U.S. DEPARTMENT OF ENERGY
OFFICE OF ENERGY EFFICIENCY AND
RENEWABLE ENERGY
WIND AND WATER POWER PROGRAM

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U.S. OFFSHORE WIND: ADVANCED TECHNOLOGY DEMONSTRATION PROJECTS

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PUBLIC MEETING

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TUESDAY
FEBRUARY 7, 2012

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The Public Meeting Convened in Ballroom C & D of the L'Enfant Plaza Hotel, 480 L'Enfant Plaza, S.W., Washington, D.C., at 9:30 a.m., Jose Zayas, Program Manager, presiding.

PRESENT:

JOSE ZAYAS, Program Manager, Wind and Water Power Program, Office of Energy Efficiency and Renewable Energy, Department of Energy
HENRY KELLY, Acting Assistant Secretary, Office of Energy Efficiency and Renewable Energy, Department of Energy
CHRISTOPHER G. HART, Offshore Wind Manager, Wind and Water Power Program, Office of Energy Efficiency and Renewable Energy, Department of Energy
MAUREEN BORNHOLDT, Chief, Bureau of Ocean Energy Management, Renewable Energies, Department of the Interior

STEVE CHALK, Deputy Assistant Secretary for Renewables, Office of Energy Efficiency and Renewable Energy, Department of Energy
MICHAEL HAHN, Project Officer, Wind and Water Power Program, Golden Field Office, Department of Energy
KRISTIN KERWIN, NEPA Compliance Officer, Golden Field Office, Department of Energy
TIMOTHY REDDING, Program Analyst, Bureau of Ocean Energy Management, Department of the Interior
WILLIAM VANHOUTEN, Installations and Environment Readiness and Safety, Office of the Secretary of Defense
PATTY WALTERS, Legal Counsel, Golden Field Office, Department of Energy
GENEVIEVE WOZNIAK, Contracting Officer, Golden Field Office, Department of Energy

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Jose Zayas, Wind and Water Program Manager, is standing at a podium and addressing a crowd.

(9:32 a.m.)

MR. ZAYAS: Good morning. Can I get everybody's attention? Great.

Okay. I say we get started. If somebody can grab the doors in the back, I would appreciate that.

So I say we get started in the spirit of staying on time. First and foremost, welcome to all of you. It's great to see so many familiar faces and new faces here.

My name is Jose Zayas. I'm the Program Manager for the Wind and Water Power Program for the Department of Energy. And, again, thank you all for coming out here and spending a good part of the day with us, especially on short notice, to discuss this program that the Department of Energy is

starting around offshore wind, in particular the demonstrations.

So before we begin, I just want to also acknowledge that this effort really couldn't be accomplished by the Department of Energy by itself. There are many representatives here from our sister agencies that we have been collaborating for quite a bit of time, but specifically in this effort in my time at Department of Energy, it has been remarkable to work with many of them.

We have representatives from Department of Interior, Department of Defense, Department of Transportation, Commerce; of course, many elements of the Department of Energy, including our Office of Electricity, General Counsel, and many others; and of course our field office in Colorado, from Golden, as well.

So it is great to be working with them, and this will continue in moving forward. And it should represent to all of

you, especially from the public sector, the intricacies and the requirements of doing an effort such as the one that we will be discussing throughout the morning.

So before we get into the formal elements of this meeting today, I just want to talk a little bit about the logistics and how the meeting is to be structured, in order for us to have both enough time, but also to facilitate the various elements that are needed to be discussed today.

Many of you when you signed up should have received a blue folder. In that folder, there are several documents. One of course is the agenda, which at least outlines how the day is going to operate.

And you will also find the draft funding opportunity announcement which was posted on our website at -- for the wind energy website for Department of Energy was posted last Friday, if you haven't seen it -- if you are having any trouble getting to it,

let us know -- in addition to, I would say, an executive summary of the offshore wind strategy that was developed nearly a year ago, which I will assume that many of you have had the opportunity to see.

In addition to that, in the table and throughout the day, you might see some notecards. It is our belief that the only way to have an ability to discuss the various topics that we need to, we have to at least ask all of you to take a little bit of time and document your questions on a notecard. We will have -- this morning we will have a series of presentations.

They are really intended to get everybody calibrated as to not only the efforts in the Department of Energy in terms of offshore wind specifically and the various activities and investments that are being made to help facilitate and mobilize this emerging industry, but also to give all of you an opportunity to ask your questions and provide

feedback to all of us.

So those cards are important. There will be folks walking around throughout the morning picking up those cards.

What you will also notice from the agenda is that there are different topics that we want to specifically cover. Those include technology, what we quantify as innovation. So one of the technology pieces that are not only needed to realize an offshore industry in the U.S., but technology that is intrinsically well positioned to lower the cost of energy and ensuring cost competitiveness, and so forth. So that is discussion point A.

Secondly, we are talking about the different topic areas, and that specifically goes to how the funding opportunity announcement is structured. If you have seen the draft document online, you will notice that there is a structure around how the program is presenting this opportunity, and that is an opportunity to clarify maybe some

questions or concerns in any of which -- in any of the topic areas.

The second one has to do with time-scale and timelines of what we are envisioning. It is an opportunity to see if the assumptions that have been made by the program are real. Many of you, at least on the developer side, have been pushing projects and trying to develop. We want to really use this as an opportunity to have that discussion.

And then, of course, indeed one of them that is a very important topic that we engage very closely with our Department of Interior, siting, permitting considerations, things of that nature, we will have that topic as well.

And then, we will end on the structure side with data collection. And the intent there is that Department of Energy -- again, for those of you who read the document -- really wants to continue to improve the

technology and ensure that we have robust models and things of that nature that are required to continue to advance the industry, very much like we have seen in other industries or something that is closer to us, the land base. And so we will have an opportunity to discuss them.

And then, we will end with about 45 minutes of what we would call open Q&A. As you will notice, there are different microphones around the room, and this is an opportunity for all of you, if you don't want to -- if you want to verbalize your question and don't want to use the notecards, that is the opportunity to do so.

In any one of these question formats, both in the structured and the open, we have representatives from various agencies that are here to answer those questions. So it is our intent to cover as much different -- as many topics as we can, answer as many questions as possible.

You will also notice that this is being recorded. You will also notice that this is actually being typed to make sure that all of the information that we have, not only to move forward and improve our documents and our vision for this, but also to provide for those folks that couldn't attend an opportunity to see what was discussed in this meeting. So both of those will be made available as well online.

Lastly, I would say that in some topics I am sure and confident that we will not we able to get to all of the questions. So for those, we will answer them as quickly as possible and post them online.

You will notice that we are soliciting feedback up to the 14th of February. So that's another opportunity that if your question doesn't get presented, or if you don't remember and want to ask it, you can pose a question online.

So there is a variety of different

ways that we are trying to enable in order to get feedback. So please take advantage of them, I encourage you.

Again, I want to thank you all. I look forward to the morning discussions, and it is great to see all of you here.

Without further ado, I would like to introduce Dr. Henry Kelly. Dr. Kelly is currently our Acting Assistant Secretary for the Office of Energy Efficiency and Renewable Energy at the Department of Energy. Dr. Kelly has been a great supporter of this effort, and I truly at least really appreciate your support for this. So without further ado, Dr. Kelly.

Jose Zayas takes his seat and Henry Kelly takes his place at the podium to address the crowd.

DR. KELLY: Well, thank you, Jose. This is in fact an enormously exciting moment for us. As you undoubtedly are aware, just

listening to the State of the Union you can understand the importance of clean energy to this administration, both because of the need to provide energy security from clean resources but also because it is a source of job creation and economic growth. And I can't think of any place where these goals come together more perfectly than in this exciting area of offshore wind.

We are in fact entering a new territory. We shouldn't kid ourselves about how easy this is going to be, but the resource potential is very large. Wind resources offshore are some of the best resources anywhere. It is one of the United States' key natural resources. The winds are strong, they blow with great regularity, and they are pretty well correlated with demand.

The resources available in many of the states in the country -- Atlantic, Pacific, the Gulf Coast, the Great Lakes -- these are all intriguing resources. They are

all going to have their own unique sets of challenges.

One of the interesting things about the resource, of course, is it is located close to where people live, close to population centers and close to places that have, in many cases, particularly high electric bills. I didn't mean to leave out Alaska and Hawaii when I was talking about the geographic diversity. There is a lot of resources in many different states.

So the resource is really a crucial part of why we are interested. These resources are also located in places with good access to ports, so that if you were talking about creating jobs in port cities this is a very intriguing possibility.

But of course there is a catch in all of this, and that is the ocean is a difficult and dangerous place to work. It is an expensive place to work. It is a place where we are really going to have to be

creative in how we go about attacking this resource.

One of the things that we plainly have to do is try to meet a very ambitious cost goal. Our goal throughout all of the EERE is to develop technologies that can compete without subsidies. That doesn't mean to say we don't support lots of interesting legislation that would encourage the use of renewables and efficiency. The President mentioned the renewable portfolio standard in the State of the Union.

But the best possible way to get stuff deployed is to be able to come in and compete without complication. And that is what we are trying to do.

We are optimistic that this is a possible thing to do. This is, of course, what DOE's sweet spot is is to help push the state of the art. We want to push as hard as we can but not too hard. We want to be ambitious but not reckless here.

So we really look forward to your help. I want to be clear that the solicitation we are talking about today is in fact a research -- or a pilot-scale project here. It is not to say that we aren't supporting the efforts of the current industry to fund commercial facilities. We will do everything we can to try to help that happen, but that is not what this particular project is about.

I should also say that in addition to a very ambitious set of technical challenges here, and trying to get something that actually works reliably for many areas in this difficult environment, and is affordable, we are also entering new territory on environmental and other issues. And that is why it has been very important for us to work extremely closely with our colleagues in other agencies.

We work particularly closely with the Department of Interior. As you may know,

we came out with a joint strategy on offshore wind about a year ago. We have both been chomping at the bit to try to get going. It's delightful to actually be able to start moving on this.

We have a memorandum of understanding with NOAA. Jose pointed to the number of different agencies that are here -- the Coast Guard, Navy, and others.

Now, this is a complicated regulatory environment. It is a complicated place to connect the wind resource to the land, so we are going to have interesting utility policies. All of these things we want to engage here in this project, and it is solutions to all of those -- the issues raised by these different regulatory environments -- that we are going to address head on.

Our goal at the end of all of this is to get wind -- offshore wind installed in the United States at scale as quickly as we possibly can. And so that is not going to

happen without help from this community. I am delighted to see the number of creative people that have shown up that are willing to help. Thank you for being here. I look forward to your comments. And let's just get going.

Thank you.

(Applause.)

Henry Kelly leaves the stage and Jose Zayas replaces him back at the podium.

MR. ZAYAS: Thank you, Henry. I appreciate that.

I just want to spend a few minutes, for those of you who maybe are fairly new to wind, just talking a little bit about the journey that we are presenting today and what we are trying to embark on, try to correlate it a little bit to what I would call the land base journey. We will do this rather quickly.

As many of you have seen either from presentations within the program or

others maybe familiar to this slide, and there are a couple of points that I want to make in this slide. Of course, there is a 30-year history and change that we are leveraging, right, in land base. And there is a couple of points that I just want to make here.

Machines -- we will refocus and look at machines today. What we clearly see is a couple of things. Of course they have gotten larger, but really what has happened inside these machines, even though that architecturally are -- they haven't -- they look the same and things, so there has been an immense amount of innovation that has enabled them to be cost competitive today.

Today we all recognize that wind has experienced record growth in many cases. Of course, we could argue what the economy did since the '08 peak. But again, just the ability of this industry to both scale and deliver what I would call cost competitive energy has been remarkable. And that has been

enabled by a variety of investments that have been made to make these machines more efficient and reliable and innovative in many ways.

When we look at where we are today in land base, we realize that machine size has somewhat stagnated because of, you know, constraints that we have in the system. Those could be called transportation, those could be called a variety of things -- logistics and so forth.

When we focus, as Henry alluded to, on offshore, we realize larger machines are really the key to ensuring that the economics not only play out, because of the cost distribution between offshore -- differences between offshore and onshore, but just the opportunity to install significantly larger machines and higher resources are important.

The word "innovation," you will find it so many different times in our

document, and it is intentional, because we really do believe, as you saw from the aggressive cost curve that Henry just showed, that it is imperative to making sure that this is a realizable goal that allows us to have cost competitive energy across the various U.S. waters.

Many of you are familiar to the "20 percent by 2030" report that was issued in May of 2008. That report still quite being used today, which is great, really outlined a scenario where we envision a future in 2030 of 20 percent of our energy coming from wind energy, and which this particular scenario captured that about 54 of it would come from offshore wind.

When we look at that scenario now, and overlay what has happened in the industry, what we clearly realize -- of course, we don't have any offshore installations today, and we hope to have those in the near future. But from a global perspective, what we realize is

that we are ahead of that scenario.

Today we have about 46 gigawatts of installed capacity in our system. Many propose projects in our waters, and, again, it is great to see what the industry has been able to do.

In the bottom table what you will see is how we think about our program. We think about our program in many ways as having strategic investments that deal of course with the continued reduction of cost of energy, and you will see those targets below, both for land base and offshore wind.

In addition to that, we of course, although we don't have full control, then project what we believe could be a realizable deployment strategy for those cost targets and in different regions that it may happen.

I guess concurrently to that, just to make sure that everybody at least recognizes the breadth of the program, we just don't always invest in technology. We also

invest in the series of activities that are imperative to making sure that deployment does happen. And how do we accelerate the markets? Or how do we address the barrier of how to be environmental, or other of that like?

So the program does have that breadth of activities, and of course if -- for those of you who have visited us, hopefully you have that perspective. And if you haven't, please do so.

So I just want to now kind of accelerate the time-scale to 2010 when I would argue that the revitalization of the offshore program started.

In June of 2010 -- many of you may have contributed to this -- the program issued an RFI, a request for information. And we received 113 responses for which we used those responses to build our strategy for our program and try to support the various elements which we believe are important to mobilize this industry.

That was followed by a report that talked about large-scale offshore wind in the U.S., a lot of efforts from our national labs and many folks contributed to that, to report that it's available, in your interest.

That was then followed by a comprehensive offshore wind strategy that was co-sponsored by the Department of Energy and the Department of Interior. There of course we see Secretary Salazar and Secretary Chu when they were announcing the document. And that really forms the basis of our program. And many of our investments, if you are tracking them, really are structured around that document.

We then followed by recognizing that we could not do this alone, and there was three gigawatts worth of experience that were happening in global in the offshore sector. We then initiated of series of what we call seminar series where we invited folks from overseas and traveled to three locations

across the U.S. to not only discuss and present the offshore strategy but to then get some feedback and continue to engage in a collaborative way with our colleagues across the water and making sure that we have a robust agenda that is as informed as it needs to be to ensure that success of this industry.

It was then followed by the Department of Energy's open solicitation or FOA, as many of you know, funding opportunity announcement. where we were seeking projects by in technology and market out-sectors. We awarded nearly $50 million in total at that time, which many of those activities some of you may be a part of today, and are ongoing as we speak, and delivering key work to ensure the cost of energy, deployment, whatever key metric we want for this particular industry.

And then, of course, we are here today to discuss our demonstration program, which is the last and very important pillar of our strategy and, again, will be discussed in

depth by Chris.

So with that, I am going to turn it over to Chris Hart. Chris is the offshore lead for the programs, wind and water activities. Chris, as many of you know, has been around, meeting with all of you, and socializing the idea of getting feedback and everything. He has done a great job. It is great to have him on the team. So with that, I will turn it over to Chris.

(Applause.)

Jose Zayas sits down and Chris Hart takes his place at the podium.

DR. HART: Good morning, everyone. Thanks, Henry and Jose, for the comments. Again, it is great to echo Dr. Kelly's excitement. It is something we definitely feel. And I think looking around the room and speaking with several of you, it is something that you feel as well. So it is great to be here, and in many ways it has been a long time

coming.

I hope you brought your tough questions. As Jose indicated, one of the main purposes of this is to get feedback. And there is a couple of topics in particular that I will highlight throughout the talk that we want to get your pointed feedback on, but please don't be shy.

With that, I will just get started. Picking up where Jose left off -- and many of you have in your packets the draft funding opportunity announcement. If you haven't had a chance to read through it already, I urge you to do so as we talk here, and that is what most of our comments should be focusing on.

I am going to go through that document in some detail with my comments. But before I do that, I want to just do a little bit more scene-setting, just a little bit, on why this particular -- this last pillar that Jose mentioned, why this advanced technology

demonstration project initiative is so crucial to the national offshore wind strategy.

It just so happens that it is not about a year ago we announced that -- it was actually exactly a year ago, February 7, 2011 -- Secretaries Chu and Salazar made the announcement of the national offshore wind strategy, and also announced the three solicitations that we awarded last September. So it is a great day to celebrate that.

But this is daunting if we take a look at where we are now and what we can achieve given the one particular scenario as presented in the 20 percent by 2030 report. It is imperative that we recognize here that this is a scenario, and the goal is actually the cost number that we have talked about. And those two are inextricably linked.

So this looks pretty daunting when we look at this number, but if we overlay these numbers it looks less so, recognizing that in the same timeframe that we are talking

about -- in eight years onshore -- those numbers were substantially -- almost four times the installation was achieved in the same timeframe onshore.

So we have done it before, and we are confident, if we execute the strategy as put forth, the global we -- "we" being not just DOE, not just our federal partners as well, but also the industry, we can achieve that scenario.

I want to dig a little bit deeper into this slide. For some of you, I imagine this is probably the first time that you have seen it. But the dashed line there represents -- at the top of the dashed line is where we currently model national average cost of energy for offshore wind. It is high, right? The number -- we don't need to talk necessarily about the specific number.

We are taking a look at that very deeply, and we have been since we published the national offshore wind strategy. But what

we can recognize is that number is really high, and we want to get it down to the 10-cent range. How do we get there? Well, that hashed piece there can be boiled down into three general areas.

All three of those general areas are attacked directly by this advanced technology demonstration project. That is construction validation, generation validation, and operations validation. Those are all getting at risk, trying to reduce the risk premium associated. That's the cost of money. That is a substantial reduction there.

The other pieces are also addressed directly by this funding opportunity announcement, and they were also directly addressed by our other areas as well, by the technology development funding opportunity announcement in our market barriers and our next generation drivetrain. I will talk about those a little bit more in depth.

But these are some of the things

that we see as absolutely crucial to getting down that cost cascade that we see as necessary in order to see a healthy, sustainable industry. So that is increased rotor areas, drivetrains, increased hub heights, etcetera. You can see the list. But this is the analysis that we used to help us make our investments.

And the advanced technology demonstration project solicitation -- I will talk about how it is broken up into two topic areas. Those two topic areas align very well with the key cost reduction drivers as delineated in this chart.

So we have been executing on our strategy since it was announced a year ago. The first column here was actually done beforehand. That was Recovery Act funds. Those went to the large blade test facility in Boston and the Clemson large dynamometer down in South Carolina. But we have a substantial investment there trying to establish ourselves

on the global stage as a major player in testing components.

But the next three were announced with the national offshore wind strategy, and we made those awards last year, in July for the next generation drivetrain, and in September for the remaining two -- technology development and removing market barriers.

And there is a substantial amount of effort that is ongoing there, a lot of really great effort. There is 47 projects in those three areas looking at everything from ports and vessels and innovative ways to look at biological studies to -- all the way to innovative drivetrains, new rotor concepts.

And perhaps most apropos to this discussion, topic area two of the technology development solicitation was looking at systems -- innovative system approaches to reducing the cost of energy. So we have been allocated just over $128 million to this national strategy thus far, and that gets us

here.

When we were out in those events that Jose mentioned talking about this strategy, we always said there were three focus areas -- technology development, removing market barriers, and advanced technology demonstration projects. And we have been working hard in order to get this off the ground and here we are.

So as you look at the title -- "Advanced Technology Demonstration Projects" -- you may wonder what is advanced technology and what is a demonstration project? Well, I am not going to give you a nice cut-and-dried answer, A, B, C, D, E, these are advanced technologies, etcetera.

What I am going to do is kind of help you through I'm sure an exercise that many of you engage in already, but some of the ways that we think about this. So put three pictures up here. This picture on the left was taken on January 16th. It's the first

wind turbine installed in the world's largest offshore wind farm in the London Array in the U.K.

You may recognize the turbine there. You may recognize the foundation technology. But what you can't see is what is going on underneath the water and the innovations that you are seeing there. What you can't see is some of the installation methodologies that were used and some of the new ground that has been broken there. So there is an interesting case study.

In the center you see the first turbine installed at the Ormond Wind Farm, which is the first wind farm that was installed with all five megawatt machines -- 150 megawatts -- completed last year. That picture was taken I believe on March 23rd, and jacket structures, so the innovation in that picture is very readily visible.

The last picture there is -- a U.S. design firm designed this floating

platform, the second megawatt scale floating platform to be deployed globally. It was deployed in Portugal -- the principal power wind float. So these are three projects, very interesting time -- that picture was taken I believe in the holiday -- end of December.

But what is the underlying theme here? The underlying theme is that there is innovation, and we defined "advanced technology" very broadly with the purpose. And that purpose is, as Henry and Jose have mentioned, we want to see substantial impacts on the cost of energy.

We have got the cascade that shows how we can get there. But there is innovative aspects of all of these examples, and there are many more out there that we could discuss.

What is a demonstration project? What I put up here is 20 projects that have been installed globally with installed main plate capacity less than 50 megawatts. Okay? So people are doing this globally, and they

have been doing it since 1991, as most of you are aware.

A couple of things you can look at. You can learn from looking at a chart like this -- I learned these things myself -- and one is that I mentioned this has been going on for a long time. A second is that the substructure type has changed, has progressed, as the time has progressed as well.

Another is that turbine capacity has improved, has increased. It mirrors the points that Jose was making before. The depth has increased; the distance from shore has increased. All of these things you can get from looking at these numbers, and they are all good pieces of information to take from this chart.

But what I really want to draw attention to is what you can't get from looking at this chart, and you can't get from these numbers -- you don't get the answer to

this question. Why did these countries and these organizations build demonstration projects?

And when you ask that question, as we have, you get a varying set of answers, but it boils down to this: there is a specific need in a specific market that when that need is met that market is allowed to grow. So I am going to talk a little bit about that.

Why does the U.S. -- what is that specific need in the U.S.? Why does the U.S. need an advanced technology demonstration project?

This is something that, again, we spent a lot of time thinking about. I'm going to -- it is a complex question. We all like to have simplified consideration, so I am going to simplify this a little bit, just for the sake of discussion.

The first point made here is really a binary decision. There is a decision -- if you are going to grow in industry, the

binary decision looks sort of like this. You can subsidize the growth of the industry or you can subsidize the growth of technology. And from DOE's perspective, it has been highlighted throughout the morning thus far, our sweet spot is in technological innovation.

And that is where we are going to focus our efforts -- on innovating technology that is going to drive down that cost curve and get us to a sustainable long-term, healthy industry.

There is two points to be made when you look at the European experience. The first one is intuitive, and the second one maybe is not so much so. But the first thing that you see when you look at the European experience -- and it was illustrated nicely by that chart -- is that you should start small, and you should learn the big hard lessons small and then go big. So that is one lesson that is fairly intuitive.

The second one -- and this comes,

again, through those discussions that you have. And one of the questions I like to ask in having discussions with global offshore wind entities is: what do you think steady state looks like? And one of the things that -- again, you get lots of different answers, but the common theme is that it might not look like it looks now. And I think that's an insightful statement, and it has been made and echoed by many, "It might not look like it looks now."

So what our task is is we're presented with an opportunity to identify that now and start at that spot, a little bit closer to what it may look like. And that's what we are trying to do with this advanced technology demonstration project initiative. That is why the U.S. should capitalize on this opportunity.

Third point -- and I've got four -- third point is that the U.S. market is huge. It is huge. You can talk about -- to

different people around the world about different aspects of the U.S. offshore wind market, and the size of the market always makes people's eyes sparkle.

You know, it is 4,000 gigawatts. That is kind of the gross number. There are some new numbers that we have analyzed that take into consideration binary exclusions that puts that number a little bit lower, but it's still really, really big. And of that big resource, two-thirds of it is in deep water. So it is going to be a little bit different. The U.S. market is going to develop a little bit differently, potentially, than other markets.

Speaking on deep water, very quickly, you may be aware that there are other efforts globally in order to -- that are in progress in order to capitalize on the deep water resource. The Japanese have a $160 million RFP on the street. There is an organization in the U.K. called ETI that also

has a solicitation on the street, so many people are taking a look at this as well.

We recognize there is two-thirds of the resources in deep water. There is also one-third of the resource in shallow water here in the U.S. But I wanted to make that key differentiator between the U.S. market and others.

And lastly -- I am not going to belabor this point, because we have been talking about it all morning -- but this is absolutely critical -- reducing the cost of energy. And this is a substantial way to do that, and attack directly the cost of capital component of that cost of energy reduction, which is very important.

So that is enough kind of background information, "why" sort of questions. Let's talk a little bit about what. This is the timeline that we are executing as we sit in this room right now.

As most of you are aware, the

draft FOA was made available last Friday. Here we are today at the pre-solicitation meeting. We are accepting comments. It has been said already. I want to highlight we are accepting comments via our oswdemo@go.doe.gov email address until the 14th of February, at which time we will collect all responses.

Added to that list will be any that we don't get to today, because I think there is going to be a substantial -- I hope you all brought your hard questions. And we will publish answers using the established methodology. You can ask questions about that later. We will get you the details. But we are going to close comments on February 14th, looking to post on February 29th the final funding opportunity announcement.

Letters of intent, which is our way of knowing that you are going to apply, so we can set up the process in the most efficient manner possible. Those will be due at the end of March.

The end of May applications will be due -- again, 90 days. Recognizing the complexity of this undertaking, we wanted to allow 90 days and looking for notifications in August and finalization of awards at the end of the fiscal year. That is the timeline we're executing right now.

There is this idea of a world-class team that is in the FOA. What does this mean? There are some specifics in there. I think we wrestled with one of the words there -- could or should. We decided to go with "could." But what we want to do, we want to have a team that is turnkey.

We want to have -- when the awards are made, we want to have activities start. And I think everyone can understand when we look at the aggressive timelines that we are proposing that that is crucial. So we know that there has been a lot of teambuilding going on since the first time we ever talked about the advanced technology demonstration

project, and we are excited to see those world-class teams come during the application process.

Regional diversity -- so we are not looking at one area, we are not looking at two areas, we are looking at all areas. And Henry had a nice slide with the resource -- the resources out there in all of those areas. There are specific technical challenges that are associated with each of them, but we are confident that we will get quality applications in each of those regions.

There is a perception -- and I probably didn't do any justice to quelling that by mentioning the two-thirds deep water, but we are looking for depth diversity. And you can take that one to the bank. There is something that -- we see that there is substantial innovation that is possible in all depth regions, both shallow, which is obviously zero to 30 meters; transitional, 30 to 60; and deep water, greater than 60 meters.

We are looking at offshore wind only for this particular solicitation. That is not to say that we don't see a potential in the future for a synergistic relationship between offshore wind and marine hydrokinetics. But we are not pursuing those sorts of applications for this FOA.

Lastly, I am going to spend a little bit more time about this, and thank goodness we have the experts in the room here. But site selection is very, very important for this FOA. We are used to -- and we have a very robust review process looking at technology, and we feel comfortable with that process.

But there is another facet to this solicitation that -- as you may have surmised, and that is the site. So when we get to a certain point in this process, we want to know that the technology is good for a particular application, and the site is good for a particular application.

So I will spend just a minute talking about sites. There are several facets of a site. You can have a -- and I am just going to, again, try and simplify it for discussion's sake. There is a state site, right, and then there is federal waters sites. And with federal water sites there is many different ways to break that down.

One is a commercial lease in a wind energy area, and congratulations to the Bureau of Ocean Energy Management and DOI for their announcement of the EA recently. So there is a wind area energy site.

There is a commercial lease that is -- a commercial site that is not in a wind energy area, but there is something that maybe people might not have considered up until now that I wanted to introduce, and that is the idea of a research lease in federal waters. And I'm going to spend a few minutes talking quickly about a research lease in federal waters.

So a research lease is a provision in the law that allows for an agency, either a federal or state government, to initiate a lease for a period up to 50 years. And that lease is between the organization, the agency, and the Department of -- the Bureau of Ocean Energy Management or the Department of Interior.

This research lease must be used for research for the life of the project. That is a slight oversimplification, but I can -- we can get into the details during the Q&A, but that's a generalization. It should be used for research during its life.

The lease block cannot be changed to a commercial lease after the -- during a certain period of time. What can be done is the research lease can be -- can exist in a certain piece of real estate, and potentially later on there is nothing that would preclude a commercial lease from being installed or being granted near a research lease, and then

certain -- we all know that the goal of research is to find commercial application for some of those ideas. So an application of that -- those results that come from that research could then be in commercial lease later.

Results obtained from the research lease -- this is what I was discussing -- could be used to permit the commercial lease later. Power can be sold. There seems to be a limit. If you talk about a limited lease, there is a limit of five megawatts, and there is some discussion about the application of that limit onto a research lease.

The electrical connection and other infrastructure can be used by the commercial farm when the research lease expires. Again, this is a little bit of an oversimplification, but just as an introduction it is a point to be made.

So there is an idea about research leases out there. I'm not sure that many

people have looked at research leases, so I wanted to make the introduction.

The funding opportunity announcement itself -- okay, we will talk about the details here. Topic area one is titled "Accelerating Pilot Deployment." Very, very aggressive timeline. That very aggressive timeline indicates that only projects that are very far along on their permitting process will be able to compete, especially from a federal perspective.

I've got a note here that says state or federal waters -- absolutely the case -- but in the federal waters it only really makes sense if that project has the lease and the construction operation plan already approved.

But there are some other ideas here -- one turbine multi-megawatt scale. So I know one of the questions that we are going to get is: what is the benefit to the federal -- or the taxpayer of topic area one?

We see this as a huge opportunity to engage in one of the first projects in the water in the U.S., gain access to substantial data, and apply that data to the improvement and -- improving the knowledge base of the existing industry. So it is an excellent opportunity to do just that, and also to highlight the importance of advanced technology in those first projects. So that is topic area one.

Merit review criteria -- you will see schedule is the key driver here. We also have very high weighting on technology and on levelized cost of energy. All of this is absolutely open for comment during the scope section of our Q&A. So we would appreciate any thought that you have there.

Topic area two -- Innovating Commercial Viability is the nature of topic area two. A little bit of a longer timeline. Again, federal waters projects -- we recognize that there is -- this is a very

aggressive timeline for federal waters -- projects in federal waters.

And what we are doing right now is engaging extensively with our other federal partners, as has already been mentioned, in order to better understand how these particular projects, being that they are very focused, smaller in scale, may be able to ensure that all of those statutory and regulatory requirements are met, but still enable the achievement of this timeline.

There is a structure here that you don't see in the topic area one, and this is a down-select from budget period one to budget period two. We see that there will be a handful of projects selected for budget period one.

Those projects will execute the final feed design installation and operations plan and initiating of the permitting process, and then there will be a stage gate that will select projects, then, to go into the final

permitting, fabrication, installation commissioning, and cost validation phases of the project.

Budget period one right now is approximately one year, recognizing that is very aggressive again, but welcome your feedback there. And the total project through commissioning is envisioned to be not longer than four years.

So topic area one, topic area two, topic area two, selection criteria, technology, and cost of energy are the largest weighted components of the merit review criteria there.

One last question -- I saved the best one until the last -- everyone wants to know about funding. We are not going to talk about the specifics of funding. However, I am going to make three points regarding funding.

The first one is cost share. The cost share numbers are in the FOA, so everyone is aware of those, or it is definitely public

information.

The next two points -- the first is -- point number two there, just a little bit of data. And this is absolutely on the table for discussion, so please give us your feedback on what you think about these numbers and what you think, from your perspective, this effort should cost.

But a very, very simple way to look at this -- those 50 -- and, trust me, our analysis has gotten more complex than this. But for -- again, for simplicity of discussion, there is two numbers that pop out.

Those 20 projects globally that are less than 50 megawatts -- if you average, just raw average those 20 projects, the capital cost of -- the cost of those projects is roughly $4 million a megawatt. If you just average the last -- since 2005, those installations, that number is $7 million a megawatt. Okay? So those are some numbers that we can have in our mind from public

information in order to understand this discussion.

Lastly, the last point to be made here, DOE envisions supporting, through the breadth of this FOA, both topic areas around 50 megawatts installed nationally.

So, again, one more point about the structure of this FOA. This is our programmatic goal -- to have this FOA structured in this way, two topic areas, in topic area two two budget periods, and the budget period two being the -- obviously the heavy lift for topic area two with final permitting, installation, and commissioning. And that is our programmatic view.

Whether or not the FOA actually gets executed in that way is still under discussion, but I wanted to make the point that that is the way we envision rolling this effort out.

So that is the quick summary of the advanced technology demonstration

project's offering. And we definitely open the floor for questions here. I am going to turn it back over to Jose. Jose is going to walk us through a few points.

And thank you very much for your attention.

(Applause.)

Chris Hart takes his seat and Jose Zayas takes his place at the podium.

MR. ZAYAS: Great. Thank you, Chris.

We are actually a little bit ahead of schedule, which is actually good. I would like to ask -- several folks are walking around the room trying to collect cards. If you have written a question, either from the presentations or thoughts that you came in with, from either reading the FOA, draft FOA or something, there is going to be folks -- if you could raise your hand, they would appreciate that. We are going to have a few

minutes to do so as well as we are kind of just changing logistics.

At this point, I would like to ask folks -- a couple of folks to come up here. I would like to ask Mr. Steve Chalk to join us up here, Maureen, Tim from Department of Interior, as well Michael Hahn and Genevieve as well from our Golden field office.

Mauren Bornholdt, Steve Chalk, Timothy Redding, Genevieve Wozniak, and Michael Hahn all join Jose Zayas at a panel table located next to the podium.

We have a subset of folks -- as I mentioned earlier, we have folks from many different agencies here today. And all of us are here and willing and able to answer questions that you may have as well. So if there is a question, you don't have to narrow it to just DOI and DOE. If there is a question for DoD, we do have representatives

as well. But just for logistics reasons, this is the structure we chose.

So, again, if you are writing questions, I would appreciate that, and pass them on to the folks, and we will get going in about a minute. Let these folks come up here. Stretch your legs or something.

(Pause.)

So as these folks are coming up and settling in, just a reminder also that the next I'm going to say hour or so we are really going to have what I call the structured Q&A session. And it is, again, intended to allow us to cover all of the different topics that we believe are important or that we have heard from all of you are important to discuss.

We will then follow that up by what we call the open Q&A session, and that will be again more of a free format where you would use either the mics, and so forth. During that open Q&A session, I do ask that you at least introduce yourself and who you

are affiliated with. We would appreciate that. Again, this is being recorded, so it would be great.

Again, if we do not get to all of the different questions that you may have that are presented, we will make our best attempt to answer those online.

Just as a final reminder, just to make sure that all of you are aware, through the 14th we will be allowing questions online. So if you do not want to ask publicly, or we just don't get a time for you to do so, again, that would be appreciated.

So before we begin, I would like everybody on the panel at least -- Michael, I will start with you, if you could at least introduce yourself -- and there are some mics in front of you -- and state who you are with and what part -- what role of course you have within this program.

MR. HAHN: I am Michael Hahn, and I am a project officer with the Wind and Water

Program through DOE's Golden field office. And we do the -- a lot of the function for procurement and project management that goes on when the awards are made for the solicitations afterwards.

MS. WOZNIAK: I'm Genevieve Wozniak with the Department of Energy. I'm the contracting officer working on this particular funding opportunity announcement.

MR. REDDING: I'm Tim Redding. I'm with the Bureau of Ocean Energy Management in the Office of Renewable Energy Programs.

MS. BORNHOLDT: I am Maureen Bornholdt. I'm the program manager for the Offshore Renewable Energy Program in the Bureau of Ocean Energy Management.

DR. HART: Chris Hart. Thank you.

MR. CHALK: Steve Chalk, DOE, Deputy Assistant Secretary for Renewables.

MR. ZAYAS: Great. Thank you. And I know that questions are passing, so we will start. So in the spirit of getting

started, we had some questions -- we actually opened some opportunities online for people to pose some questions, so we have some general questions just to get it started.

And I am going to ask a specific question, maybe to start it out, with Chris and Steve's perspective. So we talked a lot about advanced technology. Chris, specifically, I'll start with you, and you had those pictures as well. How does advanced technology and concepts have to be presented in order to qualify for this opportunity? And can you talk a little bit about your thoughts about specifically to how that breaks down into topic area one and topic area two?

DR. HART: Sure, thanks. As Jose mentioned and as I shared in the presentation, we have a very broad interpretation of what innovative -- or what advanced technology could mean. But we have identified some key drivers for the cost of energy.

And to summarize those key drivers, it

is larger turbines, larger farms, and better wind. So, and technologies that allow that to happen will really have a major impact on the cost of energy. So those are some things that are at the forefront of our mind.

Topic area one and topic area two, because of the timelines, lend themselves to different technologies. One of the things we are working on finalizing for the final FOA is a very prescriptive technology readiness level -- TRL -- analysis that is associated with topic area one and topic area two, so that there will be much less ambiguity from a TRL level.

But to summarize, topic area one should be ready for deployment imminently with technology at a megawatt scale. So we are talking about -- the list is long that would include that sort of technology.

For topic area two, there is more time in the schedule looking for construction to start maybe a year before commissioning.

And we see commissioning in the 2015 through 2017 timeframe for topic area two. So there is a little bit more opportunity for a lower TRL level of technology to be successful in topic area two.

MR. ZAYAS: Great. Steve, any thoughts on maybe how it compares to other programs or how we view the portfolio?

MR. CHALK: Not at this time. I think some of it will come out in the Q&A, so let's just hold off.

MR. ZAYAS: Excellent. Okay. No worries.

There is a question here from the audience that I am going to present here. Terminology here is called in the context of value of energy. So increasing the value of energy is also a way to improve competitiveness of wind energy. Reducing integration costs, improving forecasts, and utilizing storage are just maybe a few approaches to improving this value of energy.

Will topic area two consider such innovations?

Chris, maybe I will put that to you.

DR. HART: Sure. I think the concept value of energy, we can spend some time getting a little bit better definition of what that means in a different forum. But to the extent that we are looking at a breadth of technology improvements, all of which have an impact on the cost of energy, then absolutely, that is what -- we are definitely talking about that.

I will use as an example the six projects that were -- I'm sorry, seven projects that we are funding in topic area two of the technology development solicitation. If you look at those projects, their control volumes -- to use an analogy, what is a system, those control volumes are -- they vary greatly.

Some include export cables, some

only include the turbine and the tower and the foundation. And there are some that even include vessels and installation capability. So, yes, we are interested in all of those things. We have an idea, we have a theory about -- or a thesis, a hypothesis about what is going to have the biggest impact on the cost of energy. And I highlighted those points earlier, but we are interested in the breadth.

MR. ZAYAS: Great. There is another question presented by the audience here wondering if meteorological towers and innovative site data collection methods and technologies are going to be covered under this technology innovation program.

DR. HART: So we recognize the value of collecting data, and we recognize that that is part of the development process. So we will look to fund that sort of activity as part of a very clearly delineated path to putting turbines in the water.

So as many of you know, we've got -- we are funding activities in resource characterization that are broad in scope, all the way from, you know, putting a floating lidar system in the water and using that data to validate that particular piece of technology, to studying what is needed in a specific region in the country in order to better understand the resource.

We are funding all of those activities, and we would see that sort of activity as a necessary site assessment step in order to better understand the resource. So that would be covered.

MR. ZAYAS: Great. There is a question that I am going to put here on the technology side, and I am going to combine two that I just got. One of them -- and maybe our folks from Golden and the program can speak as well.

The question is: please clarify the expectation, if there is any, on U.S.

content, percentile of U.S. content, for either projected costs and the value of U.S. jobs and supply chain creation for a given proposal. Of course, the other question really goes a little bit more in detail, reminds at least me of the Recovery Act, the Buy American Provision. Is that a plan for this particular program?

So maybe I will -- if you can put a little bit of background on that from Golden or -- Patty, there is a mic right here. If you can help us out, that would be great. And, Patty, for the audience, if you can introduce yourself that would be great.

MS. WALTERS: Well, good morning, everyone. I am Patty Walters, and I am a legal counsel with DOE in the Golden field office. And I would be happy to address that question.

This FOA is currently going out under fiscal year 2012 appropriations. So none of the Buy American restrictions that

apply to Recovery Act funding will be applicable to this particular opportunity. So we are, you know, going to be reverting back to our normal way of doing business in financial assistance. And under those conditions, we don't have strict requirements on the Buy American side.

However, it is always preferable to use domestic source goods and services, and so that will be something that is important in the consideration of applications going forward.

I think I answered that. Is there anything else that --

MR. ZAYAS: No, that's great.

MS. WALTERS: Okay.

MR. ZAYAS: Thank you, Patty.

Another technology question -- please, Chris.

DR. HART: Just one more augmenting question or statement about the point that was just made. Obviously, the

status of the offshore wind industry globally is such that it would be limiting for the growth of a successful industry in the U.S. to be too restrictive on that particular facet of the program.

I think the operative term here looks like "a rising tide lifts all boats." That being said, and to highlight Patty's closing comment, we all recognize the value of having U.S. source materials. But I just wanted to make that point also.

There is a tremendous amount of activity that is ongoing, and globally that activity will bring jobs to an industry. That is one of the nice things about offshore wind. You are about talking about huge components, big pieces. Those things can be -- can do great things for local economics.

But when we look at -- one of the goals of this particular effort is to say all of this stuff is happening globally. It is all -- a lot of it is targeted at an enormous

U.S. market. If we are going to compete in that industry, if we want a piece of that activity, if we want to keep some of those jobs here, then we need to invest ourselves, and that is one of the driving factors here as well.

MR. ZAYAS: Great. Thank you. I now have a question more on specifics around technology, and the question is posed around deep water. So the statement is deep water requires longer underwater electrical connections and costs. This penalizes single turbine demonstrations. Can this be adjusted from the point of view of achieving the cost of energy goals?

MR. CHALK: I think absolutely we can. We recognize there is more resource in the deep water, and we will adjust the levelized cost of energy for any specifics that are germane to a project that is installed because of a particular location or adjusted because of potential in terms of

energy capture, and so forth. So I think we can make those adjustments.

And it's a system problem anyway. There is tradeoffs being made, and we will adjust that when we evaluate the levelized cost of energy or the potential -- against the potential of resources.

MR. ZAYAS: Great. Thanks, Steve.

The next question I am going to ask is a combination of technology and environmental work and how that is being perceived, and also maybe ask our colleagues from DOI to comment on the question.

So structural and mechanic improvements have matured greatly under European development. So far, technology that would accelerate the environmental review for either mitigating environmental impacts or systems that of course protect seem valuable in this call.

Would there be any focus on this kind of technology? So the question is

specific to the FOA, but of course we all recognize -- and we are trying to install hardware -- there is a NEPA requirement and things of that nature, and of course DOI will have to be a partner.

So I don't know if, Mo, you or Tim have any comments on just the value of having environmental impact technology would be for your processes, and then maybe ask specifically to Chris or others about how that is being included in the FOA.

MS. BORNHOLDT: I think that results, to be able to show the connection between technologies and some of the either environmental benefits or impact, would be very useful for our program, because, you know, as we all talked about, as Henry said, as Chris and Jose said, this is all new.

We have not launched or constructed any facilities in the -- on the OCS just yet. We know we are on the verge in some state lands. And so to be able to have

some of these demonstration projects to feed not only engineering sorts of questions and answers, but also the impact and association with the marine, human, and coastal environment is very, very important, because we have our responses and requirements under not only the National Environmental Policy Act, but Marine Mammal Protection Act, Endangered Species Act, Clean Air, Clean Water, the whole litany, that if we can gather data with regard to these types of technologies and fold that into our environmental consultations and compliance that helps makes our process more efficient.

MR. ZAYAS: Thank you.

MR. CHALK: Let me just add -- and this relates to the last question, too, on the cable and deep water. On all sides, we are trying to validate what the cost of all of this is, whether it's soft costs associated with siting and permitting, or it's capital costs, or it's operating costs.

So we want to include all of these costs as we evaluate where the technology is, because at the end of the day one of the major objectives here is to demonstrate innovative technology, but that will in turn inform where we put our R&D dollars as well as we go forward in the R&D portion of the program.

So this feedback loop from this demonstration program back to our R&D is critical. And as Chris said, it is just not about technology, but it is also about all of these market barriers, whether institutional barriers, their siting and permitting, etcetera.

We really want to get a handle on, what is that particular piece -- contribution to the overall levelized cost of energy? So that is where we really need hard data.

MR. ZAYAS: Some questions coming up. So we will get somebody out there.

So I am going to switch topics right now to scope, and what we are defining

as scope. If you have a technology question -- and if time allows, again, the open session, or we will try to come back to it as well.

So switching a little bit, the first question I would like to ask the panel is, you know, how will the selection process ensure geographic diversity beyond, in this case, the Atlantic coast? So, Chris, I would like to ask you that question. And again, if possible, ask just for thoughts from DOI's perspective, if that is -- if applicable. Go ahead.

DR. HART: Sure. I will just give a very quick summary of how our selection process works at DOE. We have got merit review criteria, which are published in the funding opportunity announcement, and there is a merit review panel that uses those criteria to assess and score each one of the applications.

Once that is completed, there is a

subset of those applications that have been scored and meet a certain threshold, as determined by the merit review panel. All of those applications are then sent to the selection official, the senior selection official.

That senior selection official then makes a determination amongst those projects that are presented above that certain threshold based on a set of policy factors. Those policy factors are also published in the funding opportunity announcement, and you will notice that one of those policy factors is geographic diversity. So that is the short answer.

MS. BORNHOLDT: And for us, I look at us as kind of the user of the process. It is not so much that we are driving a particular site location. You know, we have our own processes for providing access to the outer continental shelf, whether it's on the Pacific coast or the Atlantic coast or

offshore Hawaii.

And so for us, you know, we are taking a look at whatever is awarded and then gathering that information to help it move forward through our regulatory permitting process. We are fortunate on the West Coast we have a task force -- an intergovernmental task force that assists us with these kinds of dialogue. In Oregon, we are going to launch our first meeting -- offshore Hawaii. And then, we have intergovernmental task forces in 10 of the 13 coastal states in the Atlantic.

DR. HART: One more quick comment about the merit review process. Traditionally, the merit review process has been focused on technology. And in the comments that I made, we mentioned that there is another facet here that absolutely needs to be considered in order for us to have the greatest surety that when we make our awards these projects have a strong possibility of being successful.

So we've got to have a thumbs up on the technology, but we also have to have as much of a thumbs up as we possibly can on the site as well. If there is anything that we can address during that time period, we absolutely must.

And that's why Jose mentioned earlier, we are working so closely, making sure that the right people are looking at these applications and are looking at these sites at the right time, so when it comes time to make those recommendations to the senior selection official, those technology thumbs up and site thumbs up are there. So --

MR. ZAYAS: Great. Thank you.

There is a simple question here that I will just address really quickly. I think it was captured in the FOA, but just for completeness here -- when will -- I'm sorry. Can one organization submit a proposal for both topic area one and topic area two? The short answer is yes, but they have to be

separate proposals. Okay? We will not just take one proposal and put it into the second topic. So that's one question.

The other question is: when will DOE funding amounts be anticipated to be released? Of course that is being discussed as we speak. Of course it will be part of the announcement on the 29th, as mentioned in the schedule. We do, however, want your feedback and thoughts as to when you reflect on these things and knowing the cost share requirements, where your thoughts are on what a project of this magnitude would cost, especially for those of you who are pursuing projects.

So we, too, would like to have that discussion. We will facilitate that during the open Q&A, but that's the short answer to that.

There's a lot of questions around budget, but we will skip those for now. Hopefully, I addressed that.

Chris, you mentioned this whole notion about 50 megawatts. We kind of expect 50 megawatts. The question is: can you just expand on what you mean? And how is that number derived?

DR. HART: I don't want to get too much into the details there, just because I think it is premature. But given all of the criteria that we are trying to meet with this funding opportunity announcement -- putting turbines in the water in the most rapid, responsible way possible, expediting the development of innovation of technology as substantial -- potential for substantial impact on reducing the cost of energy. Those are kind of the two big goals, and then we've got those five secondary goals.

In order to meet all of those goals, and do so in the fiscal restrictions that we all face, the 50 megawatt number came out as the appropriate target. Is that a hard number? No. Could it be a little bit more

than that? Absolutely. Could it be a little bit less than that? Absolutely. It all depends on quite a few factors, but that is a nice touch point, and just a super quick snapshot of the decision process that went into that.

MR. ZAYAS: Great. Thanks, Chris.

This is completely unrelated to this meeting, but I just got a note. There may be, in all seriousness, an earthquake drill announced under the PA system soon. So if that happens, of course we will pay attention, and that's a little bit more important.

When I joined DOE, two days after I got here there was an earthquake, so this is deja vu or something. But anyway, so that may happen. It is a true statement, so we will pay attention to that.

All right. So let's get going back on the questions. These are clarifying questions, and I will address these really

quick.

Topic area one anticipates one award. However, it also states that one or multiple systems are expected, and the system equals turbines. The answer is yes. So it is one award, and systems equals one or more turbines depending on what the applicants feel they want to submit. Okay?

Second question that I will field here. Of course, if others want to add, that's great. How many projects is DOE targeting in topic area one and two? Specifically, under the FOA that you have in front of you, the draft, topic area one is envisioned to be one award being made. In topic area two, it is envisioned to have a handful of awards in that first budget period with a down-select from there. Okay? So those are just specific questions that were asked.

Third question that is, again, more of a process is in terms of how this is

going to be handled. Will there be multiple agencies represented in the review team of these awards? And the short answer is, of course, yes. So absolutely, it is part of the design, and so forth.

So I have another question here for our panel. Will DOE, under this FOA, fund advanced installation methods that will reduce LCOE but is also inclusive, not only the design but the constructions and vessels and the elements of that?

So, Chris, I will pose that question to you.

DR. HART: Sure. The short answer to this one is actually, no, we do not envision that this is going to be part of the solicitation. So we don't want to -- that is where we want to draw the line. If we are collecting data for site assessment, yes. If we are funding development of new vessels, of new methodologies to be applied to a commercial project, no.

MR. ZAYAS: Okay.

MR. CHALK: Let me counter that a little bit, Chris. I think --

(Laughter.)

Are we going to build ships? No, I don't think so. But I think if there is uniqueness associated with certain designs that there could be potential to allow designs on how they would be installed -- I think could be part of the effort.

Obviously, we have to take into account -- and related to the question of how many awards -- what is the overall proposal we are getting in terms of magnitude? What are our appropriations, and so forth? What are the technological diversities that we have with all of the proposals -- geographic diversity?

So to a certain extent, if it's germane to a design, in terms of, hey, this is really innovative, it would be low cost to install, but there are special vessels that

have to be deployed or looked at, I mean, some analysis, some design could potentially I think -- we will think about that.

Chris may be right, but we will think about that. I think that's a very insightful question. Especially in that first phase of topic area two, there could potentially be some analysis or design related to O&M and to how do you install this special design. I think we ought to give that some more thought.

MR. ZAYAS: Yes. Thank you, Steve, for the clarification here.

Another question I would like to present is, "In topic area two, it is stated that there will be a down-select. Does that mean that even if you have all budget period one recipients successful and on time that some will be cut?" And of course the short answer is that it is really budget-depending, right?

So at this plan of course there is

an intentional down-select, where there would be a thorough review process of how the recipient performed in that budget period one. And pending appropriations, and so forth, of course that would be then proceeded into the budget period two, where of course things cost a little more when you are trying to deploy those projects.

So that's my response. I don't know if, Steve or Chris, anything else to add on that?

MR. CHALK: Well, I would just say we will definitely have in the final FOA the selection criteria --

MR. ZAYAS: Absolutely.

MR. CHALK: -- for going from topic area to phase one to phase two, so they're very transparent with how they are going to be evaluated. I think Chris has gone through a lot of those criteria already, but that will be very clear in the FOA, final FOA.

MR. ZAYAS: Great. This question

is for I think Genevieve or Michael in Golden. Of course during that down-select there will be companies that will be eliminated, right? What happens to all of that work? How is the company's IP protected if they are not selected into the second phase of topic area two?

MR. HAHN: So in terms of the data protection provisions, we put in there that DOE is actually -- one of the purposes is to collect data from these projects. So that should be known up front, that we will be collecting the data as a part of it, but there will be -- a five-year period I believe is what we have talked about, where they will be protected, and we would only be using that internally. That's what we discussed in terms of the data at this point.

MR. ZAYAS: Great.

MR. HAHN: Otherwise, yes, the project at that point would no longer have federal funding associated with it to move on.

MR. ZAYAS: Anything to add to that, Genevieve or --

MS. WOZNIAK: No. Just at the end of budget period one, if the project doesn't move on, and they choose to protect their data for up to five years, DOE would honor that. And like Michael said, DOE can elect to use that data internally for DOE purposes, but it will not be made public if the recipient does not want it to be made public.

MR. ZAYAS: Great.

DR. HART: One more quick statement in addition to that. This is not something new that the Department of Energy hasn't done before. We have processes in place that protect data and sanitize data and then promulgate that data in a way that protects the sources.

But that is something that we can absolutely talk at length about in one of the later pieces of this discussion that is focused on data, and we can share a little bit

more about what our idea -- what types of data we are going to be collecting and how we are going to protect that. But we can guarantee its protection, absolutely. We've got processes in place.

MS. WOZNIAK: Sorry. That can also be negotiated. So after -- if you are selected for an award, during negotiations we would negotiate the intellectual property provisions with the recipient. So it is sort of a little bit of a balancing act, but we can negotiate with you on that.

MR. ZAYAS: Great. Thank you.

There is a question here that I would say it is either A or B in some way. How will the program maintain a connection between what they are defining as advanced technology projects already underway and these new initiatives demonstration projects? How would that connectivity be preserved?

DR. HART: I guess the question is unclear to me, what is meant by

"connectivity." I don't know.

MR. ZAYAS: Would the person that presented that question maybe clarify, if they feel comfortable? If not, we will move it to -- table it for a side discussion.

DR. HART: We don't envision necessarily that these projects would be connected per se, other than the fact that they are all funded under the same mechanism. But maybe there is something we are missing there.

MR. ZAYAS: Okay. There is a general question here that I will address in terms of ability to apply -- utilities are not mentioned as an eligible applicant. And that is not on purpose. The answer is, yes, of course they are eligible to be either a prime or a sub in a particular topic area. Okay?

DR. HART: The term we used is "experienced energy project developer" and that could mean a lot of different things. I think a utility could fall in that category.

MR. ZAYAS: This is a question on logistics, I think for our Golden colleagues. Does the selected proposer get to pick the type of agreement -- cooperative agreement, technical investment agreement? How is that structured?

MS. WOZNIAK: I think that the program anticipates these awards to be grants or cooperative agreements, not technology investment agreements. But again, you know, we are here to get your feedback. And it will be described in the final funding opportunity announcement what type of contracting instrument DOE anticipates making.

MR. CHALK: One clause we will have in there is "substantial involvement by DOE." And the general perception is a grant doesn't have that in there, although grants can. But in this particular case, it is more likely to be cooperative agreements, because we will have substantial involvement in the project.

MR. ZAYAS: Great. Okay. In the interest of time, I am going to move to the third topic, which is deployment timeline. The first question is, "How can an applicant assume the granting of a federal permit in time?" That sure is a tough question.

MS. BORNHOLDT: Outstanding question. That's why Chris introduced the concept of the research lease. And you know we talked about various options. That's why you saw the footnote under the Topic Area 1 that says you have to be an OCS lessee with a construction operation plan. We know there's a project of that that fits that qualification except they are somewhat bounded by some other activities presently that does not allow them to move forward.

Under Topic Area 2, we're working with DOE to take a look at some of the criteria with regard to deliverables to build in that flexibility maybe not necessarily wedded to a point in time but more likely to

the type of deliverable. Because you recognize that when you -- depending on what you want to take a look at, if it's three or four turbines, if that comes in in a construction operation plan or general's activities plan depending on where it is, the environmental compliance, the information that we have, it could be some time before deliverables can be given to, submitted to, DOE.

So we're working with them to make sure that we don't just by the structure of the FOA eliminate this opportunity to launch some of these demonstration projects or technology testing on the OCS. We're working to make sure that's compatible, that it works with our system, that we meet all our regulatory and statutory obligations as well.

DR. HART: Thanks for that, Maureen. And obviously all that stuff is right on the money for Federal waters. I want to also highlight that state waters is a

possibility absolutely. And that's pretty much it.

MR. ZAYAS: Great. Thank you. The next question is is there a possibility with specifically the Topic Area 2 that none of them will be selected for the second phase. Can we comment on that? Of course, the short answer is yes, depending on performance and appropriation and many other things. It is a possibility. But I don't know if there are any other comments either from Golden or our team here.

(No response.)

Great. It was just a general question. When are the slides going to be available? We're going to post them online I believe tomorrow. The slides will be available. Is that a correct statement?

DR. HART: Yes. Just to clarify a little bit, the slides themselves, we want this to be a package. The video includes. We purposely made the slides fairly sparse with

information that they couldn't live by themselves.

So we will post a link to a video that has the slides included. But we don't envision sending out the slides without that video accompaniment.

MR. ZAYAS: Right. Thank you.

The next question is a general question I think to our colleagues from DOI. Where can folks get more information about research leases?

MS. BORNHOLDT: You can go to our website and take a look at our regulatory framework Qs & As. Or you can contact either Tim Redding or myself and we'll make sure that that information is available. We have an open Q&A session here. We can talk a little bit more about that at that time.

Our website is located at www.boem.gov. But, of course, just for interactive and perhaps to stimulate more questions and hopefully good answers, you know

we have the open session Q&A at the end of today.

MR. ZAYAS: Thank you, Maureen.

From a deployment perspective, the question here is how will the NEPA responsibilities between the various agencies, DOE, BOEM and Army Corps in some cases how is that being handled?

MR. HAHN: Our NEPA compliance officer is actually here, Kristin Kerwin. And I'll take a start and you can come up and add to it.

Any project that would be selected under this has to undergo full comprehensive NEPA evaluation by Department of Energy. And so anything that's been done prior to that by a different agency or any pieces and puzzles that you would put together of your permit would still have to be consolidated and evaluated by our NEPA team in Golden likely after we make the award.

So basically that's why you'll see

in the announcement right now that we're drawing in feedback on the status of all that up front with the application so that we can do a part of that determination in our review process as well. We've actually initiated that as a part of that.

Kristin, did you have any other comments about it?

(No response.)

Okay.

MS. BORNHOLDT: And I know that we're going to work closely with the Department of Energy on their NEPA process because one of the ways we can make NEPA efficient is depended upon the location for some of the potential applications under the FOA and Topic Area 2 in particular.

We have to consider that we do have this obligation. There will be construction. We have NEPA obligations as well as consultation obligations.

To the extent that the NEPA for

this particular FOA can be robust enough to address some of those activities that could be undertaken on the OCS, that also streamlines our ability to move forward in an efficient manner.

MR. ZAYAS: Great. Thank you.

The question here I think applies to both topic areas. Will the deployment schedule without relief be given if the permitting/leasing issues are real? And if they have some challenges with that, would there be some relief given to the recipient?

DR. HART: We're going to be realistic about this. I mean we crafted the FOA in such a way that we're trying to meet an aggressive time line. And we're going to be involved in the process as a partner more than a financial partner.

And this is something that we see as tremendous value that DOE can bring to this effort. So we will address those challenges as partners. And I guess that's the bottom

line.

MS. BORNHOLDT: As we have done in our regulatory program for offshore renewables, we encourage people to go out there and talk to the agencies involved. You know on the state lands we don't have the Army Corps of Engineers. But there are data available. The Corps has issued permits. There are state agencies that have data.

On the OCS as well, we have the Intergovernmental Task Forces. There are at least a half dozen Federal agencies with responsibilities on the ocean. What I'm saying is get out there, do your homework, talk to the agencies, find out where the go and no-go areas are, what kind of data they have because that again makes this process for DOE move a lot more efficiency if you know that some vetting has been done with regard to the proposals that they receive.

DR. HART: Just to augment that on timing, all the work should be done. The

extent that we can have access to that information during the application process, then that would be very valuable for us to understand where your particular site, where an applicant's particular site, is being proposed. So if we have as much of that information during that application review process, that will allow us to make the largest, the thumbs-up, with the greatest certainty with regard to site.

MR. ZAYAS: Great.

There's a question maybe asked directly to any folks from DoD. I don't know if Bill or a colleague would like to answer this. Or we'll answer online.

The question is two parted. The first part is there's a lot of coastal military bases available. Who can the proposee work with or have a discussion with to potentially look at that as an opportunity?

The second question is really having to do with testing and training ranges

and some of the conflicts there as well. Who would that coordination happen with if there's a proposal that needs to be vetted with DoD?

And, Bill, if I could ask you to introduce yourself, that would be great.

Bill Vanhouten makes his way to a microphone and addresses the audience.

MR. VANHOUTEN: Bill VanHouten. And I'm the Deputy Director for DoD's Energy Siting Clearinghouse. And what we are is the one-stop-shop within the Defense Department to try to clear energy siting issues. And we've also got an R&D program in conjunction with some of the other Federal agencies including the Department of Energy.

And I would say -- It was a two-part question. But I think it's probably a one-part answer which is I would probably go to the clearinghouse for both of those. Because if you go to the clearinghouse on the

siting issue, we can go to the individual impacted services and have discussions with them and bring them into it. And it's also just from our perspective a lot -- it's really useful to act as the one-stop-shop so that we have consistent decisionmaking being made throughout the Defense Department rather than having individual installations making decisions.

And what specifically was the second piece of that?

MR. ZAYAS: It had to do if there's an error that there's a conflict either by a training route or something of that nature.

MR. VANHOUTEN: And that's totally within our purview. We got a statute back in January of last fiscal year in the Defense Authorization Act, Section 358 which establishes the clearinghouse as the body that looks at these conflicts.

And while we don't actually make a

determination, what we do is make a recommendation to the Federal Aviation Administration as to whether or not we have an issue through their obstruction evaluation process.

MR. ZAYAS: Thank you.

Bill.

MS. BORNHOLDT: Can I add something?

MR. ZAYAS: Please.

MS. BORNHOLDT: As I said, we have I believe it's now 12 Federal task forces. If you are considering an application or a concept on the Atlantic coast please go to our website. Where we have our Intergovernmental Task Forces, one of our first stops to have a dialogue with another Federal agency is the Department of the Defense.

And they have been wonderful in providing what we call our Red/Yellow/Green that basically shows areas that there is really no compatibility associated with having

any kind of development or structures in the water because of the type of exercises that they conduct out to green meaning, yes, all clear, yellow meaning we may have to have some sort of stipulation operating condition associated with operations whether operations for wind facilities or met buoys, meteorological towers, etc.

So I would suggest to you go to BOEM website for those states that we have Intergovernmental Task Forces because we usually have that data. If we do not have that data as would be the case for Hawaii and for Oregon, I would encourage you to come and talk to us. We can help point you in the direction of our BOEM point of contact. Because when it comes to the Outer Continental Shelf I think that we can help assist in pointing you in the right direction.

For example, FAA. FAA only has jurisdiction I believe out to 12 miles. So if you're going external to that, we can help you

get to that right person. Working with the Office of the Secretary and DoD's other key player here is the U.S. Coast Guard.

We all know on the Atlantic coast they're doing their Atlantic port access routing. Again we can help you get to the right people and the right sectors if you don't have a good point of contact at the Coast Guard on the East Coast. On the West Coast we have folks that can help as well.

But the key thing is to have that dialogue before you have an application. It saves everybody a lot of headaches.

MR. ZAYAS: Great. Thank you.

Bill, did you have an additional comment?

MR. VANHOUTEN: And I should have added working with the Department of Interior which was just mentioned. We are plugged into the Offshore Leasing Program that they're running. So DoD are looking into that program.

And the other thing I want to point is that our preference is to learn earlier rather than later. Because if we learn earlier, it's a lot easier to find methods to mitigate potential problems. So if we find out at the last minute mitigation becomes far more difficult and there's already a significant investment that maybe we in the end have a recommendation which goes against the proponent. And so it's easier to find out earlier.

Thank you.

MR. ZAYAS: Thank you, Bill.

The last question on this topic for Golden primarily, please discuss IP requirements. And if an IP strategy for a particular proposal can be considered, how will it be protected? Patty.

MS. WALTERS: Hello, yes. I'd be happy to address that on behalf of Golden. We have IP Counsel in the Golden Field Office and those individuals are available to speak with

recipients and applicants.

Basically, there are standard IP provisions that are promulgated by the Department of Energy that will be included in the award agreement for every recipient. And those are somewhat negotiable to a certain extent.

So I would just suggest that if you do have specific IP related questions, that you send them in in your comments on the FOA. And we can coordinate that with IP Counsel and get you answers to those specific questions.

MR. ZAYAS: Great. Thank you.

We're going to move to the fourth topic, Siting and Permitting Considerations. We'll start with the first question I think to Mo or Tim. It says, "Are NEPA requirements relaxed in any way for research thesis?"

MS. BORNHOLDT: I would not say that they're relaxed. I think what happens is you take a look at the scenario that you would

build when you begin to develop your National Environmental Policy Act document.

And for research particularly on the scope and scale that Chris has discussed with you all today, the type of installations, the type of interactions, with the marine environment and the critters that are out there is probably less than 1,000 megawatt or 500 megawatt commercial facility.

So we take a look at the type of activity, develop that scenario based on the footprints of direct, indirect and cumulative potential impacts.

So I wouldn't say that it's less onerous. I would just say the scenario is different.

MR. ZAYAS: Great. Thank you.

Again on that same topic and then really quick is what is the expected time line for a research lease from application to putting hardware in the water.

DR. HART: And this is great that

we're having the discussion about the research lease. But one of the things I want to highlight is that there are many different ways to have a lease in Federal waters. And one of the things that we're digging into very deeply right now with our partners is a better understanding of that one facet, research leases.

What I don't want to happen -- What we don't want to have happen I think would be detrimental to the growth that we all are trying to simulate here is for too much focus to be on the research leases. Yes, it's a potential avenue. It's something we're going to look at very hard. And there's something -- There's some great potential there.

However, one thing that we've seen in recent, even in the last year, 18 months, is that when you get some creative minds focused on a problem, whether it be technical or whether it be associated with the approval

process, you can get some new ways to think about solving those problems.

So we don't want to short-circuit that innovative thought also. If you are progressing down the path of pursuing a commercial lease in a new innovative way, we don't want to say the only way to go about this is a research lease especially given what we know about research leases right now. I want to kind of draw that -- make that point.

With regard to research leases and I'll even broaden it and say with regard to leases in the Federal waters, to piggyback a little bit on what Maureen was saying, we have a very specific vision for what these projects are. They're not hundreds of megawatts. They're not a hundred megawatt. They're very small projects.

What we're trying to do is we're saying, "Okay. This is the box that governs approvals in the permitting process in Federal waters." If we break that box apart and see

what statutory and regulatory requirements make up that box, is there anything that we can do given the unique aspect of these projects that when you put those pieces back together the box looks a little bit differently for a demonstration project than for a commercial project.

So that's the best analogy that I think that I've been able to come up with and try and convey the process here. We're not creating any new laws. We're certainly not breaking any existing laws. What we're trying to do is think about this challenge in a new way that would enable us to meet the time lines that we put forth.

MS. BORNHOLDT: And then just taking what Chris said into consideration, not to limit the scope of types of concepts that could be submitted to DOE under this FOA, we could take a look at applying the Smart from the Start Initiative with regard to environmental evaluation to a research lease.

And what I mean by that is the Smart from the Start takes a look at decoupling, acquiring, the reservation of the land right from the proposal of the types of activities.

So we could possibly take a look at do we even need that. Again, it all depends on what's being proposed and where it's being proposed, what exists in that area. So let's make that assumption.

You know we can take a look at doing an environmental assessment for granting of that reservation of that research lease to a state or Federal agency in approximately nine to 12 months. Then from there taking a look at the types of activities that are being proposed taking a look at the augmented NEPA that would be required.

Let's say that we did not anticipate a particular structure going in in our NEPA evaluation that did not cover that. We would have to augment our NEPA evaluation for the land right issuance.

But we could think that we could probably create a very solid scenario for the land right evaluation and more than likely be able to approve a proposal, a plan, under the research lease probably in about six months. Again, it all depends on where and what you're proposing, how good work you've done in making sure that there's not a significant critical habitat or a use like a DoD use that could possibly have implications associated with your project.

DR. HART: One last quick point about research leases. You may remember from the slide that a research lease can be entered into by a Federal agency like the DOE or another Federal agency or a state agency. And the interpretation of what an agency is is fairly broad. You can include that in your thought process as well.

MR. ZAYAS: Great. So I'm going to try to mix up the agenda just a little bit. I'm going to answer two quick questions. And

then take the risk of giving everybody like a five minute break to re-energize and get ready for the open Q&A, maybe think about some other questions that we have and just kind of get the blood flowing.

But I'm going to answer two quick questions. And we're going to come back to Topic Area D, Siting and Permitting because there's a lot of questions here. Okay. Just to kind of give a stretch.

The first question is why are we only choosing one project under Topic Area 1. Is there a funding limitation?

The short answer is it is funding driven, but it's also I would say mission driven. And, of course, Topic Area 1 and Topic Area 2 do differ in several ways. So it's a combination. I would say it's a combination of both catch-me-in-the-hallway/we-can-talk-little-more-specifics-on-that as well.

The second question is do these

projects have to be in Federal waters. And the short answer is no. If you look at the specifics around Topic Area 1 and the time scales that we are proposing, it is more than likely or generally it's going to happen in state waters for that Topic Area 1. Where Topic Area 2 could be in either location.

And I'll leave that as a general statement. Maybe, Mo or Tim, I don't know if you attempted to answer. But that's how I would answer that second question.

Okay. So I'm going to again take the risk. Five minutes. This meeting is for all of you. So please let's come back. It is 11:18 a.m. Seven minutes. Let's come back at 11:25 a.m. Everybody has a cell phone. So we should be synchronized. Thank you. Off the record.

(Whereupon, the above-entitled matter went off the record at 11:19 a.m. and resumed at 11:31 a.m.)

MR. ZAYAS: Okay. We'll get

started again. If I could ask everybody to please take a seat so we can get started.

Okay. So again as a reminder as all of you are getting a seat if you have questions, please give them to any of the folks that are collecting them. We have some time to finish up the siting and permitting. We might get started here. And the data collection plan. And that's going to be followed by the Q&A.

Again, if I could get everybody to take a seat, I'd appreciate that.

So I'm going to continue on the fourth topic, Siting and Permitting Considerations. The first question may be a combination of folks here on the panel can tackle this. For Topic Area 2 specifically, can the proposer submit two sites instead of one to minimize risk if one site does not get approved?

DR. HART: We did not envision that. We do not envision that with the

constructure of the solicitation. We currently envision that an application is made up of a technology and a site.

There's no restriction on submitting multiple applications so one could see how you could submit the same technology in two different sites using two different applications. But we don't currently envision two sites being proposed under the same application.

MS. BORNHOLDT: And, Chris, maybe this is an area that we can talk a little bit about in developing the criteria because it may be that that might be of assistance particularly since these are concepts and sometimes the available information associated with conflicting use is not readily available.

So we may have to do some work on that to see if that's plausible. Because that might help ultimately in getting the best proposal granted.

MR. ZAYAS: Thank you for that.

That's great. Great conversation we can engage.

Next question, is DOE open to allowing the Federal permitting agencies to have a NEPA lead agency? Maybe Golden or DOI or someone would be great to answer.

MR. HAHN: Kristin.

MR. ZAYAS: Kristin, if you could introduce yourself that would be great.

MS. KERWIN: Kristin Kerwin, NEPA Compliance Officer at the Golden Field Office. Jose, can you repeat that question?

MR. ZAYAS: The question is is DOE open to allowing the Federal permitting agencies to have a NEPA lead agency?

MS. KERWIN: Under NEPA though it would be one lead agency assigned and it honestly depends on the configuration of the application which Federal agencies are involved and which makes the most sense to be a lead agency. But there will just be one.

MS. BORNHOLDT: And in the case if

it was working with a commercial lease that we would have to issue it would be the BOEM would be the lead Federal agency working with all its partners.

MR. ZAYAS: Great.

The next question is is there an ideal project size in mind and how does that differ with a research lease? Is a 1.5 megawatt turbine too small for the current call?

DR. HART: So that's two questions.

MR. ZAYAS: It is.

DR. HART: So I'll answer the second one first. We had envisioned multi-megawatt meaning two or larger. So 1.5 would be too small.

What was the first part of that?

MR. ZAYAS: Is there an ideal project size in mind and how is that affected with a research lease?

DR. HART: So we envision at least

one turbine in these sites. And there is certainly a possibility that there would be multiple turbines in one project.

One of the things that we -- One of the pieces of language that we included in the FOA was the desire for DOE to understand turbine-to-turbine interaction. And towards that end we would collect data that would better help us understand that interaction. And thereby in order to have turbine-to-turbine interaction obviously you need multiple turbines. And there is debate on what the right number there to have is. But it looks like -- So that's the short answer.

We see that there could be projects that only have one turbine and we hope that there's projects that have more than one turbine.

MS. BORNHOLDT: And with regard to scope and scale, there is no limit in the research lease. It's really focused on what kind of functions are you proposing on that

research lease.

MR. ZAYAS: Great.

So another NEPA I believe recommended question here or presented question rather. Can there be a time frame put for the permitting in NEPA in the final FOA? And is there a possibility to have a one-stop-shop either a DOE or a DOI so applicants don't have to have this discussion with ten different agencies?

MS. BORNHOLDT: I'll take the last part first. You know we will have as was explained in the previous answer a Federal lead. And to that extent if it is a commercial lease or research lease that comes under our jurisdiction, we will take that lead and we'll make it as efficient as possible.

There will have to be dialogue. And we encourage dialogue with other Federal agencies because sometimes particularly when there are critical habitat or protected species involved sometimes having that

augmented dialogue with the Federal entity responsible for those trust resources can actually help the obligations that we would have as a lead Federal agency moving forward those kinds of consultations.

But we will, if it's a commercial lease or research lease, something that we have jurisdiction over on the Outer Continental Shelf, make that hopefully as painlessly, not painfully, but painlessly as possible for your coordination efforts and work with the other Federal agencies.

DR. HART: And I'll answer the first part of that question. We don't envision having specific time lines associated with these steps in the approval process in the FOA. And especially for Topic Area 2, it really only applies to Topic Area 2. The reason why is because we envision funding multiple projects and getting alignment between those different projects as they go through those different approval processes is

not conceivable. It's not realistic.

We see the goal -- We put an overarching time line, commissioning in the 2015 to 2017 time frame. So our goal is to have all projects commissioned by the end of 2017. And the way by which we get there will vary between the selected projects.

MR. ZAYAS: Great.

The next question is maybe a combination of A and D. It's an important question here. What level of third party certification would be required for proposed turbines, foundations, maybe even the entire project. They want me to handle it. I can.

So it's a couple of things. I would say a two-parter. One of them is I don't want to underemphasize, but it's important the fact that we are seeking innovative designs. And in some cases by definition innovative may not be a turbine that is available today or elements of that turbine that is available today.

But what we are required to the best of our ability is to make sure that the standards and the required design, structural capabilities, are of such a nature that, of course, a machine can survive and is willing to perform in that particular site.

We've been talking about geographic diversity, of course. When we were talking about the Great Lakes, we were talking about icing conditions whatever it may be. When we are talking about Gulf, we are talking about hurricanes. We are talking about these things.

So there will be a requirement that the designer really looks at those particular site conditions and can prove to the team through the proposal their ability that their design will survive those kinds of environments. So that's imperative for those.

I'll leave it as a general question. Of course, many of you who may be partnering and working with OEMs in trying to

balance out both viability and the reliability but also the innovative part will have a variety of different discussions that you'll be having within your team.

But it's imperative to recognize that, of course, each site has its own challenges. And we clearly seek to have a response from the proposees as to how they will survive those particular conditions.

Chris.

DR. HART: I may augment that a little bit, Jose.

MR. ZAYAS: Yes, please.

DR. HART: And this is actually a great transition point into the final topic. I'm not sure if we're there yet, but that's one of the main reasons why we want to have this robust data acquisition process especially for Topic Area 2.

And when we say data acquisition, it means much more than just your typical performance and engineering data. We want to

understand on the cost cascade that we have up there. That's the best numbers that we have available to us now. And we've collected that data from many different sources, but we want to validate those numbers.

And so the extent that we can collect operations and maintenance and other cost data for these projects and maintain as we've discussed briefly and happy to discuss in more detail later the integrity of that data to the sources. But the purpose there is to better understand where those levers actually are on that cost reduction cascade and how we can best apply our funding and our expertise and our efforts towards progression down that cost cascade.

MS. BORNHOLDT: I want to circle back to a point that Jose made. You know, obviously at the FOA stage, there will be that certification. But if you come in under a commercial lease, we do have that obligation for that certification.

Fortunately, we have this partnership with DOE that can help that. When you come in with your facility design report we'll be able to meet those obligations that we have in our regulations for certification as well. So you get it twice.

MR. ZAYAS: Great. Thank you.

Two more questions on this topic and then we'll move to the final topic. The question here is how in Topic Area 2 final is "final design" for the first period. There are many things that affect that. Site information collected over time and requirements from the permitting process may adjust design or installations and perhaps they can be significant. How will these processes interact with one another?

DR. HART: It's a great question. We've given a lot of thought to that, what exactly is a final design. There will be language in the final FOA that is very specific on what delineates a final design.

But for discussion here I think it suffices to say that a final or 100 percent front-in feed design, front-in engineering design, 100 percent feed design, that's what we're going to be looking for at the end of the first budget period for Topic Area 2.

MS. WOZNIAK: I want to say there are some nuances that are related to NEPA with the term "final design" and I was just wondering if Kristin wanted to add anything. Or let me put you on the spot?

MR. ZAYAS: Kristin, I think there's a call.

MS. KERWIN: In terms of the DOE's NEPA regulations, we're required to look at the entire project. Final design gets lumped in with construction and operation. So looking at two different NEPA reviews, probably one for budget period, one that would be anything up to but not including final design, and then another NEPA review for final design, construction and operation.

MR. CHALK: I would also add to that and we can discuss this design too we have a high level of confidence at a third party engineering house, no conflicts of interest, to look at it and give us a high degree confidence of the cost associated with construction and installation.

Obviously, there is a moving scale a little bit here. But we really need to have that high confidence of it's ultimately going to cost to build and put in the water and to operate for that matter. Again, the validation that Chris showed on the waterfall chart is so critical that if we can't validate that that we don't decrease the discount factor, the cost of money associated with these projects.

MR. ZAYAS: Great.

One question here. To minimize risk and increase chance for demonstration's success, siting in sheltered, very shallow waters is favored. How would that risk

reduction be considered?

DR. HART: That is an obvious point. I think we can acknowledge that that's the case. But as is the case with these sorts of complex projects there are many things that we're trying to balance. And one of the things that we're trying to balance is this advanced technology pushing the envelope closer towards where we think a steady state, offshore wind industry will be from a technology perspective.

And when we try and strike that balance, we lean more towards the technology and innovation side of that balance, recognizing that we are introducing perhaps an additional level of risk by doing so. But that's a conscious decision that we make.

MR. ZAYAS: Great.

The last question is how could a 25 or 50 megawatt project fit within this FOA. I would just a couple things to that. Of course, you all are aware of the time scales

that we're dealing with. If you have a project that you believe will meet those time scales and if you have a project that you believe has the ability to meet the requirements and the metrics being required for this particular call, we encourage you to apply.

And there's a variety of different ways you can consider this. You can set aside two machines or whatever you may want to make sure that they meet the requirements presented under this Funding Opportunity Announcement or whatever other creative way that you could think about it.

But again, it's imperative to recognize that there are key metrics that these proposals will be evaluated. And we hope that they are clearly outlined within the opportunity announcement.

DR. HART: So I would even add one additional to extend that question a little bit more and say how does a 500 megawatt

project or 1,000 megawatt project fit into this solicitation. And does it? Yes, it does.

Does the whole project? Probably not. But especially now if you look at the global development, you're starting to see retrofitting of existing commercial installations with advanced technology in order to test that technology in a commercial environment. And that's something that's very interesting.

So just extend that question a little bit further, even large commercial projects, there's a piece of that project that could potentially apply to this solicitation given its ability as Jose mentioned to meet certain criteria and certain metrics.

MR. ZAYAS: Great.

We're going to move to the final topic. And there are only a few questions. So if you have additional ones, please present them or this will be a little bit shorter of a

session.

The first one is what kind of connection does the DOE seek between the demo projects and the ongoing 43 funded technology, development and market barrier activities.

DR. HART: It's a great question. And that's one of the things that we've struggled with in executing the strategy was how to -- To be completely frank and as we've communicated on many occasions as you're all aware, we were ready to execute all of these facets, these three focus areas, simultaneously. And therefore the linkages, the hard linkages, between results from some of the projects which are going to be completely in those other two or those other three solicitations, the hard linkage is not there. We're not going to be able to draw a direct line between this particular solution and this particular result in the demonstration project.

However, that being said, it is

our intention to maintain those lines of communication where they make sense. And how will we do that? For those of you who aren't aware as we rolled out the awards last year we had an event at the OEA Conference up in Baltimore where we got all the awardees together and tried to establish that group in a kind of cohesive nature.

And we'll continue to support that activity as it goes forward. And this would be as a facet of our larger initiative. This would be included in that. And frankly the communication is not just limited to between awardees.

As we get results, as we get interim results, the intention is to promulgate those results to the industry in order to increase the knowledge base of the industry. So to the extent that we can facilitate those relationships and facilitate that perhaps softer exchange of results and softer exchange of ideas, then we will do

that.

One final, quick point, there is that one topic area within the Tech Development FOA where they were looking at innovative systems. And the purpose of those systems is to look at the whole, draw that control volume around a piece of the offshore wind system, and then hit that hard for cost of energy from a system level perspective. And you could see how there may be direct synergies between those particular projects and a project like this potentially.

MR. ZAYAS: I would just add to that a couple things to what Chris just said. Of course, it's alluded to in Topic Area 2 and in Topic Area 1 the need for data. In Topic Area 2, we also augment that with I would say the want by the Department of Energy to study turbine-to-turbine interaction.

If you reflect on the 43 awards that were made, several of them were made around computer models, validating structural

aerodynamics, hydrodynamic models and things of that nature. It is our thought that there could be a synergy, a very well synergy, between the data that's being gathered by these assets and those ongoing activities as well.

Those, of course, will be done in such a way working through our Golden Field Office and the recipient of the award to make sure that proper IP is being protected and things of that nature. But that's one of the key goals and metrics for gathering the data for these particular machines.

DR. HART: Two more real quick points on this topic. We have annual or semi-annual peer reviews in wind and waterpower program. And that's an opportunity for us to showcase some of the funded activities within our program and get public response and thoughts on those activities. It's also an excellent way for the PIs and the awardees to promulgate results and get those results out

into the industry. So that's another facet.

A second point to make is that these results and these activities that we're funding in the other FOAs and that we will be funding in this FOA both have tremendous amount of impact on future funding activities. And this is future Funding Opportunity Announcement s.

And it's not stretch to say that this is something that looking at our national strategy we're in for the long haul. And we're looking forward to leveraging some of those results and helping us make better investments in the future.

MR. ZAYAS: Great.

A question here is how are the results from the 43 projects that are already funded how is that information made available. I'm just going to take a stab and let others comment here.

Of course, in a variety of ways, is the complicated answer. Of course,

depending on who is doing them, there are requirements on reporting and different types of dissemination strategies that are required of those activities which are presented at conferences or things of that nature.

The other thing is what Chris just mentioned which is this peer review process where all of our projects go into a detailed showing of their activities and their results and so forth. As a matter of fact, the wind program one is happening this summer where a variety of these projects including other types of projects are going to be reviewed in quite a bit of depth. So that's going to happen this particular summer.

Anything else to add on that?

(No response.)

Okay. Are there any other questions regarding data before we move?

(Off mic comment.)

Yes. Steve just asked the dates for the review. It will be the 3rd week in

June and the specific dates are being finalized. And they will be posted on our website. But they are the third week of June in Washington, D.C.

Okay. Any other specific questions around data?

(No response.)

Okay. So with that we're going to move into what we're calling the open Q&A. I ask a couple of things. (A) Be respectful of the kind of questions we ask. But (B) also introduce yourself, who you're affiliated with and we will handle those questions accordingly.

As a reminder, I've said it several times. If you have a question which you don't want it presented either on paper or in the open, the website will be open to the 14th.

So with that I'd like to maybe open the floor for any questions that you may have. There's a question in the back of the

room.

DR. BAERTSCH: I'm Dr. Robert Baertsch from AeroGen Power Work, a California-based wind turbine manufacturer. We're trying to change the figure of merit in the industry and go from 70 tons per megawatt to 30 tons per megawatt because we think lowering cost or lowering the weight of the machines will dramatically lower the cost of wind energy.

And we've recruited a large developer to fund projects in Minnesota at the half megawatt scale. And we're trying to go out to recruit OEMs in the later part of the summer.

So the question is if we don't have an OEM partner for the Topic 2 proposal, can we identify the OEM partner in the second project phase or do we have to have that OEM partner set up for this application in May?

MR. ZAYAS: Great.

DR. HART: So two points to be

made here on the open Q&A. I appreciate your question. First is we're going to limit our response to one minute and we're going to limit your question to one minute as well. You didn't violate. So don't worry.

MR. ZAYAS: That was 42 seconds was that one. That was good.

(Laughter.)

DR. HART: I just wanted to get that tidbit out there.

But the second one is something that we really want to avoid is talking about what should or should not be done in an application process. That's the reason why we publish the Funding Opportunity Announcement . This is very unique that we actually published a draft version ahead of time. So now a month before it's final everyone has an opportunity to see what's in there.

And I think we've very explicit with the areas that we want to be very explicit about in the language in the FOA.

And we're open in other areas. So we will not get into discussions about what should or should not be done in an application. But we'll actually refer you to the Funding Opportunity Announcement language.

MR. CHALK: Yes. So basically what we're saying is we don't want to be in a position to coach proposals, look at the evaluation criteria. And I think that way answers the question whether you can put something like that in there.

MR. ZAYAS: Thank you, Chris and Steve, for that.

All right. Anybody else has a -- We have a question right here in the front.

MR. GALLAGHER: Hi, I'm Mike Gallagher. I'm from Bayer Materials Science. One of the things I wanted to just make sure I understood a little bit better was this idea of a one-site, one-design comment that was made. It strikes me as that could be somewhat constraining. It's kind of like throwing a

lot of money into one type of solution.

Have you thought of the possibility of a one site but some kind of a flexible design test bed for offshore engineering development? And would that be within scope of the proposal?

DR. HART: We did. Two answers to that question. First of all, we've taken note about the value of multiple sites for one technology. I think that's something that we will take into consideration absolutely as we move towards a final version of the solicitation. So thank you very much for that.

With regards to one site as a test facility so to speak, maybe like a plug-and-play test facility, we did go through that thought process and we envisioned -- we again moved away from that towards the one-site, one-technology proposal idea that I summarized before. But I think that's another -- It may warrant another look. Great point.

MR. ZAYAS: Great.

Is there a question in the back of the room?

MR. COHEN: Yes. This is Dan Cohen from Fishermen's Energy. Just one question. You had a slide about the cost of development projects and you said that was between $4 million and $7 million capital costs. And I was curious whether or not you had done any further breakdown for that chart showing whether or not some of those in Europe had cable or substations included and not included and whether capital cost was just for hard construction or did it include such things as soft reserves for financing, for construction continuance, for maintenance reserves. So I was trying to understand if you're comparing apples and apples or if you have a further analysis of those apples and oranges.

DR. HART: The purpose -- Thanks for the question. The purpose of those

numbers was not to say that that is the end all, be all from a cost per megawatt, dollars per megawatt, metric.

The purpose there was to have in the safest way possible to have a discussion about the funding that's associated with this project. So it's something that we showed earlier in the presentation and it's something we can kind of all wrap our heads around.

Have we taken a much deeper look at cost so that we've analyzed all those different components? Yes. Are we going to dig deeper? Yes. Would your input, your being the collective input in helping us understand those subtleties better, be valuable? Absolutely.

I really don't want to dig into those numbers anymore other than to just say they're a raw average just for discussion sake. And we look forward to the opportunity to get into a higher fidelity discussion about cost.

MR. ZAYAS: And I would just add a couple things. Programmatically if some of you may be familiar, as a program we evaluated all the different elements that you alluded to earlier in a way so we can quantify where both our investments can be and what are the driving forces that really drive the overall LCOE for offshore systems.

And, of course, as Chris mentioned, it's an average on purpose. But, secondly, I think that if we were really to try to identify with high fidelity each number for each particular project, that's very hard data to get. So I think that's also a reasoning why you saw it that way.

Next question. I think we've got one here.

MR. GOLMAN: Hi, my name is Peter Golman. And I'm supporting Santee Cooper. We had a lot of discussion about NEPA responsibilities. And it's obvious that if it's in the OCS that BOEM is going to take the

lead. If it's in state waters, is the Corps going to take the lead or is DOE going to take the lead?

MS. BORNHOLDT: It would probably be the Corps of Engineers. They would have siting responsibilities in state lands.

MR. GOLMAN: Thank you.

MR. ZAYAS: Question. There was one right here and then we'll follow with you, madam. Right here in the front of the room.

MR. DUNCAN: Hi, John Duncan with ABS Consulting. Our parent company is the American Bureau of Shipping. And, Steve, this question might be directed towards you.

We have a long history of doing third party inspections for the shipping industry primarily. You mentioned that you saw some role around third party verification. Have you thought about the role of the Government in that versus would you expect the commercial industry to really pick up the responsibility for that?

MR. CHALK: Yeah, I can see both. For another program that we have under the renewables, we are building commercial scale biorefineries. So we use third party engineering houses that do construction engineering that have no conflict of interest to verify building material costs, capital costs and operating costs. We see a potential role there as well as the Government.

On another program where we had a very, very competitive solicitation amongst auto manufacturers, we used the DOE National Lab. We actually formed what we call the Safe House. They kept all the data and basically you couldn't get in there unless you had a password. And that way we didn't compromise any data. And this was conducted over five years up to ten partners.

So we envision using methods like that to really get into the cost, again to inform the R&D. And then I think we have external folks involved whether they're a

laboratory or a third party engineering house or organization like you have, we have to make sure the conflict of interest is there and data protection is there.

And I think we're still working that out. So I appreciate that comment. And we'll factor that into the final FOA.

MR. ZAYAS: Great.

I think there was a question in the third row. There we go.

MS. McNEILAN: Thank you. Sally McNeilan with Fugro. There's a recent report from Crown Estates where the most significant factor in reducing costs was the proper consideration of site characterizations before important decisions were made.

I got a feeling that you're pushing for site designs and everything else where this is a frontier area. We really don't have subsurface information. We don't have metaocean data and we don't have atmospheric data. And you're asking our

proposer to propose a design and consideration.

How are you going to allow for that? There was an earlier question which was not mine about proposing a couple sites so that if these factors were impacting it they could be moved.

DR. HART: Yeah. I think we've already stated that there's a tremendous amount of value in potentially choosing multiple sites for one project. So I think again we've taken note of that.

With your first comments, there's no argument there either. I mean there is a lot of data that needs to be gathered and a lot of work that needs to be done especially to get this to commercial scale.

What we're proposing here is maybe a little bit different in that we're trying to do several things. We've spent a lot of time talking about the technology.

But Maureen has made a couple

comments I think that are right on that this is an opportunity not only to gather data about technology performance and engineering data, not even data about the business aspects of offshore wind, you know, operations and maintenance data, cost data. But it's also an excellent opportunity to get some systems installed on a manageable scale and instrument those systems for the collection of other data of all of the site assessment work that needs to be done.

So now I don't want to speak out of turn from other Federal colleagues, but there is a foundation upon which necessary amounts of data and how much data needs to be collected. You understand the answer to that question much better when you've got facilities out there that are instrumented and you can know how many certain species of birds are passing through there and all of that activity. And I think that's another benefit that this effort can really bring to the

growth of the industry is rounding out that knowledge base much better.

So, yes, are we bringing additional risk into these projects by bringing the projects in a lower level of data that's collected? Potentially. But the benefit that we see is tremendous and that we will facilitate the growth of a commercial industry with a much better foundation of what data actually needs to be collected.

Is that --

MS. BORNHOLDT: You know, Sally, we've been working in the ocean a long time. And I think that's probably one of the many but probably the key defining difference between onshore and testing technology and offshore.

Chris, you're absolutely right. And I agreed with you earlier in the session. We're building this opportunity to really collect some really good data that we can apply to our knowledge set. But there is that

preliminary information that we need to be aware of where you're going to place that particular turbine whether it's a geohazard or a precontact site from an archeological significant point of view.

That's going to be our challenge. And I think that Chris said let's relook at this multiple site. Because you're right. Do we have that metaocean data and site characterization on the east and west coast? No, we're just starting.

It's a very good point. And I think that we're going to be able to work with DOE to make sure we address that so we don't knock off a significant opportunity to do the data collection on the Outer Continental Shelf. Good point.

MR. ZAYAS: Great. Thank you.

Back of the room.

MR. SINCLAIR: My name is Mark Sinclair. I work with Clean Energy States Alliance. And we basically cooperate very

closely with the Leading State Clean Energy Funds. And I think it's great that the Federal Government with your limited budget is able to put significant dollars into offshore wind demonstration projects.

I would ask you to think about or get your reaction on trying to increase the amount of public funding that is going into offshore wind. The states still have significant dollars through their system benefit charges. And they have shown interest in the past in providing cost share contributing towards projects like this.

I'm wondering whether -- And we want states to continue to put money into these sorts of projects because it leverages Federal dollars. And it results in a lot more excitement at the state level about these projects being in their waters or close to their waters.

So my real point here is have you considered providing some incentive or

preference for those project applicants who are able to also get commitments for state cost share. I think that would be a way of raising more money and allowing more activities to go forward. Thanks for thinking about that.

By the way, we're doing this same sort of a cost share idea with the Office of Electricity in states around energy storage and it's going very well. So it is being shown that this kind of state/Federal partnership can actually leverage much more results from our limited public dollars. Thanks.

MR. CHALK: Yeah. I guess we'll definitely take that comment under consideration. It's a very good comment.

But I just reiterate that the cost share that we're looking for is non Federal cost share. So it could be state money, private money or a combination thereof.

MR. ZAYAS: Correct. And as

captured from Topic Area 1 or the second period of Topic Area 2 it's at least 50 percent cost share.

Okay. Next question. Anything else? Do we have one? There we go.

MR. WILLIAMS: Bruce Williams from the University of Delaware. Just a little point of clarification. None of this is going to change any Section 307 interstate or Federal consistency requirements. Right?

MS. BORNHOLDT: It gets back to I think a point that Chris made in his presentation. We ain't going to violate any laws. So with regard to Federal consistency, environmental compliance, providing access out to the OCS or even state lands under the Corps of Engineer's process or a state process, you know, it won't change anything.

I think it is just an opportunity for shared funding, an opportunity to focus an initiative to gather data to help inform and drive down the cost of electricity generated

from renewable energy. So we're not going to violate any laws. We have to follow all applicable Federal and state laws.

MR. ZAYAS: Great.

So if there are no further questions, I know some of us will be around to maybe answer a question or two.

But on behalf of the Department of Energy, the Department of the Interior, the many agencies that are here, I want to thank all of you for taking the time to come and spend with us the morning. We look forward to working with you in the future. Thank you again. And safe travels.

PARTICIPANT: Good job.

(Applause.)

MR. ZAYAS: Off the record.

(Whereupon, at 12:11 p.m., the above-entitled matter was concluded.)