Question and answer session at the DeepCwind presentation on Monhegan, Feb 6, 2010
Transcribed from audio by attendee Ron Huber, WRFR LPFM, Rockland Maine.

Q = equestion from Monhegan resident. A= answer from DeepCwind representatives Elizabeth Viselli, Jake Ward, Robert Lindyberg (UMaine) and Suzanne Pude (Island Institute). Ron Huber's questions ID'd.

Ron Huber: "If that two square mile area [the proposed test site] is an important pass through for different birds, would you consider moving it elsewhere?"

A. We'd have to work with the agencies to adapt to that and come up with the best plan forward. If everybody says that it totally makes no sense, then, well have to look at one of the other test sites.

Q Do you have any noise studies involved in this? Any sound. studies. How it's going to affect us ? Because two miles, I understand the site is two miles from the island.

A. Yes the northern border of the site is about two miles and it goes for about a mile deep.

Q. We all know how sound carries on waters My issue with wind is noise. That's my bigger concern.

A. We've got a team working on the social and human impact; part of that is noise; and most likely we'll look at how to monitor those acoustics right here on-island. As well as possible mitigation measures..there are a lot of mitigation measures for noise that can be employed, so possibly testing one of those

One thing to recognize, to make sure everyone understands if we do a 100 kilowatt scale model, the noise generated from that is different what's going on on Vinalhaven or Mars Hill. The noise generated is very specific to the model and the blades, so certainly as we monitor the test site and understand what the noise signature are. We can adapt to that 100 kilowatt one, If we end up scaling up again we will have to do additional... It's not a one to one match. Just like one rock and roll song is not like another.

Q. I'm not technical. How can you measure noise before you put it there?

A. We'll have a baseline. We'll know what background noise is there before we put anything in, and we'll know what the noise signature is, based on the manufacturer's data; we'll be able to do some modeling before we put it in. It's equivalent to..if you know how loud a song is, you can predict how that noise carries over the environment.

Noise is line of sight. If you can see it, you can hear it. If you can put a barrier up then it doesn't travel through that barrier. It has to go around it. So part of it knowing what is between here and the test site Once you hit shore, where your listening points are. So if we know what

background noise is already there, and we know what the acoustic signature of this device is, we can predict what the noise level will be based on the line of sight.

Q. But there's nothing between here and there! (Chorus)

A. But when it hits the rock of the island, what happens?

Q Lobster Cove! (chorus)

A. Then there's another part, depending on the wind/wave environment which direction the wind's blowing, where you have fog conditions anything like that that changes the acoustic environment. We'll do our best to try to model that. And make an assessment of whether we think that's going to cause anybody any problems, based on published standards.

Q And if it did? Then what?

A We'd have to look at tweaking the system.

Q. But if you couldn't, then what? Do you remove them?

A. We'd deal with that if the time came

Q. No guarantee?

A. No guarantee. We'd have to meet the standards.

Much troubled whispering in audience

Q What **are** the standards?

A. One of the challenges with the noise thing to think about it out loud...turbines generate noise when they're spinning. They're spinning when the winds blowing. On calm foggy days they're not spinning. That's when noise propagates the most. So it depends on which way the winds blowing. (*aside "Any way the wind blows, right?")*

So that's part of the thing that we've got to understand, by putting our GOMOOS buoys out there earlier and understanding the wind wave environment and understanding at what wind level we get what acoustic signature in what directions and so on.

Q. With respect to that comment, I've heard that a lot - it makes noise when the wind is blowing. But I've never heard of a wind project that doesn't have a lot of different kinds of sounds. I don't know the terminology: subsonic whatever, the humping, the whining . That doesn't seem to matter that the wind is blowing. It's still affecting people.

Q I'm so concerned about the noise and the flat ocean, because acoustics are **so** tricky So I just really hope that gets looked at not just as "Oh the wind is blowing, so it's going to whoosh

then". It's so tricky. I really want that to be focused on and I know I'm not the only voice in the room on that. (sounds of agreement.)

Q Is there a way to share the sounds, just the nature of sounds from them in Europe? You could try to compile some of that information . Because there's about seven thousand of them

Q. Are there any as close as two miles?

A. Oh yeah, much closer, 200 feet.

Q. To habitation?

A. Yes. In Europe its mostly shallow water, very close to shore.

Q. What are you going to do with the electricity

A. The budget right now does not include a cable. The test is not going to be to generate electricity. Its going to be to.. see how the turbines spin under simulated load and measure how it responds. I think we're open to looking at that - pending budget - also whether or not it is appropriate to have that discussion at some point in the future with the budgeting agencies But we're not planning on that right now.

A. Under the test site legislation we are permitted to run a cable to generate electricity if we want to or we meet all the standards for that, as Bob said right now we don't have a budget for a cable. In a long term planning vision if this works and makes sense and we can find resources for a cable, we'd be very interested in finding a site to use that electricity. There's only one logical site

Q. So you're saying you might be able to ge a cable to come to Monhegan as opposed to the mainland.

A. Yes

Q Is there a wind speed that the cut off for the design... the turbine will turn away from it if it's too high?

A . A large scale industrial turbine, has a cut-in speed usually around two to four miles per hour; this is where it's actually going to cut in and start turning. Then it ramps up and is delivering its full power at 15 to 20 miles an hour, and then beyond that as wind speed increases, it keeps delivering that full power until, depending on the unit, 30 to 40 miles per hour; at that point it's going to feather itself. It's going to be under too much load and its going to say, 'its too windy too gusty" and feather itself. Brake itself and stop turning

I don't know the spec exactly of the one we're looking at. The large utility are all in the same neighborhood of wind speed. this would be maybe a little bit lower than the big utility ones.

Q speaking of the platform designs, do you have any dialogs with Europe? Are you looking at any platforms they are using in Europe?

A. As part of this program we are also going to be solicitig designs from other designers. Statoil would be eligible to submit their design. We've been talking with other platform concept developers in Norway, the US, Denmark and Germany. We're going to put this out publicly .."Bring us your concepts". If you have a good concept, that falls within the design space that we're testing, and it makes sense and you've done some work on it and could add value to this, then we'll consider it.

A. We'll have a blue ribbon panel of experts that are going to evaluate concepts and really pull out of those the best designs.

Q How much combined of the bottom is going to be lost for fishing?

A. Hopefully we're going to minimize it, Depending on the design you saw the three designs they each have a different anchoring system. The tension laid ones; this kind the mooring goes straight down there. This one's more a caternary mooring that's going to angle out.

Q and the other one angles out

A There's a couple things it depends on. One is the overall size and the anchoring load, the design and the water depth. As we get closer to the design phase, we will have to develop a site plan that shows how those anchorings would be located. What we believe is that we'll end up marking those anchors they'll be clearly marked. What we talked about at the public hearing is having an exclusion area around the device itself of roughly 500 feet.

That was a target based on other wind energy projects that said, you know, you just don't want boats in that circle you've got blades swinging above and all that. But as far as anchors and mooring lines we feel that if they're clearly marked and they're heavy enough cable and chains, that if folks want to fish right up next to them, that's going to be up to them.

Q. But that means entanglements

A. We're willing to let the fishermen figure out if they want to do that. We're not going to restrict them; they'll know where they clearly are marked if they are in a triangular position and they are spread out; if folks want to fish around them , we'll let them make that decision

Q. Bob or Jake, do one of you want to talk about the deployment periods for this? This aren't going to be out year round, so the fishing schedule out here may not be affected or probably minimally affected.

A. Certainly we've talked about the "wind waivers" we've been trying to get that....Cianbro is most likely the contractor that's going to do the deployment,. I think our conversations are toward trying to deploy in the June - July time period and trying to be out of the water in the fall

unless we really do need to have a winter-over period of time. But generally speaking we're looking at that June to late October time period.

Q This is all a done deal. It's up to you guys whether you do that or not. It wouldn't go up to vote or anything like that?

A Nope it won't go to vote. It's not just up to us. It's up to all the state agencies and our consultation with the zone council in this

Q. o this is just for tests? They're not permanent?

A Permanent? No.

Q. But if you are testing, there's a potential space for someone or something out there.

Q That's right!

A. Once the site is designated as a test area, its under the legislation of the test area site, I guess this is up for clarification from DEP or Conservation, but my understanding is that once its designated as a test site, as long as it's a test site, it's not a commercial site.

A. We're not evaluating whether this site is the best site to collect wind energy from; we're using this site to evaluate if this technology is the best technology to collect wind energy.

Q. Is it right to say there's a delisting process, it would have to go through the state, where the state would choose to delist it as a test area and at that point it could become a commercially viable site?

A And so could anywhere else.

Q And if they decided to make it commercially viable, would Monhegan even have a voice in that? Or will it be just like these test sites that they said, this is it. This is your test site, like it or lump it.

A. My current understanding is that under the existing state laws for submerged land leasing, other existing state and federal laws for putting things in the water whether its cable ways or other types of anchoring, that you do have to apply through the existing permits that are there now; a commercial wind turbine farm would have to go through those existing permitting processes, and most of those processes do have some consultation with the Lobster Zone Council or LURC or Municipality.

A. Currently we know there's been some draft legislation - it hasn't been made public yet - to help clarify that for wind energy projects specifically. Which is to better roadmap the permitting process for a commercial site. So what I would suggest is that Suzanne and I will be tracking that legislation, we'll let you know when it's there. One, once it's out, we'll make sure you'll see

it; two: if you have concerns about what the public input to that will be through the public process

A. The deal with that these site things is that the legislature mandated the state to deal with this before December 15, So there was a limited amount of time where all this had to get decided and the public consultation had to happen and they were limited because the state legislature made them do that. If this were a commercial project there would be no limit set to say you have to kind of get through this quickly; that process could easily take two years. You look at Massachusetts: ten years,

So I think that's part of it this moved so quickly because of the legislature mandated it but there's not going to be any kind of expedited review or anything for anything beyond test sites.

Ron Huber The bill would be to allow commercial windfarming in state waters?

A . My understanding is that it clarifies the existing rules for permitting and placing things in state waters, specifically addressing wind energy

Q. I think is the scary part because this is too vague. And vague is scary. and you get financial interests, you mention e bath iron works, You get all this money and interest into it, and you think that the 50 citizens here going "we don't like this we don't like this" it is just going to go away? Even though its a test site you get a lot of interst and then you said well the decision on whether to keep it is up to the DEP etc...that's not that encouraging.

Q. We're pretty powerless..

Q. That's how it feels and then you have money involved also

Q. I think we have no say.

Q. We won't have any say.

Q Nobody's questioning you guys, we know you're well intentioned but things get done and money gets involved and politics gets in there, and it's not so clean cut and nice.

Q I'm just wanted to clarify what you're looking at having happen. A three year thing where these turbines would be there for several months a year with a possible winter over , but they're not there all the time and then a possible renewal of that. Is that is that what you're currently looking at?

A. Right now our funded project goes through the beginning of 2012; that is when my scope of work which is to do the tank testing, the design; get it out there, gather the data and get this work done. Beginning 2012 that'll be done, essentially might have to go for another month or two deployment; what happens beyond that is something we haven't...its not part of the scope of work for DOE right now.

A. Let me speculate on that. If we're going to get to the place where this is an opportunity to generate a grid scale electric generation in the Gulf of Maine, starting with 200megawatts or so, then the next increment after the scale, what we use the scale model for, and the data, is to design a commercial scale unit that might be in the 3-5 megawatt size. And part of what we have to try to use this information to design for is: one, designing for the Gulf of Maine conditions; two, to optimize the design so that Maine companies can fabricate it, Maine companies can install it, Maine companies can maintain it.

A The economics of this need to be solved such that the cost of installation and the amount of energy generated get the electric prices that are competitive. And if we can't make it competitive it won't happen. So getting to that commercial scale unit and validating that as a viable alternative, is really a stepping stone for getting to a grid scale It may be if we are successful at this stage, we would then try to design and build a commercial scale, a single commercial scale unit that could be deployed in the test site it may be that the water is not deep enough at the test site and we have to look at federal waters.

But there is a good chance if we are successful there're be a commercial scale unit tested there, but it would be of limited duration.

Q. But the reassuring part is that there are so many checks and balances in between now and then, that have to take place for people to know whether or not they can be there in the first place, Which I feel very reassured in that. If any of these variables aren't met then it can't go forward just blazingly forward It has to be ...

Q You're talking about the commercial?

Q. No! I'm talking about the testing. it can't even go in unless the sounds are met, the birds met , everything that everybody seems very concerned about , there are a lot of checks and balances in between even the testing mechanisms.

Q. Five or 6 years from now, what if you've discovered is a gold mine? if oil has gone sky high or it has stopped getting through, and the state says "Sorry Monhegan," or "Monhegan, whether you like it or not, you're going to have to put ten towers up there."

A. We can't predict too much. Our commitment to you folks: as long as we're running the test site, we going to try keeping you involved with as much information as possible
An example of what has happened down south New Jersey? "Fishermen's Energy" was formed and the fishermen themselves have been looking at how to participate in the commercial development themselves.

Q. Are you going to be employing any people on Monhegan?

A Our goal during this test period is to look at ways to use local resources to support the program. As we get the monitoring plants put together, if there's need to have monitoring equipment on site on the island for the test site, we' d like to have some folks on the island

employed to maintain and take care of that At the same time we'll look at how to use the local boats to service either the micro-siting the initial stages or...

Q. An earlier discussion months ago; so if you have these test turbines out there and its generating energy but it's not going anywhere.... I don't know much about electricity, so where is it going?

A. One way is not to generate electricity, Its spinning and you put a resistance on it so it's got torque and it's basically doing the same thing as generating electricity it's just not passing magnets past coils and generating electricity.

Q So you're just monitoring the resistance?

A. It's really the resistance and the rotation and monitoring that and its interaction with the water.

When you are releasing energy into the water, what are you affecting? Generating vibrations or waves or whatever and the sea life on the bottom. Everything around it.

Q. In the hearing someone asked, where is the electricity going that you're generating? The person in your position said 'that's a good question, I don't know.' That was a little worrying.

Q. Is it one turbine you want to test or are you going to have more than one testing at the same time?

A When we get to the point of picking our design and picking the right scale: is it 100 KW scale, a ten kilowatt scale?, then pricing it out, to make sure we can build it with the budget we have. We're confident we've got enough money for one. We might have enough money for two.

Q You prefer to have more than one

A. Of course. And they wouldn't necessarily be deployed at exactly the same time. I'd love to have two or three deployed and gathering data at various points because then I've got more data to validate models

Q. Would they be together? Would they all be round the site or different places around the island.

A. Everything would be within the test site Whether at the same time or different times, we don't know yet. depending on the size of the turbines and the blade diameters, there's some spacing you need to maintain so you don't shadow ...

Ron Huber: I arrived late but wanted to let you know that I'm the one who filed the lawsuit asking the Superior Court to take a second look at the state's decision to approve this test site. I'm not asking for monetary damages; I'm asking the court to verify that the state's decision

followed the laws and regulations. I have copies of my complaint I will leave for people to read, and will be happy to talk with anyone who would like more information.

Q. It's my understanding that once the test sites are designated, they are designated in perpetuity to be test sites. Unless its delisted. The university only has a limited interest in the test site that's been designated to it, What happens after the university group is done with the test site. I would assume it would remain a test site. What would be the process to see who has access?

A Once this is designated as the university test site, it is the University test site until we say we don't want it any more,. Even if we don't use it, it's not open to other commercial developers to use it as a test site, unless...the legislation says specifically, in partnership or in consultation with the University. Nothing came go on the water that doesn't come under our general permit. So as long as that's designated as a university site.

Q. It's not a transferable lease?

A. No. Specifically to the permitted technology wind or wave devices and the associated monitoring devices like a GOMOOS Buoy

Q So you couldn't put a small nuclear plant on a barge.

A. No. (Laughter)

Q. Is there a limit? For example the firm that wants to do the tidal thing, and the Main aquaculture association wants to try..Could get kind of crowded out there

A. We can only have up to three wind turbines and up to three other wave or tidal energy devices

A. There *have* been inquiries about whether eventually if you did offshore wind, would that make sense to co-locate offshore aquaculture pens? Those are discussions that NOAA and others like National Science Foundation have speculated upon. We have some NSF funding to support this modeling. Both program managers have said 'does that make any sense?' We've said 'Lets figure out if we can make this work first.'

Q. Is research being done or going to be done in federal waters? Why would they start in state waters?

A The MMS Minerals Mgmt Service governs the permitting for federal waters, When we first starting talking about this they didn't have a process in place to do that - or certainly not a streamlined process.

A. One of the reasons that the state wanted to do this was to get control of the testing and test site and be able to put the checks and balances on. Because part of what the state the legislature the governor - everybody wants to know how is this going to work. Do we have enough informaiotn to make these decisions the answer is we don't have enough. So how are we going

to gather that information and how do we have control the information so we can use that to govern how we're going to go forward twith this. So part of this is collecting the information on who these devices perform both in the generation and the performance itn the wind and the weather and but also the environment.

A. We have to share all that information we have to share it with the public. The public will have access to this data in such a way that w\hen we start moving into other areas if that makes sense if that's federal or otherwise, at least the state has some baseline information on how to move forward in the Gulf of Maine. I think that the OETF was very prescriptive about deciding that , because this was a way to get the best information, collect the best information so we really know to the best of our ability how things are going to perform whether they are in federal waters or state waters.

A. There is as you may or may not know the 3 to 6 mile range in federal waters that the state still has some say and some revenue sharing if there's any land use on that, and beyond six miles its purely federal.

A. We did have a nice consultation with NOS (National Ocean Service) about what it would take to go through a permitting process just so we had some ideas and concepts. The comment was well basically when they went through the whole list, that's probably about eight years. They're trying to figure that one out still.

Q. So its federal money but they didn't have a process for their waters.

A. Right

A You could do this real quick if it was an oil rig.

Q. Because its federal money, though, you share the information as opposed to the Norwegians private operation.

A. Right.

Q. How are we going to get just as good technology when they spent 70 million, and your budget is smaller

A. We have to work harder (laughter)

A I'm also taking models that have been developed with millions of dollars already; we're building of that. We're not starting from scratch like the Norwegians did. We're starting from a place where these's years and years and decades of research behind us. So we're getting the value of that. When they first starting building floating platforms for the offshore oil industry, everyone said you're crazy, never going to do it not going to make sense You won't survive the north atlantic seas, You won't survive hurricanes in the Gulf of Mexico. But they've proven over and over that they can,

A. But those rigs cost HUGE amounts of money and they build them to get billions of gallons of oil out of it, so they get to cover that cost over a while. We've got to figure out how to use that science and engineering to bring that cost down so that it is affordable to do it. So we're not out there trying to generate electricity at a buck and a half a kilowatt hour. we've got to be in the ten to twenty cents area We wouldn't want to sell you electricity at twice what you pay

Q. What's the current grid scale turbine out thee per mile cable cost to shore. Do we have any infrastructure onshore in this area to support that power coming in?

A. Infrastructure on shore, you could run a cable to Wiscasset right now.

Q. There is also a cable right of way.

A Does it get to a place that can support it?

A. I think we're apples and orange on that. From Monhegan to shore, there's a cable right of way. What's on the shore side of that to handle electric infrastructure is different from what a grid scale operation would use.

Q There's Martinsville. (Laughter)

A. A grid scale before Maine Yankee junction could handle about 600 or 800 megawatts that went there,, so that's an underutilized transmission point.

A. The cost of cable anecdotally....There was a high voltage DC cable run in Long Island Sound and that was about a million dollars a _____, so I'd heard

A. If people are interested, there's a test site going on and there's that potential legislation for s commercial projects. The Maine Islands Coalition will meet on March 1st in augusta We're going to try to meet with some legislators and hopefully have that language for that bill and kind of discuss it and dissect it a little bit and hear information on it. If anyone wants information i can tell you details on that.

If anyone's going to the fishermen's forum in Rockport, there's going to be a whole panel on Saturday afternoon on offshore wind, there's going to be a guy from Fishermen's Energy and some of the other bigger offshore wind companies there s going to be a discussion on marine spatial planning, which is what the state is trying to do try to basically kind of map the ocean and its uses, so people have a better understanding when stuff like this happens exactly who'e doing what where and why.

A. The fishermen's forum, a couple folks on the panel: Neal Pettigrew from University of Maine who developed GOMOOS buoys will be talking about using the buoys for monitoring. Des Fitzgerald representing Principal Power - one of the floating platform technology developers interested in this - they have a buoyancy stabilized design. They will probably submit as one of the designs for the test site. He'll be talking about that.

Q. Suzy, what you just said when you were talking about the commercial stuff.... Are you talking about more turbines going in the state, or about federal waters?

A This would be in state waters. Because the main state legislature has a restriction just on state waters.

Q Like the rumor that I heard that there could be a hundred or so going right down the coast of Maine.

A There's a process already that exists somebody could do that if they wanted to right now. There always has been,. the leasing of submerged lands. I think what this legislation may - it may not, they may decide to just leave it out - they may choose to include come clarifications on that process,

A. Basically that could happen tomorrow if someone wanted to put up with jumping through all the weird hoops as they're set up now. Or the state may say, hey we really want to send a message to developers that we want them to come to Maine state waters, so we're clarifying this for that purpose. We're trying our best to kind a keep an eye on that legislation

Q. Is it likely that land conservation areas, that they will have large areas of the ocean that are off limits, just totally off limits?

A That means getting involved with the marine spatial planning effort. What the MSP effort does, and the GIS data base that we've developed and the SPO office is converting in to the marine Atlas basically it takes all the significant data that's been collected and is publicly available on what's happened in the GOM in space and time. If there's rationale to have conservation areas, I think that's up for public discussion to deploy that any further.

A. I've got to tell you working with the OETF going through the public hearings and all that, if you'd told me when we first started all this that of the wholr cost of maine we were going to end up with only three sites that are about a mile and a half square each, I would have been amazed. I mean the process that narrowed it down to that little bit says that there's a lot of people who respect what happens in the Gulf of Maine right now. We're not looking at this lightly We're trying to do something that is proactive for our energy and our economy but we're going to be doing it very carefully.

Ron Huber: That's what seems so odd about this bill you're talking about: I was amazed by how intensely careful and cautious you were about these test sites for the tes,t but if this bill would open up larger areas....

A It wouldn't be as cautious about selecting commercial sites. I think it's going to reinforce that. that's my sense iopf what the OETFG was looking for in additional legislation. You got the test sites taken care of now lets apply that same level of discretion with the commercial sites.

Ron Huber: It'd be nice but you're talking about really big money. A little tougher to keep under control.

A. Somebody said earlier the wind blows free. And guess what? Oil in the ground is free. Natural gas is free solar is free. The cost is how to get it from where it is and convert it into something you can use.

Q Any studies on tidal? Was that ever considered vs the wind turbines?

A Yes. Why are we looking at wind? [Shows slide with comparative sources of energy. Wind etc. Map shows wind is most powerful source on Maine coast]

A. The tidal energy program in Maine is actually strong There's no better place in the continental united states to do tidal energy than Maine, If we can't make it work economically ijn Maine we can't make it work anywhere else. That's going on in Eastport right now. We have a program going with a company called Ocean Power Research Corporation which also has research in Alaska. In the Bay of Fundy, Nova Scotia have better tides. Nova Scotia has a tidal energy test site much like what we're talking about now. They've got a pre-permitted site now where people can bring their tidal devices and have them tested.

A. Emera, the parent company of Bangor Hydro has a percentage stake in an Irish company called OpenHydro, which is instream tidal - we're talking instream tidal versus damming. They're done tidal power through damming, but that's not the best environmentally Its not going to happen again. Instream tidal is some turbine that's mounted in-stream, and the guidelines on extracting the power are at about 15% of the tidal stream, because if you take too much, then you change the environment above and below.

A. So those demonstration sites are going on up in Eastport on Cobscook Bay right now. They're going through the same permitting process that everybody else is going through. They're looking at developing somewhere in the 1 to 5 megawatt size. For some of the peninsulas down in that area that have no power because they're stranded, that's going to make a lot of sense.

A. The coast guard station in Eastport or Jonesport is looking at doing one of the first tidal power generation sites there.

A Norway and Scotland have also have had tidal power generation sites for a couple of years; they're generating power and putting it on the grid from the demonstration sites, so the technology is there and is part of the equation.

Q. Thank you.

A. Thank you for coming.

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