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OIL AND GAS DEVELOPMENT: IMPACTS ON AIR POLLUTION AND SACRED SITES

OVERSIGHT FIELD HEARING

BEFORE THE

SUBCOMMITTEE ON ENERGY AND MINERAL RESOURCES

OF THE

COMMITTEE ON NATURAL RESOURCES
U.S. HOUSE OF REPRESENTATIVES

ONE HUNDRED SIXTEENTH CONGRESS

FIRST SESSION

Monday, April 15, 2019, in Santa Fe, New Mexico

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OVERSIGHT FIELD HEARING ON OIL AND GAS DEVELOPMENT: IMPACTS ON AIR POLLUTION AND SACRED SITES

Monday, April 15, 2019
U.S. House of Representatives
Subcommittee on Energy and Mineral Resources
Committee on Natural Resources
Santa Fe, New Mexico

The Committee met, pursuant to notice, at 10 a.m., at the New Mexico State Legislature, Room 307, 490 Old Santa Fe Trail, Santa Fe, New Mexico, Hon. Alan S. Lowenthal presiding.

Present: Representatives Lowenthal and Grijalva.

Also present: Representatives Haaland and Luján.

Mr. LOWENTHAL. Good morning, everyone. The Subcommittee on Energy and Mineral Resources will come to order.

I would like to welcome everyone to our first Subcommittee field hearing in the 116th Congress, and I would like to thank the Governor and her great team for all their help, and House Speaker Brian Egolf and his team for welcoming us to the state of New Mexico, to the great state of New Mexico, and graciously allowing us to use their committee room, and for all their help in making today's very important hearing a reality.

I would like to thank everyone who helped us organize and who participated in the events that we have already had over the weekend. We had full events over the weekend. They were extremely enlightening and allowed us to hear a lot of additional voices regarding the issues that are facing this area.

I need to get through a little parliamentary housekeeping, so please bear with me for a second or two.

Under Committee Rule 4(f), any oral opening statements at hearings are limited to the Chair and the Ranking Minority Member or their designee. I am asking unanimous consent that all other Members' opening statements be made part of the hearing record if they are submitted to the Subcommittee Clerk by 5 p.m. today.

Hearing no objection, so ordered.

I am also going to ask for unanimous consent for Congressman Luján and Congresswoman Haaland to sit on the dais and participate in this morning's hearing.

Hearing no objection, so ordered.

STATEMENT OF THE HON. ALAN S. LOWENTHAL, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

Mr. LOWENTHAL The Subcommittee is meeting today to hear testimony on the impacts of oil and gas development on air quality and sacred sites. Across the West, the availability of oil and gas has been both a blessing and a curse. These resources are a major

component of the economy of many parts of the country, and in some places very, very dramatically, such as in the Permian Basin in southeastern New Mexico.

There is no question that the oil and gas industry provides jobs, along with a huge portion of the energy and products that we still use in our daily lives. But these benefits come with significant consequences to our air, our water, our climate, our health, wild natural places, and sacred sites.

Today, the Subcommittee is holding the first in what will be a series of hearings that will examine the impacts of oil and gas development and serve as a platform to hear from local voices, state officials, tribal members, and experts. Honestly, I cannot think of a better place to hold our first field hearing than here in New Mexico.

New Mexico shows the challenges that exist when we are trying to balance vast oil and gas resources with protecting the public's health, the environment, and cultural resources.

Over the last decade, due in large part to this state, U.S. oil production has more than doubled, and we are now producing more oil and natural gas than ever before.

However, this has also brought with it a record amount of methane emissions and other air pollutants that harm the health of local citizens, that warm our climate, and waste a valuable public resource.

Methane is a potent greenhouse gas that leads to harmful ground-level ozone, and when it leaks, it brings with it other volatile organic compounds and hazardous air pollutants.

According to the Centers for Disease Control and Prevention, ground-level ozone leads to lung and throat irritation, breathing difficulties and, more importantly, aggravation of asthma and increased risk of heart and lung disease.

Just yesterday, members of our Committee saw these leaks firsthand with infrared cameras. Last week, new data was released suggesting that methane emissions in New Mexico are five times higher than EPA estimates. Despite this, the Trump administration appears not to care and is weakening regulations from both the Bureau of Land Management, or the BLM, and the Environmental Protection Agency, also known as EPA, that would have cracked down on methane pollution.

While the Federal Government refuses to do its job to hold companies accountable, state officials, such as Governor Michelle Lujan Grisham, are taking the lead, coming up with new ways to reduce the harmful effects of oil and gas development. The governor has also led New Mexico to join my own state of California in committing to a 100 percent carbon-free electric grid.

[Applause.]

Mr. LOWENTHAL. The only other state to do this is the state of Hawaii, and I am sure that we are going to hold a field hearing in the future also in Hawaii.

[Laughter.]

Mr. LOWENTHAL. Is that not the right thing to do?

[Laughter.]

Mr. LOWENTHAL. I really don't think you could ask for three more beautiful states to lead the Nation in making our clean

energy future a reality. And I just want to say to Chairman Grijalva that if he wants to make sure I get to all of them, then I will sacrifice for my Committee and for the health of the Nation.

[Laughter.]

Mr. LOWENTHAL. Closer to here, one of the most beautiful parts of an already beautiful state, and the one that we as a Committee had the honor of visiting yesterday, is Chaco Canyon. Unfortunately, it is also one of the areas most under threat by oil and gas development. Chaco Canyon and the Greater Chaco Landscape is a sacred place for tribes throughout the Southwest, and along with Mesa Verde and Bears Ears, these areas are considered footprints by ancestors of the modern Pueblo people. These landscapes were once home to ancestral Pueblo people, and to this day it is a special gathering place for tribal communities.

BLM has already proposed oil and gas leasing in close proximity to Chaco Canyon on multiple occasions, risking the numerous Chacoan sites that exist outside of the park's official boundaries. In concert with tribes and stakeholders, last week the New Mexico congressional delegation introduced legislation to permanently protect the Federal lands around this sacred area.

[Applause.]

Mr. LOWENTHAL. And I am proud to be a co-sponsor and to support this legislation.

It is crystal clear that where oil and gas development occurs, robust state and Federal actions are needed to protect the public's health and the places and landscapes that the people who live there value.

[The prepared statement of Mr. Lowenthal follows:]

PREPARED STATEMENT OF THE HON. ALAN S. LOWENTHAL, CHAIR, SUBCOMMITTEE ON ENERGY AND MINERAL RESOURCES

The Subcommittee is meeting today to hear testimony on the impacts of oil and gas development on air quality and sacred sites. Across the West, the availability of oil and gas has been both a blessing and a curse. These resources are a major component of the economy of many parts of this country, in some places very dramatically, such as the Permian basin in southeastern New Mexico.

There is no question that the oil and gas industry provides jobs along with a huge portion of the energy and products that we still use in our daily lives. But these benefits also come with significant consequences to our air, our water, the climate, our health, wild natural places, and sacred sites.

Today, the Subcommittee is holding the first in what will be a series of hearings that will examine the impacts of oil and gas development and serve as a platform to hear from local voices, state officials, tribal members, and experts. Honestly, I can't think of a better place to hold our first hearing in this series than New Mexico.

New Mexico shows the challenges that exist when balancing vast oil and gas resources with protecting public health, the environment, and cultural resources.

Over the last decade, due in large part to this state, U.S. oil production has more than doubled, and we are now producing more oil and natural gas than ever before.

However, this has brought with it a record amount of methane emissions and other air pollutants that harm the health of local citizens, warm our climate, and waste a valuable public resource.

Methane is a potent greenhouse gas that leads to harmful ground-level ozone, and when it leaks it brings with it other volatile organic compounds and hazardous air pollutants.

According to the Centers for Disease Control and Prevention, ground-level ozone leads to lung and throat irritation, breathing difficulties, aggravation of asthma, and increased risk of heart and lung disease.

Just yesterday, members of the Committee saw these leaks firsthand with infrared cameras. Last week, new data was released suggesting that methane emissions in New Mexico are five times higher than EPA estimates. Despite this, the Trump

administration appears not to care, and is weakening regulations from both the Bureau of Land Management and Environmental Protection Agency that would have cracked down on methane pollution.

While the Federal Government refuses to do its job to hold companies accountable, state officials such as Governor Michelle Lujan Grisham are taking the lead, coming up with new ways to reduce the harmful effects of oil and gas development. The Governor has also led New Mexico to join my own state of California in committing to a 100 percent carbon-free electric grid. The only other state to do that is Hawaii, so I feel like our next field hearing should probably be there.

I really don't think you could ask for three more beautiful states to lead the Nation in making our clean energy future a reality, and I just want to say to Chairman Grijalva that if he wants me to make sure I get to all of them, I will make that sacrifice for the Committee.

Closer to here, one of the most beautiful parts of an already beautiful state, and one that we had the honor of visiting yesterday, is Chaco Canyon. Unfortunately, it is also one of the areas most under threat by oil and gas development. Chaco Canyon and the Greater Chaco Landscape is a sacred place for tribes throughout the Southwest, and along with Mesa Verda and Bears Ears, these areas are considered the "footprints of ancestors" by modern Pueblo nations. This landscape was once home to thousands of Ancestral Puebloans and to this day is a special gathering place for tribal communities.

The BLM has already proposed oil and gas leasing in close proximity to Chaco Canyon multiple times, risking the numerous Chacoan sites that exist outside the Park's official boundaries. In concert with tribes and stakeholders, last week the New Mexico congressional delegation introduced legislation to permanently protect the Federal lands around this sacred area, and I am proud to co-sponsor and support this legislation.

It's crystal clear that where oil and gas development occurs, robust state and Federal actions are needed to protect people's health and the places and landscapes they value.

Mr. LOWENTHAL. With that, I would now like to introduce our first witness. We are honored to have here the governor of the great state of New Mexico, the Honorable Michelle Lujan Grisham.

[Applause.]

Mr. LOWENTHAL. I want to thank you for taking time out of your schedule to appear here for us this morning. You are now recognized to testify.

STATEMENT OF THE HON. MICHELLE LUJAN GRISHAM, GOVERNOR OF NEW MEXICO, SANTA FE, NEW MEXICO

Governor LUJAN GRISHAM. Thank you, Chairman. While not actually a part of my official remarks, it is lovely to see my colleagues in our capital, and we are all, as you can tell from this audience, delighted related to the work that you are doing in our state and related states. So, thank you, and it is lovely to see you.

For the folks here, Chairman Lowenthal and I were elected in the same year, so we are part of that same freshman class. It is good to see you, sir.

Chairman Lowenthal, Chairman Grijalva, and Vice Chair Haaland, I am very grateful for the opportunity to address you this morning. As you know, I am Michelle Lujan Grisham, and I am the governor of the great state—and I appreciate that we just get to keep saying that—of New Mexico.

[Laughter.]

Governor LUJAN GRISHAM. I am honored that our state has the privilege to host you here today. I want to thank you for scheduling the hearing in Santa Fe.

New Mexicans are an engaged people, as you know. We want to take part in our government, and we want to work with our representatives. That is why this visit and the topic of this field hearing is so meaningful not only to me but to so many of my constituents, and we are grateful.

I would like to speak to you today about issues that have been at the top of my agenda since I took office in January and are likely to remain there for the duration of my time as governor, our collective public health and what we can do and have already done as an administration to address a changing climate to protect vulnerable populations and essential sacred sites, and to establish the groundwork for a sustainable, livable, healthy future for our grandchildren and their grandchildren.

Our environment in New Mexico is both our greatest resource and our legacy. We find ourselves at a crossroads, one where we must, as a state and as a Nation, choose not the path of least resistance. We must work diligently to ensure future generations of New Mexicans and Americans are able to enjoy the great and tangible wealth of our natural resources, clear skies, clean air, the full God-given bounty of the outdoors.

I would like to talk to you today about the pressing and consistent need to address the impacts of emissions, in particular over the course of the most recent decade of expansion here in New Mexico, and I would like to share some of the actions my administration has taken in our first few months.

During my first month in office, my third executive order, Executive Order 2019–003, enshrined the overwhelming body of climate science into New Mexico's DNA. We joined the U.S. Climate Alliance, fully embracing the benchmarks set within the 2015 Paris Agreement, aligning our state with others across the United States that have committed to a climate-conscious future irrespective of the Federal mindset.

[Applause.]

Governor LUJAN GRISHAM. Indeed, under my administration, we are moving rapidly to protect people, natural resources, and our cultural heritage.

New Mexico has leapt to the front of the nationwide pack in mitigating climate impacts. In addition to the executive order, which establishes aggressive statewide benchmarks for greenhouse gas emissions, I signed transformational energy legislation into law last month, landmark policy that will provide for 100 percent carbon-free energy use by our utility companies in the coming decades.

I also signed important bipartisan legislation that will establish a rigorous new fee schedule on oil and gas operations that will help us modernize our regulatory efforts.

But to achieve statewide benchmarks, science directs our focus to methane emissions. And New Mexico has an important role to play on this front.

Methane, as you know, is a potent greenhouse gas with a 20-year global warming potential, more than 84 times greater than that of carbon dioxide, according to the Intergovernmental Panel on Climate Change. Nearly one-third of the methane emissions in the

United States come from oil production and the production, transmission, and distribution of natural gas.

In 2014, scientists from NASA and the University of Michigan discovered the most concentrated plume of methane pollution anywhere in the country over the San Juan Basin in northwest New Mexico. Further research from NASA's Jet Propulsion Laboratory and the National Oceanic and Atmospheric Administration has shown that the vast majority of this methane pollution is, in fact, attributable to oil and gas development.

The combination of technological advances in horizontal drilling and hydraulic fracturing has contributed to increases in crude oil and natural gas production in the United States. Today, New Mexico ranks as the country's third-largest oil-producing state and the seventh-largest gas producing state.

The oil and gas regions of the state include the aforementioned San Juan Basin in the northwest corner and the Permian Basin in the southwest corner. All throughout New Mexico, miles upon miles of gathering pipeline carry methane-rich products from the San Juan Basin in the northwest and Permian Basin in the southwest to compressor stations and gas plants.

Methane emissions occur through venting and unintentional equipment leaks. Equipment design, operational practices, and well completions all contribute to venting. Small leaks or significant releases can also occur in all parts of the infrastructure. Methane emissions are not visible to the naked eye, so small leaks or significant releases can remain uncorrected for days, weeks, months, and beyond.

The methane emissions from the state's oil and natural gas wells, compressor stations and gas plants not only contribute to climate change but impact regional air quality. In the oil and natural gas centric regions of New Mexico, ambient air concentrations of ozone are approaching unhealthy levels. High levels of ozone can cause breathing difficulties, especially in children, the elderly, and those who regularly work and play outdoors. Long-term exposure to ozone is also likely to cause the development of asthma and permanent lung damage in children.

Beyond the climate and ozone implications, methane emissions represent lost revenues to the state. Methane is the main component of natural gas, a commodity export of the state. Although our state agencies are still working to determine how much is recoverable, the natural gas industry loses millions upon millions each year due to venting, flaring and leaks, according to the best scientific estimates and industry's self-reported data. These are revenues that could be put toward any number of remediation efforts, not to mention other central investments like early childhood education.

There are proven, cost-effective, and innovative technologies that, when supplemented with better work practices, can remediate as much as half of these methane losses. Under my executive order, I directed the co-chairs of the new Climate Change Task Force to develop a statewide, enforceable regulatory framework to secure reductions in oil-and-gas sector methane emissions and to prevent waste from new and existing sources. They will make their first recommendations to me this fall.

Further, the State Environment Department has begun regular inspections of the oil and natural gas industry to identify methane leaks. These air quality and waste inspections, spread across the state, will assist both our state agencies as they establish baseline compliance data with existing regulations and allow them to focus on developing new incentives and adopting new technologies to further reduce emissions while providing revenues to the state.

As we launch this work of reducing and recovering emissions, New Mexico is benchmarking its existing oil and natural gas regulations related to air emissions and waste using a cross-sectional stakeholder group convened by the State Review of Oil and Natural Gas Environmental Regulations, or STRONGER. This review group, other government entities, environment NGOs, and the industry itself will evaluate the state's oil and natural gas regulations. The STRONGER review team will write a report and identify both strengths that merit special recognition and potential regulatory gaps. The review team will then develop recommendations to address the gaps and identify pathways to program improvement. The final report of New Mexico's oil and natural gas regulations is due to the Climate Change Task Force co-chairs in August 2019.

And while these efforts are ongoing, the Climate Change Task Force will be convening public stakeholder meetings around New Mexico this summer to collaborate in the development of a regulatory framework for methane reductions. These public meetings will provide a venue for critical ideas and feedback on the essential aspects of air emission and waste regulations, inclusion of regulatory standards, technology, work practices, monitoring, record keeping, reporting and more.

In addition, our Environment Department last month launched an interactive oil and natural gas methane map. This GIS tool is updated monthly, and shares data related to methane emissions with the stakeholder community and the public. The map identifies every oil and natural gas well in the state, begins to provide emission estimates, and shares ambient methane data. As we develop data layers for mapping tools, we will add them to the map to ensure transparency in our progress. This includes identifying oil and natural gas companies that exceed regulatory requirements while identifying those with compliance issues.

Aside from the long- and short-term public health concerns caused by oil and gas emissions, there is a cultural impact to New Mexicans and tribal communities that live here. Since the year 800, ancestral Puebloan peoples have lived on the Greater Chaco landscape. Today, this region is home to sites of sacred cultural practice that fortify our modern Pueblo cultures. This is why the chairman of the All Pueblo Council of Governors has described Chaco Canyon and landscape as the heart of Pueblo culture. We must protect this region, a UNESCO World Heritage Site, with the same vigor as we protect the air we breathe. It is as important to who we are as New Mexicans as our most basic natural resources.

For scientific and cultural reasons, for the protection of public health and our environment, I intend to lead a New Mexico where we take our environmental destiny into our own hands. Indeed, in many ways we already have. The work is just beginning. There is

much more to do, and we are laboring under a Federal Government that has failed us in a regulatory sense and in the omission of vital leadership. New Mexico, meanwhile, has seized and will continue to seize the opportunity to reduce pollution that threatens human health and looms as an unprecedented humanitarian crisis within this lifetime.

We have every opportunity now to protect our people, our land, our water, and all our resources. We have the strength, and we have an understanding of the situation's urgency. As a state with great mineral resources, as well as limitless potential for renewable energy production, New Mexico can serve as an incredible global example of how a united people can protect themselves and provide for their collective future.

I thank you for hearing me, and I will now stand for questions. Thank you.

[The prepared statement of Governor Lujan Grisham follows:]

PREPARED STATEMENT OF MICHELLE LUJAN GRISHAM, GOVERNOR, STATE OF NEW MEXICO

Chairman Grijalva, Vice Chair Haaland and members of the Committee, I'm very grateful for the opportunity to address you this morning. And I want to thank you, Mr. Chairman, for scheduling this hearing in Santa Fe. New Mexicans are an engaged people, as you know. We want to take part in our government; we want to work with our representatives. That's why this visit and the topic of this field hearing is so meaningful, not only to me but to so many of my constituents, and I thank you.

Our environment in New Mexico—as in your home state, Mr. Chairman—is both our greatest resource and our legacy. We find ourselves at a crossroads, one where we must, as a state and as a Nation, choose not the path of least resistance. We must work diligently to ensure future generations of New Mexicans and Americans are able to enjoy the great intangible wealth of our natural resources. I'd like to talk to you today about the pressing and consistent need to address the impacts of emissions, in particular over the course of the most recent decade of expansion here in New Mexico, and I'd like to share some of the actions my administration has taken in our few first months.

During my first month in office, my third executive order, Executive Order 2019–003, acknowledged the overwhelming body of climate science; New Mexico became the 18th state to join the U.S. Climate Alliance. Through this action, New Mexico fully embraced the benchmarks set within the 2015 Paris Agreement, aligning my state with others across the United States that have committed to a climate-conscious future—irrespective of the Federal mindset.

Indeed, under my administration, we are moving rapidly to protect people, natural resources and our cultural heritage.

New Mexico has leapt to the front of the nationwide pack in mitigating climate impacts. In addition to the executive order, which establishes aggressive statewide benchmarks for greenhouse gas emissions, I signed transformational energy legislation into law last month, landmark policy that will provide for 100 percent carbon-free energy use by our utility companies in the coming decades.

But to achieve statewide benchmarks, science directs our focus to methane emissions. And New Mexico has an important role to play on this front.

Methane is a potent greenhouse gas with a 20-year global warming potential more than 84 times that of carbon dioxide, according to the Intergovernmental Panel on Climate Change. Nearly one-third of the methane emissions in the United States come from oil production and the production, transmission and distribution of natural gas.

In 2014, scientists from NASA and the University of Michigan discovered the most concentrated plume of methane pollution anywhere in the country over the San Juan Basin in northwest New Mexico. Further research from NASA's Jet Propulsion Laboratory and the National Oceanic and Atmospheric Administration has shown that the vast majority of this methane pollution is attributable to oil and gas development.

The combination of technological advances in horizontal drilling and hydraulic fracturing has contributed to increases in crude oil and natural gas production in

the United States. Today, New Mexico ranks as the country's third-largest oil-producing state and the seventh-largest gas producing state.

The oil and natural gas regions of the state include the San Juan Basin in the northwest corner and the Permian Basin in the southeast corner. All throughout New Mexico, miles upon miles of gathering pipeline carry methane-rich products from the San Juan Basin in the northwest and Permian Basin in the southeast to compressor stations and gas plants.

Methane emissions occur through venting and unintentional equipment leaks. Equipment design, operational practices and well completions all contribute to venting—and small leaks or significant releases can occur in all parts of the infrastructure. Methane emissions are not visible to the naked eye so small leaks or significant releases can remain uncorrected for days, weeks, months and beyond.

The methane emissions from the state's oil and natural gas wells, compressor stations and gas plants not only contribute to climate change but impact regional air quality. In the oil- and natural gas-centric regions of New Mexico, ambient air concentrations of ozone are approaching unhealthy levels. High levels of ozone can cause breathing difficulties, especially in children, the elderly and those who regularly work and recreate outdoors. Long-term exposure to ozone is also likely to cause the development of asthma and permanent lung damage in children. Ozone is photochemically created in the presence of sunlight from the emission of volatile organic compounds, commonly referred to as VOCs, that are emitted along with methane during oil and natural gas exploration and production activities. Reducing methane and VOC emissions will collaterally reduce the emissions of these compounds. The totality of these reductions will lessen New Mexico's contribution to climate change while improving air quality for residents most directly impacted by oil and natural gas operations.

Beyond the climate and ozone implications, methane emissions represent lost revenues to the state. Methane is the main component of natural gas—a commodity export of the state. Although our state agencies are still working to determine how much is recoverable, the natural gas industry loses millions upon millions each year due to venting, flaring and leaks, according to the best scientific estimates and industry's self-reported data.

There are proven, cost-effective and innovative technologies that, when supplemented with better work practices, can remediate as much as half of these methane losses. Under my executive order, I directed the co-chairs of the new Climate Change Task Force to develop a statewide, enforceable regulatory framework to secure reductions in oil-and-gas sector methane emissions and to prevent waste from new and existing sources. They will make their first recommendations to me this fall.

Further, the State Environment Department has begun regular inspections of the oil and natural gas industry to identify methane leaks. These air quality and waste inspections, spread across the state, will assist both the environment and our state Energy, Minerals and Natural Resources Department as they establish base-line compliance data with existing regulations and help them focus on developing new incentives and adopting technologies to further reduce emissions while providing revenues to the state.

Collaboration is another key step in developing New Mexico's methane strategy. The co-chairs of the Climate Change Task Force will convene key stakeholders; the solutions they find together will dramatically cut emissions, curb waste and benefit New Mexico schools.

As we launch this work of reducing and recovering emissions, New Mexico is benchmarking its existing oil and natural gas regulations related to air emissions and waste using a cross-sectional stakeholder group convened by the State Review of Oil and Natural Gas Environmental Regulations, or STRONGER. This review group, other government entities, environment NGOs, and the industry itself will evaluate the state's oil and natural gas regulations. The STRONGER review team will write a report and identify both strengths that merit special recognition and potential regulatory gaps. The review team will then develop recommendations to address the gaps and identify pathways to program improvement. The final report of New Mexico's oil and natural gas regulations is due to the Climate Change Task Force co-chairs in August 2019.

And while these efforts are ongoing, the co-chairs of the Climate Change Task Force will be convening public stakeholder meetings around New Mexico this summer to collaborate in the development of a regulatory framework for methane reductions. These public meetings will provide a venue for critical stakeholder ideas and feedback on the essential aspects of air emission and waste regulations, inclusion of regulatory standards, technology, work practices, monitoring, record keeping, reporting and more. The legal authorities for regulating methane within the New

Mexico Environment Department and the Energy, Minerals and Natural Resources Department will also be discussed.

In addition, the New Mexico Environment Department last month launched an interactive oil and natural gas methane map. This GIS tool is updated monthly and shares data related to methane emissions with the stakeholder community and the public. The map identifies every oil and natural gas well in the state, begins to provide emission estimates of methane based on VOC emissions, and shares ambient methane data. As New Mexico and the broader community of stakeholders develop data layers for GIS mapping tools, the state will add them to ensure transparency in our progress. This includes identifying oil and natural gas companies that exceed regulatory requirements while identifying those with compliance issues.

Aside from the long- and short-term public health concerns caused by oil and gas emissions, there is a cultural impact to New Mexicans and tribal communities that live here. Since the year 800, ancestral Puebloan peoples have lived on the Greater Chaco landscape. Today this region is home to sites of sacred cultural practice that fortify our modern pueblo cultures. This is why the chairman of the All Pueblo Council of Governors described Chaco Canyon and landscape as the "heart of Pueblo culture." We must protect this region, a UNESCO World Heritage Site, with the same vigor as we protect the air we breathe; it is as important to who we are as New Mexicans as our most basic natural resources.

For scientific and cultural reasons, for the protection of public health and our environment, I intend to lead a New Mexico where we take our environmental destiny into our own hands. Indeed, in many ways, we already have. There's much more work to do. And we are laboring under a Federal Government that has failed us—in a regulatory sense and in the omission of vital leadership. New Mexico, meanwhile, has seized and will continue to seize the opportunity to reduce pollution that threatens human health and looms as an unprecedented humanitarian crisis within this lifetime.

Mr. LOWENTHAL. Thank you, Governor Lujan Grisham.

I know that you have a tight schedule but that you have agreed to answer some questions, so I will first recognize for questions my dear colleague, Representative Haaland.

Ms. HAALAND. Thank you, Chairman.

Thank you, everyone, for being here. It is kind of strange for me, I have never been back here before.

[Laughter.]

Ms. HAALAND. I have always been out there. I have always been advocating and showing up to show support for our legislators. So, it is a little strange, but I am so appreciative that so many of you came today to show your support for our governor and for the work that we are all trying to do.

I would first like to acknowledge that we are on Indian land. I see former Governor Mitchell in the audience, and I thank all of the people from tribes whose homeland we are sitting on right now for coming today and being here with us.

Governor Lujan Grisham, I am so honored that I am here with you today. Thank you for being here and for your tremendous leadership on climate issues. It was exciting to see the state enact the Energy Transition Act to move into a path to low-carbon and eventually carbon-free energy future.

As Vice Chair of the Natural Resources Committee and Chairwoman of the Subcommittee on National Parks, Forests, and Public Lands, I have been focusing on the impact of climate change on our public lands.

For those of you who didn't know, close to 25 percent of our carbon emissions are created on public lands, and that is because we don't have enough renewable energy projects on public lands and we have way too many gas and oil projects on public lands.

[Applause.]

Ms. HAALAND. Increases in temperature, more severe weather, and extended droughts are causing wildfires and taking critical habitat away from species seeking refuge from climate change. We are thinking about how we need to adapt the way we manage our public lands to deal with these changes in our climate.

But we are also thinking about how we need to manage our lands so that they have less of an impact on the climate. This means rethinking oil and gas development on public lands and how we manage greenhouse gas emissions from those activities.

Unfortunately, we are dealing with a president who has slashed funding for programs to protect intact ecosystems that help our environment adapt to some of the worst impacts of climate change. Instead, President Trump wants to expand drilling and logging across precious and fragile landscapes. He has been so oppressive about this that the Interior Department carried on with the permitting process for oil and gas drilling even while the Federal Government was shut down and people were not getting paid.

Meanwhile, it was not providing services to Native American tribes it is obligated to because of the Federal Government's trust obligation to tribes.

Governor Lujan Grisham, what do you think the Federal Government could and should be doing to reduce the emissions of greenhouse gases from drilling operations on Federal lands?

Governor LUJAN GRISHAM. That is an easy answer, Congresswoman. Thank you for the question. They should be doing everything. This imbalanced, unfair approach leaves the burden to a regulatory environment just in the states. And given that we are dealing with Federal public lands where we have limited regulatory authority, we need a robust partnership. And the idea that they are repealing and removing and pushing forward without state involvement or input is quite troubling not just to me as governor, given that it impacts the public health, well-being, and it interferes with our ability to diversify an energy portfolio and, quite frankly, can have the impact to limit our abilities to meet our goals in the U.S. Climate Alliance and the Paris Accords.

All of those issues require a Federal Government that is fair, balanced, and that meets its regulatory requirements. As you can see and hear from my testimony, states like ours and many others across the country, and not just states that are led by Democratic governors, are beginning to do the real work to reduce methane emissions and to do the kind of regulatory work directly that we hope by example creates a universal approach by the oil and gas industry itself wherever those oil and gas leases are occurring, because that is the only way, until we get a Federal Government that is responsive and responsible to do it.

I know I am talking too long, and I know you want to ask me—you are probably going to reclaim your time.

[Laughter.]

Ms. HAALAND. No, I will never do that with you. Thank you.

I am going to ask one last quick question, so that my colleagues have an opportunity to ask questions as well.

You have been in Congress. You know how this system works. You managed to get a tremendous amount done even though you

were in the Minority for the entire time you were in Congress. Now that we have the Majority back as well, how can we in Congress best help you in your efforts to combat climate change and protect the public lands that New Mexicans cherish?

Governor LUJAN GRISHAM. I think three ways.

One, these field hearings. I really want to congratulate Chairman Lowenthal of the Subcommittee and Chairman Grijalva, and your leadership, Chairwoman. These efforts create visibility and encourage states to do as much as they can. We need many more than two—a district, a territory, and three states to be leading on renewable energy, carbon-free efforts by 2045, and New Mexico is now the most aggressive between a transition to renewable energy and being carbon free by 2045. We need that strategy so your colleagues can work with their governors so that we create this effort at the state level.

Two, the legislation that is increasing oil and gas oversight, that is investing in renewable energy, that is providing tax incentives to do that, those efforts also create opportunities for states like ours. I encourage you to work with departments directly and to make sure that we have assets in those departments.

And last, your leadership lately and routinely to protect sacred sites is exactly what we need to hold the line to prevent the Department of the Interior from encroaching on both our authority and our efforts to protect those sacred sites.

The reality is you are doing everything right. I just need you to succeed more quickly and to work with the Senate, and I am really grateful to be able to highlight that, in fact, without a governor or a set of governors asking Congress to stand up and fight for the states and to fight for the health and well-being of your constituents, you are doing it, and thank you.

Ms. HAALAND. Thank you.

[Applause.]

Ms. HAALAND. I yield.

Mr. LOWENTHAL. Thank you.

I now would like to recognize for questions the Assistant Speaker of the U.S. House of Representatives, Representative Luján.

Mr. LUJÁN. Thank you, Mr. Chairman.

[Applause.]

Mr. LUJÁN. I cannot say how grateful I am, Chairman Lowenthal, for you and Chairman Grijalva and our Chairwoman, Debra Haaland, for coming to New Mexico. We were reminded yesterday in some e-mails that were going around, and I think it is pertinent to the point that Deb and I are sitting next to one another. There are some New Mexicans on the dais as well, if there is any question of anyone that is inquiring of the participation of leaders in New Mexico on this important topic.

To everyone who is here as well, I want to say thank you. Thank you for showing up and speaking and making sure your voices are heard.

To our Pueblo leaders, our tribal leaders who are here, it is an honor to be before you, and I thank you for the work you have done and working together as we introduced an important piece of legislation, the Chaco Cultural Heritage Protection Act. Governor, that is where my first question is.

There has been some coverage of this important issue, but it is a culmination of the importance of understanding what we have to do to protect a sacred site. A place where ancestors have been laid to rest should not be desecrated, but one that is also being negatively impacted with environmental justice concerns, negative health impact concerns, and hurting the New Mexico economy.

My first question to you is one that is very simple. Are you supportive of the legislation that Congresswoman Haaland and I recently introduced in the House that was also introduced by Senators Udall and Heinrich in the Senate?

Governor LUJAN GRISHAM. A thousand percent, and thank you. [Applause.]

Mr. LUJÁN. The next question I have builds on what we saw yesterday. We used an optical gas imaging camera to view methane emissions. It is called a forward-looking infrared camera. Many of you have been out there where you smelled the emissions. I don't know how many of you have seen the emissions. But when we looked through this camera, you could see the plumes coming out and moving across the sky. There is no question that this is occurring.

Recent estimates that came from the Environmental Defense Fund estimate that New Mexico alone, as your testimony points out, could lose up to $47 million per year in lost revenue. For those, Governor, that are not on board already because of the healthcare concerns, the importance of protecting the sacred site, or the negative environmental impacts, they need to understand the economic realities that we are facing. What could you do with $47 million in New Mexico?

Governor LUJAN GRISHAM. So much. And, Mr. Chairman and Assistant Speaker, I appreciate so much the time with you as well today.

The $47 million can do a number of things. It can go back into mitigating emissions and doing better regulatory oversight. It can be used to continue to invest in infrastructure for renewable energy. It can do what we are doing in our Energy Transition Act, which is making sure that we have equity funds available to retrain workers and to protect communities who often really suffer in a boom and bust environment, and they deserve our direct investments. And, again, we are talking largely about tribal workers, many right from the Navajo Nation who, without these funds, do not get an environment of fairness and justice, or from a public health standpoint, but they deserve every single dollar and efforts so that they can continue to support their families.

And last, I will take every single dollar for early childhood education so that I can beat every state in the Nation and get to universal child care quicker than we are already projected to, because if we are really going to get ourselves out of poverty and address health care in New Mexico, it starts earlier with these children. So, we would love to have those resources.

I know that I am out of time. But, Mr. Chairman and Assistant Speaker, I want you to know that our methane mitigation task force, which is engaged now in all these other groups, has oil and gas participating, and we expect to do a better job, and I laud what Hickenlooper did, the former governor in Colorado. He got folks at

the table together, including looking at ways to replace all their pneumatic pumps, which are another great source of leaking methane. I expect and believe that our oil and gas stakeholders are going to do a whole lot to help us regain control over these unintended emissions and intended emissions, provide those resources to the state, and be good partners.

Mr. LUJÁN. Mr. Chairman, with your indulgence, I just want to share, Governor, how refreshing your testimony is, the executive orders that you have already issued. I was honored to be invited to sit in a Natural Resources hearing less than a year ago, where Governor Susana Martinez, the former governor of New Mexico, participated, and her testimony was alluding that the United States should be deregulating or softening regulation when it comes to methane emissions in the United States.

As the Committee and the panel are looking for examples of who we should seek out to establish protocol when it comes to methane emissions, I think we have an example right in front of us.

I want to thank everyone in the room who I had the honor of working with about a decade ago to increase New Mexico's renewable portfolio standard and for everyone that did not stop working with you to make sure we got that done, and I would be remiss, Governor, if I did not last submit into the record—there was compelling testimony on Saturday as well with the work that has to be done with the Radiation Exposure Compensation Act for the work with uranium miners as well.

[Applause.]

Mr. LOWENTHAL. That will be accepted without reservation.

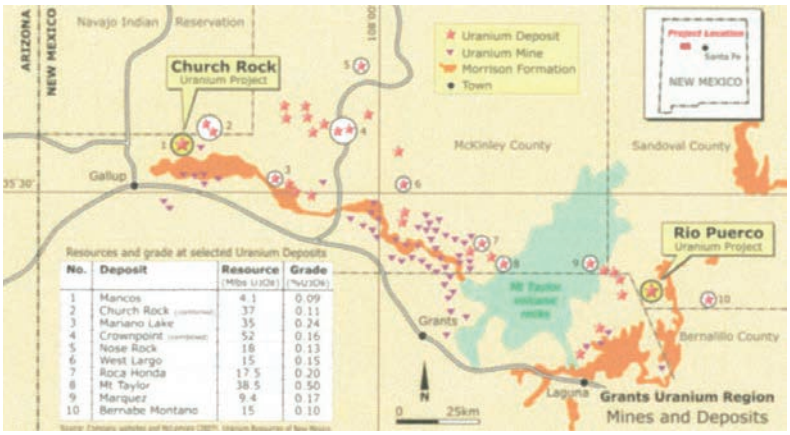
[The information follows:]

MULTICULTURAL ALLIANCE FOR A SAFE ENVIRONMENT

www.swuraniumimpacts.org

April 13, 2019

Figure 1. Grants Mining District



Resources and grade at selected Uranium Deposits

No.	Deposit	Resource (Mlbs U_3O_8)	Grade (%U_3O_8)
1	Mancos	4.1	0.09
2	Church Rock (combined)	37	0.11
3	Mariano Lake	35	0.24
4	Crownpoint (combined)	52	0.16
5	Nose Rock	18	0.13
6	West Largo	15	0.15
7	Roca Honda	17.5	0.20
8	Mt Taylor	38.5	0.50
9	Marquez	9.4	0.17
10	Bernabe Montano	15	0.10

Source: Company websites and McLemore (2007), Uranium Resources of New Mexico

Figure 2. Navajo Nation Superfund Sites

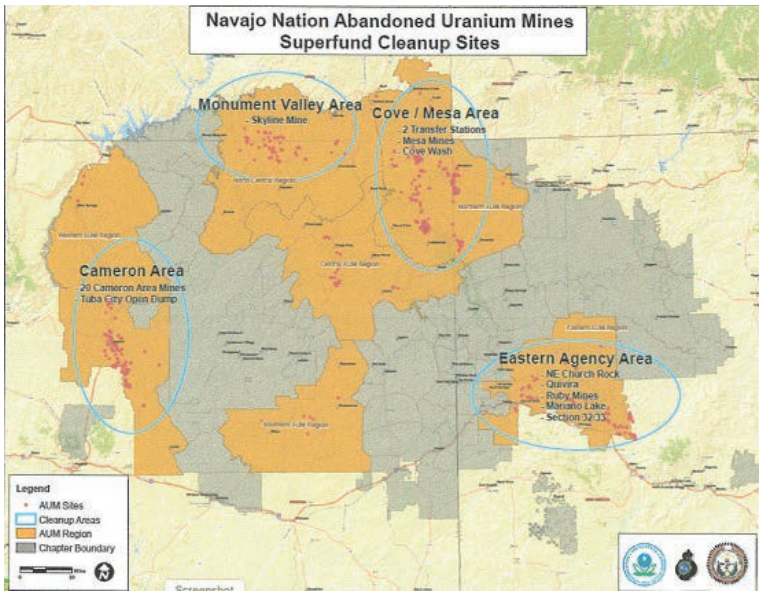
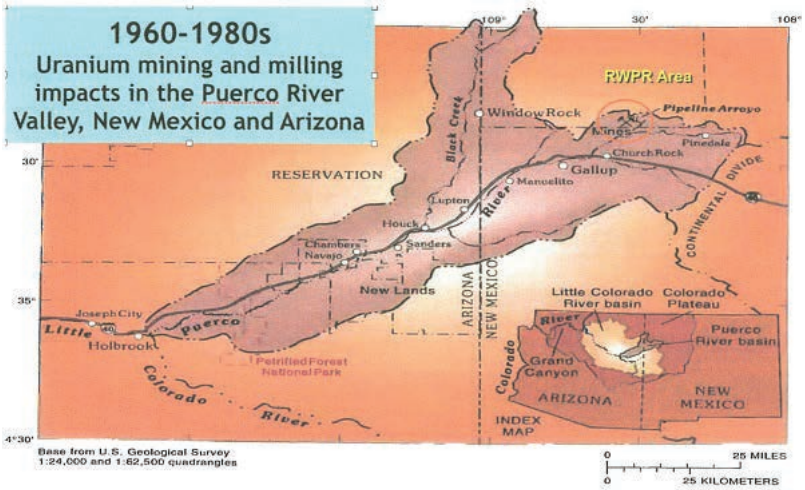


Figure 3. Church Rock Uranium Tailings Spill July 16, 1978



The Puerco River is a major tributary of the Little Colorado River. Recent population growth and changing lifestyles have created an increased demand for water in the basin. 12

Figure 4. Homestake Barrick-Gold Uranium Tailings Superfund Site

Figure 5. Historic Picture of the Jackpile Mine on Laguna Pueblo

Figure 6. Laguna Pueblo Superfund Site

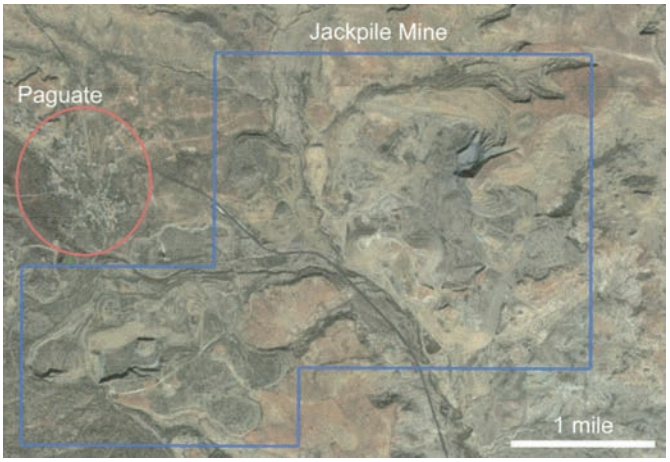


Figure 7. Navajo Miners, 1954

Figure 8. First Atomic Explosion
Trinity Site near Alamogordo, NM July 16, 1945

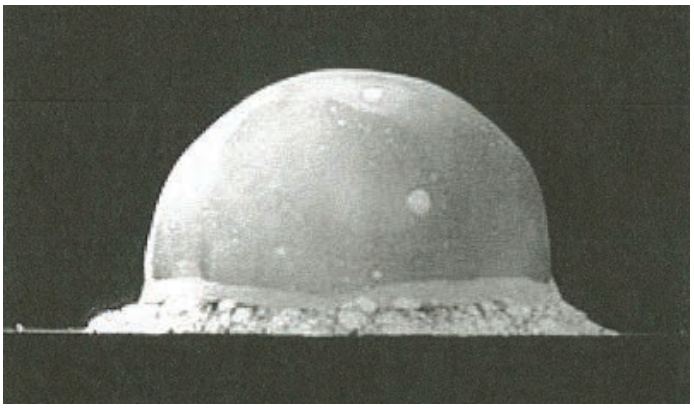


Figure 9. "We have waited far longer than other communities in the U.S. for this poison to be cleaned up. When is it our turn to feel safe? How many more generations have to wait?——Edith Hood, Red Water Pond Road Community Association testifying at hearing of Inter-American Commission on Human Rights on the "Right to Water," October 23, 2015.

Mr. LOWENTHAL. Governor, we are very appreciative of your time, so anytime you need to leave, just let us know. We think it is an honor to have you here, but we are also appreciative that you are a very busy person.

I would like to now recognize the Chair of the overall Natural Resources Committee, Chairman Grijalva.

[Applause.]

Mr. GRIJALVA. Thank you.

I do not have any real questions, Governor, just to say I miss you, we miss you.

[Laughter.]

Mr. GRIJALVA. I wander the halls where your office used to be, looking for somebody to tell me what to do for the rest of the day.

[Laughter.]

Mr. GRIJALVA. And missing that, as well.

I just want to join my colleagues in appreciation. The visit to New Mexico has been very powerful, profound in many ways, and we are learning a lot. I think that, with your leadership, investing in children and in education should be noted as well. That is an important precedent and trend that needs to be part of what this country does for its kids, and what you are doing on the issue of climate change and with methane emissions that are going on, and the protection of these special, sacred World Heritage Sites, I appreciate that. I think that the precedents that are being set here in New Mexico are a good example.

We were asked by a reporter about the industry saying that we have all the wherewithal to self-police, we have all the wherewithal technologically to take care of this problem, and we can do it ourselves and we can self-regulate. I think that what New Mexico is doing under your leadership is making sure that the citizens of New Mexico and the residents of New Mexico are at the table, that they are co-equals in this discussion, and that they have power and strength in those discussions. That kind of cooperation that we are talking about is not fanciful. It comes from two equals through power and strength on the part of the citizens through your office and through the elected officials of the state making sure that the health, the environment, and the future of this state is protected. You are doing that, we very much appreciate it, and I thank you for your leadership. Thank you.

Governor LUJAN GRISHAM. Thank you.

[Applause.]

Mr. LOWENTHAL. Thank you. Thank you, Chairman Grijalva.

I have just a few questions, short questions, I hope.

First, on behalf of the entire panel and the Committee, we really want to commend you on your leadership efforts to put New Mexico on a path toward a cleaner and healthier energy future. I hope that other governors follow your lead. We are going to find out also what is going on in Hawaii and other states too, but that is in the future.

As you have been talking about what you want to do and what is happening, we would just like to know how has the oil and gas industry responded to your efforts? Have they come to the table as a partner, or have they been resisting some of the efforts that you have put forward?

Governor LUJAN GRISHAM. I think that the Southwest is an interesting place to put things in a perspective that you do not normally see. During the last 60-day legislative session, Mr. Chairman, which New Mexico does a 30-day, 60-day, every-other-year environment, the Energy Transition Act, which we have been talking about here today, the oil and gas industry did not oppose that legislative effort, and they are a significant stakeholder in New Mexico's economic success, and they provide for significant jobs. And, quite frankly, they are the lion's share of New Mexico's revenue stream in our state budget, and without them we could not

meet what we are calling now our moon-shot investment in public education.

To put that in perspective, that is a powerful group that can weigh in, and they were neutral on that bill. I appreciate that, and I hope that it speaks to this effort.

My administration is working with oil and gas, and while we are not going to agree on every regulatory or innovative practice we would like to have them undertake, while it would be far easier to ignore that there are risks in fossil fuels and just to accept that that is a large revenue stream for the state, none of us are doing that. And they recognize, the oil and gas industry, that if there is a fight between competing efforts, particularly between energy efforts, then we do not get as far and as fast as we need to, and that New Mexicans do not benefit from that environment.

We are a small enough state, Mr. Chairman, 2 million people, that we work pretty diligently at getting along. I want to actually thank them for being open-minded, coming to the table, participating in our efforts. While I think there will be some challenges and some difficult moments, I expect that New Mexico will be a model for the rest of the country about a way in which to involve all of your stakeholders, produce brand-new innovation and productive new results, and transition to a carbon-free and renewable energy economy. I want you to refer to us not as the great state of New Mexico but as the Clean Energy State the next time you come to Santa Fe.

Mr. LOWENTHAL. Thank you.

[Applause.]

Mr. LOWENTHAL. One of the things that you mentioned in your opening statement and that I think our Committee is vitally interested in is the assistance for people who are going to be put out of work as coal plants and mines close down as we begin this great transition toward a clean economy. Can you describe how this is going to work in greater detail? Also, what role should the Federal Government play in helping displaced workers?

Governor LUJAN GRISHAM. Mr. Chairman, I really appreciate that question. I think that this has been the big mistake, and if I might be a bit political in this context, I think in the Beltway and in Congress, all too often, particularly when I was there in the Minority, if you have people suffering, it becomes a way to produce more partisan efforts. You have to keep coal mines open because people do suffer. Those workers and their families, they suffer without tangible, reliable, meaningful work, and then they become political pawns in these efforts and in the debates.

In New Mexico, we find that not only to be untenable but disgraceful, and we do not want to leave, and will not leave, anyone behind. As we are looking at decommissioning a power plant, and looking at securitization, part of that was to make sure that our large utility companies, who receive a benefit in that effort, that $20 million must return right back to the communities, primarily San Juan County, to provide through a variety of vehicles and state governments so it is fairly applied. It goes to our Department of Indian Affairs. It goes to our Workforce Solutions Department. And then we work with stakeholders to make sure that there is training, job development, job opportunities, and direct benefits to

individuals who lose their jobs when you decommission a power plant.

I think the Federal Government ought to build that into its compensation plans and its unemployment efforts and its training investments and its higher education investments and requirements for every state, and it ought to become part of the U.S. Climate Alliance efforts, that that ought to be part of model legislation for every state moving forward. I think these equity investments do make an incredible difference and take away that partisan fight over workers who are caught in the balance and do not have to be if you reinvest in their success, and that is exactly what New Mexico will do.

Mr. LOWENTHAL. I have one last question. New Mexico has provided great leadership for the Nation as being one of the three states and two territories that have committed to 100 percent clean energy by, I believe, 2050, an admirable goal. But also, New Mexico is one of the leading oil-producing states in the country, and as you pointed out, in working with the industry, a lot of your income in the state is dependent upon oil and gas.

Can you just step back for a moment and tell us where do you see oil and gas development and renewable development in the year 2050? What is going to be that balance?

Governor LUJAN GRISHAM. I really appreciate that question, Mr. Chairman. We are going to be 50 percent renewable by 2030, and 80 percent by 2040. What I see in the future is that New Mexico will look to serious wind, solar, and geothermal investments that make their way not just to job creation and job security in rural New Mexico, but that we are leading the Nation in getting this new energy, because we want California to buy it all.

[Laughter.]

Governor LUJAN GRISHAM. We are very excited about making sure that that energy is moving, and there are some challenges to that. We want folks to look here to see that, and we want to show that with oil and gas, that it is as clean as it can be, that we are using the innovation that mitigates both the landscape problems, the water use issues, and the air quality problems that are a result of oil and gas. The best response to a finite, problematic fossil fuel industry is to pivot to renewable energy.

People are motivated by investments that work on all counts. They are renewable, they are available, they produce that strong, reliable economic success that this state can have and deserves, and they create the right public health outcomes. That is what I expect to see in just, I hope, 8 short years, and I invite you back to see our transformation.

I might take one personal privilege, if that was your last question, Mr. Chairman.

Mr. LOWENTHAL. That was my last question.

Governor LUJAN GRISHAM. I miss you, too.

[Laughter.]

Governor LUJAN GRISHAM. And while I love my state and I have no better job or benefit or honor in my entire life, there is nothing better than bossing around Chairman Grijalva.

[Laughter.]

Governor LUJAN GRISHAM. I know you fibbed, Mr. Chairman, because you were never looking for me, I was always looking for you.

[Laughter.]

Governor LUJAN GRISHAM. And, Chairman Lowenthal, I hope that New Mexicans have seen today that there are Members of Congress, both sides of the aisle, who care about their constituents, who work hard every day, whose travel schedules are impossible—I can attest to that—and I appreciate those of you right from our great state who represent us directly, and those of you who are working on these issues across the country, because with your help, our success will motivate so many other states and will help us have a shared, productive, positive partnership with every single stakeholder, every single worker, and every single New Mexico family.

So, thank you very much for this honor today.

[Applause.]

Mr. LOWENTHAL. We appreciate it. Thank you, Governor. Thank you so much.

Governor LUJAN GRISHAM. Thank you.

Mr. LOWENTHAL. This will conclude our first panel.

Again, thank you, Governor, for your very generous time.

I would like to now invite the second panel to take their seats at the witness table.

Our first witness is the Honorable Michael J. Chavarria, the Vice Chairman of the All Pueblo Council of Governors, and the Governor of the Santa Clara Pueblo. Our second witness is the Honorable Brian Vallo, the Governor of the Pueblo of Acoma. Our third witness is the Honorable Myron Lizer, the Vice President of the Navajo Nation. And our final witness for this panel is Mr. Rickie Nez, the Chairman of the Resources and Development Committee of the Navajo Nation Council.

Welcome.

Let me remind the witnesses that they must limit their oral statements to 5 minutes, but their entire statement will appear in the hearing record.

When you begin, the lights on the witness table will turn green. In 4 minutes, the yellow light will come on. Your time will have expired when the red light comes on, and I will ask you to please complete that final statement or those final thoughts that you are doing.

I am also going to allow the entire panel to make your opening statement before the panel up here asks any questions to you.

The Chair now recognizes Vice Chairman Chavarria to testify.

Welcome to our Committee, Vice Chairman.

STATEMENT OF THE HON. MICHAEL J. CHAVARRIA, VICE CHAIRMAN, ALL PUEBLO COUNCIL OF GOVERNORS; GOVERNOR, SANTA CLARA PUEBLO, ALBUQUERQUE, NEW MEXICO

Mr. CHAVARRIA. First of all, [speaking native language]. That is out of respect for asking to speak before you, Chairman, members of the Committee, this morning. My name is Michael J. Chavarria,

Vice Chairman for the All Pueblo Council of Governors, and I also serve as the Governor for Santa Clara Pueblo.

I would like to thank the Committee for making time and traveling here to talk about this important topic of oil and gas development. I will focus my testimony on the impacts of oil and gas development on tribal cultural resources, and specifically the Greater Chaco Region.

For over 2,000 years, Pueblo people lived in Chaco Canyon, eventually moving outward into the land that Pueblos currently occupy, like spokes moving away from the eye of a wheel. Their time in Chaco Canyon and their movement outward across the landscape left behind many cultural resources, including vast Pueblo structures, shrines and other sacred sites, and natural formations with culturally relevant modifications. This landscape is now called the Greater Chaco Region and includes all of the San Juan Basin.

Many Pueblos maintain a significant and ongoing connection to the Greater Chaco Region. Our people still remember it as a vital part of our present identity through songs, prayer, and pilgrimages. It is hard to put into words how important Chaco is to us as Pueblo people.

The Greater Chaco Region sits atop a sought-after oil field, and this is where the problem lies. Today, the major center point of Chaco Canyon is protected from oil and gas development by the boundaries of the Chaco Culture National Historic Park, which is recognized as a UNESCO Heritage Site. However, many important cultural resources in the Greater Chaco Region are located outside of these boundaries, and much of the Greater Chaco Region has not been studied for cultural resources.

So, the All Pueblo Council of Governors takes the position that no oil and gas development should take place within a designated withdrawal area, which consists of approximately 10 miles surrounding the park. This is both because any parcel located within this area is likely to contain or impact important cultural resources and because development in this area is likely to affect cultural resources as well.

The All Pueblo Council of Governors further takes the position that, even for development outside the withdrawal area but within the Greater Chaco Region, there are Federal laws, such as the National Historic Preservation Act, which require rigorous identification and analysis of cultural resources before any steps toward oil and gas development occur.

Until recently, the Department of the Interior deemed the withdrawal area unavailable for oil and gas development. However, this administration has reversed this policy, including allowing fracking.

Now the BLM holds quarterly oil and gas lease sales that include parcels within the withdrawal area and throughout the Greater Chaco Region. Despite our concerns and offers to assist, the BLM has not conducted any type of cultural resources study required by law for any of these Federal parcels.

So, the All Pueblo Council of Governors asks first, that you support the Chaco Cultural Heritage Area Protection Act, which would remove the withdrawal area from oil and gas development.

Second, we ask that, until the legislation goes through, you put pressure on the Department of Energy to prospectively deem the withdrawal area unavailable for oil and gas development before the Department of Energy continues to include these parcels for lease sales. And we ask you to continue to put pressure on the Department of the Interior to remove them from each lease sale into the future.

Third, we ask that you put pressure on the Department of the Interior to prospectively identify and analyze the cultural resources that are affected by oil and gas development and the parcels outside the withdrawal area before listing the parcels in a lease sale. And if the DOI does list those parcels without sufficient study, we ask you to put pressure on DOI to remove them from the lease sale until the study is complete.

Thank you for the opportunity today to meet with us as Pueblo people, as Pueblo leaders, because it is very important that we encourage you and ask for your help to encourage the Department of the Interior to work with the Pueblos in this study, the cultural resources within the greater cultural region. The All Pueblo Council of Governors is currently in discussion with the Department of the Interior on a proposal going forward.

I did have an opportunity to meet with Assistant Secretary Sweeney a couple of weeks ago in Traverse City. I also provided a letter on the status of the All Pueblo Council of Governors as it relates to this. It is very important that the Bureau of Indian Affairs, as our trustee, understands the importance of the relationship that we have and their trust responsibility to us as Pueblo people.

I would like to thank you for coming today. I am glad that you had a good day yesterday out in the field, and we continue to look forward to working together. [Speaking native language.]

[The prepared statement of Mr. Chavarria follows:]

PREPARED STATEMENT OF J. MICHAEL CHAVARRIA, VICE CHAIRMAN, ALL PUEBLO COUNCIL OF GOVERNORS

The All Pueblo Council of Governors (APCG) thanks the Committee for the opportunity to testify on the important topic of oil and gas development.[1] We understand the Committee seeks testimony on the impacts of oil and gas development on public health, the climate, cultural resources, and tribal communities—and APCG believes there are many impacts in all of these areas. However, APCG's testimony will focus on the impacts of oil and gas development on cultural resources, and specifically in the Greater Chaco Region.

CULTURAL RESOURCES

For over 2,000 years, Pueblo people lived in Chaco Canyon, eventually moving outward into the land the Pueblos currently occupy—like spokes moving away from the eye of a wheel. Their time in Chaco Canyon and their movement outward across the landscape left behind many cultural resources, including vast pueblo structures, shrines and other sacred sites, and natural formations with culturally relevant modifications and meanings. This landscape is now called the Greater Chaco Region and includes all of the San Juan Basin.[2]

Many Pueblos maintain a significant and ongoing connection to the Greater Chaco Region. Our people still remember it as a vital part of our present identity through song, prayer, and pilgrimage. It is hard to put into words how important the

[1] APCG is comprised of the New Mexico Pueblos of Acoma, Cochiti, Isleta, Jemez, Laguna, Nambe, Ohkay Owingeh, Picuris, Pojoaque, San Felipe, San Ildefonso, Sandia, Santa Ana, Santa Clara, Santo Domingo, Taos, Tesuque, Zia, and Zuni, and one Pueblo in Texas, Ysleta Del Sur.

[2] In some instances, the term "Greater Chaco Landscape" has been used, but it refers to the same area of land.

Greater Chaco Region is to us as Pueblo people. Even those outside Indian Country, including within the field of archaeology, recognize Chaco Canyon's importance in telling the story of the people of this continent.

Today, the major center point of Chaco Canyon is protected from oil and gas development by the boundaries of the Chaco Culture National Historic Park, which is recognized as a UNESCO World Heritage Site.

However, many important cultural resources in the Greater Chaco Region are located outside the boundaries of the Park, and even the cultural resources that fall within the boundaries suffer the effects of activity taking place outside. Additionally, the location of a vast majority of cultural resources throughout the Greater Chaco Region has not been studied, making them vulnerable.

APCG'S POSITION

In addition to being a place of great cultural importance, the Greater Chaco Region sits atop an oil field that is under tremendous pressure for development from the oil and gas industry, and this is where the problem lies. Upwards of 90 percent of the land in the San Juan Basin is already leased for oil and gas development, and the remaining land comes dangerously close to Chaco Canyon itself.[3]

APCG takes the position that no oil and gas development should take place within a designated withdrawal area—which consists of approximately 10 miles surrounding the Park.[4] This is both because any parcel located within this area is likely to contain or impact important cultural resources and because development in this area is likely to affect cultural resources in the Park. APCG further takes the position that, even for development outside the withdrawal area but within the Greater Chaco Region, Federal laws, like the National Historic Preservation Act (NHPA) and the National Environmental Policy Act (NEPA), require rigorous identification and analysis of cultural resources before any steps toward oil and gas development occur.

As land managers, if the Department of the Interior (DOI) is going to allow oil and gas development in the Greater Chaco Region, it must gain a better understanding of where our cultural resources are located. This is true in the macro sense, in that DOI should close off areas of the Greater Chaco Region that contain high concentrations of cultural resources as part of the necessary balancing required under the Federal Land Policy and Management Act. It is also true in the micro sense, in that, under the NHPA and NEPA, DOI must sufficiently study the effects on cultural resources of oil and gas development before offering a particular parcel for lease sale. These studies are required by law, and, if done properly and early in the oil and gas development process, will save all parties time and money.

CURRENT OIL AND GAS DEVELOPMENT ISSUES

Until recently, DOI deemed the withdrawal area unavailable for oil and gas development. This administration has reversed this policy, including allowing fracking.[5]

Now, the Bureau of Land Management (BLM) holds quarterly oil and gas lease sales that include parcels within the withdrawal area and throughout the Greater Chaco Region. Although DOI has removed some of these parcels from particular lease sales after sufficient pressure from outside forces, APCG and its member Pueblos are required to pour their limited resources into each deferral request.

Further, DOI has not conducted anything close to the type of cultural resource identification and analysis required for any of the parcels located inside or outside of the withdrawal area. Therefore, APCG and its member Pueblos are forced to protest the parcels in the Greater Chaco Region in every lease sale.[6]

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[3] The BLM-Farmington District Office is the primary agency regulating the San Juan Basin, and portions of the San Juan Basin also extend into the BLM-Rio Puerco Field Office's district boundary. The majority of available land in the Farmington District Office has been leased.

[4] APCG and DOI have until recently discussed a general area of approximately 10 miles surrounding the Park as making up the withdrawal area. In recent years, as part of work on the Chaco Cultural Heritage Area Protection Act, congressional members along with input from DOI and the Pueblos have created more clarity on the boundaries of the withdrawal area by specifying its parameters and producing an associated map. The Act's boundaries are now the best description of the withdrawal area—which has shifted slightly over time.

[5] The BLM-Farmington District Office is currently amending its Resource Management Plan, meant to regulate oil and gas technological advances in horizontal drilling and hydraulic fracturing—or "fracking." Despite this ongoing amendment, the BLM continues to hold leases that would be available for this new technology.

[6] This has meant protesting parcels under the BLM Farmington and Rio Puerco Field Offices, whose jurisdictions cover the Greater Chaco Region.

LEGAL DEFICIENCIES

DOI in its sale of leases on parcels in the Greater Chaco Region is violating the NHPA and NEPA, which require sufficient study of cultural resources before DOI takes any steps toward oil and gas development. Because of the cultural significance and concentration of cultural resources in the Greater Chaco Region, these studies must be especially rigorous and must incorporate qualified experts, such as Pueblo representatives able to identify our cultural resources. Thus far, DOI has not conducted any studies sufficient to identify our cultural resources before holding lease sales in the Greater Chaco Region and is therefore in breach of the NHPA and NEPA.

DOI has argued that a literature review is sufficient to meet its requirements. This involves reviewing existing records and studies available to the BLM. But there is a significant gap in existing literature about the Greater Chaco Region because much of the land has not been surveyed and the surveys that have taken place are often outdated and absent contribution from Pueblo people. While archaeologists are trained to identify archaeological features, they often lack the cultural expertise of Pueblo representatives. Because Pueblo representatives are able to identify their cultural resources, which can include natural features that archaeologists overlook, they must be included in cultural resource studies. In fact, when the BLM took Pueblo representatives on a sample field investigation leading up to the March 2018 lease sale, Pueblo representatives identified important cultural resources of which the BLM had not been aware.

DOI has also argued that, for purposes of the Section 106 process of the NHPA (and similarly NEPA), the primary time for conducting cultural resource studies is at a later step in the oil and gas development process. But, as a lessee gains a property interest in a purchased lease, this commitment of Federal resources to a lessee is out of step with the legal processes mandated in the NHPA and NEPA.

Additionally, DOI has acted arbitrarily and capriciously by its ad hoc removal of some parcels but not others from particular lease sales. In the March and December 2018 lease sales, DOI withdrew all of the protested parcels, both in and out of the withdrawal area, due to concerns that sufficient study of cultural resources under the NHPA and NEPA had not taken place.[7] Then, in the March 2019 lease sale, DOI for no discernable reason withdrew only parcels located within the withdrawal area and permitted the sale of leases on protested parcels outside. These parcels were located very near or adjacent to parcels that had been previously withdrawn. As no cultural resource studies were conducted in the interim, the decision to move forward leasing those parcels was arbitrary and capricious under the Administrative Procedure Act.

Beyond these legal deficiencies are likely many others, including DOI's failure to live up to its trust responsibility to tribes.

REQUESTS

APCG has a number of requests for you that we believe together will help protect the cultural resources in the Greater Chaco Region.

First, we ask that you support the Chaco Cultural Heritage Area Protection Act, which would remove Federal minerals in the withdrawal area from future oil and gas development.

Second, we ask that, until the legislation goes through, you put pressure on DOI to prospectively deem the parcels within the withdrawal area unavailable for oil and gas development *before* DOI takes the step of including them in a lease sale. And, until DOI takes this prospective action, we ask that you continue to pressure DOI to remove parcels within that area from each lease sale in which they are listed.

Third, we ask that you put pressure on DOI to prospectively identify and analyze the cultural resources, in compliance with Federal law, on proposed parcels for oil and gas leasing even outside the withdrawal area *before* listing the parcels in a lease sale. This is even more important for parcels that fall just outside the withdrawal area line—like those that were sold in the most recent March 2019 lease sale. And, when DOI does list those parcels without sufficient study as required by law, we ask that you put pressure on DOI to remove them from the particular lease sale until the studies are conducted.

Fourth, we ask that you put pressure on DOI to rescind haphazard directives like BLM Instruction Memorandum 2018–034, that leads to forced development, insufficient analysis, and the likely destruction of our cultural resources in violation of Federal law. We ask that directives like BLM Instruction Memorandum 2018–034

[7] See for example, BLM's Press Release and Statement on its March 2018 deferral: https://www.blm.gov/press-release/blm-defers-oil-and-gas-lease-sale-parcels-new-mexico.

be rescinded, or exclude the BLM-New Mexico Office from its application, to allow for the Resource Management Plant Amendment to be developed and implemented without undermining by oil and gas leasing and permitting activities.

Last, we ask you to encourage DOI to work with the Pueblos to study the cultural resources in the Greater Chaco Region. APCG is currently in discussions with DOI on a proposed study of an area of the Greater Chaco Region. This study and studies like it could serve to fill the critical gap in information about Pueblo cultural resources that the BLM currently suffers.

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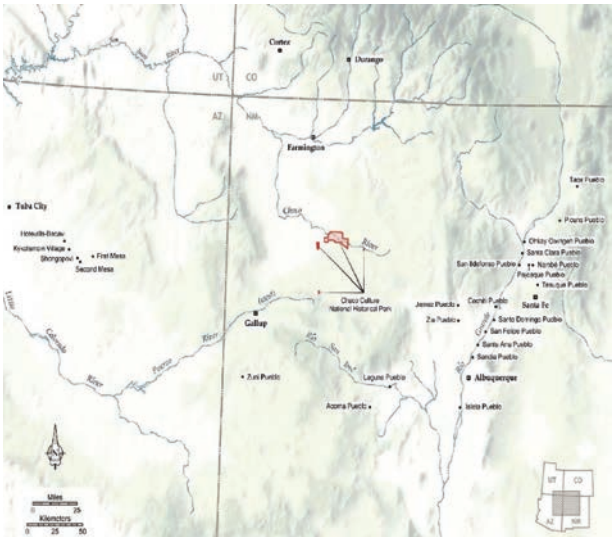
ATTACHMENT 1

"Location of Chaco Canyon, Pueblos, and the Hopi Tribe"



Map Credit—Archaeology Southwest

Mr. LOWENTHAL. Thank you, Vice Chairman Chavarria.

Next, I would like to recognize Governor Vallo for your testimony. Welcome to the Committee, Governor Vallo.

STATEMENT OF THE HON. BRIAN D. VALLO, GOVERNOR, PUEBLO OF ACOMA, ACOMA, NEW MEXICO

Mr. VALLO. [Speaking native language.] Welcome, Chairman and honorable members of the Committee. My name is Brian Vallo, and I am the Governor of the Pueblo Acoma. Thank you for traveling a great distance to be with us today.

Yesterday, I met many of you during our visit to Chaco Canyon. I hope this visit has shed some light on the impacts of oil and gas development, as well as the critical need to protect Wáphrba'shuka, or Chaco Canyon.

Chaco Canyon plays an integral role in our living history, culture, and identity as Acoma people. Our discussion of Chaco cannot be separated from our discussion of our home, Haakú, or Acoma.

Chaco Canyon and the Greater Chaco Region are deeply rooted in our collective memory. It is, in fact, an extension of our ancestral homelands and migration from our place of emergence.

Wáphrba'shuka, or Chaco Canyon, contains all of the cultural resources that continue to sustain us as Acoma people today.

Within the Greater Chaco Region are archaeological or natural features that we identify as cultural resources. Many of these resources remain unidentified by archaeologists in the Greater Chaco Region. While archaeologists are adept at recognizing those archaeological resources, many of the cultural resources important to the Pueblo are outside the domain of archaeology.

For Acoma, all ancestral Pueblo archaeological resources are cultural resources. However, not all cultural resources are archaeological in nature. Only we can identify these resources.

When oil and gas leasing and development occurs, we must rely on Federal agencies as our trustee to identify and ensure the protection of our cultural resources. Many of these resources may be classified as historic properties or traditional cultural properties under the National Historic Preservation Act. Consultation and collaboration with tribes to identify these resources is a critical part of the mandated Section 106 process. Unfortunately, the Section 106 process is undermined in the Greater Chaco Region through misguided internal Bureau of Land Management directives requiring district offices to adhere to mandatory quarterly leasing, dismantling of many Land Management processes, and the rapid sale and processing of oil and gas leases. This rush leads to incomplete and inadequate analysis under Section 106 and its related statute, the National Environmental Policy Act.

To illustrate, in March 2018, BLM nominated parcels in the Greater Chaco Region, some coming within 10 miles of the Chaco Cultural National Historic Park. Acoma demanded site visits, knowing the likelihood of Acoma cultural resources in the area. During a single sample field investigation, Acoma representatives observed sites viewed by Acoma as cultural resources. Many of these cultural resources were previously unaccounted for by the BLM.

With these observations, Acoma protested the lease sale. Subsequently, the Department of the Interior made the correct decision to defer all leases due to the inadequacy of its cultural resource analysis. Since then, the BLM has failed to work with Acoma to address deficiencies in its cultural resources information, and the BLM has never offered another site visitation.

In the lease sales that followed, similar problems occurred. In December 2018, Acoma demanded site visitations and offered to have Acoma representatives go into the field to help identify Acoma's cultural resources. This offer by Acoma was not considered by BLM. Instead, BLM proceeded with deferring all of the BLM Farmington Field Office parcels, while selling all of the BLM Rio Puerco Field Office parcels despite the parcels being divided only by district boundaries. These parcels were reliant upon much of the same information that concerned the Pueblo for its incompleteness.

Last month, the BLM Farmington and Rio Puerco Field Offices once again nominated parcels throughout the Chaco region. With pressure from Acoma and other Pueblos, BLM withdrew nine

parcels. However, BLM moved forward with the sale of an additional 30 parcels. Many of these parcels were adjacent to those parcels previously deferred due to deficiencies in the agency's cultural resources analysis.

We have made many requests about what has changed on the ground to justify moving forward, and the agency did not provide a response.

There are asks in this testimony that are on the record. In light of time, I will end by saying that, Mr. Chairman and members of the Committee, I am here today to express these words on behalf of my Acoma people today and those not yet born. As their leader, I ask you to join me, my ancestors, and my great-grandchildren as we fulfill our collective inherited responsibility to protect Wáphrba'shuka and ensure the continuance of its heartbeat for our future.

[The prepared statement of Mr. Vallo follows:]

PREPARED STATEMENT OF GOVERNOR BRIAN D. VALLO, PUEBLO OF ACOMA

On behalf of the Pueblo of Acoma ("Pueblo" or "Acoma"), I thank members of the Committee for traveling here to learn about the impacts of oil and gas development, and the importance of protecting *Wáphrba'shuka*—Chaco Canyon, and the Greater Chaco Region.

CULTURAL RESOURCES

Chaco Canyon and the Greater Chaco Region plays an integral role in Acoma's living history, our culture, and identity. Our discussion of Chaco cannot be separated from our discussion of our present-day home and community of *Haakú*, Acoma. As Acoma people, Chaco Canyon and the Greater Chaco Region are deeply rooted in our collective memory, and the experiences of our ancestors. It is an extension of our ancestral homeland, where our Ancestors lived for generations to form the foundations of our cultural practices, traditions, and beliefs that help define our identity as Acoma people today. Chaco Canyon, and its vast landscape, are not abandoned—but contain the cultural resources that tie Acoma to Chaco, and from Chaco to the place of our emergence.

The Greater Chaco Region is therefore a living landscape, depended on by living indigenous communities, like Acoma. Within the Greater Chaco Region are archaeological and significant cultural resources, left by our Creator, utilized by our Ancestors, and accessible to us for the continuance of our cultural practices. As Acoma, we have a culturally embedded and inherent responsibility to protect these resources. Many of these cultural resources remain unidentified in the Greater Chaco Region. While archaeologists are adept at recognizing many types of archaeological resources (potsherds, room blocks, pit houses, etc.), many of the cultural resources important to the Pueblo are outside the domain of archaeology. For Acoma, all ancestral pueblo archaeological resources are cultural resources, but not all cultural resources are archaeological in nature, and therein, lies the major issue. When we are confronted with unchecked oil and gas development in a region we know to be rich in cultural resources, we are forced to rely upon Federal agencies, as our trustee, to safeguard these resources. However, these agencies are often unable or unwilling to take the necessary first step needed to engage with tribal experts to identify these significant cultural resources. This necessary first step includes providing us with the opportunity to survey nominated lease parcels and potential drilling sites before Federal action is taken.[1]

[1] See "Uncited Preliminary Brief (Deferred Appendix Appeal) of Amici Curiae All Pueblo Council of Governors and National Trust for Historic Preservation, in Support of Appellants," *Dine Citizens Against Ruining Our Environment, et al v. Ryan Zinke, et al*, Civ. No. 18–2089 (Sept. 7) (10th Cir. 2018). All Pueblo Council of Governors, amicus brief describing violations of the National Historic Preservation Act, and implementing regulations in failing to consult with Pueblo tribal governments during applications for permits to drill ("APDs"), in order to gather required information about potentially affected historic properties including traditional cultural properties (TCPs), and how approving the APDs would adversely affect Pueblo TCPs.

CURRENT OIL AND GAS DEVELOPMENT ISSUES

Currently, oil and gas development is overwhelming this fragile and sacred landscape. The BLM Farmington Field Office, whose boundaries include the primary bulk of the New Mexico portions of the Greater Chaco Region, has exhausted nearly all available lands for leasing. Due to developments in oil and gas technology, previously inaccessible reaches of oil are now open, dangerously encroaching upon Chaco Canyon. This renewed interest by industry has spilled east into a portion of the neighboring BLM Rio Puerco Field Office that juts into the Greater Chaco Region.[2] Under the guise of "streamlining,"[3] the BLM issued Instruction Memorandum 2018–034, "Updating Oil and Gas Leasing Reform—Land Use Planning and Lease Parcel Reviews," which has made an already fraught situation worse by strictly adhering to a mandatory quarterly leasing schedule, dismantling many land management processes, and all but ensuring oil and gas leases are sold within in a minimum 6-month time frame. This rush to sell leads to incomplete and inadequate analyses under the National Environmental Policy Act and the National Historic Preservation Act.[4]

March 2018 Lease Sale (BLM Farmington Field Office)

In March 2018, the Pueblo of Acoma protested the nomination of parcels in the Greater Chaco Region, some coming within 10 miles of the Chaco Culture National Historical Park ("CCNHP"). Acoma demanded site visits to view the parcels in order to determine the presence of Acoma cultural resources. In the single sample field investigation, Acoma, along with representatives from other Pueblos, observed features viewed by them as cultural resources. Many of these cultural resources were unaccounted for by the BLM. For example, Acoma representatives observed tracts with a type of ancestral agricultural land modification found throughout the core of Acoma's traditional homeland, to which they refer to as *na baa'ma. Na baa'ma* tracts are more than simply settings suitable for farming, rather these areas are integral in Acoma's age-old cultural-historic traditions about how its people learned to interact with land and water resources to sustain their community over centuries. These locations are often associated with other cultural and archaeological resources which Acoma's representatives observed. With these observations, and limited tribal consultation thereafter, the Pueblo of Acoma, along with the All Pueblo Council of Governors ("APCG"), protested the lease sale. Subsequently, the Department of the Interior made the correct decision, by choosing to defer all leases in the BLM Farmington Field Office due to concerns about the adequacy of its cultural resource analysis.

Citing concerns about the uncertainty of cultural impacts, then-Secretary Ryan Zinke stated: "I've always said there are places where it is appropriate to develop and where it's not. This area certainly deserves more study [.] . . . We understand the cultural importance of this area, and the need to gather additional information about this landscape before holding a lease sale."[5] Since then, the BLM has not worked with the Pueblo of Acoma to address deficiencies in its cultural resource information, and the BLM has never offered another site visitation.

December 2018 Lease Sale (BLM Farmington & Rio Puerco Field Offices)

In December 2018 the BLM Farmington and Rio Puerco Field Offices nominated additional parcels in the Greater Chaco Region, with the BLM Farmington Field Office having parcels within 10 miles of the CCNHP. The Pueblo of Acoma, APCG, and individual Pueblos, protested, offering the same reasons cited during the protest

[2] See Attachment 1 "Map—BLM Lease Parcels Overview."

[3] See BLM Instruction Memorandum 2018–034, "Updating Oil and Gas Leasing Reform—Land Use Planning and Lease Parcel Reviews."

[4] Under the National Historic Preservation Act ("NHPA"), 54 U.S.C. § 300101 et seq. and its implementing regulations, Pueblo cultural resources may be considered historic properties or traditional cultural properties under proper analysis and may be eligible for listing on the National Register of Historic Places. Under the NHPA when a Federal undertaking takes place, a process, often referred to as the Section 106 process begins. Section 106 is a critical, step-driven process, meant to determine, in order, the (1) area of potential effects; (2) identification of historic properties; (3) the assessment of adverse effects; and (4) the resolution of adverse effects. The Section 106 process is where meaningful tribal consultation is required to advise the agency on the identification and evaluation of historic properties, including those of traditional religious and cultural importance. The National Environmental Policy Act ("NEPA") incorporates NHPA analysis into its environmental assessments and environmental impacts statements, requiring simultaneous analyses in order to assess the full impact of an undertaking.

[5] See BLM Press Release "BLM Defers Oil and Gas Lease Sale in New Mexico" available at: https://www.blm.gov/press-release/blm-defers-oil-and-gas-lease-sale-parcels-new-mexico.

of the March 2018 Lease Sale—the insufficiency of the agency's efforts to identify Acoma's cultural resources known to exist in the region. No sample field investigations were offered by either field office, despite the Pueblo's requests and offers to allow Acoma representatives into the field to assist the BLM in identifying critical cultural resources. Acoma and APCG protested the lease sale, resulting in the BLM Farmington Field Office deferring all of its parcels. However, the BLM Rio Puerco Field Offices chose to sell leases for all its parcels.

This discrepancy baffled the Pueblo. Only divided by district boundaries, many of the parcels offered by the two offices were in the same vicinity, some less than ½ mile from each other, and therefore suffering from the same lack of information concerning Pueblo cultural resources. The Pueblo of Acoma can only conclude that an arbitrary and capricious action occurred.

March 2019 Lease Sale (BLM Farmington & Rio Puerco Field Offices)

Most recently, the BLM Farmington and Rio Puerco Field Offices nominated parcels in the BLM's March 2019 Oil and Gas Lease Sale. Again, the BLM Farmington Field Office nominated parcels in the Greater Chaco Region, with nine coming within 10 miles of CCNHP. In February, these nine parcels were withdrawn due to pressure from the Pueblos. However, the Farmington Field Office retained nearly 22 parcels in its lease sales, many just outside the 10-mile area surrounding CCNHP. Several of these parcels were adjacent to, or near, parcels previously deferred in March and December 2018 due to deficiencies in the agency's cultural resource analysis under NHPA and NEPA.

The Pueblo of Acoma requested tribal consultation with both field offices through the BLM New Mexico State Office, at its earliest opportunity after the lapse in Federal appropriations ended, but prior to the issuance of the draft environmental assessments. The lapse in Federal appropriations had closed all communication with staff at district levels, including key tribal consultation coordinators.[6] Despite the government shutdown, no delay in the leasing schedule occurred commensurate with the 35 days lost during the shutdown. Instead, Acoma only consulted with the Farmington Field Office about a week before the lease sale, and the Rio Puerco Field Office failed to meet with the Pueblo. Again, no sample field investigations occurred, despite Acoma's requests and offers to allow Acoma representatives into the field to assist the BLM in identifying cultural resources that the agency failed to identify in the previous lease sale analyses. To Acoma's knowledge, no additional or substantive work occurred that would correct the issue of BLM's inability to identify Acoma cultural resources. As a result, the BLM Farmington and Rio Puerco Field Offices moved forward and sold the remaining 30 leases in the March 2019 lease sale.

BLM Farmington Field Office—Resource Management Plan Amendment and draft Environmental Impact Statement

In 2014, due to new developments in horizontal drilling and hydraulic fracturing technology, the BLM Farmington Field Office began the process of amending its 2003 Resource Management Plan. Due to the extent of tribal land within the jurisdiction of this field office, the Bureau of Indian Affairs, Navajo Regional Office, is also participating in this process as a co-lead agency. This Resource Management Plan Amendment ("RMPA"), would analyze the impact of this new technology in the Farmington Field Office planning area and its impact on previously inaccessible portions of the Greater Chaco Region (much of which comes to the north and east of CCNHP, which is now a high target for development). This guiding planning document is critical for appropriately regulating all BLM oil and gas activity in the Greater Chaco Region. Despite this important process to formulate appropriate land management policies, the BLM continues to move forward with oil and gas leasing and development, like those described above, as well as issuing permits to drill wells, and granting rights-of-way for related infrastructure. These backdoor processes mean new leases, like those in the December 2018 and March 2019 lease sales, and associated development will not be subject to the RMPA. Instead, these activities go forward without being subject to well-thought-out policies that Acoma, and other Pueblos and tribes, are attempting to address with the BLM and the Bureau of Indian Affairs in the RMPA.

Under the Federal Land Policy and Management Act, the Federal law that guides the BLM in stewarding our public lands, the RMPA must strike a critical balance

[6] See, Protest Letter from Aaron M. Sims, Chestnut Law Offices on behalf of the Pueblo of Acoma, to State Director, Bureau of Land Management—New Mexico State Office (Feb. 20, 2019) (on file with the Pueblo of Acoma and BLM NM Office).

in addressing the needs of ongoing development in the Greater Chaco Region, and at the same time protecting its complex cultural and living landscape. This takes time. Our fear is that once all parties complete an adequate RMPA, there will be nothing left to save—as the BLM will have leased much of the remaining available land in the Greater Chaco Region.

ACOMA EFFORTS

The Pueblo of Acoma has never been uncooperative and/or unresponsive where these issues are concerned, in fact, the Pueblo has always, offered solutions to address the critical lack of information about Acoma's ties to Chaco Canyon, the Greater Chaco Region, and its cultural resources therein. In consultation, Acoma repeatedly underscored the need for a comprehensive ethnographic assessment and cultural landscape analyses by Federal agencies to identify previously unidentified cultural resources, and has offer to assist agencies in re-evaluating the archaeological sites it has identified. In particular, the BLM has repeatedly responded that it does not have the funding, resources, or frankly, the time, to conduct such studies.[7] As such, our interpretation is that the agency is stating it does not have the time to comply with the clear mandates of Federal law. As a result, the Pueblo of Acoma, alongside outside partners, is conducting a limited ethnographic assessment of Acoma's ties to the Greater Chaco Region. This important study to document Acoma's relationship with Chaco Canyon, provides critical information about the types of cultural resources expected to be found, information to analyze previously identified archaeological sites, and areas of critical importance to the Pueblo. Through the expense of Acoma's time and admittedly limited financial resources, our hope is that this work will inform the BLM's current data that we know to be insufficient and incomplete.

REQUESTS

Acoma has a number of requests for you that we believe together will help protect the cultural resources in the Greater Chaco Region.

First, we request that you support the Chaco Cultural Heritage Area Protection Act, which would remove Federal minerals in the designated withdrawal area from future oil and gas development.

Second, we request that, until the legislation is passed, pressure be placed on the Department of the Interior ("DOI") to prospectively deem the parcels within the withdrawal area unavailable for oil and gas development *before* DOI takes the step of including them in a lease sale. And, until DOI takes this prospective action, we ask that you mandate DOI to remove parcels within that area from each lease sale in which they are listed.

Third, we request that pressure be placed on DOI for active collaboration with the Pueblos, to prospectively identify and analyze the cultural resources, in compliance with Federal law, on proposed parcels for oil and gas leasing even outside the withdrawal area *before* listing the parcels in a lease sale. This is especially critical for parcels that fall just outside the withdrawal area boundary—similar to those sold in the most recent March 2019 lease sale. And, when DOI does list those parcels without sufficient study as required by law, we ask that you instruct DOI to remove them from the particular lease sale until the studies are conducted, just as Secretary Zinke did in March 2018.

Fourth, we request that you place pressure on DOI to rescind haphazard directives including BLM Instruction Memorandum 2018–034, that leads to forced development, insufficient analysis, and the likely destruction of our cultural resources in violation of Federal law. We ask that directives like BLM Instruction Memorandum 2018–034 be rescinded, or exclude the BLM-New Mexico Office from its application, to allow for the RMPA to be developed and implemented without undermining by oil and gas leasing and permitting activities.

[7] This is despite duties under Section 106 during an undertaking to fill critical information gaps, when an agency does not have the information it needs. Or, despite the BLM's standing obligation under 54 U.S.C. Section 306101, and its implementing regulations, requiring the agency to establish its own historic preservation programs for the identification, evaluation, and protection of historic properties in its control (this is often referred to as "Section 110" of the NHPA).

Last, we request that you encourage DOI to work with Acoma, individual Pueblos, and the APCG to study the cultural resources in the Greater Chaco Region. APCG is currently in discussions with DOI on a proposed study of an area within the Greater Chaco Region. This study and studies of this type could serve to fill the critical gap in information about Pueblo cultural resources that the BLM currently suffers.

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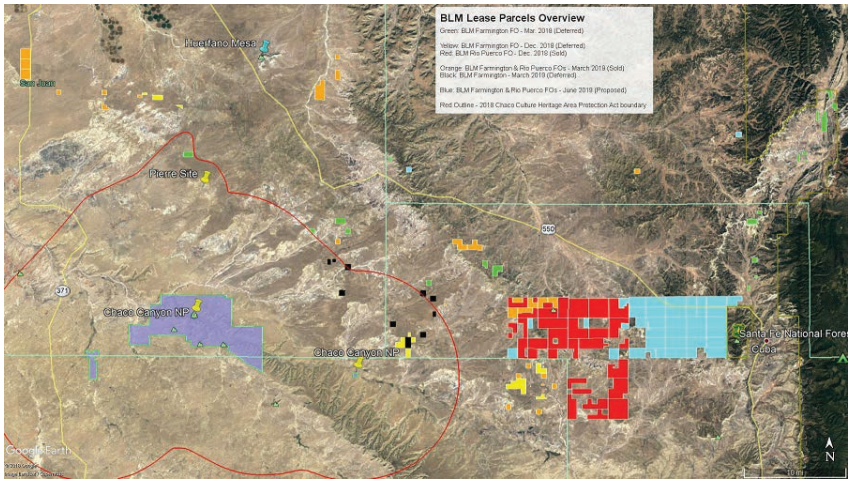
ATTACHMENT 1

"Map—BLM Lease Parcels Overview"



Mr. LOWENTHAL. Thank you, Governor Vallo.

Now the Chair recognizes Vice President Lizer for your testimony.

STATEMENT OF THE HON. MYRON LIZER, VICE PRESIDENT, NAVAJO NATION, WINDOW ROCK, ARIZONA

Mr. LIZER. [Speaking native language.] Good morning. Thank you, Chairman Lowenthal, Representative Grijalva, Representative Haaland, and Representative Luján. My name is Myron Lizer, and I am the Vice President of the Navajo Nation. I appreciate the opportunity to testify today at this field hearing on the impacts of oil and gas development for air pollution and sacred sites. The ability for the Navajo Nation to determine where oil and gas development occurs and the ability to regulate oil and gas development is fundamental to providing a clean environment and protecting Native American sites.

While oil and gas development on the Navajo Nation has provided royalties to the Navajo Nation for government services, we are also looking toward the future and alternative sources of energy to provide revenue for the Nation. Most importantly, Navajo Nation President Jonathan Nez and myself issued the Navajo Hayoolkáál Proclamation or the Navajo Sunrise Proclamation to

diversify the Navajo Nation energy portfolio from carbon-based energy to renewable energy development.

The Bureau of Land Management has postponed oil and gas lease sales near Chaco Canyon to allow for the further review of cultural impacts. With regard to BLM's development of a management plan for the area, the Navajo Nation supports the BLM's development of a sustainable management plan that would prevent Federal oil and gas extraction in a 10-mile radius, or Protection Zone, from the epicenter of the Chaco Cultural National Historical Park.

If there is increased oil and gas development in the Chaco region, there will be increased risk for disturbance of structures and artifacts. Waste from oil and gas extraction can further contaminate the region. Increased truck traffic as well as gas-powered machinery can also negatively impact air quality. Oil and gas development activities will also contribute to an increase in emissions such as particulate matter, methane, VOCs and other greenhouse gases. Over time, emissions can damage the sensitive structures and vulnerable cultural artifacts within the Chaco region.

The Navajo Nation Environmental Protection Agency, or NNEPA, has some of the most advanced tribal environmental programs in the country. The NNEPA holds primacy over air and water quality standards and conducts permitting for water programs. Under the proposed Navajo Nation Minor Source Permit Regulations, the Navajo Nation will provide air pollution permits for minor sources to help reduce methane and volatile organic compounds emissions. As proposed, minor sources must not emit more than 5 tons per year of VOCs in an attainment area.

Methane emissions not only have an economic impact but also have an impact on the environment. Methane is a greenhouse gas that contributes to climate change by increasing the atmospheric temperature. The Navajo Nation's proposed minor source rule will help reduce methane emissions by identifying oil and gas facilities on the Navajo Nation through a permitting process.

The Navajo Nation also fears that there will be an increase in the already high number of oil spills from broken pipes, particularly during the winter when pipes freeze and break. Given our limited resources, the remoteness of Chaco, and in some cases, authority, the Navajo Nation is severely limited to responding to spills. If a spill were to occur, we would have to call upon U.S. EPA, who then notifies its on-scene coordinator, who then oversees the process and shares information with us. In the past, our OSC representatives would come from California or Nevada, further delaying response times. While a spill eventually gets addressed, we have issues and concerns with response time and oversight given the limiting factors.

With that said, I also want to address uranium mining and make clear that we do not support development of any uranium mining. Uranium mining has been detrimental to the Navajo people for many decades, and I want to make sure that this does not harm any Navajo family again. Navajo law supports a moratorium on uranium mining and processing activity in Navajo Indian Country.

In summary, the Navajo Nation is looking to diversify its energy portfolio to provide clean energy to the Navajo Nation and the Western United States.

I appreciate the Committee's invitation to testify at this hearing on oil and gas impacts. Thank you.

[The prepared statement of Mr. Lizer follows:]

PREPARED STATEMENT OF MYRON LIZER, NAVAJO NATION VICE PRESIDENT

Thank you Chairman Lowenthal, Representative Grijalva, Representative Haaland, and Representative Luján. My name is Myron Lizer and I am the Vice President of the Navajo Nation. I appreciate the opportunity to testify today at this field hearing on the impacts of oil and gas development for air pollution and sacred sites. Oil and gas development has provided sustained income for the tribal government and provided jobs for the Navajo Nation, which has about 42 percent unemployment. In the past, the Navajo Nation has used its carbon-based natural resources to provide energy to the United States. However, the ability for the Navajo Nation to determine where oil and gas development occurs and the ability to regulate oil and gas development is fundamental to providing a clean environment and protecting Native American sacred sites.

While oil and gas development on the Navajo Nation has provided royalties to the Navajo Nation for government services and general funds, we are also looking toward the future and alternative sources of energy to provide revenue for the Nation. Most recently, Navajo Nation President Jonathan Nez and myself issued the "Navajo Hayoolkáál Proclamation" or the "Navajo Sunrise Proclamation" to diversify the Navajo Nation energy portfolio from carbon-based energy to renewable energy development, and to restore the environment, provide electricity to rural homes, and support new community and utility-scale renewable energy projects to provide power to the Navajo Nation and the Western United States. By setting this direction for the Navajo Nation, we look to be the leader in the clean energy market.

With regards to oil and gas development, we are sensitive to the location of these facilities near our sacred and cultural sites. This is dictated by our Navajo culture and tradition to respect our relatives who have come before us. This is the reason we continue to support the protection of the Chaco Canyon area from mineral mining and development and the long-awaited Chaco Cultural Heritage Area Protection Act that Senator Udall introduced.

Although we are not direct descendants of the pueblo who inhabited Chaco, our people have long settled in the area and many of our traditional stories are connected to the Chaco area and the surrounding region. As native people, we are connected to the land and it is important to preserve and protect the dwellings and the belongings of ancestral Native people from disturbance. This is not only a Navajo teaching but an acknowledgement of a way of life for all indigenous peoples.

The Bureau of Land Management (BLM) has postponed oil and gas lease sales near Chaco Canyon to allow for the further review of the cultural impacts. With regards to BLM's development of a management plan for the area, the Navajo Nation supports the BLM's development of a sustainable management plan that would prevent Federal oil and gas extraction in a 10-mile radius or Protection Zone from the epicenter of the Chaco Cultural National Historical Park.

If there is increased oil and gas development in the Chaco region there will be increased risk for disturbance of the structures and artifacts. Waste from oil and gas extraction can further contaminate the region. Increased truck traffic as well as gas powered machinery can also negatively impact air quality. Oil and gas development activities will also contribute to an increase in emissions such as particulate matter (PM), methane, VOCs and other greenhouse gases. Over time, emissions can damage the sensitive structures and vulnerable cultural artifacts within the Chaco region.

Ambient air quality on the Navajo Nation is classified by the U.S. Environmental Protection Agency (U.S. EPA) as attainment/unclassifiable of all monitored air pollutants except for a portion of Coconino County, Arizona located within 50-km of Navajo Generating Station, which has been designated unclassifiable with the 2010 SO_2 National Ambient Air Quality Standards (NAAQS). The NAAQS consists of six (6) criteria pollutants for which the Navajo Nation currently monitors four (4) of these criteria pollutants: particulate matter 2.5 ($PM_{2.5}$, or airborne particles 2.5 microns in diameter and smaller), ozone (O_3), sulfur dioxide (SO_2), and nitrogen dioxide (NO_2). In the case of the designated non-attainment area, the applicable threshold for a proposed source or modification is determined based on the

designation where the source is or would be located. If the source straddles the two areas, the more stringent thresholds apply.

The U.S. EPA regulates criteria pollutants using the NAAQS, which establish ambient levels for each criteria pollutant using health and welfare-based criteria. There are two series of standards. As per the CAA § 109(b), the "primary" standards are designed to provide an adequate margin of safety that is essential to protecting public health. The "secondary" standards are intended to protect public welfare from any known or anticipated adverse effects associated with the presence of a criteria pollutant in the ambient air. The primary standards protect public health and secondary standards protect public welfare by preventing damage to property such as farm crops and buildings, visibility impairment in national parks and wilderness areas, and the protection of ecosystems (U.S. EPA NAAQS Table).

The Navajo Nation Environmental Protection Agency (NNEPA) has some of the most advanced tribal environmental programs in the country. The NNEPA holds primacy over air and water quality standards and conducts permitting for water programs. The Nation has received delegation approval for a Part 71 Operating Permit Program (also known as Title V) from U.S. Environmental Protection Agency (EPA) Region IX on October 13, 2004 and March 21, 2006. This authority allows the NNEPA to administer a Title V air program under the Clean Air Act. Under this delegation, 14 major sources with potential to emit pollutants over 100 tons per year, are regulated.

The Navajo Nation has proposed a rule to establish a minor source permitting program under the Navajo Nation Clean Air Act. Under the proposed *Navajo Nation Minor Source Permit Regulations*, the Nation will provide air pollution permits for minor sources to help reduce methane and volatile organic compounds (VOCs) emissions. As proposed, minor sources must not emit more than 5 tpy (tons per year) of VOCs in an attainment area. Also, under the proposed rule, if the Navajo Nation were to become designated as non-attainment, the applicable threshold for a proposed source or modification will be determined based on the designation where the source is or would be located. If the source straddles the two areas, the more stringent thresholds would apply.

Methane emissions not only have an economic impact but also can have an impact on the environment. Methane is a greenhouse gas that contributes to climate change by increasing the atmospheric temperature. The Navajo Nation's proposed minor source rule will help reduce methane emissions by identifying oil and gas facilities on the Navajo Nation through a permitting process. Tracking oil and gas emissions from wells, monitoring the types of oil and gas wells and retaining location information of oil and gas wells will provide a foundation for future assessments and recommendations on reducing emissions, including planning for regulatory initiatives to further reduce emissions from applicable sources. The Navajo Nation then can provide recommendations to industrial sources such as oil and gas facilities, agriculture, and businesses and homes to lessen emissions.

The "Tribal Minor New Source Review Program for Indian Country", (76 Fed. Reg. 38784 (July 1, 2011), 40 C.F.R. §§ 49.151–161), currently regulates minor sources on the Navajo Nation. After the Navajo Nation issues its own Minor Source Program regulations, NNAQCP will seek to implement this program in place of the Federal Government. The NNAQCP implementation will give the Navajo Nation greater control over its air resources, and will allow the Navajo Nation to regulate emissions of air pollution that may impact the environment, public health and welfare, and cultural and religious resources. The proposed rule also would impose fees to cover the costs of administering the minor source program, including permit application, revision and renewal fees, annual emissions fees, fees for coverage under general permits, and registration fees.

On September 28, 2018, finalized the DOI BLM Waste Prevention, Production Subject to Royalties, and Resource Conservation rule for methane (83 Fed. Reg. 49184). The Navajo Nation provided comments on the proposed rule and requested tribal consultation.

The Navajo Nation also fears that there will be an increase in the already high number of oil spills from broken pipes, particularly during the winter when pipes freeze and break. Given our limited resources, remoteness of Chaco, and, in some cases, authority, the Navajo Nation is severely limited to responding to spills. If a spill were to occur, we would have to call upon U.S. EPA who then notifies its On-Scene Coordinator (OSC), who then oversees the process and shares information with us. In the past our OSC representatives would come from California or Nevada, further delaying response times. While a spill eventually gets addressed, we have issues and concerns with response time and oversight given the limiting factors.

With that said, I also want to address uranium mining and make clear that we do not support development of any uranium mining. Uranium mining has been detrimental to the Navajo people for many decades and I want to make sure that it does not harm any family again. Navajo law also supports a moratorium on uranium mining and processing activity in Navajo Indian Country.

In summary, the Navajo Nation is looking to diversify its energy portfolio to combat climate change and provide clean energy to the Navajo Nation and the Western United States. I appreciate the Committee's invitation to testify at this hearing on oil and gas impacts. Thank you.

Mr. LOWENTHAL. Thank you, Vice President.

The Chair now recognizes Chairman Nez to testify.

STATEMENT OF CHAIRMAN RICKIE NEZ, RESOURCES AND DEVELOPMENT COMMITTEE, NAVAJO NATION COUNCIL, WINDOW ROCK, ARIZONA

Mr. NEZ. Good morning. Thank you, Chair Lowenthal, Assistant Speaker Luján, Vice Chair Haaland, and also Mr. Grijalva. My name is Rickie Nez, and I am a council delegate on the Navajo Nation Council. I chair the Resources and Development Committee, which possesses oversight authority over the Nation's water, land, environmental protection, cultural resources, minerals, and economic development, among other areas.

I am Hooghanlání, born for Ozeii Táchii'nii. My cheiis, or maternal grandfathers, are Tsenabahilnii. My nalis, or paternal grandfathers, are Kinyaa'áanii.

Historically, the Navajo Nation has received substantial royalties from energy extraction on our lands, in addition to royalties paid to Navajo allottees. There are approximately 25,000 Navajo allottees.

The generous contributions of the oil, gas, and helium industries to the Nation's revenues has supported a sophisticated tribal government that provides substantial government resources for the benefit of its citizens, though the Nation has always recognized that due to the inherent environmental and safety risks involved with energy extraction, it is critical to balance drilling, fracking, and other forms of extraction with sensible regulations that prevent harm to our people and their traditional lifestyles.

The Navajo Nation is in the process of renewing a cooperative agreement with the Department of the Interior to continue the 100 percent funding of six oil and gas inspectors. The Navajo Nation stresses that it is important to keep the funding structure as a cooperative agreement and not a 638 contract.

Last year, the Navajo Nation received $32.4 million in oil, gas, and helium royalties. However, according to a study conducted by the Environmental Defense Fund, the volume of natural gas lost due to flaring or venting is worth $3.4 million and up to $895,000 in royalties. They also concluded that the amount of natural gas lost during the extraction process is 65 percent higher than the national average. With limited economic opportunity on the Navajo Nation and the closing of the two large economic engines on the Nation in the Navajo Generating Station and the Kayenta Mine, it is critical that this lost revenue be captured for the benefit of the Nation's general revenues and its allottees, the majority of which reside in the greater Chaco area.

Given the changes to BLM's methane rule, which would have increased the captured gases and the Navajo Nation's royalties, it is now incumbent upon the Nation to determine whether it will develop regulations that account for when the flaring of associated gas from oil wells will be royalty-free.

In evaluating their new SAFE vehicle rule, the EPA and DOT estimate that upstream carbon dioxide emissions from oil production, transportation, refining and distribution will increase by 159 million metric tons through model year 2029. The agencies did not examine the likely increase in methane emissions as a result of their rule.

If the government is enacting policies that will increase oil and gas production on Federal lands, whether they are tribal or adjacent to tribal lands, it is imperative that the Nation be able to capture lost revenue from any increased flaring or venting that may occur.

As the chairman of the Resources and Development Committee, I am neither committing nor desisting from pursuing regulations on natural gas flaring and venting on Navajo lands, though I am committing to investigating this issue over the course of my chairmanship.

Any increase in emissions near Chaco may create regional haze and smog, both of which may impact the health and the traditional lifestyles of many of our people.

With respect to the air and atmosphere of the Chaco area specifically, the region holds sacred significance for our people, and many traditional practitioners continue to use the area to this day. Many of our traditional stories and oral traditions rest in this region.

Without divulging too much detail, the entire Chaco region aligns with astronomical phenomena that are important to contemporary Navajo ceremonies and practices. Being able to see the solstices and equinoxes within certain areas or buildings unobstructed by haze or smog from gas or other emissions is critical to many of our people.

The inverse is also true. Many believe it is critical that certain deities or entities within the sky or heavens need to be able to observe the buildings in Chaco as well as the activities of our people.

In addition, our resources are important to our Navajo Nation. Please consider funding the water infrastructure master plan to bring water to every Navajo community.

Thank you very much for listening to my testimony, and may God bless you all.

[The prepared statement of Mr. Nez follows:]

PREPARED STATEMENT OF THE HONORABLE RICKIE NEZ, DELEGATE AND CHAIR OF THE 24TH NAVAJO NATION COUNCIL RESOURCES AND DEVELOPMENT COMMITTEE

Thank you Chair Grijalva, Assistant Speaker Luján, Vice Chair Haaland, and Subcommittee Chair Lowenthal. My name is Rickie Nez and I am a council delegate on the Navajo Nation Council. I chair the Council's Resources and Development Committee, which possesses oversight authority over the Nation's water, land, environmental protection, cultural resources, minerals, and economic development, among many other areas.

I am Hooghanlání, born for Ozeii Táchii'nii, my cheiis, or maternal grandfathers are Tsenabahilnii, and my nalis, or paternal grandfathers are Kinyaa'áanii.

Historically, the Navajo Nation has received substantial royalties from energy extraction on our lands in addition to royalties paid to Navajo allottees. There are approximately 25,000 Navajo allottees.

The generous contributions of the oil, gas, and helium industries to the Nation's revenues has supported a sophisticated tribal government that provides substantial government resources for the benefit of its citizens.

Though, the Nation has always recognized that due to the inherent environmental and safety risks involved with energy extraction, it is critical to balance drilling, fracking, and other forms of extraction with sensible regulations that prevent harm to our people and their traditional lifestyles.

The Navajo Nation is in the process of renewing a cooperative agreement with the Department of the Interior to continue the 100 percent funding of six oil and gas inspectors. The Navajo Nation stresses that it is important to keep the funding structure as a cooperative agreement and not a "638 contract."

Oil and gas inspectors are responsible for checking inactive wells. When wells are no longer capable of producing commercial quantities, they are permanently plugged by the operator. Inspectors will inform the operator if plugs are not plugged, and they may be fined if delays in the plugs occur or the operator fails to plug a well. Inactive wells that are not permanently plugged are still isolated from the atmosphere by casing, tubing, closed valves, and need to also be routinely inspected.

Additionally, regulations can have the effect of increasing government revenue.

Last year, the Navajo Nation received $32.4 million in oil, gas, and helium royalties. However, according to a study conducted by the Environmental Defense Fund, the volume of natural gas lost due to flaring or venting is worth $3.4 million and up to $895,000 in royalties. They also concluded that the amount of natural gas lost during the extraction process is 65 percent higher than the national average.

With limited economic opportunity on the Nation and the closing of two large economic engines on the Nation in Navajo Generating Station and the Kayenta Mine, it is critical that this lost revenue be captured for the benefit of the Nation's general revenues and its allottees, the majority of which reside in the greater Chaco area.

Given the changes to BLM's methane rule, which would have increased the captured gases and the Navajo Nation's royalties, it is now incumbent upon the Nation to determine whether it will develop regulations that account for when the flaring of associated gas from oil wells will be royalty-free.

In evaluating their new SAFE vehicle rule, the EPA and DOT estimate that upstream carbon dioxide emissions from oil production, transportation, refining, and distribution will increase by 159 million metric tons through model year 2029. The agencies did not examine the likely increase in methane emissions as a result of their rule.

If the government is enacting policies that will increase oil and gas production on Federal lands, whether they are tribal or adjacent to tribal lands, it is imperative that the Nation be able to capture lost revenue from any increased flaring or venting that may occur.

As the chairman of the Council's Resources and Development Committee, I am neither committing, nor desisting from pursuing regulations on natural gas flaring and venting on Navajo lands. Though, I am committing to investigating this issue over the course of my chairmanship.

Any increase in emissions near Chaco may create regional haze and smog, both of which may impact the health and the traditional lifestyles of many of our people.

With respect to the air and atmosphere of the Chaco area specifically, the region holds sacred significance for our people and many traditional practitioners continue to use the area to this day.

Many of our traditional stories and oral tradition rest in this region.

Without divulging too much detail, the entire Chaco region aligns with astronomical phenomena that are important to contemporary Navajo ceremonies and practices.

Being able to see the solstices and equinoxes within certain areas or buildings unobstructed by haze or smog from gas or other emissions is critical to many of our people.

Moreover, the ability to assess astronomical phenomena in the night sky without obfuscation from light pollution is another concern. The same concerns apply to sunrises and sunsets.

The inverse is also true. Many believe it is critical that certain deities or entities within the sky or heavens need to be able to observe the buildings in Chaco as well the activities of our people.

I thank you for listening to my testimony regarding the careful balance the Navajo Nation and Federal Government must strike in the protection of greater Chaco and the economic sustenance of our government and its people.

Mr. LOWENTHAL. Thank you, Chairman Nez.

I thank the panel for their testimony, and I want to remind the members of our Committee of Rule 3(e) that imposes approximately a 5-minute limit on questions.

I am now going to recognize Members for any questions they may wish to ask the witnesses.

I am going to recognize Representative Haaland for our first set of questions.

Ms. HAALAND. Thank you, Chairman.

And thank you, Governor, Vice Chairman, Vice President, and Chairman, for being here today, for taking time out of your busy schedules to join us. We are very grateful for an opportunity to share this day with you.

Over the last several days, we have gotten a lot of testimony from stakeholders in the region, the environmental justice folks that we met with on Saturday evening, and yesterday a meeting with members of the Navajo Nation community, folks who are concerned about the impact of gas and oil development on the land, and I realize that we are in a different era than we used to be.

I am a member of Laguna Pueblo, and we had a bartering economy until the early 1950s, when the uranium mine, the Jackpile Mine opened in Laguna, and it was home to the largest open-pit mine in the world, and we are still feeling the effects of that on our people.

It is difficult, I think, for Indian people, especially when in the 1950s I had to surmise that in our tribal government a lot of people didn't speak English. Keresan is our first language. So, when those deals were happening, when the mining company came to Laguna and said we want to open this mine on your land and everybody will have money and it will be a great thing, were we able to ask the right questions of those companies due to the language barrier? To me, that is a major thing when you are dealing with issues between Indian tribes and industries.

So, in hindsight, would we have allowed the largest uranium mine to open on Laguna? I think that people would think twice about that. I think aside from the fact that we paid dearly in social issues and in our environment because of the blasting, people's ancestral homes cracking apart every time there was a blast at the mine, those are things that we can never get back. People can't get back their great-grandmother's home after it was demolished for mining, and people who had to essentially abandon their homes and have a new home built because there were traces of uranium in it, we can't get those things back.

And I am feeling the same way about what is happening right now with our gas and oil production. It is so much easier to destroy something than it is to build it back up, right? You can cut down a tree that has grown for 500 years, but none of us are going to be around to see the next tree grow. And I feel like that is what is happening right now.

I don't want any New Mexican to go without an opportunity to support their families. That is extremely important to me. I know what it is like to be poor. I know what it is like for people around me to be poor. I know what it is like for people to essentially abandon their life and culture because they have to make a hard decision: I need to go work somewhere else, I can't stay here because I have to go support my family and give my family opportunities. That is a difficult decision that happened to a lot of us. My grandparents moved to Arizona to work on the railroad and had to leave some things behind. It is hard to get back those things once they are out of your grasp.

So, I want you to know, Chairman, that we care deeply about the Navajo people having opportunities to make a living. But I also feel that the health effects that this industry is having on people's health, you can't get that back many times either. Yesterday, in a hearing or a presentation that we had at the Chaco Canyon Visitors Center, there was a man with an inhaler. Those are real effects that happen to people, and they start when the kids are very young because they are breathing that air all the time.

I would love for us to explore other ways for folks to make a living. I don't know if renewable energy has even been explored on some of this land where people could find ways to support their families.

And I apologize. I took up my entire 5 minutes without asking a question.

[Laughter.]

Ms. HAALAND. But I will leave it to my colleagues to ask the questions, because we have all experienced what we have experienced the last 3 days, and I just thank you all for being here and being a voice for the people.

[Applause.]

Mr. LOWENTHAL. Thank you, Representative Haaland.

I now recognize Representative Luján for 5 minutes of questions.

Mr. LUJÁN. Thank you, Mr. Chairman. I thank Chairwoman Haaland for her testimony as well, an important statement, and associate myself with her remarks.

To the panel, I have some questions pursuant to the legislation.

Vice Chairman Chavarria, in your testimony, you eloquently described the importance of protecting Chaco. One of the challenges that we have with our colleagues when we have debates about protecting sacred sites, especially those that do not have the honor of representing Pueblo leaders, tribal leaders, people, we help them understand that this is a place where loved ones have been laid to rest, where ancestors have been laid to rest that should not be desecrated, the same way that a parent or a loved one of one of our colleagues, that they would not want someone desecrating that place of significance to them.

But it is much more than a place where loved ones have been laid to rest. This is the land below and above, the medicine chest that is in these sacred areas, the prayer.

Can you talk about the importance again of whether you support or do not support—and I think I heard you say it in your testimony, you do support—the legislation that I introduced with our

colleagues, the Chaco Cultural Heritage Protection Act? Do you support that legislation?

Mr. CHAVARRIA. Chairman, members of the Committee, yes, I do.

Mr. LUJÁN. Governor Vallo, do you support that legislation?

Mr. VALLO. Thank you for your question, Chairman. Yes, we do.

Mr. LUJÁN. Vice President Lizer, do you support the Chaco Cultural Heritage Protection Act?

Mr. LIZER. Yes, sir. We do.

Mr. LUJÁN. Chairman Nez, do you support the legislation?

Mr. NEZ. Yes, sir.

Mr. LUJÁN. I appreciate that. I think it is important that as we talk about the broad support that we have for this legislation and the power of the support behind it, it matters so very much.

What we saw yesterday was not just emotional to everyone that was there to be able to touch those stones and that mortar, but to leaders back in 800 or 850. You felt the power of that. But before that visit, as we traveled, I talked about what we saw, not just what we could smell.

Can you also talk about the concern that you have with what methane emissions are doing to our people, to our health, and to our communities, Governor Chavarria?

Mr. CHAVARRIA. Yes, Chairman, members of the Committee. That is very essential, because Chaco Canyon is our spiritual sanctuary. It is a place of worship. It is a church. It is a place that we consider and hold dear to our hearts. If the environmental impacts are associated with the emissions, it impacts all of us. It impacts all lives. It impacts the plants that we use for medicines. It impacts what we consume from our grocery store.

So, all this is very critical, working together, and to understand that the Federal Government has a unique legal obligation and relationship working with tribes, the Pueblos across the country.

These various laws and statutes that are out there, you will understand that Section 106 does not satisfy at all. In other words, once you disturb an area, you cannot recreate it. You cannot restore it. You cannot replicate it to another place. Therefore, it is incorrect to think that mitigation can occur later on through that 106 process.

This is why meaningful consultation is important, as required by the statute, to understand that we are at the table talking about the environmental, the health impacts, the cultural resource impacts that it has, because even though it is abandoned, it is not abandoned to us. It is a life site. It is a place that we go and visit and deal with it today.

It does not impact just the human. It impacts the animals. It impacts the environment. So, there has to be additional analysis to occur to use that data to show that there are these type of impacts occurring on a day-to-day basis.

So, Chairman and members of the Committee, we fully support and work together. We have to work together as a partner and collaborate on these issues going forward because of scientific data, but also the traditional ecological knowledge, the knowledge that we have is very important. We want to work with you and combine those two efforts into one study.

Mr. LUJÁN. And with one of the concerns that we have with meaningful consultation, do you feel, yes or no—and I will ask each of the panelists—that meaningful consultation is currently taking place around Chaco from the Trump administration?

Governor Chavarria?

Mr. CHAVARRIA. No, it is not.

Mr. LUJÁN. Governor Vallo?

Mr. VALLO. No, it is not.

Mr. LUJÁN. Vice President Lizer?

Mr. LIZER. No, sir.

Mr. LUJÁN. Chairman Nez?

Mr. NEZ. No, sir.

Mr. LUJÁN. I appreciate that.

I yield back.

Mr. LOWENTHAL. Thank you, Representative Luján.

I now recognize Chairman Grijalva for 5 minutes of questions.

Mr. GRIJALVA. Thank you, Mr. Chairman.

With regard to the Chaco Protection Act, it is something that all of you gentlemen indicated you support, as all of us on the dais support.

Just an interesting footnote. Congress and the President signed the major lands package that was finished in January. Within that package was the Yellowstone Gateway Protection Act. Because of encroachment of development and extraction industries around Yellowstone, there was a sense—and this was sponsored by Republican colleagues that represent that general area—that a buffer needed to be created around Yellowstone to preserve those natural resources for generations in the future.

And I would certainly suggest that the Chaco Protection Act and Chaco Canyon itself and what we saw and experienced yesterday rises to that level, in my estimation above that level in terms of applying the same principle of buffer zone to protect and assure that that protection is long-lasting. I mention that as a footnote.

[Applause.]

Mr. GRIJALVA. And following up, if I may, on what Mr. Luján said about consultation, the present responsibility is very important, and I am not sure that every Member of Congress understands the importance of the responsibility that we have as Members of Congress to carry out that trust responsibility, to deal with the important issue of sovereignty and the self-determination that Native nations have, and to do so as co-equals.

I want to mention that I think part of the effort that I learned and have been learning from the experiences, that everything from the National Historic Preservation Act, NEPA, Sacred Sites legislation that is on the books, cultural and historic preservation and protection, that those are all part and parcel of an agenda to strengthen, to codify into law what consultation means to Native nations so that we are all working off a blueprint and a checklist so that issues do not become subjective or arbitrary when we say that we have consulted with a nation.

Certainly, the consultations should be required and demanded relative to the impacts that happen around that Canyon. I want to thank all of you for the input that you have had in that.

I just want to ask—and let me begin with you, Mr. Vice Chairman, if you do not mind—about the point I just made, the accumulation of laws that need to be strengthened and the possibility of codifying into Federal law what this trust responsibility means in terms of consultation.

Mr. CHAVARRIA. Chairman, members of the Committee, meaningful consultation requires a dialogue with tribal partners occurring with a far-reaching consensus. Consultation must mean more than merely checking off that box and categorizing and objecting to tribal nations. Other agencies have that responsibility to sit down with tribes, engage in meaningful dialogue, and seek to reach agreement on key issues.

Too often, agencies determine tribal consensus can merely be mitigated without reaching an agreement with tribes. The goal of sitting down at the table together should be mutual understanding and agreement. Otherwise, consultation is not meaningful. So, it is interpreted across the various agencies—OK, this agency does it this way, this agency does it this way. There has to be an operating procedure, a step-by-step process, a standard that each agency should follow. When you meet with the Forest Service, the Park Service, BLM, EPA, they all take consultation from a different angle. But for us, it is sitting down at the table to reach consensus, to talk about the issues and the concerns that we have.

Now they are doing streamlining, streamlining a lot of these laws for the benefit of going faster. For us, it is not going faster. For us, it is asking for ethnographic studies, these cultural studies, because they won't know what the traditional knowledge is contained with our Pueblos and tribes. They have that knowledge of what that landscape, what that resource was used for, religion or traditions in our culture that we still utilize today. And if you impact it, it is not just going to impact us. It is going to impact the whole environment, including the world for all our peoples. This is why climate change comes into play.

So, Chairman, members of the Committee, it is very essential that I feel meaningful consultation has to be addressed as the standard operating procedure across all Federal agencies to use that same step, and I don't know if we do that through litigation or how that works within the Federal agencies, those secretaries. That is critical, because if we don't do that, we are going to be all going at different angles to reach consensus.

Mr. GRIJALVA. Thank you, and I yield back.

[Applause.]

Mr. LOWENTHAL. I would like to continue on with the questions, that line, and the answers that the Vice Chair Chavarria has given. I want to ask the other members of the panel, give them an opportunity. I will frame it a little differently, but I think it is very similar to the way the Vice Chairman has answered. So, this is for any or all members of the panel to respond.

When we are discussing leasing in the Chaco region, the oil and gas industry often will say, well, there are already laws and regulations in place to ensure that specific artifacts are protected from development. My question to you is, do these protections really cover the reasons why the region is so sacred to the Pueblo people

and to the Navajo people? The regs on the books, do they really cover why it is so important to you and to your people?

Mr. VALLO. Chairman Lowenthal, thank you for the question. They do not, quite simply. And, unfortunately, that is the situation that we have, that these sacred landscapes, these cultural landscapes are vast and, as I indicated earlier, range from archaeological remnants to natural features on the landscape, and oftentimes those are not protected under current law.

We have had a history of consultation that maybe peaked, I would say, during the passage of the Native American Graves Protection and Repatriation Act, when for the first time in this country's history we had a mandate for consultation on the return or repatriation of human remains and associated objects, many of which came from Chaco, along with cultural patrimony. And while that mandate for consultation was well-intended, even today we have institutions and Federal agencies who are still approaching consultation by one attempt, making one attempt, and with no response maybe from a tribe, checking the consultation box.

So, when we are in this time—and I mentioned this yesterday, that 28 years ago I served in tribal government, and we were having these similar conversations around Chaco Canyon. It was not formal consultation. However, the same messaging was coming across quite strongly by tribal government representatives.

If we are to meet this idea of meaningful consultation on these issues surrounding the protection of our archaeological resources, our cultural landscapes, there must be some guidelines or some very basic principles for this to happen within the Federal construct, from levels like this Committee to those individuals who are working in the various agencies who have that responsibility to have direct contact with tribal experts.

That needs to be established, and our tribal communities and tribal organizations like the All Pueblo Council of Governors have been working very hard, have been voicing this for many, many years. And until we can convince the Congress and convince the President, or a president, another president who comes in, who are willing to work with us to achieve that, we might not ever reach meaningful consultation.

So, I would encourage the Committee to be that voice on our behalf to ensure that we have the opportunity to come together at the same table and discuss how and what does that framework for meaningful consultation look like. Thank you.

[Applause.]

Mr. LOWENTHAL. Thank you.

I would like to give an opportunity now to ask each of the other Members, but I am going to come back because what I would like to do is to ask—not a requirement—is there one question that the members of the Committee or who are sitting here on the dais would like to ask? Is there any one question that we have not really asked that you would like to ask?

I am going to start with Representative Haaland.

Ms. HAALAND. Thank you, Chairman. I mean, there are a lot of questions. I will yield.

Mr. LOWENTHAL. Thank you.

I think we have all been touched by your testimony here, so I don't think I need to ask another question, and I am going to get back to you, Chairman Nez. But is there something that you would like to add, Representative Luján?

Mr. LUJÁN. Chairman, I would like to add that I failed to include earlier that for those that may still be opposed to this legislation that we are talking about, this should not be controversial. All that we are saying is that we want to codify the long-standing BLM practice to not lease within 10 miles and to protect the remaining Chaco ruins and landscape nearest the existing park.

[Applause.]

Mr. LUJÁN. I am hopeful that with the testimony that you have gotten, that that is something that we can make abundantly clear as we continue to seek support for this legislation, and I yield back.

Mr. LOWENTHAL. Thank you.

And now I ask Chairman Grijalva, is there any one thing that you would like to add or ask a question?

Mr. GRIJALVA. No, just my appreciation, Mr. Chairman. The question about consultation was particularly important. I think it is the one issue which we collectively as Members of Congress, certainly as the Resources Committee, have to really do something significant with. I represent the Ocha people, and their Vice Chairman, Mr. Vernon Jose, once told me, yes, they call us to the table, but everybody has already eaten by the time we get there.

[Laughter.]

Mr. GRIJALVA. So, message understood. Thank you very much.

Mr. LOWENTHAL. Thank you, Mr. Chairman.

And now I want to continue the same question to Vice President Lizer and to Chairman Nez. I will give you both an opportunity to respond.

The question is the oil and gas industry says, hey, we already have regulations that really respect and cover the reasons why this land is so sacred to both the Pueblo people and to the Navajo people. What is your response to that? Do we have the regulations in place that really do protect and really respond to the issues that you have raised?

I am going to ask Vice President Lizer first, and then Chairman Nez, to respond.

Mr. LIZER. Thank you, Chairman Lowenthal. As a Vice President, I am a former businessman, so I have always toiled with that question. How much is too much, you know? With regard to greed. I think the general notion out there is that business people and corporations are in it for greed. Again, as a compassionate capitalist, I have always toiled with that question, so there is a tension there.

As the Vice President, though, speaking toward the question about this consultation, having been to Washington, DC three times in 3 months, I will tell you, just the need to be out there front and center with our decision makers and those people that make decisions for us, we are challenged again, and this is an open forum here in which to address that very question.

Yes, we would like to be consulted on an issue-by-issue basis. One time for all time is not good enough. It is needed to address, as you know, our situation as it evolves, as issues evolve. So, direct

consultation with our Indian, our First Nations people, could go a long way to helping our relationship, but it also helps us address present needs.

When you asked about this accumulation of laws that need to be strengthened, I say yes, they need to be strengthened, but with Native American or First Nations input, by all means. This meaningful consultation, this dialogue that we are looking for is to arrive at a consensus with all concerned. There is safety in the counsel of many, I do believe. When you include everyone at the table, we can arrive at a consensus, and that is really, I believe, what we are talking about.

If our current administration would agree, we win, is what we need to be aiming for, and I believe that we can arrive at a win-win.

So, as we look at reviewing the way things are going right now, our First Nations people are, I believe, rising up, not to create havoc, but rising up as far as voice, and rising up for the need for participation.

I will tell you what, our First Nations people, if America ever does come into another conflict again, we will be the first ones in droves to sign up, come alongside our United States of America. Thank you.

Mr. LOWENTHAL. Thank you.

I am going to use my prerogative to go over a little bit because, Chairman Nez, you need to make a final statement also about this issue. Do we have adequate protections now? The oil and gas companies say we already have the laws.

Mr. NEZ. Sir, may I stand, please?

Mr. LOWENTHAL. Yes.

Mr. NEZ. [Speaking native language.] Thank you very much, my leaders.

Any laws and regulations that are in place still do not protect my people, the Navajo people, the Pueblo people, the greater Chaco area. You have the power as lawmakers. You have the shield on your left hand to protect my people and the Pueblo people. You have on your right hand the spear, the tool to change laws and to fight for our people in the greater Chaco area. Thank you very much.

[Applause.]

Mr. LOWENTHAL. That concludes this panel. We wish to thank you all for your wonderful presentations.

I would like to invite the third panel to take their seats.

Our first witness will be Ms. Sarah Cottrell Propst, the Cabinet Secretary for the New Mexico Energy, Minerals, and Natural Resources Department. Our second witness is Mr. Don Schreiber who is a rancher in the San Juan Basin. Our third witness is Mr. Paul Reed, a Preservation Archaeologist with Archaeology Southwest. And our final witness on this panel is Ms. Kendra Pinto, a member of the Counselor Chapter of the Navajo Nation.

Welcome.

I will now recognize Secretary Propst for 5 minutes of testimony.

Welcome to our Committee.

STATEMENT OF SARAH COTTRELL PROPST, CABINET SECRETARY, NEW MEXICO ENERGY, MINERALS, AND NATURAL RESOURCES DEPARTMENT, SANTA FE, NEW MEXICO

Ms. COTTRELL PROPST. Good morning, Mr. Chairman and members of the Committee. I am Sarah Cottrell Propst, Cabinet Secretary of the New Mexico Energy, Minerals, and Natural Resources Department (EMNRD).

Thank you for this opportunity to speak about the oil production boom in the Permian Basin and its consequences for our department's regulatory activities.

I will focus on our department's regulatory oversight, actions we are taking to minimize methane emissions that contribute to global climate change, and the importance of our working relationship with Federal agencies.

EMNRD includes several divisions: the Oil Conservation Division, or OCD; Mining and Minerals; State Parks; State Forestry; and Energy Conservation and Management.

New Mexico has a long oil and gas production history, starting in the 1920s. The state's two major basins are the San Juan Basin, which is predominantly a natural gas production basin located in the northwest, and the Delaware Basin, part of the Permian, an oil production region in the southeast portion of the state.

New Mexico also has a long history of regulating the oil and gas industry. The state's 1935 Oil and Gas Act focused on the conservation of oil and gas resources and the prevention of waste. The Act has been expanded over the years to protect public health, the environment, and fresh water, through the OCC and the OCD. Today, the division oversees more than 64,000 wells and over 5,800 environmental clean-up cases. The OCD regulates the life span of an oil and gas project from the initial application to drill and to form a spacing and pooling unit to the operation of the well and related facilities, and finally to the plugging and closure.

Today, the Permian Basin is the largest oil production area in the United States. New Mexico oil production has increased 400 percent in the past decade, making our state the third-highest oil producing state. The gross value of oil production in New Mexico exceeds $1.5 billion a month, and these dramatic increases are largely the result of shale development through horizontal drilling and hydraulic fracturing.

This boom presents challenges for our Oil Conservation Division. We are doing more with less. Our budget was reduced by 44 percent from Fiscal Year 2015 to Fiscal Year 2018, and during that same period applications for permits to drill increased from 408 in Fiscal Year 2015 to 1,821 in Fiscal Year 2018. Due largely to competition with the industry, the OCD has a more than 40 percent vacancy rate on staff. Compounding matters, the OCD operates under outdated technological services.

In the face of these challenges, however, we see opportunities. We are evaluating recruitment strategies and how we can reorganize staffing to be more efficient. The Governor signed two important bills in the 2019 legislative session, as she mentioned in her testimony.

Senate Bill 553 received widespread industry support. It establishes a fee schedule that creates a non-reverting fund which allows the OCD to initiate multi-year projects to modernize its technological and business systems.

House Bill 546 establishes an administrative enforcement process and also clarifies the regulation of produced water.

In January, as Governor Lujan Grisham testified, she issued a very important executive order, "Addressing Climate Change and Energy Waste Prevention." The executive order notes that methane is a potent greenhouse gas, and that the oil and gas industry is the largest industrial source of methane emissions. The Governor directed our department and the New Mexico Environment Department to develop a statewide regulatory framework to reduce oil and gas methane emissions and to prevent waste from new and existing sources.

Our first action was to initiate a review by STRONGER, the State Review of Oil and Natural Gas Regulations, and that process will engage diverse stakeholders to develop a report by August 1 that identifies program strengths and regulatory gaps, and potential improvements.

Oil and gas development in New Mexico occurs across Federal, state, tribal, and privately-owned lands and mineral rights. To regulate oil and gas activities and their impacts requires coordination among the various regulatory bodies and land management agencies. For our agency, a strong relationship with the U.S. Bureau of Land Management is essential. While our conservation laws apply to Federal, non-tribal land, the BLM oversees various aspects of oil and gas development on Federal land, from leasing to drilling to plugging. We coordinate with the BLM to avoid overlap and duplication.

Looking ahead, we will responsibly regulate and effectively regulate oil and gas activities in New Mexico. We will maintain our strong relationship with the BLM and other state and Federal offices and tribal partners to avoid overlap and duplication.

Mr. Chairman and members of the Committee, again, thank you for this opportunity to share the New Mexico Energy, Minerals, and Natural Resources Department's perspective on the impacts of oil and gas development in our state. Thank you.

[The prepared statement of Ms. Cottrell Propst follows:]

PREPARED STATEMENT OF SARAH COTTRELL PROPST, CABINET SECRETARY, NEW MEXICO ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

Good morning, Mr. Chairman and members of the Committee. Thank you for inviting the New Mexico Energy, Minerals and Natural Resources Department to testify today. I am Sarah Cottrell Propst, Cabinet Secretary of the New Mexico Energy, Minerals and Natural Resources Department.

Today I will speak about the boom in oil production in the Permian Basin and its consequences for our department and our regulatory responsibilities. I will focus on our department's regulatory oversight, actions we're taking to minimize methane emissions that contribute to global climate change, and the importance of our working relationship with Federal agencies.

The Energy, Minerals and Natural Resources Department (EMNRD) includes the Oil Conservation Division (OCD), the Mining and Minerals Division, State Parks Division, State Forestry Division and the Energy Conservation and Management Division.

New Mexico has a long and distinguished oil and gas production history. Major oil and gas production began in the 1920s and has continued through today. The

two major basins in New Mexico are the San Juan Basin, which is predominantly a natural gas-production region located in the northwest section of the state, and the Delaware Basin—which is part of the Permian Basin—which is predominantly an oil-production region located in the southeast portion of the state.

New Mexico has also had a long history of regulating the oil and gas industry. The state's 1935 Oil & Gas Act created the Oil Conservation Commission (OCC) and focused on the conservation of the oil and gas resources. The primary goals of the original Act, which remain today, are the prevention of waste and the protection of correlative rights. The Act has been expanded over the years to include the regulation of oil and gas facilities by the OCC and OCD to protect public health, the environment and fresh water supplies.

Today, EMNRD's Oil Conservation Division oversees more than 64,000 wells and over 5,800 environmental cleanup cases. The OCD regulates the life span of an oil and gas project from the initial application to drill and to form a spacing and pooling unit to the operation of the well and related facilities and finally to the plugging and closure of the well. Along the way, the OCD requires financial assurance for the closure of the well and oversees any necessary cleanup of contamination at the facilities.

Today, the Permian Basin that stretches under southeastern New Mexico and into Texas is now the largest oil producing area in the United States. New Mexico oil production has increased by 400 percent in the past 10 years, making our state the 3rd-highest oil producing state behind Texas and North Dakota. The gross value of oil production in New Mexico now exceeds $1.5 billion each month. These dramatic increases are largely the result of shale development through horizontal drilling and hydraulic fracturing.

Such a boom presents challenges for EMNRD's Oil Conservation Division. While the boom dramatically increased our workload, our budget was reduced by 44 percent between FY 2015 and FY 2018. We have 66 full-time positions for FY 2019. Because of the budget cuts and the unprecedented growth in the oil and gas industry in New Mexico, the OCD must do more with less. Applications for permits to drill, or APDs, increased from 408 in FY 2015 to 1,821 in FY 2018. Administrative hearing cases for the approval of various types of wells and for compulsory pooling increased from 271 in FY 2013 to 1,502 in FY 2018. Due in large part to competition with the industry in recruiting and retaining staff, the OCD has over a 40 percent vacancy rate today. Compounding matters, the OCD operates under outdated technological services which slow permit application and order processing, data collection, data organization, and data sharing.

In the face of these challenges, we see opportunities. We are evaluating recruitment strategies and how we can reorganize staffing to be more efficient. We promoted, and the Governor signed, several important bills in the 2019 state legislative session:

- SB 553, "Oil Conservation Commission Fees," was introduced at the Governor's request to establish a fee schedule at the OCD and received widespread industry support. The law establishes a fees schedule that largely mirrors the fees schedule in Texas and creates a non-reverting Oil Conservation Division Systems and Hearings Fund that allows the OCD to initiate multi-year projects to modernize its technological and business systems. Specific projects could include updating OCD online to allow all applications to be submitted electronically, updating OCD's public information server to allow greater transparency to industry and the public, and developing a case management system for administrative hearings.
- HB 546 which combined two pieces of legislation: one to establish an administrative enforcement process and the other to clarify the regulation of produced water, including the emerging efforts to recycle and treat produced water for potential reuse.
- EMNRD also received funding for several new positions in OCD to help manage the increased workload.

In January 2019, Governor Michelle Lujan Grisham issued Executive Order 2019–003 Addressing Climate Change and Energy Waste Prevention ("Executive Order"). The Executive Order notes that methane is a potent greenhouse gas, the oil and gas industry is the largest industrial source of methane emissions, and that venting and flaring volumes have increased significantly in recent years. The Governor directed EMNRD and the New Mexico Environment Department (NMED) to jointly develop a statewide, enforceable regulatory framework to secure reductions in oil and gas sector methane emissions and to prevent waste from new and existing sources and enact such rules as soon as practicable.

In response to the Executive Order, earlier this month EMNRD and NMED sent a letter to State Review of Oil and Natural Gas Environmental Regulations (STRONGER) requesting a review of our existing oil and natural gas regulations. STRONGER's review process engages a diverse group of stakeholders that includes representatives from the Federal Government, state government, tribal nations, environmental organizations, and oil and gas operators. This group will review NMED's and EMNRD's oil and gas environmental regulatory program and develop a report by August 1, 2019 that identifies program strengths and regulatory gaps. The review team will also develop recommendations for addressing any potential regulatory gaps and potential program improvements.

Oil and gas development in New Mexico occurs across a checkerboard pattern of Federal, state, tribal, and privately owned lands and mineral rights. To effectively regulate the oil and gas activities and their impacts requires coordination among the various state, Federal, and tribal government entities including both regulatory bodies and land management agencies. For our agency, a strong relationship with the U.S. Department of the Interior's Bureau of Land Management (BLM) has been essential. While our conservation laws apply to Federal, non-tribal land, the BLM oversees various aspects of oil and gas development on Federal land from the leasing to drilling to plugging. We coordinate with the BLM to avoid overlap and duplication.

We also coordinate with the New Mexico State Land Office which oversees over 9 million surface acres and over 13 million mineral rights acres that are held in trust for various beneficiaries including the public school system and the public universities. The Land Office oversees the leasing of its lands and coordinates with our agency on compliance and plugging of wells.

Looking ahead, we will responsibly and effectively regulate oil and gas activities in New Mexico. We will maintain our strong relationship with the BLM, State Land Office, and tribal partners in this work to avoid overlap and duplication. And we will continue our efforts to reduce wasteful methane emissions.

Mr. Chairman and members of the Committee, thank you for this opportunity to share the New Mexico Energy, Minerals and Natural Resources Department's perspective on the impacts of oil and gas development in our state.

QUESTIONS SUBMITTED FOR THE RECORD BY REP. LOWENTHAL TO SECRETARY SARAH COTTRELL PROPST

Question 1. How many orphaned oil and gas wells are in New Mexico, and how are they divided between Federal, state, and private land? How does New Mexico deal with and pay for proper abandonment of these wells?

Answer. With the development of oil and gas in New Mexico starting around 100 years ago, abandoned wells is something that EMNRD must deal with. A well plugging program is mandated by the legislature and each year the OCD exceeds the number of wells it is required to plug. The need for well plugging by the state is minimized by a strong inactive well program. OCD tracks wells that no longer produce and requires the wells to be permanently plugged or temporarily plugged along with increased financial assurance. As a result, the number of wells plugged greatly exceeds the number the state must plug each year. Last year we were required to plug 27 wells and plugged 60, this year we are required to plug 50 and our goal is to exceed that target. Right now, the current list of inactive wells fluctuates between 1,500 and 2,000. Total OCD budget for FY 2020 $11,522,100 vs FY 2019 of $8,001,000. The budget for plugging and reclamation for FY 2020 is $4,650,000 vs FY 2019 of $2,050,000.

Question 2. For 2017 and 2018, what was the average amount of time and the median amount of time it took for the Oil Conservation Division (OCD) to approve an oil and gas application for permit to drill (APD) in New Mexico?

Answer. EMNRD's Oil Conservation Division (OCD) turns around APDs in approximately 10 days on average.

Question 3. What is the current backlog of oil and gas APDs pending before the New Mexico Oil Conservation Division? How has this backlog changed over the past 5 years?

Answer. Because our APD turnaround time is about 10 days, there is little backlog. This precedent was set in the prior governor's administration. Our challenge is to maintain timely APD review processes while ensuring that environmental oversight is strong. During the last 5 years, while OCD has generally kept up with the rise in APDs, the number of inspections has declined significantly.

Mr. LOWENTHAL. Thank you, Secretary Cottrell Propst.

I now recognize Mr. Schreiber for 5 minutes.

STATEMENT OF DON SCHREIBER, RANCHER, RIO ARRIBA COUNTY, NEW MEXICO

Mr. SCHREIBER. Mr. Chairman, members of the Committee, if someone were to announce that they were going to come onto our ranch with the intent to harm one of us, a child, a grandchild, my reaction would be the same as I believe yours would be if you were similarly threatened. You would want to do everything you could to stop that threat and to prevent that harm.

But when the threat is coming from some of the world's most profitable, powerful companies, when the harm is permitted by the very Federal and state authorities whose job it is to keep you safe, when even your elected officials find that their hands are tied from above or by corporate compromise, you know that you are not going to be able to stop that threat. You know that you are going to fail.

Every day on a small ranch in the San Juan Basin, where my wife Jane and I live, methane, and a host of toxic and harmful chemicals that come with it, is vented and leaked. Ours is an old area, so they do not flare often, but when they do, it lights up the night sky for miles and miles.

Jane or I will put you in a ranch truck and drive you to the farthest of the 122 gas wells that are on or surround our ranch. Even speeding past the well site, you still smell the pollution. Or we will put you on a horse and ride to the closer wells, and that horse may spook as pressures blast well bore waste to the surface. Or stand with us at the house and listen to the closest wells and hear that methane being released on any day, on any night.

We don't know which wells are leaking the worst, we cannot guess which wells are going to suddenly vent, and we cannot move that fence line that we have to work on and fix when the wind shifts and pours those toxins down on us and we go home with burning eyes and a headache.

But we do know this: When the Bureau of Land Management fails to adequately enforce existing methane waste rules, when the Environmental Protection Agency rolls back methane protections, when the Department of the Interior fails to hold the oil and gas industry accountable for methane emissions, our family, our friends, our neighbors, rural Americans, we pay the price.

Many of the wells were here when we bought our little piece of ground with a Federal grazing permit 20 years ago. We should have known then. We should leave now.

But we can't do that. We are in too deep, spilled too much of our savings, too much of our blood. We buried too many horses and dogs to back out now.

What would leaving solve anyway? Leaving won't stop any leaks. The leaks stop when we find them and get them fixed. We make a difference when we call the oil company and tell them that their plunger is stuck and the well is venting wide open, or when we find their exposed pipeline.

And what of those who cannot leave, tied by their ancestry to lands for hundreds of years before the first gas well was ever drilled?

Besides, we have had our successes. We have won a few fights. The oil companies were still dumping drilling waste on the ground when we started. Oil companies were still making a new well site, a new road, and a new pipeline for 9 out of 10 wells that they drilled.

We worked our hearts out for the BLM Methane Waste Rule, and we lived in hope when it was signed. We defended the rule against the Senate attempts to overturn it and celebrated like crazy on May 10, 2017, when Senator John McCain stood with us and the Methane Waste Rule was upheld.

There are common-sense protections, basic steps to stop methane from leaking and venting and flaring, and the industry has shown time and again that they will take those steps, that they will adapt their operations, but only if regulations are put in place and enforced.

This is difficult testimony for me to give, not just to admit to you that I have failed, but because Jane and I have so many in industry that have tried to help us, so many good-hearted public servants from the Federal Government and state, so many elected officials, including members of this Committee, that we respect and admire and call friends. We know how your hands have been tied and how hard you have tried.

To know that you are trying, to know that Governor Grisham, Secretary Cottrell Propst, to know that your heart lies not in the defense of an industry that has caused so much harm but instead with those of us that suffer that harm every day, that gives us strength, that renews our spirit and restores our confidence.

Thank you.

[The prepared statement of Mr. Schreiber follows:]

PREPARED STATEMENT OF DON SCHREIBER, GOBERNADOR, NEW MEXICO

THE STRUGGLE TO HOLD INDUSTRY AND GOVERNMENT ACCOUNTABLE FOR METHANE EMISSIONS IN THE SAN JUAN BASIN

On February 7, 2018, my wife Jane and I received a "courtesy" notice from Hilcorp Energy Company (Hilcorp) that they would be "recompleting" an existing natural gas well on our Bureau of Land Management (BLM) grazing allotment.

Like most of the 122 wells on and immediately surrounding our Devil's Spring Ranch grazing allotment #05098, this well, SAN JUAN 28–6 UNIT 127 (well #127) produces Federal minerals from a Federal surface. Jane and I are intimately familiar with notifications of grazing allottees, or landowners, and the "onsite" meetings that routinely follow the notifications. We have been to dozens of onsite meetings over the past 20 years, both on behalf of our ranch and for other ranchers and landowners in northern New Mexico.

However, we were puzzled by the notice and its use of the use of the words "courtesy" and "recompletion." Hilcorp must pass through the locked gates of our

deeded land to access this well, so it is not a "courtesy" but a requirement that we be notified and we were unclear what a recompletion process would entail. We learned that Hilcorp intended to begin well site preparations at once and we requested that an onsite meeting be scheduled immediately.

Industry and Regulators Can Cooperate with Landowners

Hilcorp's predecessors, Burlington Resources and ConocoPhillips had completed and fracked numerous new wells on our ranch. In 2008, with the cooperation of the Farmington Field Office (FFO) of the BLM, ConocoPhillips and our ranch agreed to numerous conditions of well completion and fracking regarding surface use, roads, re-vegetation and, notably, the use of "green completions" to minimize the impact of methane emissions that are released in the well completion and fracking process. Between 2008 and 2012, ConocoPhillips completed and fracked 22 wells on our ranch, in each case honoring the conditions we had mutually agreed to, including green completions.

What Is Lost When They Don't

So when we met with Hilcorp employees on February 20 and learned that a recompletion effectively meant completing and fracking an existing well bore to create a new well in a different formation, in this case the Blanco Mesaverde formation, we were dismayed when Hilcorp employees told us that the conditions that ConocoPhillips and BLM had agreed to previously, including green completion, would not be followed. (Hilcorp purchased ConocoPhillips San Juan Basin assets in late 2017, and we assumed they would honor agreements made with landowners). We were further dismayed that there was no BLM representative on site even though a new formation was to be completed and fracked, and even though the well pad and roads would be highly impacted.

We immediately engaged the BLM FFO to ask that they participate, just as they had when each new well has been fracked and completed on our ranch over the last 20 years. BLM FFO repeatedly claimed that they had no responsibility for recompletions despite the fact that the proposed completion and fracking of the Blanco Mesaverde formation would create a new stream of gas production with an estimated life of 30 years. This new Blanco Mesaverde production stream would have exactly the same emissions and waste impacts, the same impacts from 24-hour/day operations including traffic, liquid by-products, methane emissions and waste, and the same noise and nuisance that any newly drilled well would have.

Hilcorp ultimately did not recomplete well #127 and instead proceeded to recomplete the nearby SAN JUAN 28–6 UNIT 143, also on our Federal grazing allotment, without first resolving any of our concerns. At the onsite meeting, we raised the same objections, emphasizing the need for green completion. Several days later we learned that the recompletion process had already begun and the fracking was underway. We scrambled to the well site to reiterate our objections and were told that Hilcorp would have no further contact with us regarding the recompletion of well #143.

BLM FFO repeatedly referred us to the New Mexico Oil Conservation Division (OCD) as the agency responsible for issuing permits for the recompletions, and the party responsible for methane emissions as well. After extensive research in the OCD District 3 office in Aztec, NM, and in the OCD state office in Santa Fe, we located the OCD Gas Capture Plan for both well #127 and well #143, as well as the permits allowing the recompletions. The OCD Gas Capture Plan permit form states, "The Gas Capture Plan outlines actions to be taken by the Operator to reduce well/production facility flaring/venting for new completion (new drill, recomplete to a new zone, re-frac) activity."

Gas Capture Plan Captures No Gas

In each case, and in a later larger survey of 54 OCD Gas Capture Plans, we learned that no gas was captured and instead was specified to be either flared (well #127) or vented (well #143). In each case, the amount of methane released was estimated at the time the Plan was issued, but no attempts were made to determine the actual volume released.

This practice of *planned* methane venting and flaring was exactly what we had sought to avoid in the conditions for new completions and fracking that our ranch had reached with BLM and ConocoPhillips back in 2008. The green completion process lessened or prevented methane emissions for the 22 wells that were completed and fracked on our ranch during that period.

Unable to get any enforcement from the BLM or OCD, we pursued the New Mexico Environment Department (NMED), who also declined any responsibility, stating that New Mexico "lacked EPA enforcement authority," and referred us to Environmental Protection Agency (EPA) Region 6 in Dallas. Despite repeated

attempts, we were unable to get past the initial voicemail at Region 6 and began cold-calling various EPA offices around the United States and in Washington, DC until we were able to get a referral and phone number within EPA Region 6. That contact did not prove helpful.

Green Completions

Eventually, one of the messages left at EPA Air Enforcement in Washington, DC did result in a contact and with the assistance of Senator Heinrich's office, we were able to secure a meeting at EPA headquarters in DC. Several members of the Air Enforcement Team were present and the Region 6 Air Enforcement team joined the meeting electronically. At that point in March 2018, it was clear to Jane and I that, pursuant to EPA Rule 40 CFR Part 60 Subpart OOOOa regarding methane emissions, Hilcorp was in violation of the Clean Air Act for failure to capture methane emissions, regardless of what responsibility the BLM or NMED denied, or what responsibility OCD accepted. As EPA described the rule: "The rule requires that significant emissions reduction be accomplished primarily through the use of a proven process known as a 'reduced emissions completion' or 'green completion.' This process is estimated to reduce methane and VOC emissions by 95 percent" (EPA 2016).

Over the course of the following 6 months, Jane and I received extensive assistance from the San Juan Citizens Alliance (SJCA) and we had numerous additional meetings in DC with EPA and Senators Udall and Heinrich, Congressman Luján, then Representative Lujan Grisham and their staffs on the subject of methane emissions from sources such as the Hilcorp recompletions and other drilling and production activity including leaking, venting and flaring. We continued to meet with the BLM, including in DC to press for them to exercise their authority over the management of Federal lands. We met with OCD in Santa Fe to try and rectify the emissions problems caused by a methane gas capture plan that captures no methane gas.

The response from our New Mexico Delegation, including members of this Committee, was consistent and coordinated support in trying to obtain constructive responses from BLM and EPA. Our delegation encouraged us to continue to hold Hilcorp and both Federal and state agencies accountable for methane emissions in the San Juan Basin.

EPA and NMED Step In

On October 29, 2018, 234 days after our initial contact, EPA issued a Clean Air Act (CCA) 114(a) Information Request to Hilcorp with a deadline of January 15, 2019 to answer. That deadline was postponed due to the government shutdown and we don't know what answers were given by Hilcorp to the EPA. However, on March 14, 2019, NMED issued a Notice of Violation to Hilcorp relative to methane emissions from recompletion operations. The accompanying press release said, in part:

> "NMED is committed to assuring the oil and natural gas industry's compliance with rules and permits," said NMED Secretary James Kenney, "This creates a level playing field among operators while ensuring public health and environmental protections."
>
> "Failure to comply with these provisions of state and federal air quality laws can lead to uncontrolled emissions of volatile organic compounds (VOCs), which contribute to the formation of ground-level ozone and hazardous air pollutants (HAPs). A collateral benefit of complying with these laws is the reduction of methane emissions. Methane, the key constituent of natural gas, is a potent greenhouse gas with a global warming potential more than 84 times greater than that of carbon dioxide, according to the Intergovernmental Panel on Climate Change. A primary source of methane emissions in New Mexico comes from the production, transmission and distribution of oil and natural gas."
>
> "NMED and the EPA are working collaboratively and requiring Hilcorp to submit additional data on each of its oil and natural gas production facilities in New Mexico to determine its compliance. Hilcorp Energy Company has 10 days to reply to NMED and EPA."

Government Engagement; Community Support

Our great thanks goes out to NMED and Secretary Kenney, to the EPA Air Enforcement teams in Washington and Dallas, to our entire New Mexico Delegation and their staffs, and especially to Governor Michelle Lujan Grisham, for their dedication, and patience, to hold Federal and state agencies, and oil companies, accountable for the methane emissions that have been impacting our state for almost 100 years and have left us with a methane hotspot visible from space. A special thanks as well to San Juan Citizens Alliance, Earthworks, the Environmental Defense

Fund, and the Western Environmental Law Center. We are grateful to State Land Commissioner Stephanie Garcia Richard and her staff, and Energy Secretary Sarah Cottrell Propst and her staff.

However . . .

However, despite all the goodwill and hard work and progress that has brought us to this hearing today, not a single molecule of methane has been stopped from venting or flaring as a result of Hilcorp's recompletion activities. The NMED Notice of Violation cites a single well, not one we're familiar with, yet Hilcorp has recompleted dozens of wells in Rio Arriba and San Juan counties, and continues to do so, since the first example we encountered back in January 2018.

Nor has the BLM assumed responsibility for the recompletion process, content to allow the operator to file a Sundry Notice, Form 3160–5, the same Notice required for a minor repair or routine maintenance. Of all the recompletion well sites that Jane and I surveyed not a single one was within BLM performance standards. Exposed pipelines, exposed electrical, eroding well sites and roads, failed reclamations, weeds, loss of surface water are but a few examples.

OCD continues to issue Gas Capture Plans that capture no gas. As of November 2018, OCD had issued 70 *no-gas-capture plans* to Hilcorp. More may have been issued since that time. Along with SJCA, we conducted a survey of Hilcorp recompletion methane emissions for 54 wells and found that the estimated cumulative emissions from the first day of each well totaled 22,008 MCF. Recompletions remain a key focus of Hilcorp's San Juan Basin business plans and they own thousands of wells that are candidates for recompletion.

We Are Impacted Every Day

So it is with a sense of urgency that we implore our Federal Government to reinstate the protections of the EPA and BLM methane waste rules. For our Senators and Representatives that have been striving on behalf of clean air you have our sincere thanks, but we must ask you to do more. The gas wells of the San Juan Basin pollute every hour of every day. With all the talented and willing career employees we've encountered at both agencies, we believe corrective actions can be taken now. Governor Lujan Grisham has kept a campaign promise to make methane emissions a focus of her administration and signed an executive order with Secretary Kenney and Secretary Propst to address methane waste and their report is due in September. But we must ask that the agencies responsible for regulating methane emissions here in New Mexico redouble their efforts to protect our families now from the proven harmful effects methane pollution and the destructive impacts that oil and gas development and production has, and has always had, on our state's lands and people.

So Many Voices Are Unheard

We would ask that the Committee please take time to consider the amount of collective effort that it has taken to arrive at NMED's Notice of Violation to Hilcorp this March—and our struggle is far from over. It has taken over a year of concerted effort by Jane and I who, after so many years here in New Mexico have every advantage in terms of trying to oppose an oil company's practices or a government agency's policies. We have education, lifetimes of political involvement, we have friends in the press, we have the support of local and national environmental organizations, we have a thorough understanding of oil and gas operations, we are retired and financially secure, we have cell phone and internet availability, we are healthy. Imagine the challenges for those trying to engage industry and government regarding methane emissions with far less resources; anyone outside the political system, those without access to education or long lists of connections both here in the state and in DC, those who do not understand oil and gas operations, or who are new to complex negotiations with industry, those with the responsibilities of children or elderly parents, anyone with a job.

On their behalf, we ask that both our Federal and state governments be open and accessible and responsive to them and recognize their needs and concerns and problems with the same level of interest and commitment that the needs and concerns and problems of the oil and gas companies are awarded.

"The land marks are still in place. The sacred places still tell us to stand, to speak."

—Daniel Tso, Navajo Nation Council Delegate, with permission.

Citations:

United States Environmental Protection Agency (EPA). 2016. Summary of Requirements for Processes and Equipment at Oil Well Sites. Available at: https://www.epa.gov/sites/production/files/2016-10/documents/nsps-oil-well-fs.pdf.

Mr. LOWENTHAL. Thank you. Thank you very much, Mr. Schreiber.

I now recognize Mr. Reed to testify.

Welcome to the Committee.

STATEMENT OF PAUL REED, PRESERVATION ARCHAEOLOGIST, ARCHAEOLOGY SOUTHWEST, TUCSON, ARIZONA

Mr. REED. Thank you, Mr. Chairman, distinguished members of the Committee. I have been an archaeologist for more than 30 years, and most of that time has been in and around Chaco Canyon. Chaco Canyon was the center of a thriving society that flourished in northwest New Mexico from roughly 850 to about 1150. The Chacoans and affiliated Pueblo groups built hundreds of great house structures across this region that connected these places with kilometers of roads and other landscape features. This extensive, ancient landscape is today managed by a variety of Federal, state, and tribal entities. These places have deep spiritual and cultural importance to nearby Pueblos and the tribes that are descendants of the Chacoan people.

Many of the sites associated with ancient Chacoan society are protected within the boundaries of Chaco Culture National Historical Park. Chaco Canyon and several outlying great houses are UNESCO World Heritage Sites that preserve the history and culture of Pueblo people. Chaco is a place like none other on this planet.

Despite the protections offered by the park, many of these sites lie outside the park across the greater Chaco landscape, and they are hardly protected from the ravages of oil and gas development. Unfortunately, these include components of the Chaco World Heritage Site, sites like the Pierre Site, located right at the edge of the 10-mile zone. These are managed by the Bureau of Land Management. Now, of course, increased development associated with the Mancos-Gallup Shale play in northwest New Mexico has been threatening this fragile Chaco-affiliated landscape since late 2011. The threat to these resources has been heightened by several executive and secretarial orders from the Trump administration over the last couple of years that aim to prioritize energy development on public lands at the expense, in our opinion, of every other use.

In fact, over the past year-and-a-half, this administration has proposed leasing within a few miles of the park no less than three times, only to defer these parcels at the last minute because of outcry from the Pueblos, the Navajos, many tribes, the archaeological community, and many, many others. But these deferments are temporary, and if they are fully implemented, ultimately, they will further fragment and degrade this amazing landscape.

Over the last 5 years, we at Archaeology Southwest have worked with a variety of partners, with the BLM and the BIA, to modify

their long-range management plans. We would like to recognize the All Pueblo Council of Governors in particular as a close partner. We have also talked with Navajo Nation and a variety of other state and Federal entities.

Now, we have advocated during this time frame for this 10-mile cultural exclusion zone, and we thoroughly applaud and support the bills introduced last week. Thank you for this, and we thank Senators Heinrich and Udall as well.

Despite agreeing to avoid oil and gas leasing in this 10-mile zone while this is ongoing, as I have noted, we have had no less than three times parcels introduced into this area. We consider this a very disrespectful game of hide-and-seek or bait-and-switch, and we believe it is time to stop.

I am also very pleased to hear that our new land commissioner, Stephanie Garcia Richards, is planning to withdraw state trust lands in a similar, somewhat differently configured arrangement in that 10-mile zone. We feel that is an equally important part of this.

[Applause.]

Mr. REED. As part of our long-range work with the agencies, we have a number of recommendations. We feel that BLM and BIA have to include a robust role for the National Park Service in all these decisions. The agencies have to take immediate, concrete steps to improve tribal consultation and bring all the affected tribes into this management plan as real partners. We would like to see the Great North Road Corridor get better treatment under this plan and more protection. And we would like the agencies to consider viewshed and soundscape analysis for Chacoan great house communities.

Our partners at the APCG have spoken out on several occasions, and they are closely working—we have done some work with the Pueblo of Acoma to begin a process of assessing ancestral important tribal sites. We feel this is a Federal Government responsibility that the agencies have to fulfill.

We have also worked with specialists to assess LiDAR and other remote sensing data that can actually let us understand what is going on on these landscapes, particularly in new lease areas, before the companies have a strong financial interest.

In conclusion, we ask the Committee to support these efforts to push the agencies to do what they are supposed to, and we feel that energy interests have dominated for far too long in this portion of northwest New Mexico, to the detriment of the Navajo people on the landscape and the amazing ancestral landscape that is in this area.

Thank you.

[The prepared statement of Mr. Reed follows:]

PREPARED STATEMENT OF PAUL F. REED, PRESERVATION ARCHAEOLOGIST, ARCHAEOLOGY SOUTHWEST

ALSO REPRESENTING
SOCIETY FOR AMERICAN ARCHAEOLOGY, MANCOS SHALE TASK FORCE NEW MEXICO ARCHAEOLOGICAL COUNCIL

Chairman Lowenthal, and distinguished members of the Committee, thank you for the opportunity to provide written testimony for this field hearing of the U.S. House of Representatives Subcommittee on Energy and Mineral Resources on the impacts of oil-gas development in northwest New Mexico.

Chaco Canyon was the center of a thriving society that flourished in the Four Corners region of New Mexico from 850–1150 CE. The Chacoans and affiliated Pueblo groups built hundreds of great house structures across the region and connected many of these places with kilometers of roads and other landscape features. This extensive, ancient landscape is managed today by a variety of Federal, state, private, and tribal owners. These places have deep spiritual and cultural importance to nearby Pueblos and tribes that are descendants of the Chacoan people.

Many sites associated with ancient Chacoan society are protected within the boundaries of Chaco Culture National Historical Park. Chaco Canyon and several outlying great houses are UNESCO World Heritage Sites that preserve the history and culture of the Pueblo people. Furthermore, Chaco Canyon is the ancestral home of Pueblo people and it is where many of the cultural traditions that are practiced to this day at Acoma, Zuni, Tesuque, Zia, Hopi, Taos, and other pueblos in New Mexico emerged. Over more recent centuries, the landscape around Chaco was settled by the Navajo people and other groups who have added their own unique traditions to the rich cultural legacy. Federal agencies are also a major, modern-day presence and oversee Chaco Canyon, a national park since 1980, along with important cultural and historic sites across the surrounding landscape.

Despite the protection offered by Chaco Culture National Historical Park, many sites lie outside the Park across the Greater Chaco Landscape. These places, many of which are as significant as those within Park boundaries, are scarcely protected from the ravages of oil-gas development. Unfortunately, these include components of the Chaco Culture World Heritage Site like Pierre's Site, located on Federal land managed by the Bureau of Land Management. Increased oil-gas development associated with the Mancos-Gallup Shale play in northwest New Mexico has been threatening fragile Chaco-affiliated cultural resources across a large portion of the San Juan Basin since late 2011. The threat to sensitive cultural resources is heightened by several mid-2017 executive and secretarial orders from the Trump administration that aim to prioritize energy development on public lands. In fact, over the past year-and-a-half, the administration has proposed leasing within a few miles of the Park no less than three times, only to defer at the last minute because of out-cry from tribes, the archaeological community, and many others. But these deferrals are temporary, and if fully implemented, these orders will further fragment and degrade the Greater Chaco Landscape.

During the last 6 years, Archaeology Southwest and its partners have cooperated with the Bureau of Land Management (BLM) Farmington Field Office and Bureau of Indian Affairs (BIA) as these agencies have been in the process of amending the 2003 Resource Management Plan (RMP) for the Farmington Field Office and drafting new Environmental Impact Statements (EISs) for their regions (BLM and BIA). Our partners include the All-Pueblo Council of Governors (APCG), The Wilderness Society, the National Trust for Historic Preservation, National Parks Conservation Association, Friends of Cedar Mesa, New Mexico Wilderness Alliance, Conservation Lands Foundation, and Pew Charitable Trusts.

As an archaeological and preservation organization, we are most concerned with the protection of the fragile area around Chaco Canyon (Chaco Culture National Historical Park aka Chaco Park) that we have identified as the Greater Chaco Landscape. This area of several millions acres is not protected by National Park Service monument or park status and has been the focus of extensive and severe oil-gas extraction activity for nearly a century. Within the several million-acre area, ancient archaeological and cultural sites within the 10-mile cultural protection zone occur at the highest density outside the Park. Thus, much of our focus has been on this very sensitive area closest to the World Heritage Site of Chaco.

In 2011, the Farmington Field Office area became the focus of renewed oil-gas exploration with the application of hydraulic fracturing or fracking technology, along with advances in horizontal drilling to access fluid mineral resources. This resulted in the drilling of roughly 150 wells into the Mancos Shale Formation by late 2013, located at about 5,000 feet below the surface. This activity had not been anticipated by BLM in their 2003 RMP and thus a process to amend the RMP was triggered. This process is still underway with draft RMP amendment and EIS documents expected later this year.

As the RMP amendment process has unfolded over the last nearly 6 years, BLM has continued to approve permits for oil-gas activities and to offer leases of new lands every year. At this point in time, more than 90 percent of the Farmington Field Office lands under BLM authority have been leased, including many sites that part of the World Heritage Site designation or are now congressionally designated Chaco Protection Sites. These lands were leased prior to these designations; however, widespread leasing and drilling has continued on immediately adjacent lands, which has resulted in significant visual and auditory impacts and fragmentation of

the broader cultural landscape. As of early 2019, many hundreds of wells have been sunk into the Greater Chaco Landscape, while the planning process languishes. We believe these already-leased lands provide sufficient access to the oil-gas resources in the Greater Chaco Landscape, particularly with the advances in horizontal drilling, such that additional leasing should not be permitted.

Thus, Archaeology Southwest and its partners have advocated for a permanent exclusion of new oil-gas leasing within a 10-mile cultural protection zone around Chaco Park and its outlying units. We fully supported Senate Bill 2907 introduced in 2018 by Senators Udall and Heinrich that would provide for the withdrawal of Federal minerals in this 10-mile cultural protection zone around Chaco Culture NHP. A 2019 version of this bill has just been introduced in the Senate along with a House companion bill, with Congressman Luján as lead sponsor.

Despite agreeing to avoid oil-gas leasing in the 10-mile zone while the RMP amendment and draft EIS process is ongoing, BLM has nonetheless included leases within this zone no less than three times during this administration. Given the importance of Greater Chaco to tribes and many other groups, this action has triggered protests and near-record numbers of comments to BLM. At the last minute, BLM has withdrawn lease parcels within or close to the 10-mile zone, only to offer similarly positioned lease parcels in later sales. This peculiar game of chicken is disrespectful to the tribal communities with connections to Chaco, and to Navajo residents that currently live in the area, and should stop immediately.

Over the last 6 years, Archaeology Southwest and its partners have provided comprehensive comments to BLM and BIA with specific recommendations for management of the Greater Chaco Landscape surrounding Chaco Culture NHP. Below, I summarize these recommendations:

1. BLM and BIA must include a robust role for the National Park Service (NPS) in future oil and gas management decisions.

We are encouraging BLM and BIA to improve interagency coordination and give the NPS a more active role in planning the decisions that affect the visitor experience at Chaco Culture (NHP). Regular and frequent consultations among the agencies is necessary to give the NPS a strong role in the decision-making process for oil-gas development on Chaco's boundary.

In addition, NPS staff possess unique expertise that can be beneficial to the agencies as they evaluate future proposals. Not only does NPS co-administer the Chaco Archaeological Sites Protection System, along with BLM and the Navajo Nation, but it also possesses expertise in managing night sky, viewsheds, and soundscape values in and around units of the National Park System. NPS has already provided BLM with some information on night skies around Chaco Culture NHP as part of recent oil and gas leasing proposals. This role should be formalized and broadened as part of the BIA-BLM planning process.

Furthermore, working with NPS, we recommend that BLM and BIA sponsor and conduct a comprehensive viewshed and soundscape analysis from Chaco Culture NHP. We also ask that stipulations be developed to protect Park Resources, including stipulations that require NPS consultation before development can proceed near the Park. In the planning documents adopted by BLM and BIA, we urge the agencies to ensure that there is a robust, ongoing role for NPS in future oil and gas management decisions.

2. The agencies should take immediate, concrete steps to improve tribal coordination and consultation, as well as public outreach and engagement.

In addition to their interagency coordination obligations, BLM and BIA share important tribal consultation and public engagement duties. The National Environmental Policy Act (NEPA), the National Historic Preservation Act (NHPA), and a number of executive orders require notice and outreach to tribes, allottees, residents and the public at various stages of the oil and gas development process. BLM Manual 1780 and Handbook 1780–1 have also set the Interior Department on an important new path to improving relationships and coordination with tribes and allottees.

By joining as co-lead agencies and expanding the planning area, BLM and BIA have already taken initial steps toward improving tribal engagement and public outreach around Farmington and northwest New Mexico but much more needs to be done. The new scoping process, which began in the fall of 2016, saw BLM and BIA representatives meet directly with tribal representatives and residents at community centers and Navajo Chapter Houses and brought a critical set of stakeholders to the table. It set the stage for an inclusive planning process with robust tribal engagement and consultation but, again, more needs to be done. Regular meetings with engaged tribes should be the rule, not the exception.

Furthermore, we urge BLM and BIA to be sure that this type of outreach and engagement continues after the current planning process is complete. The agencies should view the RMP Amendment and draft EIS as the start of an ongoing relationship and open dialogue with tribes, allottees, and the public about oil and gas planning decisions. Residual impacts to tribal communities from expanded oil and gas development can include distortions in labor markets, housing prices, public infrastructure, and disruptions in social systems. This ongoing relationship should both monitor and implement outreach programs to help communities adjust to changes.

Thus, we recommend that in the joint planning documents, a permanent, interagency BLM-BIA-NPS working group be established that meets regularly with tribes, allottees, state of New Mexico personnel, and the public to discuss and provide recommendations on ongoing minerals management decisions. Additionally, to increase transparency, we urge the agencies to make all NEPA documents (including categorical exclusions) for Federal, tribal, and allotted mineral development decisions (e.g., leasing, permitting, right-of-way, suspensions, etc.) available online for public review.

3. The joint planning document should manage the 10-mile cultural protection zone around Chaco Culture NHP in a proactive manner, designed to maximize protection of cultural resources.

The first area that BLM and BIA should manage under common allocations, stipulations and development conditions is the checkerboard of Federal, tribal, New Mexico State Trust, and allotted lands within 10 miles of Chaco Culture NHP. This area has fewer oil-gas leases and is less developed than surrounding areas. Thus, it has retained much of its cultural integrity and natural characteristics. It contains many undisturbed cultural sites and is critically important to preserving the resources and visitor experience within Chaco Culture NHP, as well as the homes, ranches, and traditional lifestyles of the Navajo people who live near the park. It also contains at least 12 Chacoan great houses and associated communities.

The new Senate withdraw bill (S. 1079) and companion House bill to withdraw Federal minerals in the 10-mile zone are part of this process. But, the agencies carry the heavy load for protection of this sensitive, fragile area.

New state of New Mexico land commissioner Stephanie Garcia-Richards has recognized the need to protect the 10-mile zone around Chaco Canyon and has indicated full support for the Senate and House bills. To protect state trust lands within the 10-mile protection zone, Garcia-Richards plans to issue an Executive Order that will put a moratorium on new oil-gas leasing on state trust lands in the area until December 31, 2023. Coupled with the proposed Federal legislation, this is a huge step toward protecting the most sensitive archaeological and cultural zone around Chaco Canyon.

Given this background, I make the following recommendations to preserve and protect cultural resources within the 10-mile cultural protection zone:

- Close the 10-mile zone to all new leasing across all land jurisdictions, and, where closures are not possible, apply no surface occupancy (NSO) stipulations. This approach builds upon the Senate and House withdrawal bills to address all land jurisdictions.
- Where cultural resources are present in lease areas, agencies and oil-gas operators should invite interested tribes and tribal members to conduct site visits and plan their development to address specific tribal concerns. Also, require that operators file viewshed and soundscape analyses with the Park Service, BLM, and BIA before conducting surface-disturbing activities and, in cooperation with those agencies, develop viewshed and soundscape protection plans.
- Require that BLM and BIA consult with the National Park Service before issuing new leases and drilling permits.
- Protect dark night skies; limit flaring and artificial lighting.
- Prioritize reclamation of well pads, access roads, and other oil and gas infrastructure to restore viewsheds from Chaco Culture NHP and nearby cultural sites.
- Prioritize new drilling within already-developed, less-sensitive areas using avoidance measures, such as siting, screening, and mandatory unitization.

4. The Great North Road Corridor requires special treatment under the BLM-BIA joint plan.

Another area that warrants a landscape-level management approach is the corridor of cultural and archaeological sites and great houses along the Great North Road (but beyond the 10-mile protection zone around the Park). This corridor has seen significantly more oil and gas leasing and development than the lands immediately surrounding Chaco Culture NHP. However, like the lands around the Park, this corridor also contains a high density of connected cultural sites that would benefit from enhanced lease stipulations and development guidelines. To protect this area, the plan should:

- Create a single area of critical environmental concern (ACEC) along the Great North Road corridor—but broader than the existing ACEC, which is insufficiently narrow—and close it to future leasing.
- Prohibit new rights-of-way across the Great North Road and other identified Chacoan roads.
- Require phased leasing that prioritizes leases away from areas with low development potential and sensitive resources.
- Require that operators file viewshed and soundscape analyses with the Park Service, BLM, and BIA before conducting surface-disturbing activities and, in cooperation with those agencies, develop viewshed and soundscape protection plans.

For the Great North Road, then, the agencies should adopt consistent management decisions and resource protections at various landscape levels across Federal, tribal, and allotted lands and should coordinate these decisions with the state of New Mexico. The agencies should manage areas with connected resources and common resource management concerns under consistent stipulations and development conditions.

5. The Agencies should conduct viewshed and soundscape analysis for Chacoan great house communities.

In addition to closer collaboration with NPS, as discussed above, we encourage the agencies to support other efforts to protect Chacoan communities from indirect effects to viewsheds and soundscapes. The recent work by Ruth Van Dyke documents considerable indirect effects to the viewshed and soundscape of the Pierre's Community. The ACEC established to protect the community is too small to address and prevent many visual and auditory impacts. Van Dyke concludes that the encroachment of oil-gas facilities has compromised the integrity of the ancient community and the ability of the archaeological community to fully understand and assess its role in the Greater Chaco Landscape. Thus, we believe that viewshed and soundscape analysis must be completed for Chacoan great house communities and protective measures put in place prior to allowing any additional leasing within the communities' boundaries.

Working with NPS, the Navajo Nation, and archaeological groups, we urge BLM and BIA to conduct a comprehensive viewshed and soundscape analysis for all Chacoan great house communities across the Greater Chaco Landscape. The agencies should exclude known Chacoan communities from additional leasing until studies are complete. Assign stipulations to protect adjacent or nearby Park Resources, including stipulations that require NPS consultation before development can proceed near the Park. In the planning documents adopted by BLM and BIA, there is a great need to ensure a robust, ongoing role for NPS in future oil and gas management decisions.

Beyond these recommendations, the All Pueblo Council of Governors (APCG) has spoken out on several occasions, issuing several resolutions calling on the BLM and BIA to work closely with Pueblo people while preparing the RMP amendment and draft EIS. The Pueblo Governors also endorsed a series of measures that would go a long way toward protecting the magnificent cultural resources and modern-day residents of the Chaco area from oil and gas development, including supporting the 10-mile protection zone around the park that would be off limits to oil and gas development. Most recently, the APCG has partnered with the Navajo Nation in 2017 and 2019 to press the agencies for additional protections across the Greater Chaco Landscape.

In 2018, Archaeology Southwest engaged researchers Richard Friedman and Sean Field to conduct analysis of the BLM-procured LiDAR data (and other remote sensing data) from 2016. This focused primarily on oil-gas lease parcels from the BLM's March 2018 sale, as well as the Bis sa'ani Chacoan Community located roughly 5 miles northeast of Chaco. A variety of landscape features were identified by the

analysts across the lease areas and in the Bis sa'ani Community area. Most were determined to be of modern or recent historic origin. Nonetheless, several features of possibly ancient, Chacoan origin were found. Several landscape features were identified within the Bis sa'ani Community that line up with a road-related feature recorded during the late 1970s work. In several of the lease parcels, anomalous linear features were detected that do not appear to represent modern or historic phenomena. Fieldwork is necessary to confirm or refute the ancient origin of these features; however, it is worth nothing that the area around Bis sa'ani has been the target of leasing proposals over the past 6 years, and there is active development in the area, which underscores the pressing need to document and protect these fragile resources. And, more broadly, this limited LIDAR project makes clear the value of using these data to assess lease parcels across Greater Chaco.

Adding to my list of recommendations above, then, I encourage BLM and BIA to require oil-gas lease holders to use LiDAR and other remote sensing data that are currently available to assess tracts of land to be developed. This approach should complement more conventional archaeological work under Section 106 of the NHPA and reduce the risk of unidentified cultural resources being damaged or destroyed during oil-gas development. In addition, the preliminary findings of the ethnographic studies in the area make clear that the requirements of Section 106 of the NHPA and Bulletin 38 are not being adequately met with the standard, archaeological approach to fieldwork and reporting. It is critically important to get Native American teams into the field to document cultural resources prior to clearances being issued for oil-gas and other development across the Greater Chaco Landscape.

In conclusion, representing Archaeology Southwest, the Society for American Archaeology, and the New Mexico Archaeological Council, I feel strongly that energy interests have dominated for far too long in northwest New Mexico—to the detriment of cultural sites in Chaco Canyon and the surrounding Greater Chaco Landscape. For Native people, these ancestral places archaeological sites play a significant role in the collective cultural identity and heritage of many Native American people, especially Puebloan people. The destruction of these heritage places by development activities has an unquantified negative effect emotionally, psychologically, and spiritually on tribal people and this should not be ignored but given appropriate and meaningful consideration by decision makers. On the ground, local Navajo communities and families have borne the brunt of these impacts. Thus, it is long past time to set aside and protect the irreplaceable Greater Chaco Landscape of New Mexico.

Mr. LOWENTHAL. Thank you, Mr. Reed.

The Chair now recognizes Ms. Pinto for 5 minutes.

Welcome to the Committee.

STATEMENT OF KENDRA PINTO, MEMBER OF COUNSELOR CHAPTER, NAVAJO NATION, NAGEEZI, NEW MEXICO

Ms. PINTO. Thank you for this opportunity to share with you the efforts being done in the Eastern Agency of the Navajo Nation.

My name is Kendra Pinto, and I live near Chaco Culture National Historical Park. It holds special meaning for Native tribes because it is also the center of origin stories of multiple local Native tribes, including the Navajo Nation. It is a place held sacred by many. It is a place we find a connection to the land and to our people. It is a sacred site now under attack by air, noise, and light pollution associated with local resource extraction.

Living in the Chaco region provides a snapshot of life before encroachment of modern technology. It is common to find shards of pottery, sweat lodges, and arrowheads. How will the Federal Government guarantee the protection of cultural resources if they continue to ignore tribal consultation in the leasing process? Today, there are thousands of cultural resources and sites that have not been accounted for by the Bureau of Land Management. This sends a clear message: Federal agencies are not properly consulting with

tribes on the potential impacts to historic properties and cultural resources.

In July 2016, a site owned by WPX exploded and 36 storage tanks holding oil and produced water caught fire. I have wondered since then if the situation was handled as best as possible or if the isolation of the area played a major factor in the decision to let the toxic fire burn. Had the Bureau of Land Management thoroughly analyzed the impacts of approving development in this location and the potential impacts to public health, safety, the air, and the surrounding environment, then maybe residents could have been spared that traumatic night of having to evacuate their homes.

Starting in 2017, I began working alongside a group of local Diné residents and allied environmental groups to study the health effects of hydraulic fracturing on neighboring communities. We took multiple air samples and found elevated levels of volatile organic compounds at several locations. One of the tested samples had elevated levels of hydrogen sulfide located within 1,000 feet of an elementary school.

Last year, Counselor Chapter House applied for funding and received 16 air monitors to test the local air at eight homes throughout the area. The results were disturbing. Counselor community monitors showed site levels reaching hazardous levels.

In October 2018, I rode alongside Earthworks to film oil well sites with a FLIR camera. This provided an up-close, personal view of the venting of methane and other gases. I was horrified, but not surprised. The isolation of the area and the multiplicity of jurisdictions creates an ideal situation of unenforced regulations.

These findings are not unique. The Trump administration's rollbacks of methane waste and pollution regulations at the Federal level are making this problem much worse. I understand that the Navajo Nation EPA is currently considering new rules to limit air pollution from oil and gas sources and that these rules could include requirements to reduce methane pollution. By adopting a strong minor source air permitting program that includes methane requirements, the Navajo Nation can help stop the pollution.

We can smell the pollution, see the flares, and hear the methane being released every day. We cannot continue to adopt a "wait and see" approach to methane regulations, especially when we know there are already common-sense steps industries can take to stop venting, leaking, and flaring, if they are held accountable.

I highly urge this Committee to consider the extent of your responsibility to me and to every single living person affected by oil and gas extraction on the Navajo Nation and in New Mexico. Accidents like the February 17, 2019 spill of 42,000 gallons of produced water and 12,600 gallons of oil in Counselor Chapter demonstrate the urgent need for regulations that hold industry responsible for negative impacts to public health, cultural resources, and the environment, as well as the need for robust emergency response plans to protect community members when accidents like this happen.

The regulations needed to protect me and my family go beyond fines and violations. They must ensure that all generations now

and in the future are considered and treated with respect in their right to clean air and clean water.

Thank you.

[The prepared statement of Ms. Pinto follows:]

PREPARED STATEMENT OF KENDRA PINTO, NAVAJO NATION

Thank you for this opportunity to share with you the efforts being done in the Eastern Agency of the Navajo Nation.

My name is Kendra Pinto. I live near Chaco Culture National Historical Park, the epicenter of one of the oldest and most advanced civilizations in the world. It holds special meaning for Native tribes because it is also the center of origin stories of multiple, local Native tribes, including the Navajo Nation. It is a place held sacred by many. It is a place we find a connection to the land and to our people. It is a sacred site now under attack by air, noise, and light pollution associated with local, resource extraction and increasingly expanding oil and gas development.

Living in the Chaco region provides a snapshot of life before encroachment of modern technology. It is common to find shards of pottery, sweat lodges, and arrowheads. Just 2 weekends ago I found two shards of pottery 550 feet from my front door. How will the Federal Government guarantee the protection of cultural resources if they continue to ignore tribal consultation during the leasing process? Today there are thousands of cultural resources and sites that have not yet been accounted for by the Bureau of Land Management. Time after time, the BLM has failed to conduct required ethnographic studies and cultural resources inventories of the area before leasing. This sends a clear message: Federal agencies are not properly consulting with tribes on the potential impacts to historic properties and cultural resources that may be eligible for listing on the National Register of Historic Places. The area is known as the Checkerboard because of its five different land jurisdictions: Federal, state, tribal, allotment, and private. All of these jurisdictions are within close proximity to Chaco Culture National Historical Park.

Last year on March 8, 2018, 4,434 acres of land were scheduled for a BLM oil and gas lease sale. This directly affected the inhabitants of the area due to split ownership of tribal surface rights and BLM Federal mineral rights. I live on one of the parcels that were put up for lease, but never received a public notice in my mail or on my door to alert me to the potential hazards of oil and gas development.

In July 2016 a site owned by Williams Production and Exploration (WPX) exploded and 36 storage tanks holding oil and produced water caught fire. I watched as emergency vehicle after emergency vehicle showed up to the scene. I watched a massive firewall build into the night sky with a home a mere 330 feet away. I watched the fire blaze for 5 days. I have wondered since then if the situation was handled as best as possible or if the isolation of the area played a major factor in the decision to let the fire continue to burn and spew toxic smoke. Following this dangerous incident, questions about the real safety of drilling and stored oil so close to occupied homes became a regular precursor in conversations. Had the Bureau of Land Management thoroughly analyzed the impacts of approving development in this location and the potential impacts to public health, safety, the air, and surrounding environment then maybe 55 residents could have been spared that traumatic night of having to evacuate their homes. The shocking distance of the fire to the house is well under what medical professionals describe as "safe doses" of continuous emissions of toxic air.

Starting in 2017 I began working alongside a group of local Diné residents and allied environmental groups to study the health effects of hydraulic fracturing on neighboring communities. We took multiple air samples and found elevated levels of volatile organic compounds at several locations. One of the tested samples had elevated levels of hydrogen sulfide located within 1,000 feet of an elementary school that exceeded the EPA reference concentration.

Last year, Counselor Chapter House applied for funding and received 16 air monitors to test the local air at 8 homes throughout the community. Our team explained particulate matter (PM 2.5) to the families and why it could contain hazardous pollutants from the wells nearby. We showed them a body graphic that explained the types of chemicals that burn off in the flares, are emitted from the well equipment, and what kind of health symptoms they might develop from breathing those pollutants. Our health committee then shared 80 health surveys with wellness and chapter groups filled out by residents of Counselor, Ojo Encino, and Torreon. The data collected was then put into a health impact assessment titled, "A Cultural, Spiritual, and Health Impact Assessment."

The results were disturbing. For the test period of 1 month, the San Juan and Rio Arriba county monitors showed daily averages of "Particulate Matter (PM) 2.5" at a healthy level of 6 or 7 micrograms per meter cubed (ug/m^3), while our Counselor community monitors showed site levels reaching hazardous levels of >80 ug/m^3. The health surveys also showed more than 80 percent of the residents reported they experienced 11 out of the most commonly reported symptoms from gas and oil communities nationally; the average reported symptoms was 40–50 percent.

In October 2018 I rode alongside Earthworks to film oil well sites with a FLIR (Forward Looking InfraRed) camera. This provided an up-close, personal view of the venting of methane and other gases. I was horrified but not surprised. The isolation of the area and the multiplicity of jurisdiction creates an ideal situation of unenforced regulations and finger pointing. Four complaints have been filed directly with NM Environment Department as a result of the emissions we saw on that day.

These findings are not unique. The most up-to-date scientific studies are showing that oil and gas pollution is putting a very heavy burden on communities across New Mexico and the Navajo Nation. A recent study [1] found that oil and gas companies operating on Navajo lands have a leak rate that is more than double the national average. This means that every year 13,000 tons of methane are emitted by companies on Navajo Nation lands, enough pollution to have the same climate impact as 235,000 vehicles per year.

Along with this methane pollution comes harmful co-pollutants that threaten the public health of Navajo communities. These include volatile organic compounds that are one of the main building blocks of ozone smog pollution that can harm respiratory health and trigger asthma attacks, especially in children and the elderly. It is concerning, though not surprising, that ozone pollution levels in San Juan County, New Mexico, where much of the Navajo Nation's natural gas production is based, are dangerously close to surpassing health safety standards for ozone. Local communities' health and well-being should not be put at risk by this pollution.

The Trump administration's roll backs of methane waste and pollution regulations at the Federal level are making this problem much worse. I support efforts from the state of New Mexico under Governor Lujan Grisham and the Navajo Nation under President Nez to step up as the Federal Government retreats. The state and tribal governments need to fill this gap to protect our people from pollution.

I understand that the Navajo Nation Environmental Protection Agency is currently considering new rules to limit air pollution from oil and gas sources and that these rules could include requirements to reduce methane pollution. I strongly support Navajo methane rules that will reduce pollution, waste and increase tribal sovereignty. By adopting a strong minor source air permitting program that includes methane requirements, the Navajo Nation can help stop the wanton waste and pollution that I have seen far too often impact my community.

The San Juan Basin is home to the largest methane "hot spot" in the United States. Methane emissions from fossil fuel development thus exacerbate climate change and its long-term, intergenerational effects on the people and communities who call the Greater Chaco Area home. We must reduce fugitive methane emissions now, not only to prevent or mitigate long-term consequences for climate and health, but also to address the empirically demonstrated health risks and effects that are already occurring.[2]

In 2018 San Juan County, New Mexico received a "C" grade, while neighboring La Plata County, Colorado got a failing "F" grade from the American Lung Association for smog pollution. The effects of fugitive methane emissions are not only long-term and widespread, but also immediate and acute. We can smell the pollution, see the flares, and hear the methane being released every day. We cannot continue to adopt a "wait and see" approach to methane regulations, especially when we know there are already common-sense steps industries can take to stop venting, leaking, and flaring, if they are held accountable.

In New Mexico, over 30,000 students attend school within ½ mile of active oil and gas wells, and over 12,000 children suffer asthma attacks annually due to oil and

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[1] https://www.edf.org/energy/navajo-nation-natural-gas-waste-report.

[2] Even the U.S. EPA has admitted that one of its proposed fall 2018 methane protection rollbacks could adversely affect human health and welfare via increased exposure to ozone, particulate matter, and hazardous air pollutants (HAP), but cited vague "data limitations" for its failure to quantify those effects. *See, e.g.*, U.S. Envt'l Protection Agency, Proposed Rule, *Oil and Natural Gas Sector: Emission Standards for New, Reconstructed, and Modified Sources Reconsideration*, 83 Fed. Reg. 52056, 52059 ("the EPA expects that the forgone VOC emission reductions may also degrade air quality and adversely affect health and welfare effects associated with exposure to ozone, PM2.5, and HAP . . .").

gas ozone smog.[3] The smog pollution is also responsible for almost 9,000 missed school days in New Mexico children.[4] Children in the San Juan Basin are especially at risk. The area is home to tens of thousands of active oil and gas wells,[5] and in San Juan County and Rio Arriba County, child asthma hospitalizations exceed the New Mexico State average.[6] Rio Arriba County and McKinley County have some of the highest rates of asthma emergency department visits in Northern New Mexico; rates are likely underestimated in this data set because many asthma-related visits in the region are to IHS facilities.[7]

In 2017, over 40 percent of San Juan county residents expressed difficulty accessing health care,[8] often due to geographic isolation but also economic difficulty. Lower income families and non-white families are also more likely to have homes, schools, and workplaces in close proximity to oil and gas wells and other polluting entities.[9] Underlying socioeconomic position, access to care, and other "social determinants of health[10]" must be accounted for when analyzing existing methane regulations and rollbacks, and when enacting and enforcing future protections.

I highly urge this Committee to consider the extent of your responsibility to me and to every single living person affected by oil and gas extraction development on the Navajo Nation and in New Mexico. Accidents like the February 17, 2019 spill of 42,000 gallons of produced water and 12,600 gallons of oil in Counselor Chapter demonstrate the urgent need for regulations that hold industry responsible for negative impacts to public health, cultural resources, and the environment, as well as the need for robust emergency response plans to protect community members when accidents like this happen.

The regulations needed to protect me and my family go beyond fines and violations, they must ensure that all generations now and in the future are considered and treated with respect in their right to clean air and clean water.

Mr. LOWENTHAL. Thank you, Ms. Pinto.

I thank the panel for all of your testimonies.

I want to remind the Members again, one more time, that Committee Rule 3(d) imposes a 5-minute limit on questions.

I am now going to recognize Representative Haaland for 5 minutes.

Ms. HAALAND. Thank you, Chairman.

And thank you all for coming here. We are so grateful.

Before I start my remarks and questions, I wanted to acknowledge that Josh Sanchez and Cal Curley are representing Senator Tom Udall at this hearing today, so thank you for being here.

And I also just wanted to let this panel and the previous panels know that we as a Committee have worked very hard to bring tribal leaders to the table. We have had a number of hearings

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[3] Oil and Gas Threat Map (2018). New Mexico. *Available at* http://oilandgasthreatmap.com/threat-map/new-mexico/.

[4] *Id.*

[5] *Id.*

[6] New Mexico Dept. of Health, *The Burden of Asthma in New Mexico: 2014 Epidemiology Report* (Jan. 2014), at 41. *Available at* https://nmhealth.org/data/view/environment/54/.

[7] *Id* at 33.

[8] *Id* at 205.

[9] *See e.g.* NAACP, Environmental and Climate Justice, *available at* https://www.naacp.org/issues/environmental-justice/.

[10] Social determinants can include both positive and negative factors. Most broadly, social determinants of health are: "conditions in the environments in which people are born, live, learn, work, play, worship, and age that affect a wide range of health, functioning, and quality-of-life outcomes and risks. Conditions (e.g., social, economic, and physical) in these various environments and settings (e.g., school, church, workplace, and neighborhood) have been referred to as 'place.' In addition to the more material attributes of 'place,' the patterns of social engagement and sense of security and well-being are also affected by where people live. Resources that enhance quality of life can have a significant influence on population health outcomes. Examples of these resources include safe and affordable housing, access to education, public safety, availability of healthy foods, local emergency/health services, and environments free of life-threatening toxins." *See* Office of Disease Prevention and Health Promotion, *Healthy People 2020: Social Determinants of Health, Available at* https://www.healthypeople.gov/2020/topics-objectives/topic/social-determinants-of-health.

already on climate change, on public lands, on missing and murdered indigenous women within our Committee, and that testimony, we have made sure that tribal leaders and tribal voices are at the table. So, I just wanted you all to know that we are working hard to make sure that that happens.

Mr. Schreiber, one thing that you mentioned that I don't think we think about a whole lot but is significant, is that the harmful impact of the oil and gas companies, how they disadvantage rural America. How has that happened in your county of Rio Arriba? It just stands to reason that you don't have nearly as much money as the big gas and oil giants in our country, and feeling like you are fighting against all odds, how have you seen that play out in your county of Rio Arriba?

Mr. SCHREIBER. Mr. Chairman, Representative Haaland, I think that what I would like to take from your question is an admonition or a request that everyone stand and fight, regardless of how disadvantaged you are, regardless of how upside-down those odds are. The response from Democratic leaders at the Federal and state level for the 20 years that I have been involved in this has rewarded us every time, and we have made progress. When we are losing, we have to say it. When we win, we have to put quotes on it because we didn't stop a well from being drilled. But the advances that we make by our activism and by standing up and with your support, I encourage everyone to do that. I don't want my remarks to seem like we don't have a strong future. We do, with your leadership, and Madam Secretary, and our governor here.

We are terribly disadvantaged in Arriba County especially, and our neighbor, San Juan County, I can name dozens of families in New Mexico from my father's generation, mine, and my children's generation that have made fortunes of spectacular proportions. Yet, a *USA Today* survey finds farms in New Mexico and the general area, the metropolitan area there, the worst place in the United States to raise a child. How can that be?

That is how we are impacted when there is a great lack of investment back to the communities from where those resources are extracted, and it is never shown in greater stark relief than we all saw it yesterday in Chaco, where so many spoke with a chest full of emotion that I certainly feel myself. Thank you.

Ms. HAALAND. Thank you very much for speaking your truth.

[Applause.]

Ms. HAALAND. Secretary Cottrell Propst, I have heard that the area BLM offices apply different standards and practices for consultation. How is the New Mexico Energy, Minerals, and Natural Resources working with the BLM to create uniformity for the benefit of all New Mexican citizens?

Ms. COTTRELL PROPST. Thank you, Representative Haaland. I would like to answer your question in part by talking about what we are doing on tribal consultation, if I may. Good-faith consultation with tribal governments is a really important aspect of our work, and New Mexico, as we have talked about, is home to so many other governments besides the state government, and consultation with all of them is no easy task, but it is not a task that we shrink from.

We officially adopted as an agency a tribal consultation policy in 2009, and we are currently revising that policy to meet the needs of our tribal partners. I have appointed our Deputy Secretary as the tribal liaison because I believe tribal consultation needs to happen at the highest level of each agency.

Official consultation can be carried out either by a request from our department or at the request of a tribal government that identifies an interest in an area of action. We are very committed to this. I am glad to give you more examples of the work that we do. For example, with the Oil Conservation Division, we worked extensively with the Apache on oil and gas well testing and underground injection control for injection wells. In addition, we have worked with the Navajo Nation to reclaim and remediate tribal lands affected by spills and leaks. So, this is the place where we step in where perhaps the BLM doesn't have the resources to do so and work to get the job done. Thank you.

Ms. HAALAND. Thank you very much, and I yield back, Chairman.

Mr. LOWENTHAL. I would like to now recognize Representative Luján for 5 minutes of questions.

Mr. LUJÁN. Thank you very much, Mr. Chairman.

Mr. Schreiber, you have long been an advocate for reducing methane emissions here in New Mexico. How can Congress specifically support your efforts to stop methane emissions here in New Mexico and across the country?

Mr. SCHREIBER. Mr. Chairman, Representative Luján, the BLM Methane Waste Rule that was passed and signed into effect in 2016 was the result of a long, lengthy, and extremely broad consultation, and we are talking about consultation processes here today. That included hearings in five different communities throughout the United States with extensive comment periods, and complete involvement from the President's team. Professor Amanda Liter from Washington, DC headed that effort up, and that was a tremendous rule. We have that tool. I would like to say that is part of the shield and the spirit that was spoken so eloquently about by my predecessor here, Chairman Nez.

You have the tools in your hand. How you fight back against this current administration to be able to use those tools on behalf of people like myself, Kendra, and the folks across America that we represent, we just encourage you to do that. But that is a tremendous rule. We will bring it down. We will put a state rule in place. But methane pollution knows no state boundaries. We air-mail that pollution to my friends and my family up in southern Colorado every time the wind blows. So, we need a Federal regulation, as well as state regulations.

Mr. LUJÁN. You touched on my second question, Mr. Schreiber, which is that your ranch is right on the border with New Mexico and Colorado. Can you talk about the difference between the two?

Mr. SCHREIBER. Well, I will tell you, there is no difference in the air. There is none. The idea that Colorado has a strong methane waste rule that works well for them, that is over 5 years old and has proven to have little or no effect on the operators, and they endorsed that bill. Governor Hickenlooper and my associate, Gwen Lacko, who is a friend to so many of us here and a great activist

and voice for methane control in New Mexico, as well as Colorado, helped Governor Hickenlooper put that into place.

The history of time has the wind going southwest to northeast across the Colorado Plateau. So, as hard as they work to control what they are doing, we are dumping that onto them. Not only that, but Coloradans come to New Mexico to work and play and to shop, and we don't just send the methane to them, they have to come to the methane in us. We need to fix that with a state law and a Federal law.

Mr. LUJÁN. Madam Secretary, you highlighted in your testimony about the importance of how the Federal Government should be working to stop this. Under your leadership and that of Governor Lujan Grisham, Secretary Kenney's Environment Department, you are taking steps to lead in addressing the methane emissions here in New Mexico. Do you see a need for the Federal Government to move in a similar direction?

And, in her testimony, Ms. Pinto brought up something important, which is if they are held accountable. Can you talk about how New Mexico holds people accountable and what the Federal Government could be doing to hold more people accountable, understanding that under the Martinez administration your budgets were reduced? We saw a reduction in staff. We are now seeing fewer staff with the Trump administration, fewer people that have the responsibility to carry this out. Can you touch on that briefly? And then I have one other question.

Ms. COTTRELL PROPST. Sure, Mr. Congressman. We work well with the BLM. I think it is important when we can lead at the Federal level and be comprehensive. That is helpful. But in the absence of that, the states will lead. BLM is the land management agency, and the state cannot assume all of its duties under Federal law. Like I said in my testimony, we don't see duplication as being a problem here. We work together to avoid conflicts.

On methane, the state did hold off on adopting rules while the BLM and EPA were developing them. Now that the Federal agencies have reduced or eliminated their rules, the state will move forward with its proposals.

Mr. LUJÁN. I appreciate that. While I am not one of the experts that is involved with these deliberations, the camera that we used yesterday clearly gives someone a tool to go and say, hey, there is a leak, and they can geo-tag it now. It turns out that even on our phones, we have GPS locating and can geo-tag. You have the video, and then you go back a week later, whatever it may be, and say, hey, it is still leaking. We can hold these people accountable, so I hope that there is a recommendation to do that as well.

[Applause.]

Mr. LUJÁN. Ms. Pinto, there is one piece of your testimony that you weren't able to include as you were speaking but that has been submitted to the record, but it is an important one. You state that you live on one of the parcels that was put up for lease by the BLM in 2018, but you never received a public notice in your mail or on your door to alert you. Can you talk about that and what is going on with this when you talk about notice?

Ms. PINTO. Yes. I think the bare minimum, at least from what I understand, is that BLM has to put a public notice on their

website, but the difficulties with our area is that not everyone in our area has a smart phone, Internet access or a computer, or even a television. I do have all those things. I do have those amenities, but not everyone does. So, I went to the bare minimum of saying we never got snail mail to tell us that there were potential impacts to this activity that was brought in by outsiders.

It is important that everyone knows that every single person was contacted to let them know that there could be a well pipe under them, 2 miles under them.

Mr. LUJÁN. I appreciate that.

Mr. Chairman, could I just bring to the Committee's attention the importance of the lack of notice that is taking place, and the notion that while we are still fighting to get connectivity in many parts of America, but especially on the Navajo Nation, we all were there yesterday, and we know where our phones worked and where they did not work. I am telling you that it is just not adequate. We have entities making millions, if not billions of dollars, and they say that it is too hard and too expensive to notify residents. That is something else that should be included in this, and I yield back.

[Applause.]

Mr. LOWENTHAL. Thank you, Representative Luján, for bringing that issue up to our Committee to address.

Next, I would like to recognize Chairman Grijalva for 5 minutes.

Mr. GRIJALVA. Thank you again, Mr. Chairman.

Madam Secretary, many of our friends on the other side of the aisle in Washington argue that agencies like the BLM should not be regulating methane, waste, or fracking, or practically anything, because that is an attack on state sovereignty and keeps states from regulating oil and gas in the way that they know best.

I ask this question because, first of all, do you think that is true? Second of all, do Federal regulations on oil and gas interfere with your ability to regulate as a state?

Ms. COTTRELL PROPST. Mr. Chairman and Chairman Grijalva, thank you. I do think we can work together with the BLM, depending on what is going on at the Federal level. If there is a desire to move forward with BLM on Federal methane regulations, then let's look at how to make sure it happens responsibly and without duplicating state efforts or without interfering with anything we are doing here.

Right now, given the circumstances we are in, when we do not see that leadership at the Federal level, we feel like we have to move forward. We are taking a look at evaluating our regs and where the opportunities are to be strong. We are going to work with stakeholders and the industry, with environmental groups, with tribal groups and others. So, we are going to move forward given that reality. Thank you.

Mr. GRIJALVA. Thank you very much.

Mr. Schreiber, have you seen any change in how the BLM field offices operate here with regard to this issue since this administration took office?

Mr. SCHREIBER. Mr. Chairman, Chairman Grijalva, we have had a long, contentious relationship with the BLM, but up until this present administration we have always been able to continue a dialogue, perhaps disagreeing but always on a go-forward footing.

We have instituted on our ranch an open-space pilot project with the cooperation of the BLM, and we have always been able to find a way to go forward.

We don't have that now. I think that has been withdrawn. Our local field office, while, as I said in my statement, there are so many good-hearted and willing public servants there, their hands are really tied from above, and our hearts go out to them to the degree that they know what needs to be done. But we can't receive that cooperation that we once had, and we miss that very much.

Mr. GRIJALVA. Let me just follow up. Did the notice which we heard about and saw pictures of, the notice of the violation of the corporation, did that include a fine? Do you know?

Mr. SCHREIBER. Mr. Chairman, Chairman Grijalva, I do not think that notice of violation process is concluded, so the fine is yet to be determined. But it is such a tremendous step forward for this state to have taken that, given the last 8 years of where we have been in this state. So, that is a $15,000-a-day fine potentially. It is really one of the most positive steps that we have seen. It took a lot of work to get there. We appreciate everyone's cooperation in Washington, DC, and here at the state level. That is showing great potential.

Mr. GRIJALVA. Mr. Reed, just a general question, reclamation being part of it, reclamation of oil and gas infrastructure in the Greater Chaco Region, and the need to reclaim that, but I think a little bit of a question about identity.

I think Chaco Canyon and many of the other areas that we will be talking about in relationship to the extraction industry and their effect on those—Bears Ears, Grand Canyon, et cetera. Identity—we know what that means to this Nation and what it means to the region, and what it obviously means to the Pueblos and to the Navajo people, but how that is part of our identity, and your reaction to that jeopardy.

Mr. REED. Chairman Grijalva, Mr. Chairman, I appreciate the question. Identity for Americans, I think, is a hugely important part of who we are, and in the special space in Chaco and around Chaco this represents a key portion of the identity of our New Mexico Native American friends and colleagues.

And what we are seeing happening with the fragmentation of this ancient landscape is basically the erasure of this identity and this ancestry with each new well pad, each new cluster, each new pipeline road.

If I might briefly make a comment on the earlier question about whether the current cultural resource management laws are adequate, I would definitely say they are not. We go out as archeologists, we survey areas, we have a well pad here, we identify a cultural site, we put a circle around it, and then we make companies go 50 to 100 feet away, and then they get their infrastructure, their well pad, their road. Meanwhile, we have an in-filling of this ancient, amazing landscape basically being intruded by an industrial landscape. As noted earlier, this oil field is almost 100 years old, so we are having tremendous indirect and cumulative effects on this landscape through time.

At this point, 91 percent of the Farmington Field Office is leased for oil and gas. We have been working hard to get that last 9

percent, about 5 percent of which is within the 10-mile zone, to get that protected, to save this last piece of this.

So, that is where we have been working really hard with our partners, with the APCG, with the Navajo Nation. Thank you.

Mr. GRIJALVA. Thank you.

I yield back, Mr. Chairman.

Mr. LOWENTHAL. Thank you.

I want to start with Ms. Pinto. Yesterday you visited the oil and gas well sites near Chaco Canyon with our delegation. Can you describe to our Subcommittee your experience from yesterday?

Ms. PINTO. How honest do you want me to be?

[Laughter.]

Ms. PINTO. Thank you for the question, though.

Mr. LOWENTHAL. Very.

Ms. PINTO. OK. Well, I have made many trips to DC, and every single trip that I have gone to, I have invited Udall, I have invited Heinrich, I have invited Luján, and that was 4 years ago it started. So, it was amazing to see Federal people, DC people here yesterday, because we have been fighting just for a visit, and it finally came true. But now we have to continue on this path to make sure that everything is protected, the people and the space out there.

So, yesterday was very interesting because it was not new for me, but it was new for you, and I wanted to see your reactions. I wanted to see how you felt and how you would incorporate that information into your decisions in the future.

Mr. LOWENTHAL. Thank you.

Now I would like to ask Mr. Reed a question.

[Applause.]

Mr. LOWENTHAL. We will get back to that.

[Applause.]

Mr. LOWENTHAL. It is a real pleasure and honor for us to have an archeologist here to testify. So, maybe to educate ourselves, the question is that yesterday we had the opportunity, as was just pointed out, to visit Chaco Canyon and to explore a Pueblo Bonito. Can you take us back in time and describe what we would have witnessed there at Pueblo Bonito had we been there 1,000 years ago?

Mr. REED. Thank you, Mr. Chairman. This is something archeologists dream about, and probably many of us Americans, right?

[Laughter.]

Mr. REED. The time machine. What we have instead of a time machine is we have deep, deep tribal tradition, Pueblo tradition in our oral history that goes back, and we have archeology, which admittedly has not been very respectful in the past. I am pleased to say that we are working much more closely with our Native American colleagues and partners at this point.

If we went back to Pueblo Bonito, I believe we would see an amazing area of activity. We would see hundreds, perhaps thousands of people carrying on daily activities. We would hear dogs barking. We would hear babies crying. We would perhaps see turkeys running about. We would see people making pottery. We would see people using different types of native stone to build and make arrowheads and projectile points. We would basically see an amazing representation of probably—or definitely, from what we

know—the largest site in Western North America at that point in time as a living, thriving community.

I am not sure we would quite compare it to a city with the number of people, but certainly a very active town with the bustle of activity going on. We might have some indication of the importance of the activities that were happening behind the scenes that were not for everyone's eyes, and we would see the connections in Chaco that archeologists and tribal folks and others, interested people, have worked so hard over the last 25 or 50 years to develop.

We would see the other buildings in Chaco Canyon, and we would see many, many people going about their activities. We would go across to Ocho Wash, which was more of a river in those days with better precipitation, less environmental damage, and we would literally see acres upon acres of corn being grown, along with beans and squash and many other traditional plants.

So, for me, again, this is the dream question and the dream time travel trip. Thank you.

Mr. LOWENTHAL. I just wanted to respond in my last minute to Ms. Pinto's question about what was our response, and I can just speak for myself, and maybe I will give each member of the panel a minute. That is an excellent question. We keep asking you questions, and now you asked us a question.

It was a profound and moving experience. For me, to have seen clear blue skies when we drove up when we saw that oil production, and then when we looked through that camera that Representative Luján mentioned, I was shocked to see the entire sky—the entire sky—filled with methane gas. It was profound and moving.

And the second part was, to follow up, and that is why I asked Mr. Reed, it was a profound experience for us to be part of the sacred grounds and to understand where we were walking, and who walked there, the ancestors before us, was very, very moving.

I would like to ask the other members of the panel also what was your experience? I will start with Representative Haaland.

Ms. HAALAND. Thank you, Chairman.

And thank you, everyone, for being here.

Ms. Pinto, I think you got the largest applause here today, so we appreciate you being here.

For me, I have been on the Navajo Nation many, many, many times, and I organized there. I spent almost every single election for the past close to 20 years going to the Navajo Nation to knock on doors, to register voters, to just be in the communities to make sure that they understood what was at stake in any election that we have ever had here in New Mexico. I have always been honored to be there because the Navajo people are some of the most loving and generous and kind people I have ever met.

So, to know that a lot of our tribal communities live in poverty and yet still have a strong desire to be a part of this state and of our Federal Government and of our armed forces and everything that they do to move our country forward, in spite of the fact that they are struggling daily for water, for clean air, for food, for just the basic necessities that a lot of us really do take for granted, it is emotional for me every time.

The thing that was different about yesterday was the camera, the infrared camera. I had never looked through a camera to see pollution like that just spewing out of pipes in my life. I had never seen that before. I feel like I ran for Congress because I wanted to be a voice for people like you, because I feel like I know what is important to you. I feel like that one thing that I did yesterday, it helped me tremendously to further my knowledge about what my charge is as a Congress Member. So, thank you.

[Applause.]

Mr. LOWENTHAL. Thank you.

Mr. LUJÁN. It was not my first time visiting Chaco. As Deb said, yesterday was special, being there with our colleagues and friends and the stories that were shared, some that were shared with everyone that was participating, many that were shared with private conversations. You and I had a few.

When we were at the site where the camera that Chairwoman Haaland references, I noticed, when Kendra came up I noticed—I think it was the scarf you are wearing today, or was that a different one yesterday? You had your face covered. We could smell it, and I asked you if you could. You said you still could. But what often goes where you smell something but you don't see it, there is a reason why I commented on that camera several times, not just to the Secretary but to the Committee, to see it.

We were told to load up in our cars right away because they didn't want us to get sick while we were there breathing it in. One of the sites we went to, there was a home less than a stone's throw away from one of the sites, not just people but horses and their animals. They don't get to get in their cars and go away. You understand the magnitude of what is happening.

The other thing that left a lasting impression on me, and Congresswoman Haaland and I talked about it quite a bit, and we shared this today with the Santa Fe New Mexican editorial board, it was about a decade ago that I had the honor of working with my colleagues to pass a Navajo Nation water settlement. It was some work that my father also started here in New Mexico with many of the legislators here in the room today, to ensure that we are able to get water to communities that do not have any water.

Senator Bingaman had a project with some Navajo students to show where water came from a decade or more ago, and many of the students drew pictures of grandma carrying buckets, or the backs of pick-up trucks with water that they were moving. Other students drew pictures of water faucets.

There was a well that was pointed out to us that was a well that was approved under the previous land commissioner, a fresh water well. They showed us where the water came out, which was a large tank that was used for oil production and for gas. But the communities that were also in eyesight of where we were looking don't have access to that well.

It was profound, and it was a very important visit, and I thank you for asking that question, Mr. Chairman.

Mr. LOWENTHAL. Chairman Grijalva.

Mr. GRIJALVA. Thank you, Mr. Chairman. Good question.

We all seek dispositions because of our need to want to serve, our sense of values, and because we want to do the right thing. But I

think the impression that I left with yesterday after we left the Canyon is that you have these rare opportunities to be responsible as elected officials and Members of Congress, to be truly responsible for something much bigger than yourself, and that was it.

Mr. LOWENTHAL. Thank you.

That concludes our third panel.

Before we bring up the fourth panel, I want to thank the audience for being so attentive, so courteous to everyone, allowing yourselves, when you really wanted to respond, to respond in a very nice way and supportive.

So, since you have been so good, we have a very important last panel coming up, and we would like you all to stay, but I would like to give you 5 minutes of recess to stretch your legs, because you have been great.

So, this Committee is in recess for 5 minutes. That is all. Thank you.

[Recess.]

Mr. LOWENTHAL. Please take your seats. We need to proceed. We still have one very important panel. Everybody is waiting. We are not going to start until everybody has a chance to come on in.

I was going to say I would now like to invite the fourth panel to take their seats, but they have already taken their seats, so I would like to introduce them.

I am going to introduce everyone first. Our first witness will be Barbara Webber, who is the Executive Director of Health Action New Mexico. Our second witness is Dr. David Lyon, a scientist with the Environmental Defense Fund. Our third witness is Mr. James Jimenez, the Executive Director of New Mexico Voices for Children. And our final witness is Mr. Craig O'Neill, the Global Business Development Manager at FLIR Systems.

Before we begin, we have spent a lot of time and talked about how we were moved very much by seeing through the infrared camera the plume that we could not see with our naked eyes, and I want to thank Ms. Sharon Wilson of Earthworks who accompanied us yesterday and had the infrared camera so that we could see it. I think Mr. O'Neill also has something about that that he mentioned. But we were profoundly moved, and it could not have happened without seeing the plumes themselves and going through that.

So, with that, I would like to begin. We will begin the testimony now with Ms. Webber for 5 minutes.

Welcome to the Committee, Ms. Webber.

STATEMENT OF BARBARA WEBBER, EXECUTIVE DIRECTOR, HEALTH ACTION NEW MEXICO, ALBUQUERQUE, NEW MEXICO

Ms. WEBBER. Thank you. I want to thank the members of the Committee for coming to New Mexico to seek input from those of us living with current Federal decisions that are undermining public health.

New Mexico knows all too well the consequences of ignoring public health and safety. For decades, communities such as those in the Tularosa Basin have had to live with the after-effects of the Trinity atomic bomb, the uranium mines that have already been mentioned, and these are still excluded from the Radiation

Exposure Compensation Act. New Mexico has paid a heavy price. Let's not repeat history.

Oil and gas is responsible in New Mexico for 300,000 metric tons of volatile organic compound pollution every year. This is the precursor of ozone. As a result, three counties in New Mexico are in danger of exceeding Federal clean air standards this year—San Juan, Lea, and Eddy. Another two counties, Rio Arriba and Chaves, are expected to join that list by the end of this year, which means that we have five counties exceeding or looking like we will exceed the Federal health standard for ozone.

For 50 years, we have more than a body of research demonstrating the relationship between ozone exposure and respiratory distress and cardiovascular problems, premature death, strokes, and neurological effects. Children and older adults are most at risk from ozone pollution. Children with asthma—New Mexico has a high rate of children with asthma—face higher risks from ozone exposure, such as decreased lung function and increased respiratory symptoms. For older adults, elevated ozone levels can literally make the difference between life and death. A study of 61 million Medicare patients found a significant correlation between ozone exposure and mortality. These effects were seen at ozone levels significantly under those of the current national air quality standards. New Mexico, by 2030, will have the third highest older adult population in the country.

The science is clear: both short-term and long-term exposure to ozone comes with real and serious health risks. Oil and gas development also releases hazardous air pollutants such as benzene, a known carcinogen, and other pollutants, and these pollutants can cause cancer, blood disorders, and seriously impair the neurological functioning of humans.

The last serious public health risk that I want to highlight is the stunning 1 million metric tons of methane being released in New Mexico each year, which contributes to climate change. This methane is responsible for more than a quarter of climate change that we are already experiencing.

The CDC notes that climate change "will likely include more variable weather patterns, heat waves, heavy precipitation events, flooding, droughts, more intense storms, sea level rise, and air pollution. Each of these will have significant public health effects."

Climate change contributes to air pollution in two important ways, first by increasing temperatures, which exacerbates ozone; and second, it has already led to more intense wildfire seasons in New Mexico and throughout the West. These fires generate particulate matter, forcing residents to limit their outdoor activity and exacerbating respiratory issues.

Climate change will also create water insecurity and life-threatening heat waves in New Mexico. Water issues will affect most of those who are not on municipal water supplies, including 30 percent of the residents in the Navajo Nation. Moreover, extreme heat poses health risks, including death, especially for children and elders, and is especially acute for those who are without access to electricity, including 40 percent of the residents in the Navajo Nation.

What is our Federal Government doing? Last year, BLM rescinded the Methane Waste Prevention Rule. The EPA has proposed to weaken leak detection and repair standards. And most amazingly, the EPA is expected to have another rollout to remove the agency's authority to regulate methane entirely.

This stands in stark contrast to the actions by our New Mexico leaders, and we commend their bold leadership on this issue. Yet, the simple truth is that, yes, we can take state action, but we need Federal action as well. It is critically important that the Federal Government change course and stop efforts to roll back commonsense regulation, and that Federal, state, and local governments conduct and require Federal health impact assessments when making oil and gas planning and leasing decisions.

Air pollution does not stop at state or international borders, and we need the United States to once again lean on this issue.

Thank you for this opportunity to testify.

[The prepared statement of Ms. Webber follows:]

PREPARED STATEMENT OF BARBARA WEBBER, EXECUTIVE DIRECTOR, HEALTH ACTION NEW MEXICO

First and foremost, I would like to thank Mr. Chairman and the members of this Committee for coming to New Mexico today to seek input from those of us in states that are living with the decisions made by the Trump administration that are undermining public health protections in New Mexico and throughout the West.

My name is Barbara Webber, and I am the executive director of the Health Action New Mexico based in Albuquerque. I began my career working on rural health and development issues internationally and have worked in various capacities to advocate for women's health including managing teams for hospice care and women's reproductive health. Prior to joining Health Action New Mexico in 2009, I was an analyst for the New Mexico Health Policy Commission.

Since 1995, Health Action New Mexico has worked to empower consumers to build healthy communities and secure better health care for their families. We care deeply about protecting the health and future of New Mexico families, and one of the best ways to do that is to cut pollution now and avoid future health care costs later.

I would like to also acknowledge our good friends from the Interfaith Worker Justice and the Tularosa Basin Downwinders Consortium who know all too well the consequences of what happens when public health and safety are ignored. For decades, this community has had to live with the after-effects of the Trinity atomic bomb test and, to this day, are still excluded from the Radiation Exposure Compensation Act.[1] In addition to the documented after-the-fact disastrous health consequences to the lives of its citizens, New Mexico has paid for decades the burden of resulting health care costs and lost human productivity. Let's make it a lesson well learned.

In my testimony today, I will provide an overview of the public health threats posed by oil and gas development to New Mexicans including ozone pollution, hazardous air pollutants (HAPs), and climate change. I will also highlight key policy issues that this Committee, the Federal Government, and the state should address.

It is critically important that the Federal Government change course and stop efforts to rollback common-sense rules. We also strongly believe that the Federal, state, and local governments should conduct and require health impact assessments when making oil and gas planning and leasing decisions. We cannot make informed and responsible decisions without critical knowledge of the health impact on our citizens and too often, we the consumers do not have this data.

Ozone pollution poses a serious threat to the health of New Mexicans, especially those living in poor, rural communities.

According to analysis released this past week by the Environmental Defense Fund, oil and gas is responsible for 300,000 metric tons of volatile organic compound pollution, a precursor to ozone pollution every year.[2] These emissions have contributed to high levels of ozone pollution that are dangerously close to exceeding

[1] https://docs.wixstatic.com/ugd/2b2028_4222ab657d7c4e4aa07975728329fa66.pdf.
[2] https://www.edf.org/nm-oil-gas/emissions.

Federal clean air standards of 70 parts per million in three counties including San Juan in northwest New Mexico and Lea and Eddy in the southeast. Almost 73 percent of the state's oil and gas wells and more than 83 percent of the state's production are located in those three counties. These counties are the top oil and gas producing counties in the state.

Rio Arriba and Chaves counties are expected to join that list when new air quality data is released in 2019. Should that prove to be true, 97 percent of the state's wells and 95 percent of the state's production would be located in counties nearing ozone nonattainment status.

An extensive body of scientific research, including research by the U.S. Environmental Protection Agency (EPA), demonstrates a causal or likely causal relationship between ozone exposure and respiratory distress, cardiovascular problems, premature death, strokes, and neurological effects.[3] Children and the elderly are most at-risk to ozone pollutions.

Asthma is now the most common non-communicable disease in children in the United States and in New Mexico our asthma rate is higher than the national rate. Children with asthma face higher risks from ozone exposure such as decreased lung function and increased respiratory symptoms.[4] And children may miss school due to ozone exposure[5] or even suffer a permanent disability.[6] Longitudinal studies have demonstrated that "long-term [ozone] exposure influences the risk of asthma development in children."[7]

New Mexico has a rapidly aging population so that by 2030, we will have the third highest older adult population in the country. For older adults, elevated ozone levels can literally make the difference between life and death. A 2017 study of almost 61 million Medicare patients conducted nationwide found a significant association between ozone exposure and all-cause mortality, with effects strongest in minorities and populations of low socio-economic status, especially of note for our state since New Mexico is a minority/majority state with the second highest poverty rate in the country. These effects were seen at ozone concentrations well below the current National Ambient Air Quality Standards level of 70 ppb.[8] Note, there are at least five oil and gas-producing counties in New Mexico that I mentioned earlier that are nearing Federal health standards.

And as the American Lung Association has noted, breathing ozone can affect the heart as well as the lungs. There is strong evidence of an association between out-of-hospital cardiac arrests and just a short-term exposure to ozone.[9] ALA also noted a 2006 study that linked exposures to high ozone levels for as little as 1 hour to a particular type of cardiac arrhythmia that itself increases the risk of premature death and stroke.[10]

The science is clear. Both short-term (hours, weeks, or days) and long-term (months or years) exposure to ozone come with real and serious risks to our health.[11]

Oil and gas development also releases hazardous air pollutants ("HAPs"), such as benzene, a known carcinogen. Exposure to HAPs can cause cancer and seriously impair the human neurological system. Unsurprising, studies have found that those living in close proximity to oil and gas activity had higher measured exposures to HAPs and face increased risks to their health.[12] Furthermore, a "number of adverse non-cancer health effects including blood disorders, such as pre-leukemia and aplastic anemia, have also been associated with long-term exposure to benzene."[13] In addition to the risks associated with benzene, exposure to other HAPs is also harmful to human health. For instance, the serious health effects associated with exposure to toluene range from dysfunction of the central nervous system to narcosis, with effects "frequently observed in humans acutely exposed to low or moderate levels of toluene by inhalation."[14]

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[3] https://www.edf.org/sites/default/files/content/Ozone_Summary_Report.pdf.
[4] https://www.ncbi.nlm.nih.gov/pubmed/11999000.
[5] http://www3.epa.gov/airquality/ozonepollution/pdfs/20151001numbersfs.pdf.
[6] https://www.epa.gov/sites/production/files/2014-12/documents/2014.05.19_chpac_ozone_naaqs.pdf.
[7] *Id.*
[8] https://www.nejm.org/doi/full/10.1056/NEJMoa1702747.
[9] https://www.ncbi.nlm.nih.gov/pubmed/23406673.
[10] https://www.ncbi.nlm.nih.gov/pubmed/16393668.
[11] https://cfpub.epa.gov/ncea/isa/recordisplay.cfm?deid=247492.
[12] https://pubs.acs.org/doi/10.1021/acs.est.7b05983.
[13] *Id.*
[14] *Id.*

Lastly, the 1 million metric tons of methane released each year during oil and gas development and production contributes to climate change and creates a serious public health threat.

Methane is 84 times more powerful that carbon dioxide as a greenhouse gas pollutant in the near-term and responsible for more than a quarter of the climate change that we are already experiencing today.[15]

As noted by the Centers for Disease Control and Prevention, climate change "will likely include more variable weather patterns, heat waves, heavy precipitation events, flooding, droughts, more intense storms, sea level rise, and air pollution. Each of these impacts could negatively affect public health." [16]

Climate change contributes to air pollution in the West in two important ways. First, by increasing temperatures it exacerbates ozone pollution issues, especially during the summertime. Heat is a key factor in transforming volatile organic compounds into ground-level ozone or smog. Second, climate change has already led to longer, more intense wildfire seasons in New Mexico and throughout the West. These fires generate particulate matter. Just last summer, Albuquerque saw elevated levels of particulate pollution due to the Buzzard Fire in the Gila National Forest.[17] Public health experts warned residents to limit their outdoor activity.

Climate change will also create water insecurity and life-threatening heat waves in New Mexico. Declining water supplies due to climate change is a dangerous public health threat that will affect those who are not on municipal water supplies the most, including 30 percent of residents in the Navajo Nation.[18] Last summer, the entire state of New Mexico was in a drought. Moreover, extreme heat poses health risks, including death. This threat is especially acute for those without access to electricity, including 40 percent of residents in the Navajo Nation.[19]

Instead of tackling the threat posed by ozone and methane pollution, the Federal Government has shirked their responsibility. In January 2018, the U.S. Bureau of Land Management rescinded the Methane and Waste Prevention Rule, putting more than 30,000 oil and gas wells in New Mexico back under the Notice to Lessee 4A (NTL–4A) framework that is more than 30 years old and lead to the San Juan Basin methane hotspot, massive amount of emissions emanating in the Permian Basin, and more than $111 million worth of natural gas wasted annually on New Mexico's Federal lands alone.

And in the fall of 2018, the EPA proposed to weaken leak detection and repair standards despite the fact that the agency found that such measures had even bigger benefits and were even more cost effective than originally estimated by the agency. This will lead to more than 480,000 tons of methane nationwide.[20] Most importantly, the EPA is expected to release a second rollback that would remove the agency's authority to regulate methane. This proposal is wrongheaded, especially in light of several major oil and gas producers—including companies with operations in New Mexico—that have come out in favor of Federal methane regulation.

This stands in stark contrast to actions by New Mexico leaders. In January 2019, Gov. Michelle Lujan Grisham issued an executive order that created a cross-agency effort between the Energy, Minerals and Natural Resources Department and the Environment Department to develop an enforceable regulatory framework that will cut ozone and methane emissions from new and existing oil and gas sources.[21]

Health Action New Mexico commends Gov. Lujan Grisham for her bold leadership at the state level, and we call on her and her agencies to move forward on these rulemakings without delay. We also thank members of the House Natural Resources Committee for their tireless efforts to defend the health and future of New Mexico's families.

The simple truth is that even after New Mexico has acted at the state level to cut emissions, we need strong action at the Federal level. Public health considerations and the scientific evidence behind such considerations must be at the forefront of these actions. Air pollution does not stop at state or international borders, and we need the United States to once again lead on this issue.

Thank you again for the opportunity to testify.

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[15] https://www.edf.org/climate/methane-other-important-greenhouse-gas.

[16] https://www.cdc.gov/climateandhealth/effects/default.htm.

[17] https://www.abqjournal.com/1179685/wildfire-in-gila-culprit-of-thursday-night-smoke-in-abq.html.

[18] https://19january2017snapshot.epa.gov/sites/production/files/2016-09/documents/climate-change-nm.pdf.

[19] *Id.*

[20] http://blogs.edf.org/energyexchange/2018/12/13/epa-methane-rollbacks-contradict-agencys-own-scientific-findings/.

[21] https://www.governor.state.nm.us/2019/01/29/gov-lujan-grisham-signs-executive-order-committing-new-mexico-to-essential-climate-change-action/.

Mr. LOWENTHAL. Thank you, Ms. Webber.

I now recognize Dr. Lyon for 5 minutes of testimony.

STATEMENT OF DAVID LYON, PH.D., SCIENTIST, ENVIRONMENTAL DEFENSE FUND, AUSTIN, TEXAS

Dr. LYON. My name is David Lyon. I am a scientist at Environmental Defense Fund (EDF), a non-partisan, non-profit environmental organization with over 2 million members and 700 staff guided by science and economics to find practical solutions to urgent environmental problems. I have worked at EDF for almost 7 years and earned my Ph.D. researching methane emissions from oil and gas development. I want to thank the Chair and Committee members for the opportunity to speak on this issue.

Methane is a short-lived but powerful greenhouse gas that contributes about a quarter of current global warming. Methane is also the primary component of natural gas, and the emissions are a consequence of the oil and gas industry wasting a valuable product and energy resource.

About 8 years ago, there were little data available to answer questions about how methane emissions would affect the climate impact of using natural gas. In response, EDF launched a series of 16 research studies to quantify methane emissions across the U.S. oil and gas supply chain. These studies involved over 140 experts and resulted in 38 peer-reviewed publications. Today, I will highlight our major findings and their implications for reducing emissions.

First, what is the magnitude of the problem? The current best estimate of methane emissions from the U.S. oil and gas supply chain is from Alvarez et al., 2018, a paper by 24 co-authors from 16 organizations published last summer in the *Journal of Science*. This paper synthesizes data from EDF-sponsored and other studies to estimate emissions are 13 million metric tons of methane, equivalent to 2.3 percent of our Nation's natural gas production. These emissions are 60 percent higher than estimated by the EPA, and almost double the short-term climate impact of using natural gas for energy.

In New Mexico, at least 1 million tons of methane are admitted from upstream oil and gas sites alone, and this conservative estimate was recently published by EDF based on data from the *Science* paper in new measurements from well pads in the Permian Basin. This wasted gas could meet the heating and cooking needs of every home in New Mexico. And EDF estimates the state is losing over $40 million in tax and royalty revenue due to this lost gas.

In addition to methane, about 300,000 tons of volatile organic compounds are also emitted from these sites, which contribute to ozone formation and include hazardous air pollutants with local health effects.

The highest emissions in the state are found in the Southeast where the Permian oil boom has led to a massive increase in new wells and flaring, but emissions remain high in the San Juan Basin where tribal communities are at risk from local air pollution.

At the Federal level, the United States made important steps during the Obama administration, including promulgation of the BLM Waste Prevention Rule for all oil and gas sources on Federal

and tribal lands, and the EPA New Source Performance Standard for new and modified sources nationwide.

Unfortunately, the Trump administration has decided to ignore the science and is working to weaken and repeal these rules. I urge the Committee members to push back against the Administration's mistaken legal and scientific rationale for undoing these commonsense regulations.

Meanwhile, state, local, and tribal governments can serve as important allies for reducing emissions. As Colorado has shown since it became the first state in the Nation to directly regulate methane emissions in 2014, strong rules can have a dramatic positive impact on reducing air pollution from the oil and gas industry. New Mexico and the Navajo Nation both have opportunities to develop and implement strong rules that will protect our citizens from pollution and wasted energy resources. These regulations can and should include a comprehensive set of national controls, such as frequent leak inspections, low-emitting equipment, reduced flaring, and a transparent science-based pathway to allow innovative technologies and work practices that can achieve equivalent or better emission reductions.

Everyone wins by reducing methane emissions. The planet experiences less warming, communities are exposed to less pollution, and oil and gas companies improve their efficiency and reduce waste of a valuable product.

As both a scientist and concerned citizen, I am hopeful that these mutualistic solutions will be adopted widely as knowledge of their benefits spread.

Thank you for the opportunity to speak on this important issue.

[The prepared statement of Dr. Lyon follows:]

PREPARED STATEMENT OF DAVID LYON, PH.D. SCIENTIST, ENVIRONMENTAL DEFENSE FUND

INTRODUCTION

My name is David Lyon. I am a scientist at Environmental Defense Fund (EDF), a non-partisan, non-profit environmental advocacy organization with over 2 million members and 700 staff guided by science and economics to find solutions to urgent environmental problems. I have worked at EDF for almost 7 years researching methane emissions and other air pollution from oil and gas (O&G) development. I earned a Ph.D. in Environmental Dynamics from the University of Arkansas with my dissertation research on the quantification, assessment, and mitigation of O&G methane emissions.

I want to thank Chairman Grijalva, Subcommittee Chairman Lowenthal, and other members of the Committee for the opportunity to speak on the important issue of methane pollution from O&G development. In addition to being a powerful greenhouse gas that contributes about a quarter of current global warming, methane emissions are a consequence of industry failing to deliver a valuable natural resource to consumers. As I will cover in my testimony, O&G methane emissions are substantially higher than government estimates, but there are many cost-effective approaches that companies can implement to reduce emissions and improve operational efficiency.

OIL AND GAS METHANE EMISSIONS: A JOURNEY OF SCIENTIFIC DISCOVERY

Methane is both the primary component of natural gas and a powerful but short-lived greenhouse gas with more than 80 times the global warming potential of carbon dioxide over a 20 year period.[1] Public interest in O&G methane emissions

[1] Etminan, M., et al. (2016). Radiative forcing of carbon dioxide, methane, and nitrous oxide: A significant revision of the methane radiative forcing. *Geophysical Research Letters*, 43(24).

grew rapidly around 2011 when studies began posing questions about the climate impact of using natural gas to replace more carbon dioxide intensive fossil fuels such as coal.[2,3] At the time, there were little data available on methane emissions and almost nothing collected since the rapid growth of unconventional O&G development from horizontal drilling and hydraulic fracturing. As a science-driven environmental advocacy organization, EDF saw an opportunity to advance society's understanding of the magnitude and sources of O&G methane emissions and apply that knowledge to develop and implement cost-effective solutions to quickly reduce emissions. In 2012, EDF launched a series of 16 research studies to quantify methane emissions across the U.S. O&G supply chain. These studies involved over 140 experts from about 40 institutions and resulted in 38 peer-reviewed papers published in academic journals.

Today I will highlight a few major findings from EDF sponsored studies and other recent research on O&G methane emissions. Additional information on the EDF studies including links to the published papers can be found on our website.[4]

WHAT IS THE MAGNITUDE OF O&G METHANE EMISSIONS?

The current best estimate of U.S. O&G supply chain methane emissions is from Alvarez et al (2018), a peer-reviewed manuscript published in the journal *Science* by 24 co-authors including myself from EDF and 15 other organizations. This paper, which synthesizes data from EDF sponsored and other studies, estimates that 2015 U.S. O&G methane emissions were 13 million metric tons.[5] Emissions occur across the entire supply chain from the wellhead to customer meter, but are dominated by upstream sources like well pads and gathering stations, which account for about 80 percent of sector wide emissions. In context, 13 million tons is 60 percent higher than the official estimate published by the U.S. Environmental Protection Agency in their annual greenhouse gas inventory.[6] These emissions are equivalent to 2.3 percent of gross natural gas production and about $2 billion in wasted product.[5] At this loss rate, methane emitted across the O&G supply chain almost doubles the short-term global warming of using natural gas for energy.[5] Or to express this finding in another way, the climate impact of natural gas could be cut in half by eliminating methane emissions.

In New Mexico, at least 1 million tons of methane are emitted from upstream O&G sites—this conservatively low estimate was recently published by EDF and based on data from Alvarez et al (2018) and new measurements from Permian well pads.[7] These emissions have the same short-term climate impact as 22 coal-fired power plants and could meet the annual heating and cooking needs of every home in New Mexico. EDF estimates the state is wasting $275 million worth of natural gas and losing out on an additional $43 million in tax and royalty revenue every year due to methane waste. And about 300,000 tons of volatile organic compounds (VOC) is co-emitted with methane, which can include hazardous air pollutants with local health effects. The highest emissions are found in the southeast of the state where the Permian oil boom has led to a massive increase in O&G development and flaring, but emissions remain high in the San Juan Basin where tribal communities are at risk from local air pollution.

WHAT INSIGHTS HAVE WE LEARNED ABOUT O&G METHANE EMISSIONS?

During our research, we have learned three key insights with major implications for the quantification and mitigation of emissions: (1) O&G emissions are highly skewed with a relatively small number of sites contributing the majority of emissions; (2) traditional approaches tend to underestimate emissions; and (3) almost all emissions are can be reduced with cost-effective solutions.

In all studies of methane emissions from O&G facilities and equipment, a consistent finding has been that individual emission rates are highly skewed. This means that most sites or components have relatively low emissions, but there are some very high emitting sources that are responsible for a substantial portion of total emissions. A general rule is that the top 5–10 percent highest sources account

[2] Howarth, R.W., Santoro, R., and Ingraffea, A. (2011). Methane and the greenhouse-gas footprint of natural gas from shale formations. *Climatic Change*, 106(4), 679.

[3] Alvarez, R.A., et al. (2012). Greater focus needed on methane leakage from natural gas infrastructure. *Proceedings of the National Academy of Sciences*, 109(17), 6435–6440.

[4] https://www.edf.org/climate/methane-research-series-16-studies.

[5] Alvarez, R.A., et al. (2018). Assessment of methane emissions from the U.S. oil and gas supply chain. *Science*, 361(6398), 186–188.

[6] https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks.

[7] https://www.edf.org/energy/explore-new-mexicos-oil-and-gas-pollution.

for the majority of emissions in a category.[8,9] The identity of these high emitters is unpredictable—as demonstrated by a study I led that surveyed over 8,000 well pads across the United States with aerial leak detection.[10] And since high emissions can be caused by intermittent issues, different sites may be the worst offenders at any one time. This has important implications for both measuring and mitigating emissions, as I will expand upon in my following points.

Traditionally, EPA and other groups have estimated O&G methane emissions with inventory approaches such as emission factors and engineering equations that rely primarily on assumptions rather than measurements. For example, an operator would estimate emissions from pneumatic pumps by multiplying their number of pumps by an emission factor that represents the average emission rate of their pumps. Emission factors typically are based on limited measurements collected at the component-level, such as by directly measuring the methane emitted from a leaky valve. Unfortunately, numerous studies have discovered that these traditional approaches tend to underestimate emissions, sometimes dramatically. Many of the challenges are due to skewed emission rates, such as not sampling enough sites to include the highest emitting sources, or being unable to accurately quantify very large emissions with component-level measurements. In contrast, newer approaches estimate emissions from empirical data based on measurements collected at larger spatial scales such as by site or basin. One example is an EPA-developed approach that parks a vehicle downwind of a site to calculate total, site-level emissions from the concentration and wind data.[11,12] Another example is flying an aircraft upwind and downwind of an area to calculate regional emissions with the mass balance approach.[13] Compared to traditional approaches, these empirical methods are more accurate for estimating total emissions since they can better account for high emitting sources. Therefore, Alvarez et al (2018) estimated national emissions based primarily on site-level measurement data from over 400 well pads in 6 basins; these estimates were validated by comparing to independent, aircraft-based, regional emission estimates from 9 basins. I want to clarify that traditional approaches including component-level measurements remain valuable because they provide data about which types of equipment are responsible for emissions, but relying on these approaches to estimate total emissions causes EPA and others to underestimate the magnitude of the problem.

The third common finding in O&G methane research is that almost all emissions are avoidable. Skewed emission rates not only means that a relatively small number of sites have very high emissions, but also that most sites have low emissions. This is critical because it indicates that low emissions are the normal state while high emissions are anomalous. There are several cost-effective options for mitigating emissions depending on their source and cause.[14] One option is replacing equipment that vents intentionally, such as pneumatic controllers, with low-bleed or zero-bleed alternatives. Frequent inspection is key for large, unintentional sources so they can be rapidly detected and repaired. In many cases, emissions are caused by a simple issue that can be fixed immediately, such as a tightening a leaky valve. Other sources may require more extensive operational or engineering changes to minimize their chance of recurrence, but in many cases these actions will be cost-effective and result in greater operational efficiency in addition to lower emissions. For example, a controlled oil storage tank that is repeatedly leaking out its hatch may have an undersized vapor recovery unit (VRU); upgrading the VRU would reduce emissions and capture more gas to market.[15] Through a combination of regular inspection and root cause analysis, operators can identify the highest emitting sources, determine the underlying issues responsible for emissions, and make the changes necessary to bring all their sites to a normal, low emissions state.

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[8] Brandt, A.R., Heath, G.A., and Cooley, D. (2016). Methane leaks from natural gas systems follow extreme distributions. *Environmental Science & Technology*, 50(22), 12512–12520.

[9] Omara, M., et al. (2018). Methane emissions from natural gas production sites in the United States: Data synthesis and national estimate. *Environmental Science & Technology*, 52(21), 12915–12925.

[10] Lyon, D.R., et al. (2016). Aerial surveys of elevated hydrocarbon emissions from oil and gas production sites. *Environmental Science & Technology*, 50(9), 4877–4886.

[11] https://cfpub.epa.gov/si/si_public_record_report.cfm?Lab=NRMRL&dirEntryId=309632.

[12] Robertson, A.M., et al. (2017). Variation in methane emission rates from well pads in four oil and gas basins with contrasting production volumes and compositions. *Environmental Science & Technology*, 51(15), 8832–8840.

[13] Karion, A., et al. (2015). Aircraft-based estimate of total methane emissions from the Barnett Shale region. *Environmental Science & Technology*, 49(13), 8124–8131.

[14] https://www.edf.org/icf-methane-cost-curve-report.

[15] https://www.epa.gov/sites/production/files/2015-09/documents/oilgascompliancealert.pdf.

HOW CAN WE REDUCE OIL AND GAS METHANE EMISSIONS?

Our scientific understanding of O&G methane emissions has advanced greatly in the last decade. We now know that total emissions are even higher than previously thought but many sites operate with low emissions. While there have been important strides made to reduce emissions in the United States including Federal and state regulations, technological advancements, and corporate commitments, much work remains to both achieve further reductions and validate that reported reductions accurately reflect an actual decrease in emissions.

At the Federal level, the United States had begun to make important steps regulating methane emissions and the waste of natural gas during the Obama administration, including the promulgation of a Bureau of Land Management Waste Prevention Rule for all O&G sources on Federal and tribal lands and an EPA New Source Performance Standard for new and modified O&G sources nationwide. These rules had many important requirements that could greatly reduce emissions of methane and VOCs and waste of natural gas at regulated sites, such as semi-annual leak detection at well pads. Unfortunately, the Trump administration has decided to ignore the science and is working to weaken and repeal these rules. In a misguided attempt to place the short-term interests of a few O&G companies ahead of public health and environmental protection, the Administration is harming the country and ultimately the O&G industry by failing to incentivize cost-effective solutions that will reduce environmental impact, improve operational efficiency, and drive further technological advancement. Although some leading O&G companies are voluntarily performing these actions, many are not, and therefore regulations are critical for moving the entire industry to implement solutions.

I urge the Committee members to push back against the Trump administration's flawed legal and scientific rationale for weakening and repealing Federal O&G regulations for natural gas waste and emissions of methane and other air pollutants, particularly for Federal and tribal lands.

Meanwhile, state, local, and tribal governments can serve as important allies for reducing emissions as several governments such as Colorado and New Mexico have implemented or are in the early stages of developing strong O&G regulations. As Colorado has shown since it became the first state in the Nation to directly regulate methane emissions in 2014, strong state rules can have dramatic positive impacts on reducing methane emissions and waste from the O&G industry.

New Mexico and the Navajo Nation both have opportunities to develop and implement strong rules that will protect their citizens from air pollution and wasted energy resources. These regulations can and should require a comprehensive set of nationally leading controls that will greatly reduce this emission and waste problem, including requirements like frequent leak inspections, lower emitting equipment, reduced flaring, and pathways that allow for further technological development.

I will highlight two key components of effective regulations: (1) frequent leak detection and repair, and (2) an alternative compliance pathway for incorporating new technologies and work practices.

Frequent leak detection is critical for reducing emissions since a relatively small number of sources are responsible for the majority of emissions at any one time. Rapidly detecting and fixing the highest emitting sources can substantially reduce total emissions; conversely, failing to mitigate these sources means that total emissions can remain high even after implementing other solutions. The original New Source Performance Standard required semi-annual leak detection at well pads with optical gas imaging cameras. The proposed NSPS reconsideration would reduce the inspection frequency, but the science supports moving in the opposite direction of more frequent inspections—at least quarterly—such as is already required in parts of Wyoming and for certain sources in Colorado. And surveys can involve more than just looking for leaks—ideally, operators would perform a comprehensive site assessment that searches for both ongoing emissions and issues such as malfunctioning equipment or poor site design that could later trigger anomalous emissions.

As a consequence of both scientific advances in measuring O&G methane emissions and greater attention on the issue, there has been a concurrent expansion in applied technologies and methods for detecting, quantifying, and mitigating emissions. These innovative approaches include continuous stationary monitors and mobile sensors mounted on vehicles, drones, aircraft, and satellites for detecting emissions. Compared to optical gas imaging, these new methods tend to be lower cost, but with higher detection limits that only find the biggest sources. However, since the largest emitters are responsible for the majority of emissions, an approach that frequently detects and mitigates these sources can achieve equivalent or better emission reductions than infrequent detection of all sources. To facilitate continuous improvement and more cost-effective mitigation, regulations should include a

performance-based pathway that allows O&G operators and technology developers to implement alternative technologies and work practices that achieve at least the same magnitude of total emission reductions as the default regulatory approach. The EPA New Source Performance Standard pathway for approving alternatives to optical gas imaging is a first step, but major improvements are needed to develop a clear, expedient, and scientifically-rigorous process. Critically, equivalency determinations should be based on a transparent, objective process that uses a combination of controlled testing and modeling to estimate emission reductions from implementation of a technology and work practice across a population of sites. EDF and Environmental Council of the States recently published a report summarizing our recommendations for an alternative compliance pathway.[16]

CONCLUSION

In summary, we have greatly increased our understanding of O&G methane emissions since EDF and others started research on this issue less than a decade ago. Methane emissions from the U.S. O&G supply chain are 13 million metric tons, 60 percent higher than EPA estimates, and these emissions almost double the short-term climate impact of burning natural gas for energy. In New Mexico, upstream O&G sites emit at least 1 million tons methane, enough waste to meet the natural gas needs of every home in the state. Research has shown that emissions are highly skewed with a relatively small number of sites contributing the majority of emissions at any one time, which means traditional methods tend to underestimate emissions, but also that low emissions are readily achievable. Strong regulations that are based on science and include frequent leak detection and a pathway for innovative approaches are critical for reducing emissions. Everyone wins by reducing methane emissions: the planet experiences less warming, communities are exposed to less pollution, and O&G companies improve their efficiency and reduce waste of a valuable product. As both a scientist and concerned citizen, I am hopeful that these mutualistic solutions will be adopted widely as knowledge of their benefits spread. Thank you for the opportunity to speak on this important issue.

Mr. LOWENTHAL. Thank you, Dr. Lyon.

The Chair now recognizes Mr. Jimenez.

STATEMENT OF JAMES JIMENEZ, EXECUTIVE DIRECTOR, NEW MEXICO VOICES FOR CHILDREN, ALBUQUERQUE, NEW MEXICO

Mr. JIMENEZ. Thank you very much, Mr. Chairman.

At Voices for Children, we are a non-partisan, state-wide child advocacy organization working to create systems-level sustainable change to improve the lives of New Mexico's children. We do this by promoting public policies through credible research and effective advocacy.

Despite the many policy victories we have helped win on behalf of New Mexico's children and their families, such as the establishment of a state-level Earned Income Tax Credit, the expansion of Medicaid, and a more than 240 percent increase in funding for early childhood programs, New Mexico continues to face many challenges. Our overall poverty rate ranks among the highest in the Nation, and we have the highest rate of child poverty. These statistics extend to workers as well, evidenced by our ranking as one of the worst in the Nation in poverty among the employed, among people who work full-time year-round, and among people who have a bachelor's degree or higher.

The 2008 recession hit New Mexico particularly hard, and our recovery has been sluggish. We are just now emerging from a decade of no job growth and budget austerity. In fact, the budget passed

[16] https://www.edf.org/sites/default/files/documents/EDFAlternativeComplianceReport_0.pdf.

by the legislature and signed by Governor Martinez back in 2018 was $800 million lower than it was for Fiscal Year 2009, when adjusted for inflation. Over the last 10 years, we have cut K–12 education by 14 percent on a per-student, inflation-adjusted basis. Our under-funding of education has been so bad that a lawsuit was mounted against the state for failing to provide a sufficient education as required by the state constitution. The state lost that lawsuit.

Still, New Mexico remains the Land of Enchantment, as you have heard today, in many respects. We have a diverse population, and we celebrate a rich history and unique cultural traditions. We are a beautiful state that is blessed with abundant natural resources. Crude oil and natural gas are two of those resources. The oil industry, as you know, is currently experiencing a boom, which has been very good for the state budget, allowing us to reverse some of the spending cuts of the past decade. But this boom also brings real impacts to our communities, such as good-paying jobs, the wages of which help support rural communities where these employees work and live. But extraction also has some drawbacks, about which you have heard plenty this morning.

From our perspective, though, as advocates for children's health and as advocates for access to high-quality education, the issue of limiting methane waste and pollution from oil and natural gas development is a very important one.

Our state is wasting far too much of our natural gas resources, and that means we are also wasting a vital chance to create opportunities for our children. As you have heard, a recently released analysis shows that New Mexico's oil and gas industry is wasting a million metric tons of methane every year, and as you have heard, that is more than enough natural gas to meet the annual heating and cooking needs of every home in New Mexico.

Put another way, this wasted methane means New Mexico is losing up to $275 million worth of natural gas every year, which is costing the state's taxpayers up to $43 million in lost tax and royalty revenues. If we captured the $43 million in foregone tax and royalty revenue, it would be enough funding to allow the state to increase pre-kindergarten enrollment by 80 percent and enroll an additional 7,300 kids in vital early education programs.

There is also a great irony in the wasting of methane in New Mexico. At statehood in 1912, Congress established a Land Grant Permanent Fund to ensure that the benefits from the use of the resources on state lands would be multi-generational, and in 1973 our state legislature created the Severance Tax Permanent Fund to once again ensure that the economic benefits of oil and natural gas extraction would not be lost for future generations once those resources were depleted. The venting and flaring of methane is the antithesis of our historic policy of ensuring that the public's resources are not wasted.

As a state with systemic poverty and an under-funded education system, New Mexico has no funding to waste. We need to harness every dollar we can to improve our education system and get New Mexico's children the educational tools and opportunities they need to succeed.

Thank you very much.

[The prepared statement of Mr. Jimenez follows:]

PREPARED STATEMENT OF JAMES JIMENEZ, EXECUTIVE DIRECTOR, NEW MEXICO VOICES FOR CHILDREN

Thank you for having me here today and for traveling to New Mexico to learn about this important issue.

My name is James Jimenez and I am Executive Director of New Mexico Voices for Children, based in Albuquerque. We believe that flaring, venting and leaks of methane from natural gas and oil wells poses two significant problems for New Mexico: One is the loss of much-needed revenue and the other is the broad and negative health implications for our residents. Our group was founded in 1987 by three pediatricians who sought a way to change the root causes of poor child well-being in New Mexico—causes like poverty, inadequate nutrition, violence, pollution, and homelessness—in other words, the social determinants of health. The doctors knew that such entrenched problems can only be solved by changing the systems that have perpetuated them—and that means changing public policy.

Thirty-plus years later, New Mexico Voices for Children, a non-partisan, statewide advocacy organization, still works to create systems-level sustainable change to improve the lives of New Mexico's children and—by extension—the quality of life for everyone. Our mission is to improve the status, well-being, and racial and ethnic equity of New Mexico's children, families, and communities in the areas of health, education, and economic security by promoting public policies through credible research and effective advocacy.

Despite the many policy victories we have helped win on behalf of New Mexico's children and their families—such as the establishment of a state-level Earned Income Tax Credit, the expansion of Medicaid, which led to the enrollment of 40,000 children, and a more than 240 percent increase in funding for early childhood care and education services over several years—New Mexico continues to face many challenges. Our overall poverty rate (20 percent) ranks among the highest in the Nation and we have the highest rate of child poverty (30 percent). These statistics extend to workers as well, evidenced by our ranking as one of the worst in the Nation in poverty among the employed, among people who work full-time year-round, and among people who have a bachelor's degree or higher. New Mexico also has one of the highest percentages in the Nation of workers in low-wage jobs, so it is not surprising that we also have the highest percentage (17 percent) of families working but still living below the poverty line, and the highest percentage (42 percent) of families that, despite working, remain low-income (below 200 percent of the Federal poverty level).

The recession hit New Mexico hard and our recovery has been sluggish. We are just now emerging from a decade of no job growth and budget austerity. The budget passed by the legislature and signed by Governor Martinez in 2018 was $800 million lower than it was in FY 2009 when adjusted for inflation. We've cut education funding from kindergarten through college, and the once-affordable tuition at our 4-year universities has been increased by more than 30 percent. We are experiencing a "brain drain" as our youth are forced to relocate out-of-state in order to find jobs that pay family sustaining wages.

Over the last 10 years, New Mexico has cut K–12 education by 14 percent on a per-student, inflation-adjusted basis. The budget cuts were so bad that a lawsuit was mounted against the state for failing to provide a sufficient education, as required by the state constitution. Shortly after the state lost that lawsuit, it was hit with more lawsuits. These suits claim that the Children, Youth and Families Department, our child protective services agency, has failed to protect children who were in its custody for their own safety from suffering further harm. Simply put, we've been trying to run our state on the cheap. And no one has suffered for it more than our children.

The culmination of this decade of austerity policy has been that last year, for the second time in the past 5 years, New Mexico fell to dead last in the Nation for child well-being, as ranked by the Annie E. Casey Foundation's KIDS COUNT program.[1]

Still, New Mexico remains the "Land of Enchantment" in many respects. We have a diverse population and we celebrate a rich history and our cultural traditions. We are home to two of America's national labs where we design everything from nuclear weapons to Mars rovers. Our spaceport will soon host flights taking space tourists beyond the edge of our Earth's atmosphere. And we are a beautiful state that is blessed with abundant natural resources. Crude oil and natural gas are two of those resources. The oil industry currently experiencing a boom as high prices persist for

[1] https://www.nmvoices.org/archives/12369.

oil, and while that has been very good for the state budget—allowing us to reverse some of the spending cuts—this boom also brings real impacts to our communities as well. With that boom comes good-paying jobs, the wages of which support the rural communities where these employees work and live. The extraction industries, however, are not without their drawbacks.

From our perspective as advocates for children's health and access to high-quality education, the issue of limiting methane waste and pollution from oil and natural gas development is a very important one for New Mexico.

Our state is wasting far too much of our natural gas resources, and that means we are also wasting a vital chance to create opportunities for our kids. A recently released analysis of the latest methane research and state emissions inventories reveals that New Mexico's oil and gas industry is wasting 1 million tons of methane every year—more than enough natural gas to meet the annual heating and cooking needs of every home in New Mexico.[2]

Put another way, because this methane is the primary component of natural gas that is one of our state's important sources of revenue, this wasted methane means New Mexico is losing up to $275 million worth of natural gas every year. And these wasteful practices are costing the state's taxpayers up to $43 million in tax and royalty revenues.[3] In comparison to the Federal budget, that may not seem like much money, but in a state with an operating budget of just $7 billion, it is significant.

As a state with systemic poverty and an underfunded education system, New Mexico has no funding to waste right now. We need to harness every dollar we can to improve our education system and give New Mexico's kids the educational tools and opportunities every child needs to succeed.

Capturing methane waste is not a panacea, but this funding can certainly help us dig out of this hole and create the public education system our kids deserve and our economy requires. Capturing methane waste and putting these funds to work in our education system can have dramatic impacts. To give one example, if we captured the $43 million in forgone tax and royalty revenue from methane waste I mentioned earlier, this would be enough funding to allow the state to increase NM Pre-K enrollment by 80 percent and enroll an additional 7,300 kids in vital early education programs.[4]

There is also a great irony from the wasting of methane in New Mexico. At statehood in 1912 we established a Land Grant Permanent Fund to ensure that the benefits from the economic use of resources on state lands would be multi-generational and then in 1973 we created the Severance Tax Permanent Fund to once again ensure that the economic benefits of oil and natural gas extraction would not be lost for future generations once the resource was depleted. The venting and flaring of methane is the antithesis of our historic policy of ensuring that the public's resources are not wasted.

We can only build a stronger New Mexico if we are willing to make the investments and this means finding ways to raise new sustainable revenue—including by requiring oil and gas producers to take sensible, cost-effective measures to capture methane waste.

We were hopeful that the Federal Government would act to address this issue. In 2016 under President Obama both the Bureau of Land Management and Environmental Protection Agency finalized rules that would have led to dramatic reductions in this pollution and waste problem.

Unfortunately, the Trump administration has moved to repeal and weaken these requirements. This is especially galling when you consider that the BLM's own analysis shows that this rule repeal will result in a significant drop in natural gas production on public lands—as much as 299 billion cubic feet of natural gas—enough energy to heat nearly 500,000 homes each year for the next 10 years. The BLM also found that the rollback would cost Americans more than $1 billion in wasted natural gas and pollution.

The environmental rollbacks we are experiencing under the Trump administration are the wrong policy choice for New Mexico. As we are experiencing a huge boom in oil and gas development in southeastern New Mexico's Permian Basin, without strong methane waste measures in place, every new well drilled is another hole in our revenue bucket, not to mention a new source of harmful pollution.

When this methane is released into the air, so too are harmful pollutants that have significant public health consequences. This includes toxic chemicals like

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[2] https://www.edf.org/nm-oil-gas/.

[3] Ibid.

[4] https://www.nmlegis.gov/Entity/LFC/Documents/Program_Evaluation_Reports/Final%202017%20Accountability%20Report%20Early%20Childhood.pdf.

benzene, which are linked to cancer, and other smog-forming pollutants that can trigger asthma and worsen emphysema especially in kids.[5]

In 2014, NASA scientists discovered a methane hotspot hovering over New Mexico, the most concentrated plume of this pollution anywhere in the United States—and about the size of Delaware.[6] Subsequent studies have found that leaking oil and gas wells and infrastructure are largely to blame. State and Federal action is needed to address the hotspot and cut natural gas waste in our state.

Oil and gas are an important part of the state's economy, but unfortunately the state isn't realizing the full potential of this resource when methane gas is burned off or leaked into the atmosphere and wasted. Oil and gas, like all extractive industries, are subject to booms and busts. Today's boom in New Mexico's Permian Basin will inevitably cool with the next shift in commodity prices. That is why it is so crucial that we find ways to diversify our economy and revenue streams to end this over-reliance on oil and gas and take immediate action to capture all the revenue we can now, while the boom lasts. Once wasted, this natural gas and its associated revenue are gone forever. This is a once-in-a-generation opportunity to capture that waste and invest those dollars in education, so when the eventual bust does come New Mexico has a stronger, more diverse, and resilient economy.

We have the technologies to cost-effectively capture this methane waste. And if we deploy these technologies, as other states have done, it will help fund needed state programs like education and create jobs here in New Mexico.

Sensible rules that require regular inspections can help prevent accidents and cut pollution. Our neighbors in states like Colorado and Wyoming have put these requirements in place.[7] New Mexicans deserve the same protections.

With a brand-new governor, this is the perfect time to change our course—to turn from austerity onto a road to opportunity. That is why New Mexico Voices for Children firmly supports the efforts that have begun under Governor Lujan Grisham to develop strong, comprehensive, statewide rules to cut methane waste and pollution.

Methane waste rules are a critical component of a comprehensive strategy to dig New Mexico out of its economic slump and create the educational and job opportunities our state and our kids need.

Mr. LOWENTHAL. Thank you, Mr. Jimenez.

The Chair now recognizes Mr. O'Neill for 5 minutes.

STATEMENT OF CRAIG O'NEILL, GLOBAL BUSINESS DEVELOPMENT MANAGER, FLIR SYSTEMS, ARLINGTON, VIRGINIA

Mr. O'NEILL. Chairman Lowenthal, Chairman Grijalva, and members of the Committee, thank you for the opportunity to speak on behalf of FLIR Systems regarding impacts on air pollution and sacred sites with oil and gas developments. FLIR Systems is a technology provider of innovative sensing solutions, providing the world with a sixth sense, helping people around the globe save lives, protect the environment, and enhance productivity. We are building more than innovative technologies; we are striving to build a more sustainable, more efficient, and safer future.

Almost 14 years ago, FLIR saw a need in the oil and gas industry to provide a better technology to detect, identify, and locate fugitive emission sources. With the launch of the GasFindIR camera in 2005, FLIR made the idea of visualizing gas emissions a reality. It sounds like a few of you today were able to experience that yesterday.

Historically, detecting fugitive emissions was a time-consuming, tedious, and unsafe practice, having to physically touch a

[5] http://oilandgasthreatmap.com/ozone-smog/.
[6] https://www.jpl.nasa.gov/news/news.php?feature=4331.
[7] http://www.santafenewmexican.com/news/local_news/neighboring-states-a-world-apart-on-methane-regulations/article_7ed78010-26f2-5d65-a80b-45112785bbbc.html.

component to determine if it was leaking and the leak origination. That meant that you had to know exactly where to go to look for the fault and to potentially put the operator of equipment inside of an unsafe environment. With optical gas imaging from FLIR, a user can stand a safe distance away from a component and inspect it for potential fugitive emission leaks, precisely pinpoint the location of a leak, and repair it.

Our technology has been embraced and approved by industry and governments. Federal regulatory entities like the EPA have designated optical gas imaging as the best system of emission reductions in their standards, and some state agencies include optical gas imaging as a focal point to their regulations, like Colorado's Reg. 7. We want to congratulate Governor Grisham on addressing methane emissions at a state level and know that her leadership will be felt throughout New Mexico and well beyond.

Many of the operators have embraced optical gas imaging not only for regulatory compliance but have also shown the financial benefit of this technology. As an example, an operator in Wyoming utilized optical gas imaging for 6 years and estimated a cumulative gas savings of over $5 million in that span, which more than covered the overall cost of the program.

There is also a financial advantage for the public in the utilization of optical gas imaging as a loss of product through emissions means a loss of taxable revenue by the operator.

Today, we are proud to lead the technology revolution in protecting our environment by reducing emissions. Earlier this year, we introduced two revolutionary products to the market to further the technological impact of optical gas imaging in the industry. The state-of-the-art, high-definition GS620 camera includes unique features like quantification mode that enables users to better understand the severity of the problem and the impact on our environment.

FLIR's new GS–77 camera is a ground-breaking low-cost, handheld product that offers cost-sensitive users a solution to reducing methane emissions with optical gas imaging. This camera is a valuable tool to increase safe practice, and it will empower operators to be better environmental stewards. With these new solutions we are advancing the technology to reduce methane emissions to new levels.

Moving into the future, FLIR will continue our innovative forward thinking as we work to deepen our impact in this industry and, in turn, our world. From organically developed solutions in technology advancements through partnerships in the industry, we are excited about the future of optical gas imaging and our positive impact to save lives and livelihoods.

Thank you again for this opportunity.

[The prepared statement of Mr. O'Neill follows:]

PREPARED STATEMENT OF CRAIG O'NEILL, SR. BUSINESS DEVELOPMENT MANAGER FOR OPTICAL GAS IMAGING FLIR SYSTEMS

Subcommittee Chairman Lowenthal, Ranking Member Gosar, and members of the Committee, thank you for the opportunity to speak on behalf of FLIR Systems regarding impacts on air pollution and sacred sites with oil and gas developments. As a member of the Center for Methane Emission Solutions (CMES), we work with numerous entities to provide a voice for business that offer innovative solutions for

methane mitigation. FLIR Systems designs, develops, manufactures, markets, and distributes technologies that enhance perception and awareness. We bring innovative sensing solutions into daily life that provide the world with a sixth sense, helping people around the globe save lives, protect the environment, and enhance productivity. We're building more than innovative technologies; we're striving to build a more sustainable, more efficient, safer future.

INTRODUCTION

With over 50 years of experience providing sensing solutions to a variety of industries, FLIR Systems has proven itself as the leader in the Infrared (IR) market and beyond. We began our journey introducing the first commercial infrared scanner to the market for electrical powerline inspections in 1965. In the many years to come FLIR has revolutionized the industry with a variety of products related to infrared like the first portable IR scanner, first dual wavelength system and the first uncooled infrared cameras, to name a few.

Infrared thermal imaging cameras have been used for decades in a variety of oil and gas applications, including electrical/mechanical inspections, tank level inspections, and even examinations of pipe integrity within process equipment. Almost 14 years ago on June 8, 2005, FLIR entered the emissions reduction industry introducing the first commercially available Optical Gas Imaging (OGI) camera, the GasFindIR.[1] This product was the first commercially available infrared camera capable of detecting volatile organic compound (VOC) gas emissions. Sources of VOCs at that time included petrochemical facilities, natural gas pipelines, transfer stations, tankers, railway cars and even landfills emitting methane gas and other toxic chemicals into the environment. Through the years this technology has been utilized by industry to proactively mitigate emissions throughout a variety of applications including meeting emission reduction requirements, ensuing safe work practices and complying with regulatory requirements. OGI cameras offer a safe and efficient way of visualizing hydrocarbon emissions in a timely manner as you can quickly check a large number of components.

FLIR GasFindIR™

On April 17, 2018, FLIR received the Inaugural Leadership & Innovation Award at the Oil and Gas Methane Leadership Awards in Toronto.[2] This award ceremony, sponsored by The Pembina Institute, Environmental Defense Fund and others, honored actions to reduce methane emissions from the oil and gas sector.

TECHNOLOGIES FOR REDUCING EMISSIONS

The U.S. natural gas industry as a whole emitted 162.4 million metric tons CO_2 equivalent of methane in 2015.[3] In addition to regulatory compliance issues, this equates to lost product for operators. The industry is faced with how to best find

[1] FLIR GasFindIR Launch Announcement, http://investors.flir.com/news-releases/news-release-details/flir-systems-introduces-new-infrared-camera-detection-volatile.

[2] Oil & Gas Methane Leadership Awards, https://www.pembina.org/media-release/global-methane-reduction-leaders-honoured-canada.

[3] Inventory of U.S. Greenhouse Gas Emissions and Sinks, https://www.epa.gov/sites/production/files/2018-01/documents/2018_complete_report.pdf, retrieved 6/14/18, pg 191 (Energy 3–77).

and repair natural gas leaks at potential escape points, including compressor stations, processing plants, hydraulically fractured wells, and along transportation lines.

Before the development of OGI cameras, most oil and gas facilities used a toxic vapor analyzer (TVA), otherwise known as a "sniffer," to analyze gas concentration levels and quantify gas emitted to the atmosphere. TVAs are reliable, relatively low cost, and can identify most gases. The disadvantage compared to an OGI camera is that the operator must know exactly where to go to look for the fault—and physically touch it. Often you must point the TVA exactly where the leak is originating to find it whereas with an OGI camera you can easily identify the leak location and source quickly. On one study, OGI was found to be considerably (up to nine times) faster than a sniffer.[4]

Image of an operator working inside methane emissions

Optical gas imaging also offers several safety advantages over a traditional TVA. It enables remote detection of a gas that could potentially explode or cause health issues to those breathing in the gas. OGI cameras enable operators to remain at a safe distance away during inspections. Rather than standing in a cloud of gas, they can remain on the ground, point to a spot 10 or 20 feet high, and determine if it is leaking gas into the atmosphere. Ron Lucier, an instructor at the Infrared Training Center in Nashua, NH, cites the importance of being able to check for gas plumes from a safe distance. "Methane and other hydrocarbons are not only flammable, but in high concentrations they can cause asphyxiation," Lucier explains. "With TVA gas 'sniffers' you know the gas is there, but you don't know how much. OGI users can immediately see the size of the gas plume—something that's impossible to do with a gas sniffer."

REGULATORY HISTORY OF OPTICAL GAS IMAGING

After the announcement of the GasFindIR, and this new technology, some regulatory agencies began researching the utilization of this advanced way of detecting emissions. On April 6, 2006, the United States Environmental Protection Agency (USEPA) proposed voluntary alternative work practice for leak detection and repair using a newly developed technology, optical gas imaging. This proposal was to allow for OGI cameras to be utilized in lieu of traditional Method 21 leak detection instruments, also known as Toxic Vapor Analyzers (TVAs) or sniffers. On December 22, 2008 the final action of this proposed alternative work practice was effective with the amendment of the rule to require an annual monitoring utilizing the current Method 21 leak detection equipment.[5] The result of this allows operators to use OGI three times per year to better locate emissions in a more efficient and effective manner.

In 2015, the USEPA proposed amendments to the New Source Performance Standards (NSPS) at 40 CFR Part 60, Subpart OOOO and set out to establish new standards at 40 CFR Part 60, Subpart OOOOa in the Oil and Natural Gas Sector. These new emissions standards focus on new, reconstructed, and modified sources. On June 3, 2016 it was announced that the final rule of these new standards,

[4] City of Fort Worth Natural Gas Air Quality Study, http://fortworthtexas.gov/uploadedFiles/Gas_Wells/AirQualityStudy_final.pdf.

[5] Federal Register/Vol. 73, No. 246/Monday, December 22, 2008, https://www.govinfo.gov/content/pkg/FR-2008-12-22/pdf/FR-2008-12-22.pdf.

commonly referred to as OOOOa or QuadOa, would be effective on August 3, 2016.[6] Related to OGI, one unique determination by the EPA in OOOOa was the designation of Optical Gas Imaging as the best system of emissions reduction (BSER) for reducing emissions of greenhouse gases, specifically methane.

While the EPA has been on the forefront of emission reduction regulations and the acceptance of OGI as technology, other entities are adding their own standards. From city to state and even other Federal agencies, like the Environment and Climate Change Canada (ECCC), there are many entities accepting new technology as a primary way of reducing emissions.

NEW OGI TECHNOLOGY IDEAL FOR OIL AND GAS APPLICATIONS

Optical gas imaging has been in the market for less than 15 years making it a fairly new technology. In that time, there have been many advancements in the technology including those by FLIR. In February 2019, FLIR added multiple solutions to the OGI portfolio further helping the industry detect, locate, and quantify fugitive emissions.

One historical challenge with the technology has been the high cost to manufacture an optical gas imaging. FLIR recently launched the first uncooled, low cost methane detection camera to the market, the FLIR GF77. This imager has a price point less than half of the legacy OGI cameras with some additional benefits like a lower cost to manufacture and longer lasting design which could benefit those interested in continuous, 24/7 operation. Of course, with lower cost solutions comes some limitations. These include less sensitivity, feature restraints and fewer gases that can be visualized with the imager. One key restriction of this new technology is that the camera is not able to meet current EPA regulatory standards, like OOOOa.

FLIR GF77 Optical Gas Imager

Another newly released product from FLIR is the GF620 including our patented Q-Mode feature. This imager is four times the resolution of other OGI imagers in the market providing the best image possible for hydrocarbon emissions applications. It includes the newly released Q-Mode feature allowing a FLIR OGI camera to store files in the field that can be utilized with a QL320 quantification solution from Providence Photonics.[7] The QL320 product allows users to effectively measure gas emissions with optical gas imaging up to five times more accurately than Method 21 technologies according to a European study performed by Concawe.[8] The combination of the QL320 from Providence and Q-Mode from FLIR removes the need for the physical tablet in the field and makes quantifying gas leaks in explosive environments an option with FLIR GFx320.

[6] Federal Register/Vol. 81, No. 107/Friday, June 3, 2016, https://www.govinfo.gov/content/pkg/FR-2016-06-03/pdf/2016-11971.pdf.

[7] Providence Photonics QL320 Quantification Solution, https://www.providencephotonics.com/leak-quantification.

[8] Concawe Report #2/17, An evaluation of an optical gas imaging system for the quantification of fugitive hydrocarbon emissions, https://www.concawe.eu/wp-content/uploads/2017/01/rpt_17-2.pdf.

FLIR GFx320 Class 1; Division 2 Optical Gas Imager

INDUSTRY USE CASES FOR OPTICAL GAS IMAGING

While optical gas imaging has been used by operators to comply with regulations, there are additional benefits. There are many examples of companies saving money and improving operator safety with OGI, often while also meeting regulations. One example is Wyoming-based Jonah Energy, which began using optical gas imaging technology in 2005 to find fugitive emissions at its production facilities.[9] The company inspects 150 facilities every month and inspects the 1,700 wells within a 1-year period. Since 2010, Jonah has reduced fugitive emissions by 75 percent. It also reduced repair time from 705 hours to 106, cut labor costs from $58,369 to $7,500, and dropped its gas losses from $348,000 to $20,500. Emissions in tons went from 351 to 31. Jonah Energy says that their monthly Leak Detection and Repair (LDAR) program using OGI technology has been both effective and consistently profitable. Their cumulative gas savings exceeded $5 million in the past 6 years, which more than covered the overall program costs.

Another example is ConocoPhillips, which performed an optical leak detection and measurement pilot study at 22 CPC facilities to test best management practices for fugitive emissions management. The study findings were used to evaluate the benefits of using OGI technology as part of fugitive emission management plan for the company's Canadian operations.[10] The study identified 144 leaking components, which collectively amounted to about $358,000 in lost product. The lost product resulted in methane leaks contributing more than 21,000 tons per year of carbon dioxide equivalent (CO_2e) to greenhouse gas (GHG) emissions. The study estimated that 92 percent of the sources could be repaired economically, resulting in net present savings of more than $2 million.

Inspectahire, a leading international supplier of specialist remote visual inspection technology and solutions, relies on the FLIR GFx320 optical gas imaging camera for both maintenance inspections and hydrocarbon leak detection in hydrocarbon production plants or for the inspection of any material that uses hydrocarbon as a fuel. They find the GFx320 camera can scan a broader area much more rapidly and monitor areas that are difficult to reach with contact measurement tools.[11] "We have been using certain contact measurement tools like laser detectors or leak sniffers," says Inspectahire's Cailean Forrester. "But the problem is that you have to go right up to the object, which is not always safe or even possible. In other words, this approach is limited and not very precise. With an optical gas imaging camera like the GFx320 however, you can keep a safe distance and still detect gas leaks with great precision."

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[9] Optical Gas Imaging Saves Money and Resources for Jonah Energy, http://www.flirmedia.com/MMC/THG/Brochures/OGI_014/OGI_014_US.pdf.

[10] T. Trefiak, ConocoPhillips, OGI Pilot Study: Leak Detection & Measurement, 2006, http://docplayer.net/17797465-Pilot-study-optical-leak-detection-measurement-report-completed-by-terence-trefiak.html.

[11] Inspectahire relies on the FLIR GFx320 OGI Camera for maintenance inspections and hydrocarbon leak detection http://www.flirmedia.com/MMC/THG/Brochures/OGI_023/OGI_023_EN.pdf.

CONCLUSION

FLIR has led the technology revolution of optical gas imaging allowing the industry to reduce emissions for almost 15 years and with the recent market introductions is positioned to continue that leadership for years to come. With optical gas imaging you have a proven solution that is compliant to regulatory standards and more efficient than historical inspection methods. With our products, we are proud that our solutions empower this industry to proactively mitigate methane emissions and have a positive impact on the environment. Allowing users to detect, locate and quantify gas emissions ensures a safer work environment for operators and a better understanding of the challenges related to methane emissions our world currently faces.

Moving into the future, FLIR will continue our innovative forward thinking as we work to deepen our impact on this industry and, in turn, our world. From organically developed solutions to technology advancements through partnerships in the industry, like our current collaborative efforts to provide immediate, in field quantification of Optical Gas Imaging, we are excited about the future of Optical Gas Imaging and our positive impact to save lives and livelihoods.

Mr. LOWENTHAL. Thank you, Mr. O'Neill.

I want to thank all the panelists for your testimony this morning.

I now would like to recognize members of the panel, of the Committee, for questioning. We will begin with Representative Haaland.

Ms. HAALAND. Thank you, Chairman.

Thank you all so much for being here.

I am going to ask this question, and if nobody can answer it, that is fine, but it is an issue that is important to me and I feel it needs to be at least mentioned today.

Many of you today have spoken about the impacts of the oil industry on the Navajo Nation on top of the damage being done by methane. The concerning issue that was brought to my attention yesterday during our trip to Chaco Canyon concerning oil and gas development involves indigenous women.

One of the Navajo Nation Council delegates said that representatives from the oil and gas companies are going door to door of the Native American allottees and soliciting women and girls for sex. This parallels the missing and murdered indigenous women issue that is taking place in the "man camps" with oil production in South Dakota and other states, and missing and murdered indigenous women is an environmental issue. It is an environmental injustice.

Further highlighting this problem during my attendance at the Environmental Justice Roundtable that we had on Saturday right here in Santa Fe, Chastity Salvador from the All-Pueblo Council of Governors Youth Committee also brought the silent crisis of missing and murdered indigenous women as it relates to oil and gas production to my attention.

So, my question is, can anyone on the panel today speak to the social impacts that the industry is having on New Mexican communities, like missing and murdered indigenous women?

[No response.]

Ms. HAALAND. OK, that is fine. Therefore, my point that it is an issue that we don't talk about, that we don't include, to the detriment of our communities—it is health issues, yes. Our budget is based on the boom and bust of the oil industry, and it should not

be like that. We should not have to suffer every time the price of oil goes down. We should have a more secure future for our children, and that includes protecting our most vulnerable citizens, our indigenous women, our indigenous girls, who already have suffered a tremendous amount in this country. I am happy that I was able to get that out there, and thank you for bearing with me.

[Applause.]

Ms. HAALAND. This question will be for Ms. Webber. You mentioned that by the year 2030, New Mexico will have the third-highest older adult population. The testimony that we heard today has highlighted the health impacts of methane emissions and the lack of regulations that have been put in place to date. For the elderly in New Mexico, can you explain what health effects you have seen from these emissions, and can the damage that has already been done be reversed for this generation?

Ms. WEBBER. Older adults will be especially vulnerable, particularly if they come with other health issues. By the time of 50-plus, most of us have developed some additional health issues. And also by the age of 50, we lose a significant portion of our lung capacity, so when we are exposed to ozone, the compromise of our lungs is even increased. If one's lungs are not able to get oxygen out to the rest of our organs, then you have issues.

Ozone, particularly in the study that was done, showed mortality effects, and those went not only for lung issues but heart issues and just general issues. I think the fact that also we have high degrees of comorbidities in our population, particularly in New Mexico. Diabetes and obesity, also contribute to the issue.

Also, we don't live in places where we have a lot of access necessarily to routine medical care, and in rural places this can be difficult to secure.

Ms. HAALAND. Thank you, Chairman, and I yield back.

Mr. LOWENTHAL. I now recognize Representative Luján for 5 minutes of questioning.

Mr. LUJÁN. Thank you, Mr. Chairman.

Mr. O'Neill, research shows that the methane leak detection and repair industry supports good-quality and high-paying jobs. The argument that capturing methane kills jobs just doesn't add up to me. So, the question I have for you is, in your opinion, when states develop strong methane regulations, will they see job growth and increased economic opportunity?

Mr. O'NEILL. From our experience in talking with people in the industry related to this, there are multiple levels of job growth that are initiated with this technology and regulations supporting optical gas imaging and leak detection and repair. Those can include, through the oil and gas companies, organic jobs that were not available to be able to detect emissions with the Leak Detection and Repair, or LiDAR, program. But there are a lot of secondary benefits to the utilization of the technology to find those missing or hidden leaks. You have the capability of hiring numerous tradesmen to be able to go fix leaks that would never have been fixed, to be able to stop the emissions into the atmosphere, and it turns into almost a bit of a trickle-down effect, that as they continually do this, they re-inspect the equipment, and being able to go

out there and hire in multiple different avenues through the industry.

Mr. LUJÁN. Well, it was apparent yesterday as we were looking through the camera that it was not just through the stacks and the vents that we saw emissions coming out. When we looked at the older equipment as well, you saw it everywhere. Someone suggested that those repairs were being done with duct tape; right, Congresswoman Haaland?

Ms. HAALAND. Yes, yes.

Mr. LUJÁN. It is a travesty, what is happening. So, that is why I asked the question.

Dr. Lyon, you shared with us that there were 16 research studies specific to methane that the Environmental Defense Fund has conducted recently. Is that correct?

Dr. LYON. Yes. We partnered with many other universities, and with oil and gas companies, to study methane emissions across the supply chain.

Mr. LUJÁN. Would you be able to produce those studies to the Committee, with unanimous consent to submit them into the record, Mr. Chairman?

Mr. LOWENTHAL. Without objection.

Mr. LUJÁN. Mr. Jimenez, I have a question that I want to get to you, but first I wanted to ask Ms. Webber a question.

While I very much understand that we are here to talk about methane emissions, Ms. Webber, you have expertise to talk about an important issue to us as well, and that is the Radiation Exposure Compensation Act. Can you talk to me about the importance of a deadline that we need to extend where the current program would expire in 2022? And then also, would you feel it would benefit from passing RECA and including New Mexico and downwind status? Even though the first bomb went off here, the open-pit mine that Congresswoman Haaland described, the uranium miner exposure, New Mexico's counties were not included in downwind protection, unlike three other states. Can you briefly touch on that?

Ms. WEBBER. Yes, and it is a very important issue. I think both the extension and adding New Mexico as an amended state to include it would make a tremendous difference in our state. The downwinders would have access to life-saving medical care, and that would be true for miners after 1971, who would also be included in the RECA.

RECA is a very rich program. If you are not familiar with it, Federal funds have been used to give you great medical care if you fall within the 21 cancers that are connected to radiation exposure. Right now, these have been covered by New Mexico, the state of New Mexico, and in the Medicaid program. So, if we are able to free up the money that is going into the Medicaid program for other people and for other uses, it also could be an economic trigger. We saw that in Nevada, because as people come in and they have money, they are able to use it on 24-hour nursing care, they are able to use it on direct care in the home, things that our Medicaid program cannot provide easily. It would just be a win-win for New Mexico.

Mr. LUJÁN. I will submit my question in writing.

The liability that currently exists with the Federal Government is that these people are not covered. So, a pay-for, not only will it achieve savings with Medicaid and Medicare, we will see that liability paid off. I appreciate that.

I just want to remind the Committee as my time expires, the spill that took place in Church Rock back in 1979, the tailing Superfund site that still exists, the mine that Chairwoman Haaland described, the Laguna Superfund site, the first atomic explosion at the Trinity site, none of these communities or counties are included with downwind protection. So, I appreciate your testimony very much, and I yield back.

Mr. LOWENTHAL. Thank you.

I now recognize Chairman Grijalva for 5 minutes.

Mr. GRIJALVA. Thank you very much.

I have a question for each of the panelists, Mr. Chairman, having to do with reaction from people opposed to the point of view or critics of your testimony. Ms. Webber, critics say that you can't say for sure that ozone exposure causes these very serious negative health impacts. How do you respond to that? That is always the response: "Well, we can't know for sure."

Ms. WEBBER. I know that that argument is made for climate change. It is very hard to make it for ozone because there are more than 50 years of studies, and they have been done by government, by private agencies. They are message studies, like the Medicare study. I think it is very hard to disprove the thousands of studies that have actually been done on ozone, so ozone and the connections to health are very clear.

Mr. GRIJALVA. Thank you.

Dr. Lyon, criticizing your most recent study on methane emissions in New Mexico, Robert McIntyre, a spokesman for the New Mexico Oil and Gas Association, said your work was conducted to advance an agenda seeking stricter state regulatory requirements on drillers and should not be trusted. How do you respond to that criticism?

Dr. LYON. First, EDF is an environmental advocacy group, so we do have an agenda in this context, which is to reduce methane emissions through practical solutions, including regulations. But we are also a science-based organization, and we take that very seriously. We were founded by scientists. We have dozens of scientists on staff, so we focus on science-driven policy, making sure we understand what is actually happening so that policy can have the most effective emissions reductions.

Mr. GRIJALVA. I think empirical fact somehow, both for Ms. Webber and Dr. Lyon, should drive the discussion at this point.

Mr. Jimenez, those in the oil and gas industry often say that more aggressive methane regulations will drive business out of the state by making it unprofitable to operate in New Mexico. How do you respond to that argument?

Mr. JIMENEZ. Mr. Chairman, Chairman Grijalva, two things. One, as background, I began doing estimates of oil and gas impacts on New Mexico in 1986 when I started my career here in state government. What we have seen overwhelmingly is what drives a company's decision to drill or not to drill is price, pure and simple. We have also seen more recently that regulating methane release, like

in Colorado, has virtually no impact on the industry's ability to develop the resources that they want to develop.

So, we essentially say that we would rebut that notion by looking at our neighbors across the border in Colorado, number 1. And number 2, we would say that a long history of oil and gas development in this country proves that really it is a price-driven industry much more than a regulatory-driven industry.

Mr. GRIJALVA. Thank you.

Mr. O'Neill, you said something that you partly dealt with in your statement, and that has to do with critics saying that methane regulations on the oil and gas industry, they say that the technology that is needed to identify leaks and other forms of emissions are too expensive, not reliable, and hurt business.

Mr. O'NEILL. Thank you for the question. Even the operators that we talk to that utilize this, some of them have given us, and there are multiple reports that are in the written testimony, on the utilization of optical gas imaging as a financial benefit to the operator themselves, not to mention the economic impact that it would have.

There are other solutions of optical gas imaging outside of having to solely purchase the asset. There are a number of organizations in the market in the United States that provide this solution and provide leak detection and repair at a lower cost than having to full-out purchase a single asset of an optical gas imaging system, as well as FLIR does offer this technology as a short-term solution in a rental opportunity, as needed, to be able to address those markets.

Mr. GRIJALVA. Thank you very much.

Thank you, Mr. Chairman. I yield back.

Mr. LOWENTHAL. Thank you.

Ms. Webber, in both your oral testimony and in your written testimony, and really in responses to Representative Haaland, you really talked about how in a national study of 61 million Medicare patients there was a significant association between ozone exposure and mortality. This is the part that gets me that I really want to ask you about—with impacts that are strongest in minority and low socioeconomic communities. Can you explain why these communities would suffer the most from ozone pollution?

Ms. WEBBER. First of all, many of our aging population already find themselves in low economic status. That is just a reality. In New Mexico, the minority population is the majority. So, our New Mexico reality really resonates.

But for people who do not have access—again, rural people do not have access to hospitals the way people in urban areas do, and even in urban areas that can be problematic. Again, older adults who are low economic status may not have things that would help them with the environment, like having a fan or air conditioning, or they may be saving because of their financial reality, not turning on the air conditioner unless it is really, really bad. I mean, some people are really pinching pennies, particularly if you get into the population where people have to pay co-pays with Medicare. It can be really expensive if you have to choose between your inhaler and your insulin.

So, there are a lot of reasons why the burden is heavier on that community.

Mr. LOWENTHAL. Thank you.

Dr. Lyon, given all your research and work studying methane emissions from the oil and gas sectors, what questions do you still have, and what future work do you plan on conducting in these areas?

Dr. LYON. I think one of the biggest research questions is what is the cause of the highest emitting sources. A consistent finding has been that the top 5 to 10 percent highest emitting sites and sources contribute the majority of emissions, and the identity of these sites can change with time. So, it is really important to understand what is causing these high emissions. Is it some equipment malfunction? Maybe it was poor site design or human error. I think if we figure out, when we find these high emitters, what caused it, do a cause analysis, it will help minimize the occurrence of emissions and help the companies improve their operations.

I also want to mention the Permian Basin, there is a lot of research that needs to be done. Ours is really the first work, and it is showing that the emissions are high, but we have a very conservatively low estimate. So, I think we need to have a lot of other data, and it will most likely show that emissions are even higher.

Mr. LOWENTHAL. Thank you. We have heard over and over again that there has been a low estimate of what the real public health and dangers really are.

Mr. Jimenez, those in the oil and gas industry often say that more aggressive methane regulations will drive businesses out of the state by making it unprofitable to operate in New Mexico. How do you respond to this argument?

Mr. JIMENEZ. Mr. Chairman, thank you for that question. I would say two things, essentially. One is that we have seen—I in particular have seen over the past 30 years, in the time that I have been doing this work—that what really drives a company's decision to drill or not to drill is the price of oil or natural gas. That is overwhelmingly the most important factor, number 1.

Number 2, I would also reiterate what we heard earlier today, and that is that when a state like Colorado implements stricter regulations, it really does not have that kind of impact as the industry protested it was going to have.

So, I think that those claims are really not founded on factual information.

Mr. LOWENTHAL. Thank you.

Finally, Mr. O'Neill, you have been researching and studying methane emissions in the oil and gas sector. We have all heard of some of these studies. The question is, do you agree with the statement that almost all emissions can be reduced with cost-effective solutions, technological solutions?

Mr. O'NEILL. I think the word "all" thrown in there may make it a little more challenging, but I would say the majority, almost all. As Dr. Lyon mentioned, the research that has been out there through EDF and many other organizations has concluded almost whole-heartedly that the majority of the emissions that we have from the oil and gas industry today come from a very small

minority of the components that would be failing or inoperable or operating incorrectly.

It is my opinion that almost all of these emissions could be solved, and not only could they be solved, a lot of them could probably be solved at a net positive financial gain for the operators in utilizing this technology effectively and reducing emissions, and therefore keeping their profits and their assets in the pipeline and, again, being better environmental stewards.

I think that in the last 5 years or so, we have seen an enormous global change in some of the largest operators in trying to move down this road to be better environmental stewards with organizations like the Oil and Gas Climate Initiative and a number of other organizations that are conglomerates of oil and gas organizations.

I think it is proof that utilizing the right technology to be able to reduce emissions is going to help them be financially beneficial as well as better environmental stewards.

Mr. LUJÁN. Would the Chairman yield to me?

Mr. LOWENTHAL. Yes.

Mr. LUJÁN. You said that most of these come from components that fail. Is that correct?

Mr. O'NEILL. They could be failing components, as Dr. Lyon said. They could be poorly engineered. It could be human error and they were installed incorrectly. There are a number of sources. But failing components in leak detection and repair, in that industry, or at least that technology, failing components is a large piece of that.

Mr. LUJÁN. Is the exception to that except when they intentionally vent?

Mr. O'NEILL. There are components out there in the industry today that are manufactured and designed to intentionally vent. I know that many in the industry are looking into that, and I do not have the technological answer to things like pneumatic controllers that just by design and operation do have a venting piece to their operation, to how they work.

Mr. LUJÁN. Mr. Chairman, I just want to make sure that we have both components that are failing and where there is intentional venting that is taking place. I yield back.

Mr. LOWENTHAL. I would like to thank all the witnesses.

This brings us to the conclusion of this panel, but I would like to thank all the witnesses that we have had on today's four panels for their testimony and for participating with us.

The last 3 days—I speak for the Committee—have been very powerful both personally to each of us, and also educationally. We bring back to Washington many ideas and a direction which we need to go and legislation that we need to support that will have a direct impact upon the public health of our citizens, and especially here in New Mexico.

We want to thank the people of New Mexico, and also the tribal leaders, for educating us and for being such wonderful hosts, and also for their great concern in terms of the protection of sacred sites and the protection of our citizens' public health.

With that, if there is no further business, and hearing none, without objection, this Committee is adjourned. Thank you.

[Applause.]

[Whereupon, at 2 p.m., the Committee was adjourned.]

[ADDITIONAL MATERIALS SUBMITTED FOR THE RECORD]

ALL PUEBLO COUNCIL OF GOVERNORS,
ALBUQUERQUE, NM

April 3, 2019

VIA EMAIL

Tara Sweeney
Assistant Secretary—Indian Affairs
Department of the Interior
1849 C Street, N.W.
MS-4660-M1B
Washington. D.C. 20240

Re: APCG Update on Chaco Canyon Related Issues

Dear Ms. Sweeney:

Thank you for taking the time to discuss with me issues related to Chaco Canyon at the 2019 Tribal Self-Governance Conference. As promised. here is a summary of issues related to oil and gas development affecting Chaco Canyon.

I. Background

The All Pueblo Council of Governors (APCG) is comprised of the New Mexico Pueblos of Acoma, Cochiti, Isleta, Jemez, Laguna, Nambe, Ohkay Owingeh, Picuris, Pojoaque, San Felipe, San Ildefonso, Sandia, Santa Ana, Santa Clara. Santo Domingo, Taos, Tesuque, Zia, and Zuni, and one Pueblo in Texas, Ysleta Del Sur.

APCG and individual Pueblos, have continuously voiced their concerns for the protection of Chaco Canyon, and the Greater Chaco Region. The Greater Chaco Region describes the vast archaeological, cultural, and natural Region(s) emanating from Chaco Canyon throughout the Four Corners Region to the existing Pueblos of today. Much of the Region has not been surveyed by the BLM. Existing surveys have not identified most of our cultural resources or traditional cultural properties (TCPs) that may be eligible historic properties under the National Historic Preservation Act (NHPA). Federal agencies typically reach out to the Navajo Nation, but not to the Pueblos, and have utterly failed to incorporate Pueblo ethnography into their studies.

APCG is concerned that the BLM is failing in its Section 106 duties under the NHPA (and through the National Environmental Policy Act review process) to identify and evaluate potential impact *prior to* selling leases for oil and gas development. We are also concerned that the BLM is not engaging in truly meaningful consultation, a necessary component of the federal trust responsibility to Indian tribes, with regard to how it should avoid or mitigate damage to our cultural resources.

2. Oil & Gas Lease Sales

APCG and individual Pueblos have protested the quarterly lease sales of parcels nominated by the BLM Farmington Field Office (FFO) and the Rio Puerco Field Office (RPFO) in the Greater Chaco Region.

Beginning in March 2018, APCG and the Pueblos protested the nomination of parcels in the Greater Chaco Region, some of which come within ten miles of the Chaco Culture National Historical Park (CCNHP), for the reasons stated in paragraph 1, above. Pueblo representatives insisted on site visitations to view the parcels in order to determine the likelihood of the presence of their respective cultural resources. In the single sample field investigation Pueblo representatives, like those from the Pueblo of Acoma, witnessed archaeological features that they interpreted as cultural resources, with some resources having not been accounted for by archaeologists. Subsequently, the Department of the Interior chose to defer all leases in the BLM FFO due to concerns about the adequacy of its cultural resource analysis.[1]

In December 2018, the BLM FFO and the BLM RPFO nominated additional parcels in Greater Chaco Region, with the BLM FFO having parcels within ten miles of the CCNHP. Again, APCG and individual Pueblos, protested for the same reasons stated above. No sample field investigations were offered, despite individual Pueblo requests and offers to provide Pueblo representatives to go into the field to assist the BLM in identifying critical cultural resources. As a result, the BLM FFO

[1] *See* BLM's Press Release and statement on its March 2018 deferral: https://www.blm.gov/press-release/blm-defers-oil-and-gas-lease-sale-parcels-new-mexico.

deferred all parcels, while the BLM RPFO arbitrarily sold leases for all its parcels. Many of the BLM FFO and BLM RPFO were in the same vicinity (some coming within ½ mile of each other), based on the district boundaries.

Most recently, the BLM FFO and the BLM RPFO nominated parcels in their March 2019 Lease Sale. Again, the BLM FFO nominated parcels within ten miles of CCNHP. Based on initial scoping comments, and previous concerns, the BLM FFO removed nine parcels located within approximately ten miles of CCNHP. However, the BLM FFO retained nearly 22 parcels in its lease sale, many of these parcels are just outside ten miles of CCNHP and many are adjacent to, or nearby, parcels previously deferred in March and December 2018 due to deficiencies in the agency's cultural resource analysis. No sample field investigations were offered, despite individual Pueblo requests and offers to provide Pueblo representatives to go into the field to assist the BLM in identifying critical cultural resources. To APCG's knowledge, no additional or substantive work or consultations had occurred to correct or address deficiencies in the agency's data relied upon in its Section 106 analysis. Compounding this request and any opportunity to conduct sample field investigations was the lapse in federal appropriations that foreclosed any opportunity for Section 106 consultation. The BLM March 2019 lease sale was not postponed commensurate with 35 days of the government shutdown.

Despite APCG and individual Pueblo protests and requests for deferral, the BLM FFO and RPFO moved forward with sale of their leases.

APCG has already submitted comments on the BLM FFO and RPFO June 2019 Lease Sale. If the Section 106 analysis and deficient tribal consultation occurs in a similar fashion as the previous three sales, the APCG anticipates it will once again be forced to protest this lease sale.

3. BLM Farmington Field Office—Resource Management Plan Amendment

The BLM FFO covers an area that was thought to be fully exploited several decades ago: over 90% of the available lands have been leased. Due to developments in horizontal drilling and hydraulic fracturing technologies, the BLM FFO in 2014 began the process of amending its 2003 Resource Management Plan. The BLM FFO's 2003 Resource Management Plan did not account for this new technology, and the subsequent interest in development in what was perceived as previously fully developed, or inaccessible development areas. The BLM FFO is trying to complete a Resource Management Plan Amendment (RMPA) intended to guide land management policy for the field office over the next several decades. Despite this, leasing activity is still occurring while the RMPA is not complete, significantly prejudicing the alternatives proposed in the RMPA and allowing for more and more leases to be sold under the 2003 Resource Management Plan, despite their use of new technologies and development in previously unforeseen areas. APCG has acted in the capacity as a cooperating agency to review and comment on the RMPA.

4. APCG Proposed Chaco Ethnographic Study

On September 26, 2018, a delegation consisting of leadership from the All Pueblo Council of Governors, Eight Northern Indian Pueblos Council, and the Ten Southern Pueblos Council met with key lawmakers in Washington, DC to discuss the ongoing threat to the Greater Chaco Region. They also met with officials in the Interior Department, including Deputy Secretary James Cason and Assistant Secretary John Tahshuda to discuss ongoing lease-sales of parcels likely to contain or affect our cultural resources in the Greater Chaco Region.

The Department of the Interior requested the APCG to prepare a proposal for assisting the BLM and BIA in analyzing the impacts to cultural resources from the proposed BLM's December 2018 Oil and Gas Lease Sale in the Farmington and Rio Puerco Field Offices.

Based on estimates of time, funding, project area and other factors—the APCG, through its Natural Resources Committee, developed two proposals and submitted these to the BLM in October 2018. The first proposal was for a joint Pueblo ethnographic study of the BLM FFO and RPFO December 2018 Lease Sales. A secondary proposal was for a joint Pueblo ethnographic study of the Greater Chaco Region intended to be a comprehensive analysis of the New Mexico portions of the Greater Chaco Region. This second proposal was intended to address concerns that such a study could lead to better planning decisions. Both studies were not intended to be exhaustive cultural resource inventories, but were designed to assist the BLM in identifying critical areas of concern to be avoided, and the types of cultural resources important to Pueblos located in the Greater Chaco Region. These two studies were modeled and vetted by qualified Pueblo archaeologists and ethnographers who worked on similar efforts locally, most notably the Mount Taylor Traditional

Cultural Property Analysis and the Pueblo of Acoma's Limited Ethnographic Assessment of Chaco Canyon.

APCG has not received a formal response, and only began discussion with DOI officials in February 2019. We have had two conference calls and one meeting since. DOI officials have said they will offer a counterproposal for an ethnographic study covering a discrete area of land tied to the area in which DOI foresees future development rather than the entire Greater Chaco Region. APCG representatives have expressed willingness to explore such a compromise, as APCG's position has always been focused on the protection of cultural resources where development is anticipated to occur. Additionally, the parties have discussed this smaller study as a pilot project for future studies that could cover larger areas or the entirety of the Greater Chaco Region.

Unfortunately, APCG has not received essential maps to assist us advancing this discussion. At our last call on March 22nd, Brian Steed from the BLM indicated he would send maps showing DOI's area of interest for a study. We have not yet received this map.

Additionally, DOI has suggested that its counter proposal of land could fall completely within the approximately 10-mile withdrawal area[2] that that is set to be withdrawn from such development by legislation. This is not acceptable because that particular area is not where the greatest potential for leasing will occur based on known resources.

There may be a misperception that the study of *only* a 10-mile area around CCNHP would be sufficient. But APCG takes the position that even for development outside this area but within the Greater Chaco Region, federal laws like the National Historic Preservation Act (NHPA) and the National Environmental Policy Act (NEPA), not to mention the federal trust responsibility, require rigorous identification and analysis of cultural resources before any steps toward oil and gas development occur. That Chaco Canyon and the Greater Chaco Region are widely understood to contain large concentrations of important cultural resources makes conducting these studies even more important.

Additionally, APCG is concerned that any study proposal from DOI needs to be in those areas where leasing is anticipated to occur. However, based on BLM assessments and the location of a majority of lease parcels, it is clear that highly reasonable foreseeable development will actually occur on lands where Pueblo cultural resources exist and deserve protection, even though the lands are outside the 10-mile area. An ethnographic study of where reasonable foreseeable development is set to occur is critical to filling the information gap the BLM suffers from in its current Section 106 analysis in its quarterly lease sales of parcels in the Greater Chaco Region.

5. Conclusion

If you have any further questions, please feel free to contact myself or APCG's Executive Director, Alicia Ortega.

Sincerely,

J. MICHAEL CHAVARRIA,
Governor, Santa Clara Pueblo,
Vice-Chairman, All Pueblo Council of Governors.

[2] APCG and DOI have until recently discussed a general area of approximately 10-miles surrounding the Park as making up the withdrawal area. In recent years, as part of work on the Chaco Cultural Heritage Area Protection Act, congressional members along with input from DOI and the Pueblos have created more clarity on the boundaries of the withdrawal area by specifying its parameters and producing an associated map. The Act's boundaries are now the best description of the withdrawal area—which has shifted slightly over time.

Methane emissions from liquids unloading and their implications for quantifying and mitigating emissions

David Lyon, Ph.D.—Environmental Defense Fund

Natural gas wells can accumulate water and other fluids in the wellbore that restrict gas flow and inhibit gas production. In response, operators perform "liquids unloading" to clear fluids and restore production. Wells can be unloaded manually when an operator temporarily switches gas flow to a storage tank instead of the gathering pipeline. This switch pushes liquids out the wellbore into the tank but also can vent gas to the atmosphere, resulting in methane (CH_4) emissions. Some wells are equipped with plunger lift systems that use pressure buildup to remove liquids, but these systems can vent either automatically or manually if there is insufficient pressure to lift the plunger.

Liquids unloading is responsible for a considerable fraction of oil and gas (O&G) industry CH_4 emissions. In their annual greenhouse gas inventory report, the U.S. Environmental Protection Agency estimates 2017 liquids unloading emissions are 117 Gg CH_4, 1.4% of O&G supply chain CH_4 emissions [1]. There are large regional differences in liquids unloading with three basins accounting for 60% of reported emissions to the EPA Greenhouse Gas Reporting Program (GHGRP): the Arkoma (Fayetteville Shale), San Juan, and Appalachian (Marcellus Shale) [2]. The vast majority of reported emissions are estimated with EPA's engineering equations, which are often inaccurate for quantifying individual events, but previous research has reported that the method has low bias overall and therefore should be relatively accurate for estimating national emissions [3].

Manual unloading events typically occur during working daytime hours since they are started and stopped by operator field staff. In the Fayetteville Shale, where manual unloadings are common, liquids unloading emissions vary by time of day with highest emissions in the midday [4]. Researchers were able to reconcile their bottom-up emission inventory with top-down aerial mass balance estimates by accounting for the fact that the aircraft measured emissions during this period of peak emissions, which should not be directly compared with the annual average inventory estimates [5]. There have been suggestions that similar temporal misalignment of measurement data could cause emissions to be overestimated in other basins when relying solely on top-down data. Although this effect is important in the Fayetteville, where over ~3% of wells unload at any one time, manual unloadings are reported to be much less common in other basins and therefore the impact should be minor [6].

Zaimes et al. 2019, a recently published, peer-reviewed paper led by researchers at the U.S. Department of Energy National Energy Technology Laboratory, developed a bottom-up, probabilistic model to estimate liquids unloading emissions in 18 U.S. basins [7]. They determine that the GHGRP underestimates emissions by a factor of 5.4, which suggests total U.S. emissions are approximately 630 Gg CH_4 in 2018. The authors state that liquids unloading is an alternative explanation for the "abnormal process conditions" invoked in Alvarez et al. 2018 to explain the difference in emission estimates based on empirical, site-level data and traditional, source-level approaches [6]. For O&G production sites, there are ~4,400 Gg CH_4 of uncategorized emissions, which means their upward revision for liquids unloading could only account for about 11% of these emissions. It is possible that this fraction is higher if there are systematic issues with the underlying data being used to estimate liquids unloading, such as inaccurately reported unloading type due to a currently inadequate reporting framework [7]. Given the lack of other alternative explanations, a larger fraction of the uncategorized emissions are due to other issues such as equipment malfunctions, poor engineering, or human error. Importantly, even intentional emission sources like liquids unloading often can be mitigated with cost-effective solutions, so uncertainty over the exact source of emissions should not impede efforts to reduce emissions.

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David Lyon, Ph.D.—Environmental Defense Fund

U.S. Methane Studies

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Measurements of methane emissions at natural gas production sites in the United States
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TESTIMONY FOR THE RECORD ON PROTECTION OF CHACO

Anna Sofaer, President, Solstice Project; Richard Friedman, archaeologist & GIS Analyst; Robert Weiner, archaeologist; Phillip Tuwaletstiwa, former NOAA geodesist; and Petuuche Gilbert, formerly of Acoma Pueblo Land Office

April 12, 2019

We are writing with concern that recent archaeological understandings of the broader reach of the Chaco culture of New Mexico are not being incorporated into public policies, nor into decisions by agencies responsible for Chaco's protection and preservation. This lack of attention to Chaco's invaluable cultural resources is particularly alarming at this time; leasing for development of energy resources in the Chaco cultural region has moved rapidly closer to Chaco Canyon in recent years; grazing and ongoing erosion are also erasing the legacy of the Chaco culture. Approaching Chaco today you are confronted with fracking rigs and flares, creating noise, air, and groundwater pollution.

We propose several actions to protect Chaco's sacred landscape:

- Enactment of current bill S. 1079, to establish a 10 mile protective "buffer zone" around fragile Chacoan ruins, roads and shrines;
- Analysis of LiDAR data of the buffer zone recorded by the Bureau of Land Management (BLM), to inform future protection efforts and expand understanding of the Chacoans landscape relationships;
- Increased support to the National Park Service's infrastructure to protect and preserve Chaco cultural resources.

Background: 1,000 to 1,200 years ago, the Chaco people developed a complex culture of monumental ritual architecture and elaborately designed astronomical works. The Sun Dagger site on top of Fajada Butte in Chaco Canyon, rediscovered by the Solstice Project, precisely records the solar and lunar cycles; and the alignments of numerous Great Houses also commemorate these cycles. The Sun Dagger site has been called "an American Stonehenge" by *Science 80*, a publication of the Association for the Advancement of Science. The remarkably beautiful and intricately designed ruins of Chaco Canyon and the extensive network of Chaco's ancient roads have been designated as an UNESCO World Heritage site. Recent studies reveal that that Chaco Canyon was a powerful center with influence across the entire Four Corners region—nearly 40,000 square miles—that holds more than 150 Chaco-styled Great Houses.

Our research group, the Solstice Project, www.solsticeproject.org, has brought awareness to the public and the scholarly community of the Chaco culture's remarkable pattern of astronomical alignments and to the profound significance of their elaborately engineered 'roads.' The Chaco culture invested enormous resources of labor and planning to create these corridors of 30 foot width in remarkably straight trajectories across the barren desert—altogether hundreds of miles of them. We have shown that many of these 'roads' appear to have been built as "cosmographic expressions" connecting the Chaco Great Houses and shrines to astronomically significant directions and special features of the landscape. Extensive evidence that the roads held spiritual meaning for the Chaco people is seen in the abundant ceramic offerings left in the course of the roads and at their associated shrines. Many roads extend far beyond the protective boundaries of the National Park. This comprehensive, sacred landscape web must be protected. If mitigating measures are not taken, destructive impacts on the fragile Chaco roads will worsen over time.

Recent energy development has included modern roads crossing the ancient Great North Road. Studies have shown that the Chacoans created this elaborate corridor of a 35 mile course from Chaco Canyon to Kutz Canyon to connect their ceremonial center to the direction north. For descendant Puebloan peoples it holds profound spiritual significance; as Paul Pino, from the Pueblo of Laguna, says in *The Mystery of Chaco Canyon* (2000): "To the north is where our point of origin begins, the point where we came into this world. In essence, that north line, that north road connects us back to the creator."

In concern for the preservation of the Chacoans' invaluable road features we conducted LiDAR (aerial LASER scanning technology) of the Great North Road. These recordings showed remarkable effectiveness of LiDAR technology to precisely document the subtle and fragile Chaco 'roads.' There is an urgent need to apply this technology in the face of the current harmful impacts—especially to those sites and 'roads' located beyond the National Park Service boundaries. (See our specific proposal here, www.solsticeproject.org/Preserving_Chaco/The_LiDAR, and in our addendum to this memo).

We recommend the following measures to improve protection of Chaco's cultural resources: The currently proposed *Chaco Cultural Heritage Area Protection Act*, S. 1079 should be brought to this Committee and the full House of Representatives for review and approval. The bill states that the Bureau of Land Management (BLM) must cease permitting new oil and gas leases and wells within the Chaco Cultural Heritage Withdrawal Area, a boundary 10 miles beyond the current Chaco Culture National Historical Park boundaries. Recognizing the broad geographic expanse of the Chaco sites and roads, the Solstice Project suggests that this withdrawal area could well be extended to include a 20-mile protective buffer zone around the Park, and 10-mile buffer zones around outlying Chaco Great Houses.

In creating its plan in 2014 for expanded energy development in the San Juan Basin, the Bureau of Land Management (BLM) committed to develop a Resource and Management Plan Amendment (RMPA) to govern all future oil and gas leases and to provide mitigating measures for cultural resources. Without fulfilling their mandate to complete this crucial document, the BLM has sold in the past 5 years, and plans to sell, numerous leases for oil and gas development in the Chaco region. Already covering about 90% of the leasable land north of Chaco Canyon, this energy development is advancing closer and closer to Chaco Canyon, whilst conservation groups, archaeologists, and descendant Pueblo and Navajo people have expressed grave concerns over its destructive impacts. No further energy development in the Chaco region should be activated before the RMPA is completed, reviewed, and approved by these parties.

We suggest in the attached addendum this critical action for Chaco's protection: analysis of LiDAR recordings inside the ten mile "buffer zone" that were conducted by the BLM and the USGS. Support to this effort would follow the responsible precedent of the BLM's study in the 1980s of the region to the north of Chaco Canyon when it was threatened with possible coal development. This excellent study revealed the elaborate 35 mile Great North Road and the profound significance of roads to the ancient Chacoans. Much of the area adjoining Great Houses in the "buffer zone" is only beginning to be analyzed with LiDAR; this data requires much further evaluation, along with on-the-ground truthing by experienced archaeologists. These efforts should proceed and their findings appropriately deter further leasing. (See addendum attached to this memo, as well as https://solsticeproject.org/images/pdfs/84-FriedmanEtAl2017_ChacoRoadsLiDAR_FirstView.pdf)

We also urge mitigating actions by the BLM to prevent and repair the problems of public health hazards in surrounding communities already encroached upon by intense energy development. We further support a shift in the region's economy to job-creating, sustainable energy enterprises.

We urge greater resources be provided to the National Park Service to support a vital visitor facility in Chaco Canyon and to have fuller staffing for maintenance of its fragile ruins. A World Heritage site with Chaco's remarkable international recognition merits this dedication of resources. It is shocking that at this time, the Park apparently due to limited staff is closed to visitors at 4:00 pm. (The current closing policy puts visitors' safety at risk and makes the ruins vulnerable to vandalism.) Professional archaeologists and naturalists who were once on the staff and residents in Chaco Canyon, along with the superintendent, are no longer present. Protection and care for this unique heritage of Ancient America is vital to our understanding and appreciation of one of the great cultural treasures of our past.

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ADDENDUM TO SOLSTICE PROJECT TESTIMONY 12 APRIL 2019 ON PROTECTION OF CHACO CULTURAL RESOURCES

LiDAR Proposal to Document Chaco 'Roads'

Proposal for Analysis of LiDAR recordings conducted by the Bureau of Land Management in 2014 across the Chaco Culture National Historical Park and the ten mile "buffer zone" surrounding the park

We prioritize this analysis to focus on Great House complexes that likely have extensive 'roads,' shrines, and landscape relationships outside the National Park boundaries, and that are vulnerable to impacts of energy development in surroundings areas. Without full knowledge of the wider relationships of these complexes, their roads and connections to outlying sites and landforms are at risk of damage and destruction. Each of these Great House complexes is a major node of the Chaco system and likely to have webs of extensive connections to the wider Chaco world.

Background: We reported in a recent paper (see link) "on the results of the first and highly effective use of airborne Light Detection and Ranging (LiDAR) technology to document Chaco roads—linear surface constructions found in association with ritual or public architecture of the ancient culture that inhabited 38,610 sq. miles of the Four Corners region between approximately AD 600 and 1300 . . . The great extent of these features—expressed in hundreds of miles of constructed segments, with typical widths of 30 feet and rigorously straight alignments in some instances up to 35 miles—demonstrate a large-scale investment of labor and planning by the Chacoan people. However, roads have received less attention than other topics within Chaco research due to several factors: their ephemeral surface expressions requiring specialized training for their identification, remote locations, and frequent extension beyond the boundaries of site-based archaeological studies. The potential for detecting Chaco roads diminishes each passing year, as sedimentation, erosion, deposition, and increased encroachment of modern society, including energy development, rapidly remove the visible traces of these cultural resources."

We now propose analyzing the 2014 LiDAR recordings by the BLM of areas surrounding these key Great Houses located in the inner area of the Chaco region and within the buffer zone; Pueblo Pintado, Peñasco Blanco, Kin Bineola, and Kin Klizhin. In recognition of the monumental stature of these particular Great Houses, they received their own National Park Service designations—with boundaries

closely surrounding the ruins. *However these protective boundaries were created without our current knowledge of the extensive road and landscape relationships of typical Great House complexes*. Therefore the surrounding road and shrine features of these four key buildings are not protected under National Park Service status; rather they are located on a "checkerboard" landscape under the jurisdiction of other federal agencies (BLM or BIA), or under tribal, private, or state ownerships. These owners might not highly prioritize cultural protection or archaeological survey. At this time there is no guarantee that the required archaeological surveys of sites sold for development within this region will include the broader look at significant landscape relationships of Great Houses. However, analysis of LiDAR can provide this information.

This LiDAR analysis should begin with two Great Houses, Pueblo Pintado and Peñasco Blanco, that are near potential energy development. Kin Bineola and Kin Klizhin are also within the 10-mile buffer and should be studied because their roads, like most Chaco 'roads,' are suffering from grazing and erosion, as well as potential energy development nearby. In addition, the road relationships of these noted Great House complexes extend far beyond not only the NPS boundaries, but possibly in some cases beyond the boundaries of the buffer zone. Ground verification is also essential to follow the LiDAR analysis of these sites. The data and analysis of this project must be shared with parties concerned with potential development and changes in these areas.

The Solstice Project has advocated for protection of the Greater Chaco Landscape since our founding in 1978, and we recognize threats to Chaco's ancient roads as the most urgent issue at this time. Since the buffer zone can create an area of protection for these sites, we strongly urge it to be legislated as a boundary of permanent protection. The massive Great Houses complexes and road relationships suggest profound insights into the concerns and values of a remarkable ancient American civilization. They are critical to research of the Chaco culture and public education about this underappreciated civilization of the ancient United States.

WRITTEN TESTIMONY

Field Hearing, Oil and Gas Development: Impacts on Air Pollution and Sacred Sites

Jeremy Nichols, Climate and Energy Program Director—WildEarth Guardians

May 6, 2019

Chairman Lowenthal and distinguished Members of the Committee, thank you for the opportunity to provide written testimony in conjunction with your April 15, 2019 Field Hearing on the Impacts of Oil and Gas Development to Air Quality and Sacred Sites. Thank you as well for taking the time to visit Chaco Culture National Historical Park and the surrounding Greater Chaco region on April 14, 2019. I applaud your commitment to learning first-hand about the issues facing this beleaguered cultural landscape and dedicating to exploring solutions to ensure meaningful protections for this area.

I am the Climate and Energy Program Director for WildEarth Guardians, a nonprofit environmental advocacy group dedicated to protecting the wildlife, wild places, wild rivers, and health of the American West. We are based in Santa Fe, New Mexico but have offices in four other western states. Our organization has been deeply involved in efforts to defend the Greater Chaco region from unchecked oil and gas development. Together with Navajo, Pueblo Tribal allies, environmental partners, and cultural advocates, we have helped to galvanize the creation of the Greater Chaco/Frack Off Chaco Coalition, a collaborative effort to bring about greater and more permanent protection for the Chaco landscape, and to confront the negative health and environmental consequences of hydraulic fracturing, or fracking, to the region.

I'd like to detail for your record seven key problems facing the Greater Chaco region and five key solutions that WildEarth Guardians believes would go a tremendous distance in achieving the goal of safeguarding this sacred landscape. I'll explain more below, but in sum, here's what we're seeing:

1. *Problem: Fundamental Disregard of Tribal Sovereignty, Indigenous Rights, and Environmental Justice*

Solution: The Interior Department and Bureau of Land Management are disregarding calls from the Navajo Nation and Pueblo Governors to restrain fracking in the Greater Chaco region, reflect a fundamental misconception of the relationship

between the U.S. Government and Tribal sovereigns. The agencies must be directed to assure their land and resource management actions are accountable to Tribal leaders and that they prioritize the recognition and accommodation of sovereignty and Indigenous rights. What's more, the agencies must be directed to enforce standards for environmental justice that meaningfully limit adverse environmental impacts in Indigenous communities.

2. Problem: A Lack of Accountability to Planning

Solution: Resource management plans required by the Federal Land Policy and Management Act must be enforced and taken seriously. The U.S. Interior Department and Bureau of Land Management must be directed to ensure that as plans are revised or amended to account for new oil and gas development, that new oil and gas development must be prohibited unless and until plans are updated.

3. Problem: A Need for Landscape-Level Cultural Considerations

Solution: Cultural resource management focuses on individual archaeological sites, often overlooking historical realities of landscape-level ties, sacredness, and a need to ensure regional consistency in safeguarding Indigenous heritage. For landscapes like Greater Chaco, landscape-level cultural planning is necessary to ensure that its integrity is fully protected for generations to come. The Interior Department and Bureau of Land Management must be directed to undertake a landscape-level cultural resource planning process that assures full protection of the Greater Chaco region's cultural integrity and that is based on interagency, inter-office, and intercultural coordination.

4. Problem: No Consideration of Health and Communities

Solution: In managing public lands and minerals, the Bureau of Land Management must safeguard public health, especially where the use of lands and minerals occurs in close proximity to communities. The Interior Department and Bureau of Land Management must be directed to ensure that health and community impact considerations are factored into planning, that the agencies develop tools to properly analyze and assess public health and community impacts, and that the agencies establish metrics to ensure its actions uphold public health and community health.

5. Problem: A Failure to Account for Cumulative Impacts

Solution: The Interior Department and Bureau of Land Management must be directed to undertake a regional, if not national, assessment of the cultural, air, water, climate, and other impacts of the federal onshore oil and gas program. To this end, the agencies must be directed to prepare a programmatic environmental impact statement of the federal onshore oil and gas program and to institute a moratorium on new federal onshore oil and gas leasing pending the completion of the programmatic review.

6. Problem: Climate Denial

Solution: Real climate solutions must become a goal of the Interior Department and Bureau of Land Management. To this end, the agencies must be directed to enact meaningful policies that reduce greenhouse gas emissions from all stages of oil and gas production and consumption, and that set real limits on development that help assure a gradual reduction and ultimate elimination of all climate pollution from federal onshore oil and gas development.

7. Problem: A Refusal to Help Advance Economic Alternatives

Solution: The Interior Department and Bureau of Land Management need to become leaders in advancing sustainable and prosperous economies. To this end, the agencies must be directed to use their authorities, resources, and expertise to promote economic development based on renewable resources, longevity, and local value. The agencies must be directed to prioritize a shift away from fossil fuel development, which is both short-term in economic impact and environmentally unsustainable.

[LIST OF DOCUMENTS SUBMITTED FOR THE RECORD RETAINED IN THE COMMITTEE'S OFFICIAL FILES]

WildEarth Guardians—Background Information from Written Testimony, Jeremy Nichols, Climate and Energy Program Director

Submissions for the Record by Paul Reed

— Recent Efforts to Research, Preserve, and Protect the Greater Chaco Landscape, Archaeology Southwest Research.
— Viewscapes and Soundscapes, by Ruth M. Van Dyke, Timothy De Smet, and R. Kyle Bocinsky, (in press), *New Perspectives on the Greater Chaco Landscape.*
— Chaco Landscapes: Data, Theory and Management, White Paper 2016.

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