STATE OF NEW MEXICO
ENERGY, MINERALS, AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION COMMISSION

IN THE MATTER OF THE HEARING CALLED
BY THE OIL CONSERVATION COMMISSION FOR
THE PURPOSE OF CONSIDERING:

CASE NOS -21528

APPLICATION OF OIL CONSERVATION DIVISION
TO ADOPT 19.15.27 NMAC AND 19.15.28 NMAC, AND
TO AMEND 19.15.7 NMAC, 19.15.18 NMAC, AND
19.15.19 NMAC; STATEWIDE.

REPORTER'S TRANSCRIPT OF VIRTUAL PROCEEDINGS
RULEMAKING HEARING - DAY 9
JANUARY 14, 2021
Via Webex Platform
Santa Fe, New Mexico

BEFORE: ADRIENNE SANDOVAL, CHAIRWOMAN
JORDAN KESSLER, COMMISSIONER
DR. THOMAS ENGLER, COMMISSIONER
FELICIA ORTH: HEARING EXAMINER
CHRIS MOANDER, ESQ.

This matter came on for hearing before the New Mexico Oil Conservation Commission on January 14, 2021, via Webex Virtual Platform, hosted by New Mexico Energy, Minerals, and Natural Resources Department.

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I N D E X

W I T N E S S E S

E X H I B I T I N D E X

HEARING EXAMINER ORTH: Good morning. My name is Felicia Orth. We are on day nine in Case 21528. And when we broke last night, we had completed Climate Advocate's witness, Dr. Singer. This morning will be taken a little bit out of order, three witnesses for the Environmental Defense Fund.

Is there anything we need to talk about before we begin?

CHAIRWOMAN SANDOVAL: What's the order for the EDF witnesses today?

HEARING EXAMINER ORTH: Let's ask Ms. Paranhos. Ms. Paranhos, do we have you?

(No audible response.)

HEARING EXAMINER ORTH: If you are speaking, I can't hear you.

(Inaudible.)

HEARING EXAMINER ORTH: Thank you very much. I see John giving the thumbs up there. Well, we certainly need Ms. Paranhos before we begin. So while we are waiting, let's do a sound check with the other counsel.

Mr. Ames, how are you set this morning for technology?

MR. AMES: Good morning, Ms. Orth. I think I'm fine.

HEARING EXAMINER ORTH: Mr. Rankin and Mr.

Feldewert?

MR. FELDEWERT: Good morning, Madam Hearing Officer, fellow counsel and Commissioners, I hope you can hear me.

HEARING EXAMINER ORTH: I can hear you, thank you. Mr. Biernoff, I see Mr. Biernoff.

MR. BIERNOFF: I'm here, Madam Hearing Officer, good morning.

HEARING EXAMINER ORTH: Good morning. And now I see Ms. Paranhos. Oh, good morning, Ms. Fox. Good morning, Ms. Paranhos. Ms. Fox, how are you doing?

MS. FOX: Good morning, Madam Hearing Officer, Commissioners and Counsel.

HEARING EXAMINER ORTH: Good morning. All right. Ms. Paranhos, do we need to take up any preliminary matters before we begin the introduction of the witnesses?

(No audible response.)

HEARING EXAMINER ORTH: I can't hear you.

MS. PARANHOS: Okay, thanks. Can you hear me now?

HEARING EXAMINER ORTH: Yes.

MS. PARANHOS: Maybe one. Because I think there could be a slight technical issue. So I forwarded the invite for my three witnesses, the one that Adrienne, the chair, had sent to me. I'm wondering if there is any issues

with all four of us joining with the same link. If there is not they will stay on mute until it's their turn to speak, but I want to make sure that's not going to cause any problems as we proceed.

CHAIRWOMAN SANDOVAL: I don't think it will.

MS. PARANHOS: Okay, perfect. Thank you.

HEARING EXAMINER ORTH: I'm joined by David Lyon, and John Goldstein. I don't see Mr. Alexander.

MS. PARANHOS: The order of my witnesses, I did hear the chair's question, but I was able to respond, is that I have a brief opening statement, then John Goldstein will present. After John is David Lyon and then we will close with Tom Alexander. Tom did say he would be joining now, so my guess is he will be on any second now.

HEARING EXAMINER ORTH: Thank you. The technical host knows to admit them and make then a panelist.

MS. PARANHOS: Perfect. And then once Mr. Goldstein begins his testimony and he does have a PowerPoint, I will do my best to share my screen and put that up at the same time as he is presenting his testimony.

HEARING EXAMINER ORTH: Thank you very much. If there are no preliminary matters, Ms. Paranhos, if you proceed with your opening statement.

MS. PARANHOS: Thank you, one second. I just closed it, so give me one minute to pull it back up here.

Okay.

Good morning, Commissioners, Madam Hearing Officer and members of the Division. EDF greatly appreciates the opportunity to present testimony today in support of OCD's draft venting and flaring rule, NMAC Title 19, Chapter 15, Part 27.

Edf commends the Division on proposing a strong, comprehensive rule to limit waste and reduce methane pollution caused by venting and flaring of natural gas.

EDF agrees with the statement made by prior parties that OCD's rule development process was robust and inclusive, and we greatly appreciate all the hard work that has gone into the current Division proposal.

EDF will present three witnesses today who will testify in support of the OCD rules and targeted improvements suggested by EDF. Many of our suggested improvements are supported by Climate Advocates.

Since the time EDF filed its prehearing statement, OCD has accepted a number of our suggested revisions, and we thank the Division for considering and accepting these changes.

Specifically, we support OCD's revision to the following provision: Changing the definition of delineation well to exploratory well and conforming edits where the term appears throughout the draft rule;

Requiring that methods operators use to measure or estimate volumes of leaked or released gas discovered with ALARM technologies are consistent with methods operators use to report vented and flared volumes in 28.7.B.5.6;

Also allowing the Division to request the operators retain a third party to verify any data or information collected or reported pursuant to the venting and flaring rules;

And, lastly, the Division added requirements related to best practices the operator plans to use, minimize venting during active and plan maintenance and information on the anticipated volumes of liquids and gas production and a description of how separation equipment will be sized to optimize gas capture to the gas management plan requirements.

So again, we thank OCD for including those suggested revisions in the current draft rule.

As you heard from OCD and Climate Advocates, OCD has a statutory duty to prevent waste and address pollution from oil and natural gas facilities under the Oil & Gas Act.

We strongly support the rule's ban on venting and flaring of natural gas during drilling, completion oil production activities that constitute waste as set forth in Part 27.8.A as an essential provision to implement these

authorities.

We similarly strongly support the rule's stated preference for flaring over venting other than where flaring is technically infeasible or would pose a risk to safe operations and venting is safer than flaring.

This provision reflects the current OCD policy to prefer flaring over venting, increases safety and reduces methane emissions.

EDF will present three witnesses today who will testify in support of the draft rules and suggested improvements. The key areas we will focus on are as follows:

First, opportunities to further reduce venting during completion by requiring operators capture or combust rather than vent emissions during the initial flowback stage of completion;

Second, opportunities for further reducing waste and pollution by narrowing the instances when an operator may flare or vent during production. Specifically we have a few suggestions to address liquids unloading activities, venting or flaring from exploratory wells, and venting during Bradenhead testing;

Third, opportunities to minimize the incidents of unlit or partially lit flares which vent methane to the atmosphere rather than destroying it. Specifically we

suggest increasing and making certain the time frame by which operators must retrofit flares with auto igniter or continuous pilot, adding a requirement that an engineer certify that all flares or combusters will have sufficient and consistent heat flow and heat content to achieve the manufacturer's design destruction efficiency; and, lastly, that all flares and combustors used during completion and production be enclosed and have a design destruction efficiency of 98 percent;

Four, opportunities to strengthen the gas management plan requirements by requiring operators submit additional information regarding anticipated safety risks that could result in venting during drilling and procedures operators will use to reduce the frequency of well liquids unloading events;

Fifth, opportunities to clarify how OCD will exercise its discretion in issuing a determination as to whether or not to approve or deny an APD when an operator cannot certify that it will be able to connect to a gas gathering system with sufficient capacity to transport 100 percent of the anticipated volume of natural gas on the first date of production;

And, sixth, last, an opportunity to increase the compliance with various certifications that the rule requires by requiring the rule add a -- by requiring the

rule add a requirement that such certification be signed by an official with accountability over the operation or activities subject to the submission.

With that, I would now like to present EDF's first witness, which is John Goldstein. And if I could get screen sharing access, that would be terrific.

HEARING EXAMINER ORTH: Now I'm muted. Good morning, Mr. Goldstein. Would you raise your right hand, please.

Do you swear or affirm that the testimony you are about to give will be the truth, the whole truth, and nothing but the truth?

THE WITNESS: I do. Thank you.

HEARING EXAMINER ORTH: Thank you.

MS. PARANHOS: Is there something I need to do to get screen sharing? I don't see anything on my screen that shows I have screen sharing authority?

TECHNICAL HOST: It should be at the bottom near your mute button.

MS. PARANHOS: I got it. I think. It's grayed out. Does that mean -- this may be more complicated. So there is a button that says open system preferences. So the share button is gray, so it doesn't seem like I immediately share. I might need something in addition to hitting the button which, as I mentioned, then takes me to the open

system preferences.

Oh, perfect, now it says you are the presenter. Okay, great.

JOHN GOLDSTEIN

(Sworn, testified as follows:)

DIRECT EXAMINATION

BY MS. PARANHOS:

Q. Go ahead, John. I will figure this out hopefully as you are talking, and if not, we will have to break between you and David.

A. No worries. Good morning, Madam Hearing Officer and Commission. It's a pleasure to be here to speak to you this morning. Should I introduce myself?

Q. Yes, that would be great, John. If you could introduce yourself and provide a brief summary of your current employment and prior work experience.

A. Sure. So I'm currently director of regulatory and legislative affairs with Environmental Defense Fund. I have been in this position since 2012. And as an EDF employee, I work as part of our energy program on oil and gas regulatory efforts at the state and federal level.

This includes work on air quality, methane and venting and flaring rules in states including, Colorado, Wyoming, Utah and North Dakota. And also worked on federal EPA and BLM methane.

And prior to joining EDF, I worked in New Mexico state government for seven and a half years as cabinet secretary of the Energy, Minerals and Natural Resources Department, as deputy secretary of the state's environment department and in a number of other roles at the environment department and in the governor's office all under Governor Bill Richardson.

Q. Terrific. Thank you, John. And can you describe for me your educational background, please?

A. Sure. So I have a master's degree in public policy and a certificate in science technology and environment policy from Princeton University School of Public International Affairs, and a bachelor's degree in history from Trinity College.

Q. Terrific. Is there any other relevant work experience that you wanted to share with the Commission?

A. Sure. I mean, I can talk briefly about some of the direct oil and gas regulatory experience that I had in my role as state government.

So just a couple of examples I've been successful, multimillion dollar settlement negotiations over oil and gas air quality violations while secretary of NMED, and leading implementation efforts around the Oil Conservation Division's PIT rule to better protect New Mexico's ground water resources.

Q. Thank you. Go ahead

A. I was going to mention, I also am the outgoing board chair of STRONGER, which I know Madam Chair is familiar with, it's the State Review of Oil and Gas Natural Environmental Regulations which brings together state regulators, environmental representatives and industry for state oil and gas regulations.

Q. Terrific. Thank you. And is Exhibit 5, EDF Exhibit 5, a true and accurate copy of your CV?

A. It is. Thank you.

MS. PARANHOS: Madam Chair, move to admit EDF Exhibit 5 into evidence.

HEARING EXAMINER ORTH: Let me pause for a moment in the event there are objections.

(No audible response.)

HEARING EXAMINER ORTH: Exhibit 5 is admitted.

(Exhibit 5 admitted.)

Q. Thank you. Mr. Goldstein, please continue.

A. Thanks. So first of all, I just wanted to express our overarching support for these rules. I know Elizabeth mentioned this in her introduction, but while we are going to talk today about a few necessary improvements that we would like to see, we want to recognize the many, many, many hours of hard work that the OCD staff and others have put into this.

So to begin with, I wanted to start with sort of the, in some ways the umbrella behind this, which is the governor's executive order that she signed, one of her first actions as governor.

You know, I think, Governor Michelle Lujan Grisham's executive order shares deep commitment to reduce methane emissions and prevent waste as part of the state's effort to combat climate change, and that I wanted to mention that this executive order also set a statewide greenhouse gas emissions reduction goal of at least 45 percent by 2030 using a 2005 baseline. And this is EDF Exhibit 6.

The executive order also directed the Energy Minerals & Natural Resources Department and NMED to develop a, quote, "Statewide enforceable regulatory framework to secure reductions in oil and gas sector methane emissions and to prevent waste from new and existing sources, and to enact such rules as soon as practical."

OCD's actions through this rulemaking will be a critical component of the state's effort to meet that goal, and that's because according to state data, 53 percent of industrial greenhouse gas emissions come from the oil and gas sector.

And this caused New Mexico's Interagency Climate Change Task Force, which is co-chaired by the Energy

Minerals & Natural Resources Department secretary and the Environment Department secretary to conclude that statewide methane regulatory framework is, quote, "The highest priority for New Mexico." And those are EDF Exhibits 7 and 8, if you want to follow along.

New Mexico clearly has a problem with methane waste and pollution that needs to be addressed. As Dr. Lyon will testify following me, EDF's estimate of methane emissions from the oil and gas sector is considerably higher than industry reported data; 1.1 million metric tons per year according to our most recent scientific estimate.

And this is in line with the state's own newly-released estimates, based in part on a recent series of flyovers that the Environment Department conducted with the Environmental Protection Agency.

This means that the need for bold action to enact new methane rules that ban routine venting and flaring, as well as complimentary comprehensive actions from NMED are necessary to meet the governor's emission reduction target and to prevent waste as required by the New Mexico Oil & Gas Act.

EDF strongly supports OCD's prohibition of routine venting and flaring during production in NMAC 19.15.27.8.A. We also strongly support the preference for flaring over venting in NMAC 19.15.27.8.A, the 98 percent

gas capture requirement NMAC 19.15.27.9, and the gas management plan requirements, NMAC 19.15.27.9.

We see these as critical colors of OCD's creation of a national leading approach ending wasteful venting and flaring. By finalizing these rules, New Mexico will become just the second state in the lower 48, Colorado being the first, to enact a clear ban on routine venting and flaring. And the 98 percent capture will put New Mexico in the vanguard on this issue as the first state to enact such a strong percentage requirement.

However, an additional fix to the gas management plan provision in NMAC 19.15.27.9.D.7 as EDF proposed in its Exhibit 4 will make that leadership even clearer. EDF believes OCD should use its discretion wisely when approving new permits, and we strongly urge them to deny an APD in an instance where an operator has demonstrated disregard for compliance with any of the rule provisions.

Meanwhile, we also recognize there may be instances where a conditional approval that conditions spudding or drilling on the operator being in compliance with the rule at the time they spud or begin drilling to be a useful enforcement tool.

For that reason we suggest the rule be modified to state that OCD shall deny or conditionally approve APDs in those instances where an operator does not certify that

it will connect to a gas gathering system with adequate takeaway capacity, or submit an adequate venting and flaring plan, or is not in compliance with its gas capture targets.

Making the language clear that APDs in these instances will only be denied or offered conditional approval will help ensure that the ban on routine flaring and venting during production and the gas capture requirements are followed.

A clear regulatory statement that APDs will be denied or conditionally approved to ensure compliance if these provisions are not met, will also make them and the state's capture requirements easier to enforce with limited staff and clear all parties.

OCD's proposed waste reduction measures also have a very important role to play in securing critically needed funds for state and local budgets. EDF calculated that operators through systemic venting, flaring and leaks wasted at least $271 million worth of natural gas. This includes about 75 million from flaring alone.

This calculation is based on EDF's estimate that operators waste 102 billion cubic feet of natural gas a year, valued at $2.57 per million British thermal units. A conservative estimate as gas is more like 2.87 today.

I would like to note that these figures have been updated from our prehearing statement based on the

availability of more up-to-date data, but these updated numbers are also included in our Exhibit 9.

Natural gas that is not wasted can be used or sold, putting more money in operators' pockets and contributing taxes and royalty payments to the state and local governments in New Mexico.

Edf estimates that the State of New Mexico is losing as much as $43 million a year in state tax and royalty revenue because of the wasteful practice of venting and flaring and leaks of natural gas. As long as this waste is allowed to occur, this means that money that would be collected through taxes and royalty is not available to fund schools, infrastructure and other vital public services. This is yet another reason, we feel, that these nationally leading waste rules are so necessary.

Thank you, Madam Hearing Officer and Commissioners, and I will turn it back over to Ms. Paranhos.

Q. Thank you, John. At this point I would like to move into evidence EDF Exhibits 6 through 9. Looks like my screen might be frozen now.

HEARING EXAMINER ORTH: Okay. Let me pause for a moment in the event there are objections to EDF Exhibits 6 through 9.

COMMISSIONER ENGLER: This is Tom Engler, Madam Hearing Officer.

HEARING EXAMINER ORTH: Yes, sir.

COMMISSIONER ENGLER: I don't have an objection to Number 9, but the headers on the hard copy and in the electronic copy cover a lot of the text. So when you read this, much of what's been written has been wiped out, so is it possible for EDF to provide a better copy?

MS. PARANHOS: Thank you for that question, Commissioner. So I believe the one exhibit that you are referring to it's hard to read we had to download from our website various pages. I don't believe that anything is missing from that, but I'm happy to double check.

I have added the only PDF that shouldn't be difficult to read, although I apologize if it's hard to read them. I'm looking at my screen. Is it just the website references that's difficult to read?

COMMISSIONER ENGLER: Every page in Exhibit 9 has a header, every header covers information from Mr. Goldstein, important information.

MS. PARANHOS: I will happily try to get you a clear copy, and the rest of the Commission, of Exhibit 9 in a different format. As I mentioned, that is all information from our website, so the website has multiple pages, so we did our best to make a PDF from each page, but I understand that it's hard to read. So let us see if we can get you a clear copy.

I guess alternatively going to the actual link might be easier. I don't know, this is a little outside of my technical wheelhouse in terms making copies of web pages, but certainly the link works well. And I'm wondering if that might be easier to look at while we're trying to get you a different version of a hard copy of that website.

COMMISSIONER ENGLER: I agree. I think for your presentation you will need to do that. For the exhibit I think you will need to provide us a better copy. Thank you.

MS. PARANHOS: Absolutely.

MR. FELDEWERT: Madam Hearing Officer, this is Michael Feldewert.

HEARING EXAMINER ORTH: Yes, Mr. Feldewert?

MR. FELDEWERT: I appreciate the observation by Dr. Engler because I was trying to follow along with the text, and the text is inconsistent as you move from one page to the next. So I don't know what the cause of that is, and I agree there appears to be a lot of some of the data that's covered up.

So it sounds like that was just an oversight, but it is difficult to follow particularly Exhibit 9.

HEARING EXAMINER ORTH: Thank you, Mr. Feldewert.

So, Ms. Paranhos, I think you've agreed to resubmit Exhibit 9. In the meantime Exhibit 6 through 9, with the caveat that 9 will be substituted, are admitted.

(Exhibits 6 through 9 admitted.)

HEARING EXAMINER ORTH: Go ahead.

MS. PARANHOS: Thank you, Madam Chair. Mr. Goldstein is now available for questions.

HEARING EXAMINER ORTH: Mr. Ames, do you have questions of Mr. Goldstein?

MR. AMES: Madam Hearing Officer, I do not have any questions for Mr. Goldstein. Thank you.

HEARING EXAMINER ORTH: Thank you. Mr. Feldewert?

MR. FELDEWERT: Yes, I do. Thank you.

CROSS-EXAMINATION

BY MR. FELDEWERT:

Q. Good morning, Mr. Goldstein.

A. Good morning, Mr. Feldewert.

Q. Mr. Goldstein, in reading through the portions of the exhibits that I was able to read if you go through, it's my understanding from what you put in these exhibits is that Governor Lujan Grisham wanted to make sure that these rules were based on sound science and data. Is that fair to say?

A. I can't speak for the governor, but that's my understanding.

Q. Okay. And likewise, you understand they should be implemented using sound, reliable data?

A. That would be my desire, yes.

Q. Thank you. That's all the questions I have.

HEARING EXAMINER ORTH: Thank you, Mr. Feldewert. Mr. Biernoff?

(No audible response.)

HEARING EXAMINER ORTH: Mr. Biernoff, do you have questions for Mr. Goldstein?

(No audible response.)

HEARING EXAMINER ORTH: I will move to Ms. Fox.

MS. FOX: No, Madam Hearing Officer. Thank you.

HEARING EXAMINER ORTH: Commissioner Engler, questions?

COMMISSIONER ENGLER: Yes, thank you. Good morning, Mr. Goldstein. Can you hear me, I presume.

THE WITNESS: I can hear you great, Commissioner. Good morning.

COMMISSIONER ENGLER: I do have questions, and it is related to Exhibit 9. I will go to the page on methodology.

THE WITNESS: Sure.

COMMISSIONER ENGLER: I do believe some of this methodology, Dr. Lyon is going to talk about later; is that correct?

THE WITNESS: That is correct, Commissioner.

COMMISSIONER ENGLER: But from -- since it's your exhibit from the -- could you walk me through a little bit

of this methodology that you have here?

THE WITNESS: I think that I will, since Dr. Lyon is going to be presenting right after me, and since Dr. Lyon led a lot of the technical data collection, if it's all right with you, I might defer to David on that.

But if you ask like specific questions, and particularly when it comes to some of the financial estimates, which I probably may be better to speak to you than David is, I would be happy to do that.

COMMISSIONER ENGLER: So on the, on the calculation reductions from the state's proposed rules where you have a calculation with the subparts to stripper wells, you cannot talk about that?

THE WITNESS: I would be happy to talk about that. That primarily goes to the Environment Department's exemptions, their draft rules released in July, but --

COMMISSIONER ENGLER: So, okay, so that's not relevant to us?

THE WITNESS: No, I mean, I think the -- what we did there was try and estimate the exemptions and their impact on the ability to, to address methane and VOCs from wells in New Mexico.

And the estimates that we used there were based upon, more upon the Environment Department's proposed exemptions and their rules that are not a subject of this

hearing. And I don't think, really, impinge upon the stripper wells as much to the extent there are any in these rules.

COMMISSIONER ENGLER: We do -- are considering, you know, specific special stripper wells or defining them in either having them as an exclusion or not for this rulemaking; correct?

THE WITNESS: That is my understanding, yes. But I don't think the, the more targeted approach that the Division is taking in this rulemaking is driving as much of a issue of things being left on the table to the extent that the Environment Department's more broad exemptions are.

COMMISSIONER ENGLER: Then so -- okay. So in the methodology then you are going -- I know, Dr. Lyon has got some of the science behind some of this measurement, but when you talk about, you know, some of your extrapolations, adjustments, assumptions, you're not the one who is capable of talking about that.

THE WITNESS: Are you meaning in terms -- I guess, could you qualify in terms of how we estimate emissions in waste or in terms of how we estimate their impacts upon renew to the state?

COMMISSIONER ENGLER: The first one. It's your first two pages in methodology.

THE WITNESS: Yeah, I think David is the better

person to speak to that because he really helped, sort of guided the data collection on that piece of it.

COMMISSIONER ENGLER: Thank you. No more questions.

THE WITNESS: Thank you, Commissioner.

HEARING EXAMINER ORTH: Thank you, Commissioner Engler. Madam Chair?

CHAIRWOMAN SANDOVAL: Good morning, Mr. Goldstein. Just a couple of questions. Are you supportive of the rule?

THE WITNESS: I am, very much so.

CHAIRWOMAN SANDOVAL: Do you believe that this was a collaborative process?

THE WITNESS: I believe that this process is amongst the most extensive and collaborative of any that I've been involved in. The MAP process was extensive. Ms. Paranhos participated in it directly, as did (unclear) from the Environmental Defense Fund. And I think the level of involvement, public involvement, technical involvement was exemplary.

CHAIRWOMAN SANDOVAL: Thank you. So on the question of stripper wells, does OCD's rule exempt stripper wells from the 98 percent gas capture requirement?

THE WITNESS: I don't believe it does. I believe the 98 percent capture requirement -- and correct me if I'm

wrong -- is applied on an operator basis, an operator to comply whoever's the wells are, his or hers.

CHAIRWOMAN SANDOVAL: Okay. Do you know what the exemptions are in this rule for stripper wells?

THE WITNESS: I would need to go back and look. I don't know them off the top of my head. I have reviewed the rules, but I don't have them in front of me right now.

CHAIRWOMAN SANDOVAL: So would it sound right to you that a reduced AVO frequency, it's a little bit of flexibility on meter retrofits and flaring retrofits, does that sound right to you for the exemptions for stripper wells in this rule?

THE WITNESS: That does sound right to me, yes.

CHAIRWOMAN SANDOVAL: But they are not exempted from the 98 percent gas capture percentage; correct?

THE WITNESS: No, I do not believe so.

CHAIRWOMAN SANDOVAL: Okay, thank you. So some of your statements that say -- let's see. One of the ones in forms which was {}Forbes which was accredited to you that says basically, "Those are exemptions that are analyst finds that would leave vast majorities of the wells in New Mexico unchecked."

It said, "Goldstein in an interview, he argued that 95 percent of the wells in the state would qualify for either the stripper well or the 15-ton-per year exemption.

That would leave far too many parts of the state without the benefit of pollution reductions from these rules."

Does that sound like something you said?

THE WITNESS: It does. And as I was discussing with Mr. Commissioner Engler, that goes to the impact of exemptions in the draft New Mexico Environment Department rule, and that 95 percent estimate is based upon the exemptions, there are two exemptions that NMED proposed in their July draft.

CHAIRWOMAN SANDOVAL: I guess the quote specifically says, "those rules," plural. Would that imply both the OCD rule and the NMED rule to somebody reading that?

THE WITNESS: I don't believe so, no.

CHAIRWOMAN SANDOVAL: Does it clarify -- okay. We'll -- that's fine. Were you a part of the any of the public comment either Monday, Tuesday or any of the mornings or afternoons of this week or last week?

THE WITNESS: I did not provide public comment. I have listened in to different pieces and parts of the hearing as my schedule allows and I caught some.

CHAIRWOMAN SANDOVAL: Did you hear the dozens of people who referred to the OCD rules as having an exemption for 95 percent of the wells in the state?

THE WITNESS: I did not.

CHAIRWOMAN SANDOVAL: Do you see how potentially some of the statements maybe created confusion for the public that 95 percent of OCD's -- or 95 percent of the wells in the state were exempted from OCD's rules.

THE WITNESS: No, because I have never said that.

CHAIRWOMAN SANDOVAL: Okay. Thank you.

THE WITNESS: Thank you.

HEARING EXAMINER ORTH: Thank you, Madam Chair. Commissioner Kessler?

COMMISSIONER KESSLER: Good morning, can you hear me?

THE WITNESS: I can. Hi, Commissioner.

COMMISSIONER KESSLER: Good morning, and I apologize for this baby noise in the background here.

THE WITNESS: No problem.

COMMISSIONER KESSLER: I had a question about your methodology in regard to you said the impact of venting and flaring on state royalty. Are you the correct person to answer those questions?

THE WITNESS: I can take a stab at that.

COMMISSIONER KESSLER: Can you go through that methodology and how you arrived at the numbers?

THE WITNESS: Sure. Let me pull that up. So you know, first of all, we -- and Dr. Lyon will speak to this -- we attempted to estimate the scope and scale of the

problem in New Mexico, realizing that there hadn't been a comprehensive look at that, and we have updated those numbers very recently to look at what, what has changed in the past couple of years.

So our first estimate was based on 2017 based on their -- and the update was suggested for 2020 using more current data including continuing data collection efforts that were during the Permian Basin.

So based upon what we were able to estimate for venting and flaring and leaks in New Mexico, we then took a look at what that meant from a, sort of an financial perspective for the state. And that, those estimates were based upon looking at a couple of different ways that the state collects revenue from natural gas.

So since methane is the primary component of natural gas, we converted the methane numbers into MCF of natural gas and pinpointed as best as we could where -- what land type the emissions or the waste were coming from, and then used that to try to ascertain how much revenue would have been collected, whether that be federal royalty when it was on federal lands where those royalty payments, 49 percent of them are returned to the state, whether that be state trust royalties or tax from where the state collects its different taxes. And I can give you the different percentages that we used for those if that's helpful.

COMMISSIONER KESSLER: I guess I'm wondering -- well, my question, I guess, is twofold. Are you aware that the State Land Office has varying royalty rates for various state leases?

THE WITNESS: Yes, I am, and that is an issue. In Exhibit 9, if I have that number right, we tried to do our best estimate on that. I believe we talked to somebody in the State Land Office -- and I'm trying to find where it is now, I was just going over it -- and came up with an estimate of 19 percent. And I'm sorry, it wasn't the State Land Office, it was a phone call with staff on the Legislative Finance Committee.

COMMISSIONER KESSLER: Are you aware that the State Land Office has also commissioned similar types of reports through the Jackson Gebert (phonetic) through UNM the Better Business -- something Business Bureau at the (unclear) Center, so that information might also be helpful to EDF, but the numbers are slightly different, but have you reviewed that report?

THE WITNESS: I have not, but I would be happy to. And as I said earlier, we updated these for newer emissions numbers and are always willing to update for newer and better data. So I would love to review and see if we can improve on this.

COMMISSIONER KESSLER: Thank you for the

presentation, and I appreciate the review of royalty issues. Thanks.

THE WITNESS: Thank you, Commissioner.

HEARING EXAMINER ORTH: Thank you, Commissioner Kessler. Ms. Paranhos, do you have any follow-up with Mr. Goldstein?

MS. PARANHOS: Just a couple of questions.

REDIRECT EXAMINATION

BY MS. PARANHOS:

Q. So John, if I heard you correctly, both the NMED rule and the OCD rule have provisions that apply to stripper wells; is that correct?

A. Right, or provisions that don't apply, as the case might be, yes.

Q. And in the OCD rule there are some provisions that apply to stripper wells, they don't necessarily exempt the wells from the regulation, but those particular facilities differently than non-stripper wells?

A. That is my understanding, yes.

Q. So it possible for members of the public potentially to get confused between which rule has what impact on stripper wells since there is two rules that recently came out by New Mexico agencies, they both have stripper well provisions, they just apply differently?

A. I would say it's very easy, not only for the

public, it's very easy for people who have experience in these issues to get confused at times.

You know, in taking the comprehensive approach, which I think is an appropriate one, and I think what the two agencies have done is try to create rules that dovetail together, but, yeah, these are complex issues. Oil and gas regulations can be difficult for members of the public to fully comprehend, and, yeah, I can understand misunderstanding and confusion can result.

Q. Great. Thank you. Just to clarify, I believe what you testified to is the EDF analysis that shows that 95 percent of the wells in the state would not be covered applied to the NMED rules, and that analysis did not actually apply to the OCD rules; is that correct?

A. Right. That percentage is based upon our analysis of the draft exemptions in the Environment Department's rule; correct.

Q. Thank you, John. No more questions.

A. Thank you.

HEARING EXAMINER ORTH: Thank you, Ms. Paranhos. Is there any reason not to excuse Mr. Goldstein?

MS. PARANHOS: He may be excused.

HEARING EXAMINER ORTH: Thank you very much.

THE WITNESS: Thank you.

MS. PARANHOS: Terrific, our next witness is

Dr. David Lyon.

HEARING EXAMINER ORTH: Dr. Lyon.

THE WITNESS: Yes, can you hear me?

HEARING EXAMINER ORTH: Would you raise your right hand.

Do you swear or affirm that the testimony you are about to give will be the truth, the whole truth, and nothing but the truth?

THE WITNESS: I do. Thank you.

HEARING EXAMINER ORTH: Thank you. Please keep your voice up.

DAVID LYON

(Sworn, testified as follows:)

DIRECT EXAMINATION

BY MS. PARANHOS:

Q. Good morning, David. Can you please state your name and spell your last name for the record?

A. Yes. David Lyon, L-y-o-n.

Q. Where do you currently work and what is your current position?

A. I'm a scientist at Environmental Defense Fund.

Q. And what do you do in this role?

A. Primarily I work on scientific research on oil and gas methane emissions including the quantification and mitigation of those emissions. But I also work on

evaluating technologies to detect and mitigate emissions and policies for reducing emissions.

Q. Great. And how long have you worked for EDF?

A. Since 2012.

Q. And what did you do prior to working at EDF?

A. I worked at the Arkansas Department of Environmental Quality where I was a program manager managing the state air pollution emissions industry program.

Q. Thank you. Can you provide a brief summary of your educational background?

A. Yes. A bachelor of arts in biology from Hendricks College, a masters of science in forestry from the University of Kentucky, and a Ph.D. in environmental dynamics from the University of Arkansas, and my doctoral research was on oil and gas methane emissions, particularly the quantification and mitigation of super emitting sites.

Q. Terrific. And did you prepare a CV for this proceeding?

A. Yes.

Q. Is that exhibit -- is Exhibit 10 a correct copy of your CV?

A. Yes.

Q. Thank you.

MS. PARANHOS: Madam Chair, move to admit EDF Exhibit 10 into evidence.

HEARING EXAMINER ORTH: Let me pause for a moment in the event there are objections.

(No audible response.)

HEARING EXAMINER ORTH: Exhibit 10 is admitted.

(Exhibit 10 admitted.)

MS. PARANHOS: Thank you.

Q. David, in preparation for your testimony today, did you review OCD's draft rule, Title 19, Chapter 15, Part 27, including any revisions suggested by OCD after the parties filed prehearing statements?

A. Yes.

Q. And did you also review EDF's suggested modification to the October 20 draft rule?

A. Yes.

Q. Thank you.

MS. PARANHOS: Move to admit Exhibit 4 which is the red line showing EDF proposed modifications to the October 20 OCD draft into evidence.

HEARING EXAMINER ORTH: Let me pause for a moment in the event there is an objection to EDF Exhibit 4.

(No audible response.)

HEARING EXAMINER ORTH: 4 is admitted.

(Exhibit 4 admitted.)

MS. PARANHOS: Thank you.

Q. Mr. Lyon. I would like to talk a little bit

about some of the various methane studies that you have participated in. Can you describe how many studies you have participated in while at EDF?

A. Yes, I participated in over 16 EDF sponsored studies that have related to US oil and gas methane emissions, and they've resulted in over 35 purity papers. And currently I'm the lead scientist on a large research campaign studying methane emissions in the Permian Basin including in New Mexico.

Q. Terrific. And I know that these studies are very complex and there are many findings, but could you briefly summarize the key findings for this Commission?

A. Yes, I will give four of the main findings from our study.

First we find that methane emissions occur across the oil and gas supply chain, but are dominated by upstream sources with about 80 percent of the national methane emissions coming from production and gathering infrastructure.

Second we find that throughout all oil and gas sources and sites, they have a highly fused methane emission rate distribution, which means some sites have relatively low emissions, but some sites have very high emissions.

And it's been found that typically the 5 to 10 percent of high emitting sites account for about half of the

emissions in that category. But we also found that the high emitting sources of sites are episodic and stochastic. So sometimes any site could be one of these high emitters at any one time, so it's difficult to -- you can't really exempt any kind of site because it potentially have the high emissions.

Third we find that traditional inventory approach, such as emission factors and engineering equations, tend to underestimate emissions often substantially. For example, many studies find when you compare measurements based on actual direct measurements or atmospheric measurements as to EPA greenhouse gas reporting data, that the EPA estimates are about a factor of five too low. And this is primarily due to the difficulty in the traditional approaches in finding and quantifying these high emitting sources.

And fourth, I will talk briefly about the paper Alvarez 2018 which was published in Science and was a synthesis of a lot of the EDF work including 24 coauthors from 16 institutions. And this paper used over 400 site level measurements to estimate our best estimate of US oil and gas methane emissions, and then validated those estimates with aerial data, including lots of facts balance finds.

We came up with the best estimate of emissions of

13 million metric tons, and this is over 80 percent higher than EPA's current estimate in the greenhouse gas inventory.

Q. Thank you. And I'm sure you've heard some questions about EDF methodology in estimating methane emissions in New Mexico specifically. Do findings -- can you just talk a little bit about how EDF has estimated methane emissions in New Mexico and how those estimations link to the findings of the paper you just reviewed?

A. Yes. So we have had a few studies that we have led and participated in related to Permian and New Mexico emissions. So the original study did include some measurements from New Mexico in the San Juan Basin, but did not include any from the Permian Basin. But since that, since the synthesis study we have done a few studies that have focused on the Permian.

So one is we had University of Wyoming use an EPA developed, ground-based method, other test method 33A where they drive a research vehicle downwind of sites, park the vehicle for about 30 minutes and then measure methane concentrates and wind direction and calculate the site level emissions from the sites and also use OGI to see if they can determine which sources are emitting from the fence line.

So we hired the University of Wyoming to perform measurements of over 70 sites in, in the New Mexico Permian in the summer of 2018. And that, that data has recently

been published in a paper in Environmental Science and Technology (unclear) 2020, which estimates that emissions in the New Mexico side of the Permian are about 500 to 6000 tons, which is five to nine times higher than EPA estimates.

But one important things to note about the study is that it is only getting emissions from wellpads, and only those emissions that can be detected from near downwind locations. So any high elevated sources such as a flare stack or compressor station exhaust typically would not be measured with this approach, so it is conservatively low and only a portion of the emissions.

The other study is Strong 2020, which was a study I participated in led by researchers at Harvard that use the data from the Tropomi Satellite, data collected in 2018 and 2019 to estimate basin-level emissions of methane.

Using the satellite data they estimated the total emissions of oil and gas methane in the Permian Basin were 2.7 million metric tons, which is a 3.7 percent of the natural gas production. And they found that in the Delaware Basin it was even higher, about a 4.1 percent loss rate.

So the -- the exhibit that had questions about earlier from our website uses a combination of data from these approaches to estimate emissions.

So we had originally used data from the Robertson, the preliminary Robertson method, but now

currently the model uses the Tropomi based data since that actually is inclusive of all emissions to calculate total emissions in the New Mexico Permian.

And then we use data and approaches very similar to the Alvarez et al synthesis study to calculate our best estimates of source-level emissions, and this uses a combination of EPA data and some measurement data to estimate where, where emissions come from from sources.

But as I mentioned, the traditional approaches tend to underestimate total emissions. So what we do, which is similar to the Alvarez et al study is we use the empirical top-down data, in this case the Tropomi Satellite data, to estimate total emissions, and then we estimate the emissions from individual sources, and we attribute the difference between those to abnormal processes. And these would be the kind of super emitting sites that can be difficult to test. So we don't know exactly what they are, but they are likely things like unlit flares that are contributing to these emissions.

And the final project that I'm currently working on is our Permian Methane Analysis Project Permian Map, and this project is using a variety of approaches to detect and quantify methane emissions in the Permian, particularly in a 10,000 square kilometer area in the Delaware Basin along the New Mexico-Texas border.

So and what we are doing is trying to collect data and then rapidly put data online to help mitigate emissions. So we use several approaches, including we have a network of towers installed around the region, so these are cell phone towers that have methane sensors at the base and then have tubes that are along the tower and allowed to collect air samples from about 300 feet up.

And scientists from Pennsylvania State University analyze the continuous data using atmospheric transport method to quantify weekly estimates of emissions from the region. We also have researchers from Scientific Aviation, a Boulder, Colorado based research group, using their research aircraft over 100 days in the Permian throughout 2020 to measure emissions.

And they use the aircraft in two primary ways. First they fly the aircraft periodically around our study areas to quantify total emissions, and this allows us to compare their estimates to Penn State University's estimate.

Primarily what they are doing is a systematic survey where they are going through our study areas and circling, randomly circling clusters of sites and measuring the emissions from those sites. So those are larger than individual wellpads, but often include something like five to a dozen wellpads that they circle around.

So they analyze that data. They calculate total

methane emissions from that cluster of sites, and within about two weeks we put the data online on our website with the estimates of emissions and uncertainty, and then we attribute which operators may be responsible for those emissions, so any wellpads that we know are located in the area.

But I want to point out, we don't -- we are not able to definitively attribute the emissions since there may be other infrastructures such as pipelines that could contribute to the emissions that we are unaware of.

And then we also use ground-based quantification. So again we have the University of Wyoming performing similar measurements as they did in 2018. So they are driving their vehicle down on lease roads and quantifying methane emissions. In this case, they also have an instrument to measure VOC emissions including hazardous air pollution such as benzene.

And then finally we have performed helicopter-based optical gas imaging surveys. So we hired the company Leak Surveys Incorporated and had them perform four surveys so far looking at oil and gas flares and in two ways.

So one we look at satellite data, the Veer (phonetic) Satellite, which shows the lights from the flares and we have this helicopter target the large flares and look at the flare performance.

And then also we did some systemic survey for a different area and they look at every flare in the area. And what they do is, based on the OCI video, they determine if the flare appeared to be active and operating normally, inactive, is it unlit and venting, or is it having -- is it lit but with some kind of issue such as physical hydrocarbon slip in the flare.

So currently we have, we place much of this data online on our Permian map website, and what we found from the first three surveys is that five percent of observed flares were unlit and venting. And this is consistent with very similar surveys that were performed by NMED and EPA by the same contractor.

And then we also found that in addition to the five percent unlit and venting flares that about six percent of flares have combustion issues.

So based on this data we come up with a rough estimate that the combustion, overall combustion efficiency of flared gas in region is about 33 percent or lower since a large number of these flares appear to have no combustion or very poor combustion.

And finally I will mention a paper that is currently in open review, that I will add, and is now in Atmospheric Chemistry and Physics, and this paper focuses on the trend data of total emissions in our study area, so

particularly looking at the Penn State University tower data and the Scientific Aviation flights around the basin.

So what we found is that in early 2020, the emission lost rate in the Permian study in the Delaware Basin was about 3.4 percent. This is very similar to Tropomi-based paper based on 2018-2019 data.

But we found that in early 2020, during the oil price crash in March and April, there was a very large temporary drop in emissions. So during the time of low oil prices, the emission rate dropped to about 1.5 percent of gas production. But since then it has gone back up to near pre-crash level.

And we think that the reason for this temporary drop is that during normal conditions there is a capacity issue in the Permian. So due to gas wells being developed at a faster rate than pipeline infrastructure can get the the gas out, there are lots of issues, including flaring associated gas, and since a lot of these flares have issues, it can cause high methane emissions, but also that it can -- that the excess gas can cause a lot of problems. So pressure release issues at a site causes the super emitter sites throughout the basin.

So it really shows that one of the ways that you can permanently reduce emissions is make sure that no wells are drilled without the sufficient infrastructure to get the

the gas out without flaring.

Q. Terrific. Thank you so much, Dr. Lyon. And are any of the studies that you just discussed listed as an EDF exhibit to our prehearing statement?

A. Yes, Numbers 17, 20, 22, 36, 38, and 42.

Q. Thank you.

MS. PARANHOS: Madam Hearing Officer, move to admit EDF Exhibits 17, 20, 22, 36, 38 and 42 into evidence.

HEARING EXAMINER ORTH: Thank you. Let me pause for a moment in the event there are objections.

(No audible response.)

HEARING EXAMINER ORTH: Hearing none, they are admitted.

(Exhibits 17, 20, 22, 36, 38, 42 admitted.)

MS. PARANHOS: Thank you.

Q. And, Dr. Lyon, based, on the findings of all of this great work, did EDF provide specific revisions to the OCD draft venting and flaring rule?

A. Yes.

Q. Great. Could you walk the Commissioners through these recommendations starting with our recommendation that all flares and combustors used during the completion and production phase be enclosed and have design destruction efficiency of 98 percent, could you explain the basis for that?

A. Yes. So we found that 98 percent destruction efficiency is reasonable. Colorado does require the flares to have 98 destruction efficiency. And our research with our Permian project has found that due to many problems with flares, that likely the actual combustion efficiency in the Permian is 93 percent or less, and this would be make flaring one the largest sources of methane in the region.

So having flares and combustors with 98 percent or higher destruction efficiency would be an effective way of reducing methane releases.

Q. Thank you.

A. We also --

Q. Go ahead.

A. We also had a recommendation for having enclosed combustors rather than open flares, and for that really found it's particularly due to pollution. So I visited the New Mexico Permian in early 2020, and by driving around the region, I was amazed and kind of horrified by -- by the really open flares that are seen everywhere.

And I would see huge flares that were visible reflecting off of people's homes 24-7. I talked to some residents who were greatly impacted by seeing these flares, and that's in contrast to somewhere like the Colorado-Denver basin where they have enclosed combustors and it has much less of an impact on landscape and likely much less impact

on quality of life.

Q. Thank you, Dr. Lyon. And are you familiar with the EDF's suggestion that operators submit an engineer's certification that all flares or combustors -- excuse me -- will have sufficient and consistent gas flow and heat content to achieve the manufacturer's design of destruction efficiency?

A. Yes.

Q. And can you explain the basis for this recommendation?

A. Yes. So we found during our aerial OGI surveys of flares we found many examples of flares that are unlit but appear to have an auto igniter or continuous pilot light, that it's failing to ignite the flare. Based on the video it appears that the gas flow rate or heat content of that flare is not capable of sustaining a flame. So the auto igniter or continuous pilot light is unable to ignite it.

So because of this, this issue, means that auto igniters or continuous pilot lights may not be a sufficient solution in cases like the Permian where there is highly variable, there can be highly variable rates. So we recommend that an operator submit an engineer's certification that evaluates the expected range of flow rate and heat content that would be experienced by the flare and

assures that the flare is suitable for achieving the manufacturers' design destruction efficiency throughout this expected range.

Q. Thank you. And are we recommending that a professional engineer sign that certification?

A. No. We recommend that an engineer submit the certification, but not necessarily a professional engineer.

Q. Thank you. Now I would like to turn to EDF's suggestion regarding retrofitting of flares and combustion with auto igniters or continuous pilot in Part 27.8.E and specifically our recommendation that operators of low producing natural gas wells or facilities equip flare stacks with an auto igniter or continuous pilot light within 12 months of the effective date of the rule. Can you explain the basis for this, please?

A. Yes. Because these low producing sites can also have the issues with flares going out. So installing the auto igniters or continuous pilot lights would result in lower methane releases. We believe that 12 months is a reasonable time frame frame to purchase and install the equipment.

Q. Terrific. Thank you. And can you explain the basis for the second recommendation on this slide here that provides a date certain by which operators of stripper wells or low producing wells must retrofit their flares?

A. Yes. So similar reasoning, by installing these auto igniters and pilot lights you decrease methane releases and it's reasonable time frame to install the equipment.

Q. Thank you so much. Turning now to the ALARM provision in Part 27.9.B.4, can you discuss EDF's recommendation that the method operators use to measure, calculate or estimate the volume of natural gas leaked or released be consistent with the quantification requirements that are specified in the reporting section of the rule?

A. Yes. So emission estimation approaches do vary in their accuracy, and some of them have high or low bias. So it's important that you have consistency in the approaches used to allow better comparisons.

And by allowing consistent methods it also decreases the risk of, of operators using approaches that, that would be bias in a way that would benefit them. So by making sure that you are using the same approaches, it really increases the comparability of the data.

Q. Great. Are you aware that the OCD has included revisions that reflect our suggestions for consistent reporting requirements?

A. Yes.

Q. Terrific. And are you also aware that the Division has proposed to include a provision that allows the Division to request an operator submit its estimation of

leaked or released gas discovered using an advanced leak detection method to a third party for verification?

A. Yes.

Q. Do you support this suggestion?

A. Yes.

Q. Terrific. Are you aware that Part 27.8.B of OCD's draft venting and flaring rule bans venting and flaring during production other than where expressly allowed?

A. Yes.

Q. Great. And are you aware that Part 27.8.D of the draft rule requires the operator to flare rather than vent natural gas except where flaring is technically infeasible or would pose a risk to safe operations or personnel safety and venting is a safer alternative to flaring?

A. Yes.

Q. Do you agree with this stated preference to flaring over venting?

A. Yes.

Q. Can you explain the basis for that preference?

A. Yes. So compared to flaring, venting releases much higher quantities of methane and other hydrocarbons including volatile organic compounds and hazardous air pollutants. So these releases can lead to climate change, human health and potentially pose a safety risk.

So methane is the main constituent of natural gas, but also a powerful greenhouse gas about 87 times the warming potential by math compared to carbon dioxide over a 20-year time period and is responsible for about a quarter of the planet's current warming.

The OC releases can include toxic air pollutants such as benzene, and also can contribute to the formation of ozone and particulate matter which can harm human health health and potentially could impact compliance with natural ambient air quality standards.

Q. Thank you. So is it fair to that venting poses increased safety, environmental and public health risks over flaring?

A. Yes.

Q. And does OCD's draft rule Part 27.8.G.2.F require operators to report volumes of venting from uncontrolled tanks for purposes of demonstrating compliance with the gas capture requirements?

A. Yes.

Q. In your experience, can venting from uncontrolled tanks be significant?

A. Yes. So numerous studies have found that oil and condensate in storage tanks, including uncontrolled tanks are one of the largest sources of oil and gas methane emissions. And in addition to the tank's flashing

emissions, there can also be higher emissions that come out of uncontrolled tanks due to upstream malfunction. For example, a duct separator duct value can cause gas that should flow into the sales pipe go into the tank and exiting the tank hatch causing to have very high emissions.

Q. Is it possible to measure or estimate vented volumes from uncontrolled tanks?

A. Yes. So there are several approaches that could be used, including many approaches that are authorized by the EPA Greenhouse Gas Reporting Program, Subpart W. These include things like the tank's model, an equation of state model. You can also take a sample of the fluids from the separater to come up with the amount of dissolved gas to figure out how much gas would come out.

And there are some direct measurement approaches. They are quite difficult to -- to measure from the ground or from, you know, near at the tank, but there are other remote approaches that allow you to measure tank emissions, including you can use some of the approaches such as the ground-based mobile approach the EPA, other test methods that University of Wyoming used to measure site level emissions.

You can try to measure total emissions in cases where the tanks are dominating those emissions, but there are also new emerging approaches such as aerial radar that

can image methane emissions from flights and then you can see where the emissions are coming from. And a lot of it shows that the emissions are coming from tanks, and then you can use that data to quantify methane emissions from the tanks.

Q. Great. Thank you, Dr. Lyon. Are you aware there has been testimony presented during this proceeding that vented volumes from uncontrolled tanks are small and do not constitute waste?

A. Yes.

Q. And do you agree with that statement?

A. No. So uncontrolled tanks can be a large source of emissions, and although uncontrolled tanks do flash as part of normal operations, there are options for reducing this waste.

So, for example, you can use multiple separators to step down pressure, and this causes more of the, the gas to go into the sales line rather than being substantively -- the tank has dissolved gases, where if it's an uncontrolled tank it is released and wasted.

Q. Terrific. I would like to turn now to OCD's draft rule Part 27.8.G.2.E which requires operators to report volumes of vented or flared gas from manual liquids unloading. And in your opinion, can manual liquids unloading events lead to significant volumes of flaring or

venting?

A. Yes, they can. EPA estimates that nationally liquids unloading without plunger lift is responsible for about 100,000 metric tons of methane nationally.

Q. Are you aware of any ways to measure or estimate these volumes?

A. Yes. So the Greenhouse Gas Reporting Program, Subpart W does provide an engineering equation that can be used to estimate emissions from liquids unloading with and without plunger lift. And also there was EDF-sponsored study, Allen et al of 2015, that used a combination, used temporary stacks and flow meters to quantify emissions.

And what this study found was that, that the Subpart W equation, while it had some inaccuracies at individual measurements, overall had low bias showing that the Subpart W method does work quite well on at least getting estimates of total liquids unloading emissions.

Q. Great. Now I would like to talk about Part 27.8.G.2.D where OCD has proposed to require operators to report volumes of vented or flared gas from downhole maintenance activities such as workovers and swabbing. And in your opinion, can these volumes be estimated or measured accurately?

A. Yes, they can be measured. Subpart W, again, provides for methods for well workovers, and then there are

also some basic engineering equations where you can use the volume or pressure of gas in the vented volumes to, to estimate it.

Q. And are vented and flared or vented volumes from these activities, can they be significant?

A. Possibly. So EPA, the greenhouse gas inventory estimates about 20,000 tons of methane from well workovers, but I will admit there is high uncertainty due to the lack of data.

Q. Terrific. Now I would like to turn to OCD's draft rule, 27.8.G.2 little i, which requires operators to report volumes of vented or flared gas from normally operating pneumatic controllers and pumps. Do these type of equipment also have significant vented or vented volumes?

A. Yes.

Q. And what are some estimates of the vented methane emissions from pneumatic controllers and pumps?

A. Yes. So EPA estimates that pneumatic controllers and pumps are the largest source of methane emissions responsible for about 2 million metric tons of methane. I think it's likely the EPA estimate is slightly too high for pneumatic controllers, but it likely is at least over a million metric tons, so one of the largest sources.

Q. Are there ways to measure or estimate these vented volumes?

A. Yes. So Subpart W does provide some emission factors. There are also ways of directly measuring the emissions. So another EDF sponsored study by the University of Texas measured emissions with some flow meters.

And I think there is also ways of at least assessing if there are issues with intermittent pneumatic controllers. So for intermittent controllers that are only supposed to emit during actuation you can use OGI or possibly AVO to assess if there is any emissions between actuations, and in that case it would indicate that likely the emissions from that controller are much higher than the emission factor for normally operating controllers.

Q. Thank you. Now I would like to discuss OCD's draft provision in Part 27.8.G.2.D which requires operators to report volumes of gas vented from improperly closed or maintained thief hatches on controlled tanks.

Does this source -- can there be significant volumes of venting from improperly closed or maintained thief hatches on controlled tanks?

A. Yes. So as I mentioned previously, several studies have found that tanks are one of the largest sources of methane emissions, and this also includes malfunctioning controlled tanks in addition to uncontrolled tanks.

So we, we have observed, particularly in aerial OGI surveys, many tanks that have either flares or vapor

recovery units that have high emissions and it appears to be due to problems with the control system.

So, for example, the flare could be unlit, but we have also seen cases in which there appears to be fluids that are clogging the line between the tank and the flare and this causes pressure, it causes the gas to back up and come out the tank hatch and vent.

Similarly from several operators that VRUs can have issues if they are not properly designed or installed, and often it's the same thing where you have clogged lines, and rather than the gas reaching the VRUs, it causes excess pressure in the tank and then comes out the tank hatch.

Q. Terrific. And do you think that there are ways to estimate or measure the volumes from improperly closed or maintained thief hatches on controlled tanks?

A. Yes, but I will admit it can be difficult in certain situations. So the easiest situation would be if the control system completely failed, such as flare going out, or a VRU being completely blocked. So the emissions would come out the tank hatch or the enardo valve.

So in that case it's essentially the same as an uncontrolled tank. So you can use the same approaches such as the equation of the state model to estimate what the emissions are assuming zero percent control.

But it's more tricky if the emissions are

partially controlled. And that -- or in other cases it may be you have upstream emissions stuck valves that causes emissions to be even higher than uncontrolled tanks.

So for these approaches I think you can use some atmospheric science approaches. So as I mentioned previously, the mobile ground-based measurements such as OCM 33A and aerial radar, and there are some vendors that are developing quantitative OGI approaches.

So these can be approaches that can be used to estimate large source emissions from sources such as controlled tanks that are difficult to directly measure.

Q. Thank you, Dr. Lyon. And so it sounds like a summary of your testimony would be that it is possible to estimate or measure volumes of flared or vented gas from the categories that we just discussed. Those are closed or maintained thief hatches on controlled tanks, liquids unloading activities, downhole workover activities, normally operating pneumatic controllers and pumps, is that an accurate -- would you agree with that statement?

A. Yes.

Q. Great. I seem to be missing a question here, but I'm going to ask you this anyway. So on the slide here there is language that we are proposing to strike, which is the language in F and G related to whether or not an operator should be allowed to vent or flare because the --

from a normally operating dehy unit, amine treatment unit or a compressor engine and turbine.

Can you just explain why we have some concerns with allowing an exception for operators to vent or flare from these pieces of equipment?

A. Yes, because these pieces of equipment, although they do emit, have some venting during normal operations, they can also have abnormally high emissions due to malfunction.

So we have seen in our aerial OGI surveys dehydrators that appear to have leaks coming from the unit or sometimes appear to have hydrocarbon slip coming out through the boiler vent. Also the compressors can have leaks, and then if they are improperly maintained, having higher venting emission. So it's important that these sources are not overlooked because they can be causing large releases.

Q. Great. Thank you so much. And then are you aware that there has been testimony presented by NMOGA during this proceeding regarding the administrative burden associated with the Division's proposed AVO inspection requirements?

A. Yes.

Q. Thank you. And do you believe that there is a benefit in having a requirement that operators conduct and

maintain records of AVO inspections?

A. Yes. Recordkeeping is a critical component of AVO. It's not really AVO without recordkeeping because the operators cannot, they cannot verify that the staff are actually performing the AVOs through the proper procedures, and then also I think the records provide extremely valuable data, not only to the regulators, but also to the operators themselves.

So one the main benefits of AVO is not just mitigating the emissions, but learning what's going wrong and then trying to figure out what's causing the problem.

So records would allow operators to see how sites change over time, compare, look throughout their site to see what are some of the most common issues and this can help increase their efficiency in both capturing gas and reducing emissions by trying to figure out if they need to have any operational or design change in their site to reduce the leaks.

Q. Thank you. Are you aware of testimony that's been presented suggesting that an exception be added to allow operators to vent or flare from normally operating fugitive emissions components such as flanges, connectors and valves?

A. Yes.

Q. And do you have any concerns with this

suggestion?

A. Yes, I do. So these components, such as connectors, are designed to have zero or nearly zero emissions, but they do -- the emissions can increase as the components wear.

So it's critical that operators do not ignore these sources, but are required to, to inspect them and determine what the emissions are. And this can also benefit them because they can see which components need repairs. So I think there will be benefits both for decreasing methane releases, but also it will help the operator increase their gas capture results.

Q. Thank you very much, Dr. Lyon. Those are all of my questions.

MS. PARANHOS: At this point I would like to move into evidence EDF's Exhibits 11, 12, 15, 24, 30 and 31.

HEARING EXAMINER ORTH: Thank you. Let me pause for a moment in the event there are objections.

(No audible response.)

HEARING EXAMINER ORTH: No? EDF exhibits are admitted. Thank you.

(Exhibits 11, 12, 15, 24, 30, 31 admitted.)

MS. PARANHOS: Dr. Lyon is available for questions.

HEARING EXAMINER ORTH: All right, thank you.

Mr. Ames, do you have questions for Dr. Lyon?

CHAIRWOMAN SANDOVAL: Ms. Orth, sorry, can I interrupt? Would I be able to go first, please?

HEARING EXAMINER ORTH: Certainly, Madam Chair. Go ahead.

CHAIRWOMAN SANDOVAL: Thank you. Sorry to go out of order. Thank you Mr. Lyon for your time today. I just have a couple of quick questions. One, are you supportive of the rule?

THE WITNESS: Yes.

CHAIRWOMAN SANDOVAL: Do you believe that it was a collaborative process?

THE WITNESS: Yes.

CHAIRWOMAN SANDOVAL: Thank you. So let me -- let's just start on this slide. I think I just heard you say, you know, that during normal operations the dehydrators, amine, the combustors, et cetera, can have venting as a part of that, but there can be issues with malfunctions, et cetera.

So I guess my question is, the language here says normal operations of dehy units, amine treatment units, normal operations of compressors and turbines, I guess that's -- does that seem to cover your concern, because it sounds like your biggest concern was malfunction. So I guess I would like to hear a little bit more on that.

THE WITNESS: I think it partially allays my concerns. It's more about maybe to specific guidance on what is normal operations and that there is a process that, that requires the operator to determine if the emissions are normal or not.

CHAIRWOMAN SANDOVAL: Okay. So maybe concern about ambiguity?

THE WITNESS: Yes.

CHAIRWOMAN SANDOVAL: Okay. All right. That's helpful, thank you. Let's see. So I think your professional, EDF's proposal, and correct me if I'm wrong, was asking for flare retrofits within 12 -- was it 12 months or six months? I can't recall.

THE WITNESS: The retrofits --

CHAIRWOMAN SANDOVAL: Six months.

THE WITNESS: Six, yes.

CHAIRWOMAN SANDOVAL: Okay. I think we heard from, I believe it was -- oh, gosh, I can't remember, one of NMOGA's witnesses that on average it costs 6- to $10,000 to retrofit a flare.

I mean, is there any concern from EDF that that cost would be cost prohibitive for stripper wells and to eventually force some companies out of business which would then cause a well problem or potentially cause a well problem.

THE WITNESS: I have not studied the economics of it much. But there may be cases, yes, where -- where the retrofit is, would cause the well to no longer be possible, but I can't speak on what the overall effect would be.

CHAIRWOMAN SANDOVAL: Okay. In looking at those six months, did EDF do any sort of analyses on the availability of this technology?

THE WITNESS: I do not think so. I just did some really quick searching on the internet and seeing that there were quite a bit of vendors that were offering this equipment, but I have not seen the web -- if there there would be sufficient to have all of these sites installed at that rate.

CHAIRWOMAN SANDOVAL: Okay, that's helpful. Thank you. And then my last question is, I think you talked about, you know, the super emitters and how some sites disproportionately contribute to, you know, the waste problem. Do you believe that the ALARM program and the monitoring that could be part of that would help to find the super emitters?

THE WITNESS: Potentially. I think operators could use some technologies in the ALARM provision that would be highly effective at finding the super emitters, but others may not be. I think really the key is the frequency at which they are deployed. So I don't want to promote any

technology or vendor, but I think approaches that allow a rapid coverage of a large number of sites at a frequent basis such as weekly or monthly oversights looking for high emissions would be much more effective than either -- than small term, you know, annual or semiannual measurements.

So it's really, I this the frequency that's the key, and often I think the frequency will have a bigger effect than the detection limit of the approach. And there are approaches that you can use, including the modeling approaches to determine what the emission reductions would be based on the various detection approaches.

CHAIRWOMAN SANDOVAL: Maybe one final question. I think NMOGA proposed to, to qualify for ALARM, it should only have to be done once a year. The Division said to qualify it has to be done twice a year. Do you feel like twice a year is a more appropriate frequency than once a year?

THE WITNESS: I think twice a year would, would result in greater releases. I think what's probably more critical than the actual (unclear) how often the ALARM provision is applied is if there is verification that the emissions are mitigated once detected, and particularly that they are permanently mitigated and it wasn't just an intermittent emissions problem that was detected and then temporarily went away but will come back later.

CHAIRWOMAN SANDOVAL: Thank you, Mr. Lyons.

THE WITNESS: Thank you.

HEARING EXAMINER ORTH: Thank you, Madam Chair. Let's return to Mr. Ames. Mr. Ames, do you have questions of Mr. Lyon?

MR. AMES: I do not have any questions. Thank you.

HEARING EXAMINER ORTH: All right. Thank you. Mr. Feldewert, questions of Dr. Lyon?

MR. RANKIN: Good morning, Madam Hearing Officer. This is Adam Rankin for NMOGA, and I will be asking Dr. Lyon some questions, thank you.

HEARING EXAMINER ORTH: Please go ahead.

CROSS-EXAMINATION

BY MR. RANKIN:

Q. Dr. Lyon, I believe a summary of your testimony was essentially that it's possible to estimate or measure emissions from various upstream oil and gas production facilities; is that correct? Do you agree?

A. Yes.

Q. And the basis for that opinion is the various studies and factors that you reviewed in your testimony; is that correct?

A. Yes.

Q. And the study -- but the studies and factors that

you identified have some variation in the emission factors and emissions rates that are calculator estimated based on the methodologies; is that correct?

A. Yes.

Q. And the, the variations that you identify in the studies can be rather significant, on the order of five to, five to nine times; is that correct?

A. Yes.

Q. That includes the greenhouse gas reporting methodologies; is that correct?

A. Yes.

Q. When I refer to the greenhouse gas reporting methodology, I'm specifically referring to Subpart W -- get the right language -- Subpart W in 40 CFR, Parts -- Part 98. Do you understand that?

A. Yes.

Q. Okay. Now, on that issue, you agree with me that the Subpart W provides for prescriptive calculation methodologies for reporters to use depending on the industry source or the equipment at issue?

A. Yes. And in some cases often, a couple of oftens, but yes, it does describe methods.

Q. So reporters would have an option to use different factors within the confines of the, within the confines of that provision; correct?

A. Yes.

Q. And those factors are based on prescriptions from EPA and not actual operating conditions for a specific facility; correct?

A. Yes.

Q. And I think I heard you say in your testimony that you, you agree that EPA's engineering equations for this reporting are often inaccurate for quantifying emissions from individual sources?

A. Some of them, yes.

Q. And I think you testified -- and to be clear, in particular, you addressed that -- you discussed in your testimony, I believe, for manual liquids unloading that the, that the EPA's factors are often inaccurate; correct?

A. Sometimes on an individual basis, but overall -- but it does not have much bias.

MR. RANKIN: Okay. I'm just going to -- if you -- I'm not sure who the host is, but maybe it's Mr. Lamkin or Mr. Rose-Coss, can I have the opportunity to share my screen, please? Thank you.

Q. Dr. Lyon, I think this a statement, it may be actual testimony, maybe you can tell me where it came from once I get it up on the screen. Do you see the screen I'm sharing now?

A. Yes.

Q. Is this -- I think this is testimony that you gave in 2015 to Congress; is that correct?

A. I think so.

Q. I can scroll down. You can see some highlighting here.

A. Yeah.

Q. Is that correct in 2015 you gave this written testimony to congress on this issue relating to methane emissions from liquid unloading?

A. I think that's the one I gave. I'm not sure if that's the testimony or comments to EPA.

Q. Okay. I'll represent to you that I found this -- I pulled this down from -- and I couldn't tell because I wasn't able to get back into where it was, but I found this on a congressional website relating to such testimony, and so I can't tell you exactly. I couldn't unfortunately tie it to where it came from, so I wanted to confirm it was testimony you gave to congress in 2015?

A. Yes.

Q. Okay. So my -- at the time I think -- and this is essentially what you stated here, but I wanted to make sure I understood because in this statement it's a little more concrete, and I have got the language highlighted here.

A. Yes.

Q. And I will just read it into the record. "The

vast majority of reported emissions are estimated with EPA's engineering equations, which are often inaccurate for quantifying individual events."

Did I read that portion correctly?

A. Yes, you did.

Q. "But previous research has reported that the method has low bias overall, and therefore should be relatively accurate estimating national issues."

Did I read that correctly?

A. Yes, yes.

Q. That's what you were trying to say in your testimony today, that for individual sources, these factors, these engineering equations that EPA is using are often inaccurate, but for a larger, broader scale, they may be more effective or useful; is that correct?

A. Yes.

Q. Perfect. Now, on a related matter, I think I mentioned this before, but I want to make sure I understood it right. Dr. Lyon, you are very fast, you are very fast and you are faster than my pen.

But I think you testified about a recent study in in New Mexico and in Texas that was measuring emissions from various sources using various techniques, I think both -- I don't recall exactly the techniques, but the bottom line from that study was that, you, you concluded or opined that

the, the emissions factors from the greenhouse gas reporting methodologies were five to nine times off what your study suggested they were; is that correct?

A. That is from the Robertson et al paper, and I believe the five to nine times comparison was to estimate based on the EPA national emissions inventory rather than the greenhouse gas reporting program.

Q. Okay. And those are using different emission factors or equations to make those determinations?

A. Some different factors, but they do share a lot of similar factors.

Q. Okay. Now -- and I think I heard you testify that for the greenhouse gas reporting methodologies, that can be a high inaccuracy or low inaccuracy, depends on factors of the particular provision or equipment; is that correct?

A. Correct.

Q. Okay. Okay. So having, having a range of factors on a scale of five to nine times isn't very, you agree with me that it's not very accurate for production accounting purposes?

A. Correct.

Q. Now, in EDF's proposal, however, I'm going to share my screen here again, I'm going to direct you to Section F, Subparagraph 5. EDF is proposing, despite these

inaccuracies or concerns, to require operators and the Division to rely on Subpart W to estimate or, in this case, EDF used the word calculate volumes of gas vented and flared; is that correct?

A. To have that as an option, yes.

Q. Okay. Now, I wanted to ask you about the word calculate. EDF proposed to delete the term "may estimate" and used the word "shall calculate."

Now, in the Subpart W provisions, are those factors that are being used -- I think you told me those factors are not based on actual operating conditions for a specific facility; is that correct?

A. The emission factors, no, they are not.

Q. So this Subpart W does not actually calculate the the actual volumes of vented or flared gas from that particular source or operation; agree?

A. I don't think I follow the difference between calculate and estimate.

Q. Well, I'm asking -- let me ask it this way again. Let me get off that question and focus on what I'm asking here.

That Subpart W, right, it's not -- the methodology that's being employed is not calculating the actual volumes of the gas vented or flared from a particular source that an operator would be using to -- would be using

a methodology to report on. Agree?

A. I mean, it can be used to calculate the emission from individual sources, for example, the pneumatic control emission factor can be applied to individual pieces of equipment.

Q. I guess what I'm trying to get at is, you're not actually measuring the volumes from that, from that piece of equipment, it's using a factor; correct?

A. In most cases there are a few options that allow direct measurements, but they're not many and they are not reliably deployed, so yes, most of them are estimates of calculations.

Q. I want to loop back and scale back a little bit here, I want to ask you more generally about the greenhouse gas reporting. Is it your understanding that Subpart W was not created to enforce any emissions limitations?

A. Yes, my understanding it was, it was more to provide data on greenhouse gas emissions. That's the largest (unclear) nationally.

Q. So it wasn't created to establish or enforce any emissions caps of any kind of any particular source or operation?

A. Not that I'm aware of, no.

Q. It was more set up as a policy tool, as you said, or the means to track trends over time; correct?

A. Yes.

Q. Are you aware of any regulatory scheme now in place proposed anywhere that contemplates using greenhouse gas reporting Subpart W methodologies as a basis for determining compliance with gas capture requirements on a volume or percentage basis?

A. No, I'm not.

MR. RANKIN: Let's see. I think -- Madam Hearing Officer, I have no further questions. Thank you.

HEARING EXAMINER ORTH: Thank you, Mr. Rankin. Mr. Biernoff, do you have questions of Dr. Lyon?

MR. BIERNOFF: No, Madam Hearing Officer, I don't have any questions of Dr. Lyon, but I certainly appreciate his very important and very interesting testimony.

HEARING EXAMINER ORTH: Thank you. Ms. Fox?

MS. FOX: Madam Hearing Officer, no. And, thank you, Dr. Lyon, for your testimony.

THE WITNESS: Thanks.

HEARING EXAMINER ORTH: Thank you. Commissioner Engler?

COMMISSIONER ENGLER: This is Tom Engler. Good morning, Dr. Lyons.

THE WITNESS: Hello.

COMMISSIONER ENGLER: I do have questions. I will try not to take too long on this.

Let me start with, I actually read every one of these papers that were put into this binder. I am not an environmental scientist, but I found this work very interesting.

I guess I want to clarify on some of this work that's done to help me understand. I will start with the -- I think you stated the Alvarez paper is kind of like an assessment or summative type paper about various methods of measuring methane emissions; is that true?

THE WITNESS: It's more of a synthesis of our earlier papers to come up with a best estimate of US oil and gas methane.

COMMISSIONER ENGLER: Now, I took that paper to somewhat verify the different methods between bottom up and top down. Is that reasonable or correct or not?

THE WITNESS: Depends on how you define bottom up and top down. So what it finds is that the site levels based estimates such as using that other test 33 A like University of Wyoming is that would be similar to larger scale basin level measurements using aircraft to fly around the entire region and calculate it that are higher than the more kind of traditional equipment and component level based emission inventory equipment.

COMMISSIONER ENGLER: So, you know, I know this one, and then there was Schniting (phonetic) and et al, they

were using satellite data; correct?

THE WITNESS: Yes.

COMMISSIONER ENGLER: So to be able to demonstrate that the satellite data is, on a larger scale was accurate, it seems to me, that and this Alvarez were trying to show that, on that -- using some bottom up or site level measurements was reasonably -- comparing with the top down, was reasonably accurate. Yes?

THE WITNESS: Yes.

COMMISSIONER ENGLER: In your knowledge and experience has anybody on the, on the top down -- you know, the satellite has a certain amount of resolution -- has anybody tried to like do more detailed verification instead of very wide, large-scale take a smaller site or sites or aerial component and look at a comparison between a site level and, say, the top down?

THE WITNESS: Yes. There has been some. I have tried to think of anything publicly available now, but we are currently working on -- we have had some large emitters that were measured by the Scientific Aviation using their approach flying around a single facility, and the sites were were often quantified by various satellite approaches, so we are now comparing them to seeing how accurate the satellites are at determining quantifying individual site emission rates.

Most satellites are focused on larger regions rather than individual sites.

COMMISSIONER ENGLER: Well, yeah, would you agree with me that the problem -- one of the issues in the science here is the scaling, scale up or scale down process.

THE WITNESS: Yes.

COMMISSIONER ENGLER: And therefore that's going to be a key area to try to get a little better numbers. Would you agree?

THE WITNESS: Yes.

COMMISSIONER ENGLER: On the Robertson paper, that was the one with the Wyoming dataset -- oh, I have -- okay, I do have a -- I have a clerical question here. Many of these papers have supplemental information or SI that was not included in this, in these exhibits. I guess I would make a friendly request to have that SI data. Do you know what I'm talking about?

THE WITNESS: Yes. Some of them are very large files, such as zip OGI videos, but yes, we could send at least electronic copies of the supplementary materials.

COMMISSIONER ENGLER: I don't want paper, I understand.

My question about the Robertson work -- well, again, I appreciate -- I find the science and the work really interesting. What -- again this was an attempt to

really looking at venting emissions; correct?

THE WITNESS: It's looking at total emissions, so this approach can't quantify course-level emissions, but they can anecdotally see if there is any major sources using their infrared camera from the site, so the total emissions at the site.

COMMISSIONER ENGLER: Is that including flaring then, too, or not?

THE WITNESS: It potentially could include flaring, but I think in most cases the flared stack would be high enough that they would not pick up those emissions from their vehicles.

COMMISSIONER ENGLER: Right, okay. So it could, but I think it was more targeted towards venting.

My question and concern with regards to the Robertson work, when you get down to the details, you know, they split up -- they have so many measurements that were, were deemed accurate, they split between complex and simple sites, and so when I get down to the -- when I read and get down to the end of this, for New Mexico there were 29 complex sites and 17 simple sites. And I think that work was done quite well, but my question to you is, do you believe that it's reasonable to extrapolate that small a number to a basin scale of thousands?

THE WITNESS: Yes, it's difficult, but you can

use statistical approaches and that's part of what the paper gets into is that the approach used is very important, and why the main finding, the thought is that it's critical to know how many low emission sites there are because there are some, some approaches where you actually can overestimate emissions if you undercount the low emission sites counter-intuitively.

So they show these approaches and really address the difficulty in extrapolation, but that's one of the reasons we are having them collect more measurements because having more data will allow us to decrease the uncertainty of their extrapolated measurements.

COMMISSIONER ENGLER: Yeah, I think what you are saying there, the uncertainty is the problem, and more data, obviously, would be helpful. Because if I go to the Rutherford paper, and they came out with some different emission factors, again I notice that when you get down to a lot of their graphs, the level of the confidence interval is very wide.

And, hence, my question is, again from a statistical measurement -- let's see. My question should be, you know, again, how can we improve that statistical variance to become -- have a better or accurate number.

THE WITNESS: Yes. So I think in addition to getting more data, the key is to use multiple approaches and

at various scales, so that's one of the things we are doing in our current Permian project. So including site level measurements, bottom up inventory, site -- basin level measurements, and by using all of these independent approaches, you can determine where an approach is being accurate and where they're iffy.

But I'll admit, it's a learning process, and as we get more data and approve the approaches we are better able to reduce our uncertainties and determine kind of which approach is being better suited in different situations to quantify.

COMMISSIONER ENGLER: I have one more question. This is completely different from all of that. In the -- in EDF's proposal for rules -- and I will read -- let's see if I can find it. It's under the statement where operators shall submit to the Division an engineer's certification that all flares or combustors will have sufficient and consistent gas flow and heat content to achieve the manufacturer's design deconstruction efficiency, my question, you know, both the gas flow and heat content will change over time; is that correct?

THE WITNESS: Correct. Yes.

COMMISSIONER ENGLER: So when you are asking for a certification, you are asking for a one-time at the initial design stage with the idea -- with the knowledge

that that's going to change over time?

THE WITNESS: Yes, and now thinking about it, I think the language may, may be -- could be better worded that really what we are asking for is a certification that the flare installed would be suitable to achieve the combustion efficiency under the expected range and variability of the gas -- the flow rate venting heat content, and that would include maybe knowing what the range and when it would be expected to need a change to a different flare if conditions would no longer allow that first flare to achieve the condition, but not implying it has to be a consistent flow rate, but the fact that the design of the selection of the flare considered, considered that variability.

COMMISSIONER ENGLER: Okay. And then I believe you said, I believe you were asked and you said, under engineer's certification, you are not asking for a professional engineer to have to certify that; is that correct?

THE WITNESS: That's correct.

COMMISSIONER ENGLER: Does it have to be an engineer that has to certify it?

THE WITNESS: It needs to be a qualified person who can do engineering calculations but, yeah, I don't think -- I can't really speak on what kind of certifications

or qualification you need, but they would need to be -- to determine what the expected variability of flow and heat rate would be from a well and be able to do calculations to figure out what the flare deconstruction efficiency would be under those.

COMMISSIONER ENGLER: I agree. I will admit, when I read anything that says engineer certification, to me that automatically assumes registered certified engineer. So I appreciate the fact that you guys kind of -- you clarified that.

I have no further questions. Again, I do appreciate the work. Thank you very much.

THE WITNESS: All right. Thank you.

HEARING EXAMINER ORTH: Thank you, Commissioner Engler. Commissioner Kessler, I am guessing you have questions?

COMMISSIONER KESSLER: I actually don't. I think mine have all been covered. Thank you.

HEARING EXAMINER ORTH: All right, thank you. Ms. Paranhos, do you have any follow up?

MS. PARANHOS: Thank you, Madam Hearing Officer, I have just a couple of questions for Dr. Lyon.

REDIRECT EXAMINATION

BY MS. PARANHOS:

Q. Dr. Lyon, can you clarify whether or not in your

understanding the ALARM provision is a voluntary provision or a mandatory provision?

A. My understanding is it's voluntary.

Q. Thank you. Yes, that's my understanding as well. And can you just briefly describe the difference between a voluntary leak detection program and a mandatory leak detection program such as a leak detection and repair program?

A. Yes. I mean, so in a voluntary program they could choose not to use the ALARM technologies, as opposed to a mandatory program, which it's either prescribed certain frequencies or types of leak detection, or possibly you could have kind of performance standards, so could either, either require leak detection that would cause emissions or releases to be below a certain amount, or similar to EPA Quad Oa could say, have it where you could have a process to have equivalent -- an equivalent program which would get equal or better emissions reductions in the default prescribed such as possible gas emission.

Q. Great. Thank you for clarifying that.

MS. PARANHOS: Those are all my questions for Dr. Lyon.

THE WITNESS: Thank you.

HEARING EXAMINER ORTH: Thank you very much, Ms. Paranhos. If there is no reason not to excuse Dr. Lyon,

thank you for your testimony, Dr. Lyon.

THE WITNESS: Thanks for your time.

HEARING EXAMINER ORTH: So we need a break. We have been going two hours. Let's come back at 10:15 here.

(Recess taken.)

HEARING EXAMINER ORTH: We will be hearing from EDF's final witness, Mr. Alexander. Let me mention two things; one, our technical host is John Garcia today. You can always find the name of the technical host immediately following your own name in the participant list.

Although there was an opportunity for the folks to sign up for a public comment session this morning at 8:30, we had no one sign up. We do have two sign-ups for the 4:30 session this afternoon.

So, Ms. Paranhos, if you would, please, introduce your witness and I will swear him in.

MS. PARANHOS: Thank you, Madam Hearing Officer. Our last witness is Mr. Tom Alexander.

HEARING EXAMINER ORTH: Mr. Alexander, would you raise your right hand, please?

THE WITNESS: Yes. Can you hear me okay?

HEARING EXAMINER ORTH: Yes, that's very clear.

Do you swear or affirm that the testimony you are about to give will be the truth, the whole truth, and nothing but the truth?

THE WITNESS: I do.

HEARING EXAMINER ORTH: Thank you. Ms. Paranhos.

TOM ALEXANDER

(Sworn, testified as follows:)

DIRECT EXAMINATION

BY MS. PARANHOS:

Q. Mr. Alexander, can you please state your name and spell your last name for the record?

A. My name is Tom Alexander, A-l-e-x-a-n-d-e-r.

Q. Where do you currently work and what is your current occupation?

A. Currently I am a consultant to the Environmental Defense Fund and have been for approximately four and a half years just after I retired from full-time work.

Q. Terrific. What do you do in your current consulting role?

A. A variety of tasks and projects over the last four and a half years centered on underground gas storage, rules regulations, rulemakings, well integrity, risk management, emergency response planning and then working with other jurisdictions such as Pennsylvania on conventional and unconventional rules. I have been on this flaring and venting project with EDF for a little over six months now, and not only in New Mexico, but Colorado and Texas.

And I also assist EDF in their work with the IOGCC and the EERT committee in trying to get tip of the spear information to regulators and the types of topics are determined by the regulators. So it's been a broad sweep of a lot of interesting things.

Q. Thank you. And what did you do prior to starting this consulting business?

A. I have about 36 years of full-time employment in the oil and gas industry starting in 1981 after I got out of the Air Force. Worked for Schlumberger and couple of operators in East Texas and Colorado as well with operations that span four or five different states, and then moved to Arkansas and was with Southwestern Energy for the last half of my career.

During that time with Southwestern Energy I served as production and completion engineer. I was a team leader for our Fayetteville Shale gas discovery in Arkansas and was its completions manager, and then severed a couple of years in Canada with an exploration project we had in New Brunswick and the last three-and-a-half years with full-time tenure with, with Southwestern Energy was the division manager for HSE.

Q. Terrific. Can you briefly summarize your relevant educational background?

A. Well, I first graduated from Wake Forest

University with a degree in psychology and then joined the Air Force during that time. I got two more degrees when we were stationed in Rapid City, South Dakota, from South Dakota School of Mines and Technology a BS and MS in engineering.

And during my work career in oil and gas, I did all of the relevant course work for a masters in environmental management at Denver University and was about halfway through my thesis when we moved, and I never did complete it.

And I would also add at least a couple of dozen industry courses on a wide variety of topics including drilling, completion, production, artificial lift, cementing, reservoir engineering, project management, the list could go on.

Q. Thank you. That's terrific. Thank you. And did you prepare a CV for this proceeding?

A. I did, yes.

Q. And is Exhibit 43, EDF Exhibit 43, a correct copy of your CV?

A. Yes.

MS. PARANHOS: Madam Hearing Officer, I would like to move into evidence EDF Exhibit 43.

HEARING EXAMINER ORTH: Let me pause for a moment in the event there are any objections.

(No audible response.)

HEARING EXAMINER ORTH: Exhibit 43 is admitted.

(Exhibit 43 admitted.)

Q. Thank you. And Mr. Alexander, in preparation for this hearing did you review OCD's proposed venting and flaring rule Part 27 of Title 19 of the New Mexico Administrative Code Chapter 15?

A. Yes, I did.

Q. And what is your overall impression of the draft regulation?

A. Overall, very good comprehensive treatment to minimize waste, promote safe operations and eventually eliminate excessive flaring and venting. However, we have some suggestions to strengthen several provisions that we will elaborate on.

Q. Thank you. I would like to now walk through some of EDF's suggested revisions for the benefit of the Commission beginning with our suggested revision to the completion requirement in Part 27.8.

Mr. Alexander, can you please explain EDF's suggested revision to the completion requirement?

A. Yes. As currently proposed, the completion or the flowback is broken into basically two different phases. There is the initial phase and then the separation phase.

And the disposition of the gas differs in these

two phases. We propose there really does not need to be a distinction, and the gas capture can in most cases be accomplished beginning with the initial flowback all the way through completion to when the well is handed over to production.

Now, for example, we propose in our redline -- I will just read this very quickly -- during initial flowback the operator must direct all fluids in flowback vessels and collect and control emissions from each flowback vessel on and after the date of initial flowback by routing emissions and operating air pollution control equipment that achieves hydrocarbon control efficiency of at least 95 percent. And if a combustion device is used, it must have a design to of destruction efficiency of at least 98 percent.

Bottom line here is that other operators are doing this in other jurisdictions and may be doing it in New Mexico. There is a way to go through a thorough risk assessment and process safety evaluation so that a system can be designed and deployed that can control even the initial flowback which would result in a significant reduction in VOC in gas emission venting.

So all of these cases of flowbacks are going to have nuances and differences, but the combination of close top tanks, pressure relief systems, liquid and gas manifold balancing systems, equipment grounding is very important,

and closed flares can be deployed.

Now the flowback operation obviously poses an increased risk of environmental and safety impacts that range not only from the gas vapor (unclear) and static ignition but the process safety management evaluation that others have done have resulted and used closed top tanks, as I said, pressure relief systems, and it's just -- it has resulted in a lot of reduction in emissions and spills.

Q. Great. Thank you so much for that. Do you think that operators can safely route flowback fluids to an enclosed flowback vessel that is equipped with a combustion device or vapor recovery unit?

A. I do.

Q. Terrific. And what precisely about EDF's suggestion gives you comfort regarding safety?

A. Well, research on the one hand, and discussion with a former colleague -- well, he still is a colleague -- on the other hand.

First of all, there is an operator that I ran into in Colorado that operates in the South Platte River Basin, and there is an interesting discussion and PowerPoint that they put together with a flow diagram using a variety of the pieces of equipment that I just described. You know, coming off the wellhead after a frac and going through sand knockout or sand separator systems and going through various

manifolds, and there are safety systems deployed, pressure relief systems deployed that allows these people to, in most cases, direct flowback and manage emissions rather than just venting them to the atmosphere.

Another colleague of mine that I discussed with that has operated for many years in Pennsylvania in the Marsellus with Range Resources discussed with me how their production engineer solved this problem quite a while ago.

So, research and discussion with colleagues, I'm confident this can be done.

Q. Thank you, Mr. Alexander. And did we base our suggested revision to the completion requirements in part on rules that have been adopted by another jurisdiction?

A. Yes, we have. Colorado.

Q. Thank you. And I think you already touched on this, but EDF has suggested some definitions to accompany these suggestions. Could you briefly describe what is meant by the term air pollution control equipment as we have proposed that?

A. It simply points to that being either a combustor or a vapor recovery unit, VRU.

Q. And can you explain what a VRU is?

A. Well, in my experience with a VRU, vapor recovery unit, most of it was in Midwest City when I worked for another company and we used them on storage tanks. We were

drilling and completing a number of wells on a per-pad basis, six, eight, ten wells per pad, I don't remember exactly how, and we would have eight or ten large storage tanks, so there were a lot of emissions coming off of those tanks. We used vapor recovery units on all of those tanks with a small compressor to direct all of those VOC emissions down the pipelines instead of letting them leak to the atmosphere.

Q. Terrific, thank you. And does the OCD proposed draft that we commented on allow operators to use a combustion device during the completion and recompletion phase?

A. Yes. In C.2.B in the October draft, that allows operators there to use a flare in certain circumstances where it's unsafe to capture natural gas.

Q. Great. And is a combustion device a type of flare?

A. Yes. OCD defines flare to mean the uncontrolled -- or the controlled -- I'm sorry -- combustion of natural gas in a device designed for that purpose.

Q. Great. Thank you. So in your opinion, does the OCD October draft contemplate that an operator could use either a combustion device or a vapor recovery unit to control venting in the rule?

A. Yes.

Q. Thank you. I would like to now turn to EDF suggestion that the rules require that any form that must be certified by signed by an official with accountability over the operations or activities subject to the certification or submission. Does the rule require the operator certify certain forms or submit a certification of certain information?

A. Yes. The OCD draft rule requires operators to certify the following: Submissions, annual reports that certify compliance with the gas capture requirements as pointed out in 27.9.B, a statement that an operator did not know or have reason to know of a leak or release in advance of discovering said leak or release during ALARM technology. Also a statement as to whether the operator will or not will not be able to connect to a gas gathering system with sufficient capacity to transport 100 percent of its anticipated gas production on the first day of production in part 27.9.D.4.

Q. Thank you. And Tom, could you explain why EDF believes it's important to require that an accountable official sign these certifications?

A. Sure. While New Mexico is embarking upon a serious effort to substantially reduce unnecessary flaring and venting, I think it's in comment that they should expect operators to be as serious, if not more so, and that the

certification be by someone in the organization that has the responsibility and/or authority to see to it that the information is correct, as well as certifying an individual should be an officer or senior manager directly responsible for an accountable -- accountability is a big deal -- for results as well. It should not be signed by the first production tech that someone can find at that level of authority.

Q. Thank you. And as far as you understand, do the OCD rules currently require anyone in particular to sign certifications?

A. No.

Q. Thank you. And in your opinion, would there be -- could EDF's suggestion be implemented by requiring that the form, on the form itself, just be signed by an accountable official rather than adding a new definition of certifier certification to this rule?

A. Yes.

Q. Terrific. I would now like to turn to EDF's suggested revision to Part 27.8.B governing exceptions to the prohibition on venting and flaring during production.

A. Okay.

Q. Great. Can you explain EDF's suggested revision to the liquids unloading requirement in Part 27.9.D.3.A?

A. Sure. It's been my experience, and so this is

what we are proposing. And over decades, for me, as operating wells in a number of jurisdictions and probably the most interesting area was Arkansas, that using some sort of automated lift system even though it's as simple as a plunger lift, that's as simple as you get, but it is going to reduce manpower requirements to do something of that nature. And in many cases and in most cases it will reduce the natural resource waste by increasing production and minimizing emissions.

Very quickly I will tell you that when I went to work with Southwestern Energy, they operated in Arkansas probably close to 400 wells, not one in every one of these wells had issues with liquid unloading. And the typical procedure was drop a (unclear) stick in the well, come back open it up, unload it and put it back to sales. I introduced the idea of plunger lifts, and we installed dozens upon dozens and dozens of those.

So I just think it's very important to encourage the use of those technologies. Manual unloading, yes, it works, but it does result in a lot more waste and pollution than using lift systems like that.

Q. Thank you, Tom. And can you see the screen here where I have EDF's suggested language for the liquids unloading provision suggestion?

A. What I see is completion and recompletion

operation.

Q. That's interesting. Huh. Apparently I am looking at a different screen than you all are.

Well, if I might just be able to read to you what we have proposed for liquids unloading, I just want to clarify our intent here. So we propose that the operator use an automated control system such as a plunger lift where technically feasible. Does that language there require that an operator always must install a plunger lift?

A. No.

Q. Are there other types of automated control systems an operator could utilize other than a plunger lift?

A. There are.

Q. And does this, do our -- is the intent of our suggestion to require that an operator try first to use an automated control system such as plunger lift, but in the event they are unable to do so, if it's technically infeasible, they may then manually unload the well?

A. Yes.

Q. Is that correct? Thank you. And could you describe the other recommendation that EDF suggested with respect to noticing of liquids unloading activities?

A. Well, combined with that is the discussion of whether or not the operator should remain on site, I think, with a well versus opening the well up and going about some

other duty and coming back later after the well is hopefully unloaded and putting it back to sales, we are adamant about requiring the operator to remain at the well site, and, as well, providing notice to the Division or the Commission of such manual unloading.

Depending upon the culture around the area, you know, it is just -- it's just prudent operations, number one, to stay on site, number two, to give the Commission an opportunity to come and observe if they choose to do so, recognizing that this could result in a lot of notifications, but certainly, you know, the Commission is not going to elect to try to come out to every one of these events, but we do feel like it's necessary to give the Commission an opportunity to respond if they choose to.

Q. Thank you, Tom. And so are we supportive of the Division's draft rule which requires the operator to remain on site rather than in close proximity during manual liquids unloading?

A. Yes, absolutely. What would close proximity mean? Is it the next well over? Is it a mile? I mean, you can't define that. Just stay on site. That's prudent operations. It's unsafe to leave a well open to the atmosphere like that. You never know when something is going to come unglued, unhinged. I just can't imagine doing that.

Q. Thank you very much. I would now like you to discuss EDF's suggested revision to the exception that allows operators to flare or vent from an exploratory well. We made some suggested revisions to that exception. Could you please walk the Commission through the basis for those suggestions?

A. Yeah. First of all, the original proposal suggested that an operator be given 12 months to evaluate a well, an exploratory well. It is obviously very important to obtain as much information as soon as you can about the viability of the well. It has a lot of implications in terms of how much more capital is going to be spent on a particular project, SEC reporting guidelines for public companies, reserve estimates, investors, there is a whole host of reasons why a company would want to know as soon as possible.

On the other hand, there is the notion that, which we support, that that 12 months is far in excess of what is generally required to evaluate the wells' potential.

Now the alternative definition or proposal here to this is that the operator will begin to file certain form C-129, I think it is, within 15 days of determining if the well is capable of producing in pay quantities.

We still feel that even with that, we understand that perhaps the intent is that the operator is going to do

the right thing, and as soon as they determine if a well is capable of producing in paying quantities, if they are going to shut in and wait for infrastructure or whatever.

We propose the alternate philosophy, and that is, give the operator say two months, 60 days to evaluate a well. Make it incumbent upon the operator to provide sufficient technical evidence to the Division that, if they need more time, here is why, and then it can be granted.

If you give an operator 12 months, they will take 12 months. If you give an operator two months and require additional information, then you will get that. And in that case you are going to almost always minimize waste, whereas if you give an operator 12 months, you will almost always increase waste and pollution to the environment.

And since --

Q. Thank you, Tom.

A. -- since the objective is waste reduction, go with the shorter time frame and require the operator to provide good technical evidence that it requires them a longer period of time.

Q. Thank you so much. And did EDF also make some, suggest some improvements to the exception that allows an operator to vent during Bradenhead testing?

A. Yes. Once again, this is a matter of putting a fence around something. If -- if you -- if you put 30

minutes or so on -- and we realize, for example, that dependent upon the downhole makeup and the volume of the (unclear) that are in question here, blowing off gas can take anywhere from a couple of minutes to whatever. And if it's going to take more than half hour, and it's still, you know, you have an issue there that needs some investigation, put a fence around it, and if there is a reason to exceed that, then, again, have the operator justify it.

But if you just say you can do this and there is no time element to this, then you are going to have cases where the backside is going to be opened up, the pumper is going to leave and he'll get back there sometime during the day.

Q. Thank you very much. I would now like to turn to EDF's suggestion that flaring during completions and production be done with an enclosed device that has a design destruction efficiency of 98 percent. Could you speak a little bit to why EDF has suggested this provision?

A. You know, it's interesting, New Mexico Oil & Gas Association put together a document that's on their site, and it's really a very good document, called Flaring In The Oil Field where they actually state that a -- excuse me -- that a properly designed flare system destroys 98 percent of methane and VOCs.

And they also state that flaring is safer than

venting because its effectively destroying more than 98 percent of the methane and VOCs. And I could just simply say we agree with that 100 percent and support that notion altogether.

Q. Thank you, Tom. I now and lastly like to turn to EDF's revision to the gas management plan requirements in Part 27.9.D. Can you explain the basis for EDF's suggestion that operators be required to provide information on anticipated safety risks that will require the operator to allow natural gas to escape during drilling operations?

A. Sure. We feel it's only prudent to think through the processes and procedures to ensure that the most efficient and safe procedures are being exercised. And another point that NMOGA has made in this same document about flaring safety over venting is that, if the operator thinks there are specific situations wherein venting is safer, it's incumbent on them to think through it and share it with the regulator. It's prudent.

There needs to also be consideration given to the surrounding environment culture, and this is the case as well with flaring. So bottom line, they need to think through it and they detail why venting would be safer, but I don't think there is very many cases that it would be safer than flaring.

Q. Thank you so much. And EDF also suggested that

operators provide a description of operational best practices that will be used to minimize venting during active and planned maintenance. Can you elaborate on why EDF supports this provision?

A. Well, I think, overall, you can't deny the value of good communication and planning and how that will reduce flaring. That's been my experience in over 35, 36 years of engineering and operations. And it's actually a point, again, in this NMOGA document where they directly state that communication and planning reduces flaring.

So going through the process and procedure to evaluate what you are doing, why you are doing it, will not only reduce flaring, but it's probably going to, from time to time, to provide new opportunities to do things more efficiently, and thus less waste.

Q. Thank you for that answer. And EDF also suggested that the gas management plan include procedures the operator will employ to reduce the frequency of well liquids unloading events. Can you discuss why we think this is an important component of a gas management plan?

A. The process, again, of examining one's own processes and procedures and seeking out better alternatives ought to be part of any operator's culture, and not documenting such can't be a burden.

And as a matter of fact it's a service and

responsibility not only to the state, but operations, and there are going to be opportunities for other operators to learn from one's experience.

Q. Thank you, Tom. And just one more question around the gas management plan requirement. EDF also suggested that operators provide the anticipated volumes of liquids in gas production and a description of how separation equipment will be sized to optimize gas capture.

Can you discuss a bit why you think that's also a helpful provision for a gas management plan?

A. Well, I think the answer really is the same as the one I have given on the last two, that the processes and procedures are things that should be shared with the regulator. It's only through doing that, through better communication and planning, that we are ever going to be a more efficient and better operator and better industry.

I think that overall it just, it's the process of going through what you are doing and why you are doing and justifying it, and are we actually achieving the end goal is something that any prudent operator will do and that the regulator ought to expect, the public ought to expect.

Q. Were these four components of a gas management plan, have they been recently adopted by another jurisdiction to their rules?

A. Yes, Colorado.

Q. Thank you, Tom. My last questions have to do with the very last part of the gas management plan requirements, Part 7. And I'm curious if could you explain EDF's suggestion that the rule should specify that OCD will either deny or conditionally approve, rather than allow for the operator -- rather than specify that OCD may deny or conditionally approve an APD if the operator fails to submit a certification regarding it's connection to a gathering line or an adequate venting and flaring plan.

A. Okay. You know, to be plain, at the risk of being abrupt, we believe it's vital that operators be in compliance with all rules and regulations, not just this one here.

So it follows that an operator is out of compliance without good cause, without good cause, that individual company should not be afforded the benefit of the state and its resources automatically. It must be crystal clear that to gain APD approval the operator must be in compliance.

Now, we are not suggesting that the regulator has to deny it. No, it has an option to conditionally approve, but it needs to be tweaked to include that OCD will definitely factor in compliance in the decision of APD approval or not.

There just needs to be more specificity around

the decision to deny, rather than the softer made position as it is. And we feel like that the proposed language will promote compliance by the operator more than the current language that is proposed by OCD.

Q. Thank you. And did we suggest that the rule specify that the operator -- that the OCD consider the operator's compliance with its state by natural gas requirements explicitly when determining whether to deny or conditionally approve an APD?

A. No.

Q. No?

A. No. Say the question again. I'm sorry.

Q. No worries. So in our suggested language to Part 27.9.D.7 --

A. Uh-huh.

Q. And unfortunately I'm looking at what I thought was a shared screen that includes our language, but apparently no one else is looking at it other than myself.

A. It's there now.

Q. Okay. So the language in red represents EDF's suggested revision. I just wanted to be clear as to whether or not EDF is suggesting that the rule add language allowing OCD to consider if the operator is in compliance with its statewide natural gas capture requirements.

A. Right. Yes.

Q. Perfect. Thank you. Sorry for my unclear question.

A. That's okay.

Q. Okay. Jus a few more questions here. Do you -- are you aware there has been some testimony regarding whether or not there is any benefit to the operator having to do AVO inspections and recording those inspections rather than simply doing those inspections voluntarily?

A. Yes.

Q. And can you talk about your thoughts on whether or not recordkeeping requirements for AVO inspections are useful?

A. Well, absolutely they are useful. History is a great teacher, and if you don't keep records, vital historical information can be left to someone's memory. And what happens when the pumper quits, moves on, or is reassigned, a lot of that past history of the well can be lost.

So proper documentation will help identify trends. It's a permanent record. Doing one's job with documents will reduce waste and increase production. There is just no question about it.

I can't -- you know, every day the pumper that shows up to a well, it should be a part of their regular routine to do these types of inspections. You just never

know, even in low producing environment, you just never know when something is going to get plugged up, come unglued, come unscrewed, pieces and parts of equipment wear out, and to just assume that everything is going to be okay one day to the next is asking for trouble.

So in all of my years of experience, it's been a regular part and routine to check these kinds of things and to make notes of, of observations and things to watch out for.

Q. Thank you, Tom. So do you think that there is a benefit in having operators record and maintain records of their AVO inspections?

A. I think absolutely, absolutely. And it can't -- I can't imagine if the operator is, if the pumper is recording all the vital information in terms of production and et cetera, that it would take more that a minute to have some sort of a form that is made up to check it off and note anything that's odd, it just, I just can't imagine not doing that.

Q. Great, thank you. And are you aware that there has been testimony presented during this proceeding that operators should be allowed to vent from normally operating fugitive emission components such as flanges, connectors and valves?

A. I am.

Q. Do you have any thoughts on that suggestion?

A. Yeah, I'm not aware of flanges and connections and piping that are designed to leak. I remember hearing Dr. Lyon talk about all of these elements are designed with zero or very minimal leakage in them.

I can just -- I can tell you that from our experience -- when I say our, Southwestern Energy when I was working with them -- we underwent in our Fayetteville shale operation, which was extensive, I think we landed up drilling some 4500 wells, a very intensive survey of leaks and detecting leaks, and there was a lot of research done on some of these with initial technologies, I wasn't directly involved with it, but I know we found quite a few of the small leaks in a period of couple of years eliminated quite a bit of them, and it decreases waste and decreases pollution and increases revenue.

So if there are connections, if there are certain situations wherein its designed to do this, then so be it. Otherwise, I think every effort should be made as an operator to detect it and fix it.

Q. Thank you, Tom. Are you are you familiar with the provision in Part 27.8.D of OCD's draft rule that requires the operator to flare rather than vent natural gas except where flaring is technically infeasible or pose a risk to safe operations or personnel safety and venting is a

safer alternative to flaring?

A. I am.

Q. And do you support this provision?

A. Yes. It's well documented that venting is more destructive to the environment than flaring methane versus CO2, there is no question. Nobody in the scientific community questions that.

The issue, though, is often more one of economics than expediency, and that really should not come into play as any kind of a driver in this decision.

Safety can be an issue as well depending upon the goes composition, prevailing winds or other meteorological conditions or topography, and I would like to reiterate -- and NMOGA states it in their document that I referred to a couple of times that flaring is more safe than venting.

So that is our position, we agree with NMOGA on that as well.

Q. Thank you, Mr. Alexander, and just one last question, are you familiar with the OCD's recent changes to the definitions of stripper wells.

A. I am.

Q. And do you have any thoughts on the new definition of a stripper well?

A. It's an interesting proposal, I have never seen it before, to address only the gas end of this equation. We

feel like both oil and gas needs to be included in the definition and/or the understanding of what is considered a stripper well.

Otherwise we think there is going to be some results from this, some unintended consequences, even though, for example, if you are relying only the amount of gas a well makes to make a decision on some exceptions that that well might enjoy, such as AVO inspections and when flare stacks need to be retrofitted, et cetera, what's the case for a well that's making 100 barrels of oil a day and 45 MCF a day that falls into that category?

So economics cannot be part of the decision as to whether or not you've got the money or the well makes enough money to properly retrofit, so we feel like the definition should include both oil and gas.

Q. Thank you so much, Mr. Alexander.

MS. PARANHOS: At this point I would like to move to admit EDF Exhibits 39 and 40 into evidence.

HEARING EXAMINER ORTH: Let me pause for a moment in the event there are objections to EDF Exhibits 39 and 40.

(No audible response.)

HEARING EXAMINER ORTH: 39 and 40 are admitted.

(Exhibits 39 and 40 admitted.)

MS. PARANHOS: Thank you, Madam Hearing Officer, and that finishes up Mr. Alexander's testimony. He is now

available for questions.

HEARING EXAMINER ORTH: Thank you very much, Ms. Paranhos. Mr. Ames, do you have questions of Mr. Alexander?

MR. AMES: Just a couple of questions.

CROSS-EXAMINATION

BY MR. AMES:

Q. Good morning, Mr. Alexander.

A. Good morning.

Q. I think you said more than once that reduced emission completions can capture the gas in most cases. And I was wondering, you know, most cases means less than all; right?

A. Yeah, this has to do with the initial flowback.

Q. Yes.

A. Yeah.

Q. So my question for you is, in what cases can reduced emission completions capture the gas and in which cases can't it?

A. Well, what I am a pointing to here is, let's say for example, you have completed a well and done your due diligence and you have outfitted this well to capture all emissions or deal with them properly as opposed venting on flowback, and I am well aware, have been, you know, completion or party to a completion of thousands, literally thousands of frac jobs and the flowback, that you can't

predict everything.

So when, when you put together this design where you have some release systems, safety provisions or pressure release systems you are going to have some cases where the system that you designed may be overwhelmed, for example. There has to be a safety release or a pressure release system.

So that would be the case that I'm talking about there. Does that make sense?

Q. Yes. And are you suggesting that EDF's proposal to reduce emission completions provides sufficient flexibility to accommodate those cases in which it wouldn't capture the natural gas?

A. I do. The terminology, I believe, that we actually put in there that the vessels would, would be outfitted with some pressure release systems.

Q. That's all. Thank you.

A. Uh-huh.

HEARING EXAMINER ORTH: Thank you, Mr. Ames. Mr. Rankin or Mr. Feldewert, do you have questions of Mr. Alexander?

MR. RANKIN: Thank you, Madam Hearing Officer.

CROSS-EXAMINATION

BY MR. RANKIN:

Q. Good afternoon, Mr. Alexander. I do want to go

back to that same topic generally that Mr. Ames was questioning about.

MR. RANKIN: But if I might, Mr. Garcia, should I be able to -- actually, never mind, the language is there.

Q. So I think I understood you to say that the provision of edition -- let me rephrase. The proposed modification on this process for airtight and vapor recovery units at the initial flowback stage is based on research and discussion with colleagues. Is that a correct understanding of what your testimony was?

A. That's part of it. It's also part of the recent Colorado regulation.

Q. Okay. And that research and discussion that you had that formed the basis of your opinion (unclear) in this language, that wasn't part of any of your exhibits today; correct?

A. That is correct.

Q. And so part of the proposed modifications, the public was not apprised of the basis for that research or the discussions you had with the colleagues that justified the modifications in this language; correct?

A. I would assume so.

Q. And the public also was not apprised prior to or at the time of the proposed rulemaking; is that correct?

A. I don't think so.

MR. RANKIN: That's all the questions I have, Madam Hearing Officer. Thank you.

HEARING EXAMINER ORTH: Thank you, Mr. Rankin. Mr. Biernoff, do you have questions of Mr. Alexander?

MR. BIERNOFF: Thank you, Madam Hearing Officer. I have a handful of questions for Mr. Alexander.

CROSS-EXAMINATION

BY MR. BIERNOFF:

Q. Thank you, Mr. Alexander. You testified on direct regarding 19.15.27.9.B.7, the provision that confirms possible denial or conditional approval of APDs; right?

A. Yes.

Q. And with respect to that provision, do you see a danger in recurrent draft rules are optional as opposed to mandatory denial or conditional approval language?

A. Do I see -- do I see a danger what?

Q. Yeah. I didn't do a great job of phrasing that question. The current language in the proposed draft rule at the section that I just mentioned uses the word "may" rather than "shall"; right?

A. Yes.

Q. Do you see any risk in that?

A. If you look at this, so what, what the Division is going to do is they will either deny or conditionally approve. So it doesn't back anybody into a corner, it just

adds a little bit more specificity, and it -- that use of the word "will" or if you want to use "shall" really does advise the operator that we are going to look at your compliance, I think that it really -- that's the point of it is to make a point to the operator that your compliance is important.

Q. Okay. Do you -- I'm sorry, were you finished? I didn't mean to cut you off.

A. Yes, all done.

Q. Okay. And then you had also testified that, in your opinion, there are references in the rule that apply only to gas wells and not oil wells, and that that, that's a potential possibility. Can you -- can you let me know what portions of the rule that concern that you are articulated applies to?

A. Talking about stripper wells. Let me find that.

MS. PARANHOS: So Mr. Biernoff, I would love to change the screen here to put back up or put up OCD's changes related to stripper wells where it shows the parts of the rule that had those. Unfortunately I am having problems going back and forth between two different documents, so if you would allow me a minute I can probably just scroll through in this document to the section that includes stripper wells if that would be helpful to everyone.

A. And I have it here, too, Elizabeth, I found it, but go ahead.

MS. PARANHOS: Go ahead, Tom, and at the same time that you are doing it I will go through this document and try to pull up the relevant provision as well.

A. So this is under 19.15.27.8, venting and flaring of natural gas, E, and it really kind of begins with 5, talking about AVO inspections, et cetera.

And then under 5.B double i, it says here, "the operator shall conduct an AVO inspection weekly On a well or a facility with an average daily production greater than," and then ten barrels of oil is stricken, and what we see there is 60 MCF a day, so basically excluding consideration of the oil production.

And when we go down to 5.C, the same has occurred, on a well or facilities with an average daily production equal to or less than ten barrels of oil is excluded and 60 MCF is included. So that's what we are referring to.

Q. And are those strikeouts, the strikeouts of reference to 10 barrels of oil, are those of concern to EDF or to you?

A. Yeah. As we interpret this, there is an exception granted to wells that are making less than 60 MCF a day without any regard to how much oil.

The exceptions are going to be on AVO inspection frequency. It's also going to allow that qualification of a well to have some relief in terms of when a well must be outfitted with, you know, retrofitted with flare stack modifications, all those, et cetera.

In a previous discussion there was a quote about are we aware, for example, it costs 6- to $10,000 to retrofit on these wells with the kind of flare stack and other equipment that is being required.

And my comment on that is that if, if 6,000, 7,000 or even $10,000 a year is going to put a well under water, it ought to be under water, anyway. It's right on the brink of becoming full of cement, and I just -- that amount of production -- the amount of production that covers that cost of capital expenditure is less than a barrel a day after some provisions for tax and royalty.

Q. Okay. Thank you very much, Mr. Alexander.

A. Sure.

MR. BIERNOFF: I don't have any other questions, Madam Hearing Officer.

HEARING EXAMINER ORTH: Thank you, Mr. Biernoff. Ms. Fox, do you have questions of Mr. Alexander?

MS. FOX: No, we do not, Madam Hearing Officer. Thank you, Mr. Alexander for your testimony.

THE WITNESS: You're welcome.

HEARING EXAMINER ORTH: Thank you. Commissioner Engler?

COMMISSIONER ENGLER: Yes, thank you. Good morning, Mr. Alexander, or good afternoon, wherever you're at.

THE WITNESS: It's afternoon where I am.

COMMISSIONER ENGLER: Okay. I want to -- I want some clarity and some help on, this is going back to the initial flowback question and equipment. Were you -- did you hear yesterday Mr. Schriver's testimony?

THE WITNESS: I did not.

COMMISSIONER ENGLER: And so you are not familiar with, he also had exhibits with regards to low emission completions. I assume you have not read or seen those?

THE WITNESS: I have not.

COMMISSIONER ENGLER: Okay. Well, so let me -- so let me ask, on this enclosed vapor type flowback vessels, in your research and experience, can you, can you describe to me some of the specs on those.

THE WITNESS: Well, let me start with experience. And I will tell you that when we discovered the Fayetteville Shale in Arkansas, it became immediately apparent that the typical way to flow back a well was not going to be acceptable.

I do not recall how long it took us to put

together our design and implementation of what we call green completion equipment. We were pretty much tip of the spear on that, but we moved to that to handle the flowback of wells immediately.

Now, we had the advantage, and I will be frank with this, we had the advantage that we had in almost all cases infrastructure readily available, so going straight to sales was not an issue, that worked.

But that was a temporary group of equipment that we moved on site and it worked extremely well. People thought there was no way this would work, it was unsafe, blah, blah, blah. That was not the case, and we actually sold more gas by doing it that way than it cost us to do it.

So second piece of this question is my research. I found an operator in Colorado when we were working on the issue up there, they are called Bonanza Creek. They are currently operating in the South Platte River Basin. They provided a nice PowerPoint with a design schematic. Have I done it this way before, I have not, but it is something that is, you know, looking at the schematic and points that they made it made total sense to me.

And then the other part of that piece that I would mention is discussing with an old colleague of mine with Grand Resources up in the Marcellus, once again they had every reason to want to capture as much as they could as

soon as they could and to solve the problem. I don't have any schematics or specs from them.

I can't give you size of vessels or pressure rates, but that would be something that would be easy enough to drum up.

COMMISSIONER ENGLER: In your example for Fayetteville, that's unconventional gas play; correct.

THE WITNESS: Correct.

COMMISSIONER ENGLER: And as you said, you had infrastructure in place, so, you know, you did have gas sales lines ready to go; right?

THE WITNESS: Correct.

COMMISSIONER ENGLER: Okay. In the Marcellus range, that's also a gas play.

THE WITNESS: We had a fair amount in most of those areas of condensate, yes, I agree. Those wells make a ton of condensate, too.

COMMISSIONER ENGLER: And the other example was what South Platte?

THE WITNESS: South Platte, yes.

COMMISSIONER ENGLER: That's gas, too, I believe; right?

THE WITNESS: I'm not that familiar with the characteristics of the basin. It's not, you know, it's not a dry gas, so select -- the basins in Arkansas, that's dry

gas, you know. Up in Colorado that's not a dry gas basin, I can tell you that.

COMMISSIONER ENGLER: I agree. It does have some condensate. But let me ask this hypothetical. If I have an oil well that's just a multistage frac and I've got 5,000 barrels of fluid coming through through from my frac, oil water, is there a vessel that has, that is enclosed vapor tight that will be able to handle that?

THE WITNESS: I think so.

COMMISSIONER ENGLER: So 5,000 barrels a day?

THE WITNESS: Yeah. I think it can be designed to do that, absolutely.

COMMISSIONER ENGLER: I wouldn't mind designing it, but I haven't seen an example, and that's why I was asking you for your expertise in research. I haven't heard of an example that does this.

THE WITNESS: I can't give you a specific example.

COMMISSIONER ENGLER: I did have another question, but I forgot what it was. Oh, I know. Different question. This is on the natural gas management plan in d, and I know one of the requests from EDF under little d, any anticipated safety risks that will require operator to allow natural gas to escape and it says during drilling. So only during the drilling is when you are asking for that, is the

way I read that; is that correct?

THE WITNESS: Can you -- let me find that --

COMMISSIONER ENGLER: It's.

THE WITNESS: -- please.

COMMISSIONER ENGLER: It's 27.9 -- oh, I hate this, what is it A, B, C, D --

THE WITNESS: A, B, C, D.

COMMISSIONER ENGLER: 1 little d.

THE WITNESS: Got it.

COMMISSIONER ENGLER: It's that request about specifically safety risks, and it only says during drilling. That's what I read. Is that what you --

THE WITNESS: That's what we mean, and I think that the point here is the reason during drilling that I'm just going to let the gas escape or event as opposed to flaring, if there is not a good reason to do that, then let's flare it.

COMMISSIONER ENGLER: Is it -- is it -- let's see. In a drilling plan you must have your well control design well control equipment, isn't that somewhat accomplishing what you are asking here?

THE WITNESS: Well, I guess it could be, it could be part of that plan, there is no question about it. It depends on how you organize it. So I mean, I'm not going to disagree with you on that. It could be.

COMMISSIONER ENGLER: Okay. I appreciate. Thank you very much. This was helpful.

THE WITNESS: You are welcome.

HEARING EXAMINER ORTH: Thank you, Commissioner Kessler -- or, excuse me -- Engler. Commissioner Kessler?

(No audible response.)

HEARING EXAMINER ORTH: She may have stepped away for a moment. Madam Chair, do you have questions of Mr. Alexander?

CHAIRWOMAN SANDOVAL: Just a couple. First off, do you support the rule?

THE WITNESS: I do.

CHAIRWOMAN SANDOVAL: I'm not sure of your involvement, but to the extent that you were involved, do you feel like the rulemaking process was collaborative?

THE WITNESS: To the extent that I was involved, yes, I do.

CHAIRWOMAN SANDOVAL: Okay. Thank you. So I think back in 27.9.D -- D.7, EDF proposes to add that language which I think you talked about, or if the operator is not in compliance with the statewide natural gas capture requirements. And what you said verbally, and I think you repeated this twice, was, without good cause, but those languages aren't -- I'm sorry -- those words aren't in the proposed language.

So is the intent of that edit to be, or if the operator is not in compliance with state natural gas capture requirements without good cause, is that what the intent is, or is it intended to be the way it's written?

THE WITNESS: It's intended to be the way it's written, and I think our point is that it would be up to the operator and the regulator to determine that without being too specific.

CHAIRWOMAN SANDOVAL: Does this language the way it's written now not give the Division that flexibility?

THE WITNESS: It says may, and that, to us, is not as specific as will, that you will consider compliance, and that it may have an impact upon how you react, that you either deny the APD or you conditionally approve.

CHAIRWOMAN SANDOVAL: Let me clarify, the language as it's proposed by EDF, I guess you are saying that the Division should have some flexibility, but does the language that EDF proposed the way it's written have that flexibility?

THE WITNESS: Yes, I believe it does.

CHAIRWOMAN SANDOVAL: Okay. So I think we just had a conversation about this stripper well, gas, oil, et cetera.

THE WITNESS: Yeah.

CHAIRWOMAN SANDOVAL: I'm looking at Part 27 and

the title and it's termed, venting and flaring of natural gas; correct?

THE WITNESS: Yes, it is.

CHAIRWOMAN SANDOVAL: Is oil a natural gas?

THE WITNESS: No, it is not.

CHAIRWOMAN SANDOVAL: I guess I'm maybe struggling a little bit to see where the concern is. Maybe if you could elaborate a little bit more, that would be helpful.

THE WITNESS: So what this -- what is the -- so the question then becomes, I think -- all right. Let's consider a stripper well, consider a well that has very little margin after you pay royalty, taxes and profits.

And so the added burden, if you will, although we don't really consider it a burden, of doing AVO inspections on some basis of time, and/or retrofitting flare stacks with auto igniters, et cetera, these wells that are stripper wells would have a bit of a problem paying for that sort of thing. So that's one side of the equation.

The other side of it is that if we are providing relief to an operator based only upon the gas production, then the economic question is not an economic question if that well is making, you know, 100 barrels of oil a day, that 5-, 6-, $10,000 is nothing.

So that's really our point is that both, you

know, if you are going to, if you are going to define stripper well, in our view, stripper means that economically the well is challenged because of the total production stream, not just the gas stream. Does that make sense?

CHAIRWOMAN SANDOVAL: (Inaudible.)

THE WITNESS: You are on mute.

CHAIRWOMAN SANDOVAL: Yeah, okay. I mean, I think I see where you're going. So you are saying like if there is a well that's producing 100 barrels of oil, but 55 MCF of gas a day, would that be classified as a stripper well under this provision and allowed to have that exemption.

THE WITNESS: Correct. Exactly. I think there is going to be some unintended consequences here.

CHAIRWOMAN SANDOVAL: Okay, all right. That's helpful, thank you. I guess my last question is all of the conversations so far have been on Part 27. Does EDF have any comments on Part 28, which is the midstream version?

THE WITNESS: I don't. I think Elizabeth is nodding as well.

CHAIRWOMAN SANDOVAL: She's not one of the pictures on my screen at the moment.

MS. PARANHOS: Madam Chair, we only submitted comments on Part 27 not 28.

CHAIRWOMAN SANDOVAL: I just wanted to confirm

that. So would that imply that EDF is good with Part 28?

MS. PARANHOS: No. We have no position on Part 28.

CHAIRWOMAN SANDOVAL: Okay. All right. That's all my questions, thank you.

THE WITNESS: Sure.

HEARING EXAMINER ORTH: Thank you, Madam Chair. Ms. Paranhos, any follow-up?

MS. PARANHOS: Thank you, Madam Chair. Yes, just a few questions.

REDIRECT EXAMINATION

BY MS. PARANHOS:

Q. I thought it would be great, there is a little confusion on EDF's suggestion to Part 9.D.7 in the natural gas management plan, if we just clarify our suggestion. So I'm going to read -- we have two suggestions for Part 7.

One is adding an element of the rules compliance to the -- explicitly adding it to the determination when an operator -- sorry, I keep saying that -- when the OCD is determining whether or not to approve or conditionally -- deny or conditionally approve an APD.

So we added the language that is in red in our redline, which just makes it explicit that a factor that OCD should consider is whether or not the operator is in compliance with their natural gas capture requirements.

Is that your understanding of that particular edition in red?

A. Yes.

Q. Thank you. And then we made one other change, and that was to strike the word "may" and replace it with the word "will" so that the rule provides two options, and only two, for the OCD when determining what to do with an APD, one is to deny it and the other is to conditionally approve it; is that accurate?

A. Yes.

Q. Okay. Thank you so much. I just thought we should clarify that.

MS. PARANHOS: I have no more questions for Mr. Alexander.

HEARING EXAMINER ORTH: All right. Thank you, Ms. Paranhos and Mr. Alexander. Is there any reason not to excuse Mr. Alexander.

MS. PARANHOS: No reason on my end.

HEARING EXAMINER ORTH: Thank you very much, Mr. Alexander. You are excused.

THE WITNESS: You are welcome. You all have a very nice day.

HEARING EXAMINER ORTH: Thank you. Let's see, Ms. Fox, I believe we would go back to the continuation of the presentation by Climate Advocates. Can you give us a

idea in terms of order of witnesses?

MS. FOX: Yes. Our next witness will be Charles de Saillan, and he is anticipated to go for about an hour. Then Nathalie Eddy, Mario Atencio, Kendra Pinto, David McCabe and Lesley Fleischman.

HEARING EXAMINER ORTH: Thank you for that, Ms. Fox. It is about 11:30. What do you think, is it preferable to take a lunch break now and come back so that we are not interrupting Mr. De Saillan?

MS. FOX: I will defer to Mr. Baake on that. Mr. de Saillan is his witness.

MR. BAAKE: I personally am okay with getting started now, but I will defer to Mr. de Saillan. I think he is the most important.

THE WITNESS: Can you hear me?

MR. BAAKE: Yes.

THE WITNESS: Sure. Let's get started now.

HEARING EXAMINER ORTH: All righty, let's do that then. Mr. de Saillan, would you raise your right hand, please. Do you swear or affirm that the testimony you are about to give will be the truth, the whole truth and nothing but the truth?

THE WITNESS: Yes, I do.

HEARING EXAMINER ORTH: Thank you. Mr. Baake.

CHARLES dE SAILLAN

(Sworn, testified as follows:)

DIRECT EXAMINATION

BY MR. BAAKE:

Q. Thank you, Mr. De Saillan. Could you spell your last name for the benefit of the court reporter?

A. Yes, I can. It's a little bit tricky. So it's Charles C-h-a-r-l-e-s, last name is de Saillan, and that's lower case d-e, and a space, upper case S-a-i-l-l-a-n.

Q. Thank you, Mr. de Saillan. Where are you currently employed?

A. I'm currently with the New Mexico Environmental Law Center where I work as a staff attorney. And just if I could, before we go on, I just want to thank the, the Oil Conservation Division for, you know, putting these regulations together. I think they have done an excellent job, and I want to say good morning to members of the Commission and to Madam Hearing Officer.

Q. Thank you, Mr. de Saillan. So I would like to discuss your qualifications a little bit. Let's start with your education.

A. Sure. I have a bachelor of arts degree in political science from Boston University College of Liberal Arts. I have a juris doctorate, that's a law degree, from Boston University School of Law, and I also have an LLM,

which is an advanced law degree, from Catholique University in Louvain, Belgium, and that was -- that was received magna cum laude.

Q. And your LLM is in environment and energy law?

A. Yes, that's correct.

Q. Thank you Mr. de Saillan. How about your professional background?

A. Yes. So after law school I worked briefly for the Massachusetts Executive Office of Environmental Affairs. I then went to Washington DC where I worked at the US Environmental Protection Agency in the Office of Enforcement.

And while I was there -- well, I worked there for about eight years, and while I was there I worked on enforcement mostly of the hazardous waste laws, the Resource Conservation and Recovery Act, which we we call RCRA, that's capital R capital C capital R capital A, and the Comprehensive Environmental Response Compensation and Liability Act, which we call CERCLA, or the super fund law.

I also handled enforcement of the water laws, the federal Clean Water Act, and the Safe Drinking Water Act. I worked both on enforcement policy and enforcement litigation which includes bringing enforcement cases throughout the country.

I also worked at the US Department of Justice in

the environmental enforcement section, and while I was there I handled a major Safe Drinking Water Act case in Butte, Montana. And based on the, the extent of the injunctive relief that we obtained, and the size of the civil penalty that we obtained, which was $900,000, that was the largest case that had ever been brought under the Safe Drinking Water Act, and I believe that is still the case.

So then in 1993, I moved to New Mexico to work for the Office of the Attorney General in the Environment Division. I worked there for six years. While I was there I worked on several citizen suits under both RCRA and the Clean Water Act. And a citizen suit is really like a private enforcement action, although the attorney general's office has brought citizen suits on a number of occasions.

I also represented the New Mexico Environment Department on some groundwater permitting issues. And I represented the Natural Resource Damage Program in bringing claims for damages, injuries to the state's natural resources. And while I was at the AG's office I also worked on the reauthorization and amendments of CERCLA super fund law.

So I was the head of a work group on super fund reauthorization through the National Association of Attorneys General. I presented testimony before congressional committees on five occasions, and what we

focused on since this is an organization of, of attorneys general was mostly enforcement issues, liability, the liability of federal government for federal facilities and natural resource damage claims.

From there I went to the New Mexico Environment Department, and I worked at the Environment Department for about 14 years. And my work there included enforcement -- well, enforcement matters included the cleanup order for Los Alamos National Laboratory in 2005, as well as cleanup orders for Sandia National Laboratories and the Giant Bloomfield Refinery.

I also handled a number of enforcement actions, a variety of different enforcement actions under the New Mexico Hazardous Waste Act, the Air Quality Control Act, the Water Quality Act and the Radiation Protection Act.

I also handled several permitting matters, including the groundwater discharge permits for the Molycorp Mine up in Questa, which is now the Chevron Mine, and the groundwater discharge permits for the Chino Mine and Tyrone Mine down in Grant County and the hazardous waste permit for Los Alamos National Laboratory.

After that I went to work for the Interstate Stream Commission for about four years, and then most recently I have been at the New Mexico Environmental Law Center. I have been there for a little over two and a half

years, and while I have been there I have handled several citizen suits, as well as several permitting actions.

So altogether I have more than 35 years of experience in environmental law and the vast majority of that, almost all of that has involved enforcement and permitting matters.

Q. Thank you. Mr. de Saillan. So in all of this time which included working at really all of the major agencies that I'm I aware of that do environmental enforcement, Department of Justice, EPA (unclear) New Mexico Attorney General and NMED and then these other experiences as well, how many enforcement actions would you say you have worked on?

A. Yeah, that's kind of hard to say. For purposes of this testimony I went back and tried to count them all, and my best estimate is at least 60, and I can say that for sure, but probably closer to 70 and possibly more than that.

Q. And how many permitting actions?

A. Not as many, probably about a dozen permitting actions, but those include permits, groundwater discharge permits, hazardous waste permits, air permits, National Pollutant Discharge Elimination System permits under the Federal Clean Water Act, mining permits and state engineer permits.

Some of those case were pretty big. The

groundwater discharge permit for the Tyrone Mine was litigated for more than a decade.

Q. And this rulemaking you were involved, I believe you served on the methane advisory panel; is that correct?

A. Yes, that's correct.

Q. Mr. de Saillan, Climate Advocate's Exhibit 19, is that a copy of your resume?

A. Yes, it is.

Q. Accurate and up to date?

A. Yes, it is, although there is one point I would like to make, kind of a minor point, but on Page 4 it says that I am the board president of Conservation Voters New Mexico, and actually last month we unanimously elected a new president for the year. So I am no longer the board president, I'm a past president and still on the board, but I'm not currently the board president.

Q. Okay. Thank you for that, Mr. de Saillan. So in your opinion, Mr. de Saillan, is enforcement a critical factor in achieving the substantive goals of regulatory programs?

A. Yes, absolutely. Enforcement is very important to ensure compliance with any regulatory program. Most of the environmental law focuses at the federal level and the state level provide for various mechanisms that enforcement agencies or the implementing agencies can use to enforce the

laws and regulation and to enforce permitting conditions for, for permits that are issued under those laws.

I can go through them quickly here. The first mechanism is to assess civil penalties for violations of the law or regulation. The main purpose of civil penalties is deterrence, and there are a couple of different components to the deterrence.

First of all there is specific deterrence which focuses on the violator that is the subject of the enforcement action. So if, if an operator is in violation and the agency brings an enforcement action and assesses a penalty, the likelihood is that operator will be more careful in the future to remain in compliance.

Then the second, the second component is general deterrence which focuses more on the industry as a whole. So, again, if the agency brings an enforcement action and assesses a civil, significant civil penalty against the violator, word is going to get around pretty quickly and other operators in that industry are going to find out about it, and they are likely to be more careful and more diligent in making sure that they remain in compliance because they realize they may be the next target of an enforcement action.

So that's the first mechanism that the agency has is to assess civil penalties.

The second mechanism which I won't really discuss is criminal fines and penalties and that can include jail terms, but that's a completely separate area of the law that I have no experience with.

The third mechanism --

HEARING EXAMINER ORTH: Mr. de Saillan, I'm sorry to interrupt. Mr. Baake, we have occasional feedback from you, if you would mute while --

MR. BAAKE: I do apologize, and while we have this little quick break. I did notice, I don't have the ability to share. I may pull up some rule language later when we get into that, so -- oh, now, I'm a presenter.

Sorry for the background noise.

HEARING EXAMINER ORTH: Please go ahead, Mr. de Saillan.

A. Thank you. So the third mechanism is the agency can issue an order or seek from the court injunctive relief to require the violator to come into compliance.

And then, finally, the agency can, a lot of times, seek clean-up. So that's most common under the hazardous waste laws, but there are also other provision in some of the other statutes with the Clean Water Act.

And under each of these mechanisms these -- well, three of the four mechanisms that I just referred to, criminal fines being the exception, but under the other

three, the agencies can choose to bring an administrative action or issue an order or go to court and seek judicial relief.

Q. So Mr. de Saillan, could I -- are there factors that, that are critical to allowing effective enforcement?

A. Critical to allowing?

Q. Effective enforcement.

A. Yes. There are a couple considerations that are, that are very important that are really critical. And the first is that the -- that the regulations or the permit conditions that are being enforced must be clear and unambiguous.

So regulations and permits must be written using precise words. Open-ended or vague and amorphous requirements are difficult or impossible to enforce. And you know, if the permit or regulation allows a period of time for an operator to come into compliance, the starting date and ending date of that period have to be stated very clearly.

And, you know, these are -- these are critical principles regardless of what you are enforcing, whether it's a permit or even a settlement agreement or regulations.

The second consideration or the second factor, I guess, is that the threat of enforcement must be a credible one. If the operators realize that the agency is not

enforcing the law, if it doesn't have the adequate resources to enforce the law, if it doesn't have the political will to enforce the law, then the deterrent effect of enforcement, the deterrent effect of civil penalties will wither away.

Q. Thank you very much, Mr. de Saillan. And in your view and experience, is it possible to achieve wide-spread compliance with an ambitious environmental or natural resources program even if the agency administering the program has limited enforcement resources?

A. Yes, I think so, at least to some extent. So there are other ways to compel compliance with, with regulations other than through enforcement. So one way is to require self-certification. And, in other words, the operator must send to the agency a certification that it's in compliance, and that certification is under penalty of perjury, and usually it's a certification that the operator is in compliance with certain specific and key regulatory requirements.

Another way to compel compliance is to condition permits or condition permitting on demonstration of compliance with the regulations or with the permits. And and so if, if the operator is not in compliance with the permit, then it, it either cannot get its permit renewed or its permit may be revoked as a consequence of non-compliance.

Q. Thank you, Mr. de Saillan. So could you give us examples of these mechanisms that you were discussing on compliance?

A. Yeah, I can give you several examples of, of certification requirements and limitation on permitting. And I can give you some examples in both federal and state law, and this is not intended to be an exhaustive list.

So the first example is under the non-attainment provisions of the Federal Clean Air Act. So the non-attainment provisions apply within areas of the country that are not in compliance with the National Ambient Air Quality Standards that are established under the Clean Air Act. And that's, that's kind of the backbone of the Clean Air Act or the Natural Ambient Air Quality Standards.

Now this requirement is under Section 173 of the Clean Air Act, and it provides that if an operator seeks a permit for a new or modified source within a non-attainment area, the operator must make certain demonstrations to EPA or to the state. To get a permit the operator has to demonstrate that all of the, all of the sources that it owns or operates, and all of the sources that an affiliated company owns or operates are in compliance with the emission requirements of the -- of their permits.

And unless that demonstration is made, EPA or the state must deny the permit for the, for the facility in the

non-attainment area.

Q. Thank you, Mr. de Saillan. And that provision is included in Climate Advocate's Exhibit 20; is that correct?

A. Yes, that's correct. That's Section 173 of the Clean Air Act which is codified at 42 USC Section 7503, and I downloaded that document from Lexis a couple of weeks ago, so it's up to date.

Q. Thank you, Mr. de Saillan. Can you proceed with your second example?

A. Sure. So another example is in the New Mexico Water Quality Act which is implemented by the New Mexico Environment Department as well as by other water quality constituent agencies.

And I want to point out that the Oil Conservation Division is one of the constituent agencies under the Water Quality Act, so it's -- it has some familiarity.

Now, under the -- under Section 74-6-5 Subsection E of the Water Quality Act, that provides that the Environment Department or other constituent agency shall deny the groundwater discharge permit if, among other things, the discharge would cause or contribute to water contaminant levels in excess of state or federal standards.

Q. And, Mr. de Saillan, that provision is Climate Advocate's Exhibit 21, is it not?

A. Yes, that is Section 74-6-5 New Mexico Statutes

Annotated, and the relevant provision is Subsection (E), and that's capital E in parenthesis. And again I downloaded that from Lexis a couple of weeks ago.

Q. Thank you, Mr. de Saillan.

MR. BAAKE: And, Madam Hearing Officer, I see we have about ten minutes. Is it okay if we just go until noon?

HEARING EXAMINER ORTH: Absolutely.

Q. Mr. de Saillan, if you have a stopping point that you see is logical, but I would suggest we just keep going because we are making progress.

So Mr. de Saillan, could you tell us about the third example that you want to discuss today?

A. Yes, the third example is in RCRA, that is again is Resource Conservation and Recovery Act, which is the federal law governing the regulation of hazardous waste. Section 3005 D of RCRA provides that EPA or -- EPA or an authorized state determines that a facility permitted under RCRA is out of compliance with some of the core requirements of the RCRA regulations, then EPA or the state shall revoke such permit.

Q. And Mr. de Saillan, that provision is in Climate Advocate Exhibit 22; correct?

A. Yes, that's correct. That's Section 3005 of RCRA and the specific provision is in section -- Subsection

3005(d). And that's a lower case d -- we are under federal law now, so it's lower case d in parenthesis, and that's codified at 42 USC Section 6925 D. And I have also -- I also downloaded that from Lexis a couple of weeks ago.

Q. Thank you, Mr. de Saillan. Tell us a little bit more about RCRA.

A. Yes. So there -- RCRA does include another provision which I think is worth mentioning, and that's the loss of interim status provision. I'm going to need to explain a little bit of background here because this goes back a few years.

So when congress passed -- congress passed RCRA in 1976, and RCRA requires all hazardous waste treatment, storage and disposal facilities to obtain permits in order to operate, in order to carry out their hazardous waste management activities.

Now, when congress enacted RCRA in 1976 it recognized that it would take many years for all of the operating hazardous waste facilities to apply for permits and for the agencies to issue the permits. So congress created a concept that it called interim status, which -- well, I'll explain how it works.

It allows facilities to continue operating without a permit pending action on their permit. So if a company was in existence at the time that the permit

regulations were issued, and that actually was in 1980, and that facility not notified -- excuse me -- notified EPA of its hazardous waste activities, that it needed a permit, and if it submitted to EPA or the state the preliminary part of its permit application known as the Part A, then that facility received interim status to continue operating pending action on its permit application.

That was sort of a temporary grandfathering of, of companies or, excuse me, operators that were in existence at the time that the regulations went into effect. EPA issued regulations for interim status facilities, sort of basic operating requirements for hazardous waste management facilities, and those regulations included financial responsibility requirements, and they also included groundwater monitoring requirements.

So then we'll move forward to 1984. In 1984 congress passed sweeping amendments to RCRA in the hazardous and solid waste amendments of 1984 which we refer to as HSWA. And when congress was in the process of debating and drafting the HSWA amendments, the General Accounting Office or GAO, which is now called the Government Accountability Office, came out with a report on RCRA compliance.

And that report found that there were a large number of interim status facilities that were operating that were not in compliance with the financial responsibility

requirements or were not in compliance with the groundwater monitoring requirements or both.

So in the HSWA amendments, congress included the loss of interim status provision which of course we called LOIS, and that's in Section 3005(c)2 of RCRA. And it provides that every facility operating under interim status had to certify that it was in compliance with both the financial responsibility requirements and the groundwater monitoring requirements of the RCRA regulations by November 8, 1985. And that, that certification was submitted to EPA. And if a facility that was operating hazardous waste, was operating a hazardous waste facility did not certify, it automatically lost its interim status authority to operate.

Now after the LOIS deadline passed, EPA mounted an enforcement initiative filing lawsuits, approximately 40 lawsuits around the country for companies that were not in compliance with the, with the LOIS deadline.

And EPA required these companies to shut down their hazardous waste operations, and you know, if that forced the company to shut down its other operations, that didn't, that didn't really matter, the company had to shut down its hazardous waste operations regardless.

And I worked on two of those cases when I was at EPA, one involving an aircraft refurbishing facility in Lake City, Florida. The other involving an electroplating

facility in Traveler's Rest, South Carolina.

Q. Thank you, Mr. de Saillan. And the L-O-I-S or LOIS provision you referred to, that's Climate Advocate's Exhibit 22; correct?

A. Yes, that's in Exhibit 22, which, again, is 3005 of RCRA, and the specific provision is 3005E2, which is codified at 42 USC Section 6925E2.

Q. Thank you, Mr. de Saillan. Do you think this is it a good place to break for lunch?

A. We could or we could keep on going. I'm fine with continuing.

Q. We have three more minutes. Let's do one more question, and I think that's a natural breaking point, I think.

A. If we are going to break, this is a natural breaking point. I'm fine -- I'm fine with completing my direct testimony.

MR. BAAKE: Madam Hearing Officer?

HEARING EXAMINER ORTH: I would only ask that you not go past 12:15 because the court reporter will have gone for two hours at that point.

THE WITNESS: I'm certainly sympathetic to the court reporter, but this will probably take more than 15 minutes, so why don't we go ahead and break for lunch now. This is a good stopping point.

HEARING EXAMINER ORTH: All right. Madam Chair, do you want to weigh on the length of our lunch hour?

CHAIRWOMAN SANDOVAL: I think we are making good progress. I would suggest 45 minutes to an hour, maybe we can actually have an hour here.

HEARING EXAMINER ORTH: All right. Thank you, Mr. Baake and Mr. de Saillan. Let's reconvene at 1 o'clock.

MR. BAAKE: Thank you, Madam Hearing Officer.

(Lunch recess taken. The proceeding reconvened at 1 p.m. as follows:)

HEARING EXAMINER ORTH: Back after a lunch break, and when we broke we were in the middle of Mr. de Saillan's testimony. Mr. Baake and Mr. de Saillan, if you would please proceed.

CONTINUED DIRECT EXAMINATION

BY MR. BAAKE:

Q. Mr. de Saillan, can you hear me okay?

A. I can hear you. Can you hear me.

Q. I can, but -- there's your video, okay.

MR. BAAKE: And could I again request the presenting ability to share the content ability. Thank you.

Q. So Mr. de Saillan, before lunch we had run through several different statutory provisions in the environmental law area and discussed how these provisions operated with respect to permit user operators who are out

of compliance with applicable regulatory requirements.

So maybe you can kind of give us an overview of how all those provisions address that issue.

A. Yeah. They all address the issue in somewhat different ways, but they all provide that an operator cannot get a permit or a permit renewal or it loses its permit if the operator is not in compliance or not able to certify compliance with the important regulatory requirements.

And these are all automatic. The regulatory agency cannot issue a permit or must revoke a permit or in the lowest case, the facility loses its interim status to operate by operation of law.

And this can, you know, be very effective and an efficient mechanism to bring operators into compliance with the law. And it is particularly useful where the regulatory agency has inadequate enforcement resources.

Q. Thank you, Mr. de Saillan. So now let's take a look at the proposed regulations that are the subject of this hearing.

So let's refer to OCD Exhibit 2A or 2B, depending if you are on the redline or not. I have the redline so I'm looking at 2A, which is the December 30 version, and I'm looking at Part 27. Have you reviewed these regulations.

A. Yes, I have, and I'm generally familiar with them.

Q. So you understand that OCD's required to -- proposed to require operators to achieve a minimum capture requirement of 98 percent of the gas they produce by 2026?

A. Yes. That's my understanding of the proposed regulations require that each well operator must capture 98 percent of the methane produced by all the operators' wells by December 31, 2026. And this applies to both oil and gas wells, again at the end of 2026, so the operator has a rather long period of time, more than five years to achieve the full 98 percent reduction.

Q. Okay.

A. It's, it's important to point out that this is a, a very critical requirement of the regulations. The whole objective of these regulations is to reduce methane waste as much as we can.

And as we all know, methane is a very potent greenhouse gas, and oil production, oil and gas production is the primary source of, of methane emissions in New Mexico. And methane emissions, among other things, are causing global climate change, global warming, which is unquestionably the most serious, the most dire environmental threat that we face, not just here in New Mexico, but throughout the country and around the world.

Q. Thank you, Mr. de Saillan. In your opinion, would it be easy for the OCD to enforce this 98 percent

minimum capture requirement as the way the rule is currently written.

HEARING EXAMINER ORTH: Mr. Baake, please mute yourself.

A. Unfortunately the way that the regulations are written are not very conducive to enforcement. So under the proposed regulations, and I will refer to Section 19.15.27.9.A.4. If an operator is out of compliance with the minimum capture requirements for the preceding year, it must submit to the agency a plan demonstrating its ability to come into compliance for the current year.

And it's important to keep in mind the timing here. So 2021 is the baseline year which each operator reports its venting and flaring data to the agency, and that establishes its baseline. And then 2022 is the first year when an operator is subject to the minimum capture requirements. So, you know, we are going all the way to 2023 before we actually would be addressing the noncompliance.

Now requiring an operator to submit a plan showing how it's going to come into compliance, you know, that can be very appropriate in some circumstances, but submitting a compliance plan, even a very good compliance plan, is no substitute for actual compliance.

And, in my view, until an operator actually comes

into compliance with the minimum capture requirement, according to the schedule and regulations, it should not be permitted to drill additional wells. To allow the operator to drill additional wells based on the contents of a compliance plan is very problematic.

And I have seen this sort of approach before, and it tends to be fraught with the delay and can be very protracted. So first of all the agency staff needs to review the plan, and often it will turn out that the plan is inadequate for one reason or another. So then the staff person will need to prepare a letter to the operator explaining why the plan is inadequate.

And then that letter will need to be reviewed by other people in the agency, usually managers and often the attorneys. And then the letter gets sent to the operator, and invariably the operator disagrees with some of the conclusions or some of the assumptions or maybe all of them that are contained in the letter.

And then, you know, the parties can wind up going back and forth on their disagreements several times. And the agency usually doesn't have the detailed knowledge, the specific knowledge of the operation to be able to very effectively push back and say no.

Now these are some of the pressure points, you can shorten the time frame but doing X, Y and Z. So it

generally has to rely on the representations that are made by the operator, and if the operator needs more time, wants more time, it's -- it's very easy for the operator to stall for more time.

And I don't mean to imply that all of the operators are going to do that, but as we have heard in some of the testimony there seems to be a consensus that not all the operators out there are prudent operators. And the economic incentive is almost always to ask for more time because it costs money to come into compliance. And the longer an operator can put off spending that money, the better it is for the operator financially.

So this process, even under the best of circumstances, can take several months, sometimes many months. And if you have an agency with inadequate staff or inadequate resources, it can go on for a very long time, it can be unworkable. So again, A compliance plan is no substitute for compliance.

An operator should never fall out of compliance in the first place. The operator should meet the minimum methane capture requirements and regulations according to the schedule in the regulations, and if the operator does not meet those requirements, it should suffer meaningful consequences, and that doesn't necessarily happen the way these regulations are written.

And I should go on here. There is another sort of layer here for operators that are submitting applications, APDs to drill additional wells. So if an operator is applying for an APD to drill more wells, and it's not in compliance, it has to submit another gas management plan for the new wells. And then the operator must determine whether or not it can connect to a natural gas gathering system that has adequate capacity to transport away all of the natural gas is going to be produced.

If the operator determines that it cannot hook up to a gathering system, then it submits yet another plan, and that's a flaring and venting plan that provides for alternative uses for the natural gas. This whole process is also very problematic and likely to burn up a lot of agency resources and lead to delays and disagreements.

Q. Thank you, Mr. de Saillan. So in your opinion, how could these requirements be improved?

A. Yeah, I believe that the regulations need to create more finality and more certainty. They need to impose clear and automatic consequences for noncompliance. If an operator is not in compliance with the minimum capture requirements of the regulations, it shouldn't be able to drill any new wells, period.

Q. Thank you Mr. de Saillan. And I would like to pull up -- I'm going to do do so right now -- which is

Climate Advocate's Exhibit, 1 which is our red lines. Does that work?

A. Yes.

Q. Can you read it?

A. Yes.

Q. So I want to talk here about this provision which is 19.15.27.9.D.7, we renumber it, so it's sort a new provision, not the same as D.7. So does this provision align with your recommendations about how to improve the enforceability of the rule?

A. Yes. This would require the Oil Conservation Division to deny any APD application for permit to drill if the operator is not in compliance with the minimum capture requirements.

Q. And would this revision be difficult or resource intensive for the agency to implement?

A. No, it would not. It would be automatic. There would be no reports or plans for the agency review -- to review, and there would be little for the agency and the operator to argue about. It would be clean and simple. If the operator does not certify compliance, then boom, no more permits.

And for most operators, if they want to drill any more wells, it would create a big incentive to come into compliance as soon as possible. And that incentive would

apply regardless of what the agency does, and it would be much greater incentive than, you know, coming into compliance pursuant to a plan.

Q. Thank you, Mr. de Saillan. Now I want to look -- we spoke a little bit about this earlier, but I want to, I want to address again OCD's proposed 19.15.27.9.A.4 which unfortunately jumps over the page gap there. Can you see that on the screen?

A. Yes.

Q. Okay. Just so folks can follow along. So if I can zoom out a little bit. Okay.

So what does this provision provide for?

A. Yes. So it's provides that an operator that is out of compliance with the minimum gas requirements can have its drilling permits, its APDs suspended. I think that applies only if the well has not yet been spud.

And I want to compliment the OCD for making this revision. I think it's a step in the right direction, but in my view, there are still problems with this approach. So the permits can be suspended if the, if the operator is not in compliance, but that suspension happens only after the operator has submitted a compliance plan to OCD, and only after OCD has reviewed the compliance plan, and only after OCD has met with the operator -- that's one of the requirements of the regulation -- and only after OCD has

determined that the compliance plan is inadequate.

So the suspension would not be automatic, and you know, really far from it. It would demand and take up considerable agency resources and there would be lots of opportunities for disagreement, and the outcome would be uncertain. So I believe that the approach that has been recommended by Climate Advocates would be a better approach.

And another problem that I point out with the -- with this approach is the scope of the hearing. So under the OCD proposal, if the operator seeks a hearing on the permit suspension, which it can do, the issue at hearing would be the adequacy of the compliance plan, and that's a question that could be very subjective and open to differing interpretation.

And so by contrast under the Climate Advocate's proposal, the only issue, if the operator requested a hearing on the permit denial, which, again, it can do, the only issue would be whether the operator certified compliance with the -- with the gas -- with the gas capture requirements. That would be it.

That would be a much simpler issue, much narrower, much more straightforward and a much shorter hearing and probably less likelihood that there would be a disagreement between the operator and the agency over whether a hearing would even be helpful.

So again, for this reason, I think that the Climate Advocates' approach is better. I do want to make one caveat here. On the other hand the OCD proposal would apply to permits that have already been approved, but not yet spud. And that's -- that's in contrast to the Climate Advocates' proposal and I think it's a very good idea, and I approve of it and again commend the OCD for making the suggestion.

Q. Thank you, Mr. de Saillan. So do you believe that the proposed revisions to 19.15.27.9.E.7 that Climate Advocates have presented, do those revisions limit or infringe upon the discretion of the Oil Conservation Division?

A. No, they do not.

Q. Please elaborate.

A. Sure. So let me start out by saying I am very sensitive to the whole idea of infringing upon the regulatory agency's enforcement discretion. And I can point to the United States Supreme Court decisions that say that the -- that an agency has complete discretion in deciding when and how and whether to bring an enforcement action and who to bring the enforcement action against.

And I can point out one leading case, which is Heckler versus Chaney, and that's Chaney spelled with an "a" not with an "e." And as the court in this case said, there

are a lot of considerations that go into enforcement decisions that only the agency can, can really assess.

So there are considerations of, of enforcement strategy, and resources and likelihood of success, and then also trying to set favorable -- favorable precedent for the, for the program. So I completely agree with preserving agency enforcement discretion.

And as I indicated in my testimony earlier, much of my career I have represented government agencies involved in enforcement of the law, and I have on quite a number of occasions advocated the importance of agency enforcement discretion and in briefs that have I filed and arguments that I have made and even in settlement negotiations.

So the proposed revision that Climate Advocates have advocated here does not in any way affect enforcement decisions. Whether or not to deny a permit, whether to deny a permit to drill, an APD is not an enforcement decision; it's a permitting decision. And, you know, an agency has a fair amount of discretion in making permitting decisions, but it's not nearly as complete as the discretion that an agency has in, in enforcement.

And, for example, it's not unusual for congress under federal law or for our legislature under New Mexico law to prescribe the circumstances under which a permit may be issued or under which a permit must be denied, and I

described some of those earlier in my testimony.

So the proposed revision, the Climate Advocates' proposed revision here does not in any way limit or infringe upon the enforcement discretion of the Oil Conservation Division. And if it did, I would not be here testifying in favor of it today.

Q. Thank you, Mr. de Saillan.

MR. BAAKE: I have no further questions at this time. Madam Hearing Officer, we would move for the admission of Exhibits 19 through 22.

HEARING EXAMINER ORTH: All right. Let me pause for a moment in the event there are objections to Climate Advocates' Exhibits 19 through 22.

(No audible response.)

HEARING EXAMINER ORTH: 19 through 22 are admitted.

(Exhibits 19 through 22 admitted.)

MR. BAAKE: And Mr. de Saillan will now stand for cross-examination.

HEARING EXAMINER ORTH: Thank you, Mr. Baake. Mr. Ames, do you have questions for Mr. de Saillan?

MR. AMES: I do.

CROSS-EXAMINATION

BY MR. AMES:

Q. Good afternoon, Mr. de Saillan.

A. Good afternoon, Mr. Ames. Good to see you.

Q. I'm sorry?

A. I said good to see you.

Q. Good to see you, too. This is a unique opportunity for me. I have known Mr. de Saillan for years, but I have never had the opportunity to cross-examine him.

Mr. de Saillan, you said that a big part of your career has been spent in governmental agencies doing enforcement work; right?

A. Correct.

Q. So be like the NMED, EPA, the Attorney General's Office; is that right?

A. That's correct.

Q. And you have done many, many, enforcement actions?

A. I have.

Q. And so you're, as you just said, you are very sensitive to rules that infringe on agencies' enforcement discretion; is that right?

A. Yes, that's correct.

Q. And you have strongly defended, and you did today, the agency's right to exercise that discretion when enforcing the law.

A. That's right.

Q. And if I understand you correctly, you also

believe it's important that prosecutors of the law, whether civil or criminal, have a wild range of tools to work with in order to accomplish their objective?

A. Yes. That's right.

Q. And you also said there are many considerations to be used or many considerations for a prosecutor deciding which tools to use and when to use them and how to use them?

A. That's correct.

Q. And as a prosecutor you want to be able to tailor your tools, tailor your remedy to the alleged violation that you are prosecuting?

A. Yes.

Q. And therefore it's important that a prosecutor to be aware of the consequences of using the tools and how you use those tools in the course of your prosecutions; isn't that right?

A. To some extent, yes. And, you know, you can't always predict what the consequences are going to be of an enforcement action.

Q. You can't predict the consequences, so you need to do -- you have to be somewhat introspective thinking about what the consequences might be and calibrating your tools and the use of your tools to the situation at hand?

A. Yeah, I guess more or less.

Q. So during your long career with government

agencies, is it, is it fair to assume that you are familiar with the Doctrine of Administrative Irregularity?

A. I don't believe so.

Q. Well, let me tell you what that doctrine is, and you tell me if you recognize it. It's a doctrine often applied in the courts that government officials will properly discharge their official duties in the course of making decisions in compliance with the language of the statute and/or rules applicable with proper motives, that they won't lie and they will generally comport themselves as ethical professionals. Does that sound reasonable to you?

A. Yes.

Q. Sound like reasonable presumption to be applied to administrative agencies in the normal course of their activities?

A. Sure.

Q. Therefore then I assume you would agree that the presumption should apply to agencies and agency personnel in the exercise of their enforcement discretion?

A. Sure.

Q. Nothing further. Thank you.

HEARING EXAMINER ORTH: Thank you, Mr. Ames. Mr. Feldewert, do you have questions of Mr. de Saillan?

MR. RANKIN: Madam Hearing Officer, Adam Rankin, no questions for Mr. de Saillan. Good afternoon, Mr. de

Saillan.

THE WITNESS: Good afternoon, Adam, good to see you -- excuse me -- Mr. Rankin.

HEARING EXAMINER ORTH: Thank you. Mr. Biernoff, do you have questions of Mr. de Saillan?

MR. BIERNOFF: No questions for Mr. de Saillan, thank you.

HEARING EXAMINER ORTH: All right.

HEARING EXAMINER ORTH: Thank you. And Ms. Paranhos?

MS. PARANHOS: Thank you, Madam Hearing Officer. I have no questions for this witness:

HEARING EXAMINER ORTH: Thank you. Commissioner Engler?

COMMISSIONER ENGLER: Thank you, Madam Hearing Officer, I have no questions.

HEARING EXAMINER ORTH: Okay. Commissioner Kessler?

COMMISSIONER KESSLER: I don't have any questions either. Thank you, Mr. de Saillan.

HEARING EXAMINER ORTH: All right. Madam Chair?

CHAIRWOMAN SANDOVAL: I just have two questions for you. Are you supportive of the rule?

THE WITNESS: Madam Chair, yes, I'm very supportive of the rule. However, I do believe that there

are certain ways that the rule can and should be strengthened and improved. But I think OCD has, and your attorneys, have done an excellent job of putting this together.

CHAIRWOMAN SANDOVAL: Thank you. Do you believe this was a collaborative process in putting this rule together?

THE WITNESS: Yes, Madam Chair, it was a very definitely a collaborative process. But if I may, I would like to make one comment, and I would like to preface this by saying that, in the grand scheme of things, this is a minor point, and I'm making this statement in the spirit of trying to be constructive.

But I do want to point out that, in my view, the limitation on public statements to two minutes was unfortunate and, I think, unnecessary. I think a lot of members of the public care about this a lot and had more that than two minutes' worth to say, and I think the Commission would have benefited from hearing some of those statements.

And I've had practice -- or, excuse me -- I have had experience in these kind of hearings before, and generally public statements have not been limited in this way, and I have not seen people abusing their opportunity to make statements, and I haven't seen that it's resulted in

particular or inordinate delays of the hearing. So I just hope that that's something that the Commission will consider in future rulemakings. Thank you.

CHAIRWOMAN SANDOVAL: Thanks.

HEARING EXAMINER ORTH: All right, thank you. Mr. Baake, any follow-up?

MR. BAAKE: I have no follow-up. Thank you very much.

HEARING EXAMINER ORTH: Thank you very much, Mr. de Saillan, for your testimony. You are excused.

THE WITNESS: Thank you, Madam Hearing Officer.

MR. BAAKE: Thank you, David. So our next witness will be Nathalie Eddy. Is she on the line?

HEARING EXAMINER ORTH: Mr. Garcia, has Nathalie Eddy been made a panelist.

MR. GARCIA: (Inaudible.)

HEARING EXAMINER ORTH: Is that you, Ms. Eddy?

MS. EDDY: Yes.

HEARING EXAMINER ORTH: Please raise your right hand. Do you swear or affirm that the testimony you are about to give will be the truth, the whole truth and nothing but the truth?

THE WITNESS: Yes, I do.

HEARING EXAMINER ORTH: Spell both your first and last name for the court reporter.

THE WITNESS: First name is N-a-t-h-a-l-i-e. Last name E-d-d-y.

HEARING EXAMINER ORTH: Thank you. Go ahead, Mr. Baake.

MR. BAAKE: Thank you, Madam Hearing Officer.

NATHALIE EDDY

(Sworn, testified as follows:)

DIRECT EXAMINATION

BY MR. BAAKE:

Q. And thank you, Ms. Eddy. Ms. Eddy, would you begin by telling us what your current job is?

A. Absolutely. I work for Earthworks as a field advocate for New Mexico. I am also the interim manager for our field team.

Q. How long have you been with Earthworks?

A. Just over three years. So I started as a field advocate for both Colorado and New Mexico, and now I'm serving as interim manager and I also became an ITC certified thermographer last year.

Q. Before you worked at Earthworks what were you doing?

A. I'm an attorney by training, so I worked with the Colorado Attorney General's Office for a number of years on (unclear) the Colorado Department of Public Health Department was my primary client.

Q. And all of this is covered in your resume, which I believe is Climate Advocate's Exhibit 23; is that correct?

A. Yes, that is.

Q. Great. So I think you mentioned that, in your job with Earthworks, you do, you go out to the field, do field work. What exactly does that entail?

A. So primarily the field work that Earthworks conducts is in response to requests and concerns from impacted community members. So we survey oil and gas sites using an optical gas imaging camera to document evidence of pollution, primarily methane and volatile organic compounds or VOCs from oil and gas leaks.

Q. And how many field tours have you done in New Mexico?

A. So in the last three years I have conducted 27 field tours or field trips in New Mexico.

Q. And you have gone to both the Permian Basin and the San Juan Basin?

A. That's right. We did 12 rounds of field work in Permian and 15 in the San Juan Basin.

Q. And Ms. Eddy, how many well sites are you typically going to on each tour?

A. It can really vary depending on where we are. So depending on the distance between the sites, the extent of findings at each of the sites, we can easily visit over 20

sites in a single day (unclear) area in the San Juan Permian Basin.

Q. And you visit well sites. Do you also visit facilities in the midstream or gathering sector?

A. We do, we also visit midstream sites, including compressor stations.

Q. And how do you choose which sites you want to visit?

A. So as I mentioned a big part of how we decide where to go is in response to community requests and concerns. So if community members are concerned with odors or visible emissions or possible health impacts from oil and gas VOC emissions, they may have us to go survey a site with one of our thermographers and a camera.

In addition, we also take a look at facilities that we know are expanding rapidly and tend to emit high emissions of pollution and we determine which sites those are by researching publicly accessible information or hearing things from community members.

Q. Do you sometimes return to the same facility?

A. We do. And, you know, drawing on our field findings and depending on the regulatory responses we receive from our complaint, we often go back to the same sites to see if either the emissions or site conditions have changed since we were last there. There is several sites in

the Permian and San Juan Basins where we filed three to nine complaints in the last couple of years, last two years.

Q. Ms. Eddy, you cut out there for a second for me. I'm not sure that you cut out for others as well. So I didn't hear the end of your sentence.

MR. BAAKE: I'm wondering, Madam Hearing Officer, would you let me know if the problem is on my end or on Ms. Eddy's end so I can --

HEARING EXAMINER ORTH: I didn't have any trouble hearing them.

MR. BAAKE: I'm wondering if i should stop my video to make sure that I don't have a glitch.

HEARING EXAMINER ORTH: You were the one really cutting out, so thank you for turning off your video.

MR. BAAKE: Thank you Madam Hearing Officer.

Q. So, Ms. Eddy, when you visit a site, what is your process that you go through to film the emissions and so forth?

A. Right. As we first approach a site, our field staff are checking for wind direction and working to identify a safe vantage point where we can -- where we can stand on a public road and survey for emissions at the site using the OGI camera. We want to avoid being directly downwind of the site if there are emissions, and we never know when we trespass.

Q. Thank you, Ms. Eddy. So are you close enough to the sites to really be able to tell what's going on?

A. Yeah, so we are staying on public roads that are adjacent to the sites, but we are also using telephoto lenses on both our cameras, both the optical gas imaging as well as an SLR camera, so those lenses increase the chances of us documenting pollution from a greater distance.

Q. Great. And so you've mentioned this optical gas imaging or OGI camera. Tell me a little bit about that.

A. Yeah. So this is really our primary tool to detect and document oil and gas emissions is a camera, the OGI camera. So Earthworks clear or forward looking infrared GS320 cameras are specifically designed to detect hydrocarbon and volatile organic compound emissions.

These OGI cameras, like the GS320 are calibrated to a narrow part of the electromagnetic spectrum while hydrocarbons absorb infrared light, so as a result the emissions become opaque so that the camera can record them and then we can see them.

Q. And Ms. Eddy, is there some sort of training that you need to be able to operate an OGI cam?

A. Yeah. So both I and Earthworks' other thermographers or ITC or infrared training center are certified to use these cameras. We receive the same training and have to pass the state exams as regulators or

operators who are getting the same training.

Q. Thank you, Ms. Eddy. So when we talk about infrared light, a lot of us going are going to be thinking about heat; right? So how do you know that you're documenting pollution and not just warmer air?

A. So our OGI thermographers are certified to, among other things, know the difference between heat and pollution. The plumes they document coming from flare stacks clearly represent pollution and not heat based on this training and expertise.

Q. Thank you, Ms. Eddy. So you are seeing pollution at facilities that you visit out in the fields. What type of problems are you observing out there, the particular pieces of equipment that you notice problems with?

A. Yeah, I mean, it's pretty common to encounter unlit or malfunctioning flares. In the last three years we've made over 300 visits to over 200 sites in six different counties in New Mexico. With regard to unlit flares we documented 37 instances of unlit flares that effectively serving as vent stacks.

And, to note, we have also documented 129 unlit flares in Texas. And then with regard to malfunctioning or improperly combusting flares, we see those all the time. And if you sort of scan across like in the Permian, if you scan the horizon you will see multiple flares emitting black

emissions, and that black visible smoke is an indication that that combustion is incomplete and is a malfunctioning flare.

Q. And Ms. Eddy, do you know what causes these flares to fail?

A. There are a range of issues that can cause that failure. Oftentimes it can be due to lack of attention, mechanical problems or oftentimes wind.

Q. And you go out to the Permian a lot, so in your experience are there a lot of windy days in the Permian Basin?

A. I experience a lot of windy days when I'm out in the field in the Permian, yes.

Q. So you testified that you do sometimes return to the same facility where you may have noticed a malfunction. So based on that, how long have you seen a flare continue to malfunction?

A. So the longest flare that I documented was five days long. I think that one actually started and ended after I was there, but that was what I was able to document was five, five days in a row.

Q. So it was a unlit for five days or smoking for five days or --

A. So it was an unlit flare that was unlit for five days straight. It was a Matador site, and I will share some

footage in a minute here, but it was the auto igniter was stuck and they needed a manlift to repair it, and so it was unlit for at least five days.

Q. Thank you, Ms. Eddy. Have you visited any stripper wells in the field?

A. Yes.

Q. And how would you, how do you identify what a stripper well is, just --

A. Sure. I mean, when I was in the field most recently in November, I went to a few stripper wells in the Loco Hills area east of Artesia. Stripper wells that I was visiting on that day were conventional wells, so small pumpjack. Some had spud dates that were 50 years, 60 years ago. We documented emissions that were coming straight from the wellhead from the ground.

Q. Thanks, Ms. Eddy. So that feeds into the next question I had is, at these stripper wells, is it common that they actually have flares?

A. The few that I visited most recently did not have flares. I haven't conducted a comprehensive survey on what looks like, but in my experience many do not.

Q. So they are just venting gas comes up?

A. That was what I observed and documented, yeah.

Q. Thank you, Ms. Eddy. So when you document pollution problems, you sometimes file complaints with

regulatory agencies; is that correct?

A. Yeah. We capture quite a large number of emissions when we are on the field. But when we are filing complaints with NMED or OCD we work to prioritize the most significant pollution plumes and conditions that impact nearby residents or represent equipment failures or possibly affect regulatory violations.

So we primarily file complaints for the biggest events or for sites closest to places where community members live or work or go to school or recreate, or for sites where field staff notice strong odors from the site or even experience health symptoms while out in the field.

Q. Is that common that, that members of the community experience these health impacts?

A. I think it's pretty common to either our field staff or community members or reporters who are joining us to experience health impacts. These can look like headaches or nausea or even eye or skin irritation, among other things.

Q. Thank you, Ms. Eddy. I wanted to go back to the complaint. So how many complaints have you filed in New Mexico?

A. I filed 150 complaints in the last few years, nine of those resulted in an emission reduction or a change on those sites.

Q. And those are filed with NMED or OCD?

A. So all of those were filed with NMED, and then depending on the nature of the emission, sometimes NMED will forward certain complaints to OCD for their enforcement team to review.

Q. Thank you, Ms. Eddy. And I think you said nine resulted in an emission reduction. So I guess the question is, there are cases where agencies, one of the agencies has taken enforcement action based on one of those complaints then?

A. Yeah. Well, most of the complaints don't seem to result in mandatory action. NMED took significant action starting in November of 2019 and started issuing letters of potential violation, part in response to our complaints and with consideration of OGI as reliable evidence of oil and gas pollution.

So between November 2019 and January 2020, NMED issued seven letters, several of which resulted in immediate response, meters going onto sites, making repairs and reducing methane field emissions directly.

Q. And you also mentioned that some of the complaints were forwarded to OCD. And did OCD take any enforcement action?

A. Yes. So of the 115, 14 were forwarded to OCD. OCD followed up on one of the complaints that we filed for

an oil spill we documented in December of 2017. To my knowledge, OCD hasn't taken other actions or responded either to Earthworks or to operators in response to the other 14 that we filed in between 2018 and 2020.

Q. Thank you, Ms. Eddy. So you mentioned that you reported oil spills, but the majority of your reports is venting of gas; is that correct?

A. Yes. So, that's right. The oil spill was something that we happened to notice while we were out surveying for air emissions, so we documented that and submitted it to OCD. But otherwise, all the other complaints are air complaints using our optical imaging camera.

Q. Thank you, Ms. Eddy. I just have a couple more questions and then we can get to your presentation. So you did field work in Colorado as well as New Mexico; is that correct.

A. That's right. I live in Colorado and both I and other Earthworks thermographers have conducted OGI investigations across the state of Colorado.

Q. We talked a lot about Colorado in this rulemaking and the regulations they have there. I'm wondering, are there any differences you notice in the field in Colorado compared to the ones you often see in New Mexico?

A. Yeah. I mean, there are always differences

across locations, it's been my experience in the field, even within a state, due to the types of operations, topography, and site conditions. For example, in the Permian Basin of New Mexico, we tend to see more unlit flares than in Colorado part because of the presence of oil drilling.

So in every state where we work and file complaints, what's consistent is that we find potential operational problems, some of which are persistent and recurring and we find insufficient levels of inspection and enforcement. And that's true with Colorado and New Mexico.

Q. Thank you so much, Ms. Eddy. And now I would like to invite you to give your presentation which I believe is Climate Advocate Exhibit 23.

A. Do I have the --

Q. The sharing capacity, yeah.

A. Okay, great. Is that showing up on everyone's screen there?

HEARING EXAMINER ORTH: Yes.

Q. I can see it.

A. Thank you very much. Great. So I wanted to share some, some visuals and examples of what Earthworks found down in the field specific to flares, focusing on unlit flares and malfunctioning flares.

For the purpose of this presentation I focused on the Permian. In this first photo we see several community

members and elected officials who joined us in the field. As we discussed earlier, our primary tool to document pollution from the field is the optical gas imaging camera. This helps us to identify the problems, partner with community members, expose otherwise invisible pollution from oil and gas and then file complaints with appropriate regulatory agencies.

Here is a quick example of the difference OGI makes and what it exposes and makes visible. So the red arrow was pointing to a flare. With the naked eye we can't necessary tell if it's lit or not. And then we see with the OGI camera that this is an unlit flare, and that large pollution, plume of pollution you see in that dark, in the video or in the image is emissions carrying far off-site from that flare. So we would otherwise not otherwise have known it was a problem necessarily.

And in addition to the OGI camera, there are several other pieces of equipment we take with us into the field. We bring respirators for our safety if needed, four-way gas monitor, we have an iPad that we use to enter in all of our field notes that go into our database so we can track where we have been and what we are finding, and tools to tell where the wind is coming from and what speed.

As I mentioned, focusing on the Permian, and we'll just look at a couple, a handful of sites really today

for the purposes of this hearing. We do have a document (unclear) snapshots that documents all the sites we have been to in the Permian, what we found and the regulatory response, for those who are interested.

So starting with the few examples just south of Carlsbad, this is a midstream site of the South Carlsbad compressor station operated by Enterprise Operating. The most significant event we captured there over the years which was in September of 2018 to the upper left of your screen which was a blowndown or unlit flare event that we, that we videoed.

While we were on site we called the emergency member to speak to someone to make sure the operator was aware of it. This is a site that community members complain about a lot. They smell odors and experience health impacts and we filed about nine complaints in the last three years on this site.

Another site just around the corner, so we are still just south of Carlsbad was a Matador site, Kathy Coleman site, the one I mentioned where we documented five straight days of this flare unlit. The auto igniter had gotten stuck and they were waiting for the manlift to get there so they could repair it.

I found that out because I called the operator and then a worker came on site and we spoke to him to tell

him what we were doing and asked him what was going and what the plan was for the flare. And again, this was a site that we went, we went to quite frequently and filed many complaints.

This was another time, March 2018, again the flare was unlit, and we filed nine complaints here over three years.

Now, I think is our last one for south of Carlsbad. This was in early November when I was down there and the flare was not operating. We filed a couple of complaints for -- because of operating sites recently, and I believe there is ongoing investigations there, but I don't know the outcome.

And then we have a little bit farther north between Artesia and Lovington in the Loco Hills area off the Lovington highway, these are a couple of different images to share the density and intensity of these fields.

Oftentimes when we are in the field with thermographers and the camera we can smell gas and it smells like sour gas or h2s, but oftentimes we don't find the source because there are a lot of different source and pinpointing that source can be difficult when there's so many different new and old sites all together.

A few more images of what we see in the field. And here is an example of an unlit flare operated by Apache.

This was part of the (unclear) Number 2020 on state land. And another unlit flare operated by Mewbourne still in the Loco Hills area.

And then finally a couple samples of what we have documented as malfunctioning or dirty flares when we see that smoke coming off, and that is really common and oftentimes visible because when the, when it's not windy and the air is clear the visibility is pretty extensive in the Permian, so you can just scan the horizon and see all the flares that are not combusting fully or properly and, therefore, are contributing more oil and gas pollution into the air.

Thanks so much.

Q. So thank you Ms. Eddy.

MR. BAAKE: Madam Hearing Officer, at this point we would move for admission of Climate Advocates' Exhibits 23 and 24.

HEARING EXAMINER ORTH: Thank you. Let me pause for a moment in the event there are objections.

(No audible response.)

HEARING EXAMINER ORTH: Exhibits 23 and 24 are admitted.

(Exhibits 23 and 24 admitted.)

MR. BAAKE: At this point, Ms. Eddy will stand for cross-examination.

HEARING EXAMINER ORTH: Thank you very much, Mr. Baake. Mr. Ames, do you have questions of Ms. Eddy?

MR. AMES: Madam Hearing Officer, I do not. Thank you.

HEARING EXAMINER ORTH: All right. Thank you.

Mr. Rankin, do you questions of Mr. Eddy?

MR. RANKIN: Thank you, Madam Hearing Officer, I just have one small question for clarification purposes.

CROSS-EXAMINATION

BY MR. RANKIN:

Q. Ms. Eddy, you testified about what you perceived as causes for the flare issues that you identified; is that correct?

A. That's correct.

Q. And I think in the prehearing statement Climate Advocates' prehearing statement, it mentions operator error, lack of attention, or even something as simple as a windy day. That's what you testified to as well; is that correct?

A. That's correct.

Q. I'm sorry, say again?

A. Well, and that's what I have learned and gathered just from speaking with folks in the field or observing often on after a very windy day, we found that many more flares had been blown out and not relit at the time of our survey at that site.

MR. RANKIN: Thank very much, Madam Hearing Officer, that's all the questions.

HEARING EXAMINER ORTH: Thank you, Mr. Rankin. Mr. Biernoff said that he had some comments, but he has no questions for Ms. Eddy. So let's go to Ms. Fox -- I'm sorry, Ms. Paranhos.

MS. PARANHOS: Thank you, Madam Hearing Officer. I have no questions for this witness.

HEARING EXAMINER ORTH: All right, thank you. Commissioner Engler?

COMMISSIONER ENGLER: Thank you, I have no questions.

HEARING EXAMINER ORTH: Thank you. Commissioner Kessler?

COMMISSIONER KESSLER: Good afternoon, Ms. Eddy. Thanks for your presentation, and I don't have any questions.

HEARING EXAMINER ORTH: Thank you. Madam Chair.

CHAIRWOMAN SANDOVAL: I just have two questions, Ms. Eddy, do you support the rule?

THE WITNESS: Yes. I do support the rule.

CHAIRWOMAN SANDOVAL: From either your involvement with this rule or previous rules, do you believe it was a collaborative process?

THE WITNESS: I think it has been a collaborative

process. I think, in particular, the public comment period that was available at the beginning of this proceeding was especially important, and I received a lot of positive feedback from community members who engaged. So the possibility of having an hour window and preparing accordingly helped folks so they could still get back to work or their daily function, so I appreciated that and many people were thankful for that window to engage.

THE COURT: Thank you, Ms. Eddy. That's all I have.

HEARING EXAMINER ORTH: Thank you, Madam Chair. If there is no reason not to excuse Ms. Eddy, we will thank her for her testimony. Thank very much, Ms. Eddy, you are excused.

THE WITNESS: Thank you for your time.

HEARING EXAMINER ORTH: Mr. Baake or Ms. Fox?

MS. FOX: Madam Hearing Officer, may we take a very short five-minute break before we call Mr. Atencio?

HEARING EXAMINER ORTH: Actually, let's take ten minutes. Let's come back at 2:30.

MS. FOX: Thank you.

(Recess taken.)

HEARING EXAMINER ORTH: Let's come back from the break, please. Would you raise your right hand. Do you swear or affirm that the testimony you are about to give

will be the truth, the whole truth, and nothing but the truth?

THE WITNESS: Yes.

HEARING EXAMINER ORTH: Ms. Fox, whenever you are ready.

MS. FOX: Thank you, Madam Hearing Officer.

MARIO ATENCIO

(Sworn, testified as follows:)

DIRECT EXAMINATION

BY MS. FOX:

Q. Good afternoon, Mr. Atencio, would you please state your name?

A. Mario Atencio.

Q. How do you spell your last name?

A. A-t-e-n-c-i-o.

Q. Mr. Atencio, where are you from?

A. I am from Torreon, New Mexico, in the northwest part of the state in the San Juan Basin, and I now live in Albuquerque.

Q. And can you tell the Commission generally about the make-up of the Torreon community?

A. Torreon is mainly comprised of the citizens of the Navajo Nation living in the far eastern Navajo Nation.

Q. Which Chapter -- which Navajo Chapter do you belong to?

A. I belong to the Torreon Chapter.

Q. Do you hold any elected office within your Chapter?

A. Yes. I was just elected vice president for a four-year term.

Q. And is there a lot of oil and gas development in and around Navajo Indian allotted land in that area?

A. Yes. A lot of Navajos have ownership interest in individual Indian held properties in the far east Navajo Nation.

Q. And you are a member of the board of directors of Dine Care; correct?

A. Yes.

Q. What's been your involvement with Dine Care and your involvement in the oil and gas operations in the San Juan Basin in particular?

A. I first became involved with Dine Care in 2009 as a volunteer, and I helped with the mission that involved the health and safety of the both the people and the land and ongoing environmental justice issues that surround whole oil (unclear). I have also -- I also have been organizing on my own oil on gas issues since 2015 when Board Chairman Fidel Begay invited me to on the Dine Care board.

Q. And you were a member of the EMNRD and NMED methane advisory panel; correct?

A. Yes, representing the Chaco coalition.

Q. And can you tell the Commission about your participation in the MAP?

A. The Navajo Nation is working on obtaining development authority under the Clean Air Act to development its own resource review standard for minor sources, and to enact methane waste rules in the checkerboard area. We want to be part of the discussion on the safety development of methane.

Q. And what is your personal involvement with oil and gas operations and development in the San Juan Basin?

A. My mother and father have ownership interest in at least ten parcels of allotted land in the Nagezi, Councilor, Ojo Encino and Torreon communities. As one of the only siblings in my family with a college education, my parents asked me to be their spokesperson regarding oil and gas.

I have raised environmental justice issues for oil and gas wells to clear the horizontal frac wells and methane VOC toxic pollutants from those wells, and the fact that not a lot of Navajos are informed about the emissions.

Q. And Mr. Atencio, can you describe impacts that your parents, the community and you have experienced living close to oil and gas development?

A. Yes. On our land in Councilor is where my

grandma, my dad's mom still lives. My cousins and aunties still live on this land. Most recently within February 2019 a major spill of toxic nuclear waste, so-called produced water, happened on -- in, on and around land of my grandmother.

Over 50,000 gallons of toxic waste and oil spilled in the stream bed that's used -- that's used as critical water to help water flocks of sheep and goats. Due to my grandmother's age, she has failed to keep a herd anymore. My uncle said that he heard explosions that sounded like dynamite coming from the Enduring Resource wellpad site that had at least four oil wells on it.

My uncle said that as a kid they had played with dynamite before, and an explosion had caused -- as a kid it was similar to the sound he heard in February 2019.

I reviewed the New Mexico Environmental Department new synthetic (unclear) for the three wells that lie less than 1.5 miles from the aforementioned wellpad that spilled the toxic waste and oil.

I testified in front of the New Mexico Affairs when they convened a meeting at the Ojo Encino Chapter. There I related how my parents and I got (unclear) reviewed a stripper well that was venting hydrogen sulfide directly into the atmosphere. I have helped lead United States House Resource Committee Chairman Raul Grijalva, Vice Chair Debra

Haaland, Assistant Speaker Ben Ray Lujan, Chairman Alan (unclear), Director Sandra Ely, and State Land Commissioner Stephanie Garcia to the site that spilled the owner and they have viewed with an OGI camera the direct venting of methane into the atmosphere.

The administrators smelled the hydrogen sulfide smell. The venting showed a significant flow rate that is estimated to be releasing tons of volatile organic compounds a year. We could never get a straight answer from anyone on exactly what regulations are, and if the venting we could see are against any federal, state or county regulations.

Locally we have had, we have had air monitors in the regions, and there are times where emissions from an oil and gas wellpad have degraded the air quality to such an extreme that it was recommended that a local Councilor family leave their home for four hours.

I helped install that monitor and saw how a calm, overcasting causes injurious reversion events that might harm the people's health. This event is showcased in the health impact assessment that the Health Impact Committee has compiled. And was part of my contribution to the MAP community that advised the drafting of these proposed New Mexico methane rules.

Q. Do your parents and other allottees have an interest in preventing waste of methane?

A. Yes, we have a financial interest in not wasting the resource of our land.

Q. And were you involved in the development of the Health Impact Assessment of the Councilor Chapter of the Navajo Nation that you just referred to which is Climate Advocate Exhibit 32?

A. Yes.

Q. How was that assessment developed?

A. The assessment started as a citizen-signed health impact report. And based on that report a local committee was formed, and we all agreed to use a citizen protocol. The UNM Center for Population helped, provided us a valuable (unclear) report.

Q. And what's the major finding from that assessment?

A. The main finding is that the emissions from the oil and gas facilities need to be trapped at the source to protect public health.

Q. And did you present this health impact assessment to the MAP?

A. Yes, we did.

Q. Mr. Atencio, the Commission is considering rules to minimize waste from flaring and venting of methane from oil and gas production and gathering systems. What recommendations would you give to the Commissioners for

their deliberations?

A. The Commissioners should call -- the Commission should (unclear) to close loopholes and reduce methane waste venting and flaring. That is what the health and practices recommended. OCD has deciding jurisdiction over Indian land and has a duty to protect our community. As a trustee of health of the Navajo citizens of northwest New Mexico, the Commission should consider all language that closes loopholes and fits the spirit of the governor's wish to capture 98 percent of all methane waste production.

Oil and gas operations, especially horizontal wells, are a major source of pollution in the Chaco region, which is one the most sacred regions of the Nation. The damage has already been done. Enacting strong rules will help begin to repair that damage.

Q. Thank you, Mr. Atencio.

MS. FOX: Mr. Atencio stands for cross-examination.

HEARING EXAMINER ORTH: Thank you, Ms. Fox. Mr. Ames, do you have questions for Mr. Atencio?

MR. AMES: Ms. Orth, no, I do not have any questions for Mr. Atencio. Thank you.

HEARING EXAMINER ORTH: All right, thank you. Mr. Rankin?

MR. RANKIN: Good afternoon, Mr. Atencio, no

questions. Thank you, Madam Hearing Officer.

HEARING EXAMINER ORTH: Thank you. Mr. Biernoff?

MR. BIERNOFF: No questions from me, Madam Hearing Officer, but I do want to thank Mr. Atencio for his testimony.

HEARING EXAMINER ORTH: Thank you. And Ms. Paranhos?

MS. PARANHOS: No questions from me. Thank you so much for your testimony.

HEARING EXAMINER ORTH: Thank you. Commissioner Engler.

COMMISSIONER ENGLER: Again, no questions, but thank you very much for your testimony.

HEARING EXAMINER ORTH: Commissioner Kessler?

COMMISSIONER KESSLER: No questions, Mr. Atencio.

HEARING EXAMINER ORTH: Madam Chair?

CHAIRWOMAN SANDOVAL: Mr. Atencio, I have a couple of quick questions. Do you support the rulemaking?

THE WITNESS: Yes, I do. With the aforementioned of closing the loophole. Thank you.

CHAIRWOMAN SANDOVAL: Thank you. Do you believe it was a collaborative process to come to the proposed rules?

THE WITNESS: Yes, I do, as much as technology and time and financial constraints apply to the process.

CHAIRWOMAN SANDOVAL: I think I heard you say -- or do you own like own mineral interests or have royalty interests in some wells or does your family?

THE WITNESS: I'm a stakeholder in my mother's and father's estate, and they have ownership interest on federal Indian allotment lands that are in contract with operators and they are getting royalties from oil and gas wells.

CHAIRWOMAN SANDOVAL: So under the OCD proposal there is a section where there is a requirement for operators to let -- let some of those interest owners know how much gas was wasted of their property. Is that something that would be helpful to you or your family? Would that be useful information to know how much gas is being vented and flared as waste?

THE WITNESS: Yes. Because these wells in the contract are under federal trust agreements and trust relationship, and if their states have jurisdiction over them, we want to know -- that trust relationship is really (unclear) but we do need to know how many of our resources are being wasted.

CHAIRWOMAN SANDOVAL: Okay. Thank you. That's all I have. Thank you for your time today.

HEARING EXAMINER ORTH: Thank you, Madam Chair. Thank you very much, Mr. Atencio. If there is no reason not

to excuse Mr. Atencio, we will thank him for his testimony and release him. Thank you.

MS. FOX: Thank you, Mr. Atencio. Climate Advocates would now like to call Kendra Pinto.

HEARING EXAMINER ORTH: Hello. How is your sound?

THE WITNESS: High everyone. Can you hear me. I don't have a very loud speaker, so.

HEARING EXAMINER ORTH: Okay. Thank you. Would you raise your right hand, please. Do you swear or affirm that the testimony you are about to give will be the truth, the whole truth and nothing but the truth.

THE WITNESS: Yes, I do.

HEARING EXAMINER ORTH: Thank you. Ms. Fox?

MS. FOX: Thank you, Madam Hearing Officer.

KENDRA PINTO

(Sworn, testified as follows:)

DIRECT EXAMINATION

BY MS. FOX:

Q. Would you please state your name?

A. My name is Kendra Pinto.

Q. How do you spell your last name?

A. P-i-n-t-o.

Q. And, Ms. Pinto, where are you from?

A. I am from Twin Pines in the northwest part of the

state of New Mexico on Navajo tribal land.

Q. And can you tell the Commission generally about the make-up of your community.

A. Yeah. So the community of Twin Pines and surrounding area is very much rural. So a lot of the people who live in this area are members of the Navajo Nation, so there's a lot of traveling for work outside of the reservation.

Q. And what is your educational background?

A. I recently graduated from Ft. Lewis College with a bachelor's in environmental studies.

Q. And how did you become involved, Ms. Pinto, with working in your community on issues related to oil and gas?

A. I first became involved with oil and gas issues through Councilor Chapter House inquiring through the community service coordinator. And while I was getting familiar with the oil and gas issues in Chaco, I became involved with the community empowerment project with Earthworks.

That project pretty much teaches community members to spot and report any sort of violations that they could see at oil and gas wellsite, of course from a safe distance.

Q. And what's been your involvement with Dine Care working on oil and gas issues?

A. I have been working with Dine Care for several years now. I'm currently on contract with the organization. I organize in the communities within San Juan Basin around oil and gas issues. It's about protecting our culture sites, our land, natural resources and public health.

In particular, my work is focused on the greater Chaco region from the negative impacts of oil and gas development.

Q. And can you describe impacts that you and your community have experienced living close to oil and gas developments?

A. So I live about one mile from a very active oil and gas wellsite. I can hear the this site, especially in the evening, and I believe it's a compressor, and these, these sites surround our communities, so, you know, my parents and grandmother live really close to the sites too. We hear it, we can see it and occasionally we can smell it depending on whether or not we are recreating on public land and going out and enjoying the fresh air and the view.

Q. Go ahead.

A. In 2016 a well located about five miles from my house did explode. I know that fire burned for about five days. When we heard that explosion, my family and I, we did sort of panic because this -- I live in the middle of this this explosion, that type of explosion has never happened in

our community before, so there was no protocol, there was no plan to follow. So we were, you know, we were trying to figure out what do we do in this type of emergency, emergency situation.

And so what we decided to do was drive in to where we heard the noise and sound because we had no idea what was going on, and that was when we discovered that there was a huge fire just spreading into the sky.

My family has never personally been told what happened at that site, but also, like I mentioned, it was in an adjacent community, and I don't have any mineral rights or land ownership type of deal, so that could be the reason why.

Q. And how long did that fire burn?

A. For five days.

Q. Did the oil and gas operator ever give you, your family, or any others of which you're aware any notice or information about the explosion, and why it happened, and the extent to which it posed a danger to you and your family and community?

A. No.

Q. Do you think you should have received notice and information about this event?

A. Absolutely. We didn't know if the fire at the time posed a direct threat to us.

Q. Ms. Pinto, have you ever gone out with Earthworks to film methane emissions?

A. Yes, I have.

Q. Can you tell the Commission about those experiences?

A. So over the past few years I have gone out with Earthworks thermographers and we go out in the field primarily in the Councilor area. What we do is I put together a list of sites, maybe a dozen. We try to aim for a dozen but because of our location these sites can be about 20 minutes apart depending on the road. So it's very spread out so it can take all day.

We go to the sites. We make sure we are not downwind. We try to be safe. We stay on the roads, and when we have the camera going, we can actually spot from the public access road all the leaking emissions that are happening in front of us in real time.

And if we find a leaking emission that's pretty significant, then we will go ahead and file a complaint to the New Mexico Environmental Department's website.

Q. Ms. Pinto, as you know the Commission is considering rules to minimize methane waste from venting and flaring of gas from oil and gas production and gathering systems. What recommendations would you give to the Commission for their deliberations?

A. I would ask the Commission to do all it can to reduce and minimize methane emissions to protect the public health of our communities and communities are who directly impacted by this sort of problem, you know, this issue.

We have significant incidences of underlying conditions like asthma and other respiratory illnesses, so that needs to be taken into mind because we need to make sure we consider air quality when we come up with any types of rules for this area. And it's vital to us to protect the Chaco area because it's home to us. It has thousands of culture sites that are sacred to us.

MS. FOX: Thank you, Ms. Pinto. Ms. Pinto stands for cross-examination.

HEARING EXAMINER ORTH: Thank you for your testimony, Ms. Pinto. Mr. Ames, do you have questions of Ms. Pinto?

MR. AMES: Thank you, Ms. Orth. OCD thanks Ms. Pinto for testifying, but has no questions. Thank you.

HEARING EXAMINER ORTH: Thank you. Mr. Rankin, do you have questions of Ms. Pinto?

MR. RANKIN: Good afternoon, Ms. Pinto, Madam Hearing Officer, no questions. Thank you.

HEARING EXAMINER ORTH: Thank you. Mr. Biernoff.

CROSS-EXAMINATION

BY MR. BIERNOFF:

Q. Ms. Pinto, in the course of your activism, have you had much contact with the New Mexico State Land Office?

A. You know, at the beginning I did attend meetings, but because of my, you know, my introduction into this type of environmental world, I have been in the room with the land commissioners, but like I said, the meetings are kind of sporadic for me, so it is quite possible.

Q. And can you think of anything that the State Land Office can do to be -- to do better to be receptive to your concerns specifically about oil and gas emissions and waste from your organization or your community?

A. You know, with this type of situation, I think it's always important to have a voice from the community who will be dealing with any type of infrastructure like this. I mean, public comment has increased over the past few years, but that's very recent, and it shouldn't be that way.

There needs to be more involvement and more communications and consultation with people who are directly affected by any of this activity. And I think it should be recognized that a lot of the people who are living in these areas like the Greater Chaco Region, they have been here for hundreds of years, so they know what the land is, they know it like the back of their hand. With these constant changes, that hurts the mind and soul, and that hurts mentally and physically.

Q. Thank you, Ms. Pinto.

A. Thank you.

HEARING EXAMINER ORTH: Thank you. And Ms. Paranhos?

MS. PARANHOS: Thank you so much for your testimony. I have no questions.

HEARING EXAMINER ORTH: All right, thank you. Commissioner Engler?

COMMISSIONER ENGLER: The same. Thank you for the information and testimony. I have no questions.

HEARING EXAMINER ORTH: Okay. Commissioner Kessler?

COMMISSIONER KESSLER: Thank you for your time and testimony. We appreciate it.

HEARING EXAMINER ORTH: Madam Chair?

CHAIRWOMAN SANDOVAL: I just have a couple of quick questions, Ms. Pinto, do you support the rulemaking?

THE WITNESS: Yes.

CHAIRWOMAN SANDOVAL: From either your involvement with past rules or with this rule do you feel like it was a collaborative process?

THE WITNESS: As much as it could be, yes, but, you know, talking as a community member there could have been a lot more involvement from the actual people.

CHAIRWOMAN SANDOVAL: Okay. Thank you. And this

is not a question. But I'm not sure if that explosion was, if it was on tribal land, the state may not have information on it, but I would be happy to get you in touch with somebody who could likely figure out what site that was, and if it was on, on federal or state land, we would probably have information on it. If you would be interested, I could -- I could coordinate through Ms. Fox if that's something you're interested in.

THE WITNESS: It is. Thank you.

CHAIRWOMAN SANDOVAL: No problem.

HEARING EXAMINER ORTH: Thank you very much. If there is nothing further, we will excuse Ms. Pinto. Thank you very much for your testimony.

THE WITNESS: Thank you for for giving me the opportunity.

MS. FOX: The next witness is Mr. Baake's.

MR. BAAKE: Good afternoon, Madam Hearing Officer. We'll now be calling Dr. David McCabe.

HEARING EXAMINER ORTH: David McCabe, I think I see you. Dr. McCabe, will you raise your right hand.

Do you swear or affirm that the testimony you are about to give will be the truth, the whole truth, and nothing but the truth?

THE WITNESS: I do.

HEARING EXAMINER ORTH: Thank you. Mr. Baake?

MR. BAAKE: Direct examination direction by.

DAVID MCCABE

(Sworn, testified as follows:)

DIRECT EXAMINATION

BY MR. BAAKE:

Q. Thank you, Dr. McCabe. And would you spell your last name for the court reporter?

A. Certainly. M-c-C-a-b-e.

Q. Thank you, Dr. McCabe. So could you give us a little overview of your education and professional background?

A. Certainly. I received a Ph.D. in physical chemistry from the University of Colorado and conducted research measuring trace chemicals in the atmosphere.

I then worked as a science and technology fellow at the United States Environmental Protection Agency. And I now serve as a senior scientist at Clean Air Task Force, a small environmental organization. My work at Clean Air Task Force involves understanding emissions from the oil and gas industry and the technologies and practice that can reduce those emissions.

In the ten years I have worked on this problem a CATF, I have collaborated with academic and government scientists and worked with regulators in the federal government, several states and a number of foreign

jurisdictions.

I have also worked with oil and gas industry partners on a number of multi stakeholder initiatives, including work in Pennsylvania, Colorado and nationally focused collaborations.

Q. Thank you, Dr. McCabe. And have you worked on other rulemakings related to the emission of waste in the oil and gas sector?

A. Yes, sir. In 2020 I served as an expert witness for Earth Justice and other environmental groups for Colorado's oil and gas conservation commission's 900 series rules covering venting and flaring, completions, and other issues.

I have also served as an expert witness in several rulemakings by the Colorado Air Quality Control Commission. I will note that much of my analysis in these proceeding has focused on measures that conserve gas by using equipment and practices that keep gas in the system rather than venting the gas or sending it to an emissions control where it's flared.

While the focus on those proceedings was on reducing air pollutant emissions, this experience is relevant because by reducing and flaring and venting and keeping more gas in the system, these measures also reduce waste.

Similarly I have worked with many other air quality regulators in other jurisdictions as they have developed standards to reduce venting from various types of equipment.

In 2016 and earlier years I worked with US Bureau of Land Management as that agency developed its venting and flaring standards.

Q. Thank you, Dr. McCabe. And have you testified in any of these rulemakings?

A. Yes. I have testified before the Colorado Oil and Gas Conservation Commission and Colorado Air Quality Control Commission.

Q. And could you describe your involvement in this rulemaking?

A. Yes, I was involved -- excuse me -- I was invited to give in two technical presentations to the Methane Advisory Panel. One presentation was on a compressor seal emissions and the second presentation was on pneumatic equipment. I also contributed to Climate Advocates' comments on the draft rule.

Q. Thank you, Dr. McCabe. We would like to now deal with the issue of routine flaring. So first of all, what is routine flaring?

A. Routine flaring occurs when oil operators flare associated gas in nonemergency situations for extended

periods of time rather than utilizing the gas on site dispatching it to market or reinjecting it.

This occurs when there is not enough capacity in the natural gas gathering systems, either on the wellpad or downstream of the wellpad to handle the gas that is co-produced with the oil.

In some cases gas is flared when the pressure of the gas at the wellpad is too low to inject the gas into gathering pipelines. In these cases gas could be compressed to raise its pressure so it could be injected into gathering pipelines, but if the needed compressor capacity is not present on the wellpad, the gas tends to be flared instead.

Q. Okay. Just to clarify, two causes of routine flaring, one is lack of takeaway capacity and the other is lack of compression; correct?

A. Correct.

Q. Both of those things are something the operator can control?

A. Correct.

Q. Is routine flaring common in New Mexico?

A. Yes, it is common in the Permian Basin. It is more common in the Permian than many other oil producing basins because development of wells targeting oil production has outpaced the development of pipelines and other infrastructure to gather and transport the associated gas

that is produced along with the oil.

Q. And is routine flaring a form of waste?

A. Absolutely. Routine flaring is waste because it is not necessary from an operational perspective. Operators flare because they wish to rapidly produce and monetize oil and they are willing to simply burn off the gas produced alongside the oil rather than taking measures to ensure the gas production does not outpace the capacity of the systems needed to handle the gas.

Flaring is not necessary from an operational perspective. Even within the Permian many oil producers flare very little gas while others engage in substantial flaring. My colleague, Leslie Fleischman will discuss this in more depth, but it bears emphasis.

On one end of the spectrum you have a company like Ameredev which reported venting and flaring 78 percent of the gas it produced in 2019. On the other end of the spectrum you have companies like EOG and Oxy that vent and flare about 1 percent of their gas.

Q. Thank you, Dr. McCabe. And is it your understanding that this proposed rule would prohibit routine flaring?

A. Yes, the proposed Part 27, Subpart 8, Section D states that flaring, venting and flaring of natural gas is generally prohibited during production operations subject to

enumerated exceptions. Lack of adequate takeaway capacity is not one of the exceptions.

Q. Thank you, Dr. McCabe. Is this ban on routine flaring justified, in your your view?

A. Yes, it is. Prohibition is appropriate and consistent with what other jurisdictions are doing which is try to prevent waste. For example, in 2020 Colorado's Oil and Gas Conservation Commission put robust rules in place to rapidly phase routine flaring.

Q. So what can an oil company do with associated gas other than wasting it, other than venting and flaring?

A. So I presume you mean in a situation where there isn't adequate pipeline capacity?

Q. Yeah. Good clarification, yes. So assuming they don't send it to sales, what alternatives do they have?

A. So, yes. In response to flaring that was wide spread in several production basins at the time, my organization Clean Air Task Force, commissioned a study which was released in 2015 of technologies that can be used to handle or utilize gas from wellpads when it cannot be handled in pipelines.

The study evaluated nine candidate technologies beyond gathering pipelines for capturing and using associated gas. Of these technologies the study authors found that three are proven and in use in tight oil

formations. These three technologies are natural gas, liquid recovery, which involves separating out heavier hydrocarbons which can easily be transported as liquids from associates gas, compressed natural gas trucking, which involves trucking associated gas to a gas processing plant or another plant where it can be transported to market via pipeline, and generating electricity with associated gas where the electricity can be used on the well pad and/or sold into the grid.

So these three technologies are mature, meaning they have been deployed commercially in tight oil production basins. They are right sized and scaleable, meaning they can scale up or down, depending on the level of gas production at a site, and they are portable.

The technologies are able to handle the conditions found in tight oil formations. In many installations that make money for companies that use them. Even if they do impose net cost, that cost is small considering the large amount of waste and pollution that is prevented when these technologies are used.

One technology that was not assessed in the 2015 study was gas reinjection. Reinjection has been used for many decades to enhance oil production by maintaining pressure in a formation and also to store or dispose of stranded gas which is produced in an area without pipeline

capacity to get that gas to a market.

For example, the bulk of the gas produced on the Alaska North Slope since oil production began there 50 years ago has been reinjected. Our study did not focus on reinjection because we were focused on the oil development in North Dakota in the Eagleford Shale, and it wasn't clear if those areas had older appropriate conventional formation to accept reinjected gas.

In contrast many parts of the Permian have significant conventional oil formations, some of which may be suitable for gas reinjection. Reinjection doesn't typically provide an alternative means to handle gas at a wellpad if the wellpad doesn't have enough takeaway capacity, but it can help if a production region doesn't have enough midstream or especially transmission takeaway capacity.

Finally, if need be, operators can shut wells in temporarily if needed to reduce gas production so that the capacity of gas gathering systems isn't exceeded. And as Dr. Singer has testified, many operators chose to shut in wells temporarily in 2020 in response to oil prices.

So the availability of these proven alternative technologies demonstrates there is no reason to accept routine flaring. Companies can get pipelines to their wells and other experts are testifying on the importance of gas

capture planning to help ensure that sufficient gathering capacity will be available at wells.

But we believe it's also valuable to consider the companies also have flexibility in how they handle associated gas because of the availability of technology I just described.

So, for instance, if a completion of a pipeline is delayed for any reason, operators -- companies have a number of options to handle gas beyond just shutting in the well or delaying completions, which are certainly valid options. There simply isn't any reason that operators have to flare gas when they don't have sufficient capacity to handle the associated gas from a well.

Q. Thank you, Dr. McCabe. I would like to switch now to the subject of performance standards for flares. Dr. McCabe, based on what you know, how often do flares in New Mexico malfunction?

A. Unfortunately they routinely malfunction. EDF, I believe, presented information on their surveys. They conducted several surveys in 2020 of more than 300 sites in the Permian. They consistently found that more than one in ten flares was either entirely unlit or malfunctioning and only partly burning the gas directed to the flare. And this is entirely consistent with the information that Ms. Eddy presented earlier this afternoon. So it's quite common.

Q. And what do operators do to prevent flares from malfunctioning in this way?

A. Automatic igniter technology is the most reliable method for reducing the likelihood and duration of venting from an unlit flare. Continuous pilots are better than operating flares without any means to keep the flame lit, but they are not as reliable as automatic igniters because it's possible for the pilot to blow out or otherwise fail.

In 2014 Colorado's Air Pollution Control Division estimated the pilots will typically be out about three percent of time, hundreds of hours per year. For this reason Colorado found it was reasonable to require auto igniters rather than allowing the use of pilots. Given the very high rates of malfunctioning and unlit flares in the Permian which is well above three percent, the Colorado assumption about downtime may have been conservative and requiring auto igniters is clearly justified.

Q. Thank you, Dr. McCabe. So OCD has proposed the use of closed flares for drilling operations. What are the benefits of using an enclosed flares as opposed to ones not enclosed?

A. So by enclosing a flare, the combustion conditions for the flame are kept more consistent, and the flame is also much less likely to blow out. So for both of these reasons, enclosed flares are generally more effective

at destroying the fuel sent to them than open flares.

Q. Thank you, Dr. McCabe. So it's not just about retrofitting pipes which I think was suggested earlier, but also about better (unclear); correct?

A. That's correct, yes. And I'm not discounting the pollution argument, but they're generally thought to be more effective in destroying the gas sent to them.

Q. Should auto igniters or similar technology be required at stripper wells?

A. Certainly. My understanding is that many stripper wells have no flares at all in New Mexico and instead vent directly to the atmosphere. So as we understand it, these facilities be would required to install a new flare consistent with proposed 19.15.27.8.A, which requires operators to flare rather than vent whenever technically feasible and safe.

That flare would have to meet the performance standards for new flares, and of course we propose that all new flares be required to use automatic igniter rather than a pilot.

If a stripper well does have an existing flare, but does not have a mechanism to prevent uncontrolled venting from extinguished flare, which could be either an auto igniter, a continuous pilot or a notification system, the flare should be retrofit with such a mechanism within 12

months.

As described earlier, malfunctioning flares are very common in the permian and implications of uncontrolled venting from these flares are very substantial, so it is important that all flares have a mechanism to stay lit.

Furthermore, stripper wells would be also be inspected less frequency -- less frequently than non-low production wells under the OCD -- under the program OCD proposes in 19.15.27.8.E.5, that's the AVO inspections, meaning that unlit flares at stripper wells will go for longer periods before being addressed.

So given the large number of these wells, the observed high frequency of flare malfunctions and long length of time these malfunctions may continue, unlit or malfunctioning flares at stripper wells are liable to cumulatively vent very significant amounts of gas.

Therefore, it's critical the Commission addresses the issue of malfunctioning flares at all wells, and we suggest they do that by requiring use of auto igniters or pilots at stripper wells by a date certain.

Q. Thank you, Dr. McCabe. Just to clarify, I think you said you propose to allow them to use continuous pilots at stripper wells. That was a concession we were willing to make on stripper wells. For other wells we do think that auto igniters should be required; is that correct?

A. That is correct.

Q. I just wanted to clarify that. Turning to the gas capture requirement, Dr. McCabe, so the proposed Section 19.15.27.9.A.3 provides that an operator's acquisition of one or more wells shall not affect his natural gas capture plan. Why is it important to segregate acquired wells for compliance purposes?

A. The Commission's goal is reduce flaring, and of course that's -- we agree that that's the right goal. Without the provisions you mentioned to govern the treatment of acquired wells, the structure of the proposed program would create unhelpful incentives.

For example if a small operator with a high flaring rate was purchased by a large operator with a low flaring rate, the combined assets of the two firms might achieve the 98 percent capture rate with no further reductions in the high flaring rate in the wells previously owned by the small operator.

In contrast, under the provisions you cite, the combined firm will still be required to address the high level of waste at the acquired wells of the smaller operator.

Q. Thank you, Dr. McCabe. So one of the issues that's been discussed quite a bit in this hearing is low pressure, low pressure gas. In your view is it important to

include venting and flaring of low pressure gas in calculating an operator's gas capture percent?

A. It certainly is. Some operators in New Mexico continue to use equipment which vent or flare large amounts of gas unnecessarily. This is wasteful because these operators are choosing not to use equipment and practices which can dramatically reduce or eliminate this venting and flaring.

One clear example of this is gas driven pneumatic controllers. These are devices that use pressurized natural gas to control valves. For example pneumatic controllers are often used on separators at wellsites. When the liquid in the separater reaches a certain level, the pneumatic controller uses pressurized gas to open the dump valve on the separator so the liquid is moved into a tank.

Since this approach uses pressurized gas to do work, the vast majority of controllers are designed to release the gas into the atmosphere as they operate. However, controllers do not all emit the same amount of natural gas.

In 2008 Colorado put in place rules requiring operators in the Denver Julesburg Basin to replace the highest emitting controllers referred to as high bleed controllers with lower emitting models.

Epa estimates each of these high bleed

controllers vents over 300 MCF of natural gas a year. When Colorado put this rule for the Denver Julesburg Basin in place, they included a provision around operators to seek an exemption from replacement mandate for high grade controllers if replacing it was not feasible. No operator even requested such an exemption, they simply replaced all the high bleed controllers.

Later US EPA put in place a standard, a national standard in 2012 which generally requires operators not to use new high bleed controllers. And then following that, subsequent to that, in a third action Colorado followed up on its 2008 rule that only applied to the Denver Julesburg Basin with a 2014 rule requiring operators to replace existing high bleed controllers statewide.

When they did their analysis in 2014, they concluded that replacing these controllers with lower venting models pays for itself in about 14 months. So there is an enormous amount of clear evidence that replacing high bleed controllers is very feasible and actually pays for itself.

Despite all of this -- and keep in mind this was all done years ago in Colorado -- despite all of this, operators in the Permian and San Juan Basin are still using thousands of these wasteful devices as demonstrated in operator reports to EPA's greenhouse gas reporting program.

I do note this particular data for this particular source, the operator reports do not allow us to identify how many of the high bleed controllers are in the New Mexico portion of these basins. However, there is no reason to believe that operators are somehow using them only on the other side of the state border.

Furthermore, recent developments make it very clear that it is not enough just to replace high bleed controllers, operators should be moving away from all types of gas driven controllers that vent gas to the atmosphere. This is already required for new equipment or new sites in two community provinces and Colorado will consider a measure to require this in February.

Some Canadian sites are also now required to retrofit to eliminate venting controllers altogether, all types of venting controllers, and we are advocating for such a policy in Colorado, too. These measures have been proven reasonable since alternative technologies are on the market that allow operators to stop using controllers that vent gas into the air entirely.

In conclusion, it's clearly egregiously wasteful for operators to continue using high bleed controllers. Further, widespread indefinite general use of any venting gas driven controller is also wasteful since operators have good options to replace gas driven pneumatics with

non-venting equipment.

Therefore, it is entirely appropriate that gas that is vented from pneumatic controllers be considered waste irrespective of whether the stream of venting is classified as low pressure venting or not.

The Commission should restore the volume of gas vented from pneumatic controllers to the list of venting sources that must be reported to OCD under Part 27, Subpart 8, Section G.2, and this source of venting should be included when an operator's compliance with the gas capture requirements in Subpart 9 is evaluated.

It is important that other venting streams classified as low pressure venting be considered waste. Gas that is vented or flared from equipment such as controlled and uncontrolled tanks or during operations such as blowdown can be considered, and many operators are already doing so.

The Commission should require these streams of venting and flaring to be reported and counted as waste when evaluating compliance with the operators' gas capture requirements.

Finally waste also results from improperly closed or maintained thief hatches and equipment leaks. Operators have the means to prevent these forms of waste as well. None of this waste is necessary for the functioning of the operation. It's simply an economic decision that operators

make to waste this resource rather than investing in solutions.

Q. Thank you, Dr. McCabe. So I want to ask you a question about pneumatic controllers. Do you know if NMED is proposing to regulate these (unclear)?

A. Yes, as I understand it, the draft NMED rule would require operators to phase out high bleed pneumatic controllers at sites covered by the rule. However, our understanding of the current is that the current draft of the rule exempts some 95 percent of production sites from the provisions the rule that cover pneumatics.

We submitted extensive comments to NMED arguing both they should eliminate the proposed exemptions and should expand their focus to all pneumatic controllers, not just high bleed controllers.

Obviously we don't know what NMED will do, in any case, OCD can and should be regulating venting from these devices because it's clearly wasteful. This is gas that can and should be sold and it's instead being vented because operators have chosen not to replace out-of-date technology.

Q. Thank you, Dr. McCabe. Why do you believe that controlled tank combustion should be included as waste in the gas capture percentage?

A. So OCD has appropriately looked at uncontrolled storage tanks as a source of waste, but controlled storage

tanks which are controlled by routing flash gas from the tank into a flare are also a source of waste because gas is flared instead of capturing it for sale and it is very possible to do the latter.

Controlling gas emissions from tanks to flaring is certainly vastly preferable to venting those emissions, but the gas lost through such flaring is still wasted since operators can avoid venting or flaring flash gas from tanks by capturing it and injecting it into a sales line.

In fact, it's relatively common for operators to capture gas in this way. EPA data shows almost 3000 tanks in the New Mexico portion of the Permian Basin use vapor recovery units to capture gas that is directed to the sales line. This approach has been used for many years in devices such as catalytic devices which remove any oxygen which leaks from tanks from the gas stream are available on the market to facilitate this approach.

This approach entirely avoids the waste and pollution from incinerating flash gas. Unfortunately this approach is only used for a fraction of tanks in the New Mexico portion of the Permian. Operators report that tens of thousands of tanks in this area either vent or share -- or, I'm sorry -- of flare their flash gas.

This is wasteful, but neither OCD's proposed rules nor NMED's draft rules require tank vapors to be

captured rather than burned off. In fact, neither set of rules encourages flash gas to be captured.

Under the structure of the proposed rule requiring flash gas from control tanks to be reported would in turn make operators account for this flaring in calculating compliance with the gas capture requirements. This is especially important given the large volume of flaring from controlled tanks.

In the Permian operators reporting emissions to US EPA reported emitting over one million metric tons of CO2 from enclosed combustors or flares from tanks in 2019.

Just by way of comparison, reported emissions from flaring of associated gas from oil wells in the Permian for those same operators was about 5 1/2 million metric tons of CO2.

So tank flaring is smaller than flaring associated gas, but it is of similar magnitude to flaring from oil wells. Again, it's million tons. So a tremendous amount of useful hydrocarbons from these tanks is simply burned up.

Operators should not be given a free pass for wasteful flaring from controlled tanks. It should be required to report it and its volume of gas waste should be included when evaluating compliance with the gas capture goal.

Many operators would then be required to reduce flaring from tanks and reduce other forms of waste over the period of the rule.

Q. Thank you, Mr. Dr. McCabe. I want to talk a little bit about the measurement provision of the rule. So are there changes to those provisions that would ensure that waste is properly calculated and not underestimated that you would recommend?

A. Yes. The OCD version of Part 27, Subpart 8, Section F.5 allows operators to estimate the volume of waste for streams of gas that cannot be or are not required to be metered, but these provisions provide no guidance at all on how operators should estimate the volume of flaring.

This open-ended approach is not likely to produce the most accurate data and may create other problems. For example, if operators are using a different estimation methodologies or techniques, their data may not be comparable.

This open-ended approach is also not necessary since methods have been established to calculate volumes of gas that are vented from a number of types of venting. Most importantly, EPA's greenhouse gas reporting program requires that operators use specific calculation methods to estimate emissions from sources such as blowdowns and liquids unloading.

The Commission should require operators to use calculation methodologies specified by the EPA reporting rule or other appropriate establish methodologies specified by the Division. OCD will likely need to provide additional guidance documents, however, to ensure waste is appropriately calculated.

Q. And Dr. McCabe, are Climate Advocates' proposed changes to Section 8.F that will require the use of establishment (unclear) is that correct?

A. Yes, that's correct.

Q. Finally on the subject, Dr. McCabe, do the methodologies used for calculating emissions under the EPA greenhouse gas reporting rule provide a perfect estimate of the amount of gas vented or wasted from a particular activity or source?

A. No. EPA's methodologies certainly don't lead to perfectly accurate quantification of all emissions. However, they do provide reasonable estimates of the volume of gas that those sources emit.

In some cases the calculation methodology might produce estimates for emission streams that are too high. In other cases the same calculation methodology might produce emissions estimates for a stream that is too low.

Those methodologies are not arbitrary. EPA developed them through formal notice and comment processes

taking into account information from commenters and stakeholders.

For example, a number of the emissions factors formulas and parameters used in the program reporting methodologies were adopted from documents such as American Petroleum Institute's compendium of greenhouse gas emissions methodologies for the oil and natural gas industry.

Q. Dr. McCabe, as you understand the way the rule works, particularly the gas capture requirement, is it a problem if the emissions estimates are not perfectly accurate for each individual source or activity.

A. No, it's not. First, while emissions methodologies -- while the emission methodology may produce inaccurate results for individual instances, on average they will produce reasonable results.

Operators aren't required to achieve the gas capture requirement of each individual well. Instead, compliance is determined by whether an operator's capture percentage meets the target level across all of their facilities. So they get to average their venting and flaring for all facilities. That kind of removes the problem of inaccuracy in a single well.

Secondly the proposed OCD rule only requires operators to reduce waste from new sources to two percent of produced gas. It gives operators several years to do this.

Put simply, uncertainty or inaccuracy of calculated emissions for sources such as liquids unloading are not significant compared to this standard.

Therefore, in my judgment, the emissions methodologies used in the EPA reporting rule are adequate for this rule.

Q. Thank you, Dr. McCabe. And the last subject I want to cover is blowdowns. So Dr. McCabe, what steps can operators in the gathering sector take to reduce, reduce waste during blowdowns?

A. So there is a number of steps that operators can take to minimize waste during blowdowns. Operators can often reduce the pressure in pipeline segments before it is blown down. And importantly, the volume of pipe and equipment that is blown down can be minimized using isolation valves or technology such as plugs that can be pegged right into place inside a pipe or inserted into a pipe via (unclear).

Finally gas can be pumped out of pipelines before lines are vented using permanent or temporary compressors. There are vendors offering portable rental compressors that are configured for this specific purpose.

A number of operators, especially in the transmission segment of the gas industry have active programs to reduce the volume of gas that they release from

blowdowns.

Q. Thank you, Dr. McCabe. So you mentioned these steps are common in the transmission segment, but I understand that transmission pipelines are significantly larger than those used in the gathering sector. Is that your understanding?

A. Yes.

Q. In fact, I believe one the NMOGA's witnesses stated that gathering lines are typically about four to six inches in diameter, while transmission pipelines can be about 30 inches in diameter. Does that sound about right?

A. Yes. Transmission pipelines are typically larger than gathering pipelines if they are designed to move more gas over longer distances.

Q. So there is a size difference in these pipes lines. Is there a technical reason that you can think of that this size difference would make it harder to capture gas from a gathering system pipe line than from transmission line?

A. No. The diameter of the pipe is not very relevant. The operator would just need the right compression equipment, and I suppose, the appropriate amount of patience if a large volume needs to be pumped down.

You know, going back to the transmission example, a 30-inch high-pressure transmission pipeline isn't sitting

there a vacuum, empty of gas, ready to suck the gas out of the equipment that needs to be evacuated. Instead it's sitting there typically at much higher pressure than used in gathering systems. So transmission companies need to bring in compressors to transfer the gas into the receiving pipeline. And that's what gathering operators should be doing, too.

Q. Thank you, Dr. McCabe. So, in your view, if an operator chooses to vent gas during the blowdown rather than utilizing the technology you described to (unclear) to a pipeline, should that be considered waste?

A. Yes, it should. It's appropriate to require operators to report the volume of gas that they vent or flare during blowdowns, and blowdowns should be included when calculating an operator's gas capture percentage.

Q. Thank you, Dr. McCabe. And I believe your resume is included as Climate Advocate's Exhibit 12. I guess, I will represent to you that it is.

MS. BAAKE: And can we move to admit that, Madam Hearing Officer?

HEARING EXAMINER ORTH: Yes. Let me pause for a moment to see if there are any objections to Exhibit 12.

(No audible response.)

HEARING EXAMINER ORTH: Exhibit 12 is admitted.

(Exhibit 12 admitted.)

MR. BAAKE: And with that, I think Dr. McCabe is ready to stand for cross-examination.

HEARING EXAMINER ORTH: Thank you very much, Mr. Baake. Mr. Ames, do you have questions of Dr. McCabe?

MR. AMES: I do, Ms. Orth. Just a few.

CROSS-EXAMINATION

BY MR. AMES:

Q. Good afternoon, Dr. McCabe.

A. Good afternoon.

Q. Are you aware that NMOGA believes that certain categories of vented and flared volumes of natural gas shouldn't be considered waste?

A. Yes, I am aware of that argument.

Q. And that those categories shouldn't be reported?

A. Yes, I'm aware of that argument.

Q. Are those the categories, downhole operations, liquids unloading, uncontrolled storage tanks, pneumatics and thief hatches?

A. That is my understanding, yes, sir.

Q. So I will just refer to those as low pressure categories from now on, but -- in general, but in terms of pneumatics, I heard you testify there are many thousands of pneumatic devices in the oil fields?

A. That's correct. They are ubiquitous.

Q. How about tanks?

A. There are several thousand tanks. I believe it's actually tens of thousands, but there are certainly thousands of tanks in the Permian Basin, for example.

Q. Any sense of how many are controlled versus uncontrolled?

A. I think the way I would say it since I don't have the numbers in front of me, sir, is that there are thousands of controlled tanks and thousands of uncontrolled tanks, so there is a significant portion of both, if that helps.

Q. Uh-huh. So with respect to the activity downhole operations, liquids unloading, are these fairly frequent activities at wells?

A. I think that there is variation of liquids unloading certain wells. For example, with automatic plunger lifts may unload quite frequently. Downhole maintenance is certainly not happening several times a month for any typical well. So there is a spectrum of frequency, but they are not -- none of them are rare or unusual.

Q. When you have 60,000 wells, is it reasonable to assume that these activities happen thousands of times over the course of a year?

A. Yes, I suppose it is, sir.

Q. If you add up all of these emissions, would you consider that potentially significant due to the total volume of vented and flared volumes to be significant?

A. Absolutely. If I may elaborate. Emissions from pneumatic controllers are, broadly speaking, the second largest source of emissions for the entire US natural gas industry behind only leaks.

And for certain basins, including the San Juan Basin, liquids unloading is a very significant source of emission. Many of us often cite a paper from a different basin, and the whole point of that paper, it's from Arkansas, the whole point of the paper was that you really couldn't understand observations of emissions from the basin if you didn't understand precisely when liquids unloading emissions were occurring, because they are so significant that if you observe them in the middle of the day, you get much higher emissions than if you observe over a 24-hour period because the unloading is happening in the middle of the day. So it's a huge chunk of emissions. Long answer to a short question.

Q. That's fine. So you understand that the OCD is proposing a 98 percent capture requirement; right?

A. Yes, sir.

Q. And that would allow operators up to two percent of vented and flared volumes relative to their produced gas; correct?

A. Yes, that's my understanding, sir.

Q. So -- but you also said your understanding that

NMOGA doesn't want to report or account for these vented and flared volumes from these low pressure categories; is that right?

A. That is my understanding.

Q. So if I understand correctly, NMOGA doesn't want to count the vented and flared volumes from these categories in the two percent. Is that how you would interpret it?

A. Yes.

Q. So NMOGA is really asking for two percent plus X; is that right?

A. Correct.

Q. Let's talk about the X. You have already said that these emissions -- these volumes could be significant. How do -- how would we know what X is for any particular operator if they don't meter, estimate or report it?

A. Well, sir, I do want to point out that to some extent they are already required to report it. Some of them are already required to report many of these emissions to the US EPA.

Q. But there is nothing -- not to OCD?

A. Yes, I just want to point out that they are already required to do that. In many cases, though, when they do that, you lose important information, for example, pneumatic controllers, you don't know if they are New Mexico or Texas, but they are already collecting the needed data.

So no, you wouldn't know what -- well, there is an example. You could go look it up how much pneumatic controller emissions are in the Permian, but then you wouldn't know if they were in Texas or New Mexico.

Q. So is it possible that operators are reporting some of this data to other agencies, but if NMOGA were to convince the Commission not to require reporting for these low pressure categories, OCD would have no way of knowing what the X is in the equation?

A. That's correct. And just to follow up on my statement, of course only larger operators report to the greenhouse gas reporting program. So for numerous reasons you would not have a precise handle on that.

Q. Thank you. That's all.

HEARING EXAMINER ORTH: Thank you, Mr. Ames. Mr. Rankin, do you have questions of Dr. McCabe?

MR. RANKIN: Thank you, Madam Hearing Officer, I just have a few questions.

CROSS-EXAMINATION

BY MR. RANKIN:

Q. Mr. McCabe, you testified generally about that, as I recall, that there's a preference for auto igniter flares over continuous pilot flares; is that correct?

A. Yes, sir.

Q. And that was based on your opinion that auto

igniters are more reliable than continuous pilots; is that correct?

A. Yes. And that's primarily based on our reading of the Colorado record.

Q. Okay. But in support of your testimony today, you haven't presented or submitted any evidence or data that supports that position; is that correct?

A. I don't know if we submitted -- if we put the Colorado (unclear) into the record, no, I don't know that.

Q. So you don't if there is no data or evidence other than your testimony that supports the -- your opinion that there's a -- that auto igniters are more reliable than continuous pilots; is that correct?

A. Not that I know. You would have to speak to them.

Q. Okay. On the flare topic, I want to direct your attention to Section B -- I'm sorry 27.8.B, Subpart 2 of the language --

MR. RANKIN: So we can have it in front of us, so if I may be permitted to share, thank you very much.

Q. So this provision addresses flare stacks during drilling operations; correct?

A. Yes, sir.

Q. And are you aware of any issues with -- that may arise during drilling operations that would impact

continuous flow or other factors that might affect the flare operations with an enclosed flare during drilling operations?

A. I'm aware of the fact that drilling operations, that the volume of the gas can be variable.

Q. Okay. Are you aware there is some concerns around the ability -- the impact that enclosed flares would have on the ability of flares to have capacity for flare capacity, combustion capacity during drilling operations?

A. I'm aware of the concern, yes, sir.

Q. But it's your opinion that it's -- and are you also aware of safety concerns regarding having enclosed flares during drilling operations so that operators and drillers can actually see that the flare is functioning?

A. I'm aware of that argument, yes.

Q. On the topic of measurement, you address the measurement issues around Climate Advocates' proposed provisions for estimating -- let me get up that language here real quick so we can see it. Get to the right page real quick. You see here, Dr. McCabe, Section F, Subparagraph 5?

A. Yes.

Q. So my understanding is you testified that, that while these methodologies are not perfect they are reasonable; is that correct?

A. Yes, sir.

Q. And that there is some that would have higher estimates and some that would have lower estimates, result in lower estimates; correct?

A. My statement was when these methodologies were applied to individual events, sometimes they would come a little high and sometimes they would come a little low in general.

Q. But you -- have you conducted a study evaluating the effects of averaging these various methodologies on all facilities for any given operator that would be required to report using these mechanisms under this proposed rule?

A. I'm not sure I understand what sort of study you are suggesting.

Q. Well, I mean, you opined that it would -- that the measurements would come out in the wash, essentially, didn't you?

A. I opined that the methodologies that the EPA has developed are appropriate ways of estimating average emissions from events such as liquids unloading, pneumatics, et cetera.

Q. Including pneumatic controllers?

A. Yes, sir.

Q. Mr. McCabe, I'm going to share with you a screen here what I understand is -- get to the right -- I guess

you can see it. Do you see this now, where it says emission per controller?

A. I'm sorry, I cannot read it.

Q. I'm going to scroll up to the top so you can see what the title page is. I think this is a presentation that you made to the MAP, Section 6, and you were (unclear)?

A. Yes.

Q. So in this one table here it says, "Emissions per controller" -- and you have a comment here that I highlighted that said, "Real emissions cannot be calculated using manufacturer specs or emissions measured under" -- do you see that?

A. Yes, sir.

Q. So isn't it true that there are a wide variety, a wide range of emissions factors that have been developed through various studies that aren't all in agreement with -- for pneumatic controllers; correct?

A. Yes. And above it, you know, we are referring to the fact that studies are consistently finding a large portion of emissions are coming from improper operations leaks and problems. So what that's all adding up to is the EPA emissions factors are probably very conservative for pneumatic controllers.

Q. What I'm getting back to is, my question is that, you know, while there is a wide variety of emission factors

rates that have been put forward, various studies including EPA's own methodologies, you have not yourself conducted a study to determine what the effect would be on any given operator employing the EPA's methodologies across all of its facilities; correct?

A. I suppose that's correct, yeah.

Q. So you are sitting here today, you don't know whether that would overestimate or underestimate their emissions; correct.

A. In general, as I just mentioned there is a pretty robust pattern that EPA emissions factors for pneumatic controllers are probably lower than actual emissions in aggregate.

Q. That wasn't my question. You didn't answer it. I'm asking, sitting here today, you don't know what the ultimate effect would be on any given operator applying EPA's methodologies across all their facilities. I'm not just talking about pneumatic controllers, I'm talking about all the methodologies that Climate Advocates proposes to include in the provision of its rule.

MR. BAAKE: Objection, Madam Hearing Officer, I believe Dr. McCabe gave a fair answer. He said it's very likely an underestimate, so I'm not sure why the question is being repeated. It was answered.

MR. RANKIN: Madam Hearing Officer, Dr. McCabe

answered about pneumatic controllers and I'm asking about aggregate results about the application of all of these methodologies.

HEARING EXAMINER ORTH: That's how I heard your question as well. Go ahead Dr. McCabe.

A. I acknowledge there is uncertainty in what emissions from these devices -- what emissions from pneumatic controllers and other emission streams are using these calculation methodologies.

Q. And so based on that uncertainty, sitting here today, you don't know what results of the application of those methodologies would be for any given operator who is required to use them to calculate the gas capture rate; correct?

A. Not with precision, no, I don't know precisely what the -- you don't know the precise effect. However, as I mentioned, this is all within the context of the proposed OCD rule.

Q. Thank you very much, Dr. McCabe. I appreciate your response.

MR. RANKIN: I think at this time, Madam Hearing Officer, I have no further questions of Dr. McCabe.

HEARING EXAMINER ORTH: All right. Thank you, Mr. Rankin. Mr. Biernoff, do you have questions of Dr. McCabe?

MR. BIERNOFF: Thank you, Madam Hearing Officer. I have a few questions for Dr. McCabe.

CROSS-EXAMINATION

BY MR. BIERNOFF:

Q. Dr. McCabe in your direct testimony I think I heard you saying that you observed some pretty big differences among companies with respect to venting and flaring. I think you said that Ameredev in recent years have flared -- vented or flared almost all of the gas it produced. Other companies like EOG they have only vented or flared around one percent. Is that right?

A. Yes, sir.

Q. Okay. And Dr. McCabe, have you determined any reasons for those pretty significant disparities between companies?

A. I, I will say that I'm a -- I don't consider myself an expert on these reasons. I think they have different business models, but again, that's not my expertise.

Q. Okay. And where would you say most companies, if you know, most companies that operate in New Mexico are on that spectrum, you know, between venting and flaring almost all of the gas they produce versus only venting and flaring one percent?

A. Again, I am not looking at the data right now.

To my knowledge, there is a wide spectrum.

Q. Okay. Dr. McCabe, are stripper wells a major source of methane emissions in New Mexico?

A. According to the best information we have, yes.

Q. Okay. Is there a point at which, a point in time at which the environmental costs of stripper wells exceed any benefit that those wells provide?

A. That's certainly possible, yes. I mean, I think, you know, it depends on which costs you include and which benefits you include, obviously. But when you add up the full cost of emissions from stripper wells, for example, and compare them to the benefit that society receives from them, they can certainly -- the cost can certainly be larger than the benefits, absolutely.

Q. Okay. Thank you, Dr. McCabe.

HEARING EXAMINER ORTH: Thank you, Mr. Biernoff. I had a call from Ms. Paranhos, she had said she would have to step away and might not be available, so --

MR. BAAKE: Madam Hearing Officer, would it be possible to take a five minute break to use the rest room?

HEARING EXAMINER ORTH: Actually she texted that she waived her opportunity to ask questions.

MR. BAAKE: No, my question is whether it would be possible for all of us to take a short five-minute break.

HEARING EXAMINER ORTH: Before we proceed with

the Commission questions?

MR. BAAKE: Yeah.

HEARING EXAMINER ORTH: Well, let's take ten minutes and come back at 4:10.

MR. BAAKE: Thank you, Madam Hearing Officer.

(Recess taken.)

HEARING EXAMINER ORTH: All right. Commissioner Engler, do you have questions of Dr. McCabe?

COMMISSIONER ENGLER: I have one. Good afternoon, evening, Dr. McCabe.

THE WITNESS: Good evening.

COMMISSIONER ENGLER: I want to do like a quick follow-up question to something Mr. Biernoff just said prior to break. He asked, in New Mexico, are stripper wells a high source of emissions, and I think you said yes. Is that correct?

THE WITNESS: Yeah, in -- in the aggregate, stripper wells are an extremely important source of emission.

COMMISSIONER ENGLER: I guess, what are you basing that on?

THE WITNESS: Multiple sources of information. For example, the information from many sources, including Ms. Eddy's testimony earlier, the EDF surveys that have mentioned, data from EDF analysis of their survey -- the

surveys that they have done on thousands of thousands of sites nationwide and hundreds and hundreds of sites in the Permian, et cetera.

COMMISSIONER ENGLER: Well, I'm aware -- I know there is EDF work. I know they have a description and explanation of the number of wells that would be excluded for NMED rulemaking. I wasn't aware of anywhere where anyone had a volume for New Mexico for stripper wells for methane emissions, and I guess that was more my question specifically. Do you have anything -- can you help me on that?

THE WITNESS: Commissioner, it's my interpretation of the question was a qualitative question, and my answer is a qualitative answer. It's that, in the aggregate, based on all of my experience with emissions patterns in many basins, but also in the Permian Basin, and because of problems like the super emitter phenomenon, aggregate emissions from stripper wells would be very significant.

COMMISSIONER ENGLER: So -- okay. So what you are telling me is, you know, based on the emissions that we suspect that is happening due to, whether it's tank venting, whatever the source, that we have very limited knowledge how wells -- how much the stripper wells actually are emitting; is that correct, in New Mexico?

THE WITNESS: I don't think I would agree with the statement that we have very limited knowledge of the emissions from stripper wells. There are tens of thousands of them, so it is very difficult to predict the emissions from any well. It's not possible to predict actual emissions from any one stripper well.

But, on the other hand, it is appropriate to assess this information and conclude that their emissions are quite significant, and if that makes sense.

COMMISSIONER ENGLER: Well, you are helping me here, yes, I am trying to wrap my head around -- I know there is lot of stripper wells, and I know the stripper wells productions per well is very low because that's stripper well definition.

What I guess I'm trying to get to is if we have any, I hate to say the word concrete evidence, but any information that would tell me that stripper wells emit an unusually higher percentage than non-stripper wells. And I'm not sure if I'm getting where I want to get to, so -- go ahead. Go ahead.

THE WITNESS: I have to be honest with you and state that, EDF's witness, Dr. David Lyon, has far more expertise than myself.

COMMISSIONER ENGLER: Okay.

THE WITNESS: And he's not here, so I can't even

throw him under the bus because he isn't here. But I just want to be very clear that my knowledge of emission studies that have been done in New Mexico is not as -- not nearly as -- it's forgotten more about this than I know. So I don't want to give you the impression that I'm an expert here on New Mexico specific emissions in this way compared to Dr. Lyon especially.

COMMISSIONER ENGLER: I appreciate that. Thank you very much. That was very good. I have no more questions, Madam Hearing Officer.

HEARING EXAMINER ORTH: Thank you, Commissioner Engler. Commissioner Kessler, do you have questions for Dr. McCabe?

COMMISSIONER KESSLER: Yes, I do. I think many were answered during Mr. Rankin's testimony. What I heard, Dr. McCabe, you say is that there was uncertainty with calculation methods for various types of low emitter sources; is that correct?

THE WITNESS: Yes. There is uncertainty for many oil and gas -- for many -- for emissions estimates from many types of emissions from oil and gas.

COMMISSIONER KESSLER: When you are looking at that uncertainty, and I am -- I am not a statistician, but is there a range of uncertainty or percent of error that you can attribute to those types of calculations, say, among the

five percent?

THE WITNESS: Commissioner, thank you for the question. My response would be that that's probably not the best way to think about that. When you say statistically that, you know, emissions from this source are 100 tons, plus or minus 15 percent, even if you say emissions from that source are 100 tons, and sometimes you will see this if you look carefully, and they will have what we call asymmetric error bars, that's 30 minus 10 percent that we can apply, those types of uncertainty bars are most appropriate to use with what are called a normal distribution or a gaussian distribution -- I'm sorry, I'm trying to think of a good example of something that's normally distributed.

HEARING EXAMINER ORTH: Hold on one second. I'm sorry, there is a fair amount of interference there with Dr. McCabe's statements. Perhaps, Commission Kessler, you could mute while he is speaking. I'm not sure what's happening. Thank you.

COMMISSIONER KESSLER: If I cut off my video maybe that would help.

HEARING EXAMINER ORTH: I'm sorry, it was hard to understand him. I'm sorry, Dr. McCabe, you left off at --

THE WITNESS: Thank you, Madam Hearing Officer. Thank you, that's much better now, Commissioner Kessler. So

the problem is that emissions from oil and gas sources are not typically normally distributed. They are what we refer to as a skewed distribution, and so -- and that arises in principal or it principally arises because of the super emitter phenomenon where some sites emit far, far, far more than average site emissions, and so the error bars don't usually represent that distribution of emissions very well. I hope that was a useful answer, Commissioner.

COMMISSIONER KESSLER: (Inaudible.)

THE WITNESS: Commissioner, I, I cannot hear you, if you are speaking.

COMMISSIONER KESSLER: Can you hear me now?

THE WITNESS: Yes, ma'am.

COMMISSIONER KESSLER: Okay. It was a helpful answer, and one of the things you can imagine the Commission is floating through is what type of data, what is worth collecting because it's good data and what is worth collecting because it's better to have some data rather than no data.

Do you have an opinion on whether or not it would be better to collect emissions data from low, low volume or low pressure categories even understanding that some of that data in its estimate form might have inaccuracy?

THE WITNESS: I certainly do, Commissioner. And if I may, I do want to clarify first from your question that

I understand the classification of these sources as low pressure sources. However, I, I do want to state that they are not generally low volume sources. They would only be low volume in comparison to associated gas flaring. And then, as I mentioned, sources such as waste from controlled tanks are about a fifth or so of emissions from associated gas flaring.

So I just -- I don't want to quibble at all with your question, but I do want to note that these are not, in my view, low volume sources. Having said that, this information is vital. It's vital that we better understand these emissions, and information collected using the methodologies, for example, the greenhouse gas reporting program, there certainly is real uncertainty with those emissions reports, but that information has been extremely valuable.

For multiple reasons it shows that some operators, for example -- well, just to take an example, historically in the San Juan Basin some operators had reduced their emissions from liquids unloading dramatically really by the time the greenhouse gas reporting program started around 2012. Other operators still had very high emissions from liquids unloading.

And you can see these differences even if there is uncertainty in what the actual emissions are, and so --

and because these, these emission streams are very significant, we think it's extremely important that those emissions be reported even though the data will not be perfect.

COMMISSIONER KESSLER: Thank you, Dr. McCabe, that was very helpful.

THE WITNESS: You are welcome, Commissioner.

HEARING EXAMINER ORTH: Thank you, Commissioner Kessler. Madam Chair?

CHAIRWOMAN SANDOVAL: Dr. McCabe, I just have a couple of questions. Do you support this rulemaking?

THE WITNESS: Yes, Madam Chair. Clean Air Task Force supports this rulemaking, and it's a good rule and it's a good set for it.

CHAIRWOMAN SANDOVAL: And then do you, from your experience in previous rulemakings and this one, believe it was a collaborative process?

THE WITNESS: Yes, Madam Chair, I was, as mentioned, I served as an expert, for example, for two of the MAP subject meetings and participated with the climate groups on comment process and some of the outreach from the Division.

So, yes, I do believe it was a collaborative process, and I thank you for that. I thank the Division for that.

CHAIRWOMAN SANDOVAL: Thank you. All of my other questions were answered in some form or fashion by everybody else. Thank you.

THE WITNESS: Thank you, Madam Chair.

HEARING EXAMINER ORTH: Thank you, Madam Chair. So is there any reason not to excuse Dr. McCabe at this time?

MR. BAAKE: Madam Hearing Officer, I do have a few redirect.

HEARING EXAMINER ORTH: I'm sorry, yes, go ahead.

REDIRECT EXAMINATION

BY MR. BAAKE:

Q. Thank you, Dr. McCabe. I want to say I really appreciate, Dr. McCabe is on the east coast, so quite late there, appreciate you joining us and your contribution.

Dr. McCabe, I believe there was a question about the 2014 Colorado Air Control -- Air Pollution Control Division rulemaking and a finding in that rulemaking that continuous pilots will be out of -- unlit about three percent of the time. Do you remember that question?

A. Yes, sir.

Q. And would that, would the rulemaking docket for that rulemaking be publicly available?

A. Yes, it is. And I recall that we also cited that document in our comments that we submitted on the draft rule

in August or September, I don't remember exactly when we submitted those comments.

Q. But in any event, we could provide it to the Commission?

A. Yes.

Q. I wanted to also follow up on this estimation issue. So I think Mr. Rankin was asking you about -- for any given operator, you can't say exactly what the discrepancy might be between estimated emissions under the GHG reporting rule and the actual emissions; is that correct?

A. Yeah.

Q. Do you remember that line of questioning?

A. Yes.

Q. And I do think in your direct testimony you testified that the discrepancy is not likely to be significant compared to the standardization in this rulemaking. It wasn't going to come anywhere close to the two percent of the standard. Is that consistent with what you said?

A. Yes, sir. That is, that is the case.

Q. And which is not the same thing as saying that the emissions aren't -- is that correct?

MR. RANKIN: Objection, Madam Hearing Officer. I'm hearing some leading questions. I would ask that

counsel rephrase his questions.

MR. BAAKE: I will do so.

Q. Is the discrepancy that might be caused by the estimation might -- I'm sorry. What's the difference between the discrepancy of the estimation and the absolute value of the emission?

A. So, yeah. These are significant sources of emissions. As I mentioned, it's a million tons of CO2 from controlled tanks in the Permian. And you know, pneumatic controllers are a very significant emission source, too.

So there is two points there, one is that two percent of production is a very large number. And so when you compare the uncertainty on those emission sources compared to two percent of production, that's where the conclusion comes that the uncertainty in emissions is not very significant compared to two percent of production.

And of course two percent of production is only in, I can't remember what year, 2026, so that's the ultimate standard is two percent.

Q. Okay. Thank you, Dr. McCabe. And you testified that the greenhouse gas reporting rule provides a reasonable estimate of the volume of gas in the low pressure sources as I recall. If you could reasonably estimate the volume of waste for a particular stream, would it be reasonable, in your opinion, to ignore that waste simply because you can't

measure it with precision at each of the (unclear)?

A. No, that would not be reasonable.

Q. One final question, Dr. McCabe. You, you presented to the MAP. I wanted to refer you -- let's see, do I have -- I am trying to share a -- from the MAP or the section of the MAP. Is that coming through here?

A. Yes, slowly, I can see it now.

Q. Okay. So this is Page 39, and I believe this is OCD Exhibit 6. This pertains to stripper wells, so if you read this first sentence here after that equipment leaks are unpredictable.

A. Recent studies have assessed whether well characteristics and configurations can predict super emitters concluding that they are only weakly related and that these emissions are largely stochastic.

Q. And then the footnote goes to Dr. Lyon; correct?

A. Correct.

Q. Let's go back up to that. So is production volume a well characteristic?

A. Yes.

Q. So to your mind does this statement, and assuming the study supports it, does that statement suggest that lower producing wells could still be super emitters?

A. Yes, it does, and that study certainly does support that statement. Yes.

Q. And one final -- or one couple of final questions. Are other devices like pneumatic devices, storage tanks, that sort of thing at stripper wells?

A. Yes, there are.

Q. Would a -- let's take an example of a high bleed pneumatic. Would a high bleed pneumatic device emit less because of, depending on whether it's on a stripper well or different type of facility?

A. It would not.

Q. Thank you, Dr. McCabe. No further questions.

HEARING EXAMINER ORTH: All right. Thank you, Mr. Baake and Dr. McCabe. Is there any reason not to excuse Dr. McCabe?

(No audible response.)

HEARING EXAMINER ORTH: No? Thank you very much for your testimony.

THE WITNESS: Thank you, Madam Hearing Officer.

HEARING EXAMINER ORTH: We are at 4:34, and we do have one sign-up by a public commenter. Her name is Antoinette Graves. Mr. Garcia, has Ms. Graves joined us?

MR. GARCIA: Not that I can see, but I'm unmuting the call-in users now.

HEARING EXAMINER ORTH: Thank you for that. Call-in users, is Antoinette Graves among you?

(No audible response.)

HEARING EXAMINER ORTH: Well, in the event Ms. Graves joins us for a another public comment section, I would be happy to accept her comment at that time. So we can return to the technical case. Let's see, I think I saw Ms. Fox. Ms. Fox?

MS. FOX: Thank you, Madam Hearing Officer. Climate Advocates would now like to call Lesley Fleischman.

HEARING EXAMINER ORTH: Thank you. Do we have Ms. Fleischman? Would you raise your right hand, please.

Do you swear or affirm that the testimony you are about to give will be the truth, the whole truth and nothing but the truth?

MS. FLEISCHMAN: (Inaudible.)

HEARING EXAMINER ORTH: I can't hear you.

MS. FOX: You are muted.

MR. GARCIA: I unmuted you.

LESLEY FLEISCHMAN

(Sworn, testified as follows:)

DIRECT EXAMINATION

BY MS. FOX:

Q. Can you please state your name?

A. (Inaudible.)

MS. FOX: Is your mic on? Madam Hearing Officer, take a few minutes to try to resolve this technical problems.

HEARING EXAMINER ORTH: Yeah, let's take five minutes.

MS. FOX: Thank you, Madam Hearing Officer.

CHAIRWOMAN SANDOVAL: She can also call in. It might work if she calls in.

HEARING EXAMINER ORTH: Did someone ask for me?

MR. BAAKE: I did, Madam Hearing Officer. I just got a text message about the public comments. I'm not sure if Teresa Pasquale is on. I think she had signed up.

HEARING EXAMINER ORTH: I don't have Teresa Pasquale. I have Antoinette Graves, but if Ms. Pasquale is on, I'm happy to take her comment. Then we can see if we can work out Ms. Fleischman. Ms. Pasquale, are you on?

MS. PASQUALE: Yes. Good afternoon, Madam Hearing Officer. Can you hear me?

HEARING EXAMINER ORTH: Yes, quite clearly. If you would just keep your comments to a few minutes.

MS. PASQUALE: Thank you. Good afternoon, Members of the Commission and, again, Madam Hearing Officer. My name is Teresa Pasquale, and I live in and am a member of the Pueblo of Acoma.

I want to thank the Oil Conservation Commission for the opportunity to provide a brief comment at your hearing today.

My pueblo sits roughly 70 miles west of the City

of Albuquerque and over 5,000 tribal members call Acoma home. I'm the daughter of a miner and sheepherder, and an archeologist by training. My experience has taught me to read the health of the land as well as know the history of it.

To the northwest of the land -- to the northwest of my village lies the sacred ancestral migration place of Chaco or as we call it (Native American name). The site is situated in an area referred to as the San Juan Basin. It is rich in cultural resources and remains a place central to pueblo beliefs and integral to maintaining our cultural practices.

This landscape is also a place that has come under immense pressure from past and current extractive industry. And in my routine drive to Chaco on a monthly basis, I can pass numerous industries from uranium, coal to oil and gas in a one-hour drive. And in that same drive I can pass children playing as they wait in the early dawn for school buses, or sheepherders tending to sheep and goats, and farmers working in fields and families moving on the land as they go about their day.

The impacts from oil and gas methane pollution continues to burden communities who are most vulnerable. Tribal communities are fragile with segments of their population, elders though the very young, most susceptible

to health impacts from methane emissions.

70 percent of oil and gas methane pollution in the State of New Mexico occurs through leaks. It is critical that the New Mexico Environment Department adopt the rule that holds companies accountable and cuts these methane emissions across the board.

The New Mexico Environment Department's draft rule fails to protect the health of our indigenous communities and the health of all New Mexicans who have a right to clean air. Methane gas pollution continues to be the primary source of greenhouse gas emissions in the state, and this needs to change.

As a farmer I know the impacts of climate change well, and growing up in the Village of Acoma, I have been able to witness the changes in seasonal temperatures, the growing drought, the changes to insects and wildlife habits. Anyone who has farms or tended a garden knows it's getting harder to do and the yields are becoming more unpredictable.

Methane is a powerful greenhouse gas that contributes to 25 percent of the climate change that we are experiencing today. And it means, if I'm at risk, it means New Mexico farmers and their economic livelihoods are at risk, too. They too bear the burden of unchecked methane emissions, but the Commission has an ability to change that.

The final methane waste rule must include the

following: It should ban routine venting and flaring and only allow such activity when necessary for health and safety, but also require flaring over venting except when necessary for health and safety.

It should require oil and gas companies to capture 98 percent of all methane emissions and strengthen state reporting and public notice requirements especially to those communities of color, those communities, tribal communities as well that are most susceptible to improve transparency and ensure accountability of oil and gas operations.

In closing, New Mexico has a methane waste and pollution problem. It costs our schools millions in revenue, much of which we could use now, but it also ruins our air and harms our climate, the very things that make New Mexico special, even sacred.

Unlike other top producing oil and gas states, New Mexico has no requirements prohibiting methane waste and associated pollution from escaping. The Commission has the ability to change that and to make the rule stronger so that pueblo communities like mine and our ancestral lands continue to be healthy and vibrant for future generations. This is our collective responsibility.

Thank you for allowing me to make public comment today. Thank you.

HEARING EXAMINER ORTH: Thank you very much, Ms. Pasquale. Ms. Fleischman, do you swear or affirm?

THE WITNESS: I do.

HEARING EXAMINER ORTH: Thank you, I can hear you clearly. Ms. Fox?

Ms. Fox: Thank you, Madam Hearing Officer.

LESLEY FLEISCHMAN

(Sworn testified as follows:)

DIRECT EXAMINATION

BY MS. FOX:

Q. Good afternoon, Ms. Fleischman.

A. Good afternoon.

Q. Would you please state your name?

A. Lesley Fleischman.

Q. How do you spell your last name?

A. F, as in Frank, l-e-i-s-c-h-m-a-n.

Q. And what is your educational background?

A. I have a bachelor's degree from Haverford College with a major in history and minor in economics. I also studied at the Harvard University John Kennedy School of Government where I earned a master's in public policy. While at the Kennedy School, I focused on energy and environmental policy, and I did course work in econometrics and quantitative analysis and analytical framework.

HEARING EXAMINER ORTH: Sorry, Ms. Fox. Ms.

Fleischman is a little soft. Try to keep your voice up, Ms. Fleischman.

Q. Can you tell us about your professional work experience?

A. Yes. In my current role as a senior analyst at the senior task force, I conducted quantitative analysis on a variety of topics in methane emissions and flaring in the oil and gas industry. I have experience working with and analyzing publicly available oil and gas emissions and emissions data. These analyses have been published in reports and included in technical comment for the proposed rules including Quad Oa, the BLM waste rules, the state rules in Colorado, California and Pennsylvania and international rules in Canada and Mexico.

In my previous role at MSCI, I worked in the socially responsible investment division where I researched the environmental, social and government performance of oil and gas.

Q. Is Climate Advocates' Exhibit 15 an accurate copy of your resume?

A. Yes, it is.

Q. And, Ms. Fleischman, for your testimony today you analyzed various publicly accessible data and reports from the OCD website; correct?

A. Correct.

Q. And that analysis is set forth in Climate Advocates' Exhibit 16?

A. Yes.

Q. And what was the purpose of your analysis?

A. The purpose of this analysis was twofold. First I wanted to understand aggregate trends and patterns in venting and flaring from the oil and gas companies in New Mexico over the past two years. And second, I wanted to assess individual companies' performance with regards to venting and flaring to see how companies compared.

Q. What data sources did you rely upon?

A. I used four sources of data in my analysis, all of which are publicly available on the New Mexico Oil Conservation Division's website. I used the C-115 venting and flaring data by operator. And this is an Excel file that reports volumes of gas flared and vented for each company at each month starting in 2015.

There is the statewide natural gas and oil production summary by month, and this is a summary file that has statewide data on oil and gas protection since 1970. For the years 1970 through the years 1993, it has annual data, but for all years after 1993 it has data by month.

I used the gas and oil production by operator with an Excel file (unclear) oil and gas production by operator in the state, and I used C-115 monthly summaries by

operators. This is an online database where users can search by operator, and once an operator is selected, you can pull up monthly data on oil and gas production in the state for that operator. All of this data is publicly available and it is self reported by the companies to the state.

In my experience working with this data, the numbers do change from time to time, so the numbers may vary depending on exactly when the data is downloaded. And it's my understanding that changes are made when companies update or correct (unclear). I know, in addition, various parties have critiqued the accuracy of some of the data particularly the venting and flaring reporting. But with these caveats in mind, this is still the best available dataset on the subject of venting and flaring in the State of New Mexico.

The data that we have showed total levels of self reported venting and flaring for each operator. We don't always -- we don't have a way of knowing what precisely is causing the venting and flaring. For example, is it due to routine flaring, emergency conditions, maintenance, well completion or testing or infrastructure and takeaway constraints. My analysis is not meant to get into those details, but it is meant to shed light on the overall venting and flaring for the state.

You are muted again.

Q. Ms. Fleischman, in some instances you combined related companies in your data which is identified in Exhibit 16, are these sets -- and there are five of them, five sets of companies -- the only related companies that you combined for your analysis?

A. Yes. I only combined data for those sites.

Q. And that's on Page 1 of your Exhibit 16; correct?

A. Correct.

Q. And why did you combine these companies' data?

A. So while these companies are separate operators for the purpose of reporting to the State of New Mexico, I combined them in cases where they share a common parent company. And the purpose of this was just to make the analysis understandable to a non-industry (unclear).

Q. What are the major findings from your analyses?

A. First, the overall levels of venting and flaring in the state of of New Mexico are high. Second, there are many operators flaring large percentages of their produced gas well above the two percent threshold.

However there are many other operators that report they are capturing and using 98 percent or more of their produced gas. And finally the bulk of the venting and flaring problem is from the absolute volume of gas vented and flared is concentrated in (unclear).

Q. As far as you know, has anyone else conducted

these same types of analyses?

A. I am aware that the OCD presented a slide during their presentation showing aggregate levels of venting and flaring in the state from 2011 through 2019, and this is similar to my Table 1. But I'm not aware of company-by-company analysis similar to my other exhibit.

MS. FOX: Ms. Fleischman, has prepared a PowerPoint of the tables that appear in her summary of testimony that are Exhibit 16. And the tables in the PowerPoint are the same as those that appear in the exhibit. They are, you know, formatted differently for PowerPoint, but substantively they are the same. We will be moving to admit Exhibit 16, and the PowerPoint will be used as a demonstrative aid.

Q. So, Ms. Fleischman, let's walk through your analysis for the Commission, again setting forth -- set forth in Exhibit 16, starting with Table 1 which is entitled, Total Reporting Venting and Flaring 2017 to 2019, which is on Page 1 of the exhibit. What data did you rely upon to develop this table?

MS. FOX: And the host needs to give her sharing ability. I should have asked for that at the beginning.

A. Have to restart Webex to do that. Are you able to share it?

Q. I don't have sharing ability right now, but I

don't know if I have your PowerPoint, although I could check and see. Which would you prefer? We can get you sharing ability or I can -- sorry about this.

A. I will have to restart Webex in order to share.

Q. The host can't give you sharing ability?

A. He can, but it's -- it won't be -- my computer will need to restart.

UNIDENTIFIED: Which exhibit is it?

MR. GARCIA: It's not her exhibit, it's her PowerPoint. So I'm going to check and see if I have that, and if I do, I will share it.

Okay, I found it. And, let's see -- oh, Mr. Garcia has already given me sharing ability. I just have to commend, Madam Chair, the hosts for this proceeding and just how extremely helpful they continuously are.

CHAIRWOMAN SANDOVAL: They are very much appreciated in this process.

MS. FOX: I tell ya.

Q. Let's see.

A. So shall I continue?

Q. Yes, but the question was, what data did you rely upon to develop the table?

A. So for this table I aggregated venting and flaring data from the C-115 venting and flaring reports for each year.

Q. And what are the findings from this table?

A. So in this table I present the statewide venting flaring and -- flaring plus venting for all the years for those years 2017, 2018 and 2019 and I included summaries showing how the numbers changed from year to year. You can see the flaring more than doubles between 2017 and 2018 and stayed roughly constant between '18 and '19.

And while flaring declined slightly from 2018 to 2019, it was still enough to supply the home heating (unclear) of 84 percent of New Mexican households every year. I just want to note that in my testimony I submitted 96 percent of New Mexicans, New Mexico households, but I updated this to reflect updated EIA data of essential gas to (unclear).

REPORTER: Ms. Fleischman, I need you to speak up. You are fading out.

A. Venting decreased by more than half from 2017 to 2018, and then increased somewhat in 2019. And the bulk of this drop between 2017 and 2018 was from one company, which is Exxon, which includes both XTO and BOPCO subsidiaries.

Q. And Ms. Fleischman, moving to Table 2 entitled 2017 to 2019 Flaring by Top 25 Oil Producers in Descending Order, what data did you rely upon to develop this table, and what does this table show?

A. This table is based on the venting and flaring

C-115 reports with flaring aggregated for each year by operator. And I also used annual production reports for each year and aggregated oil production by operator.

So the table is meant to focus on the relationship between the top oil producers in the state and high flaring levels. It shows the top 25 oil producers reporting any amount of flaring in 2017, 2018 or 2019. Four large oil producers are excluded because they reported no flaring in any of those years.

These companies are Mewbourne Oil Company, Legacy Reserve Operating LP, Kaiser-Francis Oil Company, and Caza Operating LLC. The 25 operators in the table account for 85 percent of the oil production in the state, and they account for 95 percent of reported flaring.

Q. What are your findings from this analysis?

A. While there is considerable variation in the amount of gas that different operators report that they flare, most of those top oil producers flare significant amounts of gas. In contrast, operators that primarily produce natural gas reported relatively little flaring.

Exxon, through its subsidiaries, XTO and BOPCO, top the list, reported flares of 4.5 billion cubic feet of gas in 2019. Devon Energy reported it flared 4.1 BCF. And Ameredev reported that it flares 3.56 BCF.

Three other top oil producers, Marathon,

Occidental and Cimmarex, each reported they flared over 2 BCF, and an additional eight top oil producers reported that they flared more than 1 BCF of gas each.

I mention the four companies that did not report any flaring. I don't have any additional information about these four major oil producers that did not report flaring, but I think the lack of data on these and other companies highlights the need for strong enforcement of reporting requirements in the proposed rule.

Q. I'm trying to flip -- there we go. Ms. Fleischman, what is Table 3?

A. The purpose of Table 3 is to show the top 25 operators with the highest amounts of venting and flaring in 2019. It has data on gas production, flaring and venting for each operator in addition to the percent of gas vented or flared for each operator.

Q. And what data did you rely upon for this table?

A. This table is based on the venting and flaring C-115 reports with flaring and venting and flaring aggregated for each year by operator and it also includes annual production of aggregated gas production.

Q. What are your findings from this analysis?

A. Among those 25 companies there is considerable variation in the percent of operator gas production that, that venting and flaring represents. Some are flaring a

very large portion of their gas, while others are flaring under 2 percent.

Some major oil, some major producers like Oxy, COG and EOG, report they flared a relatively small share of their overall gas production, while other major producers report they flared significantly more gas.

Exxon, XTO, Devon, Marathon and WPX flared between 4 and 13 percent of total production. So other major producers reported that they flared extremely large shares of their gas production, led by Ameredev at 78 percent, Spur at 38 percent, Energen at 32 percent, Steward at 32, Impetro at 30, and you can see down the list.

Q. Table 4 is entitled 2019 flaring by top 20 operators reporting flaring as a percent of total state flaring. Did you develop this table, and what does it show?

A. This table is based on the venting and flaring C-115 reports which flaring is aggregated by operator. And I used total statewide data to calculate the percent of statewide flaring reported by each operator.

I also used annual production reports to calculate total gas production for each operator. The purpose of this table is show how flaring is concentrated in just a few operators. It shows the top 20 operators with the highest amount of flaring in 2019. For each operator it shows a calculator of a percent of total statewide flaring

that that operator represents. And as a useful point of reference, I also included a column showing the percent of production flaring for each operator.

So just three companies Exxon, Devon and Ameredev are responsible for over one third of all reported flaring. And the top ten flaring companies accounted for 74 percent. The top 20 accounted for 96 percent of flaring.

This data indicates that flaring is concentrated in just a handful of New Mexico oil and gas companies. But some companies with the highest level of flaring are flaring less than two percent of their produced gas. These companies may or may not have to reduce flaring further depending on how the regulation is structured. But either what, it shows that getting below 2 percent is feasible and already being achieved by many operators.

Q. Ms. Fleischman, your final tables are 5-A and 5-B. Can you tell the Commission how you developed these tables and what each shows?

A. Yes. The tables are meant to provide an update for 2020 with comparative data. 5-A is 2019, January through August, and 5-B is 2020, January through August. And I used partial data, that was all the data I had for 2020. And for 2019 I used the same months to have an apples-to-apples comparison.

And unlike the previous tables which only shows

the top 20 or 25 companies, this table shows all companies reporting any amount of venting or flaring.

A point I noted earlier, these tables show that many companies are venting and flaring a large portion of their gas production; however, many other companies are venting and flaring much less than the 2 percent threshold.

For example, the ten companies vented or flared greater than 2 percent of their production in 2019 were below 2 percent in 2020. These companies are Lock Creek, BGP, Passitive, XTO, BTA, Devon, Cimmarex, Apache (unclear).

So this shows that reducing venting and flaring is possible because, you know, these companies were above 2 percent in 2019 and were below in 2020. But on the other hand there were eight companies that flared less than 2 percent in 2019 but exceeded the 2 percent threshold in 2020.

Those companies are DWR, Tamaroa, LH, Special, Lime Rock, (unclear), Advance and Catena. And this shows, without proper incentives and regulations, low flaring levels are not guaranteed to remain. I believe that strong rules for venting and flaring will create a level playing field for all companies ensuring that some companies won't be able to produce high levels of venting and flaring without consequences.

While each company's circumstance are unique, and

companies themselves are the best ones to determine exactly how they will reduce venting and flaring, but a threshold that all companies must meet is the best way to get flexibility while still making significant reductions in venting and flaring.

Q. And finally, Ms. Fleischman, after your review of all this data from the OCD website, what can you tell the Commission about complete accurate and transparent reporting?

A. Well, from my perspective, reporting is very important. All the data that I use in the charts that I presented is based on data that was self-reported by operators to the OCD. And it is important that all reported data is made publicly available so that it can be subject to independent analyses.

In addition, any analysis that is done based on the reported data is only as good as the underlying data itself. So the data reported should be subject to the quality assurance and quality control by regulators in addition to audit to ensure that data is accurate to the best of their ability.

You are muted again. Ms. Fox, you are muted.

Q. Thank you, Ms. Fleischman.

MS. FOX: Madam Hearing Officer, we would like to move for admission of Climate Advocates' 15 and 16.

HEARING EXAMINER ORTH: Let me pause for a moment in the event there are any objections.

(No audible response.)

HEARING EXAMINER ORTH: Exhibits 15 and 16 are admitted.

(Exhibits 15 and 16 admitted.)

MS. FOX: Ms. Fleischman stands for cross-examination.

HEARING EXAMINER ORTH: Thank you, Ms. Fox. Mr. Ames, do you have any questions?

MR. AMES: Ms. Orth, I have no questions for the witness. Thank you.

HEARING EXAMINER ORTH: All right. Thank you. Mr. Rankin, any questions?

MR. RANKIN: Good evening, Ms. Fleischman. I have no questions for the witness.

HEARING EXAMINER ORTH: Thank you. Mr. Biernoff?

MR. BIERNOFF: No questions for the witness. Thank you, Madam Hearing Officer.

HEARING EXAMINER ORTH: All right. Thank you. And Ms. Paranhos. No? Commissioner Engler?

COMMISSIONER ENGLER: I do have a few. You can tell it's getting late, everybody wants to stop asking questions, but I do have a few.

Ms. Fleischman, hello. I appreciate the work, so

I want to ask you a few things. Can you hear me?

THE WITNESS: Yes.

COMMISSIONER ENGLER: I find it very interesting, and I like your perspective on the fact that flaring in your numbers is so much significantly greater than the reported venting. Any thoughts on that?

THE WITNESS: I certainly couldn't speak to that definitively, but I think that -- sorry. Sorry, I'm not sure that I can speak to the reason except to say that, you know, from a safety perspective, as I believe has been testified in this hearing, flaring is preferable to venting in most cases.

COMMISSIONER ENGLER: Yeah, that's true. Okay. Another question, did you by chance -- when you were data collecting from the sources, did you by chance try to collect the number of active well counts for the operators for the time period?

THE WITNESS: No, I did not look into that to do this analysis.

COMMISSIONER ENGLER: Do you know -- okay. You present some very interesting information in your Table 5s, and when you look at, you know, I don't know -- I can tell you the numbers. From your Table 5-A, January-August 2019, and looking at the one of the worst case scenarios, Ameredev Operating, their share of flared and vented was almost 69

percent.

When, when you look at 5-B in January-August of 2020, you know, their percent is now 39 percent. Now, that, to me, just begs the question, what, what did Ameredev do or not do or did better or what happened to create that, that differential? And I guess my question is, did you do any type of further investigation into some of those?

THE WITNESS: I haven't looked into the details of any individual company for this, and there's a lot of factors that could explain why the venting and flaring changes over time. Yeah, I would have to do a deep dive into each company, which I have not done.

COMMISSIONER ENGLER: So you present a very good big picture numbers of what the range of operators do. I think the -- so the details that I guess, as Commissioners, that we should be looking at is how to assess where or what's causing that; is that correct?

THE WITNESS: Right. I think this sort of analysis, like you said, shows the range and it shows certain outliers. And then for the outliers we would have to do a more deep dive to understand what's going on, but I think in order to prioritize this sort of analysis, it's been to identify those outliers.

COMMISSIONER ENGLER: Thank you very much. I have no further questions.

HEARING EXAMINER ORTH: All right. Thank you. Let's see, Commissioner Kessler, you said you don't have questions, all right. Madam Chair?

CHAIRWOMAN SANDOVAL: Just some very brief questions. Do you support the rulemaking?

THE WITNESS: Yes, I do.

CHAIRWOMAN SANDOVAL: Do you believe it was a collaborative process?

THE WITNESS: I have not been involved in most aspects of the rulemaking up until now, but from my understanding it has been a collaborative process.

CHAIRWOMAN SANDOVAL: Thank you. Those are the only questions I have. Thanks.

HEARING EXAMINER ORTH: Thank you. Ms. Fox, any follow-up with Ms. Fleischman?

MS. FOX: No, Madam Hearing Officer.

HEARING EXAMINER ORTH: If there is no reason not to release her, thank you very much. Thank for your testimony. All right. Have we come then to the end of Climate Advocates' direct presentation?

MS. FOX: We rest our direct case.

HEARING EXAMINER ORTH: Thank you for that. Let me put on the record my understanding of the conversation we had at the end of the lunch break with the Commissioners, which is that we will have, some time before tomorrow

morning, a document from the Oil Conservation Division with their rebuttal presentation in it.

That is to say, it will be clear from the documents which of the proposed rule changes made by other parties are incorporated by the Division, and which are not, and the reasons why they would not be, and that Division counsel, Mr. Ames, will be putting on witnesses in support of that rebuttal document to answer questions about it.

We then, as I understand it, Madam Chair, at that point we would have a conversation around whether other parties would be allowed to present rebuttal, or do you want to have that conversation tonight, or do you want to have it in the morning.

CHAIRWOMAN SANDOVAL: It would be helpful to have that conversation tonight, but do other parties have an idea as to whether or not they need to be prepared.

HEARING EXAMINER ORTH: Yeah, well, let me just say, as I understand the conflict, until they see what the Division has incorporated, they probably couldn't reasonably say what their rebuttal might be.

CHAIRWOMAN SANDOVAL: Oh, yeah.

HEARING EXAMINER ORTH: But let me just ask Mr. Feldewert, I see him on the screen, what comment would you have, Mr. Feldewert?

MR. FELDEWERT: Well, I think, as I understand

the procedural order, the Division certainly is authorized to present its rebuttal case as the applicant which is totally understandable. And the parties, you are correct, aren't going to know exactly what issues remain to be addressed that have not already been addressed in a sufficient fashion until we see that tomorrow.

Secondly, as I understand, for those that want to present rebuttal, they need to explain what it is they want to rebut and why and what they intend to present so that the Commission can ascertain whether it's appropriate or not, otherwise we are going to be going round and round in circles.

So it seems to me if the process has to be, if you want to present rebuttal, you need to explain what's going to be on, why it's necessary and why it hasn't already been covered and what you intend to present.

HEARING EXAMINER ORTH: Ms. Fox, is it reasonable to expect the other parties to be able to anticipate rebuttal before they found what was incorporated?

MS. FOX: One point about the amended procedural order, I'm not objecting to OCD's -- what OCD is going to do, but there is nothing in the procedural order that gives OCD some preference for rebuttal over the other parties. It says pursuant to the applicable rule, technical rebuttal testimony may be permitted upon a finding by the Commission

that the proper testimony is offered solely for purposes of rebuttal. This applies to all parties.

So that said, I think that Climate Advocates needs a little bit of an opportunity to review, given everybody else's direct case, what if any rebuttal we would like to propose, and then we would also like to see what Mr. Ames gives us this evening.

HEARING EXAMINER ORTH: So Madam Chair, what if we were to hear from the Division in the morning, give the parties an opportunity to look at the Division's filing, and this would presumably give them enough time to consider the Division's final proposal or rebuttal proposal, and then they could make their pitch if they wanted to make rebuttal.

MR. AMES: Madam Chair, we are going to circulate our rebuttal testimony this evening. We are not going to submit a new proposal, quote-unquote, so just to be clear.

HEARING EXAMINER ORTH: Sorry, I didn't mean to suggest that. All right. Madam Chair, what do you think?

CHAIRWOMAN SANDOVAL: I think that sounds we'll deal with the decision in the morning and give the other parties an opportunity to review that document.

And then I am assuming, if need, if the other parties think they need to do rebuttal, they would be prepared, I don't know, maybe by tomorrow afternoon to start that. I don't want to waste time.

HEARING EXAMINER ORTH: The other only other thing I would say is that I think the parties have put on the witnesses to support their own tweaks or modifications to the Division's proposal, and that I would distinguish between true rebuttal, right, which rebuts something that was said during the hearing versus reiterating support for something you really already supported. That's all.

All right. I did not see an 8:30 public commenter. I don't believe it was -- oh, yes, I'm sorry, I have two public commenters at 8:30. So I'm wondering if perhaps we should get on at 8:30, instead of 8, take these two public commenters and then begin with the Department's rebuttal -- the Division's rebuttal.

CHAIRWOMAN SANDOVAL: That sounds like a gift.

HEARING EXAMINER ORTH: Okay. Luxurious morning.

CHAIRWOMAN SANDOVAL: It sounds very luxurious. I will take it.

HEARING EXAMINER ORTH: Okay, all right. So let's reconvene at 8:30. We will begin, I have two public commenters here, (unclear) Parra and Victor Snowbird. Those are the two I have down right now, and, Mr. Ames, we'll turn to you and your witnesses. Thank you, all very much.

CHAIRWOMAN SANDOVAL: Thanks. Have a good night.

MR. FELDEWERT: Thank you. (Recessed.)

STATE OF NEW MEXICO

COUNTY OF BERNALILLO

REPORTER'S CERTIFICATE

I, IRENE DELGADO, New Mexico Certified Court Reporter, CCR 253, do hereby certify that I reported the foregoing virtual proceedings in stenographic shorthand and that the foregoing pages are a true and correct transcript of those proceedings to the best of my ability.

I FURTHER CERTIFY that I am neither employed by nor related to any of the parties or attorneys in this case and that I have no interest in the final disposition of this case.

I FURTHER CERTIFY that the Virtual Proceeding was of poor to good quality.

Dated this 14th day of January 2021.

/s/ Irene Delgado
_____
Irene Delgado, NMCCR 253
License Expires: 12-31-21