

**RICHMOND, STACHELBERG, AND BERHE
NOMINATIONS**

**HEARING
BEFORE THE
COMMITTEE ON
ENERGY AND NATURAL RESOURCES
UNITED STATES SENATE**

ONE HUNDRED SEVENTEENTH CONGRESS

FIRST SESSION

TO

**CONSIDER THE NOMINATIONS OF GERALDINE RICHMOND TO BE
UNDER SECRETARY FOR SCIENCE, DEPARTMENT OF ENERGY; CYN-
THIA WEINER STACHELBERG TO BE AN ASSISTANT SECRETARY OF
THE INTERIOR (POLICY, MANAGEMENT, AND BUDGET); AND ASMERET
ASEFAW BERHE TO BE DIRECTOR OF THE OFFICE OF SCIENCE, DE-
PARTMENT OF ENERGY**

AUGUST 3, 2021



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RICHMOND, STACHELBERG, AND BERHE NOMINATIONS

TUESDAY, AUGUST 3, 2021

U.S. SENATE,
COMMITTEE ON ENERGY AND NATURAL RESOURCES,
Washington, DC.

The Committee met, pursuant to notice, at 10:07 a.m. in Room SD-366, Dirksen Senate Office Building, Hon. Joe Manchin III, Chairman of the Committee, presiding.

OPENING STATEMENT OF HON. JOE MANCHIN III, U.S. SENATOR FROM WEST VIRGINIA

The CHAIRMAN. The Committee will come to order. We are meeting today to consider three pending nominations. The three nominations are Dr. Geraldine Richmond to be the Under Secretary for Science at the Department of Energy (DOE); Ms. Cynthia Stachelberg to be the Assistant Secretary of the Interior for Policy, Management, and Budget; and Dr. Asmeret Berhe to be the Director of the Office of Science at the Department of Energy. I want to welcome all three of you. Thank you very much for being here. We also want to welcome each of your family members that are with you and thank them for attending, or if they are virtual, we appreciate that.

The office of Under Secretary for Science, to which Dr. Richmond has been nominated, was established by the Energy Policy Act of 2005 in recognition of the important role that science and scientific research plays within the Department of Energy. The Under Secretary for Science serves as the Secretary's principal advisor on science and technology, monitors the Department's wide-ranging research and development programs, and oversees the management of the national laboratories. By law, the Under Secretary for Science must have an extensive background in science or engineering. Dr. Richmond very clearly meets this test. She holds a Doctorate in physical chemistry from Berkeley; she has been a Professor at the University of Oregon for the past 26 years; she is the author of more than 200 scientific papers; and she has received dozens of honorary awards, medals, prizes, degrees, and other honors in recognition of her scientific achievements. If confirmed, as I am sure she will be, Dr. Richmond will be only the fifth person, and the first woman, to hold this important office.

Our next nominee is Winnie Stachelberg, who has been nominated to be the Assistant Secretary of the Interior for Policy, Management, and Budget. The office of an Assistant Secretary for Administration was originally established by President Truman and

did not require Senate confirmation. Congress created the current statutory Assistant Secretary in 1971, in recognition of the importance of the office's functions and to increase its stature and effectiveness.

In some respects, the Department of the Interior (DOI) is a collection of separate bureaus. The Assistant Secretary for Policy, Management, and Budget helps cement them together by developing policy, managing operations, and formulating budgets across the breadth of the Department. The Assistant Secretary serves as the Secretary's principal policy advisor and the Department's chief financial officer. She oversees a diverse collection of offices ranging from the Budget Office to the Wildland Fire Office and from the Office of Native Hawaiian Relations to the Office of Natural Resources Revenue.

It is an important job, and I am pleased to see that Ms. Stachelberg has a graduate degree in public administration and has worked as a budget analyst at the Office of Management and Budget.

Our third nominee, Dr. Berhe, has been nominated to be the Director of the Office of Science. Although the Department is named the Department of Energy, science has always been at the core of the Department. As a seedbed of science, the Department has given us the technologies to increase our energy production and use our resources in a cleaner way. It has given us supercomputers and nuclear deterrence without testing. It has even helped developed the internet.

The Office of Science lies at the heart of the Department's science mission. The Office's mission, by law, is to deliver the "scientific discoveries, capabilities, and major scientific tools to transform the understanding of nature and to advance the energy, economic, and national security of the United States". That is no small task.

Judging from the list of scientific papers you have written and the list of academic honors and awards that you have received, Dr. Berhe, it is clear that you have the scientific credentials the job requires.

Again, I want to extend a warm welcome to all three of our distinguished nominees, and I want to thank you for being here this morning and for your willingness to undertake these important positions.

At this point, I will recognize my friend, Senator John Barrasso, for his opening statement.

**STATEMENT OF HON. JOHN BARRASSO,
U.S. SENATOR FROM WYOMING**

Senator BARRASSO. Well, thank you very much, Mr. Chairman. I also want to welcome and congratulate the nominees, Dr. Richmond, Dr. Berhe, and Dr. Stachelberg. Welcome to the Senate Energy and Natural Resources Committee. Congratulations on the nominations.

If confirmed as Under Secretary for Science and Energy, Dr. Richmond, you would have an important responsibility spanning the Office of Science and the Department applied energy offices. You have been a chemistry professor for over 40 years, including

the last 35 years at the University of Oregon, served in leadership positions on numerous boards, received many awards and honors, as the Chairman just mentioned, all related to the Department of Energy and the scientific community with which it collaborates. You appear to be highly qualified to serve as the Under Secretary of Science and Energy.

I cannot say the same for Dr. Berhe's specific qualifications to serve as Director of the Office of Science at the Department of Energy. Dr. Berhe has been a Professor of soil biogeochemistry at the University of California, Merced for over a decade and has focused her research on soil management and sequestering carbon in soil. Her background and experience appear to have very little to do with the Department of Energy's main scientific focus and the scientific community with which it collaborates.

In a May 9, 2021 op-ed in the Wall Street Journal, a theoretical physicist noted, "Ms. Berhe's research program on soil chemistry, exploring the capture of carbon dioxide, is relevant to climate change policy, but her research expertise is not in any of the Office of Science's major programs and she has no expertise as a scientific administrator and minimal experience with the Energy Department itself." This continues, "Past directors have been established researchers from one of the major fields supported by the Department or they have administered large, private laboratories, such as Bell Labs, in line with the demands of the job. It is hard not to wonder whether Ms. Berhe is the right choice for the leadership role at the Department of Energy."

Certain public positions Dr. Berhe has taken and endorsed are also concerning. On February 18th of this year, she retweeted the statement, "I'm just going to propose that a nation that can land an SUV-sized rover in an ancient lake on another planet can build an electrical grid that is f-ing useless because of slavish devotion to the free market". F-ing useless because of slavish devotion to the free market.

On May 7th of 2015, she wrote in "Science" that, "The practice of farming is to blame for climate change." The practice of farming is to blame for climate change.

Mr. Chairman, I am also concerned about Ms. Stachelberg's qualifications to serve in the position to which she has been nominated. The Assistant Secretary for Policy, Management, and Budget plays a central role in policy development, organizational management, and fiscal stewardship at the Department of the Interior. Ms. Stachelberg appears to have little, if any, background or experience in public lands, in natural resources, in energy, or other policy issues managed by the Department of the Interior.

For the past 25 years, Ms. Stachelberg has worked as a political activist at the Center for American Progress and the Human Rights Campaign. The only issue she appears to have focused on, and even remotely within in the realm of the Department of the Interior, is gun control. While I am a supporter of the Second Amendment and the sportsmen and women that rely upon it, I do not believe that gun control advocacy is a helpful qualification for the job at the Department of the Interior.

Again, welcome to each of the nominees. I look forward to hearing more about your qualifications, your policy views, and your

plans for ensuring the work of the Departments of Energy and the Interior, how that could benefit all Americans, including those in my home State of Wyoming.

Thank you, Mr. Chairman.

The CHAIRMAN. Thank you, Senator. The rules of the committee, which apply to all nominees, require that they be sworn-in in connection with their testimony. So if you all will please stand and raise your right hand. Do you solemnly swear that the testimony you are about to give to the Senate Committee on Energy and Natural Resources shall be the truth, the whole truth, and nothing but the truth, so help you God?

Dr. RICHMOND. I do.

Dr. BERHE. I do.

Ms. STACHELBERG. I do.

The CHAIRMAN. Thank you. You may be seated. Before we begin your statements, I am going to ask three questions addressed to each nominee before this committee. Will you be available to appear before the committee, and other Congressional committees, to represent Department positions and respond to issues of concern to the Congress?

Dr. RICHMOND. Yes.

Dr. BERHE. Yes.

Ms. STACHELBERG. I will.

The CHAIRMAN. Are you aware of any personal holdings, investments, or interests that could constitute a conflict of interest, or create the appearance of such a conflict, should you be confirmed and assume the office to which you have been nominated by the President?

Dr. RICHMOND. No.

Dr. BERHE. No.

Ms. STACHELBERG. No.

The CHAIRMAN. Are you involved or do you have any assets held in a blind trust?

Dr. RICHMOND. No.

Dr. BERHE. No.

Ms. STACHELBERG. No.

The CHAIRMAN. We are going to start with our first witness, Dr. Richmond. But first, we have a very dear Senator who had conflicts, but he is virtually with us, and he wants the privilege of introducing you. Senator Wyden.

STATEMENT OF HON. RON WYDEN, U.S. SENATOR FROM OREGON

Senator WYDEN. Thank you very much, Mr. Chairman, and thank you for your thoughtfulness in giving me this opportunity. We Oregon Ducks really appreciate your incredible sendoff for Dr. Richmond this morning. Your words really summed it up, and I am not going to give a filibuster this morning.

I will say, though, you touched on her many scientific honors since she has been teaching. If I were to list them all, Mr. Chairman, you would be here until tomorrow morning going through this. She has an extraordinary record. And for my personal involvement, I have known about her expertise for some time and, frankly,

we feel it would be impossible to have too many Oregon Ducks serving in key Administration roles.

I would also like to note, as we get started, that she has been recognized by President Clinton, President Obama, and President Reagan for her scientific expertise. And it will surely be needed right now, in her position at DOE, because with her expertise in drought she can help us develop a scientific response to drought, which is one of the real keys to reducing fire risk. I will just close by way of saying, we are really going to need Dr. Richmond to focus on that.

Just last month, my hometown saw record hot temperatures, with some as high as 116 degrees. Mr. Chairman, you have been very helpful to me, as Chairman of the Finance Committee, because we got a law passed so that Medicare advantage plans could provide air conditioning and air filtration systems for seniors with chronic conditions who are just trying to breathe in these conditions. A very significant portion of the deaths we had during our record heat dealt with elders who clearly were suffering those kinds of health problems.

Finally, I think her expertise in drought and its relationship with the fire risk is going to be of huge help to us because we are still dealing with the Bootleg fire at home, and that is going to be an enormous concern of Westerners through the months ahead.

Finally, she has some real expertise in another set of important issues with alternative energy being an area that will go front and center in her work in her days ahead at the national labs. And the West, and all of America, cannot wait to act on climate. We are seeing the effects of inaction now. Dr. Richmond is exactly the right kind of person, at the right time, for the Office of Science, and we could not admire her more for her scientific achievements and her professional analytical skills. Mr. Chairman, to have you give us this big sendoff for her, along with Presidents Clinton, Obama, and Reagan and the past statement—I think I will quit while we are ahead, because this is an exceptional individual.

The CHAIRMAN. Thank you, Senator. And to all three of our witnesses, before you give your testimonies, if you have family or friends that are here for support and you want to recognize them, please feel free to do so. We are happy to have them. We are going to start with, Dr. Richmond, you first. If you have any of your family here, please feel free to introduce them.

Dr. RICHMOND. Thank you, Senator Manchin, I do. I have my husband of over 40 years here, Dr. Steve Kevan.

The CHAIRMAN. Good to have you, sir.

STATEMENT OF DR. GERALDINE RICHMOND, NOMINATED TO BE UNDER SECRETARY FOR SCIENCE, DEPARTMENT OF ENERGY

Dr. RICHMOND. Chairman Manchin, Ranking Member Barrasso, and the distinguished members of the committee, thank you very much for the opportunity to appear before you today. I am so honored to discuss my nomination to serve as Under Secretary for Science and Energy at the Department of Energy.

As a research scientist, I have had a long association with DOE, starting with a summer research internship at Lawrence Berkeley

National Laboratory when I was 21. Later I received DOE funding for my own research, and I have served in leadership roles on many of the Department's basic and applied-sciences advisory boards. From my visits over the years to many of the DOE laboratories, I know firsthand that they are indeed the crown jewels of the nation's research and innovation domain. These labs, along with thousands of initiatives funded by competitive DOE grants, are achieving the groundbreaking discoveries and breakthroughs that long have made the United States the envy of the world in science and engineering.

Now, myself, growing up in Kansas on a farm, I could never have envisioned the career opportunities I've experienced over the years through science. In fact, as a little girl, I could dream no bigger than just going to college, which was my parents' aspiration for me because the Depression had deprived them of that dream. My gift for math opened up possibilities in science and, beginning with my undergraduate studies at Kansas State University in chemistry and graduate work at Berkeley, my world and my worldview have been expanding ever since.

In my laboratory at the University of Oregon, my students and I use lasers to study issues relevant to energy production, environmental remediation, and atmospheric chemistry, including carbon capture. Our work has resulted in many publications and many great students and, as noted, I've been honored with many awards.

But science has also given me countless opportunities to serve on national advisory boards, as president of scientific societies, as U.S. State Department Science Envoy, and as founding director of a grassroots organization that has helped over 25,000 women and minority scientists and engineers around the globe. These experiences have provided me with a deep understanding of the scientific enterprise of this country and, even more, its power to solve our problems and improve our lives.

I come before you today as the scientific challenges for our nation and our world have never been greater. I believe the magnitude of the solutions outweighs even the Manhattan Project, as climate change poses an existential threat to the entire planet. I have been to all 50 states. I've worked in countries on every continent, including over a dozen in Africa. I have seen the human cost of climate change, the growing shortage of clean water sources, job displacement, and inequities in access to energy. But I also have experienced the boundless energy and creativity of our human resources and I deeply understand our capabilities, and I know solutions are within reach.

If I am confirmed to lead DOE's science and innovation ecosystem, I plan to set several priorities that will muster our resources and place the United States at the forefront of these solutions. First, I want to assure you that we will continue our pre-eminent role in every step of the process of innovation—from making fundamental discoveries, to developing new energy technologies, to ramping up the scale to mass production and deployment. This is not like a relay race where the baton is passed off from one stage easily to the next. As challenges arise along this journey, we need the discovery science to be ready to intercede in the technological development and deployment. DOE's national lab-

oratories, user facilities, Frontier Energy Research Centers, ARPA-E, and others are uniquely situated around the country for such long-haul mediating efforts.

Second, I want to strengthen partnerships with other federal agencies, as well as private technology and energy enterprises in this country and around the world. With the urgency of the task before of us, we must resist the impulse to compete against one another and develop collaborations that will move us faster and farther together. I have been honored to serve as chair of the DOE's Basic Energy Sciences Advisory Committee, and as an appointee by both President Obama and President Trump to the National Science Board and have worked with leaders in the laboratories and offices of the Departments of Defense and Commerce. I look forward to using these leadership experiences to strengthen the connections among our vast national community of innovators.

And finally, if confirmed, I also will foster a dynamic science and technology workforce that reflects the diversity of our population and geography, both urban and rural. I have a deep understanding and a passion for what is needed to identify, train, and support the best and the brightest among us. I look forward to ensuring that DOE laboratories and the programs the Department funds become a model for diversity.

We are stronger, smarter, and simply better when we all seize the possibilities together, and there is no better place on this planet for scientific discovery and innovation than a country built on the premise of joining forces.

Thank you for allowing me the opportunity to appear before you today, and I do look forward to your questions. Thank you.

[The prepared statement of Dr. Richmond follows:]

Statement of
Geraldine L. Richmond
Nominee for the Position of
Under Secretary for Science and Energy
of the United States Department of Energy
Before the
Committee on Energy and Natural Resources
United States Senate
August 3, 2021

Chairman Manchin, Ranking Member Barrasso, and distinguished members of the Committee, thank you for the opportunity to appear before you.

I am honored to appear before you today to discuss my nomination to serve as the Under Secretary for Science and Energy at the Department of Energy (DOE). As a research scientist, I have had a long association with DOE, starting with a summer research internship at Lawrence Berkeley National Laboratory when I was 21. Later, I received DOE funding for my own research, and I served in leadership roles on many of the Department's basic and applied-science advisory boards. From my visits over the years to DOE laboratories, I know firsthand that they are indeed the crown jewels of the nation's research and innovation domain. These labs, along with thousands of initiatives funded by competitive DOE grants, are achieving the groundbreaking discoveries and breakthroughs that long have made United States the envy of the world in science and engineering.

Growing up on a farm in Kansas, I could never have envisioned the career opportunities I've experienced over the years. In fact, as a little girl, I could dream no bigger than just going to college, which was my parents' aspiration for me because the Depression had deprived them of that dream. My gift for math opened up possibilities in science and beginning with my undergraduate chemistry studies at Kansas State University, my world — and my worldview — have been expanding ever since.

My research work has been laser-focused, quite literally. At the University of Oregon lab, my team and I use lasers to study issues relevant to energy production, environmental remediation, and atmospheric chemistry. My work has resulted in many publications with many great students, and I have been honored to receive awards for our achievements. But science has also given me countless opportunities to serve on national advisory boards, as presidents of scientific societies, as a U.S. State Department Science Envoy, and as the founding director of a grass-roots organization that has helped thousands of women scientists and engineers around the globe. These experiences have provided me with a deep understanding of the scientific and engineering enterprise in this country, but even more, its power to solve our problems and improve our lives.

I come before you as the scientific challenges for our nation and our world have never been greater. I believe the magnitude of the solutions outweighs even the Manhattan Project as climate change poses an existential threat to the entire planet. I have been to all 50 states and to countries on every continent. I have seen the human cost of climate change: the growing shortage of clean water sources, job displacement, and inequities in access to energy. But I also have experienced the boundless energy and creativity of our human resources. I deeply understand our capabilities, and I know solutions are within reach.

If I am confirmed to lead DOE's science and innovation ecosystem, I plan to set several priorities that will muster our resources and place the United States at the forefront of these solutions:

I want to ensure that we continue our pre-eminent role in every step of the process of innovation, from making fundamental discoveries, to developing new energy technologies, to ramping up the scale to mass production and deployment. This is not a relay race, where the baton is passed off from one stage to the next. As challenges arise along this journey, we need the discovery science to be ready to intercede in the technological development and deployment. DOE's National Laboratories, user facilities, Frontier Energy Research Centers, ARPA-E and others are uniquely situated around the country for such long-haul mediating efforts.

I want to strengthen partnerships with other federal agencies, as well as private technology and energy enterprises in this country and around the world. With the urgency of the tasks before of us, we must resist the impulse to compete against one another and develop collaborations that will move us faster and farther together. I have been honored to serve as chair of the DOE's Basic Energy Sciences Advisory Committee, as an appointee by both President Obama and President Trump to the National Science Board and have worked with leaders in the laboratories of the departments of Defense and Commerce. I look forward to using these leadership experiences to strengthen the connections among our vast national community of innovators.

If confirmed, I also will foster a dynamic science and technology workforce that reflects the diversity of our population. It is well proven that innovation is fueled by diverse perspectives, and creativity flourishes in an inclusive workplace. Much of my career has been dedicated to this issue, particularly in support of women and minority scientists. I have a deep understanding — and a passion — for what is needed to identify, train, and support the best and the brightest among us. I look forward to ensuring that DOE laboratories and the programs the Department funds become a model for diversity.

In the lab, "synergy" is a scientific term, but in this role, I plan to employ it in very human terms. We are stronger, smarter, and simply better when we all seize the possibilities together. And there is no better place on this planet for scientific discovery and innovation than a country built on the premise of joining forces.

Thank you for allowing me the opportunity to appear here today. I look forward to your questions.

The CHAIRMAN. Thank you, Doctor. Now we will hear from Ms. Stachelberg. If you have anybody you want to introduce, feel free to do so.

Ms. STACHELBERG. I want to recognize my partner, Vicky Phillips, who is here today. Thank you so much.

The CHAIRMAN. Thank you for coming.

STATEMENT OF CYNTHIA WEINER STACHELBERG, NOMINATED TO BE AN ASSISTANT SECRETARY OF THE INTERIOR (POLICY, MANAGEMENT, AND BUDGET)

Ms. STACHELBERG. Chairman Manchin, Ranking Member Barraso, members of the committee, it is a privilege to be here today and to be considered as the President's nominee to be the Assistant Secretary for Policy, Management and Budget at the United States Department of the Interior. I want to take this moment, not only to recognize my partner, Vicki, who is here, but my sons, Will and Charlie. They could not be here today, but they make me all the more driven to play a small part in making a brighter future.

President Biden and Secretary Haaland have given me a great honor by nominating me for this role. It is a post at one of the most important departments, at one of the most challenging of times, and the prospect of taking on this position is more than a job to me.

Like many of you, and many Americans, I have always loved the outdoors and, in particular, the sheer beauty of what this country has to offer. I have been a lifelong angler and boater, and I credit my parents for instilling in me a love for nature and our place in it. Henry David Thoreau, the great writer and naturalist, once wrote, "heaven is under our feet as well as over our heads". And I think that just about sums up the feeling of being in one of our national parks or incredible monuments and taking in the marvel of what is around you.

I remember being a 9-year-old city kid, wide-eyed, with my jaw to the floor at the sight of the Grand Canyon. And as a young adult, I went diving and took in the sheer wonder of the Buck Island Reef National Monument. And more recently, I took my kids to visit the Ding Darling National Wildlife Refuge to see the white pelicans making their trek from east of the Rockies to Florida.

I am also very aware of what lands mean to western states where large percentages of their area are managed by the Department of the Interior. This includes millions of acres of multiple-use lands where it is imperative for the Department to work with states, tribes, and a diverse group of stakeholders to strike the right balance.

As we do so, it is imperative that we take action to address the threat climate change poses to communities across the United States, and in the West in particular, which is in the throes of unprecedented drought and devastating wildfires.

We also face important questions when it comes to clean energy and wildlife conservation, fishing and hunting, and access to our public lands and heritage. How we address these challenges will have far-reaching ramifications. I sit here mindful that, if I have the privilege of being confirmed as Assistant Secretary, I will dedi-

cate myself fully to working with this committee to meet those challenges.

The role of Assistant Secretary for Policy, Management and Budget requires me to be a leader. It will require me to guide programs with national and international concern across bureaus and offices, to lead an inclusive workforce to optimize the mission of the Administration, and to spearhead budget formulation, to make key decisions when it comes to priorities and goals, and to ensure that the Department complies with statutory and regulatory requirements.

For more than two decades, I have helped lead organizations and developed the skills necessary to fulfill these functions. As a senior leader at the Center for American Progress and the Human Rights Campaign, I have been key in developing and driving strategy. I have also had the honor of managing a large number of driven, dynamic staff tackling a whole range of issues, and I have exhibited steady leadership when it has come to personnel and human resource challenges—challenges that include addressing diversity and equity issues to ensure that wherever I serve there is a workplace culture where employees can thrive and grow.

At both of these organizations, I have also executed cross-cutting personnel and policy efforts, managed complex budget and financial projects, and collaborated with key stakeholders often with differing perspectives.

I take pride in the fact that I have worked with Members of Congress on both sides of the aisle to achieve results and make progress. I have worked with organizations like the American Enterprise Institute, the Chamber of Commerce, the Bipartisan Policy Center, and the McCain Institute, to name a few. I also have a strong record of success. And I say all of this is, that I believe I have the experience and the acumen to take on this role, and I am ready to get to work.

Thank you for inviting me to be in front of this committee today. Thank you for the opportunity to discuss my nomination. I look forward to your questions.

[The prepared statement of Ms. Stachelberg follows:]

**Statement of
Cynthia Weiner Stachelberg
Nominee for the Position of
Assistant Secretary
for
Policy, Management and Budget
at the
U.S. Department of the Interior
Before the
Energy and Natural Resources Committee
United States Senate**

August 3, 2021

Chairman Manchin, Ranking Member Barrasso, Members of the Committee, it is a privilege to be here today and to be considered as the President's nominee to be the Assistant Secretary for Policy, Management and Budget at the United States Department of the Interior.

I want to take a moment to recognize my partner, Vicki, who is here today and my sons, Will and Charlie. They could not be here today, but they make me all the more driven to play a small part in making a brighter future.

President Biden and Secretary Haaland have given me a great honor by nominating me for this role. It is a post at one of the most important departments at one of the most challenging of times — and the prospect of taking on this position is more than a job to me.

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and boater and I credit my parents for instilling in me a love for nature, and of our place in it.

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As we do so, it is imperative that we take action to address the threat that climate change poses to communities across the United States, and in the West in particular, which is in the throes of unprecedented drought and devastating wildfires, our public lands and our outdoor spaces. We also face important questions when it comes to clean energy and wildlife conservation, fishing and hunting, and access to our public lands and heritage,

How we address these challenges will have far reaching ramifications.

I sit here mindful of that and, if I have the privilege of being confirmed as Assistant Secretary, I will dedicate myself fully to working with this committee to meet those challenges.

The role of Assistant Secretary for Policy, Management and Budget requires me to be a leader. It will require me to guide programs with national and international concern across bureaus and offices; to lead an inclusive workforce to optimize the mission of the Administration, and to spearhead budget formulation, to make key decisions when it comes to priorities and goals, and to ensure that the Department complies with statutory and regulatory requirements. For more than two decades, I have helped lead organizations and developed the skills necessary to fulfill these functions.

As a senior leader at several large organizations, I have been key in developing and driving strategy. I have also had the honor of managing a large number of driven, dynamic staff tackling a whole range of issues, and I have exhibited steady leadership when it has come to personnel and human resource challenges — challenges that include addressing diversity and equity issues to ensure that, wherever I serve, there is a workplace culture where employees can grow and thrive.

At both these organizations, I have also executed cross-cutting personnel and policy efforts, managed complex budget and financial projects, and collaborated with key stakeholders often with differing perspectives.

I take pride in the fact that I have worked with Members of Congress on both sides of the aisle to achieve results and make progress. I have worked with organizations like the

American Enterprise Institute, the Chamber of Commerce, the Bipartisan Policy Center, and the McCain Institute, to name a few.

I also have a strong track record of success when it comes to personnel and human resource issues, including addressing diversity and equity and creating a workplace culture where employees can grow and thrive.

All of this is to say that I believe I have the experience and the acumen to take on this role, and I am ready to get to work.

Thank you for inviting me to be in front of this Committee today. Thank you for the opportunity to discuss my nomination, and I look forward to your questions.

The CHAIRMAN. Thank you, Ms. Stachelberg. Now we will hear from Dr. Berhe. Doctor, if you have someone you want to introduce, you are more than welcome to.

Dr. BERHE. Thank you, Senator. I would like to acknowledge my husband and my kids, who are virtually joining the event today. Thank you.

The CHAIRMAN. Thank you.

**STATEMENT OF DR. ASMERET ASEFAW BERHE, NOMINATED
TO BE THE DIRECTOR OF THE OFFICE OF SCIENCE, DE-
PARTMENT OF ENERGY**

Dr. BERHE. Chairman Manchin, Ranking Member Barrasso, and members of the Committee on Energy and Natural Resources, thank you for the opportunity to appear before you today. It is my great honor to appear before this Committee as President Biden's nominee for Director of the Office of Science at the Department of Energy. I thank the President and Secretary Granholm for trusting me to help lead the next chapter in the great scientific success story of the Office of Science.

Allow me to acknowledge my family and friends whose love and support I am fortunate to have, especially my husband, Professor Teamrat Afewerki Ghezehe, our children Essey and Elilta, and my parents, Ghidei Woldelessie Ketema and the late Asefaw Berhe Hagos.

I was born in the horn of Africa, in Eritrea. I grew up in a wonderful family with two great parents and role models who not only were first-generation middle school graduates but also received college degrees while working to support their families and raising six kids. The fact that I am appearing in front of you here today is a testament to the incredible power of education to transform a person's life. My parents instilled in me the value of education and respect for knowledge and ignited my love of science and the natural environment. I am now fortunate to be a professor at the University of California, Merced, an institution with a genuine commitment and demonstrated success in serving communities that have historically been underserved.

I am an earth scientist and educator. I am passionate about soil, the thin veil of loose material covering the land surface that has an outsized role in regulating life as we know it. Soil is the most complex biomaterial that we know of. It regulates the earth's climate, it is home to the most abundant and diverse forms of life on the earth system and is foundational to human and national security. Because of the complexity of soil, scientific investigations that seek to unravel the physical, chemical, and biological processes that take place in the soil system and the energy systems that support said processes require advanced experimental, observational, and computational tools and interdisciplinary perspectives. This is why earth scientists, including me, have had career-long ties to the Department of Energy, the national labs, and the advanced facilities the Office of Science manages.

As a soil and global change scientist who has studied and worked in public institutions of higher learning, I have always taken my responsibility to serve the public very seriously. I believe publicly funded science and technology are critical for inspiring the next

generation of scholars. Scholars have a responsibility to equitably serve the diverse communities of taxpayers that make our scientific careers and love of scientific research possible, and work to cultivate society's trust in science.

I approach my nomination to serve as Director of the Office of Science with the expertise of an earth system scientist that works across and synthesizes knowledge from multiple scientific areas and teams. The integrative systems perspective that I would bring, if confirmed, is uniquely suited for this role, especially for the current time when we need to urgently address multiple issues that are critical for not just pushing the frontiers of science but also to address the ongoing climate emergency, the need for workforce development, and to promote better understanding and trust in the scientific process.

It is evident that no one person can be an expert in the entirety of the wide-ranging portfolio of scientific endeavors the Office of Science supports. My experience with scientific investigations across multiple disciplines, covering spatial scales ranging from the molecular to the global and processes that occur from seconds to geologic timescales, is an asset as we seek to address fundamental processes that hold the key for the environmental, energy, and national security challenges of our time.

It has never been more critical that we employ a systems approach to support scientific endeavors that push the frontiers of knowledge. The nation's response to the COVID-19 pandemic has clearly demonstrated what is possible when we continue to fund basic science and then allow scientists from across multiple fields to work in the most advanced scientific facilities, including facilities the Office of Science manages, to enable timely discoveries.

If I am confirmed, my vision for the Office of Science is to ensure that I support and enable the Office's mission to deliver scientific discoveries to transform our understanding of nature and advance the energy, economic, and national security of the United States. I am committed to fostering a supportive scientific enterprise for staff and researchers from across all fields to ensure that U.S. science and technology remains pre-eminent, well-supported, at the cutting edge, and continues to inspire and inform decisions in society.

If I am confirmed, I commit to you that I will provide strong leadership for the Office of Science's mission.

Thank you again for the opportunity to appear before you today. I am happy to answer any questions you may have.

[The prepared statement of Dr. Berhe follows:]

Statement of
Dr. Asmeret Asefaw Berhe
Nominee for the Position of
Director of the Office of Science
United States Department of Energy
Before the
Committee on Energy and Natural Resources
United States Senate
August 3, 2021

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I am happy to answer any questions that you may have.

The CHAIRMAN. Thank you. Thank you all for your statements. I appreciate it very much. We are going to start with our questions now. If you can, in your answers, try to be as direct and brief as you can, so we are able to hear more and learn more about you and have more dialogue. Thank you so much.

I will start the questioning. Dr. Richmond, the Department of Energy Organization Act vests the Department's function in the Secretary and gives her broad authority to delegate those functions and organize the Department as she thinks best. Secretary Moniz gave the Under Secretary of Science responsibility not only for science but for most energy programs including fossil energy, nuclear energy, energy efficiency, renewable energy, and electricity. That was undone in the last Administration and then reinstated in February, before Secretary Granholm was confirmed.

So my question would be, have you discussed your portfolio with Secretary Granholm? Will you oversee the Department's energy programs, as well as its science programs?

Dr. RICHMOND. Thank you, Senator Manchin. It is indeed a big task to take on, and I'm ready for it. I indeed have discussed this with the Secretary. I understand what the role is. I've had many briefings and am learning a lot but also realize that my expertise that I have to address some of the most important issues that are on the table, I'm ready to take on. I must say, the nice thing about this particular position is the integration of the science and applied research. I look forward to that.

The CHAIRMAN. I would say, to follow up on that, do you agree that your principal task, if confirmed, will be to foster scientific discovery and technology innovation, and how do you plan to go about that?

Dr. RICHMOND. Yes, absolutely. As I said, I have several priorities, but one particular to that issue is to make sure that as we go from discovery research to going all the way to where we develop technologies and deploy them and also create jobs, to help make that as seamless as possible. To break down silos and make sure that we can work effectively—that is my role, and I will take that on.

The CHAIRMAN. Thank you very much. Ms. Stachelberg. As I mentioned in my opening remarks, the Assistant Secretary for Policy, Management, and Budget has a very broad portfolio and authority over more than two dozen different program offices ranging from Native Hawaiians to natural resource revenues, invasive species to wildland fires, and law enforcement to hearings and appeals. No one can give equal attention to the daily operations of all these offices. The Assistant Secretary is aided by five deputies and, of course, individual offices' directors, enabling the Assistant Secretary to focus on the issues that need your attention most.

So where do you see yourself, if confirmed, focusing most of your attention, and where do you think most of the attention needs to be focused?

Ms. STACHELBERG. Chairman Manchin, thank you so much for that question. You are exactly right that the breadth of the Assistant Secretary's portfolio is wide, and I'm looking forward to getting to the Department, if I'm confirmed, to tackle these challenges.

I see a couple of areas of focus to start out. I think one of the first is really ensuring that the Department is fully staffed. Really focusing on ensuring that the Department of the Interior has the appropriate staff to address the challenges that you mentioned.

A second priority area is the wildland fire program. We see drought and severe fire, especially in the West. That seems to be an area of what I'd like to spend increased attention on.

And then, finally, priorities that have to do with management and budget—something I've been doing my entire career. Working to address and develop and promulgate budgets.

I look forward to, if confirmed, working on those issues.

The CHAIRMAN. Thank you. Dr. Berhe, we passed the Energy Act at the end of last year. It authorized over \$35 billion to invest in innovative energy solutions like CCUS, advanced nuclear, renewables, and energy storage, just to name a few. This was the first significant update to our energy policy in 13 years, and it was incredibly bipartisan, with close to 70 senators sponsoring or co-sponsoring pieces of legislation. In addition, earlier this year, the Senate passed the Endless Frontier Act, which will make additional funds available to the Office of Science.

So how will you, if confirmed, ensure the additional sums made available to the Office of Science are wisely spent to fund the basic research and provide the greatest possible return, in terms of scientific discoveries and technological innovation?

Dr. BERHE. Thank you, Chairman Manchin. Let me start by thanking the committee and the senators that work on both of those acts—very important indeed.

I think it's extremely important that we are not just working on—we're trying to innovate the newest technologies and advance cleaner energy options, but as you stated, carbon capture technology is an important part of that equation. I've spent a big part of my life, in particular, on natural solutions for carbon capture. But there are also a number of engineered approaches there. I'm committed to making sure that all those resources are spent wisely, to make sure that they are helping us push against the frontiers of the science in this area, but at the same time, see also a very smooth transition to having these technologies applied and help address the energy and climate-related challenge. And all of that's super helpful.

I look forward to the opportunity to talk to you. Thank you.

The CHAIRMAN. Thank you, Doctor. And now, Senator Barrasso, for your questions.

Senator BARRASSO. Well, thank you very much, Mr. Chairman. To the three of you, I'm sorry I have to ask the question of all these nominees. But prior to this hearing, each of you has sworn, under oath, that your answers to the committee's written questionnaires are current, accurate, and complete. So would each of you just please verbally affirm that your answers to the questionnaire are current, accurate, and complete?

Dr. RICHMOND. Yes.

Ms. STACHELBERG. Yes.

Dr. BERHE. Yes.

Senator BARRASSO. Thank you. Have any of you ever threatened the physical safety of federal officials verbally or in writing?

Dr. RICHMOND. No.

Ms. STACHELBERG. No.

Dr. BERHE. No.

Senator BARRASSO. Have any of you ever been affiliated or collaborated with an organization that uses violence against fellow Americans?

Dr. RICHMOND. No.

Ms. STACHELBERG. No.

Dr. BERHE. No.

Senator BARRASSO. Thank you.

Ms. STACHELBERG. I have a series of short questions for you and since your job is at the Department of the Interior, you quoted Henry David Thoreau, "Walden". It is during his "Walden" years he has written, "I went to the woods because I wished to be there deliberately". So can tree spiking kill or maim loggers, mill workers, and firefighters?

Ms. STACHELBERG. Senator, thank you for your question. I'm here to discuss my nomination and not anything about that. So I don't understand the context—

Senator BARRASSO. So can tree spiking kill or maim loggers, mill workers, and firefighters? It is a simple yes or no question.

Ms. STACHELBERG. As a general matter, yes.

Senator BARRASSO. Okay. And it is a crime on federal lands?

Ms. STACHELBERG. Yes.

Senator BARRASSO. Thank you. Individuals who are aware of spiked trees, they should inform and cooperate with law enforcement?

Ms. STACHELBERG. Senator, I certainly will cooperate with law enforcement. Have done so—

Senator BARRASSO. So somebody that was aware of that should as well?

Ms. STACHELBERG. If you're asking me the question about me and how I would handle that, I will cooperate with law enforcement, as I have done my entire life.

Senator BARRASSO. Should individuals who disagree with federal policies threaten the physical safety of federal officials?

Ms. STACHELBERG. Senator, if you're asking me the question of whether I have ever done that, I have never threatened federal officials or anyone else.

Senator BARRASSO. Should individuals who plan or are otherwise involved in tree spiking incidents and threaten the physical safety of federal officials, should they expect to be hired by the Department of the Interior, which you have been nominated to?

Ms. STACHELBERG. Senator, again, I'm here to discuss my nomination for the Assistant Secretary for Policy, Management, and Budget and am interested in answering questions about my nomination and my past actions and my vision for this position, which is critically important. We have so many important challenges, climate change being one of them. And I really look forward to working with you and this committee in a bipartisan fashion to address those issues.

Senator BARRASSO. So you agree that tree spiking can kill or maim loggers, mill workers, and firefighters?

Ms. STACHELBERG. Senator, again, I really wish to address questions that have to do with my portfolio and the challenging job that I've been nominated for. And if I'm confirmed, I'd be happy to work with you and others on the committee to address those issues.

Senator BARRASSO. Dr. Berhe, you clearly are a very well-respected scientist. But your expertise is in soil science, not physics or energy generation. This has led to some criticism of your selection to head this specific office at the Department of Energy. The majority of the Office of Science's research is in areas of physics, high-performance computing. Do you have any experience managing programs in these areas?

Dr. BERHE. Thank you, Senator, for your question. Yes, my background is in soil science, biogeochemistry, and I'm an earth system scientist. So I have not worked in the areas of physics, but I assure you that if I were to be confirmed for this position, no area of focus within the DOE's vast research portfolio would be short-changed in any way.

As you know, these research priorities for DOE are set in—with a very deliberate and thoughtful, you know, discussions and consultation with Congress and the scientific community. And I abide by those in making sure that the science remains highly supported.

Senator BARRASSO. So the Office of Science has an annual budget of more than \$7 billion. The Director of the Office leads over 800 federal employees, oversees 10 national laboratories with more than 26,000 employees. What kind of management experience do you have that would prepare you for this role?

Dr. BERHE. Thank you again, Senator. I'm an academic by training and my areas of expertise have, so far, been in the areas of academic research, science and technology, and workforce development. So clearly this is a slightly different approach, but my work so far in pushing not just the scientific advances in multiple areas of research but also workforce development and consultation with multiple national and international efforts are well recognized. And I believe I bring an earth systems sciences perspective that allows me to expand and work on these important issues. Thank you.

Senator BARRASSO. Ms. Stachelberg, you just talked about working in a bipartisan way on climate change. In a 2016 interview with C-SPAN, you stated that Republicans are "climate deniers". Your statement, C-SPAN, all Republicans, climate deniers. Do you stand by that characterization today?

Ms. STACHELBERG. Senator, I'm not familiar with that quote, but I certainly have worked with Republicans and Democrats, not just on climate change but a range of issues. And so, I have worked in a bipartisan fashion and if I spoke about the Republican Party, I may have been talking about particular senators. But I have a career of working in a bipartisan fashion and with organizations that I don't always see eye to eye in.

I will say that the position for which I've been nominated at the Department of the Interior is a different position from the ones that I have held. Being a public servant is different from being at an organization with ideological views, and I understand that distinction.

Senator BARRASSO. Thank you, Mr. Chairman.

The CHAIRMAN. Senator Cantwell.

Senator CANTWELL. Thank you, Mr. Chairman. Ms. Stachelberg, if confirmed, you will have a key role in stewarding our public lands. I want to ask you about the failed oil and gas sale lease earlier this year and rights to drill in the Arctic Wildlife Refuge. I say failed because you know that the lease sale brought in a paltry \$6 million to the Treasury. That is 0.67 percent of the \$1.1 billion estimate that was used to justify opening this pristine wildlife refuge in 2017. In fact, the Trump Administration spent more on preparing for the failed lease sale than what they raised.

So to me, they didn't count a lot of associated costs and harms and impacts to communities. I understand that in the last hour, the Department of the Interior announced they will conduct a new environmental review of the Arctic Wildlife Drilling program that will include consideration of greenhouse gas impacts.

How do you think the newly announced environmental review will help us get a more accurate cost for Arctic drilling?

Ms. STACHELBERG. Thank you, Senator, for your question. I am not familiar with the recently issued review. I will say that your point does show the limited commercial benefits and interest. I am not currently at the Department, but if I'm confirmed, I look forward to working with you and others on the committee and receiving a briefing on that really important issue.

Senator CANTWELL. But you do agree that you need accurate cost and cost assessments?

Ms. STACHELBERG. I absolutely believe that you need accurate costs, and I look forward to working with you and others at the Department of the Interior to assess and gather those accurate costs.

Senator CANTWELL. Thank you. Ms. Richmond, on the efforts of our national labs and R&D, some people have already mentioned USICA and our efforts to increase the R&D budget. With the support of many of my colleagues, we were able to authorize \$17 billion in that. Do you support an increase in funding for the Department of Energy?

Dr. RICHMOND. Thank you for that question, Senator Cantwell. Yes.

Senator CANTWELL. Okay. Do you support a doubling of DOE's innovation budget? Or I guess I could broaden the question to say, if we actually doubled that, we would see an additional \$40 billion. What kind of results do you think we could expect from that kind of initiative? I am referring to a report that was done by the National Academy of Sciences, the Bipartisan Policy Group, and the Breakthrough Energy Institute on some of the findings in that report about what we would then be able to achieve.

Specifically, what I am after here is, the dynamics have changed. This is not even really on my mind now, about carbon. It is not. This is about what energy economies are you going to chase? And if you do not do the R&D, we are going to fall behind on these energy economies. In the rest of the world, everybody has all decided. The consumer has decided. Other countries have decided. Everybody is moving off of carbon.

So what are we going to do to chase those economies and those solutions? Because if we do not, we are going to be without a lot of jobs. The report characterized this very well. What are you

thinking—more investment on the R&D side would help in doing this?

Dr. RICHMOND. Thank you, Senator Cantwell, for that really important question. We are the envy of the world when it comes to fundamental science and discovery science, and we have the potential of falling behind if we don't continue to invest and increase our investments in the basic sciences. That's where we will continue to win if we continue to provide support for them, at our DOE laboratories, in particular, and our facilities. Our facilities have just been critical for many of the advances that we have had in the past and that we need to go forward. But we need funding for those facilities in addition to our laboratories and our research scientist ran.

Now how could we make that change to where we really are going to have an impact? I think we do it by funding these activities, things like ARPA-E, our energy research centers that are really working very hard to go from discovery to technology and then further to deployment to create jobs. Those kinds of programs and others that the Department of Energy is launching, I think, are going to be game changers with regard to the ability to get to the endpoint that we need to have.

We cannot lose this race. We cannot lose this race. So the funding is critical to make sure that we can provide the technologies that are the technologies of the future, to keep jobs going, as we make the changes and advances in our energy technologies.

Senator CANTWELL. Thank you. Ms. Berhe, I will ask you a question for the record, but it is a similar question, where the economics just lose if we don't get it right, and that is in that coastal region. It is 17 percent of U.S. land, but they are more than half the population and wealth of our natural resource economies. If we do not do good coastal zone management, we are vulnerable to the seas and surges and tsunamis, and understanding this, we are going to have a problem. So I look forward to your work on soils and coastal issues and getting an answer for the record.

Thank you, Mr. Chairman.

Dr. BERHE. Thank you, Senator.

The CHAIRMAN. Senator Lee.

Senator LEE. Thank you, Mr. Chairman. Ms. Stachelberg, we will start with you. On March 22d of this year, you tweeted, "Pass universal background checks and ban assault weapons and high-capacity magazines. Deliver solutions and results. That's what voters want." So it appears that you advocate banning certain kinds of firearms and magazines. Let's start with the firearms. Just, as briefly as you can, tell me what you define as an assault weapon.

Ms. STACHELBERG. Senator, I just want to start out by saying, like President Biden, I believe we have too much gun violence in this country.

Senator LEE. Sure, I get that. I am just wondering what you define as an assault weapon, because you want to ban them. We want to know what you mean by that.

Ms. STACHELBERG. In my position at the Center for American Progress, I hold certain positions. I have been nominated to be the Assistant Secretary for Policy, Management, and Budget and will follow the President's policies. I just also want to say that I am a supporter of the Second Amendment to the Constitution and be-

lieve that hunting, recreational shooting on public lands should be followed.

Senator LEE. I get that. I appreciate all of that. We are on a tight time constraint. I have only got a few minutes. So just tell me what you mean by assault weapon. Something you want to ban. I just want to know what you mean by that.

Ms. STACHELBERG. You know, what I said, as a Center for American Progress employee was to reduce gun violence, getting assault weapons, AR-15s, out of the hands of people that shouldn't have them. And I believe that gun violence is a problem in this country, along with President Biden. But as I said, I'm a believer in the Second Amendment—

Senator LEE. Okay. So you mentioned AR-15s. Any other type of weapon you would want to ban? What do you define as the—as the weapon you want to define? You have said assault weapons. The only weapon you have mentioned so far is the AR-15. Is that the only gun you want to ban?

Ms. STACHELBERG. Senator, I was speaking in a certain context, as working at the Center for American Progress. That is not the position that I've been nominated for now, and I will follow the laws that are passed by Congress—

Senator LEE. Does the Second Amendment confer an individual right to bear arms?

Ms. STACHELBERG. Yes.

Senator LEE. Do you support the Department of the Interior's current positions and policies allowing concealed carry and allowing hunting on federal public lands subject, of course, to compliance with state law?

Ms. STACHELBERG. I will support all the laws of this land, including those that you just mentioned, yes.

Senator LEE. Now, the wild horse and burro program has been struggling for years to bring herds to appropriate management levels. This has led to a massive humanitarian concern and immense suffering among our equine friends that are part of this program.

How do you believe we can better use fertility treatments to get us to sustainable levels on the range?

Ms. STACHELBERG. Wild horses and burros populations, as you know, can double in size. It is a difficult issue because it puts stresses on landscapes and other species, and I am committed to humane treatment and understand that the Administration has proposed an increase in the budget to address this issue. And if I am confirmed, Senator, I look forward to working with you and others on this committee, to address this issue.

Senator LEE. Thank you. I appreciate that. Now, the President has stated his strong support for extending federal recognition to the Lumbee Tribe of North Carolina. Can you tell me why the Administration supports the Lumbee recognition when they have not proceeded through the Office of Federal Acknowledgment?

Ms. STACHELBERG. Senator, I'm not familiar with that particular example. I would like to learn more about that, spend some time learning about that issue.

Senator LEE. Okay. I ask about this because the Obama-era updates to regulations governing federal acknowledgment of Tribal entities significantly eased requirements for petitioning for these

groups. Do you feel like they should be eased further to facilitate acknowledgement of groups like the Lumbee?

Ms. STACHELBERG. Senator, recognition of Tribes is incredibly important. I know it is a priority of this Administration and of Secretary Haaland. I'm not currently at the Department, but if I am confirmed, I look forward to working with you and others on this committee to ensure that we have proper recognition of Tribes and have really enhanced the sacred trust that we have with Native Americans.

Senator LEE. The Endangered Species Act is also something that plays a significant role in the operation of the Department of the Interior. The Endangered Species Act has often been interpreted and applied in ways that have prevented forest management activities of the sort that are necessary to reduce the risk of wildfire and, ironically, this in turn, presented greater threats to wildlife.

Unfortunately, when forests are not managed, they can become more dangerous for the endangered species that exist there. How do you think we can better implement forest management to prevent wildfires and protect species?

Ms. STACHELBERG. I just want to say, at the outset, I want to note that I don't believe that there's a choice. I think it's a false choice between wildfire and the economy and species. I do want to work with you and others on the committee to ensure that the Endangered Species Act is implemented correctly. I think it's been a success. We just have to look at the bald eagle, or the American alligator to ensure that.

As I noted in my opening, wildfires are a growing problem with severe drought and the prevalence of them. I look forward to working with this committee to ensure that we address not just endangered species, but our forests as well. I was heartened to see in the bipartisan infrastructure deal, as it's been reported, that there is money for additional support for wildland fires. I'm looking forward to, if I'm confirmed, working at the Department to bring those disparate and often distinct bureaus and divisions at the Department of the Interior together to address not just endangered species but forest management.

One of the things that I've done throughout my career is work with local stakeholders to ensure that we come up with solutions that are durable. I think forest management, wildfires, and endangered species, and addressing those challenges are among the things that will require that kind of ability to bring different stakeholders from the local level—from private landowners to ranchers to farmers and others.

Senator LEE. Thank you. I see my time has expired. I agree with you that the Endangered Species Act has, in many ways, been a success to those species, and to those humans whose habitats have been destroyed through mismanagement and misapplication of the Act. When we can see harm coming, fuel building up and a refusal to treat them, that is less than a success and I look forward to working with anyone within the Department who can help address that.

Thank you.

Senator BARRASSO [presiding]. Senator Heinrich.

Senator HEINRICH. Thank you, Ranking Member Barrasso. Ranking Member Barrasso, I have a letter here supporting Ms. Stachelberg's nomination that I would like to ask unanimous consent to enter into the record. It is signed by groups ranging from the American Sportfishing Association to the Archery Trade Association to the Hispanic Access Foundation, the Mule Deer Foundation, Outdoor Industry Association, and dozens and dozens of additional stakeholders in our public lands.

Senator BARRASSO. Without objection.
[The letter referred to follows:]

July 20, 2021

The Honorable Joe Manchin
Chairman
Senate Committee on Energy & Natural
Resources
304 Dirksen Senate Office Building
Washington, D.C. 20510

The Honorable John Barrasso
Ranking Member
Senate Committee on Energy & Natural
Resources
304 Dirksen Senate Office Building
Washington, D.C. 20510

Dear Chairman Manchin and Ranking Member Barrasso:

The undersigned organizations, which represent millions of hunters, anglers, outdoor enthusiasts and outdoor businesses across the United States, express our support for the confirmation of Ms. Winnie Stachelberg to serve as the Assistant Secretary for Policy, Management and Budget at the U.S. Department of the Interior.

Ms. Stachelberg has worked for more than two decades on policy and budget issues in Washington, including as a budget examiner at the Office of Management and Budget. She has a track record of successfully working across the aisle to develop and implement durable policies.

While most of Ms. Stachelberg's work has not been in the conservation arena, since she was nominated, she has met several times with the hunting, fishing, conservation, and landowner communities, both to introduce herself and to understand our priorities. We are confident that we can work with Ms. Stachelberg and that her skills are well suited for the Assistant Secretary for Policy, Management and Budget. Moreover, Ms. Stachelberg is a lifelong angler, boater and outdoor enthusiast and would bring that passion to her work.

We urge the committee to confirm Ms. Stachelberg for the Assistant Secretary for Policy, Management and Budget at the U.S. Department of the Interior.

Sincerely,

American Fly Fishing Trade Association
American Sportfishing Association
Angler Action Foundation
Archery Trade Association
Association of Fish & Wildlife Agencies
Backcountry Hunters & Anglers
Bonefish & Tarpon Trust
California Waterfowl
Hispanic Access Foundation
Izaak Walton League of America
Mule Deer Foundation
National Alliance of Forest Owners

National Deer Association
National Fish and Wildlife Foundation
National Marine Manufacturing Association
National Wild Turkey Federation
National Wildlife Federation
National Wildlife Refuge Association
North American Grouse Partnership
Orion: The Hunters Institute
Outdoor Industry Association
Outdoor Recreation Roundtable
Pheasants Forever
Quail Forever
Student Conservation Association
The Conservation Fund
The Trust for Public Land
Theodore Roosevelt Conservation Partnership
Wildlife Management Institute
Wildlife Mississippi

Senator HEINRICH. Ms. Stachelberg, one of the proudest moments that I have certainly had on this committee was passage of the Great American Outdoors Act. That Act provided guaranteed funding for the Land and Water Conservation Fund and to fix public lands infrastructure that has fallen into disrepair.

If confirmed, are you committed to fully utilizing those funds in each and every Department of the Interior budget request?

Ms. STACHELBERG. Senator, thank you for the question. Yes, I am committed to doing so. I think that the bipartisan passage of the Great American Outdoors Act was a crowning achievement last year. It is certainly one of the priorities of the Secretary—effective implementation of the law.

The goal to meet the intent of Congress and reduce maintenance is a terribly important component of Congressional intent. If I am confirmed, I look forward to working with you and others on this committee, ensuring that maintenance projects are taken care of, the backlog is reduced, and that the bureaus and divisions charged with deferred maintenance have the appropriate resources, in order to do their jobs.

Senator HEINRICH. I appreciate that very much, and I would just point out, it is also an incredible opportunity for the Administration to use something we did last year to build back better. It is an enormous economic opportunity for the investments in that infrastructure.

Dr. Richmond, in 2018 you oversaw the advisory body that put together that year's edition of Science and Engineering indicators. That is a biannual Congressionally mandated report that provides authoritative statistics on the status of science in the United States.

According to an American Institute of Physics article published at the time, you expressed concern about U.S. R&D policies, saying that inadequate funding levels for R&D, "Will continue to erode ability to be competitive to the level that you see other countries rising, such as China".

Talk to me about where you see American R&D today, what has changed, and what has not, and where your concerns are.

Dr. RICHMOND. Thank you, Senator, for that question. This is important and this is timely. The way I've seen us, since 2018—the numbers that came out in 2018, with regard to, basically, China starting to eclipse our capabilities was frightening, is frightening, especially when we think of ourselves as being a leader in the science and engineering enterprise. Looking at the funding that China is pumping into their technology and research is incredible.

But you know, money is not the only thing. It's talent and it's our facilities and our laboratories. I worried then, and I still worry today that, do we have the funding that we need to keep our laboratories, keep our research groups going, that we really need to make this competitive edge?

Where we are ahead, currently, today and hopefully for the future, too, really is in the basic fundamental science. We are the leader, especially in the physical sciences, in materials, in a number of different areas that I could name. We cannot lose that.

Now, we can spend our time looking over our shoulder, worrying about China. Instead, we need to look forward, like in a race, and

say, let's be as innovative as we possibly can. Get our scientists onboard to be able to make the kind of changes that we need in order to stay ahead and be innovators. I believe if we can do that we will continue to be the leader in the world. But there are threats. There certainly are threats that are worrisome.

Senator HEINRICH. I think you articulated that very well. Dr. Berhe, congratulations on your nomination. You are a soil scientist, and well-known for your climate-related research on soil carbon sequestration, which is becoming more and more recognized and relevant by the moment. I think that is a great background to run the Office of Science.

Since the 1950's, actually, the Office of Science has made major contributions to our understanding of environmental and earth systems science research. For example, it was behind the earliest research on atmospheric and ocean circulation that eventually became the climate and earth system models that we utilize and depend on so much today.

As you know, the President's budget requested a 10 percent increase for biological and environmental research at the Office of Science. Can you talk to us a little bit about what some of the vital but underfunded initiatives are that you might champion, if confirmed for this position?

Dr. BERHE. Thank you, Senator. Yes, as you stated, soil carbon sequestration is an important area and an area that has been a strong focus of BER and Office of Science activities, in general. I think there's a number of activities that could benefit with an increase in budget for the BER program, in particular, having to do with climate change responses, in particular, thinking about reducing greenhouse gas emissions, for example, through a number of approaches.

But as are also genome-enabled research and biology, a synthetic biology of multiple different areas that have only risen in prominence over the last several decades and have become even more important. You know, the facilities that enable that kind of research, too, as we've seen with COVID and the national research efforts that coordinated to understand the dynamics of that—you know, how the viruses were changing and how to even tackle that important issue.

So there are vast areas of research that have already been set as priority areas for BER that would benefit and a number that could be added to that list with an increase in budget. And I appreciate your effort, and others, in helping see an increase in budget for those really important programs.

Thank you, Senator.

Senator HEINRICH. Thank you, Doctor.

The CHAIRMAN. Senator Lankford.

Senator LANKFORD. Thank you, Mr. Chairman. Thank all of you for going through the process and to be able to go through these questions and issues.

Ms. Stachelberg, let me ask a question. What are your thoughts about Congress having the authority to determine the scope and authority of federal agencies? Does Congress have the authority to determine the scope and the task on federal agencies?

Ms. STACHELBERG. If I understand your question, Senator, I think that Congress, working with other entities, has the ability to pass laws and—if that’s what you’re asking me——

Senator LANKFORD. Sure, yes, just trying to figure out, I guess, just more of a constitutional question of who sets the parameters for agencies? Can agencies decide what they want to do or are those parameters set by Congress?

Ms. STACHELBERG. Senator, I’ve been nominated for the position of Assistant Secretary for Policy, Management, and Budget and——

Senator LANKFORD. Yes, but dealing with policy, yes.

Ms. STACHELBERG [continuing]. And will absolutely be dealing with policy. Looking forward to working with you and others on this committee. I think that’s outside the scope of what I will be doing on a day-to-day basis. I know the one thing that I will do is that I will follow the regulations and the rules and the laws and work to implement the policies of the Secretary and the President.

Senator LANKFORD. That’s great. I ask—in 2016, you wrote, at one point, “In the face of persistent inaction in Congress to close the gaps in the nation’s gun laws that leave many communities vulnerable to near daily gun violence, today’s comments and actions demonstrate this Administration’s continued commitment to taking a comprehensive approach to addressing this public health crisis.” Okay, no issue there. Then, the next statement is, “Center for American Progress is eager to continue working with leaders across the country to follow the President’s example and explore opportunities to take action now, without waiting for recalcitrant legislature”. That is one.

In 2013, you wrote, “There are more than a dozen appropriation riders passed each year, typically without any discussion or debate, which significantly limit the Federal Government’s ability to regulate the firearms industry. Congress has interfered with the Bureau of Alcohol, Tobacco, and Firearms and Explosives’ ability to fulfill its mission by enacting riders to the appropriation bills that dilute its power over licensed gun dealers.”

So the reason I ask is, it is a philosophical question but it is a practical effect, to try to figure out just your perspective on whether Congress has the authority, for instance, to give instructions through legislation that’s appropriation riders, is legislation to give instruction to the Bureau of Alcohol, Tobacco, and Firearms and Explosives to be able to deal with what they can do and cannot do, or to be able to deal with firearms, or if agencies or entities, or your office in the future, in dealing with firearms policy on Department of the Interior lands. For instance, what that’s going to look like, how wide is that latitude, or is that set by Congress?

Ms. STACHELBERG. Senator, I look forward to working with you on further addressing this question but let me zoom out for just one moment and say that, absolutely, Congress passes laws and works with agencies. As you know, the Executive Branch has the ability to pass regulations. One of the things that I’m looking forward to, if I’m confirmed, is working with Congress to achieve policies that address climate change, affect conservation of our public lands, and that’s the job that I’m, before you now, seeking to talk about.

And so, if you're asking me whether agencies have latitude to issue regulations and Congress has latitude to pass laws and write appropriations riders, absolutely both of them are true.

Senator LANKFORD. Yes, to me it is more of a philosophical conversation, trying to figure out what kind of relationship we would have because, constitutionally, Congress obviously writes the laws. Regulations are created that have to be consistent with those laws. A regulator cannot just create regulations outside of the scope of what law is already there. And so, what I am trying to figure out is, when you write things like, "a recalcitrant Congress is not doing it, and so, the Administration's going to do it", or that appropriation riders are limiting the actions of an agency and what they want to do, I am trying to figure out a philosophical basis on this.

I do want to drill down one other issue, as well. You mentioned about the success of the Endangered Species Act. There are some species that have recovered on that, but if I remember correctly, it is about two percent of the species that have actually graduated out of being listed in the Endangered Species Act.

It has been a challenge for us, in Oklahoma. For instance, we are dealing with the lesser prairie chicken on the western side of our state. We have done a lot of voluntary cooperation. Our farmers and ranchers and commercial entities have done a lot of work and when the agency steps in and says, "Thanks for all your work on this but now we're going to take it from here", it diminishes some of that.

So we do have some work to be able to do to actually have the Endangered Species Act actually be successful, because I do not see a two percent graduation rate as successful. So there are some things that we still need to be able to do to try to recover these species and graduate them off.

Ms. STACHELBERG. Senator, if I just might comment. If I'm confirmed, I look forward to coming to Oklahoma and learning more about it. I think the partnership of ranchers and farmers and local communities and engaged stakeholders is essential, not just for the successful implementation of the Endangered Species Act, but for all the laws and policies that are promulgated by the Department of the Interior. If I'm confirmed, I hope I'll be able to work further with you and your staff on that issue.

Senator LANKFORD. Great, thank you. Thank you, Mr. Chairman.

The CHAIRMAN. Thank you, Senator Lankford. Senator Hickenlooper.

Senator HICKENLOOPER. Great, thank you, Mr. Chair. I thank all of you, not just for being here today, but for your public service. I tremendously appreciate it.

Dr. Berhe, I saw that you went and you got a Ph.D. in biogeochemistry. I want to just publicly salute you for that, because that has to be one of the great interconnections of science which, I think, if you look at where cutting-edge research is today, so much of it is taking place at a nexus like that. I have a master's in geology, but it would be considered primitive from anything that you have studied. I know that Berkeley is one of the top schools in the country. So again, to have dealt with what you did, what your family did, to come here and to achieve that is really remarkable.

I wanted to ask you, looking at just direct capture, nature affords us a multitude of ways of capturing carbon and storing carbon. How do you think about funding that research and supporting entrepreneurs whose natural carbon removal technology, perhaps, does not get to the market for 5 or 10 years, as opposed to being there already? I would also love if you could provide some examples from the soil carbon and mineral sequestration. I do not even know what blue carbon is, but one of my staff dug that up. Anyway, give us a quick answer on that.

Dr. BERHE. Thank you, Senator, and I appreciate your comments. Biogeochemistry is, as you said, a very interdisciplinary area. But as, again, you correctly said, we have to think in those interdisciplinary perspectives if we are going to, kind of, keep pushing the frontiers of the science. And I'm a huge fan of geology, obviously, so thank you.

Yes, just to address your question, nature, indeed, is one of our best allies in addressing the climate challenge. There are multiple solutions available. This is the area of research where I've spent a considerable part of my career. There are multiple areas where we are able to actually take out carbon dioxide from the atmosphere, for example, and store it in more slower cycling pools in soil. And doing so, in soil and other natural environments—in blue carbon even—becomes an important issue, as in carbon in oceans and ocean sediment—and in the ocean system and marine systems and aquatic systems in general.

All of those are options that are incredible, available. And you know, keep in mind that the way we have used natural resources, historically, has caused a lot of carbon to be released from the natural ecosystems into the atmosphere. But we can, at least, reverse some of that and actually use natural ecosystems to sequester a significant amount of carbon from the—and take it out. So drill down from the atmosphere and reduce the atmospheric burden of greenhouse gases.

This is a thriving area of research and also a thriving area that is of interest to businesses and land managers across the board. And I think, you know, I agree with you that sometimes research can be little slow, but this is in one area where the technology transfer and the partnerships between science and industry is moving at a really fast pace. And I think everything we could do to help in that respect, from the scientific standpoint, could only help address these incredible climate challenges that we have in front of us.

Senator HICKENLOOPER. It is an exciting time. I think you are going to be the right person in the right place.

I am not sure I am going to get to you, Dr. Richmond, but trust me, I am so impressed with all that you have done. I saw that you taught for five years at Bryn Mawr where my—

Dr. RICHMOND. I did.

Senator HICKENLOOPER [continuing]. My great-aunt went and so, I am a huge fan of that institution.

Ms. Stachelberg, I want to just put in a plug and ask your opinion. So often when science is occurring and research is occurring, some of the most important work is done by the people that are not scientists and those who are able to keep an enterprise on budget

and on task, and obviously, you have done that in number of different arenas. Is that somehow—describe just briefly, I have used up too much of my time—that ability. How do you see that helping in the Department of the Interior and the role you are proposed for?

Ms. STACHELBERG. Senator, thank you for that question and I will be brief. That is what is exciting about the Assistant Secretary for Policy, Management, and Budget. I've spent my career working to ensure that teams have the support they need, the budgets they need, the direction that they need, providing strategic guidance and leadership to teams and bureaus and divisions. And that's what I've done throughout my career.

If I'm confirmed, I look forward to doing it, not just with scientists, not just with climate experts, not just with firefighters, not just with those who work on water and mines and Native Americans but with all of the Department assets to ensure that we conserve our public lands, that we ensure that we have an outdoor economy that is creating jobs and working for all of us.

It's the kind of work that I like to do—bringing disparate people together, working across the aisle. If I'm confirmed, I look forward to working with you and others on this committee, to ensure that the Department is moving in the right direction.

Senator HICKENLOOPER. Great, and I have firsthand experience of the sensitivity of scientists that is probably only matched by the sensitivity of Senators. Anyway, I yield my time—or, my lack of time—to the Chair.

The CHAIRMAN. We are not that sensitive, sir.

[Laughter.]

The CHAIRMAN. We have Senator Marshall at this time.

Senator MARSHALL. Thank you, Mr. Chairman, and congratulations to our nominees.

My first question is for Dr. Richmond. Dr. Richmond, the Big 12 is one of the most storied conferences in the history of our nation. It is known for its academic excellence and, obviously, the strongest basketball conference in the history of this nation for the last 10 years, and a top three football program as well. Let's assume that Texas and Oklahoma leave and Oklahoma State, for my colleague from Oklahoma, that they are out of the conference. If Kansas State was playing West Virginia, (a) who would you root for?

[Laughter.]

Senator MARSHALL. And (b) can you think of a funner place to be than a Kansas State-West Virginia football game?

Dr. RICHMOND. I'd probably be watching the Ducks.

[Laughter.]

Dr. RICHMOND. How can I win by answering that correctly?

The CHAIRMAN. Good one—that was a good answer. Good answer.

Senator MARSHALL. Well, great answer. No, I—certainly from one Wildcat to another, the—what did Senator Roberts say? The ever-fighting, mighty Wildcats. Welcome and congratulations.

Dr. RICHMOND. Thank you.

Senator MARSHALL. Let's talk about something really important to Kansas, and that is biofuels—and I think important to the envi-

ronmental footprint of this nation. What do you see for the opportunities for biofuels, and specifically, renewable diesel and biodiesel?

Dr. RICHMOND. Well, thank you for that question, Senator Marshall. Let me just start by saying, on our farm, in the early morning years and years ago, my father got up every morning and shoveled coal into the furnace to get our house warm. And now, I know that there's a nuclear plant in Kansas that's providing 800,000 people with energy. What a transition that's made.

Senator MARSHALL. Eighteen percent of our energy comes from that nuclear plant.

Dr. RICHMOND. It's amazing. It's amazing. And so transitions can happen, and transitions can certainly happen. We can make much more progress in the bioenergy sphere. But again, it takes what's—we just have to make sure that we are doing the best research that we can, getting at tech technology, and getting it further. That, and any of the other fossil fuels, on all of these—we cannot give up on any of these fuels at all, because we need them to drive our economy. That said, we also need to make sure that we reduce our greenhouse gases and make sure that everything is—the emissions can be—not be detrimental to the climate, as they are right now.

And so all of these energy sources, it's important for us to go forward. And nuclear, of course, in the respect of emissions is a good resource. But we have to work hard on the carbon capture in other ways, too, in order to reduce the greenhouse emissions.

Senator MARSHALL. So I am excited to hear you talk about taking traditional energy and making it cleaner. That is a great start.

What would the impact of year-round E15 have in this country, as well as the rest of the world?

Dr. RICHMOND. You mean in terms of what would—if we make advances in these areas, how would it—

Senator MARSHALL. If we were using E15 year-round, what impact would it have on tailpipe emissions?

Dr. RICHMOND. Could you explain to me what E15 is? I'm sorry.

Senator MARSHALL. It is an ethanol blend.

Dr. RICHMOND. Oh, oh, of course.

Senator MARSHALL. Of 15 percent.

Dr. RICHMOND. With ethanol. Well, I think—listen, I think it's important for us to show that this is a very powerful way to generate energy for cars. Sorry, I didn't know it was called that. But on the other hand, it does give a message to the world and helps us with regard to being able to export and do issues in this area too. It's important. We just have to work some details out.

Senator MARSHALL. Okay, thank you.

Dr. Berhe, let's talk about soil carbon sequestration, just for a second. Certainly, I'm excited about those opportunities. You know, the same farmers that took 10 bushels-of-wheat land and turned it into 70 bushels-an-acre land could develop something at Kansas State University to be used in the ocean. We're taking plankton and teaching it how to absorb more carbon, which is simply photosynthesis, where we would farm the carbon in the ocean—the plankton in the ocean, as well.

What do you see on the horizon? What are the opportunities for soil carbon sequestration? And please don't talk about no-till farming or cover crops, which we have been doing on our farm in Kan-

sas for 25 years. What is out there? What is the vision? What does the future look like to you?

Dr. BERHE. Thank you, Senator, for that important question. Yes, this is an area that I'm very, very passionate about and, in addition to the really great options that are on the table, some of which you mentioned, I think we have an incredible amount of opportunity in front of us when it comes to working with land managers to improve soil health, which is beneficial for improving their productivity. But at the same time, it builds up carbon in soil and takes it out of the atmosphere and builds up in soil.

Some of the most promising technologies out there, and approaches, include, for example, bioenergy crops that sometimes tend to be perennial and also have deep rooting systems that are critical for carbon sequestration. But we also have to bring into the mix, to a larger extent, how we can use carbon that is currently in waste streams and bring it back into the soil, which also comes with additional nutrients. And I'm talking about animal manure, animal waste in general, as well as even sometimes human and municipal waste, in the form of biosolids, that is now being tried across the board as an option for improving soil health, soil carbon sequestration and thereby improving activity of agricultural and working lands in general.

I think there are a number of these options. In particular, ones that have to do with options that allow us to use waste and reroute waste and use it as a resource. Options that allow us to store carbon in deep soils, in particular, with deeper rooted, in particular, perennials. All of these and many, many more. This is a very exciting area for this field, as you can imagine. And I'm very passionate and excited about the opportunities to work with land managers and all sorts of stakeholders in this area because this is something that is happening, and I think we need to figure out a way to make sure that we're helping all of those that are doing the good work in this area.

Thank you, I appreciate—

Senator MARSHALL. Thank you so much. Chairman, I yield back.

The CHAIRMAN. Thank you, Senator. Senator Hirono.

Senator HIRONO. Thank you, Mr. Chairman. I ask all nominees on any of the committees on which I sit the following two initial questions. I would like to ask all of you this en masse. Since you became a legal adult, have you ever made unwanted requests for sexual favors or committed any verbal or physical harassment or assault of a sexual nature?

Dr. RICHMOND. No.

Dr. BERHE. No.

Ms. STACHELBERG. No.

Senator HIRONO. Have you ever faced discipline or entered into a settlement related to this kind of conduct?

Dr. RICHMOND. No.

Dr. BERHE. No.

Ms. STACHELBERG. No.

Senator HIRONO. Dr. Berhe, I was very interested to learn of the work that you did with the ADVANCEGeo partnership that focuses on empowering geoscientists to respond to and prevent sexual harassment, discrimination, and bullying in research workplaces. This

is an area of concern to me as we talk about our country's ability to compete, especially in the STEM areas where women and minorities drop out of these fields in droves. Your work in preventing sexual harassment and these kinds of workplace issues is really interesting to me.

So Dr. Berhe, what have you learned working on the partnership, and how would you apply that learning in leading the Office of Science?

Dr. BERHE. Thank you very much, Senator. You're right. This is a really important area if we're going to continue to maintain a very competitive and successful, scientific workforce. Ensuring the welfare of that workforce and ensuring that people from all walks of life can enter science and succeed in the scientific workforce is a really important goal. It's been a goal of mine in my entire professional career.

In particular, what we've done in the ADVANCEGeo partnership—which is, as you know, an NSF-funded effort—is to make sure that we're empowering scientists to address these issues and prevent them from happening in the first place. Create workplace cultures that actually limit the occurrence of these incidents. You know, we have legal mechanisms to address them after the fact, but I personally believe that's a little too late a time to address them.

So we could actually use a community model, a community building approach, where we're empowering scientists to work together to establish a culture where everyone that enters our academic institutions deserves to just be able to focus on their work, in peace, without any kind of exclusionary behavior. And that if we establish these shared goals and learn about what's right and what's not right ahead of time, I think we could do a lot of good. And that's one of the most important lessons that has come out of the ADVANCEGeo project.

Obviously, the ADVANCEGeo project was focused on very different kinds of institutions—in particular, universities. Not necessarily the Office of Science type of scale, even though Office of Science funds universities, obviously. But I think there are important lessons of community building and partnerships that would allow us to prevent things.

Senator HIRONO. And are these lessons learned things that you will apply, heading up the Office of Science? Because I agree with you that prevention and education and awareness and creating an environment where these kinds of behaviors get reported and dealt with is really important. So I assume that you will implement or institute these kinds of practices—

Dr. BERHE. Thank you, again, Senator.

Senator HIRONO [continuing]. In your new position, should you be confirmed.

Dr. BERHE. Yes, I'm looking forward to working with the leadership at DOE and the national labs and learning about what kinds of things are occurring right now in that space and sharing things we've learned from the AdvanceGeo and other opportunities.

Senator HIRONO. I am going to be interested in continuing a dialogue with you in these areas.

I am running out of time, but I just wanted to mention to Ms. Stachelberg the important role that the Department of the Interior plays in serving indigenous communities, including our Native Hawaiian community. So I certainly look forward to speaking with you about this in more detail during a future discussion.

Ms. STACHELBERG. Senator, I look forward to that, if I'm confirmed. Thank you.

Senator HIRONO. Dr. Richmond, maintaining a culture of scientific integrity within DOE's Office of Science is critically important. What steps will you take to support DOE's scientists and foster scientific communication with the public?

Dr. RICHMOND. Thank you very much for that question. It's really important and also timely, Senator. My role, if confirmed, would be to ensure that the leadership sends the message strongly, down and out, that scientific integrity is our priority.

As a scientist, we have ways in terms of the research that we do, making certain that it is valid, reproducible, and comes to the appropriate conclusions based on the data. We have checks and balances that are there in order to ensure that the best science gets out and gets very visible as long as we're sticking with the data.

But it goes beyond that with regard to being able to enter—to have the public trust us, with regard to whether they believe what we are saying is important and the priorities that we are setting. And therefore, it's important that we use data that has the integrity that allows us to make the important points to move the needle on some of the important issues that we have in technology and also energy workforce development.

So I can assure you that that would be a top priority for me and working with the Secretary to ensure that scientific integrity is operative at all levels and also that we provide the public and the taxpayers the knowledge that that's the way we operate.

Thank you for that question.

Senator HIRONO. Thank you. Mr. Chairman, if you don't mind—I am glad that you mentioned the need to restore the public's trust in science and facts as a way to make decisions because there are major concerns that I have as to whether or not we do have a public that relies on facts and science for decision-making.

Thank you.

Dr. RICHMOND. Thank you.

The CHAIRMAN. Thank you, Senator. Senator King, by virtual.

Senator KING. Mr. Chairman—

The CHAIRMAN. Oh, I am sorry. Senator King, I am so sorry. I missed our good friend, way up in Alaska. I missed her. I did not see her over there in Alaska. Senator Murkowski, I am so sorry.

Senator KING. I am delighted to defer to the Senator from Alaska.

Senator MURKOWSKI. Thank you.

The CHAIRMAN. And then, Senator King, you will be next.

Senator MURKOWSKI. Thank you, Mr. Chairman.

The CHAIRMAN. I am sorry.

Senator MURKOWSKI. No, no, no, I appreciate that. I thank you for your willingness to come before the committee today and answer some questions.

First, this is a question, I think, to both Dr. Richmond and to you, Dr. Berhe. I have been paying very close attention to the Arctic Energy Office. This is going to be playing an ever-increasing role in our nation's national security policy, as the Arctic becomes, certainly, a focal point when we look to geopolitics, but also, certainly in the climate space and initiatives, as well.

So Dr. Richmond, Dr. Berhe, I would ask for a commitment from both of you today that, if you're confirmed, you will collaborate closely with the Arctic Energy Office, promote Arctic-related science issues in your positions, and ensure that the AEO retains its independence and its cross-cutting nature. I would like to know that you are going to be supporting that moving forward.

Dr. RICHMOND. Yes, Senator Murkowski, this is an incredibly important issue, not just for Alaskans, but for the country. We stay involved in many of the things having to do with microgrids, and so forth, that you have in Alaska that can be really cross-cutting and also very forward-looking, as we go forward, in addition to all the other EERE activities we have in Alaska.

You have a spectacular state, but you also have a spectacular opportunity to really lead the country in many of these areas. So yes.

Senator MURKOWSKI. Thank you for acknowledging that. We do have a role that goes far beyond the boundaries of the State of Alaska, and it is very global. So we appreciate that. And my friend, Senator King, who deferred to me, knows that well, as the Co-Chair of the Arctic Conference.

Dr. Berhe, your views, please.

Dr. BERHE. Yes, Senator. You have my commitment. The Arctic is an important area for many reasons, including the beauty and the majestic environments. And you have my commitment that these are very, very important areas that I would be—look forward to talking to you and your staff and working with all the stakeholders on these important issues.

Senator MURKOWSKI. Yes, I would appreciate that. In addition to great beauty, we have really, really smart and innovative people. So tap into those.

Dr. BERHE. Yes, I know that.

Senator MURKOWSKI. Question for you, Ms. Stachelberg. The Office of Assistant Secretary for Policy, Management, and Budget obviously plays a key role in the management of our nation's resources, including the collecting, the accounting, and the distribution of revenues from energy and mineral leases. Whether it is on our federal lands or on our Tribal lands, so many of our rural communities rely on these disbursements from the Department for everything from schools to community services. Many of these revenues go to pay for many of the conservation programs that have very broad, bipartisan support here.

I know that you have not been at the Department. You probably have some limited insight in the current Administration's oil and gas lease pause. But you are here as the nominee for the Chief Financial Officer for the Department. In that prospective role, do you think that it is prudent to put a pause on one of the main drivers of revenue for the Department while the Administration is proposing a massive spending increase for the Department?

Ms. STACHELBERG. Senator, thank you for your question, and it's good to see you again. I'm not confirmed yet, as you know. We've had conversations before about the incredible opportunity that the Assistant Secretary for Policy, Management, and Budget has in working with the career staff—incredible staff—in Alaska, and if I'm confirmed, I look forward to doing that.

I am nominated by the President and follow the policies of the President, Secretary Haaland, and those are their policies and I plan to follow those.

Senator MURKOWSKI. Well, it is just—again, I am asking from the perspective of the financial management—fiscal management, here, and it just seems a bit incongruous that you would be limiting—clearly limiting the ability of receiving these revenues that are so key to some of, not only the Administration's priorities, but I think, priorities here in Congress.

One last, quick question for you. As you know, I am the Senior Republican on the Interior Appropriations Subcommittee. I am very familiar with the Department of the Interior's budget. The President's budget includes \$17.6 billion for the Department this year. It is a big job. It is an extraordinarily diverse Department, if you will, in terms budget areas. So very quickly, what is your experience with developing and implementing large budgets and your familiarity with the Department's annual budget process?

Ms. STACHELBERG. I am familiar with the Department's budget process. One of the reasons why I am eager to be confirmed is not only to work with this committee on so many of the issues, but to begin to work on the Fiscal Year budget and work with you on the issues that you have.

I've spent two and a half decades working on budgets, finances, doing cross-cutting work at complex, large organizations. I have the skills to bring people together.

I think one of the interesting and unique roles that the Assistant Secretary for Policy, Management, and Budget plays at the Department of the Interior is to bring sometimes competing, sometimes conflicting, views together, whether it's on budget, whether it's on management. Listening to Members of Congress on both sides of the aisle, listening to perspectives from people from Alaska—and we'll hear from Maine. Those are the kinds of things that I have done. As I think Senator Collins might have said to you, I have a track record of working across the aisle, working with diverse people. And one of the jobs of the Assistant Secretary for Policy, Management, and Budget is to be one of those liaisons with respect to appropriations and budget.

I believe I have the skills, the temperament, and I'm eager, if confirmed, to work with you and others on this committee to ensure that the Department of the Interior's budget, the programs that it runs—conservation, climate, Western water, fire and land management—are all taken care of and that the departments and bureaus and divisions have the appropriate resources they need to do their jobs.

Senator MURKOWSKI. Thank you for the response. Thank you, Mr. Chairman, and thank you to Senator King.

The CHAIRMAN. Thank you, Senator. And now, Senator King.

Senator KING. Thank you, Mr. Chair.

Dr. Richmond, we have mentioned the subject of climate change several times. I am haunted by the experience of England between the World Wars, particularly in the 1930's. Winston Churchill wrote his first volume of the history of World War II called, "The Gathering Storm", which was about the period of the 1930's, when English politicians essentially denied, or ignored, the growing threat from a militarizing Germany.

I wonder how we are going to be viewed 20 years from now, in terms of the threat of climate change. This summer has really brought it into stark focus, with wildfires earlier than ever, larger-than-ever drought, and the excessive heat in the Northwest. If ever we are getting a warning, it is now. Yet we are still sort of arguing about it and moving forward, and we are taking steps in various bills and legislation.

But do you share my sense of urgency about this and that when the history of this period is read, I want to be Winston Churchill, not Neville Chamberlain. Can we do more, and should we do more?

Dr. RICHMOND. Thank you, Senator King, for that really important question. You mentioned that, will we look back after 30 years and wonder if we made the wrong decision? I'd say that's closer to 20, maybe 15. This is urgent. We have to take action now. And the Department of Energy has to be the leader in taking those initiatives that will make us not regret that we did nothing for the now, and the next even five or six years, whatever it is.

And I assure you that that will be, if confirmed, a top priority of mine to basically save the planet. To do the technologies that we need to save the planet for ourselves, but also our children. Thank you.

Senator KING. Well, a young Harvard senior in 1940 wrote his thesis called, "While England Slept". That was, of course, John F. Kennedy, and I do not want somebody writing a book, you know, called "While America Slept" or "While the World Slept". We went into this really extraordinary crisis, the likes of which I do not think we have seen. So I look forward to working with you on that.

I want to ask you a somewhat difficult question, but it gets at some of the questions we have had today. There have been questions raised about Dr. Berhe's experience and administrative experience. You are going to be the Under Secretary for Science. She is going to be the Director of the Office of Science. Do you have confidence in her ability to manage that office and to lead that office, in terms of the important scientific research that we must do?

Dr. RICHMOND. Yes, I am fully confident that she will be capable of fulfilling the duties of that position, and I look forward to working with her to see if there is any way I can continue to support the efforts that she will be leading.

Senator KING. I am delighted to hear that. To go back to the question of climate change—you know, there were, sort of, Chicken Littles or Paul Reveres, whatever you want to call them, in the past—Malthus being one. But technology saved us from Malthus' predictions, and that is why I think the work that this office and you will be doing is so essential. Science must lead us out of this crisis.

Dr. RICHMOND. Yes, I agree. And let me reemphasize the point that I made earlier, that our Department of Energy national lab-

oratories are really the ones that can make the big difference that we need to make. We just need to make certain that they have the appropriate resources to be able to move forward. Because, again, they can take things from the beginning of the journey, the fundamental science, all the way to the end, in which it's deployed. And that is going to be so critical that we do that quickly, without breaking down the stove pipes, in order to get an answer to some of these issues that we so critically need to find answers to.

Senator KING. And everything from soil's ability to sequester carbon to carbon removal from the atmosphere to energy storage. I mean, all of those are scientific questions.

Ms. Stachelberg, let me ask a completely different question. Senator Heinrich mentioned the Great American Outdoors Act, and I think one of the most important principles is that execution is as important as vision. We supplied the vision, and now you have to supply the execution and the implementation.

I hope that you will commit to absolute transparency and clarity about the administration of the Great American Outdoors Act, especially the Restore Our Parks Act. Where the money is going, how it is decided where it is going, what the formulas are. I think that would be very important in giving us confidence in the administration on this important program.

Ms. STACHELBERG. Senator, as I said earlier, I think the Great American Outdoors Act certainly is one of the Secretary's highest priorities. It was a crowning achievement last year in a significant bipartisan way. You absolutely have my 100 percent commitment on that front. In addition to committing to you to be transparent on this issue, that's the way I will work, if I'm confirmed, as Assistant Secretary for Planning, Management, and Budget at the Department of the Interior.

I think it's also important, especially with the Great American Outdoors Act and the Land and Water Conservation Fund and spending the taxpayers money wisely, that we encourage local, community-driven conservation projects. And I'm looking forward, if I'm confirmed, to working with you and this committee, to ensure that we spend those dollars wisely, that we create outdoor recreation opportunities, and provide much-needed open spaces for families and boost local economies.

So thank you for your question.

Senator KING. Thank you, and thanks to all three of our nominees this morning for your testimony. Thank you, Mr. Chairman.

The CHAIRMAN. Thank you, Senator. Senator Cortez Masto.

Senator CORTEZ MASTO. Thank you, Mr. Chairman. Welcome, congratulations to all three of you. It has been an incredible morning just listening to your responses to the questions posed.

Dr. Richmond, let me ask you. Based on your current experiences with DOE, I am curious to hear more about your thoughts on the current status of the U.S. workforce. When it comes to RD&D for new technologies. Is there more that the U.S. Government needs to be doing to enhance STEM education in order to attract more scientists and researchers into this field knowing that the 21st century is going to take us in this innovation economy? I am curious about your thoughts on that.

Dr. RICHMOND. Thank you, Senator, for that question. I'm as passionate about the workforce as I am about innovation.

I have worked with many of the DOE lab leadership over the years, even doing research on issues of workforce in their laboratories, to try to understand how we can increase not only the number of women and minorities that are in their laboratories but also get them into leadership positions, which then, of course, we all know makes a big difference.

I think there's much that we can do in the educational arena to increase the number of students going into STEM. But I must also say that one thing that I think is oftentimes missed is that what we really lose out on in this country is this retention of students that want to be scientists at 16 or 18 and then aren't by the time they're 22 or 24. We are ranked one of the lowest countries in the world with regard to retention. That's embarrassing. We have to work harder on that retention. And so that's why I believe really strongly and especially for women and under-represented groups, because their numbers are the lowest.

And so I do believe that there are things that we can do at the undergraduate, graduate level, and above, and of course, K-12. But if I'm talking about retention, you know, that's where the problem child is.

Senator CORTEZ MASTO. And I agree, and I—listen, this is an area where, as we are looking at new legislation, whether it is this bipartisan legislation that we are working on now or in the future, the workforce is key. Bringing this workforce along with us, but giving them the opportunities and retaining them in this kind of space for innovation and science is so important.

If you have ideas, I am looking forward to working with you around the retention issue. This is an important part of the legislation that I am working on to bring that workforce along, but really focusing on how we incentivize them. How do we engage? Whether it is learning for the first time around STEM, or retraining, or taking the skills that they have and transitioning them. I mean, there is a lot of work in this space that we need to do. Whatever ideas you have on it, I am open to listening to you. So I look forward to that.

Dr. RICHMOND. Well, I would be thrilled to no end to work with you on this. I think in the sphere of community colleges, but in addition, thinking of graduate school. We are paying our graduate students, who are the seed corn of our future, at levels that you have to ask the graduate students why they would even go to graduate school, being paid at the level that they're being paid for five or six years in their 20s, or seven years in their 20s.

We have to seriously, as a nation, look—and across the agencies—at how we can make sure that we are attracting the best and brightest and that they can afford to do the training to take on leadership roles.

So I would be thrilled to work with you on any aspect of that.

Senator CORTEZ MASTO. Thank you. I appreciate that. I know my time is running short.

Dr. Berhe, let me ask you about this—this is another area that I don't think we are as focused on as we should be, as we look at the global competition of renewable technologies. It is the stand-

ards-setting process. Standards specifications and defined performance requirements for materials and for products and services related to technologies around the world. And I have watched as China has already established goals to set global standards for emerging technologies like 5G internet, the internet of things, artificial intelligence, and other technologies that impact the energy sector.

I am curious if you have thoughts on this. Can you discuss the importance of U.S. involvement in the standards-setting process? We cannot forget that. I would love to hear your thoughts.

Dr. BERHE. Thank you, Senator. I agree, this is a really important area. Some of the efforts on setting standards are beyond the purview of the Office of Science, obviously. But if you think about, you know, contributions that the Office and the research that enables can—I mean, the best way we can make sure that the standards we think are important are set is to out-innovate and out-compete everybody in having the best science and technology products out there and the most efficient systems. And I think we could do that, and we must do that. We have to keep doing so if we're going to ensure U.S. competitiveness in a variety of areas that are related to the topics you discussed. I would love the opportunity—I know we don't have time right now, but I would love the opportunity to talk to you and work with you on these.

Senator CORTEZ MASTO. Thank you. I appreciate that. I have one more question, with the Chairman's indulgence, if that is alright.

Ms. Stachelberg, is it?

Ms. STACHELBERG. Yes.

Senator CORTEZ MASTO. Let me ask you this, because this is another area that I have focused on. We have talked about oil and gas leasing in the Energy Committee ad nauseam. Let me just say that. But in recent years, the BLM has spent an inordinate amount of time and resources offering vast acreages for oil and gas development on land where the oil and gas industry does not really have a development interest and on lands that have little-to-no potential for development.

What does that mean? That makes these lands available for leasing and only fuels the speculative industry and wastes the BLM resources, while locking up the land from being managed for other purposes like a wildlife habitat preservation, outdoor recreation, grazing—that happens in my state, as well.

So I introduced the End Speculative Oil and Gas Leasing Act. And what it does is, it prohibits BLM from offering leases on lands determined to have low-or-no drilling potential, requiring BLM to evaluate eligible lands for the development potential instead.

My question to you is, I would hope that you would have an open mind around this and be willing to work with me, or at least take a look at the legislation and give me your input, or the Department's input, around this legislation.

Ms. STACHELBERG. Senator, I am familiar with your legislation. I think it's very interesting and I definitely, if I'm confirmed, look forward to working with you and others on this committee on reforming the leasing program. It's a priority of the Secretary. If I'm confirmed, it would be a priority of mine, as well.

Senator CORTEZ MASTO. Thank you. And thank you, all three of you.

The CHAIRMAN. Thank you, Senator. Senator Hoeven.

Senator HOEVEN. Thank you, Mr. Chairman. For Dr. Richmond and Dr. Berhe, Dr. Fatih Birol, who is head of the International Energy Agency, has said that carbon capture storage is, quote, “the most important technology that exists today”. And I would ask, do you agree with his assessment that it is the most important, or one of the most important energy technologies today?

Dr. RICHMOND. Yes, Senator, thank you for that question. I agree that it’s incredibly important, absolutely.

Senator HOEVEN. Dr. Berhe.

Dr. BERHE. Yes, Senator, I also agree. It’s an extremely important area and important technology that’s out there.

Senator HOEVEN. And do you agree that global demand for fossil fuels, including coal, will continue to be significant, particularly among developing economies in the years to come? Same question for each of you.

Dr. RICHMOND. I’m sorry, I didn’t hear the first part of your question.

Senator HOEVEN. Do you agree that global demand for fossil fuels, including coal, will continue to be significant, particularly among developing economies in the years to come?

Dr. RICHMOND. Yes, I do.

Dr. BERHE. Yes.

Senator HOEVEN. And so then, do you think it is very important that we lead the way forward and really crack the code on adding carbon capture and storage, so that we can address carbon in those industries and really lead the way forward and get it done not only from a technological standpoint but from a commercially viable standpoint? Same question for both of you.

Dr. RICHMOND. Absolutely, Senator, absolutely.

Dr. BERHE. Yes, Senator.

Senator HOEVEN. So if confirmed, will you work with myself, our chairman, and others to crack the code on CCUS, specifically including for coal-fired electric, as well as renewables and others?

Dr. BERHE. Yes.

Dr. RICHMOND. If confirmed, I absolutely would be looking forward to working with the committee and others on this important issue.

Senator HOEVEN. Dr. Berhe.

Dr. BERHE. Same answer. If confirmed, I would be very honored to work with you all on this. It’s a very important area.

Senator HOEVEN. Thank you. For Ms. Stachelberg, two questions. One is, on the moratorium on energy development on federal lands, how will you approach making sure the Interior Department acts to comply with the court order to resume those lease sales?

Ms. STACHELBERG. Senator, thank you for your question. I will comply with all court orders, with all Congressional mandates, as I have in all my previous jobs, and will wait for the court’s decision and will work with the Secretary and others at the Department of the Interior on implementation.

Senator HOEVEN. Do you agree public safety in Indian Country is a very important issue and a big issue? Something that needs to be addressed?

Ms. STACHELBERG. I absolutely do. Not only public safety in Indian Country, but education and access to public lands, yes.

Senator HOEVEN. We are short of BIA, Bureau of Indian Affairs, law enforcement officers throughout reservations across the Midwest. We have established a training academy, essentially, at Spirit Lake in North Dakota. Will you work with me to make sure that we continue to develop that academy to train BIA law enforcement officers for the whole upper Midwest region?

Ms. STACHELBERG. Senator, if I am confirmed, I hope to work with you on that issue and a range of other issues that affect Native Americans, the law enforcement community, and those interests in North Dakota.

Senator HOEVEN. We need the Bureau of Reclamation to work with us on water issues, certainly throughout the West but very much in my state. Will you commit to work with me, as well as my other western colleagues, to make sure that the Bureau of Reclamation is able to help meet the important water needs of the communities in our states and throughout the West?

Ms. STACHELBERG. Senator, I absolutely commit to you, if I'm confirmed, to working with you and others on the challenging issues of Western water resilience. I do want to just note that I was heartened to see that in the bipartisan infrastructure deal there is over \$8 billion for repairing aging infrastructure, water recycling, reuse, storage planning, including rural water projects. And so if I'm confirmed, I would love to work with you and your staff on those issues.

Senator HOEVEN. Thank you. Thanks to all three of you. Mr. Chairman, I yield back the rest of my time.

The CHAIRMAN. Oh, thank you, Senator. You are so kind. We are going to have to go vote now, but I want to thank all three of you. You did an excellent job. We appreciate you being here. And I want to thank, also, all of our participants. We appreciate you being here.

Members will have until 6:00 p.m. tomorrow to submit additional questions for the record.

So the committee stands adjourned.

[Whereupon, at 11:58 a.m. the hearing was adjourned.]

APPENDIX MATERIAL SUBMITTED

U.S. Senate Committee on Energy and Natural Resources
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Questions for the Record Submitted to Dr. Geraldine Richmond

Questions from Ranking Member John Barrasso

Question 1: Many of the statutory responsibilities of the Director of the Office of Science and the Under Secretary for Science sound quite similar—for example, monitoring DOE’s research and development (R&D) programs, advising the Secretary about DOE’s national laboratories, and advising the Secretary about DOE’s education and training activities.

a. What do you see as your role in these areas?

If confirmed, I see the responsibility of the Director of the Office of Science to be involved in the overall prioritization and management of basic research portfolio and activities, including at the DOE national laboratories. I would look forward to working with the Director and the leadership team of the Office of Science to ensure that they have what they need to continue our outstanding track record of exciting new scientific discoveries.

With the expanded role of the Under Secretary for Science to include the applied Energy responsibilities, much of my effort will be focused on strengthening the integration of activities across DOE’s Office of Science national laboratories, our applied energy national laboratories, universities, and the private sector.

b. How would you ensure that your actions are coordinated but not duplicative?

If confirmed, I will set clear expectations for the science and applied energy program offices and ensure we have effective cross-cutting teams and priorities that will not only avoid duplication, but more seamlessly translate our investments in basic research to applied energy outcomes.

Question 2: The science and engineering capabilities of DOE’s national laboratories are wide-ranging. To what extent should the laboratories focus on executing DOE’s own programs, versus making their capabilities and facilities available to other agencies, U.S. industry, academia, and others?

The Department’s national laboratories are a national asset that help advance U.S. global leadership in science and technology. An important aspect of the work happening at the national laboratories is their collaboration with the broader scientific community, which already includes U.S. industry and academia as well as conducting research for other federal agencies. The national laboratories also operate world-unique scientific user facilities such as light sources and high-performance computing assets that are available for the broader scientific community to use in advancing U.S. science and technology in a wide range of fundamental, applied energy and other areas important to our national and economic security.

Question 3: Science and technology developed by the DOE national laboratories can be valuable to U.S. industry, the economy broadly, and other national goals. How can DOE improve its technology transfer efforts to ensure that its R&D results are efficiently and successfully commercialized?

The Department of Energy has a special role to play in creating a vibrant innovation ecosystem and stimulating new economic opportunity by translating R&D activities into tangible outcomes for the American people. In recent years, DOE has provided additional tools for the national laboratories to use that make it easier to work

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with industry and university partners. For example, DOE created the novel mechanism - Agreements for Commercializing Technology (ACT) – to provide an alternative approach for non-Federal partners to engage with the national laboratories that allows for more business-ready terms and conditions.

The Department has also developed several new programs to facilitate the development and commercialization of technologies that incorporate the unique capabilities of the national laboratories. For example, DOE created the Lab-Embedded Entrepreneurship Program (LEEP) which embeds top entrepreneurial scientists and engineers within the national laboratories to perform early-stage research and development (R&D) that may lead to the launch of energy or manufacturing businesses in the future. I will continue developing these programs as well as those of the Office of Technology Transitions (OTT) to enable it to fully deliver on its congressional mandate to “expand the commercial impact of the research investments of the Department” by supporting activities across the DOE science and applied energy programs, national laboratories, and the private sector.

Question 4: Security and competitiveness concerns about foreign access to U.S. R&D results have grown in recent years. The scientific user facilities at the DOE national laboratories host thousands of foreign researchers each year.

- a. How should DOE balance the advantages of scientific openness against the potential risks associated with foreign access to these facilities and the R&D conducted at them?

The Department has taken a series of actions to address risks to research security while maintaining an open, collaborative, and world-leading enterprise. These policy initiatives aim to reduce the risk posed by specific threats, including threats posed by certain foreign governments, to the U.S. research enterprise including the DOE national laboratories. At the same time, we need to retain the strengths of our enterprise including its highly collaborative approach to complex science and technology problems and our ability to recruit and retain top talent from all over the globe.

DOE has taken steps to prohibit federal and laboratory personnel from participating in foreign government talent recruitment programs sponsored by countries of risk such as China, Russia, Iran, and North Korea. DOE has also restricted federal and laboratory personnel from participating in other foreign government sponsored or affiliated activities that could pose a security risk. DOE works closely with the chief research officers across the 17 National Laboratories to maintain a Science and Technology Risk Matrix, which takes a risk-based approach to identifying critical and emerging technology areas that have potential economic and national security implications, but that do not otherwise have traditional protections in place.

- b. What additional steps, if any, are needed to ensure that DOE-funded R&D results are not illegally or inappropriately transmitted to potential foreign adversaries?

DOE continues to actively co-chair the National Science and Technology Council Subcommittee on Research Security to ensure a coordinated interagency approach to research security, as well as participate in the National Counterintelligence Task Force campaign on research security. If confirmed, I will work to ensure that DOE continues to review and update these policies to ensure that this risk-based approach strikes the right balance

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between protecting our intellectual property and assets, while also maintaining the openness that underpins our innovation ecosystem.

Question 5: What are the advantages and disadvantages of having a single Under Secretary for Science and Energy as opposed to separating the roles of Under Secretary for Science and Under Secretary for Energy?

Having a single Under Secretary for Science and Energy greatly enables DOE to advance its investments from the earliest stages of Research and Development (R&D) through to demonstrations of clean energy technologies, and ultimately, clean energy deployments in the market. This integrated approach is important for a number of technology areas such as hydrogen, energy storage, and carbon capture, as well as artificial intelligence and quantum computing.

Question 6: The Biden Administration has proposed creating an Advanced Research Projects Agency–Climate (ARPA-C) within DOE.

a. How would the climate-related R&D conducted by ARPA-C be different from R&D conducted by the existing DOE offices?

ARPA-C would focus on creating investments in topical areas of high potential for alleviating the climate crisis that cannot be addressed individually by other Agencies, including ARPA-E and DOE science and applied energy program offices. Potential examples may include:

- Resilient infrastructure to protect against severe-weather events
- Elimination, mitigation, or prevention of greenhouse-gas emissions from land sources such as warming permafrost or landfills
- Direct air or ocean capture of CO₂
- Negative-emissions agricultural products, including products that throughout its lifecycle removes and sequesters more carbon than it emits

b. What are the potential advantages of creating a new organization for this purpose?

If created, the U.S. Department of Energy's Advanced Research Projects Agency–Climate (ARPA-C) could invest in climate-related innovations necessary to enable adaptation, increase resilience, and achieve net zero non-energy emissions by 2050, while coordination to avoid duplication with ARPA-E. ARPA-C's climate mission complements ARPA-E's advanced energy mission but reflects the need to address research activities that encompass more than only specifically energy-related emissions. ARPA-C will harness innovation to solve the global climate crisis while enhancing the economic and energy security of the United States through development of new technologies that will lead to economic opportunities for American workers and businesses.

c. What are the potential challenges?

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Full expression of ARPA-C would require legislation beyond the current ARPA-E authorization, and thoughtful design to avoid duplication with existing efforts. These include provisions relating to technology investments needed to enable mitigation of non-energy greenhouse gas (GHG) emissions and others to enhance climate resiliency and adaptation. None of these climate-critical mission areas are fully authorized to the ARPA-E currently, and application spaces that may be only partially pertinent to ARPA-E could be addressed much more broadly and effectively under an ARPA-C.

Question 7: The President's FY2022 budget proposes \$300 million for other agencies to further fund the mission of ARPA-C.

a. What are the advantages and disadvantages of such a cross-agency effort?

ARPA-C crosscutting efforts would lay the foundation for future improvements in R&D across the Federal Government by working with the other Agencies to develop transformative solutions for the climate crisis including adaptation, and resilience.

b. What would you do to ensure coordination between DOE and the other agencies involved in ARPA-C?

While ARPA-C is currently planned to reside within DOE, ARPA-C will have a broad mission and will be a cross-disciplinary effort. The additional \$300 million requested for other government agencies to support ARPA-C programs will insert ARPA-C into these other agencies budgetary process ensuring coordination via congressional appropriations and annual budget process.

Question 8: The funds requested in the President's FY2022 budget would result in rapid growth in DOE's applied energy programs, especially the Office of Energy Efficiency and Renewable Energy.

a. What challenges would such rapid expansion bring for effective program management, R&D quality, researcher career paths, and other considerations?

EERE has well-established policies and procedures for consistent budget planning and execution across its programs, as well as active project management practices to support stewardship of federal funds. The greatest challenge to a rapid budget expansion is the corresponding need for additional staff to support planning, execution, and oversight. Having both technical and operational staff, including technology managers, technical project officers, and contract and grants management specialists, among others, to ensure R&D quality and effective project management is essential.

b. What would you do to address those challenges?

My understanding is that EERE has been working with the DOE Office of the Human Capital Officer to streamline hiring processes where possible and expedite the selection and onboarding of the best qualified

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staff. Specific measures include using direct hire and other special authorities whenever possible, using standard position descriptions and job analyses, selecting multiple applicants from the same hiring certificate for similar vacancies, hiring manager training, vacancy amplification strategies to support broad awareness of open positions, and streamlined hiring incentive processes that support the onboarding of the best and brightest talent. If confirmed, I would work with EERE to continue applying these strategies as it moves into and prepares for FY 2022.

Question 9: The President has proposed to increase funding for the Office of Nuclear Energy.

a. What do you see as the role of nuclear energy in the future U.S. energy supply system?

Nuclear energy is critical to our current and future energy supply system, and it is imperative that we not only keep our current fleet of nuclear reactors running as long as possible, but also that we deploy and construct advanced nuclear reactors to achieve a carbon-free electricity sector by 2035 and net-zero emissions, economy-wide, by no later than 2050.

b. What are the most important R&D priorities to help enable that future while ensuring safety and environmental protection?

It is imperative that we develop and deploy advanced nuclear reactors, next-generation fuels, and advanced manufacturing methods that enhance safety and enable flexible operation to generate process heat as well as electricity.

Question 10: The DOE Office of Fossil Energy recently became the Office of Fossil Energy and Carbon Management, reflecting the Administration's priority on using this program for R&D on topics such as carbon capture and storage, carbon dioxide removal, and reducing methane emissions from natural gas development.

a. What do you see as the role of coal, oil, and natural gas in the evolving U.S. energy system over the next 20 years?

Fossil fuels play an important role in our energy supply. In order to reach 100% clean electricity by 2035 and to achieve a net-zero carbon economy by 2050, Carbon Capture, Utilization and Storage (CCUS) will play a critical role along with efforts that ensure a leak-tight natural gas supply chain and eliminate net life cycle emissions from the use of natural gas and other fossil fuels. The Department of Energy (DOE) is investing in technologies and approaches and deploying regional initiatives to both forward the deployment of CCUS on existing fossil plants and provide resources and expertise in the transition to a net-zero carbon economy in coal and fossil-based power plant communities. Novel technologies and business models will enable low-cost CCUS to improve the environmental performance of power plants, hydrogen production, and industrial systems across America; support secure, long-term, regional carbon storage; and provide feedstocks for valuable

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new products. Overall, CCUS has many potential benefits and can be a cost competitive option for managing carbon relative to other low-carbon sources of electricity and products.

b. How should DOE's R&D on fossil fuels be prioritized to balance environmental goals against goals such as developing advanced technologies for resource extraction and making fossil-fired power plants more efficient?

The Department of Energy's (DOE) fiscal year 2022 (FY 2022) budget request for the Office of Fossil Energy and Carbon Management (FECM) highlights DOE's prioritization on balancing environmental goals with resource extraction, efficiency, and in transitioning fossil fuel R&D to activities with future opportunities such as hydrogen production with CCUS. In most cases, these priorities are not mutually exclusive. For example, extraction of resources such as critical minerals (CM) and rare earth elements (REE) must be done in a sustainable manner. They also present opportunities to achieve environmental goals by utilizing waste materials for recovery of these CMs/REEs, and also by utilizing the waste material itself as a feedstock along with carbon dioxide to produce building materials. Efficiency is also an overarching goal with any of the pathways DOE invests in since it is critical to make these systems as efficient as possible to reduce resources (fuels, electricity, water, etc.) necessary.

Question 11: What will you do to ensure that the national labs safeguard the intellectual property that emerges from their research?

Over the past several years, the Department has taken a series of actions to address risks to research security while maintaining an open, collaborative, and world-leading enterprise. These actions aim to reduce the risk posed to DOE intellectual property and assets by specific threats, including threats posed by certain foreign governments. For example, DOE has established a cross-cutting advisory body to identify and manage potential risks to research security. DOE worked closely with the chief research officers across the 17 National Laboratories to develop the Science and Technology (S&T) Risk Matrix. It takes a risk-based approach to identifying critical and emerging technology areas that have potential economic and national security implications, but that do not otherwise have traditional protections in place. The S&T Risk Matrix is used to guide and manage foreign engagements, cooperative research and development agreements, strategic partnership projects, official travel, and foreign national access to our labs.

If confirmed, I would ensure that DOE continues to review these policies to ensure that this risk-based approach strikes the right balance between protecting our intellectual property and assets, while also maintaining the openness that underpins our innovation ecosystem. DOE will continue to actively co-chair the National Science and Technology Council Subcommittee on Research Security to ensure a coordinated approach to research security, as well as participate in the National Counterintelligence Task Force campaign on research security. In addition, DOE will continue to engage with partners through State Department-led efforts to exchange information on experiences and best practices on research security.

Question 12: The Energy Act of 2020 authorized multiple technology demonstration programs.

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These programs will require significant funding, which could detract from other critical programs. How will you ensure a balanced approach that guarantees success of the demonstration programs without negatively impacting other research and development activities and infrastructure investments?

Many provisions of the Energy Act of 2020 will give the Department additional flexibility to push innovation in critical areas for emissions reduction, energy security and demonstrations on carbon capture, hydrogen, and other energy technologies. Additional appropriations, such as those included in the Senate passed Bipartisan Infrastructure Deal would be necessary for the DOE to implement the demonstrations authorized in the Energy Act of 2020. If confirmed, I would work within the Congressional directive for new demonstrations, while continuing to advance our applied energy and fundamental science portfolios.

Question 13: The Office of Fossil Energy and Carbon Management supports R&D on carbon capture and storage, carbon removal, and reducing methane emissions from natural gas systems.

a. What do you see as the role of coal, oil, and natural gas in the energy system over the next 20 years?

Fossil fuels play an important role in our energy supply. In order to reach 100% clean electricity by 2035 and to achieve a net-zero carbon economy by 2050, Carbon Capture, Utilization and Storage (CCUS) will play a critical role along with efforts that ensure a leak-tight natural gas supply chain and eliminate net life cycle emissions from the use of natural gas and other fossil fuels. The Department of Energy (DOE) is investing in technologies and approaches and deploying regional initiatives to both forward the deployment of CCUS on existing fossil plants and provide resources and expertise in the transition to a net-zero carbon economy in coal and fossil-based power plant communities.

b. What do you see as the most important areas of R&D that can deliver environmental gains while maintaining viable and secure fossil fuel industries?

There are critical areas of R&D, as reflected in FECM's FY 2022 research, development, demonstration, and deployment (RDD&D) budget request:

- **Reduce Methane Emissions:** Develop technologies and deploy regional initiatives to monitor and reduce methane emissions across the fossil fuel infrastructure including coal, oil, and gas.
- **Accelerate Carbon-Neutral Hydrogen (H₂):** Develop technologies that leverage the natural gas infrastructure for H₂ production, transportation, storage, and use coupled to carbon management.
- **Develop Low-Carbon Supply Chains for Industries:** Develop novel approaches to recycle carbon oxide emissions, principally carbon dioxide (CO₂), into value-added products such as cement, concrete, steel, chemicals, and fuels using systems-based carbon management approaches.
- **Advance Carbon Dioxide Removal (CDR):** Research, develop, and demonstrate CDR technologies and approaches by investing in direct air capture (DAC) and mineral carbonation projects.
- **Invest in Thoughtful Transition Strategies:** Invest in technologies and approaches, such as co-firing fossil fuels with waste biomass coupled to carbon capture and deploying regional initiatives to help in the transition to a net-zero carbon economy in coal and fossil-based power plant communities.

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- **Demonstrate and Deploy Point Source Carbon Capture and Storage:** RDD&D for CCS in the power and industrial sectors to enable wider, strategic commercial deployment to meet net-zero emissions goals by 2050.
- **Advance Critical Minerals (CM), Rare Earth Elements (REE), Coal Waste to Products and Mine Remediation:** Develop technologies that enable the sustainable recovery of CM, including REE from multiple feed stocks, throughout the upstream, midstream, and downstream supply chain from carbon and other ores, mining by-products, abandoned mines and wells and other valuable sources.

Question 14: The Nuclear Waste Policy Act directs DOE to site, construct, and operate a geologic repository for high-level waste at Yucca Mountain. DOE has failed to fulfill its legal obligation to move forward with the repository. If confirmed, how do you plan to ensure that DOE complies with the law?

Since Yucca Mountain has proven not to be a workable solution and has not received any Congressional appropriations for over a decade, if confirmed, I plan to move forward, under existing law, to identify sites for a federal consolidated interim storage facility for spent nuclear fuel using a consent-based process, as directed in the Consolidated Appropriations Act, 2021, and accompanying Congressional reports.

Question 15: Please describe the distinct missions of the Department of Energy and the National Science Foundation. It doesn't make sense to me that federal agencies should compete for research dollars and leadership roles in key focus areas. What is your view?

Given the urgency of the economic and national security challenges today, our federal agencies must resist the impulse to compete against one another and develop collaborations that will move us faster and farther together. With the parallel advisory roles that I have held at the National Science Foundation and the Department of Energy over my career, I have a good understanding of the distinct differences and similarities in the research portfolios, leadership roles, laboratory facilities and missions of the two agencies. Unique to DOE are its world-class National Laboratories and user facilities that address large scale, complex research and development challenges that have allowed translation of basic science to innovation for decades. NSF is unique in its efforts in education and social science research and with a broader portfolio in the geosciences and astronomy than DOE. Such differences provide significant opportunities for synergistic collaborations. If confirmed, I would look forward to working with the Director of NSF to develop collaborations in areas of mutual interest to our two agencies.

Question 16: If confirmed as Under Secretary for Science, you will also assume oversight responsibility for the Department's applied energy programs. How will you approach the challenge of dedicating sufficient time to each of these major programs?

If confirmed, I will work closely with the leadership of all the applied energy programs to understand their capabilities and investments and ensure they are successful in providing the U.S. with abundant, clean, reliable energy. I see my role as ensuring that they are able to capitalize on the many years of investments DOE has made in basic energy research. Given the diversity of the Under Secretary's portfolio, I will look forward to

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spending more time learning about the full capabilities of the applied energy programs and making certain that we use every available opportunity to integrate DOE's science and applied energy programs to make significant progress on advancing clean energy for the American people. I will bring to this responsibility the advantage of my long experience engaging with many of the DOE Office of Science and applied energy national laboratories.

Question 17: We have multiple agencies that support science and technology innovation. Do you agree that the Department of Energy should continue to have a leading role in applied science and technology innovation?

Yes.

Question 18: The Experimental Program to Stimulate Competitive Research ("EPSCoR") within DOE's Office of Science is designed to improve energy-related research in 24 largely rural states, including Wyoming. DOE needs to continue to build basic research capacity in EPSCoR states.

If confirmed, would you support increasing funding for the EPSCoR program?

Yes. EPSCoR is ideally designed for rural and underserved states such as Wyoming. As with a number of other more rural states, there is significant capacity and economic need for growth in the advanced energy research and technology sector with EPSCoR funds that could fuel economic growth and jobs.

Question 19: If confirmed as Under Secretary for Science and Energy, you will be responsible for advising Secretary Granholm on the management and the state of the national laboratories overseen by the Department. You have years of experience serving on committees and boards at the Energy Department and our national laboratories.

a. Can you tell the committee a little about your background working with these entities?

My experience with the national laboratories is extensive and covers many years of service to these entities. This has included participating in leadership and advisory activities, search committees, oversight boards, research program reviews, proposal reviews, and multiple DOE federal advisory committees. As a scientist, I have also led multiple research collaborations with national laboratory scientists. Beyond my scientific, leadership and advisory board roles, I have had many opportunities to visit the user facilities and research laboratories at many of the DOE national laboratories, as well as engage directly with their leadership and staff-level scientists. As part of the COACH program that I have run out of the University of Oregon since 1998, I have led research on issues related to workforce development for scientists and engineers in the United States at various institutions and laboratories, which has been presented to the National Laboratory Directors' Council.

b. How do you view the current management of the national laboratories and if confirmed, what would you do differently?

I view the current management of the national laboratories quite positively. With nearly flat budgets in recent years, the directors and their leadership teams have had a challenging time to keep their best scientists and their facilities fully operational. I do however believe that improvements can be made in developing stronger

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research collaborations across the national laboratories and with the private sector. If confirmed, I would be active in trying to increase such collaborations and ensure maximum benefit for DOE investments at the national laboratories.

Question 20: The Nation's electricity system is critical to our economic and national security. As we have witnessed during recent weather events like the deep freeze across a large portion of the country this February and summer blackouts in California, Americans suffer when they lack access to affordable and reliable electricity.

In July a coalition of consumer groups wrote a letter to this Committee asking us to examine the cost and reliability impacts of regional transmission organizations (RTOs) and vertically integrated markets and provide an analysis of whether RTO expansion will benefit or harm retail consumers. Both a 2007 task force report directed by the Energy Policy Act of 2005 and a 2008 report from the GAO determined that there was no clear consensus on the benefits of RTOs to retail consumers. It is long overdue that the federal government revisit this critical issue.

Under the DOE's present organizational structure, you would oversee the applied energy offices, including the Office of Electricity. Do you commit to analyzing and reporting back to this Committee the cost and reliability impacts of RTOs, and to what extent any cost or reliability benefits of RTOs flow through to retail customers?

Answer: I agree with you that recent weather impacts demonstrate the nation's tremendous need to modernize our electrical grid infrastructure. DOE's Office of Electricity supports significant R&D efforts and works with utilities and RTOs to address issues of reliability. The Office of Electricity's portfolio includes work on technologies to increase grid resilience and to modernize the grid, including microgrids, energy storage, and grid enhancing technologies. If confirmed, I would work with the Office of Electricity to continue this work partnering with utilities, identifying grid infrastructure challenges, providing technical assistance to state and local government stakeholders, and ensuring that retail customers have reliable and affordable power.

Questions from Senator James E. Risch

Question 1: My home state of Idaho is home to the lead DOE nuclear energy laboratory, the Idaho National Lab. The INL is an applied energy lab in the Office of Nuclear Energy, but my understanding is that the Office of Science sometimes incorporates applied energy research into its programs. Can you speak to the relationship between the Office of Science and applied energy programs at DOE?

Coordination between the Department's basic research and applied energy programs is now a high priority within DOE and is facilitated in multiple ways including joint planning meetings, technical community workshops, annual contractor/awardee meetings, joint research solicitations, DOE program working groups, and collaborative program management of DOE's Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs.

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DOE leadership has established formal Science and Energy Technology Teams that cross the Department and meet on a regular basis to discuss R&D activities and goals across the science and applied energy and other programs such as ARPA-E. Coordinated funding of research activities at the DOE National Laboratories, support for ancillary equipment and end stations at scientific user facilities, and partnership/collaboration-encouraging funding mechanisms also help facilitate research integration across the basic and applied research communities. The Office of Science's R&D coordination also occurs at the interagency level.

Question 2: Do you support continued appropriate interactions between the Office of Science and the applied energy programs?

Yes.

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Questions from Ranking Member Barrasso

Question 1: In September 2017, then-Secretary of the Interior Ryan Zinke issued a reorganization proposal for DOI that included a plan to consolidate the different regional boundaries of several DOI bureaus into 12 Unified Regional Boundaries. In addition to the establishment of 12 new Unified Regions, the reorganization effort also sought to improve and streamline the Department's business operations. The focus was on using shared services and best practices throughout DOI in the areas of information technology, procurement and acquisition processes, and human resources, among others.

- a. How have business operations changed as a result of the reorganization effort? What are the advantages and disadvantages to the modification of the Department's business operations and use of shared services across agencies?
- b. Do you anticipate DOI will continue to retain the regional boundaries established in 2018? If a return to prior boundaries or other arrangement is favored, how would this affect the implementation of shared services as part of the reorganization effort?
- c. Given that DOI was recently subject to a data breach, does a streamlined approach to business operations and information technology interoperability provide the Department with more or less protection against future data breaches? If the streamlined business and information technology operations continue, how will DOI ensure that the Department's computer networks for individual bureaus and offices are secure?

Response: Because I am not currently at the Department of the Interior, I am not familiar with whether the Department reorganization implemented by the previous administration has been the subject of review in this Administration or what the impact of that reorganization has been, to date. If I am confirmed for the position of Assistant Secretary for Policy, Management and Budget, I would be interested to look at this issue and what positive or negative impacts, if any, it has had on Departmental operations. Regarding the security of computer networks at the Department, I am aware that the Department has a Chief Information Officer who is responsible for the Department's information management and technology, including cybersecurity. If I am confirmed I would look forward to working with the CIO and his team to ensure that the Department's computer networks are operating in an efficient and secure manner.

Question 2: What are some "success stories" or streamlined environmental review procedures carried out by a specific DOI agency (or agency outside DOI) that could be duplicated by other DOI agencies?

Response: I am aware that the Council on Environmental Quality is the lead on policy issues related to the National Environmental Policy Act, and I would defer to CEQ for specific guidance on this matter. While I do not currently have detailed knowledge of specific uses of streamlined environmental review procedures carried out by the Department's bureaus, it is my general view that review procedures that provide for robust public engagement and input and that are carried out in a timely and efficient manner by all participants are the most successful.

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Question 3: What existing factors slow or complicate DOI agency environmental reviews carried out under NEPA or other laws?

Response: An analysis of the factors that might slow or complicate environmental reviews within the Department has not been made available to me because I am not currently at the Department. However, it is important to ensure that appropriate resources are available to programs that carry out these processes, clear timelines are established and met, and open communication among participating agencies is practiced. I believe effective leadership can help ensure those conditions exist and minimize unnecessary delays in the Department's work. If I am confirmed I would look forward to reviewing information about this issue within the Department and to learning more about it.

Question 4: If there are factors known to delay or complicate reviews, how might DOI address them? For example, can DOI agencies provide guidance or assistance to applicants to help them navigate the environmental review and application process more efficiently?

Response: As I noted in the response to the previous question, such an analysis has not been made available to me, but it is my view that it is important to ensure that appropriate resources are available to programs that carry out these processes, clear timelines are established and met, and open communication among participating agencies is practiced. If I am confirmed I would look forward to reviewing information about this issue within the Department and to learning more about it.

Question 5: What existing factors are likely to contribute to incomplete environmental reviews carried out by DOI agencies? How might DOI agencies undertake more timely environmental reviews without affecting the necessary completeness and technical rigor of those reviews?

Response: As I noted in the previous response, it is important to ensure that appropriate resources are available to programs that carry out these processes, clear timelines are established and met, and open communication among participating agencies is practiced. If I am confirmed I would look forward to reviewing information about this issue within the Department and to learning more about it.

Question 6: DOI is responsible for the administration of most public U.S. lands and waters. These resources can be vulnerable to natural hazards such as wildfires, drought, severe weather, landslides, and seismic events. The AS-PMB is responsible for developing and overseeing DOI policies and procedures in response to such natural hazard events. This includes promoting hazard preparedness and response, ensuring continuity of DOI operations during catastrophic events, and assisting communities in response to imminent threats.

- a. What can the federal government do to alleviate the effects of natural hazards such as wildfires, drought, severe weather, landslides, and seismic events? How can DOI, in particular, better prepare for future natural hazard events?
- b. The COVID-19 pandemic posed a challenge to DOI (and other federal agencies) in ensuring continuity of operations despite a global public health emergency. What role do you see for the AS-PMB in ensuring that DOI agencies will be ready and responsive to safeguard our nation's lands and resources and fulfill the Department's responsibilities in the event of a future emergency?

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Response: The federal government plays an important role in responding to natural disasters. Providing disaster relief and overarching coordination among states and stakeholders through agencies like the Federal Emergency Management Agency and other partner agencies are critical and necessary functions. At the Department, specifically, working with these relevant entities and Department bureaus and ensuring that there is a well-coordinated and transparent response would be a priority for me, if I am confirmed. As I said at the hearing, it would be important to ensure that the applicable programs at the Department are appropriately staffed and funded, including wildfire response programs, forest management, earthquake monitoring, stream gage and other water monitoring programs. I would look forward to working on these important issues.

Question 7: The Interior Business Center (IBC) supports DOI agencies and offices, as well as federal agencies outside the Department, as a shared service center, providing business management systems and services related to acquisition, financial management, and human resources systems.

- a. As a shared service provider for more than 150 agencies, the IBC has a responsibility to provide services to customers during emergency situations. What, if any, interruptions in services occurred during the COVID-19 pandemic? Does the IBC need reform to provide uninterrupted service to its federal clients in the future should another emergency situation occur?
- b. A recent report from DOI's Office of the Inspector General (OIG) found that IBC's internal control system had deficiencies in ensuring that it followed the Federal Acquisition Regulation when awarding procurements on behalf of its federal clients. What changes could be made so that all internal processes at the IBC are in compliance with federal laws and regulations moving forward?

Response: I take questions about the performance of and potential need to reform the function and practice of such an important office seriously, and I would need to know more about the specifics of this matter in order to provide an informed opinion. I am aware that the OIG issued recommendations as part of its report in this matter. If I am confirmed I would become familiar with this issue and determine if it is necessary to take any additional actions to ensure that the IBC is operating at the standards necessary to comply with federal law and applicable regulations to ensure effective operations and the best value for the taxpayer.

Question 8: Does the \$22 billion unappropriated balance in the LWCF remain credited to the Fund? Or has some or all of the \$22 billion been spent on governmental priorities unrelated to the LWCF?

Response: It is my understanding that unappropriated monies credited to the LWCF prior to enactment by Congress of the Great American Outdoors Act continue to be credited to that Fund. Only Congress may appropriate monies from the unappropriated balance in the LWCF. If I am confirmed, I would consult with the legal experts in the Solicitor's Office and program professionals at the Department to ensure that this critically important conservation program continues to be implemented in accordance with the law.

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Question 9: Assuming the unappropriated balance remains in the LWCF, would you recommend that Congress appropriate those funds, and if so, for what purposes?

Response: Generally, when Congress enacted the LWCF in 1965, it stated that the funds would preserve, develop, and ensure access to outdoor recreation. I support these goals and, if confirmed, I would look forward to working with this Committee, with Congress, stakeholders, and others to ensure that the law is implemented as Congress intended, including the recent Great American Outdoors Act.

Question 10: The LWCF Act specifies that of the total amount made available to the Fund through appropriations or deposited in the Fund under the Gulf of Mexico Energy Security Act of 2006, not less than 40% shall be used for “federal purposes” and not less than 40% shall be used “to provide financial assistance to states.”

- a. What federal purposes can the monies be used for? Can the monies be used only for purposes related to federal land acquisition by the primary federal land management agencies, or can they be used for a broader set of federal purposes and programs?
- b. What is the meaning of “financial assistance to states?” Does this refer only to the outdoor recreation grants to states program set out in the LWCF Act at 54 U.S.C. §200305? Or does it encompass a broader set of state grants, such as through the Forest Legacy Program or the Cooperative Endangered Species Conservation Fund?
- c. How should the remaining 20% of LWCF funds be spent?

Response: I understand that Congress, through the appropriations process, most often specifies how the funding under the LWCF, including for federal, state financial assistance, and for other purposes, can be used and how it is allotted among those categories. If I am confirmed, I would look forward to working with Congress and other stakeholders and would consult with the legal experts in the Solicitor’s Office and program professionals at the Department to ensure that this critically important conservation program is implemented in accordance with the law.

Question 11: The LWCF Act specifies that “in addition to the sum of the revenues and collections estimated by the Secretary to be deposited in the Fund pursuant to this section, there are authorized to be appropriated annually to the Fund out of any money in the Treasury not otherwise appropriated such amounts as are necessary to make the income of the Fund not less than \$900,000,000 for each fiscal year.”

- a. How do you interpret the meaning of this provision?
- b. If the revenue sources specified in the LWCF act were insufficient to reach the authorized level of \$900 million in a particular fiscal year, would there be an automatic transfer of Treasury funds to the LWCF to reach this authorized level?
- c. Has this provision been implemented during the history of the operation of the LWCF, and if so, how?

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Response: Because I am not currently at the Department, I am not familiar with the way the LWCF has been implemented throughout its history. If I am confirmed, I would look forward to working with Congress and other stakeholders and would consult with the legal experts in the Solicitor's Office and program professionals at the Department to ensure that this critically important conservation program is implemented in accordance with the law. As I said at the hearing, I would look forward to creating outdoor recreation opportunities for families and to support local communities that are so dependent on the recreation economy.

Question 12: The DOI Appraisal and Valuation Services Office conducts appraisals of lands that DOI agencies are seeking to acquire or dispose of. The FY2021 Interior appropriations law provided additional funding for this office in part to expand capacity given the increased appropriations from the LWCF for DOI land acquisitions.

- a. **How is DOI using the additional funding provided to the Appraisal and Valuation Services Office in FY2021? What areas are being prioritized for appraisal and valuation work? What level of funding might be needed in FY2022 and future fiscal years to support the role of the Office in appraising lands the government seeks to acquire or convey out of federal ownership?**
- b. **The Appraisal and Valuation Services Office is likely to have more land appraisal work as a result of additional LWCF funding. How might the Office foster efficiency in addressing its workload while maintaining compliance with appraisal standards?**

Response: Given enactment of the Great American Outdoors Act and its LWCF funding provisions, it is important that the Department have in place an efficient and transparent system to timely process the necessary appraisals for transactions involving the Department and its bureaus. While I am not currently at the Department, I am aware that the Department's FY 2022 budget materials project a 50 percent increase in requests for this Office's valuation services during the next several years. Given this, it is important to ensure that the office is appropriately staffed and resourced and that it is communicating early, and often, with its clients to ensure an efficient process. Because the Appraisal and Valuation Services Office reports to the Assistant Secretary for Policy, Management and Budget, if I am confirmed I will learn more about the Office's operations and needs and will ensure that it has the tools and resources necessary to effectively complete the appraisals and other tasks under its mandate.

Question 13: The Department continues to struggle with issues of sexual harassment and misconduct in the workplace. For example, a 2019 Inspector General's report indicated that DOI needed to improve its efforts in sexual harassment investigations, tracking misconduct, and training. What ongoing or new efforts should DOI pursue to address these issues and to ensure that agency workplaces are consistently respectful, safe, and free of harassment for all employees?

Response: I am aware of past instances at the Department of sexual harassment, including instances that have occurred in remote locations. It is my firm belief that every American has the right to be free from discrimination and harassment, period. If I am confirmed, I will work to ensure that the Department provides all employees an inclusive and respectful workplace that serves the American public.

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Question 14: The Federal Lands Recreation Enhancement Act (FLREA) authorizes four DOI agencies (Bureau of Land Management, National Park Service, Fish and Wildlife Service, and Bureau of Reclamation) and the FS, within the Department of Agriculture, to charge and collect recreation fees on federal recreational lands and waters. Each agency is authorized to retain the collected fees as mandatory spending. At least 80% of the annual revenue collected is to be retained and used at the site where it was generated, although the Secretary can reduce that amount to not less than 60% if collections exceed reasonable needs. The remaining collections are to be used agency-wide, at the agency's discretion. The agencies have broad discretion in using fee revenues for purposes specified in FLREA that aim to benefit visitors directly. They include facility maintenance, repair, and enhancement; interpretation and visitor services; law enforcement; and certain habitat restoration. The Secretaries may not use more than 15% of collections for program administration, overhead, and indirect costs. Under FLREA, agencies are authorized to charge fees at recreation sites until October 1, 2022.

- a. **What are the pros and cons of letting FLREA expire, extending it, or making it permanent? If the program is continued, what changes could you suggest as to how it should operate? For instance, would you favor changing the percentage of fees retained by the collecting site or directing revenues to particular purposes, such as deferred maintenance needs of DOI agencies?**
- b. **How might you assess whether there is a need to charge new fees or increase fees across DOI areas, or, alternatively, to reduce or limit entrance and recreation fees?**
- c. **What is the proper balance between standardization of fees across agencies for similar types of services, and flexibility for agencies to tailor fees to areas and circumstances?**

Response: I know that the recreation fee program and revenue generated by it are important to the operations of the Department's land management bureaus and that this must be balanced against the desire to provide access to our parks and public lands to the recreating public. The Department and its bureaus have come to rely on these fees to provide funding for a wide variety of important activities on their lands, and it is important that reauthorization of this program give thoughtful consideration to these issues. The questions you raise highlight important and complex issues regarding the program, including the programmatic and economic impacts. As I am not currently at the Department, I do not have access to detailed information necessary to answer these questions at this time. If I am confirmed for this position, I would get briefed on these complex issues and would work with those experts in the Department who deal with this program on a day-to-day basis, and our policy analysts, to ensure that the program provides an appropriate level of support to the bureaus and their operations.

Question 15: DOI agencies modified operations in response to the COVID-19 pandemic. Modifications in some areas included partially or fully closing sites, reducing or suspending recreational activities and other services, and waiving fees for entrance. Normal operations have resumed in some areas.

- a. **How did COVID-19 affect the amount of recreation fees collected by DOI agencies under FLREA? Is there a need for Congress to counteract any reduction in fee collections by one or more agencies? For instance, should Congress increase discretionary appropriations for the agencies or amend the fee criteria in FLREA?**

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Response: I know that the recreation fee program and revenue generated by it are important to the operations of the Department's land managing bureaus and this must be balanced against the desire to provide access to our parks and public lands to the recreating public. My understanding is that the COVID-19 pandemic generally caused a decline in visitation to our parks and public lands and to the fees collected by the Department pursuant to this authority. However, it is expected that fee revenue will continue to rise as we work to end the COVID-19 pandemic and more people seek outdoor recreation and activities. If I am confirmed for this position, I would be briefed on the issue to better understand how the decline in revenue may have impacted the Department and its bureaus and whether there is a need for Congressional action or support.

Question 16: During the most recent government shutdown in December 2018-January 2019, NPS used recreation fees collected under FLREA to fund limited operations at park units while the shutdown was in force. The Government Accountability Office (GAO) issued a legal opinion stating that NPS's use of the FLREA funds violated the purpose statute and the Antideficiency Act, and DOI issued a response disputing the GAO opinion. What is your interpretation of the authority of DOI agencies to use FLREA revenues for park operations during a government shutdown?

Response: I am not a lawyer and I would rely on the Department's legal experts to provide me with guidance on an issue such as this.

Question 17: On January 14, 2021, the Trump Administration issued an executive order establishing the Wildland Fire Management Policy Committee. The Committee is chaired by the Secretaries of the Interior and Agriculture and includes other agency heads. The purpose of the order is to improve coordination among federal agencies on wildland fire management policy, implementation, and oversight issues. In what ways is the Biden Administration addressing the issues identified in the order?

Response: The Biden Administration has taken an aggressive approach to addressing wildland fire matters. I am not yet at the Department so I am not currently a part of the discussions regarding implementation of specific policies, but I am aware that Secretary Haaland and Secretary of Agriculture Vilsack have worked together in a coordinated fashion to develop and present their Departments' wildland fire preparedness and response goals, including supporting science as a part of this approach. These goals have included promoting climate resiliency across landscapes and communities, addressing low pay, the need for more full-time responders and other issues to modernize the workforce, and ensuring the safety and wellbeing of our wildland firefighters and other first responders. If I am confirmed, I will continue taking such a coordinated, transparent, and proactive approach to this increasingly severe problem.

Question 18: There are regionally specific guidelines for establishing COVID-19 safety precautions during wildfire season. To what extent were those guidelines successful in protecting firefighters while maintaining adequate wildfire response? How are these guidelines being adapted for the 2021 wildfire season? To what extent is DOI providing access to COVID-19 vaccines for the firefighters or other wildfire support staff?

Response: I know that President Biden has taken very seriously his responsibility to respond to the pandemic in an aggressive and coordinated fashion. Secretary Haaland and the Department have also been transparent with employees and the public about the need to follow Centers for Disease Control and Prevention guidance in the workplace and the importance of getting vaccinated and where to do that. While I am familiar with the

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Department's COVID-19 Workplace Safety Plan, because I am not currently at the Department, I am not familiar with the application of these efforts to specific situations or the internal discussions related to updates, adaptations, or other changes based on information from the field. If I am confirmed, I will ensure that I continue to use the latest and best science to guide decisions that we make as we navigate the pandemic and seek to reduce exposures and prevent the further spread of COVID-19 through Departmental activities.

Question 19: DOI coordinates wildland fire management and funding across the DOI agencies through the department-level Office of Wildland Fire (OWF). Funding for wildland fire management fluctuates annually but generally has increased over the past 20 years, in part due to the unpredictable nature of wildfires and the variable cost of wildfire suppression. Starting in FY2020, Congress authorized a special budgetary mechanism—referred to as the wildfire funding fix or the wildfire adjustment—to provide a certain amount of funding for wildfire suppression operations. Please describe the impacts of the wildfire adjustment on DOI operations and budgeting.

Response: While I am not yet at the Department, I have been told that the use of the wildfire adjustment has been successful and it enabled supplemental fire suppression funding without the need to cut other programs. I also understand that the Department's FY 2022 budget request assumed those funds would continue. If I am confirmed, I will work to ensure that the Department is focused on continuing effective authorities, like this one.

Question 20: The federal government's wildland firefighting workforce consists predominantly of seasonal hires, many of which are temporary positions filled annually. This has led to concerns about efficiency and the recruitment and retention of firefighters, particularly when compared with employment opportunities at the state level or in the private sector.

- a. In the FY2021 budget request DOI sought funding to examine converting some seasonal positions into a full-time, permanent, year-round workforce. Please describe the status of this effort.
- b. Due to the nature of responding to wildland fire emergencies, federal employees involved in wildland fire management often are required to work and earn overtime and/or premium pay. In each of the past five years, several DOI wildland fire employees earned the maximum amount of annual premium pay established by federal law. Some may be concerned that the cap on premium pay impacts effective wildfire response strategies because some of the most experienced employees may be unable to participate, or some employees may continue to work but not claim appropriate compensation. Others may be concerned with the cost to the federal government. How would you manage these concerns?
- c. In contrast, many of the entry-level federal wildland firefighting positions are compensated at the lower range of the federal pay range. The positions for most federal wildland firefighters generally are classified by the Office of Personnel Management (OPM) as Forestry Technicians or Range Technicians, though some may be classified as Fire Management Specialist. OPM has the authority to establish new occupational series. Would you support establishing a new occupational series for federal wildland firefighters and/or for other positions related to the prevention, preparedness, control, suppression, or management activities of wildland firefighters? What would be some of the challenges and opportunities for DOI to establish a new occupational series?

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Response: I understand that the Department is currently in the process of hiring hundreds of new firefighters and is converting over 500 temporary positions to permanent positions. I support the President's proposals to increase firefighter pay. I have been told that the Department is also in the process of implementing pay incentives for firefighters that will both increase pay and competitiveness with other employers, such as states, local governments, and private employers. If I am confirmed, I will make this a priority issue and would work closely with the USDA's Forest Service, which also has considerable need to address these issues in an effective way.

Question 21: In your hearing Senator Manchin asked you where you intend to focus most of your attention. You responded by saying, *"I see a couple of areas of focus to start out. One of the first is really ensuring that the Department is fully staffed."*

With regards to the staffing of the Department, should individuals who plan or are otherwise involved in tree spiking incidents and threaten the physical safety of federal officials expect to be hired by the Department?

Response: I understand that there are laws enacted by Congress, including the Civil Rights Act, as well as federal hiring statutes and regulations that must be observed when making hiring decisions at federal agencies, including at the Department. If I am confirmed, I will follow the laws enacted by Congress, and I would ensure that the Department's personnel office was able to hire the best candidates for positions. I do not support threatening the physical safety of federal officials.

Question 22: If confirmed to the position of Assistant Secretary for Policy, Management and Budget you will oversee, among others, the Office of Law Enforcement and Security, and the Office of Occupational Safety and Health.

- a. **If confirmed as the leader over these important offices, would you expect an individual who is aware of spiked trees to immediately inform and cooperate with law enforcement?**
- b. **Should individuals who disagree with federal policies threaten the physical safety of federal officials?**

Response: Yes, and I believe it is also important to understand the context that may influence an individual's behavior. I do not believe that individuals who disagree with federal policies should threaten federal officials. If I am confirmed, I will work with others in the Department to follow the law.

Question 23: On the "USA JOBS" website – the website where people can apply for jobs in the federal government – there is the following statement: "If you misrepresent your experience or education, or provide false or fraudulent information in or with your application, it may be grounds for not hiring you or for firing you after you begin work...Making false or fraudulent statements also may be punishable by fine or imprisonment." Should this policy apply to individuals who apply for jobs at DOI and BLM?

Response: Yes, if confirmed I will follow the laws enacted by Congress.

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Questions from Sen. Lankford

Question 1: Ms. Stachelberg, at your confirmation hearing we discussed the balance between the legislative branch and the executive branch. I would like to get clarity on a couple of questions related to that discussion.

- a. Do you believe that Congress has the authority to determine the range of federal agencies' authorities?
- b. Would you describe Congress limiting or changing the role or authorities of a federal agency as Congress "interfering" with those agencies?
- c. Would you support the Department of the Interior going forward with actions to meet its policy objectives if those actions or objectives were not authorized by Congress?

Response: Yes, the Constitution gives Congress the authority to pass bills and, if approved by the President, those bills become law and can change federal agency authority. While I cannot speak to the motivation or actions of others, as I said at the hearing, if I am confirmed, I will follow the laws and regulations that are in place and will work hard to implement the policies of the President and the Secretary. I would look forward to working with you and with Congress in a productive and transparent fashion.

Question 2: As you should know, the Religious Freedom Restoration Act was passed with nearly unanimous, bipartisan support in the wake of *Employment Division v. Smith*, to provide sweeping safeguards for religious liberty. Its terms prohibit the government from imposing a substantial burden on religious exercise absent a compelling interest that is narrowly tailored in a way least restrictive of such exercise. RFRA applies to all federal entities and regulatory actions and extends to all religious practices, including the use of real property.

- a. Do you support RFRA as passed by Congress in its entirety?
- b. Will you uphold RFRA if confirmed?

Response: As I said in the previous response, I will follow all the laws that are in place and will work hard to implement the policies of the President.

Question 3: The Supreme Court has, in multiple decisions, reiterated that religious organizations cannot be discriminated against in the distribution of a public benefit for which they otherwise qualify because of their religious beliefs or identity.

- a. Will you commit to ensuring that no policy of your Department will disqualify a religious organization from receiving aid or participating in grant programs simply because of the organization's religious beliefs or because the organization receives statutory protections for religious freedom like those in Title VII and Title IX?

Response: I commit to following all the laws that are in place and will work hard to implement the policies of the President.

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Questions from Sen. Cassidy

Question 1: As you know, one of the primary responsibilities you have is to oversee the Department's budget. In 2019, the Department disbursed more than \$11 billion in FY19 from all oil and gas activity. Offshore revenues are funding coastal protection projects in the Gulf region and programs important to this Administration such as the Land Water Conservation Fund, Historic Preservation Fund and deferred maintenance across all federal land. The Department is currently considering policy changes in relation to its federal oil and gas leasing program and its federal oil and gas royalty rates.

What role will the Assistant Secretary for Policy, Management and Budget have and how will you inform the Secretary when it comes to weighing the economic return of federal leases in a way that encourages future revenue generation versus raising costs in a way that discourages generation of those revenues for programs important to the Department's mission and Administration's conservation goals?

Response: I know this is an issue that is important to your state and to others in the region. Because I am not yet at the Department, I have not been a part of the ongoing review of the oil and gas leasing program requested by the President and am not aware of the content or recommendations that might be contained in a report. I understand, however, that the report will contain recommendations for both the Department and Congress to implement to improve stewardship of the lands managed by the Department, create jobs, consistent with the President's plan, and address our future energy needs. I also agree with Secretary Haaland that oil and natural gas will play a major role in our country for years to come. If I am confirmed for this position, I commit to following the law and to doing all I can to ensure that we are engaging with the Department's stakeholders in a meaningful way as we move forward to implement the President's plan.

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Question from Sen. Hickenlooper

Question: The Assistant Secretary of the Interior for Policy, Management, and Budget acts as the Department's Chief Financial Officer. Do you see any compelling reason why the Bureau of Land Management should continue the practice of non-competitive leasing, where largely unproductive land which could not be leased at auction is subsequently leased for \$1.50 an acre for oil and gas production, with the administrative costs footed by BLM and ultimately the taxpayer?

Response: As I said at the hearing, this is an important and interesting issue. I am aware that the Department, at the President's direction, has been working on a review of the oil and gas leasing program with an eye toward reform of the program. If I am confirmed, I look forward to working with you and others in Congress on looking at areas where we can make improvements, including any potential reforms of the leasing program.

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Questions from Ranking Member John Barrasso

Question 1: Many of the statutory responsibilities of the Director of the Office of Science and the Under Secretary for Science sound quite similar—for example, monitoring DOE’s research and development (R&D) programs, advising the Secretary about DOE’s national laboratories, and advising the Secretary about DOE’s education and training activities.

a. What do you see as your role in these areas?

If confirmed, I would see my role in these areas as working with the Under Secretary for Science to provide the best, most relevant, and comprehensive scientific advice to the Secretary of Energy across all areas relevant to our understanding of the Earth system, and to the advances in all areas of science and technology relevant to the DOE mission, including the energy, economic, and national security of the United States. In addition, I see my role as being a connection between the advanced facilities and National Labs that the Office of Science stewards and the Secretary to ensure sustained research strength, and support for education and workforce development for the nation.

b. How would you ensure that your actions are coordinated but not duplicative?

While the Under Secretary for Science and Energy has a broader set of offices and initiatives that they oversee, my role would be to advise the Secretary on matters related to the Office of Science and scientific bases for important policy decisions they would be considering, as well as issues related to education and workforce development in the research and development space. Furthermore, to avoid duplication, and ensure coordination of efforts related to our responsibilities, if confirmed to the role of Director of DOE’s Office of Science, among other things, I would seek to implement several items that would maximize efficiency, including regular communication and updates of not just the Undersecretary of Science and Director of the Office of Science, but also our senior staff, shared list of activities, and regular updates on ongoing matters and advanced agreement on division of tasks and responsibilities.

Question 2: The science and engineering capabilities of DOE’s national laboratories are wide-ranging. To what extent should the laboratories focus on executing DOE’s own programs, versus making their capabilities and facilities available to other agencies, U.S. industry, academia, and others?

DOE has invested in world-class facilities and capabilities at our national laboratories to advance the Department’s science, energy, environmental stewardship, and national security missions. These national laboratories represent a very valuable and unique set of assets for the United States. In this regard, the Department provides access to our laboratories to other Federal agencies, private industries, universities, and state and local institutions. All work conducted for these sponsors is subject to DOE policies and procedures and the DOE laboratory contract terms and conditions under which it is performed.

The DOE laboratories are major national scientific and technical assets whose contributions to the United States at large, and in areas beyond the DOE missions, are significant and well-documented. Further, exposing the laboratories to the immediate and future needs of other agencies and the private

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sector strengthens core capabilities at the laboratories that, in turn, enable them to stay at the forefront of their fields and better serve the Department's missions. Examples of this include computational research and capacity at DOE laboratories funded by many other Federal agencies, national security work supporting the Department of Defense and the Intelligence Community, and the interaction with the private sector that ultimately allow DOE and its facilities to meet their technology transfer missions and strengthen U.S. competitiveness in a continuously more competitive global market.

Question 3: Science and technology developed by the DOE national laboratories can be valuable to U.S. industry, the economy broadly, and other national goals. How can DOE improve its technology transfer efforts to ensure that its R&D results are efficiently and successfully commercialized?

The Department is committed to promoting and facilitating the technology transfer efforts of its national laboratories. These efforts continue to be one of the central themes of the national laboratory enterprise and DOE recognizes the impact it has made on the lives of every American and people around the world. DOE will continue to enable and enhance a laboratory culture that makes clear our expectations for commercialization and deployment outcomes, including economic development and job creation centered around the national laboratories. The national laboratories will pursue mission-oriented and aligned partnerships with industry and academia that can deploy impactful technological commercialization opportunities.

In recent years, the Department has provided additional tools for the laboratories to use that make it easier to work with industry and university partners. For example, DOE created the novel mechanism - Agreements for Commercializing Technology (ACT) – to provide an alternative approach for non-Federal partners to engage with the national laboratories that allows for more business-like terms and conditions. Also, DOE for the first time has provided relief to these partners as it relates to the general indemnity and liability provisions under certain circumstances in the standard agreements for such partnerships. These provisions have been identified as a key barrier to working with industry and university partners.

If confirmed, I look forward to working with the Department to continue to look for ways to improve its technology transfer efforts through both creating new and novel programs and streamlining existing mechanisms and developing new ones for use by the laboratories to engage more effectively with industry and university partners.

Question 4: Security and competitiveness concerns about foreign access to U.S. R&D results have grown in recent years. The scientific user facilities at the DOE national laboratories host thousands of foreign researchers each year.

- a. **How should DOE balance the advantages of scientific openness against the potential risks associated with foreign access to these facilities and the R&D conducted at them?**

Over the past several years, the Department has taken a series of actions to address risks to research security while maintaining an open, collaborative, and world-leading enterprise. These policy initiatives aim to reduce

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the risk posed by specific threats, including threats posed by certain foreign governments, to the U.S. research enterprise including the DOE national laboratories.

For example, DOE has established a cross-cutting advisory body to identify and manage potential risks to research security. DOE has prohibited federal and laboratory personnel from participating in foreign government talent recruitment programs sponsored by countries of risk and restricted participation in other foreign government sponsored or affiliated activities. DOE worked closely with the chief research officers across our 17 National Laboratories to develop the Science and Technology Risk Matrix, which takes a risk-based approach to identifying critical and emerging technology areas that have potential economic and national security implications, but that do not otherwise have traditional protections in place. The Risk Matrix is used to guide and manage foreign engagements, cooperative research and development agreements, strategic partnership projects, official travel, and foreign national access to our labs.

- b. What additional steps, if any, are needed to ensure that DOE-funded R&D results are not illegally or inappropriately transmitted to potential foreign adversaries?**

DOE should continue to review these policies to ensure that this risk-based approach strikes the right balance between protecting our intellectual property and assets, while also maintaining the openness that underpins our innovation ecosystem. DOE continues to actively co-chair the National Science and Technology Council Subcommittee on Research Security to ensure a coordinated approach to research security, as well as participate in the National Counterintelligence Task Force campaign on research security. In addition, if confirmed, I will work to ensure that DOE continues to engage with allies and partners through State Department-led efforts to exchange information on experiences and best practices on research security.

Question 5: The qualifications needed to be Director of the Office of Science are not specified in statute.

- a. What do you believe are the most important characteristics for a successful Director? Previous Directors have often had extensive experience in managing research organizations.**

I believe the most important characteristics of a successful Director for the Office of Science include interdisciplinary training, strategic thinking and acting, problem solving skills, ability to integrate and synthesize information from multiple fields and streams; ability to work well with others; effective communication with diverse groups of stakeholders, and ability to inspire others.

- b. What is your philosophy of managing an organization like the Office of Science?**

My philosophy of managing an organization like the Office of Science is a meld between strategic and transformational leadership philosophies. I believe it is important to have a strategic approach to ensure that I maintain a focus on both high-level visions and operations of the office, while also providing regular guidance and structure for the day-to-day support that the team might need from me. At the same time, for an organization like an Office of Science, it is important to maintain a transformational approach that ensures that the office can work on developing new goals, approaches, or benchmarks for continued innovation in the science and technology space. Hence, if I am confirmed to serve as Director

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of the Office of Science, I will manage the organization in a manner that ensures continued effectiveness of everyone on the team, and the office as a whole. I will also allow and motivate the team through setting both realistic and ambitious goals to enable innovative projects to thrive. I intend to lead by example and demonstrate my passion, drive, and integrity to support our goals.

c. What skills would you bring to that task that would make you an effective manager and leader?

I believe I bring multiple skills and experiences that would make me an effective manager and leader for the Office of Science. I have demonstrated that I have been effective at juggling multiple responsibilities as I continued to contribute to multiple leadership roles while leading an active, large, well-funded, and globally recognized research program, and while teaching and mentoring diverse groups of students and other early career researchers in my group and beyond.

I have been trained and have long term experience as an Earth system scientist, gaining valuable experience in integrating across physics, biology, chemistry, and geosciences. This integrative perspective is crucial for addressing many aspects of the energy, environment, nuclear, and other basic science issues that the Office of Science addresses. In addition, to successfully running my own research group for over 12 years, I have a long record of leadership and service to the U.S. scientific community. For example, in my own institution, I served multiple roles including Interim Associate Dean for Graduate Education, Chair of the School of Natural Sciences Executive Committee and a member of the Academic Senate's divisional council, including Vice Chair and Chair of the Academic Senate's Diversity and Equity committee.

Nationally and internationally, I have a long record of providing scientific expertise and leadership in efforts related to workforce development through appointments on numerous national committees advising U.S. federal agencies and internationally, including U.S. National Science Foundation, the American Geophysical Union, the German Research Foundation; U.S. Department of Agriculture, Department of Energy, the Soil Science Society of America, and most recently the U.S. National Academy of Sciences study committee on Advancing a Systems Approach to Studying the Earth. In addition, I served as a member and Chair of the U.S. National Committee for Soil Science at the National Academies. In this role, I provided leadership in advancement of soil science nationally and internationally, including representing interest of U.S. scientists in international bodies. I also led the committee at the National Academies that advises the academies on all matters pertaining to U.S. participation in the international area. I also have a long record of contributions to science communication and supporting the recruitment and success of a diverse workforce that represents U.S. taxpayers through independent, university, national and international efforts.

Question 6: In 2005, a report from the National Academy of Sciences recommended doubling federal funding for basic research, especially research in the physical sciences and engineering, in order to promote U.S. competitiveness. Subsequent Administration policies and enacted legislation, such as the 2007 America COMPETES Act (P.L. 110-69), supported this goal and identified the Office of Science as an agency that should be included in the doubling effort. Yet the enacted FY2021 budget for the Office of Science is still less than double what it was 15 years earlier, even before accounting for inflation.

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a. To what extent is U.S. competitiveness in the physical sciences and engineering still a concern?

The U.S. needs to be the leader in the world, including when it comes to the technologies of the future, and the physical sciences and engineering is a key component of developing these technologies. To support U.S. leadership, DOE's Research, Development, Demonstration and Deployment (RDD&D) programs, which include emerging technologies like AI, Quantum Information Science, and High-Performance Computing, are also crucial. These technologies rely on continual advances in scientific R&D. As the nation's largest supporter of research in the physical sciences, the Office of Science is key to supporting R&D on the fundamental breakthroughs needed to help our nation remain competitive in the physical sciences and engineering. Additionally, the Office of Science supports 28 user facilities that are essential to the health and robustness of our nation's scientific enterprise. These facilities are used by tens of thousands of scientists and engineers every year to make advancements across a huge range of scientific fields and are crucial to our scientific investments, in addition to R&D.

b. Would you support a renewed doubling effort?

Yes, I support robust federal funding for basic research, especially in the physical science and engineering to promote U.S. competitiveness. The work supported by the Office of Science is critical for ensuring that the U.S. takes advantage of the estimated \$27 trillion clean energy economy, exploration and use of rare earth elements, the biological sciences that are major industry of the future that hold key for the health and agricultural sectors, and more. In addition, critical and continued investments are needed in the Office of Science to address aging of critical infrastructure that is critical for successful completion of research and development efforts in the DOE complex, and facilities supported by DOE.

c. Within the Office of Science, what is the appropriate balance between research in the physical sciences and research in other fields such as the biological sciences?

I consider all the areas of science the DOE Office of Science enables to be critical for not just pushing the frontiers of science, but also for ensuring U.S. science competitiveness and continuing to train the science leaders of tomorrow right here in the USA. I believe the decision on what is the appropriate balance between research in the physical sciences and other fields such as biology is not something that one individual, even the Director of the Office of Science, should make. I believe this is a decision that should be made after a deliberative process with careful balancing act that decides the priority areas for research (developed through careful consultation with the scientific community) and recognizes that cost of doing research in different fields.

Question 7: Within the Office of Science, a key effort of the Fusion Energy Sciences program is U.S. participation in the ITER international fusion demonstration facility, currently under construction in France.

a. What can DOE do to improve the cost and schedule performance of ITER?

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The Department has a proven record of employing project management systems and personnel to ensure the best possible use of appropriated project funds. The U.S. ITER Project Office has optimized appropriations since its inception and will continue to do so in the future. A key part of DOE project management is to ensure that the Department hires and retains high-quality project management professionals and that they use appropriate project planning tools. DOE provides direct and frequent oversight through daily interactions as well as external project cost, schedule, and management reviews to ensure the project is on track. DOE also engages with the ITER Organization and other Members to monitor not only the progress at the ITER site but also at the other Members' Domestic Agencies and contractors. The international ITER project has adopted many project management practices from the U.S., including strong cost and schedule management regimes, steady management oversight, and periodic independent reviews.

b. How would you balance the resource needs of this international effort against the resource needs of domestic fusion research projects?

The Department balances the funding for the ITER project with funding for other important initiatives in the Fusion Energy Sciences (FES) program. International collaborations, such as ITER, provide capabilities that the U.S. does not possess, nor could construct and operate within reasonable funding levels. The results from such international collaborations are synergistic with domestic facilities and research efforts. DOE and other foreign entities have determined that the scale of certain international mega-science research facilities is beyond the financial and technical capabilities of any one nation, and this drives the U.S. and the international community toward collaborations in all areas of large-scale science, including the ITER project for fusion.

c. To what extent should the Fusion Energy Sciences program direct resources to alternative fusion approaches?

It is my understanding that the support in the President's FY 2022 request for stellarator research is consistent with previous years, including both domestic activities as well as international collaborations with Germany and Japan. In addition, consistent with the Long-Range Plan, FES plans to hold a basic research needs workshop in FY 2022 to explore initiating an effort in inertial fusion energy research in future budget requests. Basic research needs workshops are a proven and effective tool frequently used by the Office of Science, when initiating a new research activity, to help identify the most impactful science and technology research that needs to be undertaken. FES also supports several projects relevant to alternative approaches (including magnetized target fusion) through the Innovation Network for Fusion Energy (INFUSE) program.

Question 8: As a national steward of major scientific facilities, the Office of Science must often balance the resources needed to build and upgrade facilities against the resources needed to operate existing facilities. How would you approach this challenge in order to maximize the return on federal R&D investments?

The Office of Science supports a balanced portfolio of forefront research to advance the frontiers of science, construction and upgrade of world-leading scientific user facilities, and operation of these facilities. Each facet of this portfolio is essential to maintaining international competitiveness and advancing the energy, economic,

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and national security of the United States. Approximately sixty percent of the Office of Science budget supports facility operations and construction and upgrade of facilities.

Question 9: Over the past decade, funding for the Advanced Scientific Computing Research program has nearly doubled as a share of the total Office of Science budget.

a. To what extent do you expect this trend to continue?

Congress has invested in the Advanced Scientific Computing Research (ASCR) program over the past decade and these investments in facilities, computational partnerships and applied mathematics and computer science to develop algorithms, tools and methods underpin progress in all of the Department's missions. In addition, the investments that the DOE made with U.S. vendors in Exascale have had a large positive impact on the competitiveness of U.S. vendors and science because they directly improve commercially available products. While funding levels are ultimately up to Congress, I expect that increased investment could continue because there is an increasing demand for advanced computing to solve the Nation's toughest challenges and to accelerate progress in science and engineering.

Over the past decade, the Department made a visible commitment to advancing high performance computing, advanced networking, and computational science through the deployment of the Nation's first fully optical network for science, ESnet-5, retaking leadership in HPC with world leading systems at the Oak Ridge Leadership Computing Facility (OLCF) and advancing U.S. Leadership with the launch of the Exascale Computing Initiative (ECI). With the deployment of the Nation's first exascale computer system later this year at the OLCF, the country will embark on the exascale era that encompasses the era of big data and artificial intelligence at scale. To fully leverage its impact on scientific discovery, ASCR will need to create an ecosystem of capabilities, facilities, instruments, and expertise connected to the world's most powerful supercomputers and data tools through the world's fastest research network. In the longer term, ASCR will need to balance supporting traditional areas while making strategic investments in technologies beyond exascale such as neuromorphic computing, quantum computing and advanced networking technologies to accelerate scientific discovery.

b. What do you see as the most important opportunities for this program to contribute to scientific advances?

The Advanced Scientific Computing Research (ASCR) program, through sustained investment in strategic technology areas research teams, continues to provide enhanced computing by developing computing and data capabilities, innovative software, and algorithms; increased productivity by leveraging advances in computer science, including artificial intelligence and new hardware capabilities, to drastically reduce the time from idea to trusted implementation; and accelerated discovery by combining advanced data analytics, simulation, and artificial intelligence to derive more scientific insights faster than ever before.

ASCR will need to continue to invest in algorithms, tools and techniques to ensure that the next generation of advanced computers are more energy efficient and easier to use and that experimental and observational data is

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findable, accessible, interoperable and reusable to accelerate discovery in areas such as creating digital twins for systems biology, modeling complex experiments such as ITER, and increasing our preparedness for emergencies such as COVID-19 and extreme weather events. ASCR needs to look beyond Exascale and build the foundation for quantum computing and quantum internet to continue the forward progress that today's advanced computing and the Internet have enabled. We also need to make our scientific user facilities and the data they generate accessible to a broader community through our Integrated Computational and Data Infrastructure investments.

Question 10: Historically the main focus of the Office of Science has been in the physical sciences, with the Biological and Environmental Research program being an important exception.

- a. As an expert in soil biogeochemistry, what do you see as the appropriate role of the Office of Science in biological and environmental research?**

The Biological and Environmental Research Program supports research that addresses major biological and Earth system sciences. The BER program has enabled advances in our understanding of the fundamental processes in the Earth system that regulate life (including biotechnology and the industries of the future that these advances are enabling), energy systems, as well as the climate system, and impacts of climate change (among other things); and contributed to advanced analytical and computational tools that have paved the way for discoveries well outside areas covered in BER. As a scientist with broad disciplinary interest in multiple areas covered by BER, BES, ASCR, and other cross-cutting research areas, I understand that questions that traditionally fall within the realm of BER funded science have also inspired work across other DOE programs. I believe the physical and biological systems in the Earth system (including those that support energy and the Earth system's responses to variety of human and non-human perturbations) are inextricably linked. Hence, I see the appropriate role of the Office of Science in Biological and Environmental Research as being to continue to enable cutting-edge research across the current and other areas within BER, as our lives and energy systems literally depend on it.

- b. Which of the priorities and capabilities of the Biological and Environmental Research program would you consider either expanding or deemphasizing?**

As someone who prizes being a consensus builder before making major decision about the future directions of critical areas of research covered in programs such as BER, I would have to consult with the current DOE leadership, the scientific community, and all relevant stakeholders (including congress) before expanding or deemphasizing one area or another.

Question 11: In April, the Office of the Director of National Intelligence released a report that said, "China will remain the top threat to U.S. technological competitiveness" and that China "uses a variety of tools, from public investment to espionage and theft, to advance its technological capabilities." Will you please describe how you intend to prevent China from stealing the intellectual property developed through research supported by the Office of Science?

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The U.S. government must protect taxpayer investments from technology theft, interference, and exploitation from China and other foreign governments while also maintaining an open environment to foster research discoveries and innovations that benefit our nation and the world.

Over the last several years, the Department of Energy has taken a series of policy actions to manage risks to research security. These include the development of the S&T Risk Matrix in coordination with our National Laboratories to identify and manage risks associated with critical and emerging technologies that are not otherwise protected by classification or export controls. The Matrix is used to guide and manage foreign engagements, cooperative research and development agreements, strategic partnership projects, official travel, and foreign national access to our labs. DOE also put several actions in place to prohibit DOE employees and contractors, including laboratory personnel, from participating in foreign government sponsored talent recruitment programs sponsored by certain countries, including China.

DOE will continue to review these policies to ensure that this risk-based approach strikes the right balance between protecting our intellectual property and assets, while also maintaining the openness that underpins our innovation ecosystem.

As an agency co-chair of the National Science and Technology Council Subcommittee on Research Security, the Office of Science played a leading role in the development and issuance of the National Security Presidential Memorandum-33 (NSPM-33) on United States Government-Supported Research and Development, released in January of this year. If confirmed, I am committed to continuing to actively coordinate with science and security agencies on implementation of this policy.

Question 12: Five of the last six directors of the Office of Science were physicists, and four of the last six had extensive experience managing large research portfolios for the federal government. What skills and managerial experience would you bring to Office of Science to make you an effective leader?

If confirmed, I would approach the role of Director of the Office of Science with the experience of an Earth system scientist that works across and synthesizes knowledge from multiple scientific areas and teams. I believe the integrative systems perspective that I bring is uniquely suited for this role, especially for the current time when we need to urgently address multiple issues that are critical for not just pushing the frontiers of science, but also to address the ongoing climate emergency, need for workforce development, and to promote better understanding and trust in the scientific processes. My experience with scientific investigations across multiple disciplines, covering spatial scales ranging from molecular to the globe, and processes that occur from seconds to geologic timescales is an asset as we seek to address fundamental processes that hold the key for the environmental, energy, and nuclear challenges of our time.

Question 13: Will you commit to hiring and grantmaking on the basis for scientific and technical merit?

Yes.

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Question 14: Universities pride themselves on conducting open science, which includes collaboration with foreign nationals. International collaboration may help science, but as a recent FBI report states, “...this open environment also puts academia at risk for exploitation by foreign actors...” Before radically increasing funding to universities, that the FBI identifies as easy targets, shouldn’t we ensure that these institutions have the necessary safeguards in place?

Principled international collaborations and foreign contributions are critical to the success of the United States research enterprise. International collaborations enable cutting-edge research that no one nation can achieve alone; train a robust S&T workforce capable of solving global problems, and leverage resources, including funding, resources, and expertise. These international collaborations should adhere to principles such as objectivity, transparency, fairness, accountability, and stewardship. International students and scholars also contribute significantly to the U.S. research enterprise.

To guard against foreign government exploitation of our research enterprise, the United States government must be clear about the risks to research, clarify existing disclosure policies so that research institutions and funding agencies can make informed, risk-based decisions, and work in partnership with the research community to address threats. Transparency and full disclosure enable a system where grant decisions are made based on complete and accurate information, including the ability to properly identify, assess, and manage risks.

Much of this activity is already underway through the development and implementation of National Security Presidential Memorandum-33 (NSPM-33), which is taking a coordinated approach to disclosure policy, oversight, and enforcement. Specifically, NSPM-33 calls for research organizations that receive substantial federal R&D funding (in excess of \$50 million annually) to maintain research security programs, which should include elements of cyber security, foreign travel security, insider threat awareness and identification, and as appropriate, export control training. DOE is actively working with the interagency National Science and Technology Council Subcommittee on Research Security to develop clear and effective implementation guidance for NSPM-33.

Question 15: The Office of Science manages large user facilities and often must balance competing needs to build and upgrade facilities and to operate existing facilities. How would you approach this challenge to maximize the return on federal R&D investments?

The Office of Science supports a balanced portfolio of forefront research to advance the frontiers of science, construction and upgrade of world-leading scientific user facilities, and operation of these facilities. Each facet of this portfolio is essential to maintaining international competitiveness and advancing the energy, economic, and national security of the United States. Approximately sixty percent of the Office of Science budget supports facility operations and construction and upgrade of facilities. Each annual budget request is formulated with this portfolio approach to support our existing investments while planning for future needs.

Question 16: The Experimental Program to Stimulate Competitive Research (“EPSCoR”) within DOE’s Office of Science is designed to improve energy-related research in 24 largely rural states, including Wyoming. DOE needs to continue to build basic research capacity in EPSCoR states. How do plan building up the capacity of universities in EPSCoR states?

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If confirmed, I would work to continue the Office of Science's full commitment to advancing a diverse, equitable, and geographically inclusive research community. I believe this to be key to providing the scientific and technical expertise for U.S. scientific leadership. In particular, the DOE EPSCoR program will strengthen investments in clean energy research for U.S. states and territories that do not historically have large federally-supported academic research programs, expanding DOE research opportunities to a broad and diverse scientific community. In FY 2022, EPSCoR funding will emphasize state-lab partnership awards, single principal investigator and small group grants that promote interactions with the unique capabilities and expertise at the DOE National Labs with a technical focus on clean energy research. Investment will continue in early career research faculty from EPSCoR-designated jurisdictions and in co-investment with other programs for awards to eligible institutions. By the historical alternating biennial EPSCoR cycle, the plan for FY 2023 is to emphasize implementation awards, larger multiple principal investigator grants that develop research capabilities in EPSCoR jurisdictions.

Questions from Senator James E. Risch

Question 1: My home state of Idaho is home to the lead DOE nuclear energy laboratory, the Idaho National Lab. The INL is an applied energy lab in the Office of Nuclear Energy, but my understanding is that the Office of Science sometimes incorporates applied energy research into its programs. Can you speak to the relationship between the Office of Science and applied energy programs at DOE?

I understand that coordination between the Department's basic research and applied technology programs is a high priority within DOE and is facilitated through joint planning meetings, technical community workshops, annual contractor/awardee meetings, joint research solicitations, focused DOE program office working groups in targeted research areas, and collaborative program management of DOE's Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs. DOE leadership has established formal Science and Energy Technology Teams that cross the Department and meet on a regular basis to discuss R&D activities and goals. Coordinated funding of research activities at the DOE National Laboratories, support for ancillary equipment and end stations at scientific user facilities, and partnership/collaboration-encouraging funding mechanisms facilitate research integration across the basic and applied research communities. The Office of Science's R&D coordination also occurs at the interagency level.

Question 2: Do you support continued appropriate interactions between the Office of Science and the applied energy programs?

The relationship between the Department's applied energy programs and the Office of Science (SC) is strong. Coordination of basic research and applied energy programs is a high priority within DOE and is manifested through multiple activities including cross-program dialogue; participation in meetings, reviews, and strategic planning activities; and the formal Science and Energy Technology Teams that cross the Department and meet

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on a regular basis to discuss R&D activities and goals. This integrated relationship between SC and the energy technology programs is crucial to bringing basic science innovations to bear on the fulfillment of DOE missions and in maintaining strong communication of the challenges for current and future energy technologies to the basic research community. We look forward to the enhancement of this relationship in the reorganized Office of the Undersecretary for Science and Energy.

Question 3: Can you please provide a list of research projects you have led that has a direct nexus to the Office of Science?

I have had many research projects that I led (including projects I co-led or led critical components of) and have had direct nexus to the Office of Science. Below is a short summary of these projects.

- **Biogeochemistry** (including projects related to soil carbon sequestration, and carbon capture, utilization and storage, and fires)
 - Persistence of organic matter in soil
 - Effect of changing climatic conditions on storage, distribution and stabilization mechanisms of soil carbon
 - Role of weathered bedrock as a large, potentially active pool of soil carbon
 - Stability and partitioning of deep soil organic matter – work with implication on quantifying the global amount of carbon stored in soil
 - Effect of cover crop on soil carbon sequestration.
 - Role of soil water retention characteristic on aerobic microbial respiration.
 - Role of the physical properties of soil in determining biogeochemical responses to soil warming
 - Soil nitrogen storage and stabilization in dynamic landscapes
 - Alteration of Phenolic Lignin to (Poly)Aromatic Hydrocarbons as Revealed by Pyrolysis-Gas Chromatography-Mass Spectrometry (Py-GC-MS), effect of burn intensity
 - Wildfire Severity Controls Pyrogenic Dissolved Organic Carbon and Nitrogen Properties
 - Effect of soil moisture and organic matter quality on microbial decomposition following boreal forest fires
 - Effect of fire on active layer permafrost microbial community and metagenomes in boreal ecosystems
- **Microbial ecology**
 - Soil depth gradients in microbial growth kinetics under deeply- vs. shallow-rooted biofuel plants; implication for the contribution of biofuel crops for soil carbon sequestration
 - Climatic controls on deep soil microbial community activity and composition
 - Fire effects on microbial community composition and activity (see also next bullet point)
- **Nano-geochemistry** (material sciences related)
 - Characterization of the physical and chemical properties of natural, nanoparticulate metal oxides that play critical roles in a number of fundamental chemical and biochemical processes in nature
 - Role of natural, reactive nanoparticles in mediating biogeochemical process
 - Magnetic properties of ultra-small goethite nano particles

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- **Application of advanced DOE supported technologies in soil science, biogeochemistry, atmospheric science, basic material sciences.** These projects represent work related to research within the scope of BER, BES, and ASCR, and were conducted in conjunction with DOE facilities:
 - Lawrence Berkeley National Lab (LBNL) – long-term research collaboration (started from when I was co-advised by a scientist at LBNL), and includes, fractionations, radiocarbon prep, gas flux analyses, Fourier transformed infrared (FTIR) spectroscopy with researchers at LBNL’s Earth and Environmental Sciences area; and x-ray spectroscopy work conducted at the Advanced Light Source;
 - Stanford Linear Accelerator (SLAC) – x-ray spectroscopy on soil samples with a goal of characterizing speciation of carbon, iron, and phosphorus in soil;
 - Pacific Northwest National Laboratory (PNNL) – long-term research collaborations that enabled one of the earliest works on applying nuclear magnetic resonance (NMR) to soil to infer composition, and in addition, to NMR the collaborations have also been extended to application of pyrolysis gas chromatography mass spectrometry (Py-GC-MS), and Fourier Transform Ion Cyclotron Resonance Mass Spectrometry (FT-ICR-MS);
 - Lawrence Livermore National Laboratory (LLNL) – long-term research collaborations that have enabled work on many aspects of soil carbon dynamics, notable among these are our ongoing collaborations with researchers in LLNL to apply accelerated mass spectrometry (AMS) for radiocarbon analyses of different environmental samples, and on-going collaborations that will enable use LLNL’s advanced facilities for material characterizations, including through isotopic approaches such as Nanoscale secondary ion mass spectrometry (NanoSIMS) and other isotopic probing approaches that target microbial communities and organic matter in environmental samples; and
 - Ongoing collaborations with researchers at Oak Ridge National Laboratory (ORNL) on research related to effect of fire and distribution of pyrogenic matter in soil and streams post-fire; and broadly soil biogeochemistry.

Question from Senator John W. Hickenlooper

Question: Direct air capture (DAC) is one of the more potentially transformative technologies in the clean energy space, but as of now there are only a very small handful of companies that have operating direct air capture projects, even at pilot scale. Meanwhile, some of the major barriers to DAC come in at the level of fundamental science: for example, the solid sorbent technologies that the CO₂ molecules stick to when we pull them from the air are major cost drivers of some of the DAC platforms already out there. Do you see a strong role for the Office of Science in driving down the costs of these materials so that we can foster a vibrant ecosystem with dozens to hundreds of such companies?

As one of the principal sponsors of U.S. basic research in the Federal government, DOE’s Office of Science is committed to delivering the discoveries, capabilities, and major scientific tools that advance strong scientific foundations for creating clean energy technologies. Direct air capture is an emerging technology that requires significant investments in research and development to create an economically viable technology that can be deployed at scale and in time to achieve net-zero emissions by 2050.

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To begin meeting this need, in FY 2020, Basic Energy Sciences (BES) made its first investments to explore and develop new methods of capturing carbon dioxide directly from the air, funding three projects led by National Laboratories. BES expanded its direct air capture investments in FY 2021 by funding nine research projects at universities and national laboratories to support breakthroughs in understanding how to overcome the limitations of currently available technologies. These projects will advance new energy-efficient approaches that use electricity or light to control the capture and/or release of carbon dioxide and will explore and develop new materials and chemical compounds with the potential for improved efficiency for carbon dioxide capture and regeneration.