

**MEMBERS' DAY HEARING:  
HOUSE COMMITTEE ON SCIENCE,  
SPACE, AND TECHNOLOGY**

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**HEARING**  
BEFORE THE  
**COMMITTEE ON SCIENCE, SPACE,  
AND TECHNOLOGY**  
**HOUSE OF REPRESENTATIVES**  
ONE HUNDRED SEVENTEENTH CONGRESS  
FIRST SESSION  
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COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY

HON. EDDIE BERNICE JOHNSON, Texas, *Chairwoman*

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September 29, 2021

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**WEDNESDAY, SEPTEMBER 29, 2021**

HOUSE OF REPRESENTATIVES,  
COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY,  
*Washington, D.C.*

The Committee met, pursuant to notice, at 9:59 a.m., via Zoom, Hon. Eddie Bernice Johnson [Chairwoman of the Committee] presiding.

Chairwoman JOHNSON. Committee on Science, Space, and Technology will come to order. Without objection, the Chair is authorized to declare recess at any time. Pursuant to *House Resolution 8*, today the Committee is meeting virtually. I want to announce a couple of reminders to the Members about the conduct of this remote meeting. First, Members should keep their video feed on as long as they are present in the meeting. Members are responsible for their own microphones, and please also keep your microphones muted unless you are speaking. And finally, if Members have documents they wish to submit to the record, please mail them to the Committee Clerk, whose e-mail address was circulated prior to the meeting.

Good morning. I'd like to welcome to the Member Day hearing for the Committee on Science, Space, and Technology for the 117th Congress. This meeting is being held pursuant to *House Resolution 8*, Section 3, and gives Members, including those not on the Committee, the opportunity to come before us and discuss proposed legislation under—and simply discuss interests and priorities under the Committee's jurisdiction. We have Members before us today to testify on a variety of policy areas and bills, and also had Members submit testimony for the record. As the Members of this Committee know, I welcome input from all corners, and that includes Members both on and off the Committee. I'd like to welcome our colleagues testifying before us today, and we look forward to hearing your thoughts on these very important policy areas.

[The prepared statement of Chairwoman Johnson follows:]

Good morning. I would like to welcome everyone to the Member Day Hearing for the Committee on Science, Space, and Technology for the 117th Congress. This hearing is being held pursuant to House Rules, and gives Members, including those not on the Committee, the opportunity to come before us and discuss proposed legislation, or simply discuss interests and priorities under the Committee's jurisdiction.

We have Members before us today to testify on a variety of policy areas and bills, and we also had Members submit testimony for the record.

As the Members of this Committee know, I welcome input from all corners, and that includes Members both on and off the Committee.

I would like to welcome our colleagues testifying before us today. We look forward to hearing your thoughts on these very important policy areas.

Chairwoman JOHNSON. I now recognize our Ranking Member, Mr. Lucas, for an opening statement.

Mr. LUCAS. Thank you, Madam Chair. I look forward to the comments of our colleagues today. It's important that we hear from Members. They, like you and I, represent and reflect the interests and the focus of their constituents all across the country. What they report to us, what they observe, matters, and with that, I yield back so we can listen to our colleagues. Thank you, Madam Chair.

[The prepared statement of Mr. Lucas follows:]

Thank you, Madam Chair. I look forward at the comments of our colleagues today. It's important that we hear from Members. They, like you and I, represent and reflect the interest and the focus of their constituents all across the country. What they report to us, what they observe, matters. And with that I yield back so we can listen our colleagues. Thank you, Madam Chair.

Chairwoman JOHNSON. Thank you. If there are Members who wish to submit additional opening statements, your statements will be added to the record at this point. Also, if there are Members from off the Committee who have submitted statements, I ask that they be inserted into the record for this hearing.

[The prepared statement of Representative Bill Posey follows:]

Chairwoman Eddie Bernice Johnson and Ranking Member Frank Lucas,

Thank you for the opportunity to discuss with you an issue of significance to Florida, my district, and our nation: The threat of China. I urge the Committee to hold hearings and support legislation to address this threat. The House Science, Space, and Technology Committee needs to make sure that U.S. taxpayer dollars are focused on Americans and that agencies are pressed to put American companies first.

Back in March, this Committee approved amendments of mine to H.R. 144, the *Supporting Early-Career Researchers Act*. The amendments strengthen research opportunities for American students studying STEM (science, technology, engineering, and mathematics) and whose research has been impacted by the COVID-19 pandemic. One amendment prioritizes American students, because this bill funded only a small fraction of STEM graduate students. This is important because American students generally have higher amounts of student loan debt. Without my amendment, some funding would have gone to Chinese students. It has since passed the House and awaits consideration by the Senate.

The Committee also considered H.R. 3593, the *Department of Energy Science for the Future Act* in June. One amendment that was adopted prohibits funds going to state-owned (Chinese) enterprises. It states that none of the funds authorized in H.R. 3593 can be used to award federal contracts, grants, or loans, to entities owned, controlled, or otherwise tied to a corporation based in a nonmarket economy country or foreign country of concern (i.e., China). The amendment would also prohibit funds from going to entities listed under the *Uyghur Human Rights Policy Act of 2020*. The bill has passed the House and awaits consideration by the Senate.

H.R. 4609, the *National Institute of Standards and Technology for the Future Act* was amended to include an amendment to stop countries like China from gaming the system by co-opting and subverting international standards-setting bodies and placing the U.S. at a disadvantage. The amendment maintains U.S. participation in these bodies where appropriate, while providing guidance to the National Institute of Standards and Technology regarding how those bodies it participates in should operate with respect to Chinese participation. The foundation of all our work with international partners must include fairness for American companies. I urge this Committee retain this amendment language as the bill proceeds.

When this Committee considered the Budget Reconciliation bill, one of my amendments was adopted to protect the domestic solar industry. Specifically, it reinforces the importance of supporting technologies at all stages of the solar energy supply chains. Today the majority of the world's silicone is produced in China. To address this concern, the amendment directs the Department of Energy to encourage U.S.

production of important materials, such as silicone, needed to help the domestic solar industry. This same amendment will also help the domestic semiconductor industry.

Unfortunately, the Committee failed to adopt an amendment to require the NASA Inspector General to establish an interagency task force of Inspectors General to investigate Chinese interference.

Our nation's space capabilities are critical to our economic competitiveness, national security, scientific discovery, technological advancement, and the survival of our species. So much of our modern-day life is dependent on space—making a bank transaction, for example, or even a phone call these days, requires using some type of space-faring technology. From GPS, to life-saving medical research, and advanced agriculture, hybrid car batteries, and even Posturepedic mattresses, our investment in space, has spawned some truly amazing innovations, and has an ongoing, positive impact, on our nation, and the world.

It all started with the Gemini and Mercury missions, that led to the Apollo Missions. And we will continue to benefit from our accomplishments in space, when NASA returns to the Moon with Artemis, as a steppingstone to reaching Mars, and beyond.

The foundation for such a bold mission, is already being laid, but NASA must continue to lead the way forward, with a strong international partnership, that accomplishes the mission, and inspires the rest of the world. However, China is threatening with its Made in China 2025 and 2050 initiatives designed to surpass the U.S., particularly when it comes to space.

Space is the Ultimate Military High Ground, and whoever controls space, will control the destiny of the free world, and the degree to which freedom spreads, across the world.

The Annual Threat Assessment of the U.S. Intelligence Community report stated, “Beijing is working to match, or exceed, U.S. capabilities in space, to gain the military, economic, and prestige benefits, that Washington has accrued, from space leadership.” The same report expects a “Chinese space station, in low Earth orbit, to be operational between 2022 and 2024” ... and it “conducted, and plans to conduct, additional lunar exploration missions” ... China also “intends to establish a robotic research station, on the Moon, and later, an intermittently crewed lunar base.”

China also has plans to erode the U.S. military's information advantage, by integrating its space services, and satellite communications, into its weapons, and command-and-control systems, according to the Annual Threat Assessment report.

According to the 2020 U.S. Defense Space Strategy report, China, and Russia, have weaponized space, as a means to reduce U.S., and allied partners', freedom of operations in space. The same report, claims China has tested, and proven, counterspace capabilities, that threaten U.S., and allied partners', satellites, and national security.

The U.S., and particularly our commercial space assets, face cyber- attacks, from bad actors: Russia and China, in particular. Foreign Governments like China have taken notice of the U.S. space launch market growth, and have begun to fund their own vehicles, to compete in the same market. Foreign launch companies are heavily subsidized from their national governments.

A strong domestic, commercial space industry, with supporting prime contractors, that have large, and diverse supplier networks, is in our national security interest. Another way to promote U.S. space launches, and our domestic space industry, is to simply get out of the way: to not impede progress, with unnecessary red tape.

The SARS-CoV-2 virus (COVID-19) has cost the lives of hundreds of thousands of Americans and killed millions worldwide that originated from China. It has disrupted the life of every American, causing unprecedented economic harm and costing Americans up to \$16 trillion by an estimate in the Journal of the American Medical Association.

With no other Committee in the House investigating the origins of COVID-19, the Investigations and Oversight Subcommittee did hold a hearing on the origins of COVID-19 in July. However, this Committee needs to hold a series of hearings on this subject. There are few subjects more pressing given the magnitude of the disruption and loss of life stemming from this pandemic.

Thank you very much for your consideration of my views, and I look forward to working with the Committee and my colleagues on these threats posed by China.

[The prepared statement of Representative Anna G. Eshoo follows:]

Thank you, Chairwoman Johnson and Ranking Member Lucas, for giving me the opportunity to testify at today's Member Day hearing, and I would like to discuss my legislation, the *National Civilian Medals Improvement Act*.

Most Americans are familiar with the Nobel Prize, but few know that the U.S. has its own National Civilian Medals for science, technology, the arts, and humanities. Unlike the Nobel Prize which is awarded annually, presidents have awarded the National Civilian Medals inconsistently which I believe contributes to the lack of awareness of these medals among the public. In 2019, I wrote to then-President Trump urging him to award the National Medal of Science and the National Medal of Technology and Innovation, but he unfortunately never did during his term. As such, these medals have not been awarded for seven years which further tarnishes their reputation. This is particularly disheartening given that every American has benefited from the extraordinary work of scientists to protect us from the Covid-19 pandemic by developing highly effective vaccines so quickly.

My legislation addresses this problem by requiring each medal to be awarded annually on a fixed schedule. To ensure the prestige of the medals, the president is authorized to award each medal to no more than five Americans every year. My legislation also creates a new National Medal of Social Sciences to ensure parity with similar awards. Although the current National Medal of Science can be awarded to social scientists, the vast majority have been awarded to academicians in the "hard sciences." Economists, psychologists, historians, and other social scientists deserve equal recognition for their work. The *National Civilian Medals Improvement Act* will better recognize the many extraordinary Americans who contribute to the arts and sciences of our nation.

Thank you again for the opportunity to testify, and I look forward to working with you to advance this important legislation.

Now to our testifying colleagues. We will have one panel, and each of you will have five minutes for testimony. When you have all completed your testimony, we will then open the floor to questions from the attending Members of the Committee. We will begin with the gentlelady from New Mexico, Ms. Stansbury.

STAFF. Madam Chair, I think we're having some trouble getting our testifying Members connected, so it might make sense if we take a short recess until we can get them online.

Chairwoman JOHNSON. OK. Let me know.

STAFF. OK. All right. Thank you, Ms. Johnson. I'm sorry.

Chairwoman JOHNSON. That's okay.

[Recess.]

Chairwoman JOHNSON. Well, thank you very much. We will now hear from the gentlelady from New Mexico, Ms. Stansbury.

**TESTIMONY OF THE HON. MELANIE STANSBURY,  
A REPRESENTATIVE IN CONGRESS  
FROM THE STATE OF NEW MEXICO**

Ms. STANSBURY. Thank you, Madam Chairwoman, and thank you to the entire Committee. As one of the newest Members of this Committee, I wanted to take this opportunity to say thank you to you all for your tremendous support, and for helping me as I've been getting settled here on the Committee. It's truly an honor to be able to serve on the Science and Space and Technology Committee, and I thank you for your collegial support.

I'm excited to continue our science and technology work over the course of this fall. We have a lot of important work to do as a Committee to help ensure that we are building a thriving STEM and S&T (science and technology) economy, not only for our country, but for our home States, such as mine, New Mexico, which has a thriving, growing S&T economy, including two National Labs, a number of Air Force research laboratories, an aerospace industry, and a tech industry. Our National Labs in particular generate bil-



lions of dollars for our local economies. They employ thousands of New Mexicans, and are a cornerstone of our communities, in addition to being a tremendous source of innovation in science and technology. Sandia Labs, which is in my district, and which I have worked with and have visited many times, is a powerhouse in research and development, and technological innovation in microelectronics, computing, energy generation, and energy storage modeling, and many areas that are critical to our national security in tackling some of our Nation's biggest challenges.

To ensure that this research that happens at our labs, and at the Department of Energy (DOE), can effectively translate into on the ground solutions, and be deployed to solve our country and our planet's biggest challenges, it's critical that we leverage partnerships with academia, and industry, and particularly our local and minority serving institutions to accelerate the development and commercialization of these technologies. That is why I am so proud to sponsor H.R. 4863, which is the *Partnerships for Energy Security and Innovation Act*—a bipartisan bill sponsored by many of the Members on this Committee, and supported, of course, by our Chairman and Ranking Member on this Committee, which would create a foundation for the U.S. Department of Energy to leverage its partnerships, and bring energy innovations to market, serving rural and underserved communities, and facilitating the commercialization of next generation technologies.

As our country and our planet are facing global and national security threats, the—this effort is more important than ever, and I am so excited and honored to be able to help carry this bill, and ensure that we are taking the science and technology, and research and development happening at our National Laboratories out into our communities, and transforming our ability to solve our biggest challenges. And with that, Madam Chair, I yield back, and thank you so much for the opportunity to speak about this bill.

[The prepared statement of Ms. Stansbury follows:]

Madam Chair, as one of the newest members of this committee, I want to extend my thanks to you and each of our colleagues on this committee. Since arriving in June, you have all have welcomed me and have helped me find my footing throughout a busy summer.

I am excited to continue supporting the Committee's work this fall—which is vital to supporting and creating STEM jobs in New Mexico and across the country.

New Mexico is the proud home of two Department of Energy national labs, including Sandia National Laboratories in my district.

Our National Laboratories generate billions of dollars for our local economies, employ thousands of New Mexicans, and are cornerstones of our communities.

This summer, I had the opportunity to tour Sandia to witness all of the amazing work our lab is doing firsthand.

Sandia performs early-stage work in materials science, microelectronics, energy generation, energy storage, computing, and other areas that will help tackle some of our nation's and communities' biggest challenges including climate change.

But to get these technologies from a concept of energy storage to a next-generation electric battery in the cars we drive every day means that our national labs need partners.

We have a role to play right here in this committee to help transfer this technology funded by public dollars to be accessible to the general public. That's why I was proud to introduce the bipartisan *Partnerships for Energy Security and Innovation Act* with Representative Young Kim and with the support of the Chairwoman and Ranking Member.

This bipartisan bill would create a nonprofit foundation for the U.S. Department of Energy built on previously successful models and championed by New Mexicans.

It would channel research and innovation to institutions of higher education and private sector partners in alignment with the Department of Energy's mission.

One of the most important benefits that the Foundation would provide to underserved communities and the nation as a whole is a mechanism for accelerating the transition to new energy technologies to market.

My constituents have felt the impacts of climate change through an ongoing historic drought while others in the country have faced record-breaking heat, devastating hurricanes, and other extreme weather that demands we act now.

We must act to get new energy technologies to the market and widely adopted to help fight climate change.

The ability to leverage private sector and philanthropic contributions and pool resources from across a range of different sectors to quickly move new technologies to the market has been successfully implemented by other agencies.

We will all benefit by bringing this same tactic to the Department of Energy.

As you continue putting together this committee's research and technology competitiveness package, I ask that the committee include the *Partnerships for Energy Security and Innovation Act* in an upcoming hearing and include it in the final package.

Chairwoman JOHNSON. Well thank you very much, and we'll go now to Mr. Chase of Hawai'i before we get to questions. So, Ms. Stansbury, if you'll just stand by? Mr. Chase—Case?

**TESTIMONY OF THE HON. EDWARD CASE,  
A REPRESENTATIVE IN CONGRESS  
FROM THE STATE OF HAWAII**

Mr. CASE. Thank you so much, Chair Johnson, and Ranking Member Lucas, and Members of the Committee, and mahalo for the opportunity to share my thoughts with the Committee on climate change, especially as it relates to our oceans, which is, of course, a critical issue impacting my home State of Hawai'i.

We are, of course, severely impacting our climate through our actions. Throughout our Nation this year we've seen record temperatures, expansive droughts, massive wildfires, increased hurricanes, and more. This has, of course, tragically led to the deaths of many Americans, and affected the lives and livelihoods of many more. These weather events will only increase in frequency and severity on our present course.

In my home State of Hawai'i we are on the front lines of the fight against climate change because of its severe effects on our fragile ecosystems, especially our oceans. Ocean acidification is killing off our native reefs and shellfish, ocean rise is washing away our beaches and threatening roads and communities, and increasing temperatures are having effects such as pushing mosquitoes and other invasive species further into our native forests, killing more and more of our endemic endangered species.

I want to thank this Committee for your leadership on climate-related issues to help protect Hawai'i from these threats. Your work and investments in climate science research and observation technology have focused squarely on the challenges we're facing. For example, continued congressional support for NOAA's (National Oceanic and Atmospheric Administration's) Mauna Loa Observatory on the island of Hawai'i over decades has confirmed the existence, extent, and pace of climate change. Earlier this year Mauna Loa recorded atmospheric CO<sub>2</sub> levels exceeding 470—417 parts per million, which is 50 percent higher than the beginning of the Industrial Revolution, and it's on an accelerating course.

I speak before you today to request that this Committee make sure to include our oceans in your future climate work. Perhaps this is not always top of mind to many people, but oceans cover 71 percent of our Earth's surface. Government scientists agree that oceans are critical in climate change, since they absorb solar radiation and release heat needed to drive the atmospheric circulation. They absorb carbon dioxide from the atmosphere and store it for years to millions of years, and our ocean greatly impacts weather events, from hurricanes to droughts.

To help do my part, together with other colleagues on a bipartisan basis, I'm an original co-sponsor of H.R. 3764, the *Ocean-Based Climate Solutions Act*, H.R. 3906, the *Blue Carbon Protection Act*, and H.R. 3748, the *Blue Globe Act*. These measures would help restore marine and coastal ecosystems, make coastal communities more resilient, and conserve marine mammal and fish populations. These bills have all been referred to my Natural Resources Committee, but they've also been referred to this Committee. Your input, and markup, and serious attention to these measures are critical to their success, given your expertise in research and development, and scientific issues more broadly. Their advancement is important to assisting coastal communities and constituencies like mine adapt to new realities of higher sea level, increased flooding, and depleted fish stocks.

Furthermore, your continued investment in monitoring and forecasting can help us mitigate climate change effects until we develop long term solutions. I grew up in the town of Hilo, Hawai'i on the coast on the island of Hawai'i, and I remember personally the 1960 tsunami that killed 61 people in my hometown. Because of the excellent work of the National Weather Service and other Federal agencies, while we have had tsunamis since then, we have not seen a tragedy of that nature in America on that scale since. We can follow this model to help develop ways to save lives as we confront climate change head on in this Congress and beyond.

In closing, thank you again for your leadership in addressing the science of climate change, and work toward advancing American innovation to address climate-related issues. I look forward to continuing to work with you on this critical issue that is affecting all of our constituencies, and especially our oceans. Thank you very much. I yield back.

[The prepared statement of Mr. Case follows:]

Chairwoman Johnson, Ranking Member Lucas and members of the Committee: Thank you for the opportunity to share my thoughts with the Committee on climate change, especially as it relates to our oceans, which is a critical issue impacting my home state of Hawai'i.

We are of course severely impacting our climate through our actions. Throughout our nation this year, we've seen record temperatures, expansive droughts, massive wildfires, increased hurricanes and more. This has tragically led to the deaths of many Americans and affected the lives and livelihoods of many more. These weather events will only increase in frequency and severity on our present course.

In my home state of Hawai'i, we are on the front line of the fight against climate change because of its severe effect on our fragile ecosystems, especially our oceans. Ocean acidification is killing off our native reefs and shellfish; ocean rise is washing away our beaches and threatening roads and communities; and increasing temperatures are pushing mosquitos and other invasive pests further into native forest, killing more and more endemic endangered species.

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science research and observation technology have focused squarely the challenges we're facing. For example, continued Congressional support for NOAA's Mauna Loa Observatory on the Island of Hawai'i has confirmed the existence, extent and pace of climate change. Earlier this year, the observatory recorded atmospheric CO<sub>2</sub> levels exceeding 417 parts per million.

This is 50% higher than when humanity began the Industrial Revolution, and it will only rise if we do nothing to stem emissions.

I sit before you today to request that this Committee make sure to include our oceans in your future climate work. While not top of mind for many who do not live near the coasts, oceans cover 71 percent of the Earth's surface. Government scientists agree that oceans are critical in climate change since they absorb solar radiation and release heat needed to drive the atmospheric circulation. They absorb carbon dioxide from the atmosphere and store it for years to millions of years, and our ocean greatly impact weather events from hurricanes to droughts.

To help do my part, I am an original cosponsor of H.R. 3764, the *Ocean-Based Climate Solutions Act*; H.R. 3906, the *Blue Carbon Protection Act*; and H.R. 3748, the *BLUE GLOBE Act*. These measures would help restore marine and coastal ecosystems, make coastal communities more resilient and conserve marine mammal and fish populations.

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Furthermore, your continued investment in monitoring and forecasting can help us mitigate climate change's effects until we develop long-term solutions. I remember the 1960 tsunami that killed 61 people in my hometown of Hilo, Hawai'i. Because of the excellent work of the National Weather Service and other Federal agencies, we have not had a tsunami tragedy in America of that scale since. We can follow this model to help develop ways to save lives as we confront climate change head-on in this Congress and beyond.

In closing, thank you for your leadership in addressing the science of climate change and work toward advancing American innovation to address climate-related issues. I look forward to continuing to work with you on this critical issue that is affecting all of our constituents and our oceans.

Mahalo.

Chairwoman JOHNSON. Thank you very much. At this point we'll begin our question period, and I will first recognize myself for panel questions.

Ms. Stansbury, how would the foundation concept enable DOE to be more effective toward—to more effectively address the climate crisis?

Ms. STANSBURY. Thank you, Madam Chairwoman. This bill creates a quasi-private foundation based on a model that has been deployed in many other partnership models with other agencies, as well as public/private partnerships that help to commercialize various technologies. As we all know, our labs are sources for a tremendous amount of research and development and innovation; and so, what this bill does is create a foundation process to help foster those public/private partnerships with local universities, especially minority-serving and Tribal colleges and universities, and historically Black colleges and others, so that we're getting that science and technology into our local academic institutions, and helping to commercialize the science that's being produced through our labs.

So how that ultimately will help us solve the challenges of climate change is our National Laboratories are doing a tremendous amount of modeling, research and development, looking at the impacts of climate change, understanding how climate processes are happening, and by transferring that information and those technologies to our local institutions, it will help to translate that infor-

mation into solutions that can be deployed in our communities—so, helping to solve issues around drought, and food security, wildfires, and other issues that are being impacted by climate change.

Chairwoman JOHNSON. Thank you very much. Mr. Case, the Science Committee has held many productive ocean-related hearings, and are working on significant ocean-related bills. We've talked about the importance of the ocean in the Earth systems, and the ocean/climate nexus. On June 7 we held a hearing entitled "Defining a National Ocean Shot: Accelerating Ocean and Great Lakes Science and Technology". Earlier this year we passed Ms. Bonamici's *Coast Research Act* out of the House, and I'm committed to working with you and Chairman Grijalva of the Committee on Natural Resources to move these important cross-jurisdictional ocean bills, including our forthcoming Ocean Exploration bill. In the gentleman's informed opinion, what would you say would be the most important ocean science questions you think the Science Committee should address?

Mr. CASE. Well, I think—thank you so much, Madam Chair, and, first of all, I do definitely want to again recognize the work of this Committee to date. You've been real leaders on this issue. You have been entirely cognizant, and fully appreciative, of the oceans from a climate change perspective, you collectively, and it has been a wonderful working partnership from that perspective.

I guess what I would say to you is that when—of course, when we talk about the oceans, the oceans are not some integrated, you know, separate ecosystem from the land, and from our air. And so I guess I would answer you very, very generally, which is your broader work on climate change is obviously critical to the oceans, as well as every other part of our global ecosystem, and so I don't want to get away from that at all.

I definitely believe that your emphasis on research and development, in terms of climate change with specific regard to impacts on the oceans, is invaluable because it does demonstrate the actual effect of climate change—which many of us don't perceive in the oceans because, you know, we don't tend to go into the oceans; I do, but many of us don't—it's critical from just appreciating the acidification, the increase in temperatures in our oceans, the impacts on coastal communities. That research and development proves a cause and effect, you know, relationship that I think is critical from that perspective, together with your broader research.

Chairwoman JOHNSON. Thank you very much. Now I'll open the floor to anyone on the Committee who has a question of our testifying colleagues. Mr. Lucas, would you like to be recognized? You're muted.

Mr. LUCAS. Better now, Madam Chair, I hope.

Chairwoman JOHNSON. Thank you. Yes.

Mr. LUCAS [continuing]. Allocating me time. I'd simply say to my colleagues I appreciate the input that both of you offered. It's important to the Committee. In particular, Congressman Case, some years ago, when I was a Subcommittee Chairman on Agriculture, you and I conducted a hearing addressing the Agriculture Conservation Programs, and the unique nature of Hawai'i and the islands. Would you remind us today about the climate—the different climate zones? When you're on the island, you literally have every-

thing from rainforests, potentially, to arid deserts, or semi-arid. If you'd mention a few details about that, the unique challenges in Hawai'i?

Mr. CASE. Well, first of all, Congressman, it was great to host you in Hawai'i in conjunction with our—both of our membership then on the Agriculture Committee, and I really appreciated your interest and attention to unique challenges of agriculture in tropical parts of our country. Which, again, is not most of our country, but we certainly have our specialty agriculture. You saw that in spades, and your visit is remembered, by the way.

So in Hawai'i, and this is relevant to our conversation, we have all of the microclimates of the world in one place. We go from, you know, alpine to mountain, to deep tropical rainforest, to desert, and everywhere in between. And, by the way, this goes out into the ocean, so we have many, many of the characteristics of the ocean in one place as well. We have certainly the near shore tropical world of, you know, corals and tropical fish, but we go very quickly to deep ocean, where we have impacts from climate change in our deep oceans, and this is within our, you know, EEZ (Exclusive Economic Zone).

And so really, you know, from a positive and a negative perspective, excuse me, on the positive side, you've got every impact of climate change there is out there in a very small area, which makes the research and development that we do in Hawai'i really integral to our international understanding. On the negative side, we get impacted on a lot of different ways. And, to your point on agriculture, as one very specific area, I spoke to it a little bit earlier, but as the climate changes, as the temperature changes, those microclimates adjust to that, and the agriculture adjusts to that, and the invasive species that we have adjust to that as well.

I've made mention of the fact that we saw mosquitoes and other pests coming deeper into native forests, where the natural flora and fauna never had to deal with mosquitoes before. And so, as a result—and I think it's pretty clearly directly impacted by climate change, and increased air temperatures, which are causing that, we are seeing devastation. And that is true also in our agriculture in Hawai'i. So there are broad-ranging effects that you can see a very, you know, very small and confined area in Hawai'i. I'm sure this is the case in many, many parts of our country and world, but I happen to live it, so I see it.

Mr. LUCAS. I thank you both, and I yield back, Madam Chair.

Chairwoman JOHNSON. Thank you very much. Anyone else seeking time? Well, hearing none, I will bring this meeting to a close. And I want to thank the Members for their attendance, and this really concludes our Member Day hearing. Thank you again.

Mr. CASE. Thank you very much.

Ms. STANSBURY [continuing]. Madam Chair.

Chairwoman JOHNSON. Does someone seek recognition? Okay. [Whereupon, at 10:24 a.m., the Committee was adjourned.]

