# USGCRP Listening Session Live Transcript

**Session Theme: Global Change and Energy** **Session Date: 18 November 2021**

>> Welcome, everybody to this call. I am an associate professor at Rutgers University and acting director of the Rutgers energy Institute and on behalf of the National academies committee -- Committee to Advise the U.S. Global Change Research Program, I welcome you to this listening session on global change issues with a specific focus on energy related challenges and opportunities. Through USGCRP, we use results to create tools and assessments to help people make decisions in the context of global changes. Through this session and others in this five-part series, we aim to connect more directly with users and researchers who were building on and applying global change information and tools in their work and to gather insights and information that the USGCRP can continue as it plans the implementation of its work over the coming decade. In these sessions, we are welcoming staff from the USGCRP and agencies that compromise it, members of the national academies to advise the USGCRP, of which I am a member, and all of you who are users and researchers who are engaged in building on and applying the types of knowledge and tools that they USGCRP is charged with, developing, and supporting. Can we start the slides? So in today's session, we have a series of speakers who will provide remarks, all of whom expressed interest when contributing and registering for this session. Everyone will have opportunities to contribute to an engaging platform that we will introduce shortly. Representatives from the USGCRP and the committee to advise the USGCRP are attending and listening mode today. Thank you for joining us, and we look forward to hearing from you over the next 90 minutes. To start, I would like to acknowledge that while today we are gathered virtually, the national academies is physically housed on the land of the people's past and present. We honor with gratitude the land itself and the people who have stewarded it through generations and we honor and respect the enduring relationship that exists between these peoples and nations in this land. We thank them for their resilience and protecting this land and aspire to uphold our responsibilities to their example. We also acknowledge that our understandings of energy and global change issues are closely related to and informed by indigenous knowledge and experience and that many native communities are on the frontline of impacts from these hosts. Today, I am joining from Highlands, New Jersey, the traditional land of the lineup eight people. I and the other members of the committee to advise the USGCRP are looking forward to these sessions to connect directly with researchers and users who are using and applying global change information in their work. As part of our regular meetings throughout the year, we provide this and other opportunities to engage with and hear from broader audiences to inform this important work. The goals of this series of listening sessions include: together -- to gather input for USGCRP for implementation of its work. To make connections and expand groups of researchers and users who are directly engaging with the USGCRP in its work. Recognize connections across researchers users and themes of USGCRP and products and inform potential future engagement mechanisms and opportunities, including forms, approaches, and participants for such engagement. Today, we are seeking input on how USGCRP may implement this work better to understand and address local change issues. You do not need to be familiar with USGCRP to provide input. We are specifically seeking to connect with a broader audience in these sessions. If you are unfamiliar with USGCRP, we hope you have had a chance to view the introduction video on our event page before the session -- or we encourage you to view it afterwards. And preparing for these listening sessions, USGCRP requested input and insights on the following themes to inform the implementation of its strategic priorities and activities. First, diversity, equity, and inclusion. Which actions should be prioritized to fully incorporate these values in research, community engagement, and workforce development? How do we implement them? Second, advancing science. What are the priority gaps in science methods that require enhanced long-term investments. Third, use inspired research. How do we ensure that USGCRP, science and

products are better driven by and connected to users including, for example, improved use of consultation, collaboration, translation, dissemination, informing client services, socioeconomic science. And finally, socioeconomic sciences integration. What are these parties for integrating sciences into our program and to form critical decisions particularly helpful feedback might include ideas on emerging scientific questions related to global change and/or response, especially those where interagency collaboration will be critical. Specific information on how science is or is not being used inform response to global change and why and knowledge gaps and obstacles to implementing scientific tools or knowledge the USGCRP is developing its next strategic plan and expects to release a draft prospectus for the public before the end of 2021. While these listening sessions might help inform the development or implementation of this plan individual feedback on the prospectus should be submitted to the public comment mechanism. To ensure we all have time to speak today we will be holding you to the five minute limit. We are all 50 were all participants can participate fully in an atmosphere that is free of harassment and discrimination based on any identity-based factors. Please report misconduct immediately to Steven Stichter. I will turn this back to Steven for further discussion.

>> Thank you, Rachel, and welcome to everybody who's joining us today. I am here to talk about some logistics and I want to first go over Zoom. Everyone who is here has successfully joined the Zoom platform, and we are happy to see you here. We encourage you to set your screen to speaker view. We will have a series of speakers who are talking throughout this session, providing oral comments they signed up to provide oral comments to this session. And at the same time, we have an available platform, Slido, to capture key points from the speakers and contributions from you. Most of the interaction from you will be through the Slido platform which I will discuss next. If you have any issues with either this Zoom platform or Slido, please send a chat to the host via the Zoom or an email to Rob Greenway, whose email is listed on this slide. We encourage you to update your name, to have your full name and your affiliation on the Zoom platform. And today, we have a series of speakers who will provide oral remarks on the theme renewable change and energy. The first set of speakers were the first ones to indicate during registration and interest in providing oral remarks. These speakers will all appear with video. Time remaining, we will draw additional speakers from the waitlist and from a broader audience that's joined us today, all of you. Any such speakers will be audio only. We also have close captioning available throughout this session. The transcript is available through the live transcript icon in the Zoom menubar. So please access that resource if you are interested in viewing that. Next slide, please. As I noted, in addition to the Zoom video and audio contributions, we are running the Slido platform. Slido allows you to interact with -- to provide comments and interact with comments of other participants. There are a number of ways that you can join Slido. One is through this QR code, or are you can go to Slido.com and enter the event code is listed on the screen. 219036. In addition, if you look in the chat, there will be a link for joining Slido directly in the chat. Within Slido, we will use the Q Hyundai mode. We are not using it exactly as designed, so we are actually looking for insights, recommendations, opportunities, gaps and challenges that you have to contribute around this theme of global change and energy. So even though we are using human today, we are looking for thoughts and statements and recommendations rather than questions, as noted previously, the USGCRP and the committee are here listening, so we will be specifically addressing questions that are raised, either in the oral comments or on the Slido platform. There is a 300 character limit on entrance, so if you have longer entries you can enter a starter thread or reply to an existing thread, and then add additional comments through the reply. So start by hitting the ask button, even though we are asking you to provide comments and thoughts. So this is what you will see when you are signing in. It will ask for your name and your email

address, and then you select joint event. And then once you are on, whether it's mobile or on the web, you will see a sign that says ask the speaker. But it's in that box. Type your question is where we ask you to give your contributions. Finally, some disclaimers that we have. We are recording this event, and it's part of the information that is provided to you -- to USGCRP as they contribute your remarks and contributions going forward. So all remarks and contributions, both here and on Slido, will be part of the public record for this event. Additionally, we have invited speakers, and they are coming on as individuals. They may be associated with -- and affiliated with organizations, but we've asked them to speak on their own behalf. So thanks again for joining us. At this point, I would like to invite Mike to provide a welcome on behalf of the USGCRP.

>> Steven, thank you very much. I'm told by my computer that I can't start my video. Yes, I can. I am the Executive Director of the research program and we call it USGCRP. USGCRP is managed by the subcommittee on Global change research which consists of representatives from the 13 federal agencies that make up the program. You can think about subcommittee has the Board of Directors for USGCRP. I'm here today representing those 13 agencies and we want you to know that we are serious about our legislative mandate. To assist the nation in the world to understand, assess, predict, and respond to human induced and natural processes and global change. On behalf of USGCRP, thank you for your interest, for your time, and for your expertise. Your input will be heard and considered as we draft and implement a new 10 year strategic plan for USGCRP. In addition to staff from the national academies, there are a number of federal agency representatives and representatives from the USGCRP national coordination office here today. They will be listening carefully, taking notes, to inform our discussions in writing for this new plan. The new plan will be completed next year. Between now and then, you can expect to see a prospectus that is a high-level annotated outline of the plan coming out for public comment I hope in November. And a full draft of the plan which will be released for public comment and also for review by the national academies in the middle of 2022. Please watch for these opportunities and please feel free to comment both on the prospectus and on the draft plan. Finally, on behalf of USGCRP, our sincere thanks to you for taking the time to speak to us today, to the committee to advise USGCRP and the staff of the national academies for organizing these listening sessions, specifically, I want to thank Rachel and Steve and Amanda Stout and Amanda Purcell for the committee respectively and my sincere thanks to Katie Reeves and Julie Morris from the national coronation office here at USGCRP for their roles in making this possible. We very much look forward to your comments and suggestions. Thank you very much. Rachel, back to you.

>> Thank you. All right. Now we are going to hear from our first speaker. Ayadi.

>> I am an architect student and I am part of the USGCRP as a committee member. I will start with what is important to me which is young people. Individual scientists -- key aspect of academic cultures all the sentients make moving out of one profession quite hard and it's very difficult not to mention the bureaucracy that comes with it. It's still hard for a young person to be involved in discussing their own future. So the point I'm trying to make is we need more equity across people and the resources they use. What I have seen this research focuses on something fundamental to be favored. And we come to a more immediate concern. They're always under the impact of the global environment changes are likely to become more important over an immediate timescale. This can affect the capacity of a certain sector or have irreversible effect in the global environment or people's ability to respond. Quite grateful for the work and importunate that -- as we know, it's only taking those few steps that we need to move to a larger goal. It's not just the idea that the indirect fact that seen as influencing but in the long term is

instrumental impact in whatever he uses mainly in this population. As I come from India, this becomes even stronger for me. In the end, I will say many more resources. Many more platforms for the impact that you want to make and we need more platforms on an international level but also at a local grassroots level because the more voices there are the more we move towards the same goal and the ones that are going to leave the date that's going to lead us together are going to then decide which impacts the people will have. Thank you again.

>> Thank you, Ayadi. I would like to now invite our next speaker. Suzanne Singer.

>> Hello, everyone. I am Suzanne Singer. I'm a member of the Navajo nation speaking to you from northern Arizona, which is home and is of cultural significance too many tribes around the southwestern U.S. I am the Executive Director of native renewables, and I have a background, a PhD in mechanical engineering and I think sort of my experience growing up, my grandparents living without any electricity, running water, definitely no Internet and my technical expertise and then leading to tribal energy research has kind of led me to form a nonprofit organization largely because of the frustration of the lack of energy access for so many indigenous families. The Navajo nation, if you're unfamiliar, is within Utah, New Mexico, and Arizona. I will focus on that for now because that's a community am from. It's about 27,000 square miles, and is approximately 15,000 families who still do not have access to electricity. So a big part of what I work and promote is energy access, equity, and it's really a shame if you live in Nevada, Las Vegas, Phoenix. He has benefited from natural resources that come from tribal lands and you have gotten electricity because of -- what companies have been able to do an export the power. So it's a real shame the inequity that exists that others can have power because of the resources yet we are still struggling to power our own family homes. So I think some of the things I want to share or promote and I think asked for in regards to future projects, programs, research, someone is always advocating for equitable goals and being inclusive of both indigenous communities and rural communities. Within indigenous communities, you may be familiar with informed consent, so that's a really critical process, which I personally think includes educating community members on the technology that's going to be proposed within a community or the technology that is going to be used for research purposes, so that's really critical. I think being transparent about this processes, I've seen a lot of energy products not go through and a lot of research efforts not happen because not all community -- not all community members felt like they were informed want that information was not shared with them or distributed widely. It was only shared with a small group. Another thing I will sort of ask as you are doing the work that you do is really think about the lifecycle process of an effort of project. I think thinking about decommissioning, land use, a lot of indigenous people think of themselves as caretakers of the land. We don't own land but we are caretakers of it. And so in terms of energy disposal efforts, I think thinking about how that could impact the cultural values of community members who may be relying on the plant life that's in the area or they use those land areas for gatherings. And so just thinking about the impacts that any future projects could have, I would encourage you to think about that as well and be transparent about it. Another point I like to share is investment in underground organizations. It's really important. I think a lot of the folks that I worked with there from the communities, they've been there for years, they know the issues. They know the families and they know it's not going to fly in terms of getting work done there, and they understand the barriers. So I think being -- make sure you are valuing that community knowledge, that cultural knowledge that a lot of times can go hand-in-hand with science as well, and just some other things, I think, is if you are wanting to work within indigenous communities, thinking about what makes good partnerships. I think

engaging in leadership in the communities, being open to collaboration but also bring ideas. If you have a technical expertise and that community does not -- they might struggle a little bit to come up with some ideas. So I appreciate your time, and thank you.

>> Thank you for your comment. I would like to invite Tricia now to speak.

>> Hello and thank you for inviting me to speak. I am from the miter Corporation which is a nonprofit that was founded 63 years ago. And I'm part of the energy and environmental sciences group. I will comment on the topics to assist in the energy transition. What is really needed is the deployment of the tools that's being done. Into user accessible formats. I'm sure as you know the U.S. needs to rapidly to carbonized its production. The good news is there are many existing technologies to produce carbon free electricity. The challenging part is making this transition equitable. And helping to build that infrastructure that is more resilient to climate impacts. So as many of you know underserved communities experience injustices both from the cost of their electricity to living in places with the floods and fires to having a polluted power plant in their backyard directly impacting community health. Confound this with plant closing without leaving workers with jobs and high and employment caused by the pandemic. So what are they doing to help with the energy transition? We have spent the last years building several tools and capabilities. To assist them with their energy transition and resiliency goals. You know, one issue, delaying the creation of new clean energy jobs is the placement of the new power plants which is hindered by the difficulty of creating that stakeholder consensus and the risk of not having the available workforce to build and operate the new facilities. So after a year of work we have nearly finished building a tool that's -- that includes geographical data and modeling to allow local governments to plan and cite these new power plant investments. It compiles many federal data sources, has an impact model and big data labor analytics to facilitate the decisions that the physics community level and therefore help build that consensus. We are also building capabilities to assess threats and vulnerabilities. Those be cyber, physical or climatic events of both -- they are in the process of building a social equity and distributional impact analysis framework for federal and state agencies to use when doing benefit cost analysis of their energy projects. And so there are a lot of different stakeholders convening around the energy transition so again, creating tools that are accessible that can be used across that space is necessary to help make the transition equitable and as painless as possible. And that's all I have.

>> Thank you for your comments.

>> I want to jump in really quickly to say we've had some speakers who were unable to join us at the last minute, so we will have an opportunity after this initial set of speakers has given the remarks for people from the audience to also make contributions. You have the capability in the audience to raise your hand, and if you raise your hand, we will work through contributions to the audience. Those will be audio only but please let us know if you are interested in making contributions. One of the things we recognize is that we have these sessions that are focused on a specific theme so much of this work and global change is crosscutting so we actually welcome comments that cut across any of these themes. I will pass it back to Rachael to continue with the sign of speakers but we will look for your raise hands for people who are interested in making contributions.

>> Thanks, Steve. So next up we have Ronald Larson who will be speaking.

>> Good morning or good afternoon to everybody. Am I coming through?

>> Yes.

>> So I'm going to talk about the subject I worked on for the last roughly 20 years which is a form of taking carbon out of the atmosphere. And before I go into that, let me give a little bit more of my background. I wrote some of my present affiliations. I was in the first class of congressional fellows in 1973. There were nine of us. I was representing the IEEE electrical engineers. Work on the first solar legislation that established -- and I work for a year after that with the Office of Technology Assessment. I am a past chair of the American solar energy Society and I worked mostly on stoves after I retired. And I worked on stoves because I headed a project for USA ID on all forms of energy. A very fine country, I might add. So I'm going to switch to my four entries and I will just read them. I can't see any other screens, but I will try to do this quickly. My first four points is a DVR often appraise our income at renewal energy to only solar PV M. But bio energy is the energy source today for half of the world's population. A community sure to be most done by global warming. Bio charge would be properly recognized if we -- it better includes bio energy as RB. Second issue. Carbon dioxide removal and national labs. The Department of Energy is lumping buyer chart with all of the other CDR. There are about eight of them to be handled by not all. In the designated lead lab for fossil. Not renewable biomass energy. Enril is not being appropriate -- appropriately utilize for CDR. I was a branch chief in the proposal for today's Enron and I was a branch chief and I was the first fellow -- or something. I forgot. Principal scientist. Third point carbon negativity and energy. The cost of electricity as a coproduct is obviously more than its cost from wind and solar, but the combined cost of one, electricity or fuels and 2, dispatch will storage. We are mostly talking about hydrogen and that's not the only option. Three. Carbon negativity. That is what the buyer charge mostly listed as, one of the seven or eight CDR options and number four. Food. Biochar going into the ground and gets increased NPP. And the fifth point jobs can be lowest with bio charge. I forgot what that means. Number D is more about biochar and number one. It's going to be released cost in developing countries where the USA should feel continuing Co2 guilt. Number two, it helps much of the U.S. economy. Forests, agriculture. I think our culture is in the biggest industry. Blue energy and coastlines and oceans. Number three, always means local jobs. Many of the technologies cannot provide local jobs. Number four, biochar is always an investment. It's not a cost and must not be analyzed like tax and backs. I'm going back to the screen here. I've got no more time. That's it.

>> Thank you, Ronald. So we would like to open it up for questions if folks want to dictate not questions. I guess comments. Folks want to raise their hand and offer some comments? Him and.

>> I'm not currently seeing any hands. We do have dictate the next -- I just got a request or a query the next one is just audio only. Bob, can you open Bob's audio and see if we can get that to work for him?

>> I think it may be open now, but can you hear me?

>> Okay. Thank you very much. Sorry I couldn't speak via video because lack of connection. Geothermal energy and all of its forms is something that only recently is being recognized by the investment, the government agencies, and other communities. It's been there for a very long time in the form of legacy geothermal, especially in the West where there is very hot spots from the salt and see to the Kaiser's and internationally the Ring of fire. That's great. Absolutely wonderful. It's what I called the legacy type system where everything stays below ground and another type reservoirs which are medium temperature within the range of oil and gas and oil and drill capabilities today and those capabilities are extending rapidly. We're talking temperatures in the 300 degrees Fahrenheit to 500 degree Fahrenheit

range. If one looks at sedimentary basics, they are well spread throughout the U.S. certainly within oil and gas regions such as the Gulf Coast of the U.S. Other places of the world as well. In the multiple uses of high temperature geothermal energy from direct heat use. And other surface areas to the use of conversion to electricity is something that has been, we will say, not overlooked but minimized. The most important thing about geothermal energies is continuous. It's not intermittent like wind and solar. Yes, it can be used for subsurface storage and if one goes deep enough today's technology, it's easy enough to drill deep enough. Geothermal actually has a much wider geographic footprint than originally expected. So more research continually goes into this area, being able to drill and measure too much deeper and higher debts. As well as the initial capital costs coming down. The service equipment continues to lower in price and get much more energy efficient. And that high upfront costs are well again because new technology continues to drop rapidly. I would like an advocate that NAS DOE and the other government agencies put more emphasis on geothermal research. And geothermal development throughout the U.S. and with U.S. interest for more his including energy efficiency. Equity, of course and national security. Thank you for giving me a chance to speak. Take care.

>> Thanks for those comments. Is there anyone else?

>> I have not seen additional interest as yet. You can either raise your hand or send a chat to me. We will give just a moment more but we seem to have had a series of folks who were not able to make contributions this morning after setting it up. Let's give it a moment. All right. All right. It's a shorter session than what we had time scheduled for, but it is one of five sessions, and we have had robust contributions for the others and we look forward to engagement in the final two which will be in December. Mandy, can you bring up the final two slides? Great. So in follow-up to this and the other sessions, we will be sending an email to all registrants with another opportunity to engage and provide contributions to USGCRP through a call for input is the first questionnaire and then an evaluation for this session as well. After each listening session, we will be posting on the event page, which you can find at the national Academy site referencing this address below or just searching on the national Academy site some of the outputs from this activity. You can find the outputs from all of the activities at the end of the series of sessions. We will provide video recording and transcript of the session as well as we will provide additional information as it becomes available. Inputs from these listening sessions will be available to USGCRP. We have representatives. I will also provide the recordings. Next slide, please. So today is our third of these listening sessions and we have two more scheduled for the first full week of December. On December 6 and the afternoon we have a session focused on food and global change and two days later on December 8 we have a session focused on transportation and infrastructure. So we encourage you to join us for any and all of these sessions and please spread the word about future sessions as well. So Mike and then Rachel, if you have some closing remarks.

>> Stephen I wanted to repeat my thanks. Interesting comments, and we've got a lot of notes. Thank you all very much for your time and your input. It's valued and appreciated.

>> Yes. Similarly, as a member of the committee to advise the USGCRP, thank you all for your participation in insightful comments. I learned a lot and was happy to hear from you. So thank you.

>> Thank you all for joining.