VENKAT SRINIVASAN: So welcome to the second annual Energy Storage Grand Challenge Summit. Welcome to Argonne in Chicago. It’s a pretty nippy morning out there, this is fall in Chicago for all of you. Come back in January – you will know how warm it is here. We are delighted to hold this meeting on behalf of the Department of Energy. This event will be hybrid, so there will be speakers and attendees who will be both here in person, you can see them, and virtually.

You are sitting in the Advanced Photon Source, that’s the building that you’re in. You might have seen sort of the ring when you drive in from the outside. It’s a high energy x-ray source, one of a kind, uses an unprecedented ability to study materials, components and devices. We use it routinely to study energy storage systems. It’s one of those signature facilities that the national labs have. Every lab has things like this and hopefully you in the audience can take advantage of the national labs and learn more about how we can contribute to its success with things that you’ve been trying to do.

I’m Venkat Srinivasan, I’m a scientist at Argonne National Lab and one of the coordinators of the Energy Storage Grand Challenge from the National Lab site. So I’ll be talking a little bit about the Energy Storage Grand Challenge, or ESGC as we call it. There are labs involved and DOE involved. On the labs side, I’m one of the people that is coordinating and I’ll be the emcee for this event for the next two days.

I want to make sure I call out Charlie Hanley from Sandia National Lab. Sandia is also one of the labs that is coordinating this activity and Charlie has been integral for that. He’s been the one interfacing with DOE to set up this meeting. He’s been involved in all aspects of it. He was supposed to be standing up here emceeing this event. Unfortunately, events on the ground, he couldn’t actually travel yesterday for a variety of things. So guess what? You get me instead. So that’s what’s going to happen.

I’ve been in the storage field for 27 years, started with the capacitors in 1995 in graduate school. I got to tell you there has never been a better time to be in energy storage. It’s an amazing time in this field. We’ve known for a long time I think that storage is key, that it’s going to be the enabling technology for decarbonizing the transportation of the grid sector. But transitions in energy take a long time, oftentimes multiple decades.

But it feels like we’re on the cusp of the transition. Many sectors are moving away from fossil fuels to a carbon-free energy and this is the time where energy storage is going to be at the middle trying to impact this community and the world so that we can move to a better place. So that’s the exciting part of what is going on here.

And I got to tell you, when we look at the numbers, the next 10 years, demand for energy storage is expected to go up by a factor of 30. There is such a huge demand it means there’s going to be a lot of funding. That’s where we hear announcements every other week about somebody building a factor somewhere to either power a car somewhere or to put something on the grid. So that’s the exciting part of what is happening here.

And the federal government has taken notice. You might have seen that in the last year we’ve got the Bipartisan Structure Law and now the Inflation Reduction Act. Both of these are going to be providing both supply side and demand side stimulus, a very significant shot in the arm when it comes to kind of moving this technology forward. So that’s very, very exciting.

So a lot of promising things that are going on, but the reality is that if you want to decarbonize the economy completely, we need better storage – cheaper storage, longer lasting storage. What that means is we have to come up with new innovations, but it’s not enough to just have innovations. As we all know, it takes a long time for us to go from innovations to market, so we have to think about the transition.

We have to think about the fact that we have to manufacture these things at scale and we have to ensure that we have a supply chain from mines all the way to kind of the materials and the devices that are resilient and they’re something that we can be dependent on. We’ve learned that lesson very hard during the COVID time, I think. And it doesn’t just end there. We have to train all the people and retrain the workforce so that we can power this economy. That’s going to be a significant challenge.

And because energy is a commodity, we’ve got to think about the markets, right? Where are we going to make sure that the energy storage device can make money and how can we impact that by using policy, both at the federal level and at the state level. And we have to do all of these things without leaving anybody behind in this transition that’s going to be integral for us as we move forward.

In other words, what we need is a holistic strategy. We’ve got to think about this as a complete system and think about how are we going to transition the economy. The Energy Storage Grand Challenge or ESGC, is really that holistic thinking behind how are we going to transition energy from fossil base to something that is non-fossil based, with energy storage being that lynchpin technology that gets us there, the number of Department of Energy offices that are participating in ESGC, the level of national labs that are participating as part of this process.

A quick history, ESGC started when COVID started, really. That’s when the activities started getting kicked off. So we had a series of events that were sort of regional events, that DOE organized for the different national labs. A lot of success there, a lot of participation, a lot of input from people like you. Of that, a report came out, a roadmap report that was issued late in 2020 with 30 different technologies, both storage and sort of technologies for integration onto the grid were sort of articulated and the R&D gap were identified.

The national labs started participating more in this activity in 2021. We started seeing a variety of different things. One thing that’s going on right now is an activity called the Rapid Operational Validation Initiative or R-O-V-I, or Rovi. This is a call that is out on the street now. Think about the [unclear] we have in storage. All of us want to have a storage device to last 10, 20, 30 years, but nobody wants to wait 10, 20, 30 years to - if it’ll last that long. So you have to accelerate the process of aging. Figure out how we are going to predict the life. This activity is going to be aiding in that. So the national labs have been involved in that activity.

The second one is if you go online and search for the DOE lab partnering service, you will come up on a page specific to energy storage where you can search and find intellectual property at the national labs, specific to storage and also subject matter experts that can help you in your quest to sort of make your devices better.

And the last thing is we’ve had a number of workshops and webinars talking about many different things, including advanced manufacturing, policy evaluation work, and also an equitable workforce development, all in aid of ensuring that we’re getting information out to you all, but also getting information from all of you, and we ultimately collected all that information for you. DOE has also released the Long Duration Storage Earth Shot.

This is an ambitious project where the target is to decrease the cost of storage by 90 percent of lithium ion in the next ten years for long duration. So this is more than ten hours of storage. Extremely exiting, but the kind of target that we need to make this energy transition happen. DOE recently put out the Request for Information, the RFI, which led to the long duration storage. Hope you all had a chance to submit your input there. I’m sure that they’ll be watching carefully to see what comes of it.

So lots has happened in the last couple of years, which brings us to this meeting. So DOE has already done a lot, as we were just talking about, but we want to hear from all of you, both in person, and virtual, as to what else is needed as we go forward. That’s the first big thing. Identify the gaps that are still there so that we can make this transition, get the US manufacturing and move this, the sort of technology, from being fossil based to ultimately being carbon free.

The second one is we want to make actual partnerships, right? People in the national labs working with industry, academia, and industry. We want industry and industry to talk to each other. That’s the second purpose of this meeting. And hopefully this meeting gives you a chance to kind of get those robust interactions.

There are 600 people that are registered to attend this meeting. Approximately 135 in the room, another 400 plus that are going to be virtual. They’re going to give you a lot of opportunities to sort of give us feedback. There will be breakout sessions, there’ll be places where you can come up to the mics and ask questions.

As you heard at the beginning, there will also be opportunities for people virtual to ask questions so that we can get your input throughout the process. They’re going to have the agenda mirroring the five themes in the energy storage grand challenge – technology development, manufacturing and supply chains, commercialization, policy valuation and workforce development. That’s kind of what you’ll be hearing. Obviously we have other sessions around that to kind of frame the whole picture.

There will be opportunities for you to kind of ask questions throughout and participate in each of these tracks. Tomorrow afternoon we have a session which is kind of exciting. It’s called a pit session. We’ve been asking people to come and tell us about the technology they’re excited about and how that can meet the long duration storage target and what might be the gaps they have to satisfy to get there in terms of the cost targets.

We’ve got 90 people interested in pitching. We don't have time for all of them, so we’re going to be doing a handful of that tomorrow and the rest of them is going to be virtual in October. We will collect all of that input. There will be people from the National Lab to be asking questions, trying to delve deeper, to get a sense for how these technologies can have an impact. And hopefully based on that, in the next year we will be looking at road mapping kind of the needs that are there for these different technologies to go from where we are today in terms of cost and performance, to where they need to be to satisfy the long duration targets.

So an exciting agenda. I want to make sure I call out Eric Hsieh who is going to be coming out in maybe another five, ten minutes, who’s really been the guy who’s been visioning in terms of what this meeting should be, thinking about speakers. So he has been working closely with the National Lab, especially Charlie, to kind of get this up there. So kudos to him for sort of pulling this off. And with the ICF team, and I’ll make sure I do a formal thank you to all the people there later in the day.

And thank you all for joining us, right? Because again, we need your input for us to make this happen, so thank you all for doing that. Now I want to hand it off to my lab director, Paul Kearns. Paul is the Director of Argonne National Lab. He joined in 2017 and before that, the Lab Chief Operating Officer. Paul knows the National Lab system very, very well. He’s actually worked at four different national labs and he really understands what the labs bring to the table when it comes to US [unclear] and US duration. So with that, let me hand it off to Paul. Paul?

PAUL KEARNS: Thank you very much, Venkat. It’s great to be here. I really appreciate the opportunity to welcome participants, both here in person, and virtually. I wanted to add my welcome to all of you that joined the Department of Energy, Energy Storage Grand Challenge Summit. It’s great to see so many of you in person. And it has been a while since I’ve seen some of you, so it’s great to actually step out of the virtual world into the real world and have a chance for a conversation casually over a coffee.

And certainly welcome those of you visiting here in person, but also want to thank those that have joined virtually. I know at this point in terms of our experience with the pandemic, it takes a bit of discipline to really be attentive on Zoom or Teams, and I really want to compliment those folks that are joining virtually and participating in that way.

As Venkat mentioned, I’m Paul Kearns. I have the privilege, or the honor, of being the Director of Argonne National Laboratory and on behalf of Argonne, let me say that we’re thrilled to host the Energy Storage Grand Challenge Summit for the next two days, and to have the opportunity to really facilitate these vital connections for energy storage advancement.

We are pleased to welcome many leaders from the Department of Energy across its basic and applied science office in the room today. We have Michael Berube and Paul Spitsen from the Office of Energy Efficiency and Renewable Energy. Eric Hsieh and Michael Benson from the Office of Electricity. Diana Bauer from the Advanced Manufacturing Office. Steven Boyd from the Office of Manufacturing and Energy Supply Chain. And we’ll have Linda Horton and John Vetrano from the Office of Science joining us virtually.

A little later this morning we’ll hear from the Under Secretary for Science and Innovation, Dr. Geri Richmond, and from the Deputy Secretary, David Turk tomorrow. So a really fantastic show of support and interest from the Department of Energy. The Energy Storage Grand Challenge or EGSC, as we call it, has once again proven itself to be a venue where thought leaders from across the Department of Energy, the national lab complex, industry and academia come together to discuss bold solutions to current energy storage challenges.

I am pleased to see the exciting progress of the EGSC. It truly represents a new approach in technology development, linking various parts of the DOE who assist them from science to applications with the aim of accelerating the development and deployment of energy storage and enhancing US scientific leadership.

The five tracks of the ESGC, namely technology development, manufacturing and supply chain, policy and evaluation, technology transitions and workforce development are all represented at this meeting. Taken together, these five tracks provide a holistic strategy for holistic leadership that will be critical for realizing a clean energy future. Argonne is pleased to be a part of the multi-laboratory team engaged with ESGC. We have been working with the DOE national laboratory complex on this important challenge for the past two years.

I am pleased to see our national laboratory partners here today .I’ve gotten to say hello personally to many of the leaders from those labs and so welcome, it’s great to work together and we certainly look forward to our continued engagement to achieve the goals of the ESGC.

One key challenge that we will discuss today and tomorrow is of course, long duration storage. I should note that the Joint Center for Energy Storage Research has a six year history of work in this area culminating in the formation of Form Energy. Form Energy has recently seen much success in the deployment of its long duration applications and I’m pleased to see Billy Woodford, Chief Technology Officer of Form Energy is here today to share their exciting technology.

As Venkat mentioned earlier, the recently released request for information that the Department of Energy issued to engage the community on the funding for storage included in the bipartisan infrastructure law will help accelerate many storage concepts as they move to deployment. Both the bipartisan infrastructure law and the recently Passed Inflation Reduction Act will have significant impact on US leadership and energy storage.

There will be much discussion on these important pieces of legislation during the course of the next two days, and I look forward to hearing more about the attendees’ views of the challenges and opportunities that lie ahead. Let me stop here and thank you again for being here and for your commitment to the advancement of energy storage. Thank you very much. Welcome.

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