Item 6**</u>: BRIEFING: Sub-committee Report on Midstream Regulatory Jurisdiction	Linda Daugherty Todd Denton Chad Zamarin
	<u>**Committee Discussion and Q&A:**</u>	Committee Chair
3:45	<u>**Agenda Item 7**</u>: BRIEFING: Class Location Study	Steven Nanney
	<u>**Committee Discussion and Q&A:**</u>	Committee Chair
	OPEN DISCUSSION	Committee Chair
	Wrap-up and Adjourn	Jeff Wiese