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LEVERAGING AGENCY EXPERTISE TO FOSTER AMERICAN AI LEADERSHIP AND INNOVATION

WEDNESDAY, DECEMBER 13, 2023

House of Representatives,

Committee on Energy and Commerce,

Washington, D.C.

The Committee met, pursuant to call, at 10:04 a.m., in Room 2123, Rayburn House Office Building, Hon. Chair Cathy McMorris Rodgers [Chairwoman of the Committee] presiding.

Present: Representatives Rodgers, Burgess, Latta, Guthrie, Griffith, Bilirakis, Johnson, Bucshon, Hudson, Walberg, Carter, Duncan, Palmer, Dunn, Lesko, Pence, Crenshaw, Joyce, Armstrong, Weber, Allen, Balderson, Fulcher, Pfluger, Harshbarger, Miller-Meeks, Cammack, Obernolte; Pallone, Eshoo, DeGette, Matsui, Castor, Sarbanes, Tonko, Clarke, Cardenas, Ruiz, Peters, Dingell, Veasey, Kuster, Kelly, Barragan, Soto, Criag, Schrier, Trahan, and Fletcher.

Staff present: Sean Brebbia, Chief Counsel; Deep Buddharaju, Senior Counsel; Sarah Burke, Deputy Staff Director; Lauren Kennedy, Clerk; Christen Harsha, Senior Counsel; Jessica Herron, Clerk; Nate Hodson, Staff Director; Tara Hupman, Chief Counsel; Noah Jackson, Clerk; Sean Kelly, Press Secretary; Alex Khlopin, Staff Assistant; Emily King, Member Services Director; Chris Krepich, Press Secretary; Tim Kurth, Chief Counsel; Brandon Mooney, Deputy Chief Counsel; Kate O'Connor, Chief Counsel; Karli Plucker, Director of Operations; Olivia Shields, Communications Director; Micheal Steinberg, Detailee, GAO; John Strom, Senior Counsel; Teddy Tanzer, Senior Counsel; Evan Viau, Professional Staff Member; Caitlin Wilson, Counsel; Jennifer Epperson, Minority Chief, Counsel Communications and Technology; Austin Flack, Minority Junior Professional Staff Member; Tiffany Guarascio, Minority Staff Director; Lisa Hone, Minority Chief Counsel, Innovation, Data and Commerce; Mary Koenen, Minority GAO Detailee; Will McAuliffe, Minority Chief Counsel, Oversight and Investigations; Constance O'Connor, Minority Senior Counsel; Christina Parisi, Minority Professional Staff Member; Caroline Rinker, Minority Press Assistant; Emma Roehrig, Minority Staff Assistant; Harry Samuels, Minority Oversight Counsel; Michael Scurato, Minority FCC Detailee;

Andrew Souvall, Minority Director of Communications for Outreach and Member Services; Johanna Thomas, Minority Counsel; Caroline Wood, Minority Research Analyst; and Tuley Wright, Minority Staff Director for Energy, Climate and Grid Security.

*The Chair. Good morning, everyone. The Committee will come to order. Chair recognizes herself for five minutes for an opening statement.

To win the future, America, not China, must remain the global leader in artificial intelligence. The reality is there is no better place in the world than here to ensure this technology is used responsibly to raise our standard of living, protect data privacy, and create more opportunities for the hardworking people of this country.

This Committee has been leading on policies to promote innovation in AI for everything from our supply chains, energy, health care, emerging technologies and more. Today's hearing is a culmination of those efforts.

It is clear that AI will have a significant impact on every aspect of the economy as well as how the federal government engages with stakeholders in overseas industries. It is also clear that unilateral, one size fits all regulations do a poor job addressing various use cases and may ultimately hamper innovation.

To foster American leadership, we need a complete understanding of how each agency can apply its unique sector specific expertise and ensure agencies are equipped to foster, not hamper, innovation and address the disruptive impact of AI across the entire economy.

AI can help doctors better detect diseases and develop new drugs and treatments. It can help better deliver affordable, reliable energy to people and improve broadband services and cybersecurity.

Across the board, federal agencies must understand and be equipped to address the unique needs and risks associated with these new technologies and know when or whether it is appropriate to take action to address them.

What we are seeing around the world today is a call for American leadership. China is abusing emerging technologies and data to suppress and control its own citizens with mass surveillance.

Europe is over regulating and halting innovation in its tracks. We can chart a new and better course to improve people's lives of leveraging AI and upholding our values of human rights, individual liberty, the free market, and limited government.

That means the Administration and Congress must work together. We should start with one key action and that is delay the groundwork to protect people's information with a national data privacy standard.

It is time that we provide people with greater transparency and put them back in control over the collection and use of personal information. We also need to strengthen

data security protections to safeguard people's information against threats.

The theft and exploitation of sensitive information, especially biometric data, poses significant threats. Establishing foundational protections early will ensure greater public trust in AI, which will help ensure future innovations are made in the US.

In October, the Biden Administration released a sweeping executive order on the development and use of AI along with a proposed OBM memo on how agencies should manage their own use of AI. That includes Departments of Commerce, Health and Human Services, and Energy.

I have concerns that some aspects of the executive order start us down the path of the European Union, where they have overregulated technological innovation out of existence.

We cannot let overbearing regulations hinder AI advancements, and in turn, limit US global competitiveness. Your agencies have a lot of work ahead and today, we hope to hear more about how you plan to carry out these responsibilities and coordinate with public and private partners as well as Congress.

These technologies and the risks that they pose will continue to evolve and agencies must be prepared to adapt and remain vigilant. As we explore the best path forward, I am

hopeful that the Administration will work with Congress to address the risk can take full advantage of the benefits of AI and not just act unilaterally through executive fiat.

I am optimistic about the promise of AI and believe that this Committee can lead the way in support of AI innovation in the public and private sectors. It is crucial that we strike the right balance with AI. One that gives businesses the flexibility to remain agile as they develop these cutting-edge technologies while also ensuring the responsible use of this new technology.

I look forward to discussing how we achieve that balance, and I yield back.

[The prepared statement of Ms. Rodgers follows:]

**********COMMITTEE INSERT**********

*The Chair. The Chair now recognizes the Ranking Member, Mr. Pallone, for five minutes.

*Mr. Pallone. I want to thank the Chairwoman. Today's hearing is an important opportunity to hear what steps the executive branch is taking to harness, advance, ensure the safe use of artificial intelligence or AI.

And while AI is not new, the speed at which we are witnessing the deployment of generative AI is staggering. The effects it will have on our everyday lives are tremendous.

Indeed, this technology has led to an explosion of AI systems and tools that answer consumers questions, draft documents, influence the way patients are diagnosed or what health insurance will cover and make employment and housing decisions.

And many of these systems are trained on massive amounts of data that big tech has collected on all of us, and that is why the lack of nationwide protections around what data companies can collect, use, and sell to train these AI systems should concern every American.

Given the opportunities and challenges that AI offers, I am pleased that President Biden issued an executive order on the safe, secure, and trustworthy development and use of AI.

The executive order recognizes both the promise and peril of AI and adopts a coordinated federal government-wide approach

for the development and use of AI in a responsible manner.

Specifically, the order requires Secretary of Health and Human Services to establish a safety program that receives reports and acts to resolve harm from AI's use in health care practices.

It tasks the Secretary of Energy with addressing the threats that AI systems have to our nation's critical infrastructure as well as any chemical, biological, radiological, nuclear, and cybersecurity risk.

The Secretary of Commerce must develop guidance for content authentication and watermarking so that AI-generated content is easily identified, and Commerce will also lead an effort to establish international framework for harnessing benefits and managing risks.

The Assistant Secretary of Commerce for Communications and Information will also assess the benefits, risks, and accountability frameworks for open-source foundation models.

These are all important actions that the Biden Administration is taking, but we cannot lose sight of the fact that sufficient guardrails do not currently exist for America's data and AI systems.

As a result, we are unfortunately hearing of a growing number of reports of harmful impacts from the use of AI systems. There have been instances where AI has been used to

mimic a friend or relative to scan consumers out of their hard-earned money.

Deep fakes have been used to further misinformation or disinformation campaigns. There are reports that chat box of medical records and personal information and AI assistants have discriminated against female candidates for jobs and people of color in the housing market, and there is an acknowledged concern that increased adoption of AI technologies into our critical infrastructure, like the electric grid, can add new vulnerabilities and cyber risk, and this is all extremely concerning.

We can't continue to allow companies to develop and deploy systems that misuse and leak personal data and exacerbate discrimination. That is why we must make sure developers are running every test they can to mitigate risk before their AI models are deployed.

This year, Republicans and Democrats were able to work across the aisle and pass the American Data Privacy and Protection Act out of this Committee by a vote of 53 to 2.

That legislation included provisions focused on data minimization, algorithmic accountability with heightened privacy protections for children.

Clearly defined privacy and data security rules are critical to protect consumers from existing harmful data

collection practices and to safeguard them from growing privacy and cyber threats that AI models pose.

And as I have repeatedly stated in our previous AI hearings in our subcommittees, I strongly believe that the bedrock of any AI regulation must be privacy legislation that includes data minimization and algorithmic accountability principals.

Simply continuing to provide consumers with only notice and consent rights is wholly insufficient in today's modern digital age. And I will continue to push for a comprehensive national federal privacy standard. It is the only way we can limit the aggressive and abusive data collection practices of big tech and data brokers, ensure our kids' sensitive information is protected online, protect against algorithmic bias, and put consumers back in control of their data.

So I look forward to hearing from witnesses and working with our partners in the federal government to elaborate, innovate, and lead in developing policies that both harness the transformative power of AI while also safeguarding the rights and well beings of Americans.

And, again, Madam Chair, I want to thank you. This is something, clearly, we are going to work together on and I appreciate that, and I yield back.

[The prepared statement of Mr. Pallone follows:]

**********COMMITTEE INSERT**********

*The Chair. The gentleman yields back. That concludes member opening statements.

The Chair would like to remind members that pursuant to the Committee rules, all members' written opening statements will be made part of the record. Please provide write those to the clerk promptly.

Our witnesses today are Helena Fu, the Director of Office of Critical and Emerging Technology at the Department of Energy; Saif Khan, Senior Adviser to the Secretary for Critical and Emerging Technologies at the Department of Commerce; and Miki Tripathi, the National Coordinator for the Health Information Technology at the Department of Health and Human Services.

We appreciate all of you being here today. I look forward to hearing from you.

Dr. Fu, you are recognized for five minutes.

STATEMENT OF HELENA FU, DIRECTOR OF THE OFFICE OF CRITICAL AND EMERGING TECHNOLOGY, OFFICE OF THE UNDERSECRETARY FOR SCIENCE, DEPARTMENT OF ENERGY

*Ms. Fu. Thank you.

Chair Rodgers, Ranking Member Pallone, and distinguished members of the Committee. Thank you for the opportunity to testify on behalf of the Department of Energy to discuss the important role that we play in advancing a national, trustworthy, reliable AI capability that will accelerate science, transform innovation, and underpin our future economic prosperity and national security.

Let me begin by thanking Congress for its support of DOE for many years, support that has helped enable DOE's existing infrastructure and capabilities that can be harnessed for cutting edge AI.

DOE designed, developed, and operates four of the ten fastest supercomputers in the world. The nation's first exascale supercomputer, Frontier, is currently the fastest and the world's second most energy efficient.

We have developed unique science and engineering algorithms that help make these fastest supercomputers uniquely AI capable, and we are the largest producer of unclassified and classified scientific data, the fuel that powers AI.

And we can put all of these assets to work because of our most valuable resource at DOE, the nation's largest skilled scientific workforce with over 70,000 Scientists, engineers, researchers, and support personnel at our national laboratories.

DOE advances in AI are not just in the realm of the future. On average, DOE-supported research contributes one new AI method or technique applicable to multiple scientific domains every single day.

And let me highlight just a few of the AI applications spaces where DOE is working. We're using AI to help cities and utilities plan their energy investments. To make better offshore wind turbines, we're working with industry to understand the complex conditions that will affect durability and performance.

Our AI-enabled models have identified new domestic sources of critical minerals, and we've partnered with academia to develop new tools to safeguard nuclear reactors. We're also hard at work trying to apply AI to the challenge of permitting for energy projects.

And our national security needs demand that DOE have a strong AI capability. We're working with the electricity sector to detect and mitigate cyberattacks on the grid. We're using AI and machine-learning models to enhance and extend our

nuclear weapons stockpile, including support for faster and more efficient production of key components.

And what used to take our scientists weeks to simulate or model, for example, to discover new materials, we can now do in seconds, and we're working with industry to analyze AI models to develop strategies for preventing from AI from aiding bad actors.

And we're bringing these capabilities and expertise to bear to implement the recent executive order on AI. DOE has an important role to play on safety and security, from conducting red teaming to developing test beds, evaluating AI models, assessing AI risks in critical infrastructure, and evaluating the potential for AI to be misused for chemical, biological, radiological, and nuclear threats.

We're also tasked with advancing AI innovation. We are charged with establishing a program to train 500 new researchers by 2025; developing AI tools; advancing privacy enhancing technologies; and partnering with industry to build foundation models for science, energy, and security.

Let me end with some news. As of yesterday, I am officially the Director of DOE's Office of Critical and Emerging Technology.

The office will coordinate across the department and our national laboratories to ensure that our expertise and our

capabilities are brought to bear on key challenges and we'll work to ensure effective coordination with external stakeholders and with other parts of the government, including with my colleagues in the agencies represented on this panel.

Thank you for the opportunity and I forward to your questions.

[The prepared statement of Dr. Fu follows:]

**********COMMITTEE INSERT**********

*The Chair. Thank you.

Mr. Khan, you are recognized for five minutes.

STATEMENT OF SAIF KHAN, SENIOR ADVISOR FOR CRITICAL AND EMERGING TECHNOLOGIES, DEPARTMENT OF COMMERCE

*Mr. Khan. Chair Rodgers, Ranking Member Pallone, and distinguished members of the Committee, thank you for the opportunity to testify on behalf of the Department of Commerce.

Today, I'll give a summary of Commerce's current efforts in AI. The Department aims to create a race to the top in AI safety, security, and trust.

We are addressing AI-related threats to our national security. The Department is fostering an innovative, competitive, and informed marketplace for AI.

And finally, we are examining ways to use AI for good to enhance the government's work. First, the department is taking several actions to ensure that we meet our nation's and the world's needs for safe, secure, and trustworthy AI.

Commerce houses the National Institute of Standards and Technology or NIST, the premier US government body for advancing measurement science and standards.

With support from Congress, NIST published the AI risk management framework in 2023. The framework now has broad stakeholder buy in. We are now following up with a companion resource for generative AI.

In November 2023, Cice President Harris and Secretary

Raimondo announced the establishment of the US AI Safety Institute within the Department.

The NIST-led institute will facilitate the development of guidance for measurements and methodologies to enhance safety, security, and trust, and will provide testing environments to evaluate and red team AI capabilities, risks, and impacts, particularly from the most advanced AI technologies.

The Institute is also launching a consortium to work with partners in academia, industry, civil society, and non-profit organizations to advance its AI safety mission. And the Institute will also be a home for foundational research to support its mission.

The Institute will collaborate with the Department of Energy and the National Science Foundation to make testing environments available. And after completing the work assigned to Commerce by the executive order, we intend for the Institute to remain a hub of US government AI safety and trust efforts.

Additionally, Commerce's Bureau of Industry and Security, BIS, will issue ongoing surveys to ask US AI developers how they are developing advanced AI models and what they are doing to keep those models safe and secure.

Second, BIS continues to enforce our AI-related export controls and is regularly updating them to adapt to the fast pace of change in this area.

This October, BIS updated its rules limiting access to advanced semiconductors that are fueling breakthroughs in artificial intelligence and sophisticated computers that are increasingly critical to military applications.

In the wrong hands, these capabilities could otherwise threaten the national security of the United States and our allies and partners.

We are also developing a proposed regulation to enhance the Department's visibility into foreign actors' development of advanced AI using US cloud services. Third, the Department is working to facilitate an innovative, competitive, and informed marketplace for AI.

The National Telecommunications and Information Administration or NTIA is preparing to publish a report on AI accountability, which will make recommendations for federal government action to increase transparency and accountability in AI.

NTIA will also soon call for public input, then issue a report related to the benefits, risks, and policy options with respect to widely available model weights of advanced AI models or open-source AI.

We expect this report to become a foundational document for future government decision making. The US Patent and Trademark Office or the USPTO will also issue guidance on

inventorship for AI-assisted inventions, other considerations at the intersection of AI and IP, and recommendations for executive action on copyright in coordination with the copyright office.

Fourth, the department is looking for responsible uses of AI to enhance our work. The National Oceanic and Atmospheric Administration or NOAA is working closely with our European partners on AI applications that are designed to allow more accurate extreme weather forecasting, including river flows and wildfires.

NOAA is also exploring the use of AI for the operation of uncrewed mapping systems, processing underwater surveys of marine mammal and fish populations, automated language translation of weather forecasts and warnings, and processing, interpreting, and utilizing observation from NOAA satellites and other sensors.

The Department is also working to structure, label, and in some cases, publish our troves of data from NOAA and from Census, also within the department, which are some of the biggest repositories of data in the world so that they can be used for official applications of AI.

With the continued support of Congress, the Department is committed to meeting the opportunities and challenges of AI.

Thank you for the opportunity to appear before you today.

[The prepared statement of Mr. Khan follows:]

**********COMMITTEE INSERT**********

*The Chair. Thank you for your testimony.

Dr. Tripathi.

STATEMENT OF MIKI TRIPATHI, THE NATIONAL COORDINATOR FOR THE HEALTH INFORMATION TECHNOLOGY AT THE DEPARTMENT OF HEALTH AND HUMAN SERVICES

*Dr. Tripathi. Chair Rodgers, Ranking Member Pallone, members of the Committee, thank you for the opportunity to testify today on the Department of Health and Human Services efforts to promote responsible AI in health care, public health, and human services.

I am Micky Tripathi. I head the Office of the National Coordinator for Health Information Technology at the Department.

I come to this role having served in the Department of Defense many years ago and for the past 20 years in the private sector working on electronic health record implementation, interoperability, and data analytics.

ONC is a staff division in the Office of the Secretary charged with advancing the federal government's use of health IT and spurring adoption of secure interoperable health information technology in the marketplace.

In addition to my former role, I've been tasked by Secretary Becerra with co-leading the Department's efforts in AI.

HHS's mission is to enhance the health and wellbeing of

all Americans by supporting effective health and human services and by fostering sound and sustained advances in the sciences underlying medicine, public health, and social services.

We look at AI through that same mission lens, promote responsible AI to improve people's lives. There are many ways in which AI will affect health care, which is why we've launched a cross department task force looking at eight areas, including health care delivery, public health, and R&D.

We in the Department are AI optimists. AI-based technologies have the potential to accelerate innovation, increase competition, help to ameliorate health inequities, reduce clinician burnout, and improve care and the care experience for patients.

We also know that there are lots of potential downsides, and that's why we believe our posture in AI needs to be don't trust without verifying. It's vital that we both seize the promise and manage the risks.

It's important to also note that we're not starting from scratch at the Department. The FDA has already approved almost 700 AI-enabled devices for use in the market and, as this Committee is aware, is working very hard on a predetermined change control plan approach to AI-enabled devices with our international partners.

The National Institutes of Health is working in

collaboration with or co-leading with the Department of Energy, Planning, and Development of significant components of the of, excuse me, national AI research resource infrastructure.

The Office of Civil Rights published a draft rule emphasizing the non-discrimination provisions of Affordable Care Act, Section 1557, also apply to AI-enabled tools. And The Center for Medicare and Medicaid Services has implemented rules regarding the use of AI-enabled tools in Medicare Advantage, medical necessity checks, and coverage determinations, and they'll begin audits and oversight of those and related activities in 2024.

Going even further, I am really pleased to announce that just this morning, the Department released ONC's HTI-1 final rule, which is a significant step in establishing responsible use of AI in the industry.

The HTI-1 rule has specific provisions to promote transparency and risk management of AI-based technologies used in health care delivery based on what we call the FAVES principles; fairness, appropriateness, validity, effectiveness, and safety.

To give some context, a key role that my agency plays in health care is certifying the electronic health record systems that are now used by 97 percent of hospitals and almost 80 percent of physician offices across the country.

EHRs are a key enabler of AI in health care. They're increasingly the source of data that feeds machine learning algorithms, and they are the place where AI works behind the scenes, in user interfaces and workflows, to influence day to day decision making that directly affects patient lives.

For these reasons, ONC has been working on this since I took this job on day one and we've been very hard at it since. The HTI-1 regulation empowers clinicians first and foremost, by requiring HER vendors to establish transparency about the AI-based models in their products, including making available a standardized nutrition label, quote, unquote, to help advance explainability or really transparency of the AI operating in their software.

This rule also complements other efforts in the Department by covering areas not covered by FDA regulations and by helping providers comply the Section 1557 nondiscrimination requirements.

Shining light on where and how AI is operating in EHR systems would put health care providers in a better position to do what they try to do every single day, have trusted information that they can use to make best decisions for and with their patients.

We've heard from providers, at a recent advisory committee meeting that we had, who are concerned about AI being a black

box on their system and that is leading to their, you know, hindering their adoption of these technologies.

We believe that our rule is going to spur adoption by using transparency and risk management to instill public trust and confidence. AI opens up vast opportunities to improve our country's health care, public health, and social services capabilities to better serve the American people.

HHS is already taking action to motivate responsible use of AI in these critical areas. Thank you again for the opportunity to be here to discuss this with you today.

[The prepared statement of Dr. Tripathi follows:]

**********COMMITTEE INSERT**********

*The Chair. Thank you. Thank you again, everyone.

I am concerned about the EO and how it may hinder American development in AI and, in turn, US global competitiveness.

One doesn't have to look far to see how EU's overly burdensome regulations from GDPR stifled European innovation, and we are taking great pains not to repeat mistakes in our approach to data privacy.

Unfortunately, President Biden's not taking this approach to AI. The executive order invokes the Defense Production Act of 1950.

At its core, the DPA is intended to respond to serious military conflicts, natural disasters, acts of terrorism, a tool for severe emergencies. Unfortunately, we have already seen the President invoke DPA when it comes to promoting heat pumps over natural gas-powered furnaces.

So clearly, scrutiny is needed here.

Mr. Khan, there was recently a provision, debated for NDAA, which I understand the CHIPS office at the Department supported, that would authorizes Secretary of Commerce to override NEPA laws to advance semiconductor production in the US.

If the chip situation doesn't constitute enough of an emergency for the administration to invoke DPA to remove regulatory barriers and AI relies on these chips, how can we

expect any consistency over when and how the Administration intends to use this authority?

*Mr. Khan. Thank you, Chair, for, raising these issues. First, with respect to the Department of Commerce's use of the Defense Production Act.

I would note that this is a long-standing authority that the Department has had available and used many times over the preceding decades to issue surveys to the industrial base to better understand its capabilities.

What we are doing under the President's executive order is essentially to issue a survey to better understand AI developers, development of advanced AI models, and the steps they are taking to make them safe and secure.

It is not a regulation. It is an information gathering exercise. I would also note it is particularly focused on the most advanced AI technologies, next generation technologies.

So I wanted to clarify the scope of the use of the Defense Production Act in this context.

On your question relating to the CHIPS Act, obviously, the Department is laser focused on ensuring that the CHIPS Act succeeds, understanding kind of the bipartisan support that it received in Congress and we are kind of taking every effort we can to make sure that taxpayer dollars are spent appropriately.

*The Chair. Okay. Thank you.

*Mr. Khan. Thank you.

*The Chair. My concern is around consistency. So Mr. Khan, has a follow-up and I welcome the other witnesses to answer. In invoking the Defense Production Act, the EEO requires AI developers to notify the government of any work which constitutes a risk to health and safety, the economy, or security.

Those are very broad categories and move us into a permission-based approval process. How will you implement this process to ensure it is not an impediment to innovation, and how is the Administration going to very clearly define these risks in respective agencies and departments?

*Mr. Khan. Chair, thank you for that question.

So one clarification I would like to issue is that, you know, we don't see the use of the Defense Production Act as an approval process, but rather it is really just an information gathering exercise.

One of the key considerations here is that the very most advanced models kind of are increasingly kind of showing new emerging capabilities of national security concern, potentially.

And so what we are doing is to kind of better understand those capabilities, essentially.

*The Chair. Okay. I think I am going to _

*Mr. Khan. So that we can make sure _

*The Chair. I am going to quickly run out of time here.

I would just note, the Defense Production Act was just used to promote heat pumps over natural gas-powered furnaces.

I want to move on to cybersecurity. AI has the potential to help identify new threats, but it can also help adversaries and bad actors create more severe attacks.

Washington Post just published an article on Monday about Chinese hackers that are targeting and infiltrating critical infrastructure computer systems.

So Ms. Fu, I wanted to start with you. How is DOE engaged with utility companies to help identify and prioritize AI-powered cyber threats, especially those originating in China?

*Ms. Fu. Thanks for the question. I think it's an extremely important one. And frankly, there's three issues that are at play here.

The first is around the benefits that AI can provide to operators that are trying to deal with the growing complexity of the grid, but with the growing complexity of the grid, there's obviously a greater attack surface for cybersecurity attacks.

And so the second is around how we manage that. The third is around the energy use of AI, which also can cause instability to the grid.

So on all three fronts we are working actively with industry and utility players, big and small. Our Office of Cybersecurity, Energy Security, and Emergency Response is engaging with companies across the energy sector to discuss the risks that need to be managed and also figure out how to harness those opportunities. And it includes understanding how our grid operators are looking to use AI as a tool.

And we're partnering with companies, such as Siemens and the National Rural Electric Cooperative Association, to launch project, to develop secure AI tools that will help determine, help develop algorithms that can detect attacks _

*The Chair. Okay. Thank you.

*Ms. Fu. _ and investigate algorithms. Yes.

*The Chair. Thank you. I am sorry. I am way over time.

*Ms. Fu. Thank you.

*The Chair. I am going you to finish in writing and the other two, if you would respond to my question in writing, I would appreciate that.

I yield to the Ranking Member, Mr. Pallone, for five minutes.

*Mr. Pallone. Thank you, Madam Chair.

I have a question for each of you and so I am going to try to limit each of you to about a minute and a half so I can get to them.

The first is of Mr. Khan and it deals with our efforts on the Committee to pass national data privacy legislation. How does the rapid growth of AI impact the urgency of Congress adopting strong comprehensive federal data privacy legislation that implements clear rules around data minimization and algorithmic accountability?

*Mr. Khan. Ranking Member, thank you for the question, and it's an incredibly important issue.

First, I want to note that the President supports bipartisan federal data privacy legislation. So we think it's a critical issue that we need to address and welcome opportunities to work with you on any technical assistance on that issue.

I agree with you, the AI kind of poses a number of new concerns in the privacy space. Obviously, we have these very advanced models that are ingesting very large amounts of data and that are kind of becoming encoded in those models and then there is a risk that they will be then able to output kind of personal data.

And so there are a number of efforts that the department is undertaking to kind of address some of these issues. Just two days ago the Department issued guidance via NIST on differential privacy, which is essentially one of many privacy enhancing technologies. We are also planning to work with DOE

on the establishments of testing environments to further test additional privacy enhancing technologies.

So we see kind of a role for legislation, but also work on technical approaches that will help us address the unique issues relating to AI and the intersection with privacy.

*Mr. Pallone. Thank you. And this, Dr. Tripathi, I wanted to ask you about medical data, which is central to the use of AI, but also valued by companies offering health related services and products.

As patients' highly sensitive medical data is used to train health care related AI Systems and is shared with AI systems to diagnose and treat patients, protecting people's privacy becomes even more important, and I am concerned about expanded use of AI.

What safeguards should be in place to protect the privacy and security patient's health information?

*Dr. Tripathi. Yes. Thank you for the question. I certainly want to begin by stressing the importance of privacy and medical record information, and that's one of our top priorities and always has been at the Department.

I want to reiterate what Mr. Khan had said about the President's support for bipartisan legislation related to protection of data, all personal data, especially for kids.

AI certainly poses a new set of challenges because so much

information related to our health actually lives outside of HIPAA now. More and more that lives outside of those HIPAA protections. And AI poses additional challenges now because of, you know, a number of different factors.

One is the ability to use algorithms and this kind of computing capability to pick you out of a crowd, essentially, in ways that were not possible before, literally in terms of facial recognition technology, as well as figuratively, in terms of identifying individuals or reidentifying individuals in ways that we may not have expected in the, you know, from different databases and bring them together, which is the importance of the differential privacy kinds of approaches that Mr. Khan referred to.

The second is the use of these tools creating unexpected kinds of, you know, sort of matching of data in ways that individuals might find surprising. And the third, is, you know, related to the, you know, the computing power and the ability of that information to be able create incentives for being data greedy.

And so there are many more incentives now for developers of AI to want more and more data than existed before because they're able to do more things with it.

So all are challenges that have existed for a while, but AI, the gusher of AI technologies is now sort of putting a

premium on that.

I will say, you know, as it relates to medical information _

*Mr. Pallone. I am going to have to cut you off, otherwise I won't get to Ms. Fu.

*Dr. Tripathi. Thank you.

*Mr. Pallone. With 45 seconds, how are you working to implement the recent executive order to prevent cybersecurity biosecurity risk?

*Ms. Fu. We're working very closely. As I mentioned earlier, our Office of Cybersecurity and Energy Security and Emergency Response is working with utilities very closely.

They're already evaluating where the potential attack vectors may be and working to figure how to harden our electric grid from those cyberattacks, but I just wanted to follow-up very quickly on the health data question.

*Mr. Pallone. You've got ten seconds.

*Ms. Fu. One of the big partnerships that we have is actually with NIH, and we also have one with the VA about how we develop secure enclaves to deal with health data at Oak Ridge National Lab.

*Mr. Pallone. Thank you.

Thank you, Madam Chair.

*The Chair. The gentleman yields back.

The Chair recognizes Mr. Burgess from Texas for five minutes.

*Mr. Burgess. And thank you, Chair.

Dr. Tripathi, I actually wasn't going to bring it up in this hearing, but you provoked me when you brought up provider wellbeing and physician burnout.

I have had lengthy discussions with the Surgeon General about this and I don't know if it takes artificial intelligence or not, but here is the equation.

You worked your doctors and nurses during the pandemic literally to the bone, and then you turn around and say, but we don't really value what you do and the way you signal that is through the physician's fee schedule at the Center For Medicare and Medicaid Services.

So if I could ask you to take a message back to the agency, you have got to pay attention to this. If you are concerned about physician burnout and retaining people in the clinical settings, you are going to have to stop, year after year with the erosion of reimbursement because, in today's inflationary environment, literally doctors and nurses just simply can't keep up with their practices.

Again, doesn't take artificial intelligence, this is just kind of common sense, but I felt obligated to bring that up. So if you would carry that message back to Director Brooks-

LaSure and Secretary Becerra.

*Dr. Tripathi. Yes.

*Mr. Burgess. And you are to add to that if you have something you wanted to say?

*Dr. Tripathi. Yep. We'll take that back. Thank you.

*Mr. Burgess. Okay. Thank you. Now within HHS itself, Director Tripathi, they have a history of taking actions to regulate, prioritize, distribute recommendations.

How are the agencies, specifically your agency, coordinating and collaborating with private industry outside groups and other governments when developing and regulating AI in health care?

*Dr. Tripathi. Yes. Thank you for the question.

We have a number avenues for doing that. One is we have a very active federal advisory committee, the Health IT Advisory Committee, which represents multiple stakeholders.

They meet on a very regular basis and we rely on them, lean on them for industry input from stakeholders, providers, vendors, all across the spectrum. So that's one avenue that, you know, that we've used to get consistent and sort of ongoing leading-edge information from the ground.

The second is we've been working with different collaborative, you know, industry collaborations that have brought together different types of stakeholders.

So for example, CHAI, the Coalition For Health AI, which brings together large tech vendors, provider organizations, and others. We are observers there along with some other federal agency partners, and we've taken some very good input from them as well.

*Mr. Burgess. But I guess the concern there is with the executive order on artificial intelligence to suppress that activity or suppress development in that realm that would be a concern as an individual I have in that space.

Let me just ask you. As this Committee was really instrumental in developing and passing the 21st Century Cures Act _

*Dr. Tripathi. And thank you for that.

*Mr. Burgess. It really was, when you look back at it, it is a master course in legislation and how you develop the concept and collect the data and then bring it forward in a rather comprehensive legislative package.

One of the titles dealt with interoperability in health care and yet, your office has been tasked with writing the rules on the implementation of that.

I do feel like I need to point out that that bill was signed by President Obama in December of 2016. So how are we coming with that?

*Dr. Tripathi. Yes. Thank you for the question. I agree

it's been a long time, but we are making tremendous progress and we are putting the final touches on a number of the provisions.

When we came into Office, we put into effect the rule that implemented certain components of it, so standards, the requirement for FIRE APIs, standardized APIs, that went into effect the last day of December of 2022, all electronic health record vendors were required to support and make available to their customers the standard APIs called for in the 21st Century Cures Act.

In the rule that we released this morning, HTI-1, we are requiring the USCDI, US Core Data for Interoperability, minimum data set standards that were also called for in the 21st Century Cures Act.

We have released the last pieces of the information blocking provisions, namely OIG, the Office of Inspector General has finalized and now is doing enforcement of the information blocking pieces of the enforcement.

*Mr. Burgess. Let me _

*Dr. Tripathi. Yep.

*Mr. Burgess. I will just stop you there because I am going to run out of time and I do want to just an observation also, having visited the Los Alamos National Lab, now it has been almost 20 years ago, but terribly impressive what they

could do with quantum computing.

I don't even know how much of that classified and what I could talk about at an open hearing, but I was concerned during the pandemic that there wasn't more utilization of that type of computer capacity to help develop the plans for dealing with the pandemic to try to peek into the future, if you will.

Do you think we have that capability?

*Dr. Tripathi. Well, we don't have it off the shelf, but I think that's a, you know, a lot of the work that we're doing ahead, because we agree you, we need to, as a whole part of the data modernization initiative, is looking at leading edge technologies, looking at modernizing all of our approaches as it relates to public health.

*Mr. Burgess. Thank you. I will have some questions for the record. I will yield back.

*Dr. Tripathi. Thank you.

*The Chair. The gentleman yields back. The Chair recognizes, for five minutes, Ms. Eshoo from California.

*Ms. Eshoo. I want to thank you, Chairwoman Rodgers, and our ranking member for holding this very important hearing.

And to the witnesses, I think you have given highly instructive testimony today. So thank you.

I think your testimony has made clear that AI can provide tremendous benefits to society. It can help networks respond

to natural disasters, protect our cybersecurity, and very importantly, help find novel medical treatments and so much more.

AI also presents peril. The unsafe development and use of AI can threaten our national security, be used to turbocharge cyberattacks, or develop dangerous bioweapons. It can also exacerbate existing inequities in our society or fuel misinformation.

One thing we know for sure, and that is that the resources needed to develop AI, good data, computing power, and people are expensive. And today, they are mostly held in the hands of a few large technology companies.

This concentration means that most of the talent in America is prevented from participating in AI R&D. This reduces competition, in my view, limits the boundaries of innovation and hampers our ability to develop safe and trustworthy AI.

That is why I have introduced the Create AI Act, which is bipartisan, bicameral legislation to fully authorize the national AI research resource and provide these resources to all sectors of our society, including small businesses, start-ups, the medical community, academia, nonprofits, and the public sector.

And I am very pleased that that is mirrored in the,

president's executive order. I am going to submit questions to each of you, in writing, but what I want to go to today with my questions is to Mr. Khan.

I spent almost a decade on the House Intelligence Committee and I have concerns about terrorists using AI to create novel pathogens and bioweapons, which is why I have introduced The Artificial Intelligence and Biosecurity Risk Assessment Act, with Congressman Crenshaw.

It would require the Administration for Strategic Preparedness and Response, ASPR, to monitor and report on technical advancements in AI and how it can be used to develop novel pathogens.

President Biden shared these concerns in his Executive order. He directed Commerce to use the Defense Production Act to require companies developing foundation models to provide information on the development and training of these models.

So Mr. Khan, are companies prepared to conduct the redlining for biosecurity risks and how can Congress ensure they are? What would it require for the government to be able to properly assess the results of those red teaming exercises?

*Mr. Khan. Thank you, Congresswoman.

This is an incredibly important issue and very top of mind for us, specifically kind of the intersection of AI and biosecurity and the ways in which AI could enhance bad actors'

ability to abuse biotechnology.

So we have a number of efforts in the Department that are focused in this area. One, as you note, is kind of the disclosures under the Defense Production Act, which will ask AI developers about red teaming efforts in areas of concern, such as the efforts to red team, their models for capabilities that could present biosecurity risks.

So that's one key effort that we're undertaking. Also within NIST, through the AI Safety Institute, one of the core efforts that we expect to go through in the following year will be to kind of better characterize advanced, or I should say, issue guidance on how to do capability evaluations and red team models to kind of check whether the advanced AI models do have the capabilities that you're describing.

And I think that effort is one that we're going to have to work very carefully with kind of the wider set of stakeholders. We're launching a consortium, as I noted, where industry academia and others can come together to really kind of bring the expertise of the nation to bear to address this very critical issue.

So thank you.

*Ms. Eshoo. Thank you. Thank you to each one of you.

*The Chair. The gentlelady yields back.

The Chair yields five minutes to the gentleman from Ohio,

Mr. Latta.

*Mr. Latta. Well, thank you, Madam Chair, and thank you very much for holding the subcommittee hearings that we have had over the last several weeks to discuss AI.

It is really important because one of the things we have found out during these subcommittee hearings that no one size fits all approach to regulating this technology and there shouldn't be a one size fits all.

Mr. Khan, the Department of Commerce is tapping the National Telecommunications and Information Administration to play an important role in developing artificial intelligence policy.

NTIA is already actively participating in discussion with its requests for comments on AI accountability. Would you outline what this AI policy role for NITA will look like in the coming months?

*Mr. Khan. Congressman. Yeah, thank you very much for that question and happy to kind of outline a couple of the core efforts that NTIA will be undertaking.

So for one, you mentioned have the work on AI accountability. We've already had, over the last year, a robust amount of stakeholder engagement, including a request for information and we are planning, in early 2024, to issue a report on AI accountability.

We expect it to address issues such as kind of guidelines for audits, how to think about information disclosures about liability, what kind of investments do we need to better red team models, and kind of issues such as that.

So that's one of the efforts, and under the President's executive order on AI from October, another effort that NTIA we'll be undertaking will be, as I mentioned in my testimony, kind of a request for information and then a report on widely available model weights or open source.

We see this as kind of one of the very challenging policy issues that has come up in AI. As these models get more capable as, you know, Congresswoman Eshoo noted, you know, one of the examples is that AI may, supercharge capabilities related to biosecurity.

There's other areas such as cybersecurity, et cetera. So how do we balance those risks of those models if the actual models are widely available and published with, of course, the immense benefits that we get from openness for innovation for a competition?

And so we really want to try to get robust stakeholder feedback in the coming year on that issue, then issue a report on that.

*Mr. Latta. Let me just ask because I know my time's limited here. But, one of the questions also was is that when

you are dealing when working with industry out there, when you are looking at the report, you know, you want to encourage the safety without jeopardizing and harming innovation out there.

Is that some of the areas that you will be looking at when you are talking with industry?

*Mr. Khan. Yeah, Congressman. Yeah. Thank you for that question. Yeah. It's absolutely our approach to kind of figure out how we can thread the needle and really address kind of the security elements of the issue while still promoting our innovation ecosystem, and, of course, you know, the openness of our economy has been, so essential to kind of American leadership.

And so I think we're really looking for kind of robust stakeholder feedback to figure out how to approach this issue.

*Mr. Latta. Well, thank you.

Dr. Tripathi, one of most rewarding parts of serving on this Committee is we have always had a great ability to look over the horizon in five to ten years because we see the innovators and the entrepreneurs coming before us.

In health care we have seen breakthroughs in treatment like drugs for Alzheimer's that can save patients from previously incurable diseases.

In 2021, over a 100 drug and biologic applications at FDA included AI research. How will the AI increase the development

of these new and innovative medicines?

*Dr. Tripathi. Yes. Thank you for the question, Representative.

And I think it's, you know, we're really at the beginning of just thinking about that. So anything we say now I know is going to be obsolete three years from now, but let me just, you know, think about that.

I mean, one of the ways that, you know, that we're already seeing, for example, is in the area of protein folding. So protein folding is a, you know, very important part of being able to identify diseases as well identify cures.

And it's a very laborious process right now. So there's something like, you know, almost 300 million proteins that have been identified and through the manual that we've had today, something like a 189, 190,000 of them have actually been mapped and modeled, right?

So 300 million versus 190,000. And then you have an initiative like AlphaFold, which is an organization that came out of, you know, Google DeepMind. Just as one example, they have actually developed models on 200 million of those proteins that now have to have human, you know, oversight and human verification, but it's a tremendous leap forward in, you know, the ability to model these things and reduce the time to, you know, from conception to being able to model something that's

going to turn into greater discoveries for drug development.

That's just one example, I think, of the kinds of, acceleration that we'll be able to see.

*Mr. Latta. Well, thank you very much.

Madame Chair, my time has expired and I will submit the rest of my questions to the witnesses. Thank you very much.

*The Chair. The gentleman yields back. The Chair recognizes Ms. DeGette for five minutes.

*Ms. DeGette. Thank you, Madam Chair. And I want to thank Congressman Burgess for getting the update on implementation of 21st Century Cures, which, of course, was the bill Fred Upton and I teamed up on some years ago.

And, Dr. Tripathi, we, Fred and I worked on Cures 2.0 before he retired and I am now restarting that effort with Congressman Bucshon. So if there are tweaks or adjustments we need to make, and I will say this to everybody, please let us know as we move forward in developing this new legislation.

*Dr. Tripathi. We'd be very happy to provide technical assistance on that.

*Ms. DeGette. Thank you very much. But now I am the ranking Democrat on the Energy Subcommittee, so I want to spend the bulk of my questions today talking about the energy issues, and I want to talk about the consumption of energy by AI, because AI models process huge amounts of data, as we just

heard from Dr. Tripathi.

They process huge amounts of data to complete various tasks. So as the models become more sophisticated, they require more and more computing power, which uses more energy. AI is already a critical tool deployed in many situations, but we must ensure these tools are as energy efficient as possible to maximize their benefits and to reduce the strain on our energy supply.

So, Ms. Fu, first of all, congratulations on your announcement today. Your testimony mentions DOE's leadership when it comes to creating more energy efficient computers at scale. What work has DOE done to make the chips that AI relies on more energy efficient?

*Ms. Fu. Thank you for that question. And energy efficiency is not an afterthought at DOE, especially when it comes to our high-performance computers.

We absolutely cannot have computers that are too expensive to operate or that overburden our power grid and make it unreliable. And this is somewhere where DOE has been investing for decades.

Over the last 20 years, we've been able to enable an exponential increase in energy efficiency 200 times more efficient.

So 20 years ago, the fastest supercomputer at the time,

people thought that they might need to site a nuclear plan alongside that supercomputer. We were able to set very, very, aspirational goals for what that envelope should be like and drive in partnership with industry the energy efficiency, improvements.

And so our Frontier exascale supercomputer is 200 times more efficient than the first one that we built 20 years ago, not 200 years ago. And there's a huge opportunity for industry partnership here.

*Ms. DeGette. And that is my next question. I understand that you are working closely with the private sector, when it builds the new chips, and many of the technical advancements to enable the efficient computing can be adapted and applied at smaller scales.

So can you talk a little bit about those innovations?

*Ms. Fu. That's exactly right. Through our exascale computing program, we partnered very, very closely with leading chip companies. And in fact, many of the critical components that are in today's leading-edge chips that are powering today's AI Revolution were born out of those codesign and co-development partnerships that we've had.

*Ms. DeGette. Thank you. I want to shift a little bit because in your testimony, you also talked about how we can develop unique AI systems that can be actually leveraged to

enhance national security.

I wonder if you can talk a little bit about that because it's so important, not that we just protect it, but that we advance it.

*Ms. Fu. That's exactly right. I think one of the key questions here, you know, people often say, well, the private sector is leading here. We should just let them continue to do all the things that they're doing, and that's incredibly important and a real marker of the vibrancy of our innovation ecosystem.

But there are specific things that DOE really needs to focus on to have an AI capability, and that really is three things. The first is on specialized data. The second is on trust, and the third is on security.

So on specialized data, we have thousands of more times scientific data than the largest AI models are trained on. So we really need to be able to leverage that for the kinds of mission set that we have.

The second is around trust and reliability. We talked about black boxes before. The important thing is not just to get the right answer from a model, but to understand how they got there, and that's incredibly important for mission critical missions that we have at DOE.

And the third is on security. And so there are going to

be applications in national security where we're going to need these models in classified spaces. And so that's exactly one of the things that we're really focused on and developing throughout the AIEO.

*Ms. DeGette. Great. Thank you so much, and thanks to all the whole panel. I yield back.

*The Chair. The gentlelady yields back.

The Chair recognizes gentleman from Kentucky, Mr. Guthrie, for five minutes.

*Mr. Guthrie. Thank you. I thank the Chair for yielding and my first question is to Mr. Khan.

You know, China dominates global hardware and software supply for supply chains for AI. Could you talk more about just how reliant we are on China? And with that in mind, how does integration of AI across our economy make us more vulnerable to adversaries like China?

*Mr. Khan. Congressman, yeah, thank you for that question. Incredibly important issue.

So first, I kind of want to just highlight, you know, the Department has kind of been at the forefront of some of these issues, particularly, on the export control side where in October this year we recently updated our rules, kind of tightening our restrictions and further closing avenues of circumvention for China to gain access to the most advanced

semiconductors and the manufacturing equipment needed to produce those semiconductors.

So that's a really kind of critical element of our strategy that we've implemented on hardware side that is, obviously, quite relevant for AI, and kind of, more broadly speaking, of course, you know, the Administration's focus is absolutely on finding ways to further de-risk kind of our ties with China.

*Mr. Guthrie. What would you expect from Congress to help you mitigate these issues? What would you like to see from congress?

*Mr. Khan. Thank you, congressman. Yeah. We're happy to work with you on kind of any legislation on this and provide technical assistance as needed. Yeah.

*Mr. Guthrie. Okay. Thank you.

Dr. Tripathi, the executive order for AI requires HHS to issue a strategy to determine whether AI and health care maintains appropriate levels of quality in addition to ensuring providers who receive funding comply with nondiscrimination requirements using utilizing AI.

How would you define quality and then what type of AI do you believe can be most informative in health care?

*Dr. Tripathi. Thank you for the question, Representative.

Yeah, we go back to the fundamental principles of, you know, we call it FAVES, fairness, appropriateness, validity, effectiveness, and safety as a core construct, it's very similar to what you see in the, you know, in the AI framework, the NIST AI framework and other frameworks that are available across industry.

And so we, you know, go back to principles like that. And the idea of quality is really based on this idea of assurance, of how do you have, you know, sort of test beds, infrastructure, and alignment with the Safety Institute, for example, that Mr. Khan described, that'll be more of a US government-wide approach, and we're going to be looking at it from a department perspective with a deliverable in April to develop that strategy and then, you know, think about how we can build both infrastructure as well as policy infrastructure and technical infrastructure to provide that kind of, you know, sort of assessment and evaluation of products against those principles.

*Mr. Guthrie. Okay. Thanks. So how do you intend on working with your private sector counterparts and those with the most expertise in this field to ensure there are appropriate guardrails in place to check on potential bias without impeding innovation?

*Dr. Tripathi. Yes. Very important question. So we have

to work with industry on this. We absolutely have to work with industry on this.

So couple things. One is, I think, that as we go into and I don't want to get out ahead of the process here, but as we go into developing that assurance strategy, for example, I think one of the concepts we'll look at is federation, for example, of assurance labs, you know, as an idea that I think that we've been looking at, and that would be, you know, sort of a public-private collaboration, much in the same way that my agency certifies electronic health records, leveraging private sector organizations that take requirements from my agency, but they do the certification. They do the actual work of doing the certification.

*Mr. Guthrie. Okay. Thanks. So you had mentioned electronic health records. And one of the keys of this Committee is data privacy and the most private of all data is your personal health information.

How do you think this should be protected?

*Dr. Tripathi. Yes. Couldn't agree more on that.

So we work very hard to ensure that the technology supports the ability of providers to be able to have, you know, as much security and privacy protections as possible.

So our certification requirements have a number of different elements related to the protection of information,

from everything from encryption to access controls.

In the most recent rule that we just issued, for example, we added an additional requirement for a patient to be able to request that the API that's making their information available be shut off within an hour of their request.

So that's just one example of the kinds of things that we're putting into place.

*Mr. Guthrie. Okay. Thanks. So Ms. Fu, this weekend my area had tornadoes. Like we had exactly the same weekend two years before. Fortunately for us, it didn't have the damage it had two years before, but, unfortunately, for my neighbors to the south in Tennessee.

So how can AI help with resiliency? I am sorry, I only have about eight, ten seconds left. So if you give a quick answer, resiliency?

*Ms. Fu. It can. And we and we are working on a number of tools that can help either from emergency response, helping with planning, for example, for forest fires or even on emergency response.

So I don't want to take up too much time, but I can follow-up with additional.

*Mr. Guthrie. We will have you follow-up. My time is expired and I yield back.

*Ms. Fu. Thank you.

*The Chair. The gentleman yields back. The Chair recognizes, for five minutes, Ms. Matsui.

*Ms. Matsui. Thank you very much, Madam Chair, and thank you witnesses. This has been a great session here.

The CHIPS Act addresses the importance in ensuring we take back leadership of the semiconductor industry, not only for national security purposes, but also for economic development and innovation.

It does have implications for near-term military readiness, but also our ability to lead in technology of the future. AI is no exception.

Mr. Khan, can you discuss the interaction between American leadership and semiconductor technology and AI?

*Mr. Khan. Thank you, Congresswoman. It's an incredibly important issue.

So just kind of step back, AI, what it essentially is is taking these kind of mathematical algorithms, ingesting lots of data with lots of computing power to kind of then develop those models using that data.

That computing power obviously comes from semiconductors, and the semiconductors that are used to develop and deploy AI are essentially some of the most advanced semiconductors in the world.

Unfortunately, we don't really produce these

semiconductors in the United States today.

*Ms. Matsui. Okay.

*Mr. Khan. And so the CHIPS Act _ please.

*Ms. Matsui. Right. Well, so do you believe implementing the CHIPS Act quickly can give a leg up in the global AI race?

*Mr. Khan. Thank you. I think the answer is, yes.

*Ms. Matsui. Okay.

*Mr. Khan. So as kind of the CHIPS Office and the Secretary have noted, one aspect of our strategy under the CHIPS Act is to onshore leading-edge production.

That leading-edge production will allow us to create, in the United States, the advanced semiconductors we need to develop and deploy AI. So I think he answer is, yes.

*Ms. Matsui. Okay. Thank you very much.

Dr. Tripathi, I have long worked to improve access to elect electronic health records, especially for behavioral health care providers to improve integration of care.

I have been excited ready to hear about the ways AI can improve the efficiency of HER's and even support clinical decision making, however, I think it is essential that patients and providers understand these tools.

I am interested in your testimony about the algorithmic transparency provisions in the health data technology and interoperability proposed rule.

Dr. Tripathi, how will ONC enforce these transparency requirements if third-party companies, not health IT vendors, are the developers of are the predictive AI?

*Dr. Tripathi. Yes. Thank you for the question, Representative.

So we worry about this every single day and have spent a lot time thinking about what we think is a thoughtful approach that balances the need for innovation and the opportunity to be able to have these kinds of technologies in the electronic health record system, which is the best place for it because that's where it's in the workflows.

It's available to patients through patient portals, for example, if that's the, you know, if that's the technology that allows, but it's available there for providers to be able to use.

So what we've done with our regulation is require that the capabilities are there to make that information available, that nutrition label kind of information. If you're the electronic health record vendor, you're required to fill out the nutrition label for things that you supply.

*Ms. Matsui. Okay.

*Dr. Tripathi. But you also need to create that ability for a third party to populate that information, either themselves or through the provider. Now, that's not a

requirement. We're not regulating it, but we believe that there will be a race to the top.

*Ms. Matsui. And so if third parties refuse to share the information on AI development with health IT vendors what tools would ONC have at its disposal if that happens?

*Dr. Tripathi. Right. Well, what we want is for the market incentives to make that clear and to expose the fact that you've got certain vendors who are not making that information available.

And we believe that providers will then have the ability to say, well, I've got some AI that has that information available to me and here's an AI tool _

*Ms. Matsui. And you think that's _

*Dr. Tripathi. _ that doesn't have that information and that will inject appropriate caution on their side to decide whether or not to use that tool.

*Ms. Matsui. Okay. I will have to follow-up with you on that, but Dr. Tripathi, in your testimony you also mentioned the risk of predictive AI models propagating bias or making incorrect conclusions based on the quality of the data used to train the model.

Patients and providers must be able to trust these models will improve and not worsen existing health disparities. Dr. Tripathi, can you touch on ONC's work to create a

representative dataset to train AI models?

*Dr. Tripathi. Yes. Data quality is a huge issue here. I think as we heard in the subcommittee meeting a couple of weeks ago from Dr. _

*Ms. Matsui. Right.

*Dr. Tripathi. _ Dr. Newman Toker, the clinical data, which is a part of all of the data, is probably the worst quality in a way or the, you know, sort of the biggest issue with respect to the quality of the of the algorithms.

So we are putting in place standards and increasing those standards. The US Core Data for Interoperability is a set of standards that are required to be supported across the industry, and more and more compliance with that will generate higher quality data to be made available for better algorithms.

*Ms. Matsui. Thank you.

Ms. Fu, I want to ask you some questions but I run out of time, but I will submit some. Okay? Thank you very much. I yield back.

*The Chair. The gentlelady yields back.

The Chair recognizes Mr. Griffith for five minutes.

*Mr. Griffith. Thank you very much.

Director Fu, you mentioned just a little bit ago that your office was working with grid operators and utilities on AI applications for the grid.

Is your office using and/or soliciting power generators on AI applications that could cycle fossil fuel power plants more efficiently and in turn extend the power plant's life?

*Ms. Fu. Certainly. This is a really important issue, being able to ensure energy security, being able to assure low-cost energy and also reliability. These are all broad issues that are really important for the grid.

On the specific question of how we're trying to extend types of energy, I will get back to you on that.

*Mr. Griffith. Well, I would appreciate it because I think it's very important because I think that because it costs so much to build a power plant that the longer we can get useful energy out of that power plant, it's better for all concerned. And you would agree with that, would you not?

*Ms. Fu. It's important to make sure that the investments that are going into the grid are put to best use.

*Mr. Griffith. Absolutely. All right. So that was my highbrow question.

Mr. Khan, I am going to go lowbrow on you. We got a lot of folks up here are going to ask you big picture questions and I am sitting here listening to it, and they are all fabulous, and we have concerns about AI, and we should.

And then I realized that, you know, maybe I should ask the lowbrow question, and that is on my phone I have had right now

I only think I have one AI application or one company, and that is my Merlin Bird Identification App. And both sound and photo ID on that.

And previously, I had the Mitch Waite Group Photo Sleuth, which used AI to identify photos of birds on my phone to help me figure what a species is.

Here is the question. How do I, as a consumer, know that they aren't collecting other data? I know they are collecting the bird sounds. They are collecting all sounds. It records everything that is going on when I turn it on around me to identify the bird and my location.

But how do I they are not collecting other pieces of information while they are collecting that? And what can we do? I am assuming we don't at this point. Now, I rec trust Cornell. I am not beating on Cornell's Merlin app. It is fabulous. I recommend it to anybody that is interested at all.

But that being said, what standards are we going to set up to make sure that when you are _ we are not talking about the power plant. We are not talking about the medical health records. We are talking about something people carry around with them and use daily that they are carrying on their phone.

What kind of standards can we set, and are we even looking at that yet? And I know it is a big task. So I am not saying it should already done, but I am saying, have you all even

thought about it yet and are you looking in that direction?

*Mr. Khan. Congressman, yeah. It's an incredibly important issue. I mean, I just want to highlight again, of course, companies should be judicious about which data is being used to train their model to ensure that it doesn't kind of create harmful capabilities of the model.

One, of course, that we discussed is bias, but there are a number of other ways in which, you know, harmful training data is basically reflected in the outputs of the model. And so I think we absolutely do need to kind of consider standards and best practices to ensure the right data is used to train these models.

I think another element, just going back to the issue of privacy, of course, federal data privacy, legislation, I think will be critical here, to ensure, that personal data is appropriately protected.

So those are a couple of the efforts that I think we should undertake. And I would also just like to highlight. Also, we've been working kind of with our partners and allies on this issue as well. The Department has worked with the Department of State and the G7 to create a developer's code of conduct.

One of the issues that we did agree when we published the code of conduct is to be kind of very careful about input data

as well. So I think this is an active conversation that we need to kind of continue to focus on.

*Mr. Griffith. And I would agree and it both recognizes, in that low brow question, it recognizes both that we have some concerns that we should have as overseeing committee on AI and it also shows the great potential because what they're to do is that in the next few years we're tracking the bird movements, how the species are moving as a result of climate changes or maybe they have been there all along and we just didn't realize it because it's hard to get.

And now instead of, you know, relying on notes from an individual, we have got the AI that says, yep, that person actually did see the Saw-whet owl in Roanoke County on a particular day at a particular time of the year and we can track that. It has got great potential. It also has great risk.

I yield back.

*The Chair. The gentleman yields back.

The Chair recognizes Ms. Castor for five minutes.

*Ms. Castor. Well, thank you, Chair Rodgers, for calling this very important hearing on artificial intelligence and thank you to our witnesses. Thank you for your work to ensure that America remains a world leader in innovation.

Like most people, I am very interested in the efficiencies

and advances that artificial intelligence can bring to our lives. The technological revolution driven by the internet has also, on the other hand, magnified a lot of societal harms.

One of my top priorities, when addressing evolving technologies, has been to make sure that we protect the privacy and the personal autonomy of Americans, especially our children.

A lot of folks do not appreciate the fact that when you are online that you are often subject to manipulative and deceptive algorithms that online technology can provide just incredible learning opportunities, but too often, the online world, can become full of risks and sometimes a predatory place, especially for our youth.

And for many years, I have raised the alarm about how children, about the hidden practices of the big tech platforms. The harm to kids and young people. How they use the manipulative designs to addict kids to their platforms, to their products, they funnel them towards exploitive or harmful content.

What is not so transparent to the average person is the massive amounts of data that is collected, their personal information. Some of it is incredibly sensitive and they gather it to fuel the algorithms and often, they put, you know, there is a story that comes out just about every day, how they

put their profits over the best interest of our kids.

So we have talked a little bit about today, Mr. Khan, but what can you say to folks about the massive amounts of personal data collection that we are all subject to and how that is feeding in to train the AI models?

Just talk about the data collection and how that, for good or for bad, goes into building the AI bottles?

*Mr. Khan. Congresswoman, yeah, thank you for, kind of pointing out that issue.

So yeah, I have two little kids who are not old enough to use social media yet, but I hope we solve this problem by the time that they are.

Yeah. It's an incredibly concerning problem. I think as Dr. Tripathi noted, you know, one of the core elements of data privacy legislation should be to focus on the issues that are impacting children in particular and the use of their personal data.

We see that, I think, as one of the really major focuses here and that's part of the solution. There's quite a bit other work we can do, where, you know, data gets collected in some way and is used to train an AI model.

One of techniques I talked about earlier, for example, differential privacy, you know, even after _ if data has inappropriately made it into a model or it was trained, if that

model was trained on that data, how can we make sure that those models still don't output personal data as well?

And so one of the techniques, for example, is to kind of introduce noise into the outputs of the model, so that even if it has personal data kind of encoded within, it doesn't get out.

And so I think there's, kind of across the life cycle of AI, we're really going to have to pursue, you know, both legislation, but also technical solutions to solve this problem and I think that's a real focus for us.

*Ms. Castor. So talk about the scale of the data that is being collected and how AI developers, how are they going tapping that data? Are they going to data brokers? Or what is the ecosystem of data collection and are they, if you're developing a certain model are you focused on certain datasets? How does that work?

*Mr. Khan. It's a great question. Yeah. I mean, I don't know if I'll be able to quantify that for you here. I am happy to kind of get back to you on the particulars.

Obviously, you know, with kids, for example, using social media, you know, the number of hours in a day. I mean, there's the opportunity for lots of data to kind of be collected, but happy to get back to you on kind of some of the particulars of how this is happening.

*Ms. Castor. Can you talk about it from a health perspective?

*Dr. Tripathi. Yes. Happy to. I think one of the things that it's important for us to recognize, as I was describing before, is that so much of our information, that is actually health information, lives outside of HIPAA now because of the day-to-day activities we have on our phones and the fact we're taking this information from our electronic health records, let's say, that might fall outside of HIPAA, but also just our day-to-day activities and kind of the breadcrumbs of those activities.

And right now, outside of HIPAA, the only real protections across the country are FTC Section 5. And so there is a responsibility on individuals in our country to look at the privacy statement and make sure that they're comfortable with the privacy statement.

And I know for all of us, as a practical matter, you know, we download an app and we don't _

*Ms. Castor. It's not easy.

*Dr. Tripathi. But that is the, you know, the sole assurance that we have right now is that that privacy statement tells you what the vendor's going to do with the information.

*Ms. Castor. I think that highlights that we have work to do on it. Thank you, Madam Chair, I yield.

*The Chair. The gentlelady yields.

The Chair recognizes Mr. Bilirakis for five minutes.

*Mr. Bilirakis. Thank you. Thank you, Madam Chair. I appreciate it.

Mr. Khan, I appreciate that the Administration is looking into AI. As chairman of the Innovation Data and Commerce Subcommittee, we spent a significant amount of time this year focused on data privacy.

I know we have been discussing this for quite a few minutes, but addressing the protection for children is one of the more difficult challenges, specifically, how to avoid collecting more information to identify a child.

The executive order certainly discusses testing of AI and providing safeguards, but I do have concerns over child sexual abuse material being categorized alongside misleading content as the latter is surely a more subjective term.

One of the clearest steps we can take is enacting a data privacy law. In terms of AI, I believe a lot of risks can be mitigated with a data privacy law and being clear how and what is collected, creating high barriers for the transfer of children's information.

This is imperative, when it comes to mobile devices and websites, that are collecting data on their behavior, their facial expressions and even their voices. How are, again, the

Secretary Raimondo and the President viewing the importance of a data privacy law getting done? And what is the most important aspect of that effort to them as it relates to AI?

*Mr. Khan. Congressman, appreciate that question. So, yeah, I would just reiterate, of course, you know, how essential it is that we have data privacy legislation that particularly, gets at this issue.

One of the efforts that the Department is undertaking as part of executing the President's executive order on AI is that the Department will be issuing guidelines for synthetic content authentication, and part of effort will also involve how to ensure that kind of we don't have, you know, abusive material, that is taken into the model or generated by the model.

And how to handle that issue in particular is, I think, something that we're going to be addressing under the executive order. Thank you.

*Mr. Bilirakis. Thank you, Dr. Tripathy, I appreciate that HHS has continued to work on adopting the broader use of predetermined change control plans. As the author of legislation in the House last Congress to authorize the use of PCCPs, I am interested in ensuring that innovators maintain the ability to use machine learning to improve their capabilities without getting bogged down by red tape at the FDA, especially when these devices aren't substantively changing their

capabilities.

How does HHS plan to continue to utilize PCCPs to allow this innovation to occur for the benefit of patients? What updates to the PCCP pathway would help ensure that the US maintains its leadership in medical innovation on the global scale?

*Dr. Tripathi. Yes. Thank you for that question.

So I think that I won't, you know, say at a high level. I'd definitely want to take back the specifics of that and get back to you from my FDA colleagues who are much more expert in this.

But in general the PCCP approach, I think as you know very well since you're very involved in it, is to provide that kind of flexibility, is to say we need a regulatory framework that allows for taking into account the dynamism of technology and really speaks to processes and approaches and trust in governance mechanisms to allow, you know, sort of innovation to happen within those kinds of parameters.

And I think working in that frame and working with our international partners assures that we'll get the kind of innovation that we're looking for. But I am happy to, you know, to work with you on getting more specifics on that for my FDA colleagues.

*Mr. Bilirakis. Please. Please. Yeah. We await that.

Mr. Khan, over one in four of my constituents are seniors. And as we know, seniors are one of the largest targets of robocalls, credit card scams, and an endless number of other online scams that in many cases leave people destitute.

Criminals have utilized AI voice technology to better mask themselves and fool more victims into being scammed, giving away their life savings are risking the safety of their loved ones.

Your testimony mentions the Administration's intention to launch a consortium of experts to advance its AI safety mission. To that end, how can we fight fire with fire and utilize AI technologies to enhance public safety by identifying these criminal activities and providing appropriate resources to law enforcement?

*Mr. Khan. Congressman, thank you. It's an incredibly important issue. One of the efforts that the Department is undertaking under the executive order, within the AI Safety Institute in partnership with kind of consortium experts, as you noted, is the Synthetic Content Authentication Initiative, which is essentially develop guidelines and technology for how to identify when content is AI generated, when it's made by humans, how to watermark AI-generated content, and I think that will be kind of a core, you know, foundational technical element that will help us then to better govern the technology

and kind of identify cases of misinformation. So that's a real core focus for us.

*Mr. Bilirakis. All right. Thank you very much. I yield back, Madam Chair.

*The Chair. The gentleman yields back.

The Chair recognizes Mr. Tonko for five minutes.

*Mr. Tonko. Oh, thank you, Madam Chair and to our ranking member, both thank you for hosting this important hearing.

To combat the worst effects of climate change we must make substantial progress transitioning to clean energy by the end of the decade.

AI has the potential to accelerate that transition and be a useful tool in our fight against climate change. So, Director Fu, your testimony describes AI tools that are already helping accelerate the energy transition and the deployment of clean energy.

Could you address how AI tools, excuse me, are being used today to accelerate the energy transition and deployment of clean energy?

*Ms. Fu. Thanks for that question and absolutely agree with the importance of this of this issue.

AI is absolutely important and a critical tool in the scientist's toolkit. And I think, across the department, we are looking at how we can use our large-scale compute, the

algorithms that we have, and the broad base of scientific experts at our national labs to apply to different kinds of clean energy deployment and development and research questions.

And I think one really good example is how we've been able to do that in fusion. So one of the key scientific conundrums is really how to ignite and control the fusion reaction. And what we've seen is we've been able to use AI to predict, quantitatively predict and learn from new experiments and to predict when ignition might actually happen.

And the to do that actually saves tremendous amounts of time, and also, the costs associated with we're actually doing testing. If you're able to simulate and use modeling, it actually saves you a lot of time when you're actually doing the experiments.

And so we've been able to see some really, really exciting advances coming out of our Lawrence Livermore National Lab in this space, but that's just one example among many.

*Mr. Tonko. Yeah. Are there other examples of AI support for the development of future energy solutions as just indicated with fusion? Are there others that you would share?

*Ms. Fu. Yes. Well, we talked a little bit in the testimony about how we're applying this with industry on offshore wind. We're also really looking at new materials, how we can use our computing and our ability to model the different

kinds of material properties to develop completely new things that are going to accelerate the development of technologies that we may not even know about yet.

*Mr. Tonko. Thank you. And AI clearly has an important role to play in our transition away from fossil fuels, but we need to consider the potential cybersecurity and reliability risk that AI could create as it becomes more heavily integrated in our energy sector.

So, Director, I know DOE is thinking about these risks and is working to make AI tools adopted by the energy sector safe and secure. How is your office supporting DOE's efforts to design secure AI tools that prevent new ways to attack the energy grid?

*Ms. Fu. That's right. There's a lot areas of research that really need to be developed. One is around attack detection and mitigation.

I was speaking a little bit earlier about how we already have a program to develop algorithms that can detect those attacks, those vectors of entry, and mitigate the potential damages from a cyberattack, and that includes, for example, having a hardware in the loop test bed.

So we use actual hardware that utilities are using in their systems and do all sorts of testing on them to make sure that they are able to be resilient to those potential attacks.

*Mr. Bilirakis. And, what is DOE doing to making certain that it develops scalable solutions that work for, say, microgrids or smaller grid operators, and not just the largest and most sophisticated energy companies?

*Ms. Fu. That's a really important question, and I think we are only as strong as a country as the weakest links here, and so that's why we need to work with all types of companies to ensure that the grid is hardened.

And I think one of the ways that we can scale here is through industry partnerships. By working to develop and codevelop kinds of solutions that big and small utilities can really use and scale.

*Mr. Tonko. Thank you. Well, AI is creating exciting opportunities to accelerate the energy transition and fight climate change and I am glad that DOE is exploring ways for AI tools to support the energy transition and has taken steps to identify and mitigate potential risks as AI becomes more widely adapted.

I also hope that we in Congress can work together to pass a national data privacy standard to ensure that AI development does not come at the cost of American safety and its privacy.

So with that, I thank you, Madam Chair, and yield back.

*The Chair. We are doing it. Thank you. The gentleman yields back.

The Chair recognizes Mr. Johnson for five minutes.

*Mr. Johnson. Thank you, Madam Chair.

And this first question is for the entire panel. Can you tell us how the lack of a national data privacy standard has impacted your work to advance AI in your federal agencies? Ms. Fu, let's go to you first.

*Ms. Fu. Sure. I recognize the importance of this issue. DOE doesn't have a regulatory role here, but one of the things that we're really doing, we talked a little bit about health earlier, we are developing some of the some of the technical tools that can be used to deal with privacy and trustworthy and responsible AI.

So two of our supercomputers, Frontier and Summit, can take advantage of a unique framework that we've actually developed that enables researchers to safely and securely process protected data at scale.

*Mr. Johnson. Okay.

*Ms. Fu. So we hope that we will be able to expand that.

*Mr. Johnson. Thank you. Mr. Khan? Commerce?

*Mr. Khan. Yeah. Congressman, I appreciate the question. So, yeah, I would say, kind of similar to my DOE colleague, here, Director Fu, you know, one of our core focuses, not just in the kind of privacy space but more broadly is, you know, particularly within NIST is to kind of really, around AI and

its connection to privacy, is really develop the measurement science, develop the technology that can serve as the technical foundation for any potential future regulation, so that regulation is smart.

So I think that's what we're really focused on as we're hoping to eventually get to a federal privacy law.

*Mr. Johnson. All right. Dr. Tripathi?

*Dr. Tripathi. Yes. I think one of the issues that affects the health care industry and health IT industry for, you know, for really for decades is the heterogeneity of privacy policies across the country and across jurisdictions.

And you start thinking about, you know, people move across state borders.

*Mr. Johnson. Right.

*Dr. Tripathi. People move across jurisdictions and having to figure out what are the privacy policies as I move from one to the other and the medical record sharing has been, you know, a significant barrier to being able to move forward to, you know, better interoperability.

*Mr. Johnson. Okay.

Mr. Khan, we have seen in the past the race to bring innovative technology to market. It is not uncommon for app developers to rush a program to market and then correct the flaws in real time.

I know because I am an IT guy and a software engineer and I know how the industry works with that. While AI apps can produce results way beyond what the human brain can perceive, right? It is ultimately based on the data and parameters of its training.

AI Apps can explain, for example, how they came to a certain conclusion. So it is vital that procedures are in place to assess whether an AI app will reliably perform its expected tasks.

Has the Commerce Department considered how to balance the need to bring innovation to market that uses AI quickly, while ensuring appropriate testing has been completed?

*Mr. Khan. Congressman, yeah, thank you for that question. So, the Commerce Department worked kind of very closely with the White House, with industry in securing voluntary commitments earlier this year from 15 leading AI companies.

And you know, a core element there was to kind of outline some of the commitments that companies could make on testing, evaluation, red teaming of models before they are deployed, for a wide range of capabilities of concern ranging from kind of national security related capabilities, more kind of emerging capabilities in the most advanced models.

*Mr. Johnson. Well, let talk about the national security

aspect of it a little bit because you mentioned that. There are varying degrees of risk associated with AI. I mean, we heard from an industry executive leader yesterday who basically confirmed you can't take human judgment out of the equation in many aspects, and that's part of the balancing in risk.

AI used in advanced weapon systems, for example, pose a much higher risk than AI used to predict text in an email. How is the Commerce Department taking into account these varying degrees of risk associated with AI? Because it can't be a one size fits all.

*Mr. Khan. Yeah. It's a great question. So on the specific use of kind of AI in military context, I would defer to my kind of Department of Defense colleagues who are not here with us today.

More broadly speaking, kind of the issue of kind of increasing autonomy of these systems is actually one of the kind of emerging areas that we want to better characterize through our work within NIST and the AI Safety Institute.

*Mr. Johnson. Okay.

*Mr. Khan. So I think it's a critical issue.

*Mr. Johnson. Is there a lot of collaboration going on with outside groups to address the risk factors?

*Mr. Khan. Absolutely. So as I mentioned, we're launching a consortium where NIST will have the ability to

partner with industry, civil society, nonprofits, academia, and we expect very wide participation.

We held a workshop very recently where the kind of the start of that collaboration has already begun.

*Mr. Johnson. Okay. Great. Madam chair, I yield back.

*The Chair. The gentleman yields back.

The Chair recognizes Mr. Cardenas for five minutes.

*Mr. Cardenas. Thank you, Madame Chairwoman Rodgers and also, I would like to thank the Ranking Member Pallone for holding this hearing. And I want to thank the witnesses here today for imparting your expertise and your opinions on the subjects that we are talking about today.

I am glad that closing out the year in this Committee with a focus on artificial intelligence, which is a powerful technology that will produce a lot of opportunity for the American people, but also present some new challenges as well.

We must ensure that we maintain our global leadership and technology while also protecting workers and human rights. Doing so will require consistent dialogue with the industry leaders, regulators, and elected officials here in Congress and also at the state level as well.

Last month the White House and the National Telecommunications and Information Administration, NTIA, released the National Spectrum Strategy, which referenced the

need for more research and development to encourage dynamic spectrum sharing.

Artificial intelligence will lead to this development of innovative spectrum sharing technologies and it will allow more efficient spectrum use.

Mr. Khan, how can private sector connectivity companies work with the federal government to ensure that AI is being leveraged to encourage dynamic spectrum sharing?

*Mr. Khan. Congressman, thank you for that question.

So, first, I would just say at the outset, you know, AI really has application in a wide variety of areas. I know we've talked with colleagues here about health care, energy. telecom, is yet another.

Yeah. We see an incredible opportunity here for innovation in this space with AI kind of playing an increasing role. As for kind of some of the, you know, specific detail, happy to follow-up with you with NTIA who is kind of studying this issue very carefully.

*Mr. Cardenas. Okay. Thank you.

President Biden's executive order on AI has directed the United States Patent and Trademark Office and United States Copyright Office to work together to issue recommendations to the President on potential executive actions relating to intellectual property and AI.

As we have seen this year, there are a lot of AI-related IP risks that come with use of technology.

Mr. Khan, can you speak to the main risks or priorities that the Department of Commerce, the Biden Administration, the USPTO are concerned about?

*Mr. Khan. Yeah. Absolutely. So yeah, copyright kind of comes into play in many different ways, kind of throughout the AI life cycle. One is kind of the very complex issue of the use of, you know, copyrighted information, that is used actually during the training and development of a model where I think, you know, this is an issue that I think, you know, the courts and Congress will need to kind of further consider, and, you know, this particular issue is something that we're thinking about.

And then, of course, also the issue of the AI model once it's trained. Many models have the ability to actually just reproduce content that is otherwise copyrighted.

And so how do we deal with that issue? What kind of technical solutions should companies be implementing that fine tune these models in a way that they, you know, if you query them to kind of output copyrighted data, how can you ensure that they don't do that inappropriately?

So I think those are all issues that are kind of under consideration. Now, we have, you know, kind of a roadmap for

kind of further feedback from stakeholders on this and we're not coming in with a particular answer, as yet, but hopefully more to come in the new year as we ultimately issue those recommendations.

*Mr. Cardenas. Thank you. Generative AI ingests massive amounts of data to produce outputs. In some cases, where these outputs are things like digital paintings or music, the result can closely resemble the original work of artists whose data these apps are being trained on.

Mr. Khan, what tools should we be considering to ensure that there is level playing field in markets where artists are competing with AI generated products, which are often influenced by the artists' work themselves? And also, should these AI generated products require labels?

*Mr. Khan. Could you repeat that last part?

*Mr. Cardenas. Should these AI generated products require labels?

*Mr. Khan. Labels. Okay. Yeah. So on the labels _

*Mr. Cardenas. Labels, watermarks, you know what I mean.

*Mr. Khan. Right. Right. On the question of watermarking, that is, as I mentioned earlier, kind of one of the initiatives that we have in place to kind of better kind of create kind of a standardized methodology and technology for watermarking and particularly in, you know, images for example,

that's an area where, kind of technically speaking, that's something that can be done.

So that's certainly one area that we're looking at. Yeah.

*Mr. Cardenas. Well, I think it is important that we recognize the tremendous potential of AI, yet at the same time, the disruption, which some people love the word disruption, but disruption could mean the replacement of millions of jobs across America and across the world.

And these are the kinds of things that I think that we should be looking at, considering, and also taking into account when we are moving forward to make sure that the playing field remains fair and appropriate for the American people.

With that, my time has expired, and I yield back.

*Mr. Bucshon. [Presiding] The gentleman yields back.

I now recognize myself for five minutes for questions.

I would like to thank the witnesses for being here today. I was a surgeon before I was in Congress, so I want to agree with Dr. Burgess regarding physician burnout and early retirements.

We need to fix the physician fee schedule now. This is an annual problem. It has been going on for about 30 years, late 1980s, and we are having problems of getting physicians in underserved urban areas and in rural America.

So that is another message for you, sir.

As the United States continues to adopt the use of AI throughout the economy the need for qualified individuals that can develop and utilize such technologies will continue to grow.

In 2019, the US had approximately 14 million 600 workers. It is more now. And the numbers of workers in this sector is expected to grow at twice the rate as the general workforce.

We have already seen some of the potential and, at this point, unproven dangers of employing these powerful tools without properly trained individuals overseeing their use.

Just this morning it was reported that a major health insurer faced the class action lawsuit alleging the company empowered an AI algorithm to deny approval for care that patients were owed under the Medicare Advantage plans.

This is a second such case against the health insurance. Both ensure insurers deny these claims against them, but we will have to see how this plays out.

While AI can be an effective tool, companies must be sure the algorithms they deploy function appropriately and that careful oversight by trained individuals is widely available and utilized.

Maintaining a robust workforce of qualified individuals will ensure that the US remains a hub of innovation. It does not cede its leadership role to our competitors abroad. This

is why I am proud to be co-leading the Artificial Intelligence Literacy Act of 2023, alongside representative Lisa Blunt-Rochester, which will ensure that existing grants can be used to facilitate programming and tools related to AI educational opportunities.

Education on appropriate utilization of AI is extremely important, particularly in the health care sector.

Dr. Tripathi, are there challenges faced by the health care sector workforce that are different from other areas? I mean, it is a unique space, right?

*Dr. Tripathi. Yep. Thank you. Thank you for the question.

Well, the biggest challenge that we have in health care is just the shortage of workforce. I mean, you see it, almost everywhere.

Anytime you go to Hospital, you know, some of the challenges of just being able to get into the hospital are related to floors empty because there aren't enough workforce.

And I think as we heard a couple of weeks ago in the Subcommittee hearing from Dr. Schlosser, for example, the opportunity for AI to be able to extend the productivity of clinicians and of the workforce to allow treatment of more patients with the existing workforce with the same quality that exists today, I think, is a huge opportunity for us and

something that's really important for health care.

*Mr. Bucshon. Yeah. And I would agree and I think there are some companies out there that are in the private sector, obviously looking adding health care divisions in the tech sector. Oracle is one of those.

So how do we begin to train medical professionals on the use of AI and increase awareness of the pros and cons, and how can we ensure that they are using AI as a tool, not a crutch?

So to your point, they can use this, be more efficient, but how do we start educating? And can HHS do anything to encourage the educational system to start doing this if they are not already?

*Dr. Tripathi. Yes. I think, part of, you know, one of the key focus areas of the task force, the cross-department task force that I mentioned, is education in particular. And I think there are a couple of different levels to that.

So we certainly are going to develop that over the coming months as we think about that. As I described before, our HTI-1 rule creates transparency for clinicians. You're a surgeon, so for clinicians to be able to have access to that information, which begs the question of well, what do I do with that information?

You know, how do I do that? So we place a premium on being able to, you know, figure out the education for, you

know, for two levels. One is for those who are practicing today and how do we have appropriate mechanisms working with medical societies, working with, you know, medical colleges, to be able to provide kind of training and expertise?

The second is building the pipeline. So ONC has a, you know, public health informatics training that's working with minority serving institutions, 5,000 trainees into parts of the workforce that we haven't tapped into, typically.

We also have the AIM-AHEAD program at NIH, which is similarly establishing centers working with 1,500 trainees to help them move into these AI-focused technologies.

*Mr. Bucshon. Yeah. I think that is very important. The pipeline piece is really important. I think, you know, getting young people interested in this. My daughter's a software engineer, and particularly, women, you know, is a population of people who they've encouraging, you know, you mentioned minority, underserved, groups of our fellow citizens that could potentially benefit from being trained in this area and tech and in AI and other things, and it is an untapped resource, I think.

I would completely agree with that.

With that I yield back and recognize Mr. Ruiz from California.

*Mr. Ruiz. Thank you. As a physician, I have long worked

towards creating a health care system that is affordable, accessible, and patient focused. And these priorities not only improve quality of care, but they also strengthen our health care workforce and address barriers to care affecting underserved communities.

Artificial intelligence has the potential to help us achieve these goals, but we must do our due diligence to be sure it is not at the cost of quality care or patient safety.

Last month, the Health Subcommittee held a hearing to explore and better understand how AI is changing health care.

Dr. Tripathi, I would like to get your perspectives on some of those themes. So what mechanisms are required for AI in-house standings to ensure patient safety? What can go wrong and what mechanisms are required to ensure that those things don't happen?

*Dr. Tripathi. Yeah. I would point to three things. One is transparency, first and foremost, which is what our rule establishes the rule released this morning. It starts to establish transparency so that providers know what AI is embedded in their systems and they have some basic information about where does that algorithm come from? Are there known safety issues? Are there risks?

So that they can start to make informed decisions just like they do every single day about what medication am I going

to prescribe? What's on the formula? Should I use this device?

We think we should be looking at that in the same context and provide them with the kind of information so that they can make those decisions. The second is about education.

So how do we work with medical societies, work with medical colleges to provide to make them better and more informed users so that they're in a position to make those kinds of decisions, which I think is, you know, critically important.

*Mr. Ruiz. So it sounds like you are utilizing AI as you would some kind of screening test or modality. And so you're allowing the test and you're going to have doctors kind of be educated on the pros, the cons, the limitations of that test.

Is there anything within AI that would be programmed to ensure the safety of patients?

*Dr. Tripathi. Well, there certainly could be, and I think that's a part of, you know, being able to have transparency about what, you know, as you look at tools, side-by-side for example, tools that have those kinds of capabilities over time would hopefully be preferred by providers with the assurance that if they use those tools, they've got those kind of capabilities.

In the absence of that information, we don't have that

kind of _

*Mr. Ruiz. So bias has been an issue in the health care setting that have led to disparities in treatment modalities for certain groups versus others.

What impact does a biased AI model have on patients, and what strategy should be implemented to detect and negate biases in AI models used for health care?

*Dr. Tripathi. Yeah. So it can have profound effects, and there's, you know, already a ton of documentation on that. There are areas that seem to be relatively benign, that it turns out have big effects.

So there's, you know, a peer-reviewed journal studies that have looked at, for example, something that seems as benign as patient scheduling, where AI was used to schedule patients and then didn't take in and then tried to sort of double book, triple book physicians who were seeing certain patients because they were deemed to have a higher risk of no shows.

Well, it turns out they were being a no show because they had transportation insecurity. Maybe they live in a rural area 50 miles away and they have an old car and two times their car broke down on the way and now, all of a sudden, the algorithm says, oh, they're a high risk for a no show. Let's double book, triple book the provider.

And now they're the ones that, you know, the individual

shows up and they're sitting for two hours in the waiting room, perhaps losing their job because they weren't, you know, allowed to take that time.

So there's many, many dimensions of this, and I think there could be some profound risk from a bias perspective.

*Mr. Ruiz. In October, the Biden Administration issued an executive order on artificial intelligence that establishes a safety program in HHS to receive reports and remedy harms from unsafe health care practices involving AI.

What is the status of that safety program, and how is HHS thinking about its development and its mission to protect patients?

*Dr. Tripathi. Yes. So one of the deliverables, I think of it as a two-part deliverable, the idea is, from a safety perspective, is to first have an assurance strategy. So is there infrastructure or other resources that we make available that allow us to test these kinds of technologies that will be in line with the Safety Institute, for example, that Department of Commerce is launching?

And that first plan we are going to be completed by the end of April. The second is, by the end of October, is thinking about that in the context of patient safety reporting.

So leveraging the patient safety organizations that are already in place and saying, how do we have mechanism for the

reporting of these kinds of incidents, for a central repository where I can gather that information, and then how can I screen those to be able to issue informal guidance where issues are identified to appropriate stakeholders who might be using technologies so they're aware of those?

*Mr. Ruiz. Okay. Thank you. I yield back.

*Mr. Bucshon. The gentleman yields back. Recognize Mr. Wahlberg, five minutes.

*Mr. Walberg. Thank you, Mr. Chair, and thanks to the panel for being here. This is extremely helpful as some of us try to wrap our minds around AI and really come to understand the positive things that can be done along with preparing ourselves for the negatives.

At this Committee we often speak about bureaucratic backlog and the amount of time it takes to do anything at the federal level, from permitting new energy projects, and I have mentioned the possibility of AI helping that, as I spoke on a panel at COP28 this weekend, in fact, to addressing Medicare appeals or approving satellite licenses.

We know AAI has added some complications to our legal system, but I also think it could improve how our government works and help us bring some much needed certainty.

Ms. Fu, thank you for being here. What are some practical things government can do with AI to improve our own outcomes?

For instance, could AI be used to better identify waste, fraud, and abuse in DOE's grant programs in the same way that private companies are deploying it to find fraud?

*Ms. Fu. The answer is yes. AI can be used for a multitude of different purposes, one of which could be for identifying waste, fraud, and abuse.

*Mr. Walberg. Which would be helpful and encouraging to the to the citizenry, the taxpayers as well.

Let me go on and ask you, Ms. Fu. AI has been demonstrated to help user to identify trends, automate tasks, and increase productivity. Some have suggested that AI could be used to speed permitting and reduce bureaucratic delays as I conjectured at COP.

Has the Department looked into how AI could be leveraged to address our significant permitting issues?

*Ms. Fu. That's a really important question and we're tracking this very closely.

We think that there's a huge opportunity for AI here. And through the executive order we were tasked with looking at opportunities that AI can provide for permitting and potentially speeding up that process.

So we're working on a project right now that leverages our supercomputing and our AI capabilities to analyze vast amounts of permitting information that are associated with past

projects and to see where the bottlenecks are and how we can put in place, potentially, some kinds of mitigating actions that can help move time lines along.

*Mr. Walberg. Yeah. It would just seem that with all information coming from past projects and permits that go on that we could have learned a lot that would say about another project in a similar space, yeah, we've been there, we've done that. And we can reduce the time to get that done. I hope that that comes to reality.

If we were to deploy AI in this manner, what guardrails exist for AI to ensure projects are still being judged on merit, not just what AI may say about them? For instance, could there be bias in AI leading to some projects being funded, but not others?

*Ms. Fu. This is a big concern and I think this is exactly why we need to do some of the research that's necessary to look at how bias is, you know, potential sources of bias within the system and potential mitigating measures.

Also, I think I mentioned before, this issue of explainability is extremely important, especially for DOE's high consequence missions. Think nuclear security or the electrical grid.

We need the right answer, but we also need to know how we got there. So this is a very important line of research for

DOE.

*Mr. Walberg. Yeah. As one expert in the field explained to us yesterday that we ought to be copilots still in the process. Taking the technology, the usefulness of it, but still thinking for ourselves to some degree.

So I would assume you would agree with that?

*Ms. Fu. I would agree with that. I just also just add one thing, because I think today we've talked a lot about I think really assuming, you know, in this space of AI, we're talking a lot about large language models, about sort of the predictive next text capability.

And I think that's really important, and obviously, we've all played with these tools, and they can do really interesting things. One thing that DOE is really focused on is physics informed models.

We have a lot of physicists; we have a lot of scientists. How can we use these types of new foundation models for our science, energy, and security missions?

*Mr. Walberg. Great. I am glad to hear you are thinking about that. I will remain a copilot, but _

*Ms. Fu. Yes.

*Mr. Walberg. _ trust some of the benefits that we can get. So I see my time is about to expire. Next question won't fit, so I will yield back, Mr. Chairman.

*Mr. Bucshon. The gentleman yields back.

I recognize Mr. Peters from California, five minutes.

*Mr. Peters. Thank you, Mr. Chairman. Thanks to the witnesses for being here. I appreciate it very much.

And as the world leader in innovation, as America's likely to be in the lead of developing AI, it reminded me, by the way, I should just mention, I visited Sony Electronics in my district in San Diego where they are working on watermarking photographs to fight back against deep fakes.

So I know that the private sectors out there. I appreciate the mention of partnerships with the private sector, to help the government get things right.

In San Diego we are familiar with the devastating effects of wildfires and many communities around the country are facing catastrophic wildfires for the first time. AI enabled tools can help wildfire response and recovery efforts, saving lives and helping communities bounce back more quickly.

But I want to ask you, Ms. Fu, about that, but, also, what about mitigating wildfires? What about forest management? What about other natural disasters? How is DOE taking advantage of AI and supporting work in that area?

*Ms. Fu. That's a great question and a big source of concern.

Our Pacific Northwest National Lab actually has already

developed a fully automated AI assisted tool that will map the characteristics of wildfires and has already been used on hundreds of events.

So there's two pieces to this. The first is around how it can help with risk planning, as you say, and the second around rapid disaster response. So on risk planning we've worked with the forest service to develop a tool that can identify across 500 million acres of forest to manage. You know, where forest thinning should be used, where controlled burning to be used to potentially prevent future wildfires.

On disaster response, the tool also combines different sources of imagery to help identify and assist with situational awareness for incident command and disaster management. And the tool can actually see through wildfire smoke, especially at times when ground crews or aircrafts or drones cannot deploy.

*Mr. Peters. Okay. I know that you mentioned in your testimony that the Coast Guard used AI to help with wildfires in Maui and we had a subcommittee hearing on those effects in September.

Can you just describe a little bit about how, in that specific instance, you used AI?

*Ms. Fu. I think this tool was deployed and really helped the Coast Guard or helped us guide and work with the Coast Guard to think about where resources would be most effective,

most deployed where the fire was predicted to spread, looking at different kinds of imagery from satellites, from social media, even from drones.

So this is one thing that we have used in Maui, but we've also used in other incidents around the country.

*Mr. Peters. Okay. I was also going to ask you the same question about permitting reform as Mr. Walberg did.

I really think, you know, we passed the IRA last year. We put on the books up to $369 billion to invest climate action. If things go well, that's tens of thousands of projects, 30,000, 40,000, 50,000 projects that have to go through the system.

Today's Department of Energy, Department of Interior, the EPA, we are not equipped to deal with that volume and it strikes me that AI is going to have to be part of sorting through all that.

And so, I appreciate your response, Mr. Wahlberg. I think it is going to be really critical if we want to take climate action because we have the money now, but unless we get at it with speed, we will still fail.

You can have all the money in the world, but if we can't get the money out of the bank and into the ground we will fail, and I don't know how to do that without AI. Have you thought about how to really focus AI as a tool to deploy the work we

have done on the climate side in the IRA?

*Ms. Fu. So I mean, this is a really important issue for us. And I mentioned earlier that we have this pilot that's ongoing.

Right now it's digesting just NEPA documents, but we're looking at how we might be able to expand that for other types of permitting documents from other agencies and potentially serve as a resource for other agencies as well.

But one thing I would flag that we're uncovering is really the need for common data formats. I mean, it sounds extremely dry, but it's essential as we look to actually apply AI to all sorts of mission sets.

*Mr. Peters. Well, we can talk about that with respect to avoiding the next pandemic. I think one of the frustrations that I identified really early on was that we don't have specific sets of data or the exact same data from around the country. I know that the English National Health Service has got its problems, but at least they see all the patients and they have the same data.

I appreciate that that is an input issue for you in health care and environment, but also on permitting. It is not just NEPA. It is the Endangered Species Act, and it is historical, and all that stuff can be synthesized by AI, I believe.

So thank you very much for coming. I look forward to

working with you, and, Mr. Chairman, I yield back.

*Mr. Bucshon. The gentleman yields back.

I now recognize Mr. Carter, five minutes.

*Mr. Carter. Thank you, Mr. Chairman, and thank each of you for being here. This is extremely important as I know you understand.

In fact, this hearing today is kind of a culmination, if you will, of a number of hearings. We have had them throughout all our subcommittees because the focus is so different for a for each area that that we have jurisdiction over here in this in this Committee.

So it is very important, whether we're talking about cybersecurity, whether we're talking about drug development or whatever.

I want to ask you, Mr. Khan, the National Institutes of Standards and Technology, NIST, that falls under Department of Commerce, is that correct?

*Mr. Khan. Yes.

*Mr. Carter. And they have been given a lot of responsibilities within the President's executive order. That includes the development of AI safety information.

So I understand that NIST is going to be relying on outside agencies to help them with that and I am okay with that, but I just want to make sure, how is the Department of

Commerce going to ensure that there is a diverse set of viewpoints that are incorporated into this effort?

*Mr. Khan. Thank you, Congressman. Yeah. It's a critical issue that we're thinking about.

Certainly, as we launch our consortium to support the activities of NIST in the AI Safety Institute, we are really hoping to have kind of a wide range of stakeholders within industry, not just large companies, but, you know, small and medium businesses as well, academics, nonprofits.

I would also point out that NIST also houses the National AI Advisory Committee, which includes an advisory board, essentially, that has a range of stakeholders from kind of different parts of industry, different parts of academia. So, we're really focused on getting a voice from a wide range of stakeholders.

*Mr. Carter. And it is so important. As I said earlier, you know, we all of our subcommittees have had separate meetings on it. It is so diverse and so impactful and everything.

The National Telecommunications Information Administration, NITA, and it they also play an important role in AI responsibility.

So how is the Department of Commerce overseeing the coordination between NTIA and NIST?

*Mr. Khan. Thank you for that question, Congressman.

So, yeah, we have a robust coordination on AI policy ongoing across the Department. Part of that is, of course, you know, my job to be talking to all of these different bureaus across the department, but we have, you know, quite a few resources kind of devoted to that, you know, inter-bureau collaboration and especially on certain issues.

Just to take one example, you know, we've had a lot of work in the kind of international AI policy space, working with allies and partners in the G7. There was a recent UK AI Safety Institute, and really all of the bureaus, NIST, NTIA, others like BIS, and others, all have kind of unique equities when it comes to kind of international AI policy, and so, you know, we'll regularly have input from across the bureaus on key issues that relate to that.

*Mr. Carter. Right.

*Mr. Khan. That's just one example, but across other issues as well.

*Mr. Carter. Okay. Well, in the coming months, the Department of Commerce is going to be putting out a series of requests for comments in response to the executive order. So with that expectation of having multiple requests in various areas, do you feel like the US government has the staff to review these comments and will the government have to utilize

outside help for that?

*Mr. Khan. Thank you, Congressman.

So we're focused on executing the tasks under the executive order with the funding and the resources we but, of course, to better accomplish the mission, I think, you know, additional resources for Commerce and the bureaus, I think would be helpful.

*Mr. Carter. How are you make sure that some of these third parties don't have a conflict of interest?

*Mr. Khan. Absolutely. That's a critical issue that we look into. So the consortium that we are launching under NIST, for example, You know, all of the members will essentially be able to join on kind of an even playing field and we're absolutely kind of _

*Mr. Carter. Ms. Fu and Dr. Tripathi, both of you are going to be involved in this too. So how are you going to ensure that these outside agencies don't have a conflict of interest that you're utilizing.

*Ms. Fu. I'll go first. So we are tasked in the executive order to work very closely with Commerce, and we do not plan to use outside agencies. We are, you know, as I mentioned earlier, we have a staple, at our national labs, of tremendous expertise, especially on AI safety and security that we would look to bring to bear to support Commerce in this

effort.

*Mr. Carter. Okay.

*Ms. Fu. The Institute is something that we would also look to support, but we are not going to be engaging external agencies.

*Dr. Tripathi. We similarly, for everything in the executive order, we're going to be doing that within existing resources and existing authorities.

*Mr. Carter. Okay. Well, I certainly hope in health care that we do get some diverse opinions out there too, so that will be important. I am out of time. Again, Thank all of you. This is extremely important, guys. I hope y'all recognize that.

Okay. Thank you, Mr. Chairman. I yield back.

*Mr. Bucshon. The gentleman yields back, and now I recognize Ms. Kuster for five minutes.

*Ms. Kuster. Thank you, Mr. Chairman. I want to thank our witnesses for being with us here today. In addition to serving on this Committee, I am very proud to serve as chair of the New Democrat Coalition, a group of nearly 100 centrist Democrats committed to governing from the middle out.

The New Dems have always been on the cutting edge of innovation and artificial intelligence is the next great frontier of technological advancement.

This year, the AI working group, which has two focuses. First, educating members and staff about artificial intelligence and its associated benefits and risks, and second, focusing on developing short and long-term policies Congress can enact to ensure that the US leads the world in AI innovation and safety.

An issue the working group is focused on is disinformation. We have already seen how social media can stoke the fires of social division by amplifying disinformation. AI I could literally throw fuel on the fire.

Mr. Khan, my first question is to you. There has been a significant rise in AI-generated content designed to manipulate or deceive online users. Could you discuss the steps the Department of Commerce is taking to develop standards for authenticating, detecting, and labeling AI generated content?

*Mr. Khan. Congresswoman, thank you for that question. So, you know, as I mentioned earlier, we have, in NIST, through the work of the AI Safety Institute, a synthetic content authentication initiative where we are going to be working with stakeholders to develop guidelines on how best to watermark AI-generated content so that you can distinguish it from human-made content and we think that kind of will be kind of a critical, you know, technical foundation for then how to govern the technology and make sure that we are able to identify when

information is misinformation.

*Ms. Kuster. Yeah. And another the concern we've heard is regarding AI, the potential to disrupt the labor market. While we know AI has the potential to enhance job safety and efficiency, there are also concerns this technology will replace workers.

Again, to you, Mr. Khan, is the Department of Commerce considering best practices to ensure that workers are empowered in the emerging AI landscape?

*Mr. Khan. Congresswoman, I absolutely agree with you that, you know, AI should be used, not to displace workers, but to support workers. And I think, you know, there's a lot of work within the Administration, including the Department of Labor and many other agencies tasked under the executive order to look at this exact question.

And so we're definitely focused on it, along with our US government partners.

*Ms. Kuster. Thank you. Changing gears. Me and some of my colleagues recently returned from the COP28 in Dubai. The climate conference. We had a bipartisan delegation from Energy and Commerce.

A point repeatedly made at the conference is the importance of conserving energy. In recent years we have seen how new technological innovations can have unintended impacts

on energy usage and I think my colleagues have brought this up today.

But, for instance, in the United States, cryptocurrency activity is estimated to emit up to 50 million tons of CO2 each year, the equivalent of more than 10 million cars.

Director Fu, AI is similarly energy intensive and it requires large amounts of computing power and has a sizable carbon footprint. Could you discuss the Department of Energy's efforts to support the development of energy efficient AI Systems?

*Ms. Fu. Thank you. That's a question that's near and dear to our hearts because we have done so much in this space over the last 20 years.

I mentioned earlier that we've been able to achieve a 200 times increased efficiency in our supercomputers. But I think the good news here is that the things that we're doing with industry, the investments that we're making, we're really focused on building first of a kind, not one-of-a-kind systems.

The kinds of investments that we're making will help industry to develop more energy efficient chips, but also, the unique expertise that we've developed by working with and in very close partnership with industry has really given us unique insights into how to actually build, design, and operate these kinds of data centers.

And so this is something that we would very much look forward to continuing to partner with industry on because I think there's a lot that can be shared.

*Ms. Kuster. I agree with my colleagues. There are so many aspects of this, it is hard to get it in, but just one last one. Dr. Tripathi, coming to you quickly, could you discuss what efforts HHS is taking to ensure that data is managed in a way that best protects patient privacy and what regulatory standards Congress should consider implementing?

*Dr. Tripathi. Well, certainly, as the President you know has said, you know, bipartisan legislation on data privacy would be enormously helpful. It would fill in a lot of gaps.

I will point that with AI-enabled tools, and HIPAA still prevails, so, you know, just because it's an AI-enabled tool doesn't mean it doesn't have to follow HIPAA.

So everything related to information protection when it's in the hands of HIPAA-regulated entities, whether it's, you know, just sitting there in a database or being used in an AI-enabled tool, it still has to follow HIPAA provisions. So I think, by and large, most of what we're talking about here, at least as it regards to the work inside a health-care regulated entity, can fall under the HIPAA provisions.

*Ms. Kuster. Great. Thank you very much. I look forward to working with all of you on this important issue. Thanks. I

yield back.

*Mr. Duncan. [Presiding] The gentlelady yields back.

I now recognize myself for five minutes.

And I will say this. This is a complicated and fascinating subject. Thank you three for being here and I have enjoyed the answers to the questions. I will align myself with Mr. Griffith when he talked about energy, energy management, utilities, as cross border sales, how that can be more effective.

I also align myself with Dr. Bucshon who talked about rural health and remote health telemedicine, that sort of thing, diagnostics that can happen a lot quicker.

So it is fascinating. Even Mr. Peters from California talked about forest fire mitigation and management. There is always going to be a human element to analyze what that AI delivers and how we apply that on the ground to active forest management or fire management.

So, Ms. Fu, I enjoyed that. I will tell you that AI scares a lot of my constituents and scares me to some degree as someone that of a generation where we had the Terminator, Matrix, and even I Robot that, you know, that was Hollywood. I get it, and this is real life. But my constituents talk about the fears of AI and so I just throw that out there.

We just came from the UAE where we talked with the folks

with the Emirates about their approach to AI and what the UAE is doing, what other countries that were at COP might be doing, with regard to AI and climate change, and so it is just a fascinating subject.

Mr. Khan, I want to start with you. And, given your experience serving on National Security Council and in the digital trade, I am sure you have a strong appreciation for how digital protectionism can hurt American interest.

From my perspective, it is especially important that we push back on forced data localization proposals by foreign governments. They interfere with our ability to lead on AI and disproportionately impact small companies in this space.

What is your perspective on forced data localization, discriminatory burdens on cross border data flows, mandatory source code transfer, other policies United States has always opposed?

*Mr. Khan. Yeah. Thank you, Congressman.

Yeah. I think you've raised a number of, you know, very critical issues. I think we're concerned and kind of studying all of those issues. So I really appreciate that, you've kind of raised that.

*Mr. Duncan. Yeah.

*Mr. Khan. And happy to follow-up in more detail.

*Mr. Duncan. So how detrimental would it be if China

became the world leader and put in place a regime where all data flows must be led to China? All source code must be examined by the CCP?

*Mr. Khan. Yeah. I think that would be a kind of incredibly concerning world if we ended up there, and, you know, we need to take approaches to data security that will kind of address that.

*Mr. Duncan. Is it a concern of the Administration?

*Mr. Khan. I mean, I think it would. It is a critical issue and happy to kind of follow-up with you on that.

*Mr. Duncan. Yeah.

*Mr. Khan. Yeah.

*Mr. Duncan. The Administration's AI executive order directs Commerce to undertake a number of tasks, including implementing reporting requirements for dual-use foundation models and conducting a consultation on open source. How will the Department of Commerce ensure that the private sector has an opportunity to contribute to those initiatives?

*Mr. Khan. So as I mentioned, you know, NIST, through its AI Safety Institute is launching a consortium and that will be kind of one of the primary venues where the private sector will have kind of a robust opportunity to kind of work with NIST as we develop these guidelines.

I think the real goal here is understanding, you know,

there's expertise across the nation that we want to leverage, and we won't get it right unless we have all of the stakeholders contributing.

Of course, you know, given the number of, you know, tasks in the executive order, we're also going to be putting out, you know, requests for information for a number of these different areas and want ensure that we get robust input from all of the relevant stakeholders.

*Mr. Duncan. Thank you for that.

The Administration's AI executive imposes requirements on dual-use foundation models that pose a serious risk to security, national economic security, national public health, or safety. What types of AI models fall within this definition and are covered by the executive order?

*Mr. Khan. The executive order does include a definition of dual-use foundation model. I don't have it in front of me, but happy to follow-up with that particular definition, but also for some of the, you know, specific provisions that the Commerce is tasked with, including some of the reporting requirements that you mentioned.

You know, there are very, you know, specific technical thresholds that are outlined in the executive order, such as based upon kind of a specific amount of computing power that an AI model is trained with.

And so that is kind of another definition that we're using to kind of look at a particular class of models where we want to better understand kind of some of the capabilities that might appear in this range of technology.

*Mr. Duncan. I will look forward to your follow-up to the Committee or to my office, either one was fine.

I was a former banker at one time and I analyzed a lot of financial data. I can see how AI can help really look at a financial picture and give a banker or a financial analysis or Wall Street broker or whatever a good quick analysis of the true economic health or physical health of the company they are analyzing or the individuals even.

So I am fascinated with it. Look forward to working with you all as we move forward. My time's expired, and I will now go to, Mr. Veasey for five minutes.

*Mr. Veasey. Thank you. I wanted to ask a question. I know that during the Communications Subcommittee hearing last month we had the opportunity to hear from experts and leaders in emerging technologies.

And one comment that I thought was kind of interesting was that there is a community of workforce development providers who are thinking about incorporating emerging technology into their skill-based training, particularly for those people that don't have a college degree.

Mr. Khan, as you know, the Commerce Department is overseeing about 50 billion to revitalize the US semiconductor industry, and this success hinges on a skilled and diverse semiconductor workforce, and we are seeing a lot of that work already taking place in North Texas area where we have.

And as Secretary Raimondo recently mentioned, our nation will have a shortage of approximately 300,000 engineers and about 90,000 technical workers by 2030. And I was hoping to Mr. Khan, that you could tell us how can the Department of Commerce deliver the use of AI help meet these demands with the understanding that the manufacturing sector is one of the best places for noncollege degreed workers to find jobs?

*Mr. Khan. Congressman, it's an incredibly important issue. So under the CHIPS Act, you know, of course, we have a number of programs. One is kind of the program for manufacturing incentives so that we can onshore semiconductor production.

Another is the establishment of a semiconductor technology center in partnership with other agencies, including the Department of Energy. And so for all of these programs, I think, you know, we see kind of support for the workforce as a critical component to make these projects succeed.

So that's absolutely a critical aspect here under President Biden's AI executive order issued in October. You

know, there's also a number of workforce related initiatives both to kind of make sure that we can train the domestic workforce, but also, kind of be the home for the world's best, AI and STEM talent broadly.

And so we think those are going to be kind of critical initiatives. And then, of course, there is the there is the use of AI to kind of, you know, to also kind of improve productivity as well. And I think in manufacturing that that will, of course, be a critical area and that's something that we're also looking at.

*Mr. Veasey. Yeah. Yeah. No. Thank you. I want to ask, Director Fu a question also.

I know that your testimony highlighted several key areas where AI can be beneficial to the energy sector, including protecting and hardening our grid.

I hope that ERCOT reviews your testimony and embraces some of the tools that you highlighted. Ultimately, though, I think it's going to come down to people. People need to be trained on how and when AI is the right tool to use and when you don't use it.

Additionally, people need to work together to protect sensitive data. Director Fu, can you elaborate on how DOE is thinking about training the next generation of the energy workforce and one enabled by AI and other technologies?

*Ms. Fu. Thank you for that question. It's essentially important. It's essentially important also for our national labs.

As you know, as I talked about in the testimony, we have many, many scientists, and engineers at our national labs, but we are also looking for talent there. And they are competing industry just as many of our US government agencies are also looking to bring AI talent into our agencies themselves.

So I guess on the question of, you know, how are we training the next generation? The AI executive order tasks us with building a pilot program to train 500 new researchers by 2025.

That will be helpful. That will support the AI revolution and that is something that we are committing to do. We also already have workforce development programs that are in place, but, obviously, there's a lot more to do in this space because there is a talent gap, and we need to be able to build that talent for the future.

*Mr. Veasey. Yeah. No, thank you very much. Also, I wanted to ask really quickly.

Every innovation in communication promises great possibilities for the future, but it also means greater demand for spectrum. I don't know if that's something that is getting more and more attention. And I was hoping that, Mr. Khan,

could quickly enlighten us and let us know is there an opportunity for our universities and other higher ed institutions to aid national efforts to capitalize on the use of artificial intelligence and our understanding, when it comes to research, and spectrum efficiency and utilization?

*Mr. Khan. Thank you, congressman. Yeah. I mean, I think partnerships with universities are going to be core to kind of accomplishing some of our workforce needs, including in the area of spectrum policy.

*Mr. Veasey. Yeah. Thank you very much.

Thank you, Mr. Chairman, I yield back.

*Mr. Duncan. The gentleman yields back.

I now go to Dr. Joyce from Pennsylvania for five minutes.

*Mr. Joyce. Thank you, Mr. Chairman, and thanks to Chair Rodgers for holding today's hearing and to all the witnesses for being present. We appreciate your time and your testimony.

Artificial intelligence has made incredible strides in recent years and now has significant impacts on our day-to-day lives. As this technology becomes more advanced, it is critical that Congress works with agencies and their experts to address the challenges that will inevitably arise.

In industries where AI is seeing dramatic increase in usage, there are and there will be certain risks associated with this implementation that we must contend with as

policymakers.

It is critical that we remain vigilant to ensure that sensitive information is safe, secure, and protected. As we move forward, Congress must have and will have unique tasks of analyzing and further understanding AI's evolution and applicability when it comes to certain industries.

AI presents opportunities in the energy sector. Right in my district in Pennsylvania, PPL Electric Utilities was one of the first utilities to leverage AI to model power flows on the electric grid as part of their smart grid technology.

This has led to significant reduction in outage for customers with well over one million customer outages avoided as a result of utilizing this technology combined with field devices.

PPL has also leveraged AI to predict storm damage more accurately, proactively predict failure of electrical equipment, and to build better vegetation management plans.

All of these applications have saved customers millions of dollars while also improving reliability. While President Biden's executive order on artificial intelligence might lay out the Administration's policy initiatives, it is still the responsibility of this Congress to legislate on these issues and to find solutions that will allow us to remain competitive while not sacrificing personal data privacy.

It is critical that Congress has a firm grasp and a clear comprehension of how AI interacts with existing regulations so that we can ensure that AI can continue to positively shape the US energy, health care, Commerce, and technology landscape.

Director Fu, the Department of Energy has included in President Biden's October 2023 executive order on safe, secure, and trustworthy AI. At that time, Secretary Granholm committed to collaborating with other agencies, the private sector, and academia to develop standards and models for the appropriate use of AI in the energy sector.

What steps has your office and the Department taken to work with these partners, particularly in the utility industry that operates the vast majority of our nation's electric grid to ensure that these regulations promote innovation and maintain safety and reliability?

*Ms. Fu. This is an important question. And our Office of Cybersecurity, Energy Security, and Emergency Response is already engaging with companies and electric utilities of all sizes, to talk about what the risks are and where the opportunities are.

As you mentioned, the utilities are really confronted with very, very complex energy pictures and they are utilizing AI to help with some operational decision making, but we need to make sure that, as they apply the AI, they are able to manage the

risks.

They are manage able to manage the risks, but also, apply AI to enhance efficiencies. So this is something that is ongoing, and we will be happy to give a report out. We are also developing a report that will look at risks to critical infrastructure.

*Mr. Joyce. When could we look to see that report?

*Ms. Fu. That should be out in about two and a half months or so.

*Mr. Joyce. Fantastic. Would you please share that with this Committee?

*Ms. Fu. Quite soon and we'd be happy to brief you. Yes.

*Mr. Joyce. Dr. Tripathi, your Office has unveiled a rule to regulate AI. Can you explain this proposed idea of nutrition label for health care products? And how would this rule impact those patients and constituents and consumers?

*Dr. Tripathi. Yes. Thank you for the question. So the idea of a nutrition label is obviously a colloquial, kind of term.

The idea is in the industry it's called a model card and just like a nutrition label, it gives you some information about the AI, where it came from, what is it supposed to intended for, where has it been tested, are there known issues with it, so that it allows the provider, first and foremost, to

be able to make decisions about whether that applies to their particular patient population. Then they can have a discussion with their patient about the appropriateness of that tool.

*Mr. Joyce. Dr. Tripathy, earlier this month, you were quoted in the Wall Street Journal saying right now there is a resistance to some of these tools because of the black box nature of them. Can you expound on that, please?

*Dr. Tripathi. Yes. We've heard directly from providers that they have hesitancy using black box technologies on their patients.

They would prefer to use other means of getting information or the best available information rather than taking information that's coming to them for, you know, reasons and in ways that they don't know.

So that's the core focus of our rule is to say, let's open that up a little bit, provide them with information about that, about that AI tool so then they have a better perspective on it and hopefully will build trust and that's at the core of it.

*Mr. Joyce. Mr. Chairman, my time has expired. I thank all of the witnesses for an informative discussion this morning, and I yield.

*Mr. Duncan. Thank you. The gentleman's time has expired and he yields back.

I now go to Ms. Kelly for five minutes.

*Ms. Kelly. Thank you, Mr. Chair, and I also want to thank our witnesses for being here.

We are all grappling with the emergence of powerful AI systems that are transforming the way Americans are completing some of the most mundane tasks while also applying these AI technologies to solve some of the most complicated problems facing critically important industries.

Yet while AI has tremendous upside there are also ethical challenges that can be greatly exacerbated by the emerging uses of AI technology and systems. So I applaud the Biden-Harris Administration's comprehensive approach to AI and look forward to seeing how our government will work with industry, civil society, and academia to ensure that AI technologies and systems are both developed and implemented in a safe, secure, and transparent manner.

Mr. Khan, the Department of Commerce's National Institute of Standards and Technology, NIST, through the USAI Safety Institute, will facilitate the development of guidance for measurements and methodologies to enhance safety, security, and trust.

Can you explain what these measurements and methodologies are? And are there any measurements and methodologies that the Institute plans or believes should be prioritized to enhance safety, security, and trust in advanced AI technologies?

*Mr. Khan. Thank you, Congresswoman. So there's a number of different initiatives in this space. So in better characterizing the capabilities of AI models we kind of break it down into two buckets.

One is to just generally evaluate the capabilities and have benchmarks available to understand, you know, for particular domain areas and particularly areas of concern that we've identified in the executive order, you know biosecurity being one example.

Just have clear benchmarks and tools available to evaluate these models easily and understand how they perform against these benchmarks. So that's one element.

And another element is red teaming. And red teaming can be thought of kind of as something a little bit more adversarial where you kind of have a team who will kind of intensely probe the model to ensure it doesn't break. Are you able to ultimately kind of push it to kind of output harmful information?

And so those are kind of two elements where we're hoping to put out guidance on the best way to do these things kind of in consultation with the stakeholder community. And as I mentioned in my testimony, one thing we really hope is to kind of create a race to the top where kind of all of the stakeholders, industry, and others can kind of rally around a

set of standards that we can really kind of mitigate some of the risks in the space.

*Ms. Kelly. Thank you for your response.

Shortages of prescription drugs continue to plague our nation's health system. These shortages pose a serious threat to public health and hamper physician's ability to follow the evidence-based treatments that work best for our patients.

While identifying which drugs are hardest to obtain is fairly straightforward, figuring out precisely why that is the case is another matter entirely.

Dr. Tripathi, in your testimony you mentioned how the FDA is using AI-enabled devices to improve medical diagnosis and expand access to quality care. Is there an opportunity to leverage AI to enhance our awareness of a potential drug shortage crisis?

*Dr. Tripathi. There certainly could be, but I don't want to dive into details of that too, and I am not that familiar with it.

But, you know, certainly, we are very concerned about drug shortages. It's a complex set of issues that we know related to supply chain, related to pricing, a whole bunch of factors. We're happy to provide more information to you on that if you're interested in that?

*Ms. Kelly. Thank you. And Mr. Khan, what role could

Commerce play in leveraging AI to prevent potential drug shortages?

*Mr. Khan. So one of the elements of NIST's work in the NTIA Safety Institute is to kind of further build on the very successful AI risk management framework. And so one element that we're kind of doing soon is to kind of put out a companion resource for generative AI specifically.

But then on top of that I think the hope is also to provide further guidance across different industry verticals to really understand how to make AI safe and trustworthy across ad number of critical domain areas and health care areas included.

*Ms. Kelly. Thank you so much, and I yield back.

*Mr. Duncan. The gentlelady yields back.

I now recognize Mr. Allen from Georgia for five minutes.

*Mr. Allen. Thank you, Mr. Chairman, and I want to thank all of you for being here today.

This is something that is moving very rapidly and we have got a lot of work to do in this Committee to kind of get our arms around it.

And with that my first question is to you, Director Fu, President Biden's executive order is more than 19,000 words long.

Can you define the problem that is trying to be solved here?

*Ms. Fu. I would say there's two large pieces to this that, at least for DOE, we are laser focused on. The first is advancing innovation.

So making sure that the United States maintains and sustains its technological leadership edge in AI. The second is around protecting the American people from its harms. And DOE has a very, very important role to play there on maintaining and ensuring that safety.

*Mr. Allen. And so does this Committee. I would like everyone to address this.

Can you define what constitutes AI? Who would like to answer that question?

*Ms. Fu. They are looking at me. So I mean, I think the premise of the question is that actually AI is many things. It can do many things. And because it can do many things, it's very hard to define.

We think of it as a scientific tool. That tool can be used for good or for harm and I think, just as all of our Agencies are just committed to making sure that we can use that tool for good, in our case, for science and energy, and to prevent against its harms for security.

*Mr. Allen. Yeah. Well, that is true in all technology. I mean, you know _

*Ms. Fu. That's true.

*Mr. Allen. You know every time we have a technological advance there are risk proportionate to that advancement, and it does create problems throughout our culture.

Mr. Khan, how are we to draft definitions of what constitutes AI?

*Mr. Khan. Thank you for that question. So in President Biden's executive order, from this past October, you know, it did include, some definitions of artificial intelligence as well as, you know, dual-use foundation models. And so happy to follow-up with you there.

That said, you know, there's definitions of AI are kind of all over the place. You can ask two people and they'll probably come up with two different definitions. And this is also just a really fast changing technology.

*Mr. Allen. Right.

*Mr. Khan. And so what we call AI today might not be what we see what we call AI tomorrow.

*Mr. Allen. Right. And to follow-up, what makes these next generations of AI different from the algorithms that have been developed over the past decades? I mean, what is the difference? Is it faster? More information?

*Mr. Khan. So one of the key things that we're seeing is that if you kind of add more data into the training of the model or add more computing into the trading of the model or

add more mathematical parameters to the model, in many ways new capabilities kind of emerge or the ability for the AI models to kind of achieve certain benchmarks increases.

And so you have kind of more recent models that are able to kind of perform very well on standardized tests, for example, whereas previous generations, they just kind of weren't trained with as much data or computing power, and so we're kind of a little right lower.

So I wouldn't necessarily say, you know, kind of models over the last decade are kind of completely fundamentally different, but rather, you know, there's kind of a spectrum of capabilities that are being unleashed as we kind of put more resources into the development.

*Mr. Allen. Right. And it, of course, is a direct, as you mentioned, is one of the most common concerns, and there is a lot of concern out there about generative AI and the risk of turbocharging the creation and prevalence of misinformation, privacy violation, and other harmful outputs.

Mr. Khan, should AI firms be held liable as publishers so they are incentivized to minimize the likelihood of harmful outputs in the same way traditional publishers are?

*Mr. Khan. So that's an incredibly important question. I think you're referring to kind of an analog of Section 230.

*Mr. Allen. Right.

*Mr. Khan. On that question I would kind of defer to my colleagues in the other parts of the Administration on, you know, Department of Justice colleagues, for example, on the applicability of kind of those existing legal frameworks.

*Mr. Allen. Okay. All right. As far as whatever guardrails we put around this, the argument is it would kill innovation. Do you agree with this position?

*Mr. Khan. Thank you, congressman. So my view would be that, you know, ultimately, and I think the President has noted, in order to harness the benefits of AI, we have to address its risks.

Safe, secure, and trustworthy AI is AI that can be deployed. So we think it essentially goes hand in hand that if you introduce guardrails, it makes AI technology more useful.

*Mr. Allen. Okay. All right. Great. Well, I am out of time.

Mr. Chairman, I yield back, and thank you so much.

*Mr. Duncan. The gentleman yields back.

I now go to Mr. Soto, five minutes.

*Mr. Soto. Thank you, Chairman.

Artificial intelligence is already here and has been transformative to helping us address some of humanity's most major challenges.

When I think back a little three years ago, we were

sitting in this committee passing the Family First Act, establishing telehealth for Medicare and eventually Medicaid.

Meanwhile, the HHS was working with the Department of Energy, no less, at the Oak Ridge National Research Lab to narrow down from 8,000 to 77 antiviral drugs in record time to try to stem the tide of COVID-19.

Remdesivir, of course, became the first antiviral drug that had some effectiveness on it. So that tells us, both here and at home, just one major example that changed the course of history, and we up getting a vaccine within a year, which would, under any other normal circumstances, be impossible.

Of course, Americans are also concerned about AI. They see ChatGPT. They see their data being used in ways they don't like, and so this Committee must pass comprehensive internet privacy to make sure that we are protecting American's data.

I am excited that we passed the Consumer Safety Technology Act out of Committee, to protect consumers against dangerous products. I also filed the Jobs of the Future Act, which requires a report to analyze the impact of AI on workforce and to prepare for the future.

I am excited that was included in President Biden's, artificial intelligence executive order that obviously we're pretty excited about.

The executive order establishes new standards for AI

safety and security protects Americans' privacy, advances equity, civil rights, stands up for consumers, workers, promotes innovation, competition, advances American leadership around the world.

This set of reports that you are all set to develop, absolutely critical to assist this Committee as we work hand-n-hand to develop new laws regarding the promotion of innovation and protecting Americans.

Dr. Tripathi, you know, we have talked about remdesivir already and the ability to, during a pandemic, identify new potential cures as well as repurposing existing drugs.

How do you see the future of AI in expanding the efficiency of this and getting more cures to the market more quickly?

*Dr. Tripathi. Yes. Thank you for the question, Representative.

By increasing the speed of bench to bedside is hugely important. It's hugely important. I think one of the, you know, the great prospects for the use of AI in our industry.

So we, as a part of the executive order, are going to be developing a strategy that we'll deliver in October related to AI's use in drug development. But just to give a sense of, you know, how that breaks down and follows a drug life cycle.

You start to think about, first off, you start to think

about just the development itself and the ability of AI to help with identification of targets, with, you know, sort of screening of molecules and compounds with prioritization of those, all of which is a very laborious process right now, and the ability to speed that up based on learning is just hugely beneficial.

Then you move to clinical research and the ability to use AI to much more efficiently and in a more equitable manner identify participants, identify sites, identify endpoints, inclusion/exclusion criteria, again, taking into account health equity, other kinds of dimensions.

You know, I think it's got the opportunity to be more efficient as well as more equitable. And then finally, you start to look at post-market surveillance and the ability to analyze real world data, to be able to identify safety issues, other issues.

All of those, I think, are on the horizon for us here and we look forward to developing that report.

*Mr. Soto. Thank you so much.

Ms. Fu, we passed the Inflation Reduction Act out of this Committee. We are looking to promote solar, wind, green hydrogen, nuclear, multiple different clean energies. How do you think AI can help the Energy Department and others to move this along a little bit and create more efficiencies?

*Ms. Fu. I think there's multiple pathways. The first is in accelerating the actual research and development into new clean energy technologies that can be deployed.

I mentioned offshore wind is one example. There's a number of energy shots that our Department of Energy has underway on a number of pathways.

The second is around permitting. I've talked a little bit about that earlier, about potential for AI to assist and accelerate the permitting process by creating those efficiencies.

And the third is around thinking about how we plan and manage the grid, where we look to deploy more redundancies to allow for more energy security and resilience.

*Mr. Soto. Thanks. And my time has expired.

*Mr. Duncan. The gentleman's time has expired.

I will now go to Idaho's Mr. Fulcher for five minutes.

*Mr. Fulcher. Thank you, Mr. Chairman.

Director Fu, you were just talking about energy grid, and your testimony had some content on that. And having a strong, reliable grid is obviously very, very important.

I have Idaho National Lab in my state. We do a lot of nuclear research. And when it comes to the grid, it is one thing to protect against a wind farm hack, it is another thing, potentially a new nuclear reactor.

So on that front, what are some practical examples of positive use of artificial intelligence when it comes to grid ability and stability?

*Ms. Fu. Thanks for that question. And I think Idaho National Lab is leading the way in some really exciting applications here, including on digital twins.

So what they've been able to do is develop a virtual replica of a nuclear reactor, a microreactor, and they've worked with universities to really think about how they could use that digital twin to examine and look at potential ways to actually mess with, I suppose, the reactor itself.

So the system was able to identify and stop simulated attempts by red teams to actually abuse the reactor, which has really big applications in our nuclear and non-proliferation space.

*Mr. Fulcher. So on that space, who are the malicious actors that we need to be worrying about here? Is this is this internal? Is this external?

*Ms. Fu. There's actually different potential threat vectors. One is around potentially misapplication, I guess, friendly mistakes that could be used, but there's also obviously, nation state actors that are actively to attack our grid.

*Mr. Fulcher. Okay. All right. Thank you for that.

Let me come back on that here in just a minute, but I want to cover a couple of other things while I have time.

Dr. Tripathi, in your testimony, you stated risks to artificial in health care could stem from inconsistent government data, policies, or controls for how they are acquired, managed, or used.

That is a big topic in this Committee and I would like to hear you talk about this a little bit. How could a comprehensive data privacy standard, and that is what we are looking at, how could that data privacy standard help, in terms of streamlining data governance in the health care space?

*Dr. Tripathi. I think one of the biggest challenges we have in the health care space is that so much of the data is outside of HIPAA. Where HIPAA provides a baseline set of provisions from the HIPAA privacy rule and the HIPAA security rule that provide protections for information that is in the hands of the entities that are covered by HIPAA, namely provider organizations, health plans, health insurers, and clearing houses.

So there's a certain set of protections there, but more and more of the information that we might think of as health information actually lives outside of HIPAA because it's contained in the, you know, the data entrails, the breadcrumbs that I leave on my cell phone when I search for, you know,

latest medication or I travel to my doctor's office, for example, as well information that I am taking into my own hands that now lives outside of HIPAA.

So I think a privacy law would help to fill in those gaps to say _

*Mr. Fulcher. So does that entail broadening HIPAA? Clarify that for me. Is it the actual standard that you think is the solution there, or is it?

*Dr. Tripathi. Well, I think, I mean, there are certainly multiple ways to approach it. I don't think the Department has a perspective on exactly how to do that.

We're, you know, certainly happy to work with this Committee on thinking about what the various options _

*Mr. Fulcher. But you are just saying the standard itself would just provide some _

*Dr. Tripathi. Just being able to have a nationwide, standard based on bipartisan legislation that focuses on data privacy.

So that doesn't even have to be just health care, but data privacy, especially for kids, which is a _

*Mr. Fulcher. Okay.

*Dr. Tripathi. _ very sensitive.

*Mr. Fulcher. All right. Thank you.

I am going to shift gears in my last minute to Mr. Khan,

and this is something nobody is talking about and for maybe obvious reasons.

But in my state, we have a tremendous amount of federal land, and our federal resources are overwhelmed in terms of management of that land. We have wildfire. Wildfire is a very significant problem in the West.

Recently, there have been some very productive software innovations that can predict areas where are most likely to be impregnated or penetrated by wildfire. One of the things that my staff and I had talked about was, are you aware of any discussions whatsoever in the space of natural resources and AI integration with natural resource use, natural resource threats? Any discussion going on there?

*Mr. Khan. Yeah. Thank you, Congressman. So one of the work streams that we have in the National Oceanic and Atmospheric Administration, NOAA, is actually to leverage AI to kind of have better predictive models when we might have extreme weather events and wildfires is, you know, particularly one of the areas that NOAA has ongoing work and also in collaboration with our European partners.

*Mr. Fulcher. That might be something that would be very interesting for our office to connect with. That is a big deal for us.

Mr. Chairman, I yield back.

*Mr. Duncan. The gentleman yields back. The witnesses have been for about three hours. We are going to recess for about five minutes for a comfort break. We will come right back, pending call of the Chair.

[Whereupon, at 12:54 p.m., the Committee recessed subject to the call of the chair.]

*Mr. Duncan. I call the Committee back in order and recognize Ms. Fletcher for five minutes.

*Mrs. Fletcher. Thank you so much, Mr. Duncan.

And thanks to our witnesses for being here today. This has been a really interesting panel discussion. I have been here and heard all of your testimony and really appreciate your insights and the issues you have raised today.

And several issues have come up today that I definitely want to hear more about. But, in the interest of time, I want to follow-up on some of the questions Mr. Fulcher was just asking before the break.

Specifically to you, Dr. Tripathi. I think we all see the possibilities and some of the really exciting possibilities, when it comes to AI, but we also see some of the potential harms.

And so one of the things you all were just talking a little bit about the need for privacy law and HIPAA protection, and I was just reading an article that touches on this issue

that I want to ask you more about, because one of the things that you discussed in your testimony, you talked about the risks of some of algorithms in AI and some of the information, that can be inaccurate or unreliable because of the sources that that it's drawing from and it can also be unreliable because of differences in inpatient populations.

So one of the things that I was reading about is some misinformation relating to AI and the potential to greatly, expand some misinformation or disinformation. And there was an article that recently researchers posed 39 medical related questions to the free AI Chatbot, ChatGPT and they found that it only provided accurate answers to about 10 of those 39 questions.

And some of the responses could actually put the patients at risk. And certainly, we all know that many of us now when we start to feel sick or have symptoms are Googling, you know, Googling our symptoms and trying to figure out what is going on, and I think that the risk of someone going to ChatGPT to try to get this information is right there in front of us.

And so I would just love to get your perspective about what the guardrails are that we should be talking about, that we should be instituting here, whether as a policy matter and otherwise, to protect people from AI-generated disinformation, specifically when it comes to health, I think it is a generally

applicable question as well.

*Dr. Tripathi. Yes. Thank you for the question.

So certainly, I mean, this has been an issue for a while. Doctor Google has you know, right and we are all concerned about that continue to be concerned about that, and so this is just the next generation of that for sure.

And I think we've seen that these large language models have an unnerving capability to either make mistakes or make things up, as hallucinations or confabulations as they call them.

So certainly, I think there's a multi, you know, sort of, pronged approach here. One is certainly for patients. I think it's about education, education, education, and developing trust on the part of providers of the AI tools that the providers can use and that puts them in a better position to have a better relationship with the patient and discuss with them how the AI tools, used appropriately, used within the setting where there's appropriate direct supervision in the care setting, that can help patient with better information and to be able to get the best advantage of AI and also allow them to offer the cautions about using AI on its own.

*Mrs. Fletcher. Thanks. I think that brings up a topic that has come up in our subcommittee hearings as well, which is just the general concept of AI literacy and envisioning a

scenario you have a provider and a patient talking about the reliability of information is important, but obviously, there are a lot of people who don't have access to that information, who don't have that level of care.

And then more broadly, you know, things that we should be thinking about are doing to ensure that there are indicia of reliability sort of built in for the users. I think a lot of users are currently interacting with systems that rely on AI without knowledge of that.

And I know that in our subcommittee hearings, we raised this issue. And so I think any ideas that any of you all have to suggest, I have only got a minute left, this went very quickly.

But with the minute I have left or after time, if you can talk about things that you think we can be doing or should be doing to ensure that consumers and people who are using products that contain AI know when they are interacting with AI generated content or AI-based systems, I don't know if Mr. Khan, you want to address that?

*Mr. Khan. Thank you, Congresswoman.

So, yeah, I think a number of things that we need to be doing in this space. One is kind of better watermarking technology and guidelines around that which I know we've discussed a little bit earlier in the hearing, but, you know,

the idea of kind of having a shared understanding of what techniques we are using and having a process to watermark when content is AI generated and when it is not.

I think that's a kind of a critical element to govern misinformation. So that's one element of the challenge.

*Mrs. Fletcher. Great. Thank you so much. And I only have a few seconds left, so I am going to submit a couple more questions for you all for the record, but I really do want to thank you all and, Ms. Fu, I was very interested in your testimony on permitting, so I would love to hear more about that as we go.

Mr. Chairman, thank you so much for the time, and I will yield back.

*Mr. Duncan. The gentlelady yields back.

I now go to Mr. Palmer for five minutes.

*Mr. Palmer. Thank you, Mr. chairman. I thank the witnesses for being here. And I don't know if this has been covered yet, maybe a little bit of a different direction, but whoever controls artificial intelligence and quantum computing will control the battlefield.

Vladimir Putin said this in 2017. That the country who leads in AI will be the ruler of the world. So there's serious considerations about the applications of AI and then combined with quantum computing.

And what I would like to know from each of you is, is this something that the Biden administration is seriously focused on, because I think it should be?

Ms. Fu?

*Ms. Fu. Yes. I agree that our ability, as an S&T superpower, is really predicated on our ability to get there first and fastest. And I agree that whoever leads the world in AI and in quantum will help lead the world in scientific discovery and also clean energy development and also application of AI for good.

*Mr. Palmer. So when President Biden said that AI should be used as the tools of opportunity, not as weapons of oppression. Was that just a head fake? Because he goes on to talk about how we need to be working with China, and I think most Americans are coming to the realization that that China is more than just an adversary. They are an enemy.

How does that factor into our need to develop our own ability to defend our nation using artificial intelligence and quantum computing?

*Ms. Fu. I'll continue then, I suppose.

*Mr. Palmer. Yes, ma'am.

*Ms. Fu. I would say I would say this. At a bilateral government to government, DOE to counterpart level, we don't have cooperation with China on AI.

I would say also that our ability as an S&T superpower really comes from having the best-in-class facilities, but also and the talent, but also our ability to work with others around the world so that we avoid strategic surprise.

*Mr. Palmer. Well, China is utilizing artificial intelligence in some of their unmanned surface vessels, reportedly intended for patrols in the disputed South China Sea.

I think China is only going to be more aggressive in that regard, and I hope, at some point, we can get a briefing, maybe in a classified setting about where we are on this because it really is one of the most serious things that the country is facing, in terms of threat to our own national security and our own way of life.

There are other things about it though, in addition to my concerns about the use of AI by our enemies, I am concerned about the threat to Americans on a day-to-day basis and some of their decision making.

For instance, in the use of their financial resources. There is an enormous push by this Administration for renewables and I just hope that, in the future, where AI is applied on financial decisions, that AI does not deny an American access to their resources if they want to buy an eight-cylinder combustion engine pickup truck and AI tells them they can only

have an EV.

With the machine learning advances that we are having now, I think that is a real possibility. I think it is also possibility in regard to availability of power on the power grid.

China has already, I think, developed a city, Xiongan, that will be the first artificial intelligence guided city and that that is something that I am concerned about.

Ms. Fun, in your role at the Department of Energy and you oversee the critical emerging technologies where AI could be applied to determining power generation.

*Ms. Fu. I would say this. I think it's very important for DOE to have capability in AI exactly for the reasons that you're talking about.

For us and the United States to have a strong capability, technological capability, especially when it comes to our strategic technology competition, I think that's essentially important.

On the piece of how AI is making decisions. Certainly, we need to introduce AI in very specific ways for specific instances. We need to be very careful about that I really understand the concerns that you have there.

*Mr. Palmer. Well, I appreciate that because there are some of my Democratic colleagues are so wrapped around the axle

on Green New Deal type issues that I hope that they don't expand that to the point that they impose upon the rights of average American citizens.

Mr. Chairman, I yield back.

*Mr. Duncan. The gentleman yields back.

I will now recognize the Acting Ranking Member Ms. Clarke of New York for five minutes.

*Ms. Clarke. Thank you very much and I want to thank our Chairwoman Rodgers and Ranking Member Pallone for convening today's hearing.

I would also like to thank our witnesses for bringing your expertise to the table today. It has been quite enlightening and this is the type of dialogue we need to engage in in order to make sure that the American people's interest comes first.

Examining how our federal agencies are using and thinking about artificial intelligence is undoubtedly a topic worthy of consideration for this Committee, however, like many of my colleagues have noted and both and our witnesses as well, I would be remiss if I did not take this opportunity to note what currently missing from any discussion about the role of AI in our society, and that is a federal data privacy standard. Baseline.

The pace of innovation in artificial intelligence demands increased accountability and transparency. And foundational to

that work is a comprehensive data privacy legislation, as outlined in the American Data Privacy and Protection Act, last Congress.

As we continue our work on AI-related issues, we must also commit to finishing our work and passing comprehensive data privacy legislation. One provision of the ADPPA that was born from my legislation I first introduced in 2019, the Algorithmic Accountability Act, required entities involved in the development and deployment of certain algorithmic systems to conduct annual algorithmic impact assessments and report certain findings to the FTC.

The Administration's executive order on AI and recent OMB guidance make mention of the use of impact assessments as they relate to privacy. I am concerned, however, that this narrow focus leaves consumers vulnerable to the potential bias and other kinds of discriminatory outcomes with respect to the use of automated critical decision-making systems.

So my first question is directed to all of you. How does your respective agency's view the concept of algorithmic impact assessments? And what factors should be considered when creating baseline requirements for effective impact assessments seeking to identify bias in algorithmic systems?

Ms. Fu, I guess we can start with you.

*Ms. Fu. Thanks. This is a really important question,

and I think especially for our mission set, around science, energy, and security.

I spoke a little bit earlier that we need trust and reliability in the data, in the outcomes. We can't just get the answer from the AI. We need to know how they got to that answer.

And that's really important because we deal with science, we deal with mission critical decisions and we deal with complex and life critical systems. So we need this for our nuclear mission. We need this for energy and the grid.

And there are a lot of issues that I think still require additional research and development, and there are things that we're focused on right now at the Department to look at.

*Ms. Clarke. Very well, Mr. Khan?

*Mr. Khan. Thank you, Congresswoman.

So one of the efforts that the Administration undertook, with kind of the Department's involvement, was securing voluntary commitments from leading AI companies to evaluate and red team their models, which I understand to essentially be kind of, in some sense, an impact assessment of the algorithms.

And so building on that work, which, of course, first of all, I would say, you know, we've kind of repeatedly said we see that kind of ultimately as a bridge to regulation.

But on top of that, you know, as we consider, you know,

that line of work, the Department is very focused on kind of developing better guidelines for how to evaluate these models for their impacts in a variety of areas, of national security concern, but also societal concerns such as bias and misinformation.

And so we want to have a better ability and a scientific foundation to do this so that then, you know, companies and other AI developers will be able to kind of mitigate some of these safety risks by, for example, if a model is displaying biased output, here are the techniques that you could use then to kind of remove that from the model.

So it's, definitely top of mind for us.

*Ms. Clarke. Dr. Tripathi?

*Dr. Tripathi. Yes. Thank you for the question.

Just this morning the Department released HTI-1, which is a rule from my agency regarding the use of algorithms in electronic health record systems.

And a specific set of provisions in that is related to risk management that's required for algorithms that are supplied by the electronic health record vendor.

So the idea there is that if the electronic health record vendor has either created themselves an algorithm or they're incorporating as a part of their product, they would have an obligation to provide information on the maintenance, which

would be like impact, certain parts of it would be like impact. They're required to make that information available on what processes they use to maintain that and to keep it up to date and also to do an annual review on all of the areas that are listed in that nutrition label as we're calling it.

*Ms. Clarke. Very well. My time has elapsed and I thank you.

Mr. Chairman, I yield back.

*Mr. Duncan. I thank the gentlelady.

I now go to my friend, Mr. Balderson, from Ohio for five minutes.

*Mr. Balderson. Thank you, Mr. Chairman, thank you all for being here today.

My first question is for Ms. Fu.

I understand that Argonne National Lab has been using AI to ensure greater reliability, resilience, and efficiency of the electric grid.

I would like to associate myself with the comments of my friends, Mr. Griffith, and Dr. Joyce, who raised the importance of this technology in helping grid operators deal with unique challenges such as severe weather and equipment failures.

This Committee has also heard concerns from grid operators, including PJM, regarding long-term grid reliability. Earlier this year, PJM released a report that shows 40

gigawatts of existing generation are at risk of retirement by 2030, and that the retirement of fossil fuel power generation outweighs new renewable generation getting online.

How is the Department of Energy using machine learning and AI to review and address long-term reliability issues as we're looking at the premature retirement of more and more power plants?

*Ms. Fu. This question of how we modernize our transmission grid is essentially important and how we are able to simultaneously achieve affordability, carbon reliability, and resilience.

These are things we need all across the board and we think that AI will be able to be leveraged to achieve all these things. There's going to be a number of advances that we're going to need to focus on, trustworthy decision-making being one of them, but also, innovations and materials that are going to help translate into a future modernized grid.

*Mr. Balderson. Okay. Thank you.

My next question is for Dr. Tripathi, thank you for being here as well. I am excited about the potential of AI and to improve the access to health care in areas like rural Ohio and Appalachia, Ohio.

Digital health technologies, such as telehealth and remote patient monitoring or RPM, reduce provider workload, increased

access to patient data and catch catastrophic events earlier.

We see this with AI-enabled RPM devices that can alert providers if there is a change with their patients or that can use data gathered to predict future patient outcomes.

At the same these same types of algorithms can do low risk administrative tasks like billing. What is ONC's approach in ensuring a risk-based approach to AI requirements?

*Dr. Tripathi. So thank you for the question.

So our approach in the rule that we released this morning is actually not to be risk based, but to focus on algorithms that are made available in the system.

And the reason that we don't do it in a risk-based manner is because it's really hard to ascertain what's risk based. You could have an administrative type of algorithm that seems benign, like scheduling, for example, that turns out to actually have a big impact on the patient's life if it's done incorrectly.

So we what focused on is really the functional aspect of it. If it's a predictive decision support intervention, as we call it, or an AI-based tool, then the transparency requirements, the risk management requirements would kick in.

*Mr. Balderson. Okay. All right.

Mr. chairman, I yield back. Thank you.

*The Chair. Thank you. The gentleman yields back.

The Chair recognizes Ms. Barragan for five minutes.

*Ms. Barragan. Thank you, Madame Chairwoman.

Dr. Tripathi, the human component in the development of and deployment of AI systems is important to build trust in AI. We have seen several instances in which AI systems have replicated the biases of their training data and their developers and people have observed biases in AI-generated content or decisions.

I know you touched upon this, but I want to follow-up on how your agency's diversifying and training your technology workforces so that the AI algorithms don't reinforce racial and other existing biases?

*Dr. Tripathi. Yes. And I am sorry did you want me to expand on that? I think I _

*Ms. Barragan. Well, I want to know how your agency is diversifying and training your technology of your workforce?

*Dr. Tripathi. Oh, specifically? Yes. So we have a couple of approaches on ourselves from our own organization. We have led a program called Pathways to Progress, which is specifically reaching out and recruiting people into federal service and, you know, we're one of the agencies that we want to be able to do that.

As it relates to recruitment into the field in general, there's a couple things that the Department is doing. I well,

many things the department is doing. Let me just name two. One is we have a public health informatics training program that we're working with ten minority-serving institutions and coalitions across the country to train and place 5,000 individuals in public health informatics positions.

The National Institutes of Health also has a program called AIM-AHEAD that now works in 29 sites across the country, including Puerto Rico, with a hub in Texas with which they've established, which is working with 1,500 trainees to bring racial diversity into these important workforce skill sets.

*Ms. Barragan. And these are people that are going to be in the technology sector there?

*Dr. Tripathi. So yes. I mean, the training and the idea of the recruitment is for them to be in informatics and technology.

*Ms. Barragan. Great. Thank you.

Mr. Khan, how is the Commerce Department partnering with external AI experts to implement President Biden's executive order on artificial intelligence, particularly for minority business development, to promote a fair and competitive AI ecosystem to help these businesses commercialize?

*Mr. Khan. Thank you for that question, Congresswomen. So one of the key efforts we had earlier this year was to publish, with the support of Congress, an AI risk management

framework that was through NIST, the National Institutes for Standards and Technology.

And so this framework has already been incredibly useful for a wide range of stakeholders and, particularly, you know, small and medium sized businesses, minority owned businesses, in order to kind of manage risk in the development, deployment, and use of AI in their businesses.

So that's certainly one core element of our strategy to address that issue. And then also, of course, we think it's critical to have a broad stakeholder input through a consortium we're launching, via NIST, to kind of get a wide range of stakeholders, both small and medium sized and large businesses, academia, nonprofits, et cetera, from all of these different areas to kind of help us, you know, and contribute their ideas for how to develop consensus-based guidelines for AI safety, security, and trust.

We also have a national AI advisory committee with kind of diverse representation, with many different voices that are coming to the table.

*Ms. Barragan. Thanks. And just to follow up. What steps do you think Congress or the Administration should invest in to ensure that Americans are not harmed by, you know, AI and the technology?

*Mr. Khan. Thank you for that question. Yeah. I mean,

it's a top-of-mind issue. So I think, you know, a lot of the work that we're doing under the executive order is to kind of develop the science around measuring AI and to mitigate its risks and information gathering and a lot of the key policy challenges, and in parallel with that, you know, we've secured these voluntary commitments from companies to kind of mitigate various safety, security, and trust risks.

And so we think all of these efforts will ultimately kind of need to lead to some form of regulation and we're happy to work with you on, you know, technical assistance on how all of these efforts will ultimately feed into that.

*Ms. Barragan. Ms. Fu, anything you want to add or say on that?

*Ms. Fu. I would say, I mean, I would echo my colleague, Saif. Really, as we implement the executive order, we're going to be able to identify where we are currently in the research and development cycle of all of these things and how might actually deploy AI and for which systems and we'll be able to identify where the gaps are.

And so we'd be very much happy to work with Congress and the White House to develop a robust plan.

*Ms. Barragan. Great. Thank you. Thank you to everybody who is here to testify.

With that, I yield back.

*The Chair. The gentlelady yields back.

The Chair recognizes Ms. Harshberger from Tennessee for five minutes.

*Ms. Harshbarger. Thank you, Madam Chair. Thank you all for being here today.

I have a question for Dr. Tripathi. What updates to the regulatory framework for drugs and biologics should Congress consider to facilitate innovation in AI applications?

*Dr. Tripathi. Yeah. So thank you for the question.

It's an active area that we've been looking at. And as a part of the executive order, we're going to be producing a plan in October that looks specifically at the use of AI in drug development.

So I'll have more specifics, hopefully, to once we you know, I don't want to get out ahead of our process here.

*Ms. Harshbarger. Yeah. That would be good. What about supply chain issues and things of that nature?

*Dr. Tripathi. As it relates to drugs?

I mean, I think that will, you know, probably a part of it. It's looking at that. That approach is going to look at discovery.

*Ms. Harshbarger. Yeah.

*Dr. Tripathi. Clinical research, post-market surveillance and then manufacturing practices.

*Ms. Harshbarger. Okay.

*Dr. Tripathi. And certainly in the manufacturing practices around supply chain will be a critical issue.

*Ms. Harshbarger. Yeah. Absolutely. What kind of updates to the regulatory framework for medical devices should Congress consider to facilitate innovation in AI applications, you know, while also ensuring that these products are safe and effective for the patients?

*Dr. Tripathi. Yes. I don't think, I mean, right now, I don't know that we have a Department perspective on that yet. We've certainly, you know, gotten feedback from the industry. And I think a few weeks ago we heard from the industry, in this in the subcommittee hearing, that is it relates to software as a medical device and the approaches there that the FDA is taking.

I mean, they have already approved 700 devices that have, you know, software, you know, AI-enabled tools as a part of the software. They are also working with international partners on the predetermined change control plan, which offers a lot opportunity for innovation based on good practices.

*Ms. Harshbarger. Yeah.

*Dr. Tripathi. So right now we're feeling like that's, you know, sort of covering the ground, and it compliments what the regulatory framework that came out in the rule today from

my agency, which, you know, sort of covers a broader set of capabilities with little bit less sort of requirements from a regulatory perspective.

So those kind of complement each other and I think cover a lot of ground.

*Ms. Harshbarger. I know. It can get a little complicated, can't it?

*Dr. Tripathi. Yes.

*Ms. Harshbarger. What existing standards are in place To demonstrate clinical validity when leveraging AI?

*Dr. Tripathi. I am sorry. The question was standards to demonstrate clinical validity? Yeah. So there's, you know, so there's a variety of ways, I think, that one can approach that.

You know, the industry is still converging on what are the best ways of testing these kinds of systems, how do you provide assurance. In developing the regulation we looked at a wide variety of kind of approaches.

There is no real consensus so the approach that we've taken in the rule is to require that there be a section of that nutrition label, that we described, that had certain types of quantitative sort of measures of performance, but we left a little bit open, you know, the ability to provide that information so that the industry could start to converge on different approaches.

We certainly see that as we develop a strategy ourselves, which we're going to do by April according to the executive order, and we're working hard toward that, we'll have an assurance strategy there from the Department's perspective, and, of course, we'll be working in collaboration with the broader AI Safety Institute that Department of Commerce is launching.

*Ms. Harshbarger. So are there gaps in the existing standards now?

*Dr. Tripathi. Well, I would say there aren't any standards, you know, real industry consensus standards in the area of AI safety and sort of standards for performance in that regard.

*Ms. Harshbarger. Okay.

*Dr. Tripathi. So I mean, I guess the answer to that one is yes, but it's early.

*Ms. Harshbarger. What about gaps in existing standards, not for AI, but just existing standards?

*Dr. Tripathi. There, I mean, there are ways of looking at sort of validation of these kinds of tools in, you know, in the broad spectrum. There's you know, sort of evidence-based, rule-based kind of tools versus more that move into this predictive area.

There are existing ways of looking at that, but, you know,

but I think the we're all recognized that this is a whole new generation of kind of tools, especially as you get into generative AI.

*Ms. Harshbarger. Yeah.

*Dr. Tripathi. So we need to think of different approaches there.

*Ms. Harshbarger. Okay. Do you want to add anything, Mr. Khan, or Ms. Fu? Good. Okay.

With that, Chairwoman, I yield back.

*The Chair. The gentlelady yields back. The Chair recognizes, for five minutes, Mr. Sarbanes.

*Mr. Sarbanes. Thanks very much, Madam Chair. Thank you all for being here.

So I know a lot of the discussion and debate is around whether what the level of regulation ought to be coming from the government with respect to AI. How government can partner, in terms of the innovation side of things, but at the same time manage risk.

So what I wanted to ask each of you is whether you have confidence, from where you sit and the responsibilities you have, not so much about your ability to regulate because we have to contribute to that authority and manage the risk that's happening out there, but whether you think you can see all of it clearly, because and let's leave aside foreign actors in

foreign states. Let's just talk about the domestic development and deployment of artificial intelligence.

If each of you could just speak for a minute about, from where you sit, do you think you have full eyes into everything that is happening out there so that you know and can communicate, in particular, the risks that can come whether or not you think you have the tools, but, obviously, if you can see clearly, you are in a position to help us give you those tools?

So if you could just speak to your ability to kind of see the risk out there from each of your positions. We can just start with Ms. Fu.

*Ms. Fu. That's a really important question. I would be remiss if I said we could see everything very clearly. I do think that AI is not new to DOE. We've been investing and working on these issues for decades.

And we also have, at our national labs, a tremendous resource of skilled scientists and engineers who are focused on many of these questions.

To the questions of risk, our laboratories are already evaluating model capabilities. They are already starting to engage in red teaming to identify where some of those risks might reside.

So we don't see clearly now. We believe that with the

tools that we, you know, the taskings that we've gone through the executive order and in partnership with our inter-agency colleagues will be able to share what we're finding and be able to get to a better place when it comes to managing some of the risks that coming from AI.

*Mr. Sarbanes. Thank you, Mr. Khan.

*Mr. Khan. Thank you, Congressman. So, you know, there are many ways in which AI is kind of different technology than so many other areas. I mean, if you just look at an automobile, you can look inside there, you know, like, what parts it's made of, you know what each part is doing.

AI models, I think, you know, Dr. Tripathi has noted before, black box is essentially there's these mathematical algorithms that are made of billions or trillions of numbers that we don't know how it works.

We know the data we've put in. We know that these models are able to output, you know, certain types of data or content. We're able to red team and evaluate the capabilities, but, ultimately, this is a technology that we're still kind of at, I think, as a society still grappling with how to understand and I think we really need a society-wide effort to really, kind of better characterize where AI is going and the pace of progress is just breakneck.

So that's going to be a huge, huge challenge for us. I

mean, I think we're trying to do our best with the resources we have to better understand these models, better evaluate them. I think more resources are going to be needed.

*Mr. Sarbanes. Dr. Tripathi, what is your line-of-sight into what is happening out there?

*Dr. Tripathi. Well, I would certainly agree with Ms. Fu that, I don't think anyone, can say that they have, you know, complete vision into this. Peter Lee, the head of Microsoft Research, said that GPT-4 is like the smartest and dumbest person you've ever met in your whole life.

And I think that's, you know, sort of points to the, you know, the promise and the risk and the concern. As it relates to I have more confidence today than I did yesterday because our rule is out and our rule was released this morning.

And one of the things that the rule does is it creates transparency, first and foremost, because I think we have to start with transparency. And that allows us to, you know, be in the position of saying that's where we get the opportunity to seize the promise and to have risk mitigation, more than anything else.

Because I think one of the things that, you know, has struck me as I've been in, you know, discussions with the big tech vendors about this is that they themselves are surprised every day by what they discover from these models.

So I think we're all learning this together, and it's appropriate for us to set up these guardrails, have appropriate risk management, so that we're able to mitigate the risks as they emerge.

*Mr. Sarbanes. Great. Thanks very much. I yield back.

*The Chair. The gentleman yields back.

The Chair recognizes Mr. Weber for five minutes.

*Mr. Weber. Thank you, Madam Chair.

Mr. Khan, I am going to go to you. We have been engaged in conversations around the world about, quote, where do we go from here, end quote, with regards to AI regulation for years. I am also on Science, Space and Technology Committee.

Not only have we think to talk about where do we go from here. I am also interested in where have we been. Where have we been, as a matter of fact, so that we don't repeat those kinds of mistakes.

So I am going to ask you two questions about that. What sort of regulations have been, in your opinion, the worst at creating an innovative climate for the AI sector at large and what kind of regulations have been the best?

*Mr. Khan. Congressman, that's a great question. So, yeah, I mean, I think, you know, the way in which kind of regulation, I think kind of applies in the AI sector thus far is really kind of, you know, sector specific.

There are some regulations that kind of may have an impact on particular use cases. I mean, I am happy to get back to you kind of on specifics on kind of which sectors it has worked out really well and which one are not and what studies kind of support which approaches.

I mean, I think that is a critical question as we kind of navigate any potential future regulation in this space.

*Mr. Weber. Well, I think of Google when they first trademarked the name Google. Those two guys that founded Google, I thought, how do they know that name was available? I mean, they couldn't Google it.

And so what I am wanting to know is from AI, who is on the leading edge? Who is compiling all the best? Is there one clearing house? Is there one company? Maybe it is the gentleman from California, Mr. Obernolte, that is this is categorizing all that because he is smart with computers, but your experience has been, is there one clearing house that keeps up with all this? Who would be?

*Mr. Khan. Thank you, Congressman. So, I mean, there is a number of companies that are at the kind of leading edge of AI development. You know, one of the things that they heavily rely on is data, of course.

And so much of that data, of course, is open source. You know, a lot of these large language models are essentially

being trained on data that is just available on the internet. But there are, you know, service providers who kind of collect and are kind of clearing houses of data that then have as customers leading AI developers who then use that data to train their models.

And then there are other companies, of course, who operate other business models and have very large in-house datasets. And so that's kind of one example in kind of the data space.

So there's kind of angles that I think industry takes in terms of getting the resources they need.

*Mr. Weber. Ms. Fu, has that been your experience as well? What would you add to that?

*Ms. Fu. I would just add that we are working with industry now, and I think there this is an area where really deep partnerships between DOE and industry could really supercharge our nation's AI capability.

I mentioned earlier that, you know, we're talking a lot about large language models. The kinds of AI that DOE needs for its science, energy, and security mission are not scrapings of the internet.

There are going to be physics informed foundation models that are going to need scientific data, and we have troves and troves of that across our 34 user facilities around the nation, our most powerful X-rays and supercomputers and the things that

we're getting from research.

And if we're able to harness all of that data and use that in the service of the nation, I think this would be incredibly powerful.

*Mr. Weber. So who is the clearing house for those 34 agencies around the nation?

*Ms. Fu. The 34-user facilities? So DOE holds these as assets. Our national laboratories and the user facilities have the most important and sort of powerful scientific tools that have enabled discoveries like AlphaFold that have done the kind of very close molecular scale looks at things nobody has ever seen before.

And so I think, you know, this question of how does the federal government, how do we, as DOE, use the data that we have as an asset for our science, for our energy mission, and for our national security mission? That's incredibly important.

*Mr. Weber. Is there no other people who house that kind of information? It is just the DOE? And let me preface by asking you this question about weather. Two, three, I guess, three February's ago, winter storm Uri hit Texas.

The grid, there was all kinds of things that had, it was a perfect storm, if that is not a bad term. Could AI have prevented that in your opinion or predicted that, I guess, is

the relevant question.

*Ms. Fu. Well, I would say a few things and I think perhaps my colleague Saif also would like to say something. We are we have worked with NOAA. Our supercomputing has and our cooperation with NOAA has helped on weather prediction.

I would say also that our laboratory scientists are also cooperating with industry to think about AI-enabled models for climate that can predict a week in advance.

So I think there is a lot of tremendous opportunity here to do more.

*Mr. Weber. Okay. Well, I appreciate that, but I have run out of time, and I will yield back. Thank you.

*Mrs. Lesko. [Presiding] Thank you. Now, Representative Schrier is recognized for five minutes for questioning.

*Ms. Schrier. Thank you, Madam Chair, and thank you to the witnesses today.

As a member of the New Dems Artificial Intelligence Working Group, I really appreciate the Chair and Ranking Member's commitment to exploring AI, the good, the bad, and the ugly, in particular in the jurisdiction of this Committee.

I also, before I even ask my question, I want to associate myself with some of the concerns expressed by my colleague, Mrs. Fletcher, about people self-diagnosing online using AI.

And I will note that this extends into mental health as

well, often relying on AI for diagnosis and therapy that is totally unchecked by licensed professionals, and that is a separate topic.

I want to start with a question about health care. And so Dr. Tripathi, my first question is to you. I am a physician, and I believe that AI developments can allow providers to save time, be more effective, more efficient in their care.

I think it can help keep physicians up with the latest research, can reduce errors. Now, it can also impact, positively or negatively, the doctor-patient relationship, physician happiness, felling like almost a decade of training is worthwhile if a computer is doing a lot of the thinking, and so I wonder about satisfaction and other areas of risk.

So I feel like we need to strike the balance there between striking that treasured human interaction, doctor-patient relationship, and I want to talk about kind of where AI crosses the line.

Like, has the doctor or is the doctor becoming just a quality check on a computer? Where does the role of the physician go in this context? And then also, just in the realm of litigation, let's say a suggestion is given and a physician does not follow that, does not think it is the right thing for their patient, is that physician then at higher risk for litigation for not following a suggestion provided by a

computer.

*Dr. Tripathi. Yeah. Thank you for the question.

So, I mean, I think we would see, you know, this as being a tool to augment, you know, sort of physician decision making. As really a tool for the physician to ultimately make those decisions and hopefully to return the joy back to medicine.

Both my parents and my daughter are doctors, and certainly the amount of overhead and the administrative time that takes away from the time that you want to be spending with patients or be doing, you know, spending time really, like, managing a patient's care, is taken away by all those administrative burdens.

So if you look at and again, a couple of weeks ago, Dr. Schlosser from HCA and Dr. Longhurst talked about where they're starting, which is things like the physician inbox, using that for triaging and generating responses that are reviewed by a human before they go out, but that has alleviated a lot of burden and given back time to the provider so they can, you know, sort of use that time.

I think as it relates to liability, at the end of the day, I think, again, Dr. Longhurst said a few weeks ago, that's the importance of having the person in the loop, the physician in the loop at the end of the day.

You don't want to be automating these technologies. I

think, you know, Peter Lee, from Microsoft Research again said that, you know, GPT-4 is not ready for use in health care without direct supervision.

*Ms. Schrier. Yep.

*Dr. Tripathi. Physicians are going to ultimately responsible for the decisions they make, but they have to be in the loop. And that's why our rule is so important because it provides the physicians with more information about that tool that puts them in a better place to make those decisions.

*Ms. Schrier. Thank you. And, yes, I think the term they used at the last meeting about this was it saves pajama time, which I am well familiar with.

My next question is about energy, and I only have about a minute left, so I will be quick. I have been talking with hydropower in my district about the need and the complexity of balancing as we add more renewables, variable sources of energy to the grid, the importance of being able to balance base load and variable load.

And so I was wondering about the role of AI in this and also the timing. And I wonder, Director Fu, if you could talk about that a little bit?

*Ms. Fu. Sure. Thank you. And this is a very important question. You know, our quest here is really how do we maintain, I mean, not only maintain, but how do we exceed

expectations of energy reliability and low energy costs?

And our ability, for example, to be able to forecast where loads are going to be, that is already happening. You know? Utilities are already doing things like that. And AI some level is already being applied, but this question of how do you plan for an energy grid? How do you think about where to site additional generation or use existing hydropower?

Like, these are things that are going to need real time, close to real time application, and I think AI could potentially help with that, but we to do it in a safe and managed way.

*Ms. Schrier. Thank you very much. I will yield back because of my time. Thank you.

*Mrs. Lesko. Thank you.

Next, we recognize Representative Pflueger for five minutes of questioning.

*Mr. Pfluger. Thank you, Madam Chair.

In my meetings with industry, no matter what kind of industry it is, the rise of cyberattacks and the rise of AI adding to the threat has been mentioned by pretty much every one of them.

Ms. Fu, I will start with you. In your testimony, you emphasized the importance of focusing on applications of AI that govern critical infrastructure. You know, looking at

water utilities across the nation, US Agency officials blamed a hacker group Cyber Avengers affiliated with the Iranian government.

We know that AI can be a force for good, but also can be used, to exploit. What more can DOE do to promote the public-private collaboration in this instance?

*Ms. Fu. Thank you. This is really top of mind and one where our Office of Cybersecurity, Energy Security, and Emergency Response is actively engaged already with utilities of all sizes. And I think it is very important that they continue to do that.

They are working on a report right now that will actually look at a number of potential risks to critical infrastructure, including the grid. So obviously, including cybersecurity, and really leveraging some of the existing work that is happening at the national labs in this space.

*Mr. Pfluger. Thank you.

Moving to health care. This year CMS a rule exempting Medicare Advantage Organizations to ensure that they are making medical necessity determinations based on the circumstances of the specific individual as opposed to using an algorithm or software that does not account for the individual circumstances and it will become effective in the new year.

Dr. Tripathi, you list this finalized rule as one of the

many examples of HHS AI-related activities. Can you elaborate on how AI is being integrated into this process and how it aligns with the goal of holding MA organizations accountable to deliver the quality health care that patients need?

*Dr. Tripathi. Yes. I mean, I was pointing to that as one example of, you know, the areas that the Department has covered and the CMS specifically is looking at now.

There is a lot more work, I think that, you know, that CMS is going to be doing. And as a part of the task force that we're launching, health care delivery and, you know, the payer side of that you know, going to be one of the key parts that we look at.

So I think there'll be more to come there as we, as the Department and the CMS, start to look deeper at these issues. But, you know, we also want to be acting in areas that we know that we can act and when we know that there's particular vulnerabilities.

*Mr. Pfluger. Have you seen AI leveraged and used in a way that, I guess, is used to steal medical records, or used in a way that exploits known vulnerabilities in the medical record system?

*Dr. Tripathi. I haven't. I think that the biggest risk just right now, and, again, this is fast moving, and, you know, it's a little bit of an arms race on both sides with the

offense and the defense.

But I think the biggest risk, from a health care perspective, is all the information that lives outside of the health care system that is covered by HIPAA and covered by the HIPAA's privacy rule and the HIPAA security rule.

We tend to think of health information as being medical record information, but all the information that lives outside from our searches on our phone, from our visits to our doctors, and the geolocation that is on our phone, people call that the inferred medical record.

And in some cases, the inferred record might actually have more information than your real medical record.

*Mr. Pfluger. Right.

*Dr. Tripathi. And the ability of AI to actually have access to that data, which is already available, which is not protected by HIPAA, put it together in ways that we never would have thought.

I think that's, you know, that's the area that's of particular concern right now.

*Mr. Pfluger. Thank you. I would like to yield the balance of my Mr. Obernolte.

*Mr. Obernolte. I thank my friend from Texas for yielding.

Mr. Khan, I would like to continue the question chain that

was started by Chairwoman Rodgers regarding the use of the Defense Production Act.

You made it clear when she asked about this, that the Department was using it to collect information not to regulate, but I want to be clear. The collection of that information is nonconsensual, correct?

*Mr. Khan. Thank you, Congressman.

So, we're using the Defense Production Act authority to issue a survey to ask industry questions. That's _

*Mr. Obernolte. Right. But response to the survey is non-consensual? It is mandatory.

*Mr. Khan. It is a mandatory questionnaire.

*Mr. Obernolte. So my question is, you know, the Defense Production Act was passed to give government some control of our supply chains in times of armed conflict.

This seems like a pretty far cry from that. How does the DPA give the Department of Commerce the authority to demand that information from industry?

*Mr. Khan. Thank you, Congressman. So as far as the particular legal questions, I would defer to kind of our counsel across the Administration, of course. You know, we'll be gathering, though, information on kind of safety and security testing that will be kind of very essential to meet our nation's needs for, safe and secure AI.

*Mr. Obernolte. Wow. Okay. Well, we are going to get more time here in a minute, but, thank you for your response. I will yield back.

*Mr. Pfluger. I yield back, Madam Chair.

*Mrs. Lesko. All right. Thank you.

Now, I recognize Representative Trahan for five minutes of questioning.

*Mrs. Trahan. Thank you, Madam Chair, and thank you to our witnesses for being here today.

For consequential decisions, including those affecting individuals' health care and education, trust and transparency is paramount. A big part of the reason that we trust our doctors and teachers to treat our medical conditions and educate our children is because we know that they have been educated and certified to perform those critical tasks.

But as we are beginning to see AI being used in health care and education, I am concerned that there isn't nearly enough transparency into how those models and products have been trained or tested or how teachers and doctors will use them.

That is why Congresswoman Sarah Jacobs and I recently sent a letter to the Department of Education asking them to examine the civil rights implications of the use of AI in the classroom.

In addition, in an answer for the record for the recent AI hearing in the Innovation, Data and Commerce Subcommittee, Amba Kak highlighted the importance of having tailored obligations across the development cycle of AI systems, including impact assessments and algorithmic audits, early throughout and after deployment.

However, we have seen that time and time again, tech companies resist external accountability and transparency into their products and services claiming it would harm innovation.

Mr. Khan, how can privacy-enhancing technologies enable meaningful transparency and accountability into AI development without compromising trade secrets or proprietary information?

*Mr. Khan. Thank you, Congresswomen. So the Department has a number of initiatives underway to kind of develop privacy-enhancing technologies.

One effort, in collaboration with the Department of Energy is to kind of develop testing environments that will be kind of a test bed for new privacy-enhancing technologies.

We've also, just two days ago, NIST, the National Institute for Standards and Technology, has issued a set of draft guidelines around differential privacy, which essentially is a technical technique where you can introduce noise into output data even if there was kind of sensitive data that went into the training of the model and that would thereby protect

privacy.

We're also kind of looking into a number of other technologies as well in this space that would then kind of hopefully make it into guidelines as well. NIST has also kind of provided, you know, quite a bit of technical leadership as well.

At the recent Summit for Democracy, you know, there's a privacy-enhancing technology challenge. And this effort resulted in kind of 90 ideation papers, 19 submitted technical solutions using privacy preserving techniques.

And, you know, the final challenge actually had six winning solutions. You know, they were demonstrated in international workshop and provided as open-source packages to the privacy community.

So we're really trying to best facilitate it as we can, the development of these technologies.

*Mrs. Trahan. I appreciate that. We also need to be able to trust the use of AI after it is deployed.

The EU agreed last week to significant regulations for AI that include important transparency requirements for AI systems classified as high risk such as medical and educational uses of AI.

Among other things, those requirements mandate the development of human oversight and human machine interface

tools for high-risk AI to ensure that they can, quote, be effectively overseen by real human beings during in which the AI system is in use, end quote.

That requires companies to build systems that would give doctors and teachers the tools that they need to properly oversee the use of high-risk AI.

How is the Department of Commerce encouraging the development of that type of accountability and oversight, and what can Congress do to help?

*Mr. Khan. Thank you for that question, Congresswoman. So with regard to the kind of EU AI Act, you know, we're obviously kind of on the same page with our European partners that we need to address risks in this space to kind of harness the benefits and ensure that we create an interoperable framework that also kind of ensures the innovativeness of our industries.

On the question of accountability. One of the efforts that we've already been undertaking over the last year is a report on AI Accountability, which is, we've gone through a process of getting a great deal of stakeholder feedback and are now going to be publishing a report in early 2024, to get at many of these issues to provide recommendations how best to create kind of transparency and accountability in AI development, deployment, and use.

*Mrs. Trahan. Great. Thank you. And my final question, which I will actually have to submit for the record because I am running out of time, was for, Dr. Tripathi, and the transparency guardrails that should be in place in health care. But I think I am out of time, so I will yield back.

*Mr. Obernolte. [Presiding] The gentlelady yields back. I will recognize myself for five minutes.

And point out first of how egalitarian a Committee can be when it is possible to move from the most junior chair in the room to the chair within a single hearing.

Mr. Khan, just continuing our discussion about the administration's invoking of the Defense Production Act. You had mentioned in your testimony that one of the tasks of the AI Safety Institute will be to create guidelines relating to the detection and labeling of artificially generated content.

And there has been a lot of discussion about requirements for watermarking of AI generated content. Do you think that the Department of Commerce has the authority, under the Defense Production Act to require that artificially generated content be watermarked?

*Mr. Khan. Thank you, Congressman. So the Department's use of the Defense Production Act is an information gathering exercise. It is not actually an imposition of requirements to kind of actually watermark technologies or kind of institute

any other kind of actual regulatory requirements where there would be any kind of approval process.

What it is really focused on is kind of a survey of advanced AI developers, and I would note, you know, the technical thresholds in the EO are really just for kind of next generation AI technology.

So we are talking about a small number of very advanced, highly capable AI systems. We are kind of having an information gathering exercise. So that is essentially what we are doing there and not a requirement for a synthetic content authentication.

*Mr. Obernolte. Sure. Yeah, I understand. But, I mean, you are imposing requirements on industry. And just to be clear, this isn't us necessarily disagreeing with the Department's need to have access to this information.

It just seems to me that invoking Defense Production Act, an act that was clearly created with the goal of ensuring our supply chains, in times of armed conflict, is not appropriate to apply to this particular domain.

This is very different. And it seems to me that this is the Administration usurping authority away from Congress and we are going to get there. I assure you. We're working to try and, create a regulatory framework for AI and I have no doubt that that framework will also involve tracking and locating the

accumulation of large amounts of compute, probably a Know Your Customer requirement on the vendors of compute, certainly international cooperation for preventing the proliferation of malicious AI, all of those things, but in in my opinion, the Department of Commerce has the authority to do none of that absent express grant of that authority from Congress.

So I urge you to work with us and our colleagues in the Senate to together craft a framework that gives you the tools that you need. Don't just take them because it's just not going to stand up to legal scrutiny. But thank you for the discussion.

Dr. Tripathi, I wanted to have a discussion with you. You've had a couple of comments with my colleagues about the FDA's approval of now almost 700 applications for the use of AI in medical devices, which is incredible.

Just a few months ago, we had a health subcommittee hearing. The number was 400. So that shows you the pace of the technology. And I have to compliment you. I have frequent interactions with industry and almost overwhelmingly, they say that the FDA is doing a great job in overseeing the use of AI.

Thoughtful, engaged, involved, patient, safety centric, all of the appropriate things that we want to hear.

*Dr. Tripathi. I will let them know that. Thank you.

*Mr. Obernolte. Okay. Yeah. Well, please pass that

along. Because we know it is not easy and you are learning to build the plane as you are flying it.

So obviously, the FDA has acquired some knowledge about this, but we have been talking about the AI Act that was passed by the EU a couple of days ago.

Under that regulatory scheme, a new agency is granted the authority to issue these licenses. So we in Congress are grappling with this decision of what to do.

Do we follow the lead of countries like the EU, where we spin up a new authority and we take that authority away from the FDA, or do we have a hub and spoke approach where we empower agencies like the FDA?

And a better way of asking the question is, is it easier to teach a new agency everything the FDA already knows about ensuring patient safety and medical devices, or is it easier to teach the FDA what it might not already know about AI? Which of these two paths do you think is appropriate?

*Dr. Tripathi. Yeah, well, I mean, certainly any decision, along those lines, would be an administration level, decision.

So, you know, we would participate in that discussion and, you know, and the Administration ultimately will make those decisions. I mean, I will point out, and I think it's been recognized in the approach to the AI and in all of the, you

know, the work being done in the AI Council, which is, you know, part of the AI executive order, is the recognition that there are certain things that are government wide and really important government wide, but the sector specific, you know, sort of factors are really important and the deep domain experience and expertise that you need in each of those domains is very, very important.

So I think figuring out the right model that doesn't break either of those is, you know, I think where we're going to want to be.

*Mr. Obernolte. Yeah. I think we are in furious agreement on that, and, Mr. Khan, will tell you from the NIST risk management framework, the risk of AI is very contextual.

So, what is risky in one context is not risky in another. But let me disagree with something you just said. The Administration will not decide. We all, together, will decide what the appropriate regulatory framework is and I hope that that is going to be a collaborative, non-adversarial process as we work through that over the next couple of years.

*Dr. Tripathi. I stand corrected on that.

*Mr. Obernolte. All right.

*Dr. Tripathi. Thank you.

*Mr. Obernolte. Well, thank you very much.

Ms. Fu, I had some questions for you, but I will submit

those for the record. I will yield back.

We will now go to my colleague from Iowa, Ms. Miller-Meeks, you are recognized for five minutes, finally, for your questions.

*Ms. Miller-Meeks. Thank you, Mr. Chair. I thank all the witnesses and the Committee for holding this hearing.

Just as a disclosure, I am a physician and a former director of public health, and in leading the Modernization Task Force for the Healthy Futures Task Force focused on AI.

Dr. Tripathi, the Office of the National Coordinator for Health Information Technology or ONC runs a voluntary FDA certification program for health IT. Depending on the intended use of a health IT product, it may also need to gain FDA approval or authorization.

Duplicative or conflicting rules can lead to stakeholder confusion. How do ONC and FDA coordinate requirements for AI-enabled health technologies?

*Dr. Tripathi. Yes. Thank you for the question. Definitely has been a lot of effort, on our part, working with our FDA colleagues.

So we work very closely with FDA on the definitions of devices and the boundaries and the complementary, you know, sort of pieces of our regulatory approaches.

As a general matter, and I think this is from the 21st

Century Cures Act, if I am not mistaken, ONC has the authority over electronic health records and the FDA is over devices.

Now, there is certainly a blending of those as you think about devices or software-enabled devices, particularly being within electronic health record systems.

The approach we've taken is to say that we're agnostic to whether that's a device or not, in terms of the transparency requirement for AI-enabled tools that are in the software, and indeed that nutrition label that would be a requirement that an electronic health record vendor make available to a clinician like you, for example, about the AI that's in the tool, we would think it'd be very informative for you, as a clinician, to know, oh, this particular AI-enabled piece of software actually is also an FDA approved device.

*Ms. Miller-Meeks. And given the Chinese advancement in AI and perhaps in health ahead of the United States do you, and we have talked about HIPAA throughout this hearing and if you could be a very brief answer, because I have some other questions.

Do we need to make changes to HIPAA where people could voluntarily share information so that you could get repetitive machine learning? I am thinking especially of scans like in mammography or in cancers?

*Dr. Tripathi. Yes. If I understand the question right,

there is nothing in HIPAA that prevents an individual from voluntarily sharing their information with anyone.

*Ms. Miller-Meeks. Thank you.

Dr. Fu, you mentioned the national laboratories, Iowa houses a national laboratory, Ames Lab at Iowa State University, and researchers at Iowa State University were awarded funding, through ARPA-E, to leverage artificial intelligence technologies to improve solar panel design and application.

What other emerging research and development areas are you planning that have applications to meet industry and community needs?

*Ms. Fu. There's a series of earth shots that the DOE has launched on a number of different topics. So I think that there's tremendous potential for AI to really advance the frontier in all of these areas and materials are really going to be central to that.

And we have many, many material scientists, combined with the computing power that we have at the DOE National Labs, that will be able to serve as a tremendous resource for the nation.

I mean, I would just want to emphasize that our national labs, they're stewarded by DOE, but they serve many agencies. And I've talked about a lot of the agencies that we partner with and work with to really advance both our shared mission

our shared missions for good. Thank you.

*Ms. Miller-Meeks. Thank you. And much of the leadership in AI is centered in big tech companies, i.e. Google, Microsoft, Amazon, et cetera, with heavy geographic presence on the coast.

What are your current, and any one of you can answer this, current or future plans to incentivize companies to connect with talented researchers at universities and colleges, particularly those working in geographic locations underrepresented in Big Tech, i.e. the Midwest?

*Ms. Fu. I would just volunteer here. You know, our national labs have really focused on place-based innovation and seeing how they can partner with universities, both within their geographic confines, but also around the country.

And so I think that's one really important piece. The second is around computing availability. Ms. Eshoo mentioned earlier support for the National AI Research Resource. That's something that is needed and that's something that DOE is supporting.

We've extended the lifetime of one of our fastest supercomputers, Summit at Oak Ridge National Lab, that will be a resource for researchers across the country to be able to access compute.

*Ms. Miller-Meeks. My final _

*Ms. Fu. That Ames Lab is great.

*Ms. Miller-Meeks. My final question, and it may be that you can submit in writing. Machine learning, particularly neural networks, are susceptible to systemic biases and data used to train them, and this was mentioned earlier.

How do your agencies structurally federally support programs to ensure that future networks reflect the interest of all Americans and are not biased to reflect the circumstances, interests, worldview, and politics of the concentrated coastal tech areas where they are currently primarily developed?

Do you want me to have them submit answers in writing, Mr. Chair?

*Mr. Obernolte. I was going to give you another 30 seconds of leeway. It is up to you.

*Ms. Miller-Meeks. Why don't you submit your in writing if all three of you can do so, and I yield back my time. Thank you so much.

*Mr. Obernolte. The gentlewoman yields back.

We will hear next from the gentleman from Texas, Mr. Crenshaw, you are recognized for five minutes.

*Mr. Crenshaw. Thank you. Thank you all for being here. Long day.

I wanted to take a step back and look at basics about risk assessment and what we are even talking about when we talk

about regulating AI, and we sort of breeze over that too often in these conversations, I think.

And so I am actually curious how you even define, so if you are going to regulate AI and you are going to call something artificial intelligence, how do you define it within your agencies? How do you differentiate between advanced software that a programmer wrote that's really, really good, and actual AI?

We will start with Mr. Khan, actually. Thanks.

*Mr. Khan. Thank you, Congressman.

So yeah, the question of how to define AI is kind of an enduring question that comes up repeatedly.

In the recent executive order that the President issued in October on AI, we do have some definitions of both AI broadly, but also specifically kind of a more concerning category of dual-use foundation models.

And so we've kind of taken attempts there. There are kind of existing _

*Mr. Crenshaw. I am not asking is there a definition. Like what is your definition?

*Mr. Khan. Happy to get back to you with kind of _

*Mr. Crenshaw. Okay. Noted. That is fair enough.

*Mr. Khan. _ specific technical _

*Mr. Crenshaw. Do you have a definition?

*Ms. Fu. I am sure we, as part of our own efforts to develop, for example, a generative AI user manual for the Department so that we can actually start testing around use of AI.

But I would say, for us, it's less important to have a definition than it is to have a capability.

*Mr. Crenshaw. What do you _ can you explain that?

*Ms. Fu. So for us, our Department is very much more focused not so much on the regulation side, so how do you define AI and regulate it?

*Mr. Crenshaw. Yeah. Yeah. Okay. I understand.

*Ms. Fu. But how do we have a capability for our mission set.

*Mr. Crenshaw. Okay. Fair enough.

*Dr. Tripathi. Yeah. In the rule that we released this morning, we don't define AI. What we define is what we call predictive decision support interventions, which are software-enabled tools that are in an electronic health record or available in an electronic health record.

AI would be sort of one example of that. We have three criteria. One is that the software tool actually learns from sample data. That's the first thing. Second is that it draws and drives relationships between a couple of the variables that are part of that learning. And third, that it makes a

prediction or an inference from that.

*Mr. Crenshaw. Okay. Yeah. One of my big concerns is I see the difference as you can't look under the hood. Like, if a programmer can't go in there and say this is what this is what will happen based on the code that I am looking at.

To me, that is what AI is. And you can tell me that that is incorrect. I think that is correct. So is there a theoretical limit then to how risky with this is and how much we should build? Maybe this is a good question for Dr. Fu, Department of Energy.

*Ms. Fu. We're certainly concerned about the risks, and I mentioned a little bit earlier that we're already starting to evaluate model capabilities and also to test some of these systems to see what we can get out of them.

We are specifically concerned about some of the more existential catastrophic risks here, but I think that the learnings that we find will be applicable potentially to a number of different fields.

*Mr. Crenshaw. Okay. So catastrophic risks. We don't want to breeze by that, do we? Concerned about the whole existential risk and everything, but we have heard a number of times how at risk our critical infrastructure is.

Let's just keep it at the energy and electrical grids for, you know, for our purposes here. That is not just AI, that is,

I mean, that's simply China hacking into our stuff. Do you think we are at a point where some of our critical infrastructure should have a manual override capability?

*Ms. Fu. That's a very interesting question and I would like to take that back to our SMEs there and CESER.

*Mr. Crenshaw. Okay.

*Ms. Fu. But I would just say, you know, it is just as important to understand how we're going to apply AI to the grid, how we're going to protect against cyberattacks, but I think, again, you know, going back to this AI capability question, we're going to need to develop AI to counter AI at the end of the day too.

So you know, this is kind of pointing to how do we apply some of these tools to the adversarial AI?

*Mr. Crenshaw. And given that you guys are developing it, of course, at the Department of Energy, do you feel comfortable that if a hostile country was developing something also of great capability that we would have the means to be able to detect that development?

*Ms. Fu. Am I concerned about that or do you _

*Mr. Crenshaw. Are we able to detect that development or is it something that can happen with a great amount of, I guess, surreptitiousness. Can it happen in secret?

*Ms. Fu. Certainly I am sure that there are many programs

underway. I am sure the team would be happy to brief you on what we know.

*Mr. Crenshaw. Okay. I yield back.

*Mr. Obernolte. The gentleman yields back.

We will hear next from the gentlewoman from Florida, Ms. Cammack, you are recognized for five minutes.

*Ms. Cammack. Thank you, Mr. Chairman. Thank you to our witnesses.

I think I am your last questioner of the day. So I will jump right into it. This is going to be a question for you all and no lengthy response if you can avoid it.

My colleague, Representative Palmer, touched on quantum, so I am just going to do a little bit of follow-up on that because I think it is crucial that we understand the implications of quantum AI and really the risks that it poses as we are in this race.

So specifically, what are each of you doing to harden our infrastructure, and are you developing quantum safe encryption technologies?

We can just go down the line.

*Dr. Tripathi. Sure. I can start. The Department just released a cybersecurity strategy. It has four elements. I won't go through all four. I know you want us to be brief. One is about setting performance goals, sector specific

performance goals.

There's sort of a basic set and there's an enhanced set. I don't know the answer to whether it's addressing the, you know, the quantum-based encryption, you know, sort of issues, that you're describing.

I am happy to get back to you on that. Second is carrots and sticks and we would like to work with the Congress on that, providing incentives for those who already have met the basic performance goals for them to invest in enhanced technologies.

And correspondingly, it's, you know, raising the floor and raising the ceiling on the floor, providing resources to rural hospitals, critical safety net hospitals, tribal entities that don't have the capabilities to even meet the basics.

And then third would be beefing up enforcement. That would be the stick would where we'd like to work with the Congress again on having higher civil monetary penalties, from a HIPAA perspective, and another area that we'd like to look at is updating the HIPAA security rule.

And that's all a part of the HHS cybersecurity strategy, which was released, I think, in the last couple of weeks.

*Ms. Cammack. Okay. Thank you.

*Mr. Khan. Thank you, Congresswomen. So the National Institute for Standards and Technology, NIST, which is within the Department is kind of playing a core role in kind of

helping to kind of develop standards for the ecosystem for post quantum cryptography.

So I think it's a pretty significant work stream for us. And of course, as you note, you know, quantum computers have the ability potentially in the future if they're scaled up to kind of break fairly advanced encryption.

So I think we're quite worried about that and we're going to make sure that we harden our infrastructure against that risk.

*Ms. Cammack. So there is a plan in place? We are working on a plan to address that very issue?

*Dr. Tripathi. Yes.

*Ms. Cammack. Okay. I am thinking broadly the geopolitical implications of quantum computing matched up with AI and what could happen to in particular, our federal agencies.

*Ms. Fu. Thank you for that question and it's something that's really central. A big question for DOE. We have a significant effort with a number of quantum centers around the country where we're looking at how we advance the science of quantum.

We also have significant efforts at the national labs in this space. We'd be happy to get back to you with a little bit more, and this is a whole of government effort. So OSTP, the

National Quantum Coordination Initiative, and a number of other agencies are all involved in this discussion.

*Ms. Cammack. Okay. Wonderful. Thank you.

So I know that companies are really working on developing various ways to identify AI-generated content. There are the watermarks. There are all kinds of ways to embed metadata in the pixels, et cetera. But there was a study from the University of Maryland that just came out a couple of weeks ago. I am not sure if you all are aware.

And they discovered dozens of ways in which the watermarking was actually not an effective way. It was actually very easy to manipulate. In fact, they were creating false positives because these malicious actors, in this case it was just a bunch of university students, but they were able to go in, manipulate the data, manipulate the image, and create a false positive.

You can imagine that a lone wolf or an adversary could do some pretty serious damage if this was an image or a verified piece of AI content that, you know, was then deemed to be a false positive later.

Have you guys explored any further steps beyond just the basic watermark of AI-generated content?

*Mr. Khan. So thank you, Congresswoman.

So yeah, I mean, I think it's a critical part of the

challenge in developing watermarking technologies. The truth is once a piece of content is out there, it can be manipulable by many actors and removing watermarking, this was definitely an issue.

So I think it's an interesting area for research and development to kind of build in kind of stronger watermarks that are more difficult to remove, if that's technically feasible, but it's an important issue.

*Ms. Fu. I would just add here that our labs have done work in content authentication, which I think is the sort of flip side to the watermarking, how do you know if it's actually true rather than if there's an emblem that says that it's true?

*Ms. Cammack. Great.

*Ms. Fu. And, you know, our labs do a lot of work with synthetic data, and it kind of operates in the sort of same idea where but our goal is different. Our goal is about generating synthetic scientific data that we can do models and simulations on, but that the learnings that we get from that are actually applicable in this space as well, and it's one that we would look to work with our interagency colleagues to develop a stronger approach on.

*Ms. Cammack. Okay. Wonderful. And I know I am over time, but was there anything you had to add from HHS?

*Dr. Tripathi. I didn't have anything to add.

*Ms. Cammack. All right. Thank you.

Mr. Chairman, I yield back.

*Mr. Obernolte. The gentlewoman yields back. That concludes our questions.

I would like to thank our witnesses for being here. It has been an incredibly informative hearing, and we really appreciate your time and your diligence.

Let's keep the lines of communication open here as we continue to work on this problem.

I ask unanimous consent to insert in the record the documents included on the staff hearing documents list.

Without objection, so ordered.

I remind members they have ten business days to submit questions for the record and I ask our witnesses to respond to the questions promptly, and I know you will.

Members should submit their questions by the close of business on December 28th.

Without objection, that concludes the business of our Committee. The Committee is adjourned.

[Whereupon, at 2:19 p.m., the Committee was adjourned.]