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FEDERAL ENERGY REGULATORY COMMISSION

SCOPING MEETING

ROOSEVELT ISLAND TIDAL ENERGY  
HYDROELECTRIC PROJECT NO. 12611

Community Center  
5 River Road  
Roosevelt Island, New York

March 29, 2007

10:06 a.m.

P R E S E N T:

- |                |                             |
|----------------|-----------------------------|
| THOMAS DEAN    | FERC                        |
| TIM KONNERT    | FERC                        |
| KRISTEN MURPHY | FERC                        |
| RON SMITH      | VERDANT POWER               |
| JIM GIBSON     | DEVINE TARBELL & ASSOCIATES |

1                   P R O C E E D I N G S

2                   MR. DEAN: Looks like we can  
3 start the meeting. So there looks like  
4 there's a lot of interesting faces in the  
5 audience this morning.

6                   Good evening, ladies and  
7 gentlemen. Welcome to the Federal Energy  
8 Regulatory Commission's public scoping  
9 meeting for the proposed Roosevelt Island  
10 Tidal Energy Project, FERC Project No.  
11 12611. My name is Tom Dean and I'm the  
12 project coordinator employed at the  
13 Commission. The other Commission staff  
14 members with me tonight are Kristen Murphy,  
15 she is back there, as well as Tim Konnert.  
16 Representatives of Verdant Power, the  
17 license applicant, are Ron Smith and  
18 assisting Verdant Power is Jim Gibson from  
19 Devine, Tarbell & Associates.

20                   Here's the agenda for the  
21 scoping meeting, so you'll know what to  
22 expect. I will start off with some  
23 introductory remarks, review the licensing  
24 process and explain the purposes of scoping.

25                   Ron Smith will then provide a

1       brief history of the project, describe the  
2       proposed project facilities and operation.  
3       I will follow by identifying the  
4       environmental issues and then Jim Gibson  
5       will identify the proposed and ongoing  
6       studies.

7                        During the presentation, we will  
8       periodically ask if anyone has any questions  
9       about the information presented. At the end  
10      of our presentation, we will ask if anyone  
11      has any comments, has identified any new  
12      issues that should be considered or has any  
13      questions before adjourning the meeting.

14                      First, I hope everyone signed in  
15      and took a copy of the Scoping Document.  
16      They're at the end of the table. Who has  
17      the sign-up sheet?

18                      MR. KONNERT: I think it's still  
19      up there.

20                      MR. DEAN: Tim, can we pass that  
21      around?

22                      MR. KONNERT: Yes.

23                      MR. DEAN: At least get most of  
24      the people to sign in. Thank you.

25                      For those of you who wish to

1 speak today, we have a court reporter to  
2 transcribe today's meeting because it will  
3 serve as a part of the Commission's record.  
4 While we want to keep things as informal as  
5 possible, we ask that you state your name  
6 and affiliation before commenting so the  
7 court reporter can accurately attribute the  
8 comments to you.

9 Further, so the court reporter  
10 can record all your statements, only one  
11 person at a time should speak. Please  
12 respect the opinions and views of others  
13 when comments are expressed by individuals  
14 during the meeting.

15 If someone wishes to file  
16 written comments, our mailing address is on  
17 page 6 of the Scoping Document. Comments  
18 should be filed at the Commission by April  
19 30, 2007. You can also file comments  
20 electronically. Instructions for electronic  
21 filing are also found on page 6.

22 We distributed the Scoping  
23 Document to everyone on the FERC's mailing  
24 list and Verdant's distribution list.  
25 However, further mailings from FERC will

1       only include those entities on the FERC's  
2       mailing list. If you wish to continue  
3       receiving paper copies of issuances, please  
4       check the list on the back of the Scoping  
5       Document, and if your name or address is not  
6       there, please follow the instructions on  
7       page 17. If you prefer to receive  
8       correspondence via e-mail, instructions for  
9       electronic registration are found on page 6.

10                 The slide shows the major  
11       milestones of the licensing process for the  
12       RITE Project. Although the Traditional  
13       Licensing Process is being used, we consider  
14       the licensing process for the Rite Project a  
15       hybrid. Normally under the traditional  
16       process, scoping would not occur until after  
17       the license application is filed with the  
18       Commission and before the Ready For  
19       Environmental Analysis Notice, that's the  
20       REA Notice, is issued. For this project,  
21       scoping is occurring simultaneously with  
22       ongoing studies. That is why the licensing  
23       process is considered a hybrid process.

24                 Verdant Power requested scoping  
25       of issues at this stage as a way to expedite

1 the licensing process. Verdant Power  
2 anticipates distributing the draft license  
3 application to the agencies and other  
4 stakeholders this summer. Verdant Power  
5 will then file its final application with  
6 the Commission this fall. At that time,  
7 staff will review the application, and if it  
8 is complete, we will issue a Notice Ready  
9 For Environmental Analysis requesting  
10 comments, recommendations and interventions.  
11 We will then complete our environmental  
12 analysis with the assistance from EPA and  
13 the Corps of Engineers by issuing an EA in  
14 the summer of 2008.

15 A licensing decision or license  
16 order would then be issued. There will be  
17 at least three opportunities for you to  
18 provide comments to the Commission. They  
19 are during the current scoping period, when  
20 we issue Notice of Application Ready For  
21 Environmental Analysis and when we issue  
22 Notice of Availability of the issued EA.

23 I have a note I wish to state  
24 about the timing of the issuance of the REA  
25 Notice. The Scoping Document shows the

1 Notice being issued in April 2008. The REA  
2 Notice could be issued sooner if Verdant  
3 Power files enough information for staff to  
4 assess the potential effects of project  
5 operation on aquatic species. In other  
6 words, the process schedule shown on page 14  
7 of the Scoping Document could be  
8 accelerated.

9 Under the Federal Power  
10 Commission, the Commission has the  
11 responsibility to issue licenses for  
12 nonfederal hydroelectric projects. You can  
13 read more about the FERC's mission at  
14 [www.ferc.gov](http://www.ferc.gov).

15 The National Environmental  
16 Policy Act or NEPA requires the disclosure  
17 of environmental effects of FERC's licensing  
18 actions. The environmental effects will be  
19 assessed in a NEPA document. The Scoping  
20 Document includes a brief description of the  
21 proposed project facilities and project  
22 operation, a list of resource issues that  
23 will be assessed in the NEPA document and  
24 describes the studies currently ongoing by  
25 Verdant Power. The Scoping Document also

1 describes the types of information we are  
2 seeking as part of scoping, a time line for  
3 processing the license application once it  
4 is filed and a proposed outline of the EA.  
5 The main purpose of our meeting with you is  
6 to solicit comments and input from the  
7 public, nongovernmental organizations and  
8 federal, state and local agencies about new  
9 issues not yet identified that need to be  
10 considered when assessing potential project  
11 effects on the environment.

12 We will present the issues that  
13 have already been identified, make sure we  
14 understand the issues you raise, ensure that  
15 we did not omit any issues that should be  
16 included and further refine or eliminate any  
17 issues where needed.

18 Before Ron presents the brief  
19 history and project description and  
20 operation, are there any questions about  
21 what information has been provided so far?

22 All right. Ron, would you,  
23 please.

24 MR. SMITH: We want to just take  
25 a minute and describe to you how we got here

1       today.

2                       This project when licensed and  
3       commercialized will be the first of its kind  
4       in the world and it is a purely indigenous  
5       New York project and I'll talk a little bit  
6       about that. In 2001, my company, our  
7       company, wrote a proposal to the New York  
8       State Energy Research & Development  
9       Authority to introduce tidal energy, free  
10      flow tidal energy to the state and we  
11      proposed a site in upstate New York.  
12      NYSERDA came back to us and turned us down  
13      on that proposal. As we debriefed with them  
14      afterwards, they said if you are going to do  
15      this project, we're certainly very  
16      interested in new renewable energy in New  
17      York State, but if you're going to do this,  
18      we need you to do it in the load pocket in  
19      New York City where energy is needed and we  
20      need electricity. New York Power Authority  
21      also gave us that direction. So we wrote  
22      another proposal.

23                      In 2002 NYSERDA gave us our  
24      first award and that began this  
25      public/private partnership to develop this

1 project here in the East River next to  
2 Roosevelt Island. So over the past three  
3 and a half years, we have been working with  
4 the various regulatory agencies to permit  
5 this project to get the environmental data  
6 and the environmental impact information  
7 required to submit this license application  
8 to FERC.

9 Our hope is and certainly our  
10 plan is to have comprehensive environmental  
11 impact data particularly for fish impacts  
12 that will allow us to get this project  
13 licensed, deliver this electricity to New  
14 York City and to other areas around the City  
15 and State here.

16 We're supported through  
17 funding -- with funding of over \$2 million  
18 so far from the State through NYSERDA,  
19 additional funding from the City through the  
20 Economic Development Corporation as well as  
21 our corporate investment. So, as I  
22 mentioned at the outset, this will be the  
23 first free-flow Tidal Energy Project in the  
24 world, so it's significant for the State,  
25 it's significant for the City, it's

1 significant I think in terms of the  
2 development of this renewable energy type of  
3 industry. So that's kind of an overview of  
4 what this is. Eventually, our proposal in  
5 the application will be to put in  
6 potentially up to 150 to 200 turbines to  
7 deliver five to ten megawatts of electricity  
8 at two locations. The locations are laid  
9 out in this chart. You can see on the  
10 northern end of Roosevelt Island potentially  
11 as many as 50 to 75 turbines delivering  
12 three to five megawatts of power, and then  
13 on the west side of the West Channel, over  
14 in the security area of the United Nations,  
15 another potentially 50 to 75 or 100  
16 turbines, three to seven megawatts potential  
17 there. We're in the process of doing that  
18 analysis.

19 Now, over the past six to eight  
20 months, we have been working with  
21 stakeholders in the area and we have 11  
22 study groups that Jim is going to talk about  
23 in a few minutes. We've been -- one of  
24 those is a navigation and security study  
25 group looking at the other navigation and

1 security issues with the water around here  
2 and those uses.

3 In the process of doing that  
4 group's work, the Coast Guard and the harbor  
5 pilots and the other folks who use the  
6 waters out here precluded a number of areas  
7 that we were proposing to put these turbines  
8 and directed us to these two areas. So this  
9 is -- we're working with the Coast Guard to  
10 put these turbines where they will work for  
11 the City and all the other folks in the City  
12 who have to use this water.

13 Here is an image of the turbines  
14 that will be deployed. We deployed two of  
15 these in December and in December and  
16 January for the first time delivered grid  
17 connected electricity to Gristedes  
18 Supermarket here. Over the course of  
19 December and January, we delivered in excess  
20 of 10 megawatt hours to the grocery store.  
21 So as we build this system, put the turbines  
22 in to evaluate the impacts on the fish,  
23 there will be electricity delivered to local  
24 customers.

25 This turbine was originally

1 designed and developed at New York  
2 University in the early 1980s in their  
3 Department of Applied Sciences. The  
4 department no longer exists, but in those  
5 days the New York Power Authority and  
6 Department of Energy supported the  
7 development of this, so this is a locally  
8 developed technology, one of the principals  
9 at that time is leading the technology  
10 development for our company right now, so  
11 this is an indigenous New York City/New York  
12 State project.

13           As I mentioned, we potentially  
14 will have up to 150 to 200 turbines. We are  
15 in the process right now of doing the  
16 analysis to identify specifically where  
17 those turbines will go. Once we have that,  
18 we will begin the discussions with potential  
19 off-takers who will use the electricity that  
20 will be developed from this site. We  
21 haven't done that work yet, but over the  
22 next two to three months in preparation of  
23 the license application, we will be talking  
24 with various potential off-takers of this  
25 electricity. So that's kind of an overview

1 of the project, where we've come from, where  
2 we're headed, why we want to do this, why  
3 it's important. If you have questions at  
4 the end of the presentation, we'll be happy  
5 to answer any of them.

6 MR. DEAN: Thank you, Ron.

7 In Section 5.2 of the Scoping  
8 Document, pages 9 through 11, are the  
9 environmental issues and concerns that the  
10 Commission staff have identified for  
11 analysis in the NEPA document. The list  
12 shows the resource issues that have been  
13 identified to date that have the potential  
14 to be affected by the RITE project. As you  
15 can see, we have identified geology and  
16 water, aquatic, terrestrial, threatened and  
17 endangered species, recreation and land use,  
18 historic and cultural, socioeconomics,  
19 aesthetics and developmental resources as  
20 issues to be assessed. We are particularly  
21 interested in hearing from you whether we  
22 have captured all of the issues or whether  
23 any new issues or resources should be  
24 considered.

25 Jim will now present the

1 proposed studies or ongoing studies.

2 MR. GIBSON: Thank you, Tom.

3 As Tom mentioned, over the  
4 course of the last what's been approximately  
5 three years now, we have been working with a  
6 variety of agencies, folks here at Roosevelt  
7 Island and other stakeholders to identify  
8 resource areas, and there have, as Tom  
9 mentioned, there's been six general resource  
10 areas that have been identified. So what  
11 Verdant Power has been doing over the course  
12 of the last two years is initiating and  
13 performing studies to evaluate those  
14 resources and how those resources may be  
15 affected by putting turbines in the water.

16 So of those six resource areas,  
17 the first study that's been conducted is a  
18 water quality study. So what Verdant has  
19 been doing is they've been using side scan  
20 sonar to go out to the East River and  
21 identify any potential sediment that may be  
22 present in the study area, so when the  
23 turbines are put on the water to determine  
24 if there would be any impact there.

25 The second resource area,

1 aquatic wildlife, there's been a total of  
2 five different studies that have been going  
3 on, the first one being benthic habitat,  
4 going out and taking a look at the  
5 substrates for habitat, any kind of benthic  
6 organisms that may be present in the area.

7 They've also been doing a  
8 hydrodynamic study, taking a look at both  
9 prior to deployment of the turbines and then  
10 after deployment of the turbines, how the  
11 turbines may affect the hydrodynamic aspects  
12 of the water and how water flows through the  
13 river and any potential impacts on fish.

14 They've been also doing multiple  
15 hydroacoustic studies. Verdant Power is  
16 doing a fixed hydroacoustic study, which if  
17 you've been out to the site here adjacent to  
18 the parking garage, you see multiple cables  
19 running down into the water. At the end of  
20 those cables are hydroacoustic transducers  
21 which are sending out sound signals which  
22 when fish swim through will send back a  
23 signal and then Verdant is able to track the  
24 fish that move through that area. They will  
25 be doing that for a total of 18 months 24

1 hours a day watching fish move through the  
2 area and how they may be affected by the  
3 turbines.

4 They are also doing the same  
5 with mobile hydroacoustics, they have a boat  
6 that comes out about once a month and they  
7 are looking for fish not only in the area of  
8 the six turbines, but up and down the East  
9 River.

10 The other studies that are being  
11 done to address aquatic wildlife are they're  
12 doing a noise study prior to deployment of  
13 the turbines and then following deployment  
14 of the turbines, they are taking sound  
15 measurements to determine the potential  
16 impacts to fish and other wildlife as a  
17 result of sound and they're also doing --  
18 well, that's it for the underwater.

19 The other studies then for the  
20 other resource areas, first of all, a bird  
21 observation study, taking a look at how  
22 birds may be impacted by the resources, in  
23 terms of what birds are predeployment and  
24 post deployment in terms of impacts, and  
25 then also rare, threatened and endangered

1 species, the potential for turtles or short  
2 nose sturgeon in the area, Verdant is doing  
3 a study to determine potential impacts as  
4 well.

5           The last couple of areas of  
6 studies are a recreation study where Verdant  
7 is evaluating the potential resources with  
8 regard to recreation and how those resources  
9 may co-exist with deployment of the turbines  
10 as well as navigation. Ron mentioned  
11 earlier that the navigation study group is  
12 the group that has influenced the footprint  
13 of the project and we're looking to see how  
14 the project can coincide with current  
15 navigation use.

16           The final resource area and the  
17 final study is on historical properties.  
18 Verdant Power is working with the State  
19 Historic Preservation Office and a number of  
20 other stakeholders to identify potential  
21 historical resources within the project  
22 area.

23           Like Ron said, there's a total  
24 of 11 study groups. The studies are  
25 ongoing. Some of them will wrap up here

1       within the next two to three months, others  
2       will continue over an 18-month period. In  
3       total, Verdant is spending roughly between 3  
4       and 4 million dollars just on studies.

5                   And if there's any questions, I  
6       would be happy to answer them at the end of  
7       the presentation.

8                   Thank you.

9                   MR. DEAN: Thank you, Jim.

10                   Before we hear from meeting  
11       participants, are there any federal, state  
12       or local elected political representatives  
13       in the audience that wish to make a  
14       statement about the RITE Project?

15                   Are there any new issues or  
16       other resources not identified that should  
17       be considered or are there any comments or  
18       questions about the information that has  
19       been presented today?

20                   Please state your name and  
21       affiliation.

22                   MR. STREET: My name is Mr. Earl  
23       Street, I am affiliated with The Child  
24       School here on Roosevelt Island as a teacher  
25       in special education. My question is by

1       your research, if you find that anything is  
2       affecting -- that the turbines are affecting  
3       anything environmentally in the water or the  
4       things around it, what will be the next  
5       stage to the creation of this whole project?

6                   MR. DEAN: Well, that  
7       information should be developed hopefully in  
8       the studies that Jim had mentioned earlier.  
9       Those -- the studies and study results will  
10      be filed with the Commission and the  
11      Commission staff will look at those -- that  
12      information and the studies along with other  
13      state and federal resource agencies and then  
14      we will prepare an environmental assessment  
15      that assesses the potential impacts of those  
16      turbines on aquatic resources and then  
17      they'll make -- then the environmental  
18      assessment will also include some staff  
19      recommendations for some type of mitigation  
20      or enhancement measures that may benefit the  
21      aquatic resources.

22                   MR. SMITH: Let me just add  
23      something to that because this is very  
24      important to us, this is a brand new  
25      technology, we are in the process of

1 designing it and deploying it for really  
2 seriously the first time, although we've  
3 done four field studies of this, so that if  
4 there are impacts, it will affect the future  
5 design and direction of the technology and  
6 where we move this because we have to make  
7 this -- this technology has got to work  
8 with -- for everybody and has got to be  
9 benign environmentally, so it will affect  
10 the design and deployment of the future  
11 turbines and the turbines that will go in  
12 the water here.

13 MR. DEAN: Anyone else that has  
14 any comments? Any questions?

15 Please state your name and if  
16 you would spell your name for the court  
17 reporter.

18 MR. ELIAS: My name is Matthew  
19 Elias, that's E-L-I-A-S. My question is:  
20 Like the structure itself, it's sort of like  
21 a propeller, an underwater propeller?

22 MR. SMITH: Yes. It's a  
23 three-bladed, you saw the picture of it,  
24 it's three blades, it turns at about 34 RPM,  
25 so it turns fairly slowly and it sits right

1 now on a monopile on the bottom of the  
2 water.

3 MR. ELIAS: What about let's say  
4 water pressure? It's like built to like  
5 stand water pressure or it really doesn't go  
6 like that deep into the water?

7 MR. SMITH: Yes. This is -- the  
8 water pressure here, it's only 30 feet deep,  
9 so it's not going like 2 or 300 feet under  
10 water where there's significant pressures.  
11 So at this point water pressure is not an  
12 issue.

13 SPEAKER: Ron, do you want to  
14 run the animation? We can do that.

15 MR. DEAN: There's another  
16 question over here. We'll get a microphone.

17 MR. HARRIS: My name is Saj  
18 Harris and my question is how do you plan on  
19 making this invention of yours more  
20 international like how are you going to like  
21 send it out for other people to see more  
22 than just this right now, but --

23 MR. SMITH: This is the  
24 beginning of a new industry. Marine  
25 Renewables and the United Kingdom right now

1 is investing in the development of these  
2 technologies quite a bit, so there's a lot  
3 of international interest. Canada as well.  
4 So, in fact, Tray Taylor, our business  
5 development person, is in conversations  
6 every day with potential applications in  
7 other places in the world, but the very  
8 first step for a new technology is to show  
9 that it works, it's reliable and it's good,  
10 and that's what we're doing here in New York  
11 City.

12 SPEAKER: Did you anticipate any  
13 noise or vibrations?

14 MR. DEAN: Your name is?

15 MS. LYNN: Oh, my name is Robin  
16 Lynn, I live on Roosevelt Island, I've been  
17 a resident here for about 25 years.

18 My question is: Does this  
19 technology create vibrations or noise or  
20 wearing sound or what is the impact on the  
21 people who live here as opposed to the  
22 historical resources?

23 MR. SMITH: No. As far as we  
24 can tell, we believe it's going to be  
25 totally benign. We do have -- one of the

1 studies -- one of the pieces of work we're  
2 doing among the studies is to look at the  
3 noise of the turbines, but, you know, from  
4 our view there will be very, very little  
5 noise, it will be basically invisible to the  
6 populous.

7 MR. GIBSON: I would actually  
8 like to add to that.

9 And just to add, with regard to  
10 the noise study, there will be no noise  
11 above the water. When we talk about noise  
12 study, it's everything below the water.  
13 There has been turbines in the water to date  
14 and there's no noise associated with them  
15 above the water.

16 MR. SMITH: Can everybody see  
17 that? This is an animation of what a  
18 potential field of 75 to 100 turbines would  
19 look like. It shows the approximate spacing  
20 of the turbines as well as the rotation  
21 rates of the turbines, so it gives you a  
22 sense of what it is that will be happening  
23 under the water when these turbines are  
24 deployed.

25 MR. DEAN: We have another

1 question over here.

2 MR. DEMPSEY: My name is Kevin  
3 Dempsey, a student at The Child School, and  
4 about how many homes is this invention going  
5 to power?

6 MR. SMITH: Just to kind of give  
7 you kind of the rule of thumb, basically, if  
8 we put 10 megawatts of power which  
9 potentially was the original objective,  
10 whether we're going to get there or not is a  
11 question, that would support an average  
12 American -- about 7 to 8,000 average  
13 American households, those 10 megawatts.

14 MR. SHTEYMAN: My name is David  
15 Shteyman and I'm from The Child School.  
16 Will there be -- if you manage to build  
17 them, what would happen if let's say some of  
18 the garbage gets stuck in the turbine's  
19 blades and rollers, would that cause any  
20 problems?

21 MR. SMITH: Certainly it would  
22 cause problems if they got stuck. Our  
23 engineers have gone to great lengths to  
24 design the turbines so that that wouldn't  
25 happen. One of the things you saw the

1       turbines, the turbines change, they yaw with  
2       the change in the tidal flow, so during an  
3       ebb tide the turbine will be facing one  
4       direction and when the tide changes, the  
5       turbine turns around. So if something was  
6       stuck on the turbine, when the turbine  
7       turned, it would just, you know, wash away,  
8       but the design of the turbine is designed to  
9       ensure that debris moves past the turbine  
10      very easily.

11                   MR. DEAN: The last person,  
12      would you please spell your name?

13                   MR. SHTEYMAN: S-H-T-E-Y-M-A-N.

14                   SPEAKER: I have a question --

15                   MR. DEAN: Give your name and  
16      where you're from and please spell your last  
17      name.

18                   MR. BERKOWITZ: B-E-R-K-O-  
19      W-I-T-Z. My name is Daniel Berkowitz. I am  
20      from The Child School.

21                   Are you going to be making any  
22      also like other forms of renewable energy  
23      like wind propellers or solar panels?

24                   MS. SMITH: No. I mean, there  
25      are other activities and other companies

1       doing those types -- that type of work. Our  
2       focus is on, you know, tidal and energy from  
3       moving water.

4                   MR. BERKOWITZ: Okay.

5                   MR. BUITRAGO: Hi. My name is  
6       David. I am just wondering if would the  
7       boats be affected?

8                   MR. DEAN: Spell your last name,  
9       please.

10                  MR. BUITRAGO: My name is David  
11       Buitrago, B-U-I-T-R-A-G-O.

12                  MR. DEAN: And your question,  
13       please?

14                  MR. BUITRAGO: Oh, my question  
15       was will the boats be affected by the  
16       turbines?

17                  MR. SMITH: In working with the  
18       Coast Guard, there will be a security  
19       basically buoyed off area so that the boats  
20       will not be driving over the turbines.  
21       We're going to do that so that there's just  
22       no risk. Ultimately when the tide is at its  
23       very lowest, the turbines are about six feet  
24       below the surface of the water here off  
25       Roosevelt Island. At the United Nations, it

1       may be deeper, but the Coast Guard is going  
2       to -- we're going to have buoys around the  
3       area so that boats will not be driving over  
4       the turbines.

5                   MR. BUITRAGO: Thank you very  
6       much.

7                   MR. EDWARDS: My name is Michael  
8       Edwards and I was wondering like what is the  
9       life line of the turbines, like how long  
10      does it last?

11                  MR. SMITH: The question is how  
12      long will the turbines last. Our engineers  
13      are in the process of development. These  
14      first generation, basically it's the fifth  
15      generation of turbine, our target for the  
16      life of these is ten years. As we develop  
17      the technology, we are hoping that we can  
18      extend that life to 15 to 20 years. It's an  
19      engineering challenge, but that's what we're  
20      here to do.

21                  MR. EDWARDS: Thank you.

22                  MS. LYNN: Hi. It's Robin Lynn  
23      again. I guess my question is of all the  
24      water pathways in the United States, what  
25      attracted you to the East River?

1                   MR. SMITH: A couple of things.  
2           Number one is our company is a start-up  
3           company, so, you know, we were not -- we  
4           didn't have deep pockets, we were not deeply  
5           funded when we started six, seven years ago.  
6           So the existence of the New York State  
7           Energy Research & Development Authority,  
8           their interest and potential for funding new  
9           technologies like this brought us to New  
10          York State, and, as I mentioned earlier,  
11          they then directed us here to the City. So  
12          it's basically the infrastructure that New  
13          York State has in place as well as the need  
14          for electricity in a city like New York.

15                   MR. HARRIS: I have one question  
16          about the tur -- I have one question about  
17          your invention because on one of your  
18          animations while it was showing, it like  
19          spin around, it also looked like it could  
20          also affect the -- it could also affect  
21          habitats of other animals and I know you're  
22          trying to figure that out, but it looks like  
23          some animals could actually get caught in  
24          that. Do you have any plan on figuring that  
25          out like do you have a way of not letting

1 animals go through it?

2 MR. SMITH: Could you give your  
3 name so she can record it?

4 MR. HARRIS: Saj Harris, S-A-J.

5 MR. SMITH: Now, you made a  
6 statement some animals could be what?

7 MR. HARRIS: Caught in the  
8 blades.

9 MR. SMITH: Caught in the  
10 blades. Well, the reason we showed you the  
11 animation was to just show you the slow  
12 speed that the turbines turn. We have, as  
13 Jim mentioned, we have underwater  
14 hydroacoustic sonar technologies that have  
15 been specially designed for this project to  
16 watch large numbers of fish of various types  
17 move in and around those turbines and to  
18 evaluate their behavior. So we're going to  
19 be doing very intensive analysis and data  
20 gathering on all those impacts. Based on  
21 all the science to date that has been done  
22 here and in Europe, the conclusion that  
23 we've come to is that there will be  
24 basically no impact on the fish, but  
25 obviously we have got to get empirical

1 evidence to that effect and that's what  
2 we're doing.

3 MR. HARRIS: Okay.

4 MR. GIBSON: And just to add to  
5 that, we've done a lot of research and we've  
6 looked at literature that other researchers  
7 have done and with units such as this, there  
8 are approximately five or six different ways  
9 that a fish or some sort of wildlife could  
10 be heard. Anything from impingement like  
11 you're talking about where something would  
12 get stuck in a unit to entrainment or  
13 because of pressure or things that happen  
14 with units such as that, based on the  
15 research to date, it appears that the only  
16 potential way that a fish or wildlife could  
17 be hurt is through a fish strike where the  
18 fish would actually get hit by a turbine  
19 blade, and that's what we're studying right  
20 now. But, like Ron said, given the slow  
21 RPMs, the rotations per minute, of these  
22 units, the general thought is that it's  
23 pretty unlikely that a fish would be struck.

24 MR. MURPHY: My name is Lou  
25 Murphy, and I just wanted to know, how do

1       you make turbines? L-U-Y-E.

2                   MR. DEAN: And the question is  
3       how do you make the turbines?

4                   MR. MURPHY: Yes. And what made  
5       you think of it?

6                   MR. SMITH: The turbines are  
7       basically assembled from a variety of  
8       components that are designed by engineers,  
9       so these turbines have potentially 40  
10      different parts and components, not  
11      including small pieces like bolts and other  
12      types. So they are -- each component is  
13      either bought or fabricated to go into the  
14      turbine, then our engineers put those  
15      turbines together for deployment out here.

16                   The basic idea of generating  
17      electricity or energy from flowing water has  
18      been around for a long, long, long time.  
19      But as the situation in the world and  
20      certainly the energy situation and need for  
21      energy and renewable energy in particular  
22      gets more and more important and urgent, we  
23      and other groups and companies around the  
24      world are looking for new solutions in order  
25      to solve those problems. So it was an idea

1 that was out there and we decided to address  
2 that and starting here in New York City.

3 MR. DEAN: Yes.

4 MS. MARMOLEJOS: My name is  
5 Nicole Marmolejos, M-A-R-M-O-L-E-J-O-S. My  
6 question is how did you come up with the  
7 idea?

8 MR. DEAN: Please -- how did we  
9 come up with what?

10 MS. MARMOLEJOS: How did you  
11 come up with the idea of making the  
12 turbines?

13 MR. SMITH: Oh, how did we come  
14 up with the idea? It's -- you know, like  
15 many ideas, many people have had them. This  
16 idea was one that many people have tried to  
17 address, investors, and other scientists  
18 have attempted to address. As the need for  
19 renewable energy developed, our company just  
20 said this is important and we will put a  
21 management team and a business around this  
22 to make this a commercial option for, you  
23 know, for people here in the United States,  
24 but potentially around the world.

25 MR. FENKLER: Hello. My name is

1 Carl Fenkler, I teach at The Child School.  
2 My question is how does the profitability,  
3 the potential profitability of this  
4 renewable energy compare to other sources  
5 like wind power or, you know, other ones  
6 that are in the works? Is it much more  
7 effective? I mean, how does it compare?

8 MR. SMITH: That's a large  
9 question, Carl, for us and our investors.  
10 You know, what we are trying to do is to  
11 basically, first of all, show the  
12 feasibility of this and the delivery and our  
13 work, I mean, our corporate mission over the  
14 next three to five years as we commercialize  
15 this is to make it economically effective  
16 and competitive. Early on here, our focus  
17 is, you know, just putting together systems  
18 that show the feasibility and that this will  
19 work reliably. Our next step with the  
20 commercialization of this project is to make  
21 it economically viable and that remains to  
22 be seen.

23 MR. DEAN: Many, many  
24 inquisitive minds this morning.

25 MR. SHTEYMAN: Hi there. There

1 is one more thing I would like to add. How  
2 are you going to plan to install these  
3 turbines on the East River? I mean, how are  
4 you going to plan to install them?

5 MR. SMITH: What we have done so  
6 far, and, again, because this is the first  
7 time this has ever been done is basically we  
8 are applying conventional marine  
9 construction technologies for these initial  
10 six test turbines so they are sitting on  
11 monopiles that have been basically put in to  
12 the bedrock on the bottom of the river. We  
13 have a research and development effort under  
14 way to look for alternative ways of doing  
15 that, which are not conventional marine  
16 construction approaches. That's, again,  
17 another part of our business challenge over  
18 the next couple of years. We're working  
19 with leading companies who do marine work  
20 around the world.

21 MR. GIBSON: And I'd like to add  
22 that the weeks of April 9 and April 16 there  
23 is going to be a construction area you would  
24 have to stay out of, but these turbines will  
25 be going in the water, so for the folks --

1 especially for the folks that live here on  
2 the Island, you could watch that.

3 SPEAKER: Give the dates again,  
4 please.

5 MR. GIBSON: The dates are the  
6 weeks of April 9 and April 16, so a two-week  
7 period coming up here.

8 MR. BERKOWITZ: Excuse me. When  
9 building these turbines, are these going to  
10 affect the oil market at all, like  
11 decreasing American's independence from oil?

12 MR. SMITH: That's the big  
13 picture. We are at a very, very, very, very  
14 small scale, but the idea with these  
15 renewable energies of all types is that over  
16 time, over the next 30 to 50 years or so or  
17 even shorter, that our independence on  
18 fossil fuels will decrease, certainly in  
19 relation to the generation of electricity.

20 MR. BERKOWITZ: Okay.

21 MS. SMITH: Hi. I'm Zoni Smith,  
22 I'm a student at The Child School. I would  
23 like to know how will this affect the future  
24 with the turbines?

25 MR. SMITH: Well, hopefully in a

1 very positive way. We're working with  
2 everybody to -- our idea here is this is  
3 new, it's novel, it's innovative, and  
4 hopefully what we start here will be adapted  
5 in a lot of places and have an influence in  
6 reducing our dependence around the world on  
7 fossil fuels.

8 MS. SMITH: And also, if this,  
9 if the turbine were to break, would you like  
10 replace it or would you go down there and  
11 fix it?

12 MR. SMITH: Yes, and actually  
13 the two turbines that we put in in December  
14 have broken, and we are putting new blades  
15 on them. So as the turbines wear themselves  
16 out, we will be taking them out,  
17 refurbishing them and then putting them back  
18 in. So there was an operations and  
19 maintenance strategy and plan as to how the  
20 turbines will be maintained over their  
21 10-year or 20-year life.

22 MR. DECATUR: Yes. My name is  
23 Treval and I wanted to know what powers the  
24 turbines.

25 MR. DEAN: What -- you asked

1           what powers the turbine?

2                       MR. DECATUR:  Yes.  Like does it  
3           power itself?

4                       MR. SMITH:  The turbine actually  
5           translates the energy in the flowing water.  
6           The tides as they flow basically through the  
7           strength of the moon have a tremendous  
8           amount of energy in the tidal flows, so  
9           these turbines are basically a conversion  
10          device to take that energy and deliver it in  
11          the form of electricity, so it is the  
12          flowing tides that are the generative source  
13          of the energy.

14                      MR. DEAN:  Could you please  
15          spell your last name?

16                      MR. DECATUR:  D-E-C-A-T-U-R.

17                      MR. DEAN:  Spell your first  
18          name.

19                      MR. DECATUR:  T-R-E-V-A-L.

20                      MR. DEAN:  Thank you.

21                      MR. ELIAS:  I am just wondering,  
22          you said the blades recently broke; correct?

23                      MR. SMITH:  Yes.

24                      MR. ELIAS:  So what kind of  
25          material are they made out of like?

1                   MR. SMITH: The initial two  
2 turbines that we put in had a steel skeleton  
3 and then over the skeleton was composite  
4 skins. We had used those in an earlier work  
5 that we had done out here a few years ago  
6 with a smaller turbine. As we extended the  
7 turbine, you know, there were some weak  
8 spots at the ends of the blades. We have  
9 replaced those blades with sand cast  
10 aluminum magnesium alloy blades that are  
11 much, much stronger, a little heavier, but  
12 much, much stronger, and have been used on  
13 an earlier version of the turbine itself.

14                   MR. ELIAS: How long were the  
15 blades in before they broke exactly?

16                   MR. SMITH: Well, one was just  
17 in for a day. We put some extreme stresses  
18 on it and within 24, about 36 hours the  
19 blades had broken. The second turbine,  
20 which was delivering electricity through a  
21 generator, ran for about 42 days, and then  
22 at the end of 42 days at a very fast flow  
23 tidal flow, that one broke as well. The  
24 turbine blades are now being changed. So  
25 all these six turbines will have brand new

1 aluminum blades on them.

2 MR. LANGONE: I'm Michael  
3 Langone from The Child School. I would just  
4 like to know how exactly do these turbines  
5 take in energy and form it into electricity  
6 under the water?

7 MR. SMITH: Well, basically it's  
8 the shape of the design of the blades which  
9 rotate. I mean, the flow of the water hits  
10 the blades, the blades turn and rotate and  
11 that translates into a gear box and a  
12 generator. The generator then delivers  
13 electricity through cables to a control box  
14 in our control room here that goes to a grid  
15 box that delivers the electricity to  
16 Gristedes Supermarket. So it is the impact  
17 of the flow on the blades and the part of  
18 the design is a unique blade configuration  
19 to extract energy from the flowing water in  
20 the most efficient manner.

21 MR. DEAN: I think you're going  
22 to have to spell your name for the court  
23 reporter, please.

24 MR. LANGONE: M-I-C-H-A-E-L.

25 SPEAKER: Last name.

1 MR. LANGONE: L-A-N-G-O-N-E.

2 MS. HANDELL: Naomi Handell,  
3 H-A-N-D-E-L-L, U.S. Army Corps of Engineers.  
4 When the turbines broke, did the blades  
5 actually come off or did they just stop  
6 functioning and how soon after they broke  
7 did you realize it and how soon after that  
8 did you have them removed or fixed?

9 MR. SMITH: Well, the first one  
10 we deployed on Monday, December 11, the  
11 second turbine was deployed Tuesday,  
12 December 12. By Tuesday, we had identified  
13 that the blades on the first turbine had  
14 broken and we took the first turbine out of  
15 the water on Tuesday, that same day.

16 MS. HANDELL: They just stopped  
17 or did they break off?

18 MR. SMITH: No. They were  
19 turning very slowly and the blades just, it  
20 just folded over like that, so it didn't  
21 break off, it just folded over. So the  
22 divers went down, looked at it, said they  
23 had broken, and then that very next day we  
24 brought the turbine up. The turbine that is  
25 out there now did the same thing, but it

1 is -- and in the course of turning it got  
2 stuck, so the turbine -- the blades turned  
3 during the ebb tide, when the water is  
4 flowing out, and it's sitting right now so  
5 that when the flood tide comes in, it  
6 doesn't turn at all, it just sits there, but  
7 that will come out on Monday, April 9, or  
8 Tuesday, the 10th. The first thing we will  
9 do is take that turbine out and change the  
10 blades.

11 MR. PETERSEN: What makes tidal  
12 power preferable to wave power?

13 MR. SMITH: They are very  
14 different. Tidal power is driven by the  
15 flow of the currents across the blades.  
16 Wave power basically it's the up and down of  
17 the wave action, again, it's very -- it's  
18 kinetic, but there are three or four  
19 different types of technologies that extract  
20 the up and down motion of the waves into  
21 electricity. So there are a number of  
22 companies who are working on wave powered  
23 technologies. Ours is a current technology.

24 MR. PETERSEN: I had read that  
25 wave power was sometimes too powerful and

1       too inconsistent and for that reason they  
2       now took the wave going out after the wave  
3       crashes on the beach, it surges out, and  
4       then that that was very, very powerful and  
5       very, very constant.

6                   MR. SMITH:  Yes, there are a lot  
7       of --

8                   MR. PETERSEN:  So that would be  
9       an alternative.

10                  MR. SMITH:  Yes.  There are a  
11       lot of advantages to kind of marine power  
12       because it particularly for our technologies  
13       in contrast to solar and wind, our  
14       electricity is predictable.  We know when we  
15       are going to be generating power and  
16       delivering it to a utility.  Wind powered  
17       technologies and solar not so much because  
18       they are dependent on the weather, the wind  
19       and the sun.

20                  MR. DEAN:  Would you please tell  
21       us your name?

22                  MR. PETERSEN:  Morgan Petersen,  
23       P-E-T-E-R-S-E-N.

24                  MR. TWARENSTEIN:  My name is  
25       Asher Twarenstein, A-S-H-E-R T-W-A-R-E-N-

1 S-T-E-I-N, and I want to know how long does  
2 it take for the turbine to generate and how  
3 do they generate?

4 MR. SMITH: Could you say that a  
5 little louder?

6 MR. TWARENSTEIN: Yes. How long  
7 does the turbine take to generate? How long  
8 does it take to generate energy?

9 MR. SMITH: How long does it  
10 take to generate energy?

11 MR. TWARENSTEIN: Yes.

12 MR. SMITH: The energy -- the  
13 amount of energy from the turbine is a  
14 function of the speed of the tides, so what  
15 happens with the turbine is as the tide  
16 comes in and speeds up from a slack tide  
17 when it's not running, it gets to -- out  
18 here you'll see that at a very -- the  
19 fastest it will run at about seven feet per  
20 second, so once it gets to about two and a  
21 half to three feet per second, the turbine  
22 begins to turn, and it will then turn and  
23 deliver more and more electricity -- more  
24 and more power as the speed increases, and  
25 then as the tide drops off, it will again

1       when it gets down to about two and a half to  
2       three feet per second, the turbine stops, so  
3       the turbine generates electricity over about  
4       five and a half hours out of a six and a  
5       half hour tidal cycle.

6                   MR. TWARENSTEIN:  Okay.

7                   MR. CRUZ:  Hi.  My name is  
8       Christian Cruz, a student of The Child  
9       School, and I would just like to ask how  
10      long did it take you to create these turbine  
11      generators?

12                  MR. SMITH:  Well, there's --  
13      there are a lot of aspects to it.  Like I  
14      said, originally at New York University they  
15      spent two to two and a half years of  
16      research and development to initially  
17      develop this technology design.  Our  
18      engineers have been working now for seven  
19      years and we have done field tests of four  
20      different types of turbines, so it's a long,  
21      lengthy process that requires a lot of  
22      technical analysis and engineering.

23                  MR. KAISER:  My name is Lance  
24      Kaiser, it's K-A-I-S-E-R.  My colleague had  
25      a question -- I am with The Child School as

1 well. My colleague had the question about  
2 economic feasibility and I just want to add  
3 a more specific question about the turn-  
4 around time as far as profitability and how  
5 long it takes to pay for itself. Do you  
6 have an estimated time on that?

7 MR. SMITH: We don't yet. I  
8 mean, certainly part of this project is the  
9 economics, the financing, the support and  
10 the economics that will result from this  
11 project and others. We're working with the  
12 Congress like wind to build some incentives  
13 that can support the economics of these  
14 projects certainly early on here to help get  
15 this technology mainstreamed and cost  
16 competitive. We are at the early stages, so  
17 right now it's expensive, like I said, our  
18 corporate job is to bring down the cost so  
19 that this can be applied in a lot of places.

20 MS. EPSTEIN: Good morning.  
21 R.L. Singer, S-I-N-G-E-R, Epstein, E-P as in  
22 Papa S-T-E-I-N. I am by trade a community  
23 information specialist and work primarily  
24 with nonprofit organizations. I am a  
25 participant in the RITE Recreational

1 Resources Study Group. I grew up in North  
2 Queensview, the middle income co-op just  
3 across the river on 34th Avenue in Astoria,  
4 Long Island City, six blocks from Rainey  
5 Park, R-A-I-N-E-Y, on the Queens/East River  
6 Waterfront. Early in my career, Steven Reed  
7 Johnson brought me to Portland, Oregon to  
8 work with The Rain Collective which produces  
9 the monthly Rain Magazine and Rainbook:  
10 Resources for Appropriate Technology,  
11 published by Shocken Books in 1977.

12                   Those of us born at the top of  
13 the baby boom who in our youth were paying  
14 attention to sources of renewable, clean  
15 energy are now turning gray. When I  
16 returned full-time to the family homestead  
17 two, three years ago, one of the first new  
18 things I heard from a neighbor was about the  
19 tidal energy turbines going into the East  
20 River between Rainey Park and Roosevelt  
21 Island. This was thrilling to me. Living  
22 in the neighborhood with Big Allis,  
23 A-L-L-I-S, the Ravenswood Power Plant at  
24 36th Avenue just across from here, there has  
25 always been a concern for clean air and the

1 health of the residents such as the  
2 incidence of asthma and some would say brain  
3 tumors.

4                   The oft quoted statistic is that  
5 60 percent of New York City's energy is  
6 produced by the power plants in Astoria, New  
7 York City. This is, of course, the  
8 neighborhood where last summer, July 2006,  
9 almost 200,000 people experienced the power  
10 blackout and brownout due to what was called  
11 infrastructure problems that this Tidal  
12 Energy Project, quote, unique in the world  
13 is being placed within the footprint of  
14 these power plants is amazing. Verdant  
15 Power is to be commended for its  
16 technological vision and environmental  
17 stewardship. The federal government should  
18 continue to work expeditiously with New York  
19 State and New York City to bring this  
20 project to fruition.

21                   I have a question. How would  
22 the turbines operate during flooding events?

23                   MR. SMITH: The floods really  
24 shouldn't affect the turbines. The turbines  
25 are controlled, so to the extent that the

1 speed of the water would increase, there  
2 would be more power generated, but the  
3 turbines are controlled and should not have  
4 a problem in a flood.

5 MR. EPSTEIN: Thank you.

6 MR. GARE: Ivan Gare, G-A-R-E, a  
7 resident of the Island for 29 years. A  
8 question relating to what you are providing  
9 Gristedes. Just curious, are they paying  
10 for this energy, are they contributing to  
11 the makings of the turbines? That's one  
12 question.

13 MR. SMITH: The -- we're sitting  
14 here with FERC today and the Federal Energy  
15 Regulatory Commission licenses hydropower  
16 facilities in the United States under the  
17 Federal Power Act. So it -- a company like  
18 ours cannot generate and deliver electricity  
19 without a FERC license. Two years ago, we  
20 commissioned the Commissioner or we  
21 submitted a request to the Commissioners of  
22 FERC to consider allowing us to connect for  
23 test and study purposes to show the  
24 technology to deliver the electricity. Part  
25 of the Federal Power Act and the FERC

1 authority is that they cannot impact  
2 interstate commerce. So a part of that is  
3 that the electricity that we are delivering  
4 to Gristedes basically we are not being  
5 reimbursed for. Gristedes is just  
6 reimbursing Con Ed normally as they would,  
7 you know, so there's no -- for our company  
8 there's no economic exchange at all.

9 MR. GARE: I assume there's a  
10 direct relationship to the speed of the  
11 turbine related to the position in the flow  
12 of tide. If I'm correct, the two turbines,  
13 and I noticed when they were being  
14 installed, are relatively close to the  
15 shoreline, which would strike me that it  
16 would interfere with the speed of the  
17 movement of the tide and the turbine. Is  
18 that --

19 MR. SMITH: Yes.

20 MR. GARE: -- valid?

21 MR. SMITH: Yes. This  
22 technology -- one of the aspects of this  
23 technology just like wind is that you have  
24 to characterize the site characteristics  
25 very specifically so that you're getting the

1 most power that you can, so we have got a  
2 staff of five or six people whose job is to  
3 study the flows to position the turbines in  
4 the appropriate place to extract the most  
5 energy that we can from that flow of water,  
6 but the part of what we are studying out  
7 here is how the turbines need and should be  
8 deployed in relation to each other so that a  
9 field is extracting the most power feasible.

10 MR. GARE: Thank you.

11 MS. DeSANTIS: My name is Margo  
12 DeSantis, D-E capital S-A-N-T-I-S. My  
13 question is how do you operate the turbines?  
14 Underneath the ground or something?

15 MR. SMITH: Okay. The way the  
16 turbines operate is all in the design the  
17 engineers have put in place. These turbines  
18 do not have any controls that we, you know,  
19 sit on the shore and control these. We put  
20 them under water and they run on their own,  
21 so they are basically designed to be put in  
22 the water and basically have very few things  
23 that can go wrong with them. So that we  
24 don't have to do anything, they operate  
25 through the flow of the water.

1                   MR. DEAN: Any other questions  
2 before we adjourn this morning's meeting?

3                   I just want to remind you that  
4 your written comments are due to the  
5 Secretary of the Commission by April 30,  
6 2007. Transcripts of this meeting will be  
7 available on the Commission's online records  
8 information system called eLibrary no sooner  
9 than ten days from now. You can access  
10 eLibrary from the Commission's website at  
11 [www.ferc.gov](http://www.ferc.gov). I want to thank you for  
12 attending and participating in the Roosevelt  
13 Island Tidal Energy Project Scoping Meeting.  
14 This meeting is adjourned.

15                   (Time noted: 11:10 a.m.)

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C E R T I F I C A T I O N

I, ROBIN LaFemina, a Certified  
LiveNote Reporter and Notary Public, within  
and for the State of New York, do hereby  
certify that I reported the above proceedings  
on March 29, 2007, and that this is an  
accurate transcription of these proceedings.

IN WITNESS WHEREOF, I have hereunto  
set my hand this            day of            , 2007.

ROBIN LaFEMINA