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FEDERAL ENERGY REGULATORY COMMISSION  
DAM SAFETY CONFERENCE

Ensuring Dam Safety in the United States

- Commission Chairman Joseph T. Kelliher
- Commissioner Suedeen G. Kelly
- Commissioner Marc Spitzer
- Commissioner Philip D. Moeller

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REPORTED BY:  
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## 1 P R O C E E D I N G S

2 CHAIRMAN KELLIHER: Good morning, welcome to the  
3 Commission's Technical Conference on Dam Safety. And  
4 before we get any kind of opening remarks I wanted to start  
5 by giving some awards to a Commission staff member, two  
6 awards, actually, a commission staff member who is very  
7 well deserving, namely the Career Service Award and the  
8 Merit Award, and that is, correct me if I am wrong, Vitold  
9 Koplakauski.

10 MR. KOPLAKAUSKI: Very good, sir.

11 CHAIRMAN KELLIHER: Thank you. He was coaching  
12 me earlier.

13 If you will stand here, I am going to embarrass  
14 you slightly. But, Vitold, otherwise known as Vit, is  
15 retiring from the Office of Energy Projects, the Division  
16 of Dam Safety and Inspection. He has been working in the  
17 Chicago Regional Office, and that Vit has served in public  
18 service, federal service in the United States, dedicated to  
19 protecting the American people, for 32 years in both the  
20 U.S. Army and in the FERC Dam Safety Program.

21 Vit was born in Poland, we were just talking  
22 about the Napoleonic battlefields, and which one we were  
23 in, Prussia or Poland, he was correcting me, and I am  
24 impressed with that. But, Vit was born in Poland, and he  
25 lost his father, who was imprisoned by the Russians and

1 disappeared, but Vit and his mother became displaced  
2 persons. They came to the United States by way of  
3 Kazakhstan, Iran, Lebanon and England. Vit had quite an  
4 experience.

5 He earned his U.S. citizenship while serving in  
6 the U.S. Army. He earned his civil engineering degree at  
7 night school, and joined FERC in 1978 as a Dam Safety  
8 Engineer, and he has risen to be a Senior Civil Engineer.  
9 Vit was a major contributor to the development of the  
10 Emergency Action Plan at FERC, which are widely admired by  
11 both federal dam safety experts and other agencies, as well  
12 as international dam safety experts. And Vit is not only  
13 an excellent dam safety engineer, he has also proven to be  
14 an excellent teacher, and he has been a mentor and a coach  
15 to young engineers at the Commission.

16 That has always been my perception of one of the  
17 strengths of the Commission. We have a really nice mix of  
18 veterans and young employees, and that mix really is a  
19 great source of strength, and Vit is a fine example of  
20 that.

21 So you have certainly earned both the Career  
22 Service Award and the Merit Award, and I would like to  
23 present them to you today. Congratulations.

24 (Applause.)

25 MR. KOPLAKAUSKI: Thank you, sir.

1                   COMMISSIONER MOELLER: Thank you, Mr. Chairman.  
2           Over the last year I have had the pleasure of visiting our  
3           offices in Chicago, New York and San Francisco that focus  
4           on dam safety. We also have them in Portland and Atlanta.  
5           And the welcome I was given was thorough, the graciousness  
6           of the staff was memorable, and it was a heartening  
7           experience to see these dedicated federal employees in our  
8           Regional offices who focus on the very nature of today's  
9           conference, and I hope that although they are sometimes out  
10          of sight, they are never out of mind.

11                   CHAIRMAN KELLIHER: I have a question for you.  
12          When you were in the Regional Offices, is there a picture  
13          of us on the wall or is it a big picture of Mark Robinson?

14                   COMMISSIONER MOELLER: It is Mark Robinson.

15                   CHAIRMAN KELLIHER: I thought they might be able  
16          to turn it around when we are visiting.

17                   Okay, with that, it is Friday morning, so let me  
18          make an opening comment and turn to my colleagues and then  
19          we can get to business. I want to welcome everyone to this  
20          Technical Conference.

21                   As everyone knows, the Federal Energy Regulatory  
22          Commission has a number of core missions. Many of them are  
23          widely recognized and publically recognized, but one is  
24          not. The missions that really are generally associated  
25          with the Commission are the traditional ones, economic

1 regulation, infrastructure development, grid reliability  
2 and enforcement, those latter two being newer missions, but  
3 widely recognized.

4 But we are really here today to talk about a  
5 fifth mission that is not generally recognized, at least by  
6 the public, and that is our safety mission, that FERC is a  
7 safety agency primarily in two contexts, in hydropower  
8 operation and liquified natural gas project operations, and  
9 that we also have a safety function during infrastructure  
10 construction. But dam safety is one of our most important  
11 missions and one of our oldest.

12 FERC established its Dam Safety Program over  
13 40 years ago in 1960, and since has developed into a world  
14 class program, a model for dam safety programs elsewhere in  
15 the United States and abroad. And while the FERC Dam  
16 Safety Program is not widely recognized by the general  
17 public, it is recognized and praised by national and  
18 international dam safety authorities.

19 Once FERC licenses a hydropower project and it  
20 becomes operational, our primary duty is on ensuring safe  
21 operations and protecting the public, and we discharge that  
22 duty through our Dam Safety Program by assessing the  
23 risk posed by various projects, by requiring the  
24 development of Emergency Action Plans and by requiring  
25 drills of those plans.

1           Now, it is necessary for the licensee and the  
2 community to be prepared to act in the unlikely event that  
3 there is a project failure and the public is put in harm's  
4 way.

5           My first visit, my first trip after becoming  
6 Commissioner five years ago, was a tour of the Saluda  
7 Hydropower Project outside of Columbia, South Carolina, and  
8 I joined Chairman Pat Wood on this trip, and we inspected  
9 the progress made on building a new concrete dam needed to  
10 assure the safety of the Saluda project.

11           The Saluda project is perhaps the best example  
12 of FERC's commitment to dam safety. There it was  
13 discovered that an earthquake fault ran directly under a  
14 large earthen dam, and that the loss of structural  
15 integrity from an earthquake threatened 100,000 residents,  
16 I think the attorneys in the analysis was that 100,000  
17 people would be affected, I think badly affected. So, that  
18 was a very significant risk, and FERC, assessing that risk,  
19 presented the licensee with a simple choice, they could  
20 either remove the earthen dam, carefully lowering the water  
21 levels, turning Lake Murray into Valley Murray, or they  
22 could install a new concrete dam directly behind the  
23 existing earthen dam, and from our point of view, one of  
24 these two actions was necessary to assure safety, and the  
25 licensee chose to build a new concrete back up dam.

1           I think also the penalties we imposed after the  
2 failure of the Taum Sauk project also showed the need of  
3 dam safety. There a project failed in part due to the  
4 failure of the licensee to accurately identify and report  
5 conditions affecting the safety of the dam and failure to  
6 take the necessary steps to correct the instrumentation  
7 defects.

8           I should note that the Taum Sauk project,  
9 however, is being reconstructed and the licensee is  
10 committed, has demonstrated a genuine commitment to  
11 building a world class hydropower project.

12           Now, to assure dam safety in the United States  
13 it requires strong dam safety programs at both the federal  
14 and the state level, and as FERC regulates 2500 dams,  
15 states are responsible for a far greater number, exceeding  
16 80,000 dams. There are also many federal hydropower  
17 projects operated by other federal agencies.

18           So, assuring dam safety in these various  
19 projects requires close collaboration between FERC and  
20 other federal and state agencies, and I think FERC has done  
21 a great deal to improve the dam safety programs of other  
22 agencies.

23           The purpose of this Technical Conference is to  
24 focus on the FERC Dam Safety Program, to review the  
25 progress that has been made in this area, and also to

1 consider how FERC is working with states and other federal  
2 agencies to improve dam safety across the country. And  
3 that given the importance of this mission and the high  
4 quality of FERC regulation in this area, I think the FERC  
5 Dam Safety Program deserves greater recognition.

6 And with that, colleagues, any comments?  
7 Commissioner Kelly?

8 COMMISSIONER KELLY: I just want to thank you,  
9 Mr. Chairman, for taking this opportunity to put the  
10 spotlight on this significant, successful and unsung  
11 program, and also I appreciate the opportunity to get to  
12 meet the people who are involved in this effort, both  
13 governmental and in the private sector. Thank you.

14 CHAIRMAN KELLIHER: Thank you.  
15 Comments, Mr. Spitzer?

16 COMMISSIONER SPITZER: Thank you, Mr. Chairman.  
17 I, too, am grateful that you have shown the spotlight on  
18 this area for a couple reasons. The first has already been  
19 said, you have had a successful program but not much  
20 notice. The analogy is to the baseball umpire who calls a  
21 game very well, at the end of nine innings, no episodes,  
22 and it goes unreported, and it is important that the  
23 success of this program be noted. For the second reason,  
24 the cooperation with the state safety programs is, can  
25 benefit from a spotlight on this issue, and then liaison

1 with local law enforcement, and I am talking about the  
2 county sheriffs and the city police forces who participate  
3 in emergency response procedures, again having more  
4 attention shown to this issue I think will facilitate that  
5 cooperation, and our mutual constituents with the state and  
6 local officials will benefit greatly from that cooperation.

7 COMMISSIONER MOELLER: Thank you, Mr. Chairman.

8 As you know, I hail from Washington State, which  
9 is what I consider the home of hydropower, the ultimate  
10 renewable resource, and I am particularly impressed that my  
11 two colleagues from the more arid areas are here and  
12 showing their interest today.

13 This, as I will echo your comments, all three of  
14 you, although may be unsung, obviously a part of our agency  
15 mission that is critical, and yet I am very aware of the  
16 role of states, having been a legislative staffer and  
17 worked on state legislation pertaining to dam safety  
18 inspection, so, thank you, Mr. Chairman, for making this a  
19 priority, and to the staff for setting it up, and  
20 particularly for our panelists for traveling here to focus  
21 the spotlight on this critical and happily not too public  
22 role of our regulation.

23 CHAIRMAN KELLIHER: Why don't I turn this to  
24 John Katz now, he will be facilitator of this meeting. He  
25 is the bad guy, I think that means he can cut people off

1 when they have exceeded their time.

2 MR. KATZ: Only when necessary. I have never  
3 known an engineer to go on too greatly.

4 As a first thing I want to do is just a very  
5 brief review of the agenda. If anyone does not have an  
6 agenda, there are some on the table outside. We are going  
7 to start with a presentation by Dan Mahoney, and the  
8 Commissioners will then have a chance to ask him questions.  
9 Following that we are going to have two panels from experts  
10 outside the Commission, and we will follow that by a  
11 wrapping up with a consensus on action items.

12 I will say by way of introduction, I think it is  
13 true what the Chairman and the Commissioners have said, dam  
14 safety issues don't often come before the Commission,  
15 although they do arise reasonably often, and I think the  
16 reason that is, is not only the dedication and hard work of  
17 Dan's staff and Dan himself, and it is great to see Gus  
18 Tumeson in the audience who held Dan's position with  
19 distinction before Dan held it, but there also seems to be  
20 a consensus out there in the regulated community, that as  
21 one of the Commission's lawyers we deal with cases brought  
22 before the Commission when there is conflict.

23 It seems as though in dam safety, as in almost  
24 every case, the regulated community, the state regulators,  
25 as Commissioner Spitzer said, the local community, the

1 environmental folks who care about impact on the  
2 environment, all when dam safety arises know that human  
3 safety and the safety of the environment comes first and  
4 they move quickly and effectively to resolve the problem.  
5 That's one reason why it is perhaps a more hidden  
6 discipline than some other things that the Commission did.

7 And now I want to turn for an overview of the  
8 FERC Dam Safety Program to Dan Mahoney. Dan is the  
9 Director of the Division of Dam Safety Inspections. I know  
10 I don't need to say more than that, but Dan has been with  
11 the Commission for 27 years, 25 of those in dam safety.  
12 Before he was at the Commission he was a project engineer  
13 for water resource projects in the U.S. Army Corps of  
14 Engineers, in the Baltimore District. He received his BS  
15 in Civil Engineering from Virginia Tech and a Master's  
16 Degree in Water Resources and Environmental Engineering  
17 from Johns Hopkins. Dan.

18 MR. MAHONEY: Thank you. Okay, good morning. I  
19 am going to take a couple of minutes and just give a brief  
20 overview of the FERC Dam Safety Program. Hopefully what I  
21 want to do is really get everyone set up for the really  
22 interesting panels that we have shortly.

23 The Dam Safety Program is primary carried out by  
24 FERC engineers in the five regional offices located across  
25 the United States. The Regional Offices are in New York

1 City, Atlanta, Chicago, San Francisco and Portland, Oregon.  
2 I would like to take a moment and introduce the Regional  
3 Engineers for our regions. If they would stand, please.

4 Okay, starting from that side, we have Peter  
5 Volare who is the Regional Engineer for our New York  
6 Regional Office; Pat Regan, who is the Regional Engineer  
7 from Portland; Charlie Wagner is the Regional Engineer for  
8 the Atlanta Regional Office; Betty Hardin is in the Chicago  
9 Region, and Ling Lee is the Deputy in San Francisco who is  
10 sitting in for Ronald Diaz, who is taking a well deserved  
11 vacation. Thank you.

12 Okay, our program covers dams in the U.S. that  
13 have non-federal hydropower projects. That is about 1700  
14 projects, and just over 2500 dams. The distribution of our  
15 dams is shown here.

16 Of the 2500 dams, approximately 1000 are what we  
17 call significant or high hazard potential, that leaves  
18 about 1500 of our low hazard potential dams.

19 Our current Dam Safety Program started in 1981  
20 with the issuance of Order 122. Order 122 became Part 12  
21 of the Commission's Regulations. Like most federal  
22 agencies, FERC's program was influenced very significantly  
23 by the series of infamous dam failures that occurred in the  
24 United States throughout the 1970s. They are shown here,  
25 Buffalo Creek, Boulden, Teton Dam, and then Toccoa Falls in

1 Georgia, that have you may have heard of.

2 The public outcry against these dam failures  
3 basically prompted the first federal guidelines for dam  
4 safety. That effort was initiated by a directive from  
5 President Carter in 1977 that federal guidelines for dam  
6 safety be developed.

7 Part 12 of our Commission's Regulations provides  
8 for comprehensive dam safety oversight throughout the  
9 entire life of a hydropower project. The important  
10 components of Part 12 are, reporting of all conditions  
11 affecting the safety of the project, emergency action  
12 plans, periodic inspections by independent engineering  
13 consultants, construction quality control program, the  
14 requirement for a surveillance and monitoring program for  
15 their projects, and then also the annual testing of  
16 spillway gates.

17 In providing oversight throughout the entire  
18 project, that includes the design phase, the construction  
19 phase and the operation phase.

20 During the design phase we review the  
21 preliminary design as part of the information that is  
22 submitted as part of the application for license. Once the  
23 project is licensed, we review the final design and then  
24 the plans and specifications for the construction prior to  
25 authorizing construction of the project.

1           If it is a new dam or there is some kind of a  
2 complex technical issue involved with any construction, we  
3 will require the licensee to convene a board of engineering  
4 consultants, that is basically expert engineering  
5 consultants to oversee every phase of it from the design  
6 through the construction of the project. And then finally,  
7 we require the licensee to develop a quality control and  
8 inspection program to be put in place during the  
9 construction.

10           During the construction phase we will have the  
11 board of consultants, if one was convened. We have the  
12 licensee's quality control program, which basically just  
13 makes sure that the project is constructed as it was  
14 designed. We do periodic staff inspections, and we also  
15 have the requirement for a Temporary Emergency Action Plan  
16 to be in place during the construction.

17           Once the project goes into operation it really  
18 switches just to, you know, making sure that the project  
19 performs adequately. The first line is the Licensee  
20 Owner's Inspection Program. We do periodic FERC  
21 inspections annually at all of our significant and high  
22 hazard potential dams. Our low hazard dams are inspected  
23 by FERC staff on a three-year frequency. Also, we have the  
24 requirement for a five-year inspection, every five years  
25 for an independent engineering consultant to do an

1 inspection, a complete and basically re-evaluation of the  
2 project to make sure everything is the same or identify any  
3 changes.

4 Again, our Emergency Action Plan requirement is  
5 in place during the operation, and the rest of Part 12 is  
6 also in place, including what we consider a very important  
7 one, that is the requirement to self-report any conditions  
8 affecting the safety of the project that the owner sees out  
9 in the field.

10 One of the, I guess, challenges that everybody  
11 in dam safety is dealing with is the aging infrastructure,  
12 and that is the dams are basically getting older. Just  
13 because a dam is old does not mean it is not safe. What it  
14 does mean though, is that many of the older dams do require  
15 a higher level of monitoring and maintenance, and so  
16 everyone really has to be, you know, the effort probably  
17 will increase as the dams get older, and that is just the  
18 challenge that the entire dam safety community is facing.

19 CHAIRMAN KELLIHER: I have just one question.  
20 Is that breakdown roughly the same for state dams or are  
21 state dams younger or are they the same vintage?

22 MR. MAHONEY: I think that FERC dams is pretty  
23 much the norm out there, that is my impression, I don't  
24 know, maybe some of the panelists can shed some light on  
25 that a little later.

1                   CHAIRMAN KELLIHER: Thank you.

2                   MR. MAHONEY: A very important characteristic  
3 that a dam safety program must have, okay, there is a very  
4 important characteristic that a dam safety program must  
5 have to be and remain effective. Since 1981 the FERC's Dam  
6 Safety Program's leadership understood this and they have  
7 made this a basic characteristic of our program, or a basic  
8 tenet of our program, and that is that a dam safety program  
9 must constantly change and improve if it is going to remain  
10 effective.

11                   There are several reasons that this is true. We  
12 continually have to learn and adopt the new available  
13 technologies. We have to adjust to the improvements and  
14 the predictions of the different loading conditions, which  
15 is as we improve in the seismic predictions and extreme  
16 flood predictions, we have to really be open to those kind  
17 of new ideas. And we constantly have to find more  
18 effective ways to inspect, monitor and analyze dams.

19                   A good example of this is risk informed decision  
20 making. The dam safety community is slowly discovering the  
21 benefits of risk informed decision making.

22                   There is a track record being developed that  
23 using a risk-type approach provides for better dam safety  
24 decisions and safer dams. The dam safety community is  
25 very, is slowly getting their arms around this, it is kind

1 of a very involved technology, but FERC is kind of sitting  
2 here, you know, exploring how, the different ways it can be  
3 applied to the regulatory environment.

4 Okay, I just want to mention a few of the recent  
5 changes.

6 CHAIRMAN KELLIHER: Dan, I hate to interrupt  
7 you, but when you say risk informed decision making, are  
8 you talking about probabilistic risk assessment?

9 MR. MAHONEY: That is a part of it, and it is  
10 one of the parts that the dam safety community is having  
11 the toughest time with, especially in the area of hydraulic  
12 loading. It is, you know, figuring out probabilities for  
13 extreme floods. As an industry we really haven't gotten a  
14 handle on that yet. It is very easy to, you know, predict,  
15 draw a curve out to the 500-year flood level, but the kind  
16 of floods that we use for design criteria could be over the  
17 1 in 10,000, and it is a little harder. I am not sure we  
18 are there yet.

19 CHAIRMAN KELLIHER: So it is hard, I mean, it is  
20 used in the nuclear context, but it is easier to calculate  
21 risk in the nuclear context than in hydro because of that?

22 MR. MAHONEY: Well, the only thing I can say is  
23 that the nuclear industry has been using risk assessment  
24 for a long time, and they have got some developed  
25 procedures and it is actually part of their regulations.

1       Actually, that is one of the things we are looking at.  
2       They don't have to deal with floods as much as we do --

3                   CHAIRMAN KELLIHER:   Right.

4                   MR. MAHONEY:   -- but it is sort of, I think  
5       there is ways to do it, and there are some agencies that  
6       are making advances in this area and that are getting  
7       comfortable with that sort of thing, but it is just  
8       something that we are going to watch.

9                   CHAIRMAN KELLIHER:   It looks beyond a 100-year  
10      flood period, it looks at 500 years, or longer?

11                  MR. MAHONEY:   Well, the required federal  
12      guidelines for a high hazard project is the probable  
13      maximum flood, and routinely those probable maximum floods  
14      are out there on a 10 to the minus 6, or 10 to the minus 5,  
15      or 10 to minus 6, way beyond the 500-year or the 1000-year  
16      flood, and it is that projecting of the curve out to that  
17      extent, there is not a lot of confidence out there that  
18      that can be done accurately.

19                  COMMISSIONER MOELLER:   But just to clarify, Dan,  
20      when you talk about that terminology, I think there is  
21      often a misperception, probably not in the hydro safety  
22      community, but a 500-year flood is a 1 in 500 chance of it  
23      happening every year, it is not a flood that happens once  
24      every 500 years; correct?

25                  MR. MAHONEY:   Correct.

1                   COMMISSIONER MOELLER: That is, I think, an  
2 important distinction that sometimes the public loses.

3                   MR. MAHONEY: Okay, I guess from where we are  
4 sitting, you know, the 100-year flood is, you know,  
5 basically can happen anytime, I mean, that is how we treat  
6 it. A 500-year flood, they do happen. I mean, you know,  
7 in the past couple years we saw, I think they are  
8 estimating some of the events up in New England this past  
9 two years as up in the 500-year level. So, I mean, and we  
10 use it as kind of a guide to, if we have to fix a dam, how  
11 urgently, how quickly we should fix it with respect to  
12 those kind of numbers.

13                  COMMISSIONER KELLY: And when you say 10 to the  
14 minus 5, are you saying the 1 in 10,000 year flood?

15                  MR. MAHONEY: 1 in 10,000, I think, is 10 to the  
16 minus 4, so 10 to the minus 5 is 1 in 100,000.

17                  COMMISSIONER KELLY: So you are looking at that  
18 as a potential risk measurement?

19                  MR. MAHONEY: Well, that is the, our criteria  
20 right now is the PMF, and that is really the upper bounds  
21 that we analyze our projects with, and as it turns out, as  
22 we learn more about it, those kinds of probabilities are up  
23 there in the 10 to the minus fifth, and 10 to the minus  
24 sixth on some of them, so they are pretty improbable.

25                  COMMISSIONER KELLY: And so then the question is

1           how do you deal with those probabilities?

2                       MR. MAHONEY: Well, no, the question is whether  
3           or not it is worth, I mean, you have got a certain amount  
4           of risk involved in a project and, you know, so you look at  
5           the risk posed to the project by 10 to the minus 6  
6           probability, and that is really the major advantage of risk  
7           assessment, because a risk assessment takes you through the  
8           numbers and it will show you that the real risk of this  
9           project is something that is associated with the normal  
10          loading condition that happens every day, and, you know, so  
11          it directs the few dam safety dollars that are available on  
12          the really important projects sometimes.

13                      COMMISSIONER KELLY: Thank you.

14                      MR. MAHONEY: Okay. I just wanted to mention a  
15          few of the changes, the recent, well, not so recent, but  
16          the changes that we have made to our Dam Safety Program  
17          over the years that we feel were improvements, and that is  
18          the functional exercise of the Emergency Action Plans.  
19          FERC has adopted Potential Failure Modes Analysis  
20          requirements as part of our periodic inspection.

21                      We have developed a program where we basically  
22          targeted the surveillance and performance monitoring plans  
23          to the potential failure modes of the project that has been  
24          identified as part of the analysis. And then our most  
25          recent one is that we are emphasizing the importance of the

1 Owners Dam Safety Program.

2 My last slide is just going to run-down a couple  
3 of the existing collaboration and cooperation that we do  
4 with the states. We try to basically coordinate all of our  
5 dam safety activities with the state offices. We routinely  
6 invite a State Engineer on all of our inspections. We have  
7 no cost training available at any of these FERC workshops  
8 that we put on.

9 We do spend some effort coordinating and  
10 collaborating with the states on specific dam safety  
11 issues, and we find that this is very helpful in cases  
12 where a state has state legislation regarding FERC  
13 projects, we find that if we work closely with the state we  
14 can avoid the, you know, the question of dual jurisdiction,  
15 and things like that, and at the same time not task the  
16 licensee with having to deal with two different groups.

17 And then our last bullet describes a new  
18 training initiative that we started last year where we send  
19 an engineer to the state dam safety office and conduct a  
20 day's training in some kind of technical matter. One of  
21 the problems that the states have sometimes is that they  
22 can't travel out of state, there is restrictions on them,  
23 so we figured we would take the training to them, and we  
24 did about four last year and they turned out very  
25 successful, and we hope to do some more this year.

1                   That is all I have, and I will answer questions.

2                   MR. KATZ: Commissioners, Mr. Chairman, if you  
3 have any questions for Dan, this is your opportunity.

4                   CHAIRMAN KELLIHER: Mark, do you have any  
5 questions?

6                   COMMISSIONER SPITZER: I guess I would ask if  
7 there is, on the positive side, any state programs that you  
8 find particularly helpful, I know states have challenges  
9 particularly in budgets, and to the extent you don't  
10 re-invent the wheel, are there any state programs that you  
11 may find particularly noteworthy that might be able to  
12 provide assistance to their sister jurisdictions?

13                  MR. MAHONEY: At the risk of making some of the  
14 other states mad at me, no, seriously, the State of  
15 California has a very well developed dam safety program,  
16 actually, one of the famous dam failures is St. Francis  
17 that you might have heard about which prompted state  
18 legislation back in, that was like in the late 1800s, so  
19 they were like the first state dam safety program.

20                  David Gutierrez can speak to this, but they have  
21 a good program.

22                  COMMISSIONER KELLY: Dan, you mentioned that  
23 there are high hazard and low hazard dams, and that you use  
24 that classification I suspect for a variety of reasons, one  
25 is the frequency of inspections, and how do you make that

1 determination?

2 MR. MAHONEY: The hazard rating potential is  
3 determined on a project specific basis where we do the  
4 necessary steps to make sure that failure of the structure,  
5 or actually what the effects of the failure of the  
6 structure does. And most times we will have a dam break  
7 analysis in which we will do a theoretical dam break and we  
8 will see what a dam break, how it would affect the  
9 downstream area, and, you know, that kind of drives what  
10 criteria we use to measure it.

11 Some dams, a lot of our low hazard dams, that  
12 can be accomplished just by an inspection. There are some  
13 dams that there is just absolutely nothing that, you know,  
14 any kind of development downstream, so you don't need any  
15 detailed analysis for that.

16 COMMISSIONER KELLY: So the things that you  
17 would look at is the amount of water that is impounded by  
18 the dam and the downstream geography or --

19 MR. MAHONEY: Right.

20 COMMISSIONER KELLY: -- who is residing  
21 downstream, what is growing downstream?

22 MR. MAHONEY: Right, I guess the big keys are,  
23 number one, the height of the dam, the size of the  
24 reservoir, and then what is downstream, you know, what the  
25 development is downstream, and in some cases it could be a

1 small dam but the development is just right at river's  
2 edge, I mean, all of that stuff is, it comes together and  
3 it is all considered.

4 MR. ROBINSON: One of the ways that we can look  
5 at this is that the dam classification can change without  
6 the dam changing at all. If somebody develops something  
7 downstream some day that wasn't there before, it can go  
8 from being a low hazard to a significant or high hazard dam  
9 because of those activities, not because the dam is any  
10 less safe than it was before, but just because of somebody  
11 moving in.

12 COMMISSIONER KELLY: I think that is a good  
13 point to make. It doesn't, the hazard rating of the dam  
14 doesn't have to do with the safety of the structure.

15 MR. ROBINSON: Right, exactly.

16 CHAIRMAN KELLIHER: If there is downstream  
17 development, is it our job to identify that and then  
18 reclassify, or is it the licensee's duty to inform us about  
19 the downstream development?

20 MR. ROBINSON: I think the licensee has a duty  
21 to inform us, but ultimately we classify the structure.

22 MR. MAHONEY: On our high and significant  
23 hazards it is not as important, but on low hazard dams we  
24 require annually for anybody with a low hazard dam to  
25 basically certify to us that we, that nothing has changed

1 in the last year and that it is still a low hazard.

2 Now, a couple years ago we kind of focused on  
3 this and, you know, with low hazard projects it was a  
4 tendency to, well, it is a low hazard project so let's just  
5 review the inspection. But we refocussed on the fact that  
6 the most important thing in the low hazard inspection is to  
7 confirm that it is still low hazard, and that is what we  
8 have been doing over the last couple years.

9 CHAIRMAN KELLIHER: And that is a standard  
10 question during a low hazard inspection, is it still a low  
11 hazard project?

12 MR. MAHONEY: Absolutely.

13 CHAIRMAN KELLIHER: Does high hazard mean human  
14 life is threatened, does it mean property, I mean, a  
15 certain number of human lives --

16 MR. MAHONEY: Okay, it is pretty  
17 straightforward. A high hazard dam means that there will  
18 be probable loss of life in the event of a failure.  
19 Significant would be property damage, there would be  
20 property damage, and then low hazard would be basically no  
21 hazard to life or property downstream.

22 MR. ROBINSON: Dan, just one thing. Can you  
23 spend maybe 30 seconds telling all of us exactly how the  
24 identification of the PMF, what that number, the  
25 significance of identifying that number, how that

1 translates to the actual dam structures, the costs  
2 associated with them? Sometimes people will focus just on  
3 the number and they forget those things really do have an  
4 impact on what happens at the dam.

5 MR. MAHONEY: Right. Okay. The probable  
6 maximum flood, the PMF, is basically the maximum flood that  
7 a high hazard dam would have to pass. The opportunity  
8 exists, if the licensee or the dam owners can show us that  
9 the dam could fail at floods less than a PMF and not  
10 constitute a hazard to life or property, then we accept  
11 something less than the PMF. And the way that would come  
12 about is basically the PMF is such an extreme storm that  
13 there are a lot of cases where any kind of development that  
14 was the basis for the high hazard potential would be  
15 inundated already, just from the natural flood and, you  
16 know, all the people are out of there and the houses are  
17 all inundated already. So in cases like that we wouldn't  
18 require the owner to spend, you know, because a lot of  
19 times modifying a dam to pass a PMF is a substantial cost,  
20 and, you know, they do have that option.

21 MR. ROBINSON: Those numbers can then translate  
22 directly into like the size of the gate structure or the  
23 size of the spillway, and any modifications to increase  
24 those sizes can have tremendous costs in terms of dam  
25 remediation.

1           MR. MAHONEY: That is right, it is pretty  
2 expensive to add a spillway to an existing dam, add  
3 spillway capacity.

4           CHAIRMAN KELLIHER: Now, at FERC we have a  
5 variety of licensees they are not all utility companies  
6 are, there are aluminum companies, paper companies and  
7 manufacturing companies. Then there are small licensees  
8 whose means might be limited. If we had a high hazard  
9 project where the licensee is a small company or  
10 individual, what happens if we require certain improvements  
11 to assure dam safety and they plead lack of resources?

12           MR. MAHONEY: We haven't really come up against  
13 that. We have had some cases where it is a, you know, they  
14 were a very small licensee but, you know, they just didn't  
15 want to do the fix, and there has been the case where we  
16 basically went, took them to civil court and basically he  
17 was forced to make the modifications.

18           We try, you know, we do, that is one of the  
19 things we deal with. We have a lot of what we call the mom  
20 and pop operations, and we try to, you know, give them as  
21 much help as possible, for example on the Potential Failure  
22 Modes Analysis, we would offer to be the facilitator for  
23 the PFMA and try to minimize the expenses for that, so we  
24 have got things in place for that sort of thing.

25           CHAIRMAN KELLIHER: So that is where we might

1 provide more help than for a larger licensee, we might help  
2 them in the analysis, but it doesn't mean that we don't  
3 assure dam safety of those projects?

4 MR. MAHONEY: Right, they are pretty much held  
5 to the same standards.

6 CHAIRMAN KELLIHER: Well, but we just haven't  
7 confronted that dilemma where a certain individual --

8 MR. MAHONEY: You know, I can't think of a case  
9 where we couldn't do a dam fix --

10 MR. ROBINSON: We have had a couple of  
11 historically creative situations where we have had to come  
12 in and help and find ways and look at opportunities to make  
13 it happen, but ultimately the objective is to make sure  
14 that they are -- that the dam, irrespective of who the  
15 licensee is, is held to exactly the same standards.

16 MR. KATZ: You know, what happens is usually we  
17 talk and usually Dan's folks and Mark's folks are able to  
18 work something out, because I think essentially nobody, no  
19 matter what size of the business, wants to be a headline  
20 that they are refusing to protect the public or protect  
21 property below their dam, so usually these things are able  
22 to be worked out.

23 CHAIRMAN KELLIHER: That is the difference  
24 between federal and state, or at least FERC regulated  
25 projects in the state or projects under state jurisdiction

1 is someone can't just walk away from a FERC project, they  
2 are a licensee until we accept a surrender, so where as I  
3 think, aren't there orphan projects in the state's domain  
4 where it is not clear who the owner is or the owner has  
5 actually abandoned the project?

6 MR. ROBINSON: Unfortunately I think we have had  
7 a couple of those as well, and we they have gotten really  
8 creative, but in all those instances we have found a way to  
9 make sure the public is protected and that the dam  
10 maintains its security and safety.

11 MR. KATZ: And those sometimes are examples  
12 where we work with the state programs where there is a FERC  
13 licensee that is no longer willing to do the job, and we  
14 have to on some occasions to do a successful hand off to  
15 the state regulators.

16 CHAIRMAN KELLIHER: Actually I remember some of  
17 those cases.

18 MR. ROBINSON: Actually we took one as well,  
19 that goes back to about 1985.

20 COMMISSIONER MOELLER: I was just kind of  
21 wondering general trends that may concern you or maybe they  
22 don't concern you in terms of where dam safety is going  
23 regardless of whether it is our jurisdiction or the  
24 state's, not to point out a trend, but what happened at  
25 Taum Sauk was that despite regulation someone changed

1 measurement equipment that then led to failure, not at all  
2 implying that that is a trend, but are there things that,  
3 as you look forward we should have a little bit of concern  
4 about?

5 MR. MAHONEY: Okay, just for Taum Sauk I guess  
6 one of the, we always do an extensive investigation after  
7 that, and at Taum Sauk we basically know exactly what  
8 happened, you know, maybe it could have been predicted, but  
9 what we, we use that information to make sure that it can't  
10 happen anymore, and that is basically the new project that  
11 they are putting out there basically answers all those  
12 questions.

13 A trend in dam safety that I have some concerns  
14 about is training good dam safety engineers. My generation  
15 had the benefit of going through the era where we designed  
16 dams, and we had design experience in all the construction  
17 plans. The new engineers coming out of college now really  
18 are just, they get to see major remediation sometimes but  
19 there is not too much design work coming down, so we have  
20 to find other ways to get them this dam safety experience  
21 and that is going to be focus in the future.

22 COMMISSIONER MOELLER: So we need to build some  
23 more dams.

24 MR. MAHONEY: Yes, we do.

25 COMMISSIONER KELLY: There are some other

1 countries that do.

2 CHAIRMAN KELLIHER: Any other questions? John,  
3 do you have any comments?

4 MR. KATZ: No, I think if there are no more  
5 questions we can move ahead into our first panel.

6 Folks of the first panel can come up and get  
7 seated, please.

8 Our first panel is going to discuss the major  
9 components of the FERC Dam Safety Program, including the  
10 important parts of a good program, the Emergency Action  
11 Plan Program, and some of the things that Dan has been  
12 discussing, dam site security.

13 And, Natalie, what do I need to do for Joe  
14 Ehasz?

15 NATALIE: You just need to leave that microphone  
16 on, and he should be on the phone.

17 MR. KATZ: Joe, can you hear us?

18 MR. EHASZ: I sure can.

19 MR. KATZ: Great. Joe, I am going to run  
20 through a brief biography of the panelists, and then we  
21 will get started.

22 Joe Ehasz, whose chair you see over there, is  
23 not with us in person who is good enough to appear  
24 notwithstanding some family matters that he had to take  
25 care of.

1 Joe is the vice president of the Washington  
2 Division of URS Corporation, and is program manager of the  
3 Water Resources Hydroelectric program. He has over  
4 40 years experience on levees, dams, reservoirs and  
5 hydroelectric projects. He has inspected over 50 dams as  
6 the Commission's Part 12 inspector, and he chairs the  
7 Earthquake Committee on Dam Design of the U.S .Society on  
8 Dams. He graduated Rutgers with a bachelor's and master's  
9 degree in civil engineering. He is a licensed professional  
10 engineer in 30 states.

11 Our next panelist is Hal Dalson. He is the  
12 Regulatory Security Manager for the Consumers Energy  
13 Corporate Security Department, those who don't know, is one  
14 of our major licensees for a number of projects in the  
15 Midwest. Consumers Energy is responsible for 13  
16 hydroelectric projects, six pump storage projects and 12  
17 coal fired facilities with a total capacity of 9,700  
18 megawatts. Hal is trained in physical security systems  
19 design and testing. He works with Michigan's Homeland  
20 Security Commission, and is, I believe, the chairman of its  
21 dam sector coordinating council; is that correct?

22 MR. DALSON: Yes, I am.

23 MR. KATZ: Thank you. Our next panelist is  
24 William Christman, Chelan County for whom he works, Public  
25 Utility District, I presume, No. 1, is again a major

1 licensee with the Commission. He joined the District in  
2 1988, and he has been their hydroengineering manager since  
3 1998. He has been involved in a wide variety of projects,  
4 and I found it interesting on his biography he supplied us  
5 that he, in addition to his hydro work, he served as  
6 project manager for a major light rail project in Seattle,  
7 as well as working on a number of projects including wild  
8 salmon rearing, downstream fish passage, temperature  
9 control modifications, and structural stability  
10 evaluations. He has a BS in civil engineering from  
11 Washington State which he received in 1983, and he is also  
12 a licensed professional engineer.

13 Our last member of the first panel is Don  
14 Baldwin. He is a senior engineer with Exelon Power -  
15 Hydro. He has over 30 years design engineering and  
16 construction experience on projects such as hydro  
17 facilities, nuclear and fossil power plants, and water and  
18 wastewater treatment facilities. His passion, however, is  
19 emergency action planning, in which he has been involved  
20 for the last 15 years. His responsibilities included  
21 incorporating the Commission's comprehensive Dam Safety  
22 Program with respect to Exelon's two large hydro projects.  
23 He graduated from Duke University -- the home of the as yet  
24 undefeated Duke basketball team, sorry about that -- with a  
25 BS degree in civil engineering, and he is a licensed

1 professional engineer also.

2 And what I am doing for the panelists, is we  
3 have got a sign up here, or a timer that shows the  
4 ten-minutes time, and we are going to ask folks to keep  
5 their initial presentations to ten minutes so there is time  
6 for questions.

7 Joe, will lead off, and you will not be able to  
8 see the ten-minute timer, but I will let you know when you  
9 get close to the end of your ten minutes, so if you could  
10 start, please.

11 MR. EHASZ: Thank you, John. I apologize to the  
12 Commission and the audience for not being there today. My  
13 wife had an emergency yesterday morning, and I thought  
14 about it real hard at 6:00 yesterday morning, and I guess I  
15 have been listening to Huckabee too long, he said do the  
16 right thing, so the right thing was to stay home with my  
17 wife, and I took her to the hospital yesterday and we got  
18 some tests and she has got to go for an operation either  
19 late today or tomorrow.

20 But in any event, I do appreciate the  
21 opportunity to be there, and I don't know whether or not  
22 Natalie has my mugshot up there or not, but the last thing  
23 I wanted to be was an empty suit in Washington.

24 I have been around dams and worked with  
25 hydroelectric projects, as John mentioned, all of my life,

1 and over the past 40 years. In fact, I worked on both the  
2 jobs that the Commissioners mentioned, Saluda and Taum  
3 Sauk, I was one of the consulting panel members of the  
4 owner's panel on Saluda and am now working with the PRC on  
5 Taum Sauk, so I surely appreciate the discussion had in the  
6 last few minutes.

7 Natalie, do you have the first slide up?

8 NATALIE: Yes.

9 MR. EHASZ: What slide is up there?

10 NATALIE: First one.

11 MR. KATZ: Says Panel 1, Major Components of the  
12 FERC Dam Safety Program.

13 MR. EHASZ: Okay, thank you. As I said, I have  
14 worked with a lot of the projects and worked on both FERC  
15 federal and state projects on various state dam safety  
16 organizations, and I believe I have a pretty good feel for  
17 the important parts of the program.

18 Next slide, broken down my thoughts in terms of  
19 the owner, the designer and the regulator.

20 Next slide. As mentioned earlier, and I truly  
21 believe it, that the owner has the first line of  
22 responsibility. He is really the first defense against dam  
23 failures that we have been talking about here for the last  
24 few minutes, and he is on site more than anyone, most of  
25 the time on the bigger projects the owner is there 24 hours

1 a day. He is really the responsible and only person for  
2 surveillance, and the owner is really obligated to know  
3 what it takes to maintain a safe dam and recognize the  
4 conditions, and also he really needs to train and update  
5 his staff as to maintain this first line responsibility.

6 Next slide. Broken down a few things as was  
7 mentioned, real significant part I feel is the Owners Dam  
8 Safety Program, and those programs as defined by FERC do  
9 delineate certain things that I have outlined here, and one  
10 of the most important ones is, as I have started with, is  
11 the clear designation of responsibility.

12 The person in charge of the Owners Dam Safety  
13 Program really has to have the oversight and the authority  
14 to do, as I just said, to do what is right, and to maintain  
15 that authority through all the organizational elements.  
16 Also, it is necessary to have the technical resources at  
17 his call, and to be a proactive owner in his inspections,  
18 and adequate on site presence of the various staff and  
19 training of that staff.

20 The next mention I have is the emergency action  
21 plan, there was talk about that just recently, and that is  
22 another one that is on the owner to develop a plan in  
23 accordance with the FERC and FEMA guidelines, and  
24 coordinate that, and to do the various drills to be sure  
25 that the folks in the neighborhood and the local agencies

1 and authorities understand the situations with respect to  
2 dam failure.

3 The next slide, come into the realm of the  
4 designer, and responsibilities of the designer is also  
5 quite significant. The designer can use various  
6 engineering guidelines, FERC, Corps of Engineers or Bureau  
7 of Reclamation guidelines, but to develop safe criteria and  
8 both under static and dynamic conditions, as we were just  
9 speaking about earlier, the hydrology and the hydraulics,  
10 the spillway requirements are real significant, and the  
11 hydrology with respect to the various thousand year to PMF  
12 various storms.

13 Stability is another big issue, whether it is a  
14 concrete dam or an earthen dam, stability is real important  
15 with respect to the criteria utilized for the various  
16 features and in just how stability is approached, as well  
17 as with an earth embankment, with piping and drainage and  
18 filters.

19 Then last but not least is the seismic  
20 conditions, and that is one that is a real significant one  
21 as conditions change with more recognition of the geology  
22 and the tectonics of a particular area, the seismic needs  
23 to be recognized and updated as time requires and  
24 necessitates.

25 Next slide, to continue on with designer, the

1 designer is the guy that really should develop the  
2 instrumentation program for a particular dam, whether it is  
3 a brand new dam or a rehab of an existing structure, and  
4 then establish the threshold values. For instance, he  
5 should really be the person that knows where sort of the  
6 hot spots are on a dam, to locate instruments and to set  
7 thresholds based on what his stability may encounter, and  
8 then the details of the instruments and how often he feels  
9 they should be read. And then they all really should be  
10 involved certainly as a key person and develop the  
11 surveillance and monitoring, and again, since he knows the  
12 dam, whether it is a new one, a new design or a redesign,  
13 he understands the methods of design and he should  
14 establish the schedules for readings and then really  
15 develop forms and the reporting format with respect to the  
16 uniqueness of a particular design.

17 The next, and not least, is the regulator, and  
18 the regulator could be either in terms of generalities, or  
19 at this point either FERC or the state regulators, but they  
20 really should and do establish basic dam safety guidelines.  
21 The engineering guidelines for evaluation of hydro  
22 projects, for instance FERC has, as points were mentioned  
23 earlier, I think Dan described that there are dam safety  
24 workshops and to identify safety publications are an  
25 important facet of the regulator's responsibility.

1                   Next slide. The regulators should maintain  
2                   periodic inspections and review the reports, and again,  
3                   things were mentioned, I will just briefly just go through  
4                   them, the FERC annual safety inspections, the site  
5                   inspections by FERC engineers, the FERC Part 12 by  
6                   independent consultants every five years that the entire  
7                   project is reviewed, and that is a real significant part  
8                   that the regulator maintains in FERC's aspect, and then  
9                   review a dam safety surveillance and monitoring, both the  
10                  program and the annual or semiannual reporting.

11                  Next slide. The enforcement enforces dam  
12                  safety. The regulator should enforce the surveillance and  
13                  monitoring, and starting off with working with the owner  
14                  and develop a plan, the dam safety surveillance plan, and  
15                  review the plan reports as they are submitted either  
16                  quarterly or annually to review the reports, and then  
17                  should really coordinate the surveillance and monitoring  
18                  design at the report of the surveillance with the PFMA with  
19                  respect to findings during that particular analysis.

20                  Next slide, then the regulator enforces the PFMA  
21                  which is in my mind one of the most significant aspects of  
22                  the FERC program, and I am sure we will talk about that  
23                  later on. I think Bill talks about that later.

24                  But performance of PFMA on all projects, whether  
25                  they are new projects during the initial design, and, as I

1       said, I have been involved in Saluda where the PFMA was  
2       working through with the new back up dam, and that is a  
3       real important aspect to understand during design, as well  
4       as on a rehab project, talking again about Taum Sauk, look  
5       at the rehab of a project like that.

6               And then older projects should be done as soon  
7       as possible, and I think they do enhance the safety of  
8       projects with the insight by looking backward, so to speak,  
9       as to how the dam was built and what the significant parts  
10      were that I am sure Bill will get into later on under his  
11      discussion on PFMA, and then to incorporate, as I mentioned  
12      on the last slide, the PFMA results into the  
13      instrumentation monitoring program.

14             Next slide. The regulator then in that since  
15      really maintains close coordination with the dam owners,  
16      that is an important aspect as I have mentioned going  
17      through, and then provides the safety guidelines for the  
18      designers, and then monitors the safety process. The  
19      Owners Dam Safety Program, the Part 12's, the dam safety  
20      surveillance and monitoring reports, the potential failure  
21      mode, and then the emergency action plans which we also  
22      hear about in a few minutes.

23             So therefore, my key aspects and components of a  
24      good Dam Safety Program are one, an informed and proactive  
25      owner, as I outlined earlier; number two, an experienced

1 designer who knows the projects and knows the designs and  
2 can put forward the responsible parts of his design to the  
3 regulator; and then finally, a regulator that maintains  
4 close coordination with the owner, secondly, provides good  
5 safety guidelines, and then mentors the dam safety process.

6 And my last slide, put my dam safety engineer up  
7 there, he appears on a lot of talks that I give, I think he  
8 is an important guy, I hope you are all looking at him  
9 right now, he has got the FERC shirt on, but I tried to  
10 outline the important parts from my experience and  
11 background of a good safety program, and I don't know  
12 whether we are going to hold questions until all four of us  
13 are through or whether we do it now, however you choose.

14 MR. KATZ: Thank you, Joe, that was an  
15 incredibly impressive sticking to your ten minutes without  
16 even having the clock facing you. We are going to hold the  
17 questions until all the panelists have all spoken with the  
18 Chairman's and the Commissioners' permission.

19 MR. EHASZ: Thank you.

20 MR. KATZ: Our next speaker is Hal Dalson who is  
21 going to focus on dam site security.

22 MR. DALSON: Thank you for inviting me. I get  
23 to talk about a relatively new, I guess, when you think of  
24 dams and the security programs that are in place --

25 MR. KATZ: Is your microphone on?

1 MR. DALSON: Yes.

2 Pre 2001 dam security really was focused on the  
3 minor incursions, the trespass, the vandalisms, the thefts,  
4 those kind of incursions, and I guess primarily the reasons  
5 for those thoughts were the robustness of the structures  
6 and the remote locations of those structures.

7 And many times the guiding authority behind that  
8 security program, for lack of a better term, may have been  
9 the river superintendent or the site supervisor, and as  
10 those incidents took place or as they were reported they  
11 were reported at that level, and that was the individual  
12 who determined then if they even went to the local  
13 authorities. They may have more than likely been held and  
14 controlled completely in-house by the owner/operators,  
15 basically the mess is cleaned up and they move on because  
16 it was just a trespasser, or it was just someone trying to  
17 find the best fishing spot, and we all know where that is  
18 at, right next to the dam, so they have to get there, or  
19 with some curiosity seeker who just wanted to get into the  
20 structure, and that was the mindset.

21 We had basic intrusion standards around the  
22 sites, and mainly those were designed for litigation  
23 protection for the owner/operators. It was the fencing, it  
24 was a no trespassing sign, it was the padlocks on the  
25 doors, that was the intrusion protection, and it was set up

1 for a whole different avenue than what we think of it  
2 today. We didn't have anything such as security exercises,  
3 you have great emergency action plan exercises, and later  
4 on I will talk about how that actually dovetails into some  
5 of our current security plans. We have to take advantage  
6 of the programs that are currently in place.

7 We have almost incident reporting as far as  
8 upper structural handbooks for the owners and operators and  
9 for the auditors and for the regulatory bodies, again, that  
10 didn't exist, it didn't happen. Again it was held very  
11 close, very, very close to the actual site itself.

12 After 2001, actually it was FERC that pulled  
13 together a group of owner/operators from around the country  
14 and recognized at least some need to start formalizing a  
15 security program, not a regulatory-type program but a  
16 security program. They pulled in people from around the  
17 country who had security backgrounds. That foundation that  
18 was put in place from those early groups basically became  
19 the same foundation that DHS has used for their sector  
20 coordinating council, it is the same, some of the same  
21 faces, the same concepts, it is a partnering-type concept,  
22 to move forward with the design of a security program and  
23 to share that message with the 80,000 plus owner/operators  
24 around the country.

25 FERC has a history of partnering. I have heard

1       you talk this morning about partnering with the smaller  
2       owner/operators with their dam safety programs, and in  
3       helping them move to be in compliance, the expectation that  
4       they are in fact in compliance with the Dam Safety Program.

5               It is the same concept that we follow in the  
6       security awareness program. It is a partnership, we have  
7       developed training materials and different workbooks that  
8       are available for distribution and being distributed now at  
9       many hydro association meetings around the country, and it  
10      focuses site security on the size of the structure, not  
11      everybody has a Hoover, not everybody has a Lovington pump  
12      storage, but everybody has a need to at least be aware of  
13      what is going on around their sites. They have a need to  
14      at least know how to report those incidents that may seem  
15      very minor. Pre-2001 they were trespassers, post-2001 they  
16      very well could be surveillance techniques, you don't know,  
17      and we don't expect that small owner/operator to have to  
18      ascertain that, but we really do expect them to start  
19      trailing that information up the line, let somebody else  
20      determine if we are seeing a trend-type program, and that  
21      is where we are taking the dam safety programs.

22             As with any voluntary program, I am the chairman  
23      of the dam sector coordinating council. We have weaknesses  
24      with voluntary-type programs, and one of them obviously is  
25      an economic downturn. First thing that does is it starts

1 people having to really determine where they should spend  
2 their resources, where is the proper place to spend them,  
3 and then when we see, I get different invitations to  
4 participate and I share those with the membership of the  
5 council, and even recently I have had people that have had  
6 to decline because of the economic downturn that has taken  
7 place. They have to reassess where their resources go, but  
8 through all of that we are starting to see security  
9 becoming a cornerstone particularly in the FERC projects.  
10 Our hope and our aim, quite frankly, is to spread that same  
11 awareness around the country. We want all the  
12 owner/operators at least to have an awareness of it, and we  
13 are moving down the path now of web based security training  
14 through DHS partnering with FERC partnering with the  
15 private sector, so at least a small owner/operator has an  
16 avenue where they can go and get some training and get some  
17 recognition for at least having that. FERC safety  
18 inspections now include a section of site security, you  
19 know, what the parameters are, what the expectations are on  
20 that site, so we are starting to see that, and that one  
21 action alone has raised the security awareness around many,  
22 many sites, it just changes the focus.

23 We are faced now though with a challenge, that  
24 early days it was just hard getting the owner/operators to  
25 realize that there was a change, the trespasser may not be

1 a trespasser. Now we are going to that owner/operator and  
2 we are talking about a threat that is equally as foreign to  
3 them. It is the cyber concern that is taking place around  
4 the country right now, and I believe that we have to look  
5 at it in a different manner. We can't continue to think of  
6 the cyber threat as a broad based attack that is an  
7 end-all. The reality is, in my opinion, it is not that way  
8 at all. I continue to question why we put up physical  
9 security parameters to stop a cyber-type attack, but that  
10 is just my opinion, I am a physical kind of guy.

11 But I believe moving forward it is going to take  
12 the partnership between the research and development guys,  
13 the IT guys, the physical security guys, the  
14 owner/operators and regulators, and we are going to have to  
15 get together soon and really determine the correct measures  
16 and mitigations to apply towards this cyber threat. It  
17 baffles me that we can design a protective relay that knows  
18 when a limb falls on a line and goes through an open  
19 closure-type sequence, but we can't design a relay that  
20 knows when it is being continually probed to find its  
21 access code. I believe it can be done but it is not from  
22 people of my position, it is people from R and D that would  
23 be charged with that, and I believe it has to take place  
24 soon. I don't believe that we can ask the small  
25 owner/operators to spend limited resources on security

1 programs or measures that really may not apply to the  
2 correct mitigation.

3 And in closing -- I got my one minute, 24 -- in  
4 closing I believe that one of the things that I would ask  
5 that everyone look at is if we could actually design an  
6 appeal process, and the reason for the appeal process is  
7 not to say I'm exempt from some regulation, but it is to at  
8 least give the owner/operators an avenue to question the  
9 validity of that application to their particular site, and  
10 I believe that appeal process ought to have the regulator  
11 involved, it ought to have peers from the sector, it ought  
12 to have your local PSA's, and it ought to have at least a  
13 good cross sector to give them a good clear process to  
14 follow. Thank you.

15 MR. KATZ: Thank you very much. As we said  
16 before, we are going to hold questions until the panelists  
17 are completely finished.

18 Our next panelist is Bill Christman who is going  
19 to talk to us about potential failure modes.

20 MR. CHRISTMAN: Thank you very much. I am going  
21 to talk about both potential failure modes, what  
22 essentially that new initiative is, and how it winds into a  
23 good Owners Dam Safety Program.

24 First just briefly, a sense of who we are. I  
25 work for a company that has four dams, three of them FERC

1 licensed, one of them state licensed by the State of  
2 Washington, and it is state licensed because it doesn't  
3 produce any hydropower, and we are on the Columbia River,  
4 which has the fourth highest hydroelectric discharge in  
5 North America, both a river system that can have  
6 significant flooding potential, and significant off the  
7 coast of Washington, earthquake potential that dissipates  
8 somewhat as we get into the interior of Washington.

9 We also have an innovative habitat conservation  
10 plan that has recently been approved, that has got a  
11 50-year life. And essentially what it provides is that we  
12 don't have a deleterious impact to fishery species that  
13 migrate past our dams or live within the reservoirs. To  
14 accomplish that we made significant modifications to the  
15 projects, and what I wanted to point out was that none of  
16 our environmental obligations encroach in any way upon dam  
17 safety.

18 Likewise, over the decades we have made  
19 modifications to the projects for dam safety, and we have  
20 accomplished all of those in a manner that doesn't produce  
21 any negative environmental impacts.

22 So the Potential Failure Modes Analysis is a  
23 relatively new initiative promulgated by the FERC, and it  
24 is a very power way of looking at dam safety. It is part  
25 of the Code of Federal Regulations, Title 18, Part 12. And

1       essentially the way that it is different from the way that  
2       we used to look at dams is when dams were relatively new,  
3       we could walk around them and find that they were in good  
4       shape and they looked like what we expected them the to.

5                But they is clearly an aging infrastructure now,  
6       and so we need to look expansively at what could go wrong,  
7       and then what we try to do is try to juxtapose what could  
8       go wrong with the particular characteristics of any  
9       particular dam, and with those two considerations put  
10      together, carefully assess what could go wrong, and  
11      systematically work to reduce risk.

12               So why would we do that? There is a dam on the  
13      mid-Columbia River that is in good shape and it looks  
14      essentially new, but it was completed in about 1962. And  
15      Ralph Peck, an American Geotechnical engineer who is  
16      helping the Chinese nation develop projects on the Yangtse  
17      River, commented to them that monitoring of every dam is  
18      mandatory because dams change with age, and may develop  
19      defects.

20               So it is just like us, change with age, and we  
21      might develop some defects. We all know that getting a  
22      regular physical is very, very important to try to catch  
23      whatever defects you might have as early as possible, and  
24      intelligently address them. Just like with dams, as Ralph  
25      Peck said, there is no substitute for systematic

1 intelligence and surveillance. Powerful comment.

2 So, incorporating that into the PFMA process,  
3 there is a picture of the Columbia River Basin, big river  
4 basin. All those red dots are federal projects and the  
5 yellow dots are FERC licensed projects. So a lot of dams  
6 in an area that can produce significant floods.

7 And off the coast of Washington and Oregon, to  
8 the left of the side, there is a subduction zone where the  
9 North American plate is moving underneath the what is  
10 called the San Juan de Fuca Plate, and there is earthquake  
11 hazards, and we are aware of that, and our job is to  
12 maintain those projects in a manner that is robust in the  
13 event of a significant flood, and robust in the event of a  
14 significant earthquake, partly because that is what the  
15 regulations require and partly because it is simply good  
16 business. Always costs less to prevent a failure than to  
17 try to recover from a failure.

18 So I will talk briefly about regional  
19 considerations, the potential natural disaster kind of a  
20 thing. Another PFMA methodology is to look at the specific  
21 dam, because we know that with aging infrastructure we need  
22 to look carefully at these individual projects. There is  
23 on this particular dam there is 12 spillway bays, and these  
24 pass large floods, and all those spill gates look great but  
25 they are about 45 years old and we know that consequently

1 they can be developing defects that are hard to see.

2           There is also an earthen embankment on that  
3 particular project that from the outside looks great, but  
4 we know that water could be seeping through there carrying  
5 fine soil particles with it, and if it does that it can  
6 develop bigger and bigger seepage paths and carry ever more  
7 particles, and that is a process called internal erosion,  
8 and it is actually the second leading cause of dam failures  
9 worldwide, and it is particularly pernicious because it is  
10 very hard to see from the surface and it is also hard to  
11 instrument. And because it is the second leading cause of  
12 dam failure worldwide, it is not uncommon.

13           So there is something that nobody wants to see  
14 happen. That is a good example of what can happen with  
15 aging mechanical equipment, that is a project on the  
16 Sacramento River, and that failure occurred in the 1990s,  
17 and it was because the connections in the steel structures  
18 had aged with time and the bearings in those gates had aged  
19 with time and they put increased load on a decreasing  
20 strength structure.

21           Other potential failure modes that can occur  
22 specific to a dam include operational mistakes, and that is  
23 a very important consideration for us going forward because  
24 the workforce is aging, and the people that built the dams  
25 are moving along, so new people are coming into those

1 roles, and as they do, if we have robust succession  
2 planning we reduce risk, and if we don't have robust  
3 succession planning then there is a personnel-related  
4 potential failure mode that we need to be aware of.

5 So a specific example of how failure modes are  
6 addressed with surveillance and monitoring programs, those  
7 are spill gate structures on a Columbia River dam. And  
8 from that previous slide we worked with that owner to learn  
9 as much as we could about how that gate failed, and we  
10 instrumented this gate to try to carefully address whether  
11 or not that is a condition that could occur at this  
12 project. So an intelligent response to a potential failure  
13 mode.

14 What we found, shown on this graphic, is that  
15 gradually over time the loads in this gate that looked  
16 great were nonetheless increasing, and they were  
17 approaching that red line at the top shows a limiting value  
18 from a structural standpoint, go beyond that and we are not  
19 certain that that gate can withstand the loads that are put  
20 on it, stay below it and we are fairly certain that it can.

21 And so the surveillance and monitoring program  
22 showed us information that we simply didn't have before.  
23 It was an intelligent response to a systematic way to try  
24 to discover whether this potential failure mode had  
25 efficacy with this particular dam.

1                   And that is a pretty straight forward and  
2 relatively easy thing to accomplish, but sometimes the most  
3 difficult is getting funding to address potential failure  
4 modes in a manner that reduces risk. At our company we  
5 have tried to respond to that by simply automatically  
6 prioritizing all dam safety initiatives as a top priority.

7                   So it fits in with our budget process before  
8 anything, any of the other competing projects get funded.  
9 So it is a very robust way for us to move forward. We  
10 didn't as engineers get to concentrate on surveillance,  
11 monitoring and reducing risks, and it washes a lot of the  
12 politics out of the equation in trying to get adequate  
13 funding.

14                   This is the flyer for a forum that we have been  
15 holding in the Northwest for a couple of years, the  
16 brainchild of the FERC, and it is very, very successful.  
17 And essentially what it does is, it gives us to a chance to  
18 collaborate with all of the different owners in that river  
19 basin, all the federal and all the non-federal owners, so  
20 that we can learn from each other, and it also provides a  
21 certain threshold for peer pressure. If we are all working  
22 hard for dam safety then it is hard for somebody to stand  
23 on the outside and think that they don't have to. It has  
24 been effective in that regard.

25                   So I am out of time, I won't belabor you with a

1 summary, other than to try to offer that in my experience  
2 with 20 or so years in the dam safety field, I can  
3 sincerely state that I think the FERC regulations are  
4 sound, and that the FERC is a very demanding regulator that  
5 clearly places the responsibility for dam safety on the  
6 owners, but nonetheless is collaborative in helping us  
7 achieve that goal.

8 MR. KATZ: We will take a few seconds. If we  
9 get to a point where we are asking the audience questions,  
10 if people could give their names so that the gentleman over  
11 there will be able to mark them down.

12 (Recess.)

13 MR. KATZ: Thank you, sir. Now we have Don  
14 Baldwin, he is going to talk about Emergency Action.

15 MR. BALDWIN: First of all, I want to thank the  
16 Commission for the opportunity to making this presentation.  
17 I also want to point out that the goal of my presentation  
18 is to talk about the benefits of FERC's Emergency Action  
19 Plan program. It happened not only to us the licensee, but  
20 the emergency communities downstream and most importantly  
21 the public.

22 The name of our company is Exelon, and we  
23 operate two high hazard dams in the Northeast. The first  
24 one is located in the lower right-hand side of this slide  
25 at the bottom of the Susquehanna River. The Susquehanna

1 River is the largest river in the Northeast and it is very  
2 flood prone, because the river flows can vary dramatically  
3 from fall to spring. And one of the communities that is  
4 located just six miles below the Conowingo Dam is the town  
5 of Fort Deposit. It is a small Riverside community of  
6 about 700 people, and when there is river, high river  
7 flows, it dramatically affects them. So that just gives  
8 you a little background we go into the next slide.

9 So let me talk about the history of the  
10 Emergency Action Planning program from our licensing  
11 perspective. Prior to the 1990s our Emergency Action Plan  
12 consisted of basically two things, a telephone call tree  
13 and a three-ring binder that really explains how the dam is  
14 watched and what would happen as a result of the dam  
15 failure.

16 What happened in the early 1990s is FERC  
17 expanded the program to require table top and functional  
18 exercises and therefore develop relationships with the risk  
19 counties, with the emergency agencies, with the local fire  
20 companies and the local sheriff's office and so forth, but  
21 the important thing I want you to share is, anytime FERC  
22 makes a change like that, they just don't throw us in the  
23 water and say go do it, they send us to a three-day  
24 training class on how to do that. And at that three-day  
25 training class not only did we learn how to perform the

1 program, but we developed relationships with the other  
2 licensees so, as a full community of dam owners, we can  
3 improve from each other. Now there is a significant  
4 difference.

5 Now, what happened was it took us about  
6 18 months to get to a point where we could hold a  
7 functional and table top exercise, because we had held  
8 about 50 meetings with the downstream communities, with the  
9 sheriff's office, with the police departments, with the  
10 local emergency management agencies, and that really  
11 culminated in the first ever table top and functional  
12 exercise of our Emergency Action Plan, held in rooms  
13 similar like this where we practiced what happened if the  
14 dam fails.

15 So we spent all that time getting together and  
16 at the functional exercise there were some lessons learned  
17 during the exercise and the plan was improved even more.

18 And what happened less than six months later is  
19 we held a drill of our Emergency Action Plan, using an  
20 event called an ice jam. And what an ice jam simply is,  
21 imagine a frozen river and then there is a warming trend  
22 with maybe snow melting and rainfall, and all of a sudden  
23 that ice breaks loose from the river bank. So, what you  
24 have is you have rivers turned into a slushy, and in the  
25 case of the Susquehanna River that is 30,000 miles of

1 stream and 500 miles of the main river being a slushy  
2 moving downstream. And every time you would approach an  
3 abutment or a dam or a turn in the river that ice builds  
4 up.

5 So that is what the scenario was in our practice  
6 drill in December 1995. Less than five weeks later that  
7 actual event occurred, when there was an unprecedented ice  
8 jam in the lower Susquehanna River, and the next few slides  
9 will take you through that.

10 If we can go back one, in this picture, what you  
11 see is this is in Harrisburg, Pennsylvania, and what  
12 happened was that was a pedestrian walkway that got lifted  
13 off its foundation and then moved down by the ice for about  
14 a half-mile before crashing into the highway below that.

15 The next slide shows how ice can build up  
16 against an obstruction. This is a case where you see the  
17 ice building up behind a dam. Now in some cases you have  
18 the ice would build up, and if it is bad the ice will build  
19 up so much that it forms a dam and actually floods the area  
20 behind where the ice builds up.

21 In the worst case that ice build up and then  
22 rapidly and then suddenly without warning breaks. And  
23 there you see a photograph, this was taken of a dam about  
24 30 miles above us, but it knocked over a skimmer wall and  
25 in three seconds caused over \$30 million worth of damage.

1                   And this great surge of water headed downstream  
2 toward the town of Fort Deposit and ourselves, we had to  
3 implement our Emergency Action Plan.

4                   So what was the immediate return from that  
5 18 months of meeting with the various communities? Well,  
6 there was two major things. The first was we had  
7 relationships with all of these emergency agencies, and  
8 they understood what an ice jam was. The second one is  
9 because we had relationships, they understood the acronyms  
10 that you have, they understood the terminology of what has  
11 happened, plus how long it will take the water to get  
12 there, and as a result the local fire company was able to  
13 make 100 water rescues with no loss of life.

14                  As a result of that event it actually deepened  
15 our relationships, and the way it happens now is we work  
16 together very closely in two major flooding events after  
17 that, Hurricane Isabel in 2003 and Hurricane Ivan in  
18 2004, when we had to activate our Emergency Action Plan,  
19 not because the dam was going to fail but because the flow  
20 of the Susquehanna River, as a result of Hurricane Ivan  
21 was so much there was a flooding of the town down below.

22                  So how do I want to sum this up, is as a direct  
23 result of FERC expanding their Emergency Action Plan to  
24 include table top and functional exercises, we developed  
25 closer relationships with the emergency communities and the

1 towns people below. Having relationships improves  
2 coordination. When you have the coordination, people  
3 understand that saves time, and saving time in emergencies  
4 saves lives, and I have witnessed that.

5 Thank you.

6 CHAIRMAN KELLIHER: Thank you very much, those  
7 were all very good presentations. I am very impressed and  
8 there are three of us now for the moment, and Commissioner  
9 Kelly is going to come back on the ice, but why don't we, I  
10 think we have five minutes each for questions, we can go  
11 over a little bit if that is appropriate, but why don't we  
12 start with Mr. Moeller.

13 COMMISSIONER MOELLER: Actually I will pass,  
14 thank you, Mr. Chairman.

15 CHAIRMAN KELLIHER: Mark.

16 COMMISSIONER SPITZER: There has been discussion  
17 about the change in focus after 9-11, how you read that  
18 issue. I have to tell you when I, we had a nuclear plant  
19 in Arizona, it is large and a potential target in the State  
20 and Federal Homeland Security Plan, and I was able to  
21 attend some of the training sessions. One of them was it  
22 was a mock attack, actually Ninjas, which is really  
23 interesting to watch, with the black outfits and all.

24 CHAIRMAN KELLIHER: Was it a nuclear plant?

25 COMMISSIONER SPITZER: Yes, Palo Verde. I was

1       wondering if you, the visual impact for the local elected  
2       officials who have to support the law enforcement, and then  
3       the law enforcement folks, and I thought was extremely  
4       valuable. Have you had an opportunity to do any of these  
5       for local enforcement and perhaps elected officials as  
6       well?

7                   MR. BALDWIN: We have invited and actually  
8       attended safety joint task force, an individual at our  
9       hydro facility, we have had the Department of Homeland  
10      Security Public Security Advisor visit our facility, we  
11      have done mock drills, incursions so to speak at some of  
12      our fossil plants. That information then is shared with  
13      the hydro facilities, so we are active at Consumers Energy  
14      with conducting those types of drills, those types of  
15      exercises.

16                   Some of the other sector members now that belong  
17      to the dam sector community, they have completed active  
18      drills and exercises, around scenarios such as active  
19      shooter. They are sharing that with the other  
20      owner/operators around the nation. So those types of  
21      drills and exercises are taking place.

22                   Keep in mind, particularly with the FERC  
23      licensees, the Emergency Action Plan, the spill plans, the  
24      inundation maps, many times we can fold into those  
25      emergency notifications through a man-made disruption, so

1 those are very robust, and we use those types of exercises  
2 are taking place.

3 COMMISSIONER SPITZER: Have you found that those  
4 exercises generate more support from the local citizenry of  
5 what you are doing?

6 MR. DALSON: And awareness.

7 MR. CHRISTMAN: We also have done a mock  
8 exercise with malicious intrusion at night at one of the  
9 mid-Columbia projects, and we tested our resiliency along  
10 with Department of Homeland Security, Corps of Engineers,  
11 Bureau of Reclamation and the other owners in the river  
12 system, and found that to be a very valuable exercise for  
13 not only us to work down troops through our call down list  
14 and collaborate with other owners, but also incorporating  
15 the local law enforcement and emergency responders.

16 MR. BALDWIN: The additional benefit for us is  
17 we did search and rescue drills with the first responders,  
18 and not only was that good for security purposes, but it  
19 indicates that in a case that your employee would get hurt  
20 or there would be other, a major fire in our power houses  
21 and so forth, so they get to know your power house better  
22 to respond there.

23 COMMISSIONER SPITZER: The other question I have  
24 relates to downstream development, and Mr. Mahoney just  
25 mentioned it briefly, but we had an episode in Arizona in

1       2004 where there was a rupture in an oil pipeline in  
2       Tucson, and it turns out there was a lot of development,  
3       the pipe was laid in I think the early '50s, around the  
4       state there was all kinds of residential development, and  
5       in fact, homes had been put in 18 feet from the pipe.

6               And it is possible, we don't know, that some of  
7       the heavy earth-moving equipment, as part of the  
8       residential development, caused some structural damage to  
9       the underground pipe. And as it turns out there were no  
10      protocols in the City Tucson Zoning or Pima County with  
11      respect to setbacks from oil pipelines, and the federal  
12      government had not communicated very well, and it is not  
13      their fault, but with the local zoning authorities, who  
14      were voting to rezone vacant land in some cases  
15      agricultural land for residential, so this is a lack of  
16      communication. And of course we have the burden on the  
17      licensee, but you want to be fair and reasonable.

18             What, in terms of residential development,  
19      zoning applications, other real estate uses that change  
20      over time, particularly as rural areas become exurban and  
21      exurban become suburban, and ultimately urban, what kind of  
22      challenges do you face, and do you think there need to be  
23      any changes in terms of a Uniform State Land Use Rule so  
24      that the local land use incorporates your need for dam  
25      safety?

1                   MR. DALSON: I take being from the sector's  
2 point of view we are having problems with levees, with the  
3 same issue. The local jurisdictions don't seem to  
4 recognize setbacks in many cases around levees, these  
5 people building close to them.

6                   COMMISSIONER SPITZER: Is there a uniform rule?

7                   MR. DALSON: As far as building or standoff  
8 distances, not that I am aware of, it is a continuing  
9 issue, so that is something that should be considered if  
10 there was a uniform rule put out there.

11                   Probably the levee was built for the 100-year  
12 flood and people like it, they would like to build on top  
13 where they get better view. You know, all, and 100 years  
14 later something happens and their house is --

15                   MR. KATZ: I will just note that that does  
16 happen in the hydro seismic gas program and that is a very  
17 well developed program for rights-of-way. But on the hydro  
18 side we do sometimes get commercial development and folks  
19 who want to build residential homes on what is clearly  
20 marked as an area that the licensee has reserved for  
21 flooding, and we do the best we can to discourage them from  
22 doing that. Even if it is not a flooding area, it may be  
23 off of a designated flood area, with you would, you put a  
24 100,000 homes in a potential path, would, I would assume,  
25 change the risk matrix, and there may not be, to change the

1 risk matrix imposes safety and economic burdens on  
2 licensees, regulatory burdens on the FERC, and those  
3 responsibilities I am not sure are being, those aspects are  
4 not being considered by the local zoning authority folks.

5 MR. CHRISTMAN: That is my experience. We have  
6 inundation zones outside of our project boundary. We seek  
7 to own as much land as we can within a flood hazard within  
8 our project boundary, but the easements for extreme  
9 flooding, it is an uncertain process by which people are  
10 excluded from, or even made aware of those easements.  
11 There is a challenge that exists out there.

12 MR. SPITZER: The easements I assume, in the  
13 stream easements they are recorded?

14 MR. CHRISTMAN: They are recorded, that is  
15 right. So making sure people are aware of the recordings  
16 and understand them, and then respect them, and some people  
17 ultimately won't, but it is an ongoing challenge.

18 MR. MAHONEY: There have been a couple cases  
19 lately where the licensee has been made aware of some  
20 developments, proposed development downstream and they had  
21 some success with respect to working with the local, and it  
22 would have meant a change in the hazard rating and expense,  
23 and they had some success in working with the local  
24 jurisdictions to get some adjustments made to the  
25 development. So I mean, but that is, it is really isolated

1 with respect to that, and there really is no good general  
2 rule out there.

3 MR. KATZ: You did have a case before you a few  
4 months ago where a licensee was selling some land and  
5 offering some land for recreation purposes, and we put in  
6 the order a relatively unusual requirement that if lands  
7 that were possibly subject to flooding were sold to private  
8 individuals that there be specific information provided to  
9 them in the course of that sale so that they would be aware  
10 of those.

11 CHAIRMAN KELLIHER: Mr. Moeller?

12 COMMISSIONER MOELLER: Thank you, Mr. Chairman.  
13 Again, thanks to our panelists and for the effort they made  
14 to get here, especially a fellow Washington State person,  
15 Mr. Christman. My first question is to you, if you could  
16 elaborate a little bit, as you noted on your slide which  
17 was great, it shows the extensive nature of the Columbia  
18 River system, it is a coordinated system that includes  
19 obviously investor owned utilities, publicly owned  
20 utilities, the Corps, the Bureau and the Canadians. And I  
21 just wondered if you could expand a little bit about the  
22 coordinated nature of the system and how safety is taken  
23 into account from your perspective? You have not had  
24 sewerage projects but you do have two very key run of the  
25 river projects in kind of the middle of the system.

1           MR. CHRISTMAN: We do. I am impressed with your  
2 damage of that system. I am not surprised since that is  
3 where you hail from, but nonetheless impressed. A lot of  
4 the people out there aren't aware nearly as much as you are  
5 in terms of the extent of development, hydro development on  
6 the Columbia River system and the careful coordination  
7 process that now exists.

8           We in the mid-Columbia have a central  
9 coordinating office that essentially operates daily, river  
10 flows and forecasts through the five mid-Columbia projects  
11 from Douglas the Wells projects down through Grand Rapids  
12 project. That center coordinates carefully with the Corps  
13 of Engineers for Chief Joseph releases, and the Corps  
14 coordinates carefully with the upstream owner, the Bureau  
15 of Reclamation on the Grand Coulee Project, and they  
16 coordinate carefully with the upstream owners on the other  
17 side of the international border, British Columbia Hydro.

18           We, and please interrupt me if I am not directly  
19 addressing your question, but then we carefully coordinate  
20 with hourly forecasts, daily forecasts and weekly forecasts  
21 for power production, through flows through the power  
22 houses, and for spill flows which are very, very common in  
23 the Columbia River now for downstream fish passage so that  
24 they can be as relatively environmentally benign as  
25 possible.

1           All of those are flows both for power production  
2           and for fishery enhancement are carefully coordinated  
3           through each of those projects, all the way through the  
4           Bonneville Project which is just upstream of Portland,  
5           Oregon.

6           One notable consideration in that regard is that  
7           in about 1996 there was a huge discharge from Oregon rivers  
8           into the Columbia River system and the Columbia River and  
9           Snake River were already flowing at a very high level, and  
10          the mid-Columbia and British Columbia projects worked  
11          carefully with the Corps of Engineers and the Bureau of  
12          Reclamation to stem an otherwise flooding river back to an  
13          extreme low flow for about a 12 hour period, during which  
14          time the big part of the hydrograph passed through  
15          Portland, Oregon, and with everybody working together the  
16          sea walls in Portland were nearly, but not overtopped, and  
17          in a natural event would have been overtopped.

18                 COMMISSIONER MOELLER: It was very close. I am  
19                 glad you brought it up, because I was going to, that your  
20                 efforts along with many others basically saved downtown  
21                 Portland from hundreds of millions of dollars of flooding  
22                 damage.

23                 MR. CHRISTMAN: Another benefit of hydro power.

24                 COMMISSIONER MOELLER: Thank you.

25                 Again, people who may not hail from the

1 Northwest may not appreciate the inter coordinated nature  
2 of the system, but it is one. And just to note from an  
3 historical perspective is that there are different  
4 constituencies in the hydro system because it is a  
5 multi-use river system of power and fish and recreation,  
6 irrigation, municipal water supply, but the one  
7 constituency that is dying off is the constituency for  
8 flood control, because people don't get killed by floods  
9 anymore, like they used to, in the Lower Columbia, and so  
10 everything we do with energy infrastructure has pros and  
11 cons in this country, and certainly there are environmental  
12 ramifications to the dams on the Columbia system,  
13 particularly for fish and wildlife. But, they because of  
14 the coordinated nature have saved lives, and I think that  
15 sometimes is forgot. Thank you.

16 If I have just a couple more minutes, an open  
17 question, the same one I asked to Dan, a couple of you  
18 alluded to it, are there he emerging trends that may  
19 concern you that you think we should be aware of?

20 MR. DALSON: From a security perspective, there  
21 seems to be a trend around the nation where they have these  
22 GPS groups where people actually build high treasure  
23 troves, so to speak, and they really seem to have a lot of  
24 interest around dams in the nation, that they would like.  
25 They are actually calling owner/operators saying can we

1 place a treasure trove on one of your sites, and to date  
2 the answer has been no, we would appreciate if you would  
3 plant your little treasure box someplace else.

4 But we do have these public access areas, and  
5 they really can do it, and then they he get their GPS  
6 coordinates, and you look puzzled but --

7 CHAIRMAN KELLIHER: Why do they do that?

8 MR. DALSON: It is a game.

9 CHAIRMAN KELLIHER: Okay.

10 MR. DALSON: It is a literal game, and they get  
11 their GPS coordinates and they go traipsing around --

12 CHAIRMAN KELLIHER: They had better not be on  
13 any FERC property.

14 MR. DALSON: But that is one of the trends that  
15 is taking place, and I guess, you know, you really can't  
16 stop it, but it is just one of those concerns from a  
17 security perspective. It just gets more people the  
18 opportunity to get closer to the things that I am concerned  
19 about.

20 And I guess in closing to that one other thought  
21 that I have had over the years, at times of heightened  
22 awareness, when, if we ever do go to a level red, so to  
23 speak, I guess one of the things that I would ask be  
24 considered, is that the owner/operators at least have the  
25 leeway to tighten up the public access areas. It is a

1       tenuous request, I know, but if the nation ever goes to a  
2       heightened level alert like that, that is something that  
3       would help us out, because it brings a lot of people really  
4       close to our access and I would request that it be  
5       considered.

6               MR. CHRISTMAN: The trend that I see is  
7       continually aging infrastructure that will continue to  
8       develop defects, and I think the FERC is a very capable  
9       regulator and that as, if our financial condition lasts for  
10      very long and the challenge those people will have paying  
11      for infrastructure improvements and risk reduction, if the  
12      aging infrastructure and financial challenges are  
13      disparate, then I encourage the FERC to consider being a  
14      strong regulator. Any dam failure affects all of us in  
15      some manner, and we should see none.

16             From the Emergency Action Plan standpoint we are  
17      dealing with the Internet a more knowledgeable population  
18      below. There has been a lot of times at public meetings  
19      that I have given web sites to upstream owner sites,  
20      different gauges along the river, so the individuals along  
21      below the river can track the river themselves better. The  
22      danger is as budget cutbacks, the USGS is always being  
23      challenged on keeping river gauge systems up. That is  
24      your, that is your primary long distance learning system is  
25      stream gauges.

1                   So my concern would be if for budgetary reasons,  
2                   USGS would be shutting down river gauges, that would have a  
3                   negative he effect on Emergency Action Plans.

4                   COMMISSIONER MOELLER: I suppose there is a flip  
5                   side to the technology benefits is perhaps you could get a  
6                   list of the 700 people in your downstream community and be  
7                   able to text message them if there was an emergency, which  
8                   would be a technology that you wouldn't have had available  
9                   a few years ago.

10                  MR. BALDWIN: That is right, we did have a  
11                  situation about 10 years ago where we did an automatic like  
12                  reverse 911 call and we did that about 10 or 12 years ago,  
13                  and individuals were not used to speaking to a computer on  
14                  the phone 10 or 12 years ago, and it had a very negative  
15                  results, but now that individuals are more used to getting  
16                  those reverse 911 calls, like for instance when schools are  
17                  late because of snow or school is cancelled for whatever  
18                  reason, they are getting those messages, so that is working  
19                  out.

20                  COMMISSIONER MOELLER: On the phone, Joe, do you  
21                  have any thoughts?

22                  MR. EHASZ: Yeah, I do. In fact, I was going to  
23                  ask if I might, my concern is pretty much the same that I  
24                  hear echoed from Dan Mahoney and that is the experience  
25                  from engineers today, and a lot of us are getting pretty

1 old that have been working in this business, and one way I  
2 think to enhance that is to follow through with as many of  
3 the younger folks that we have to attend the PFMA  
4 techniques, Potential Failure Mode Analysis techniques,  
5 which I think is really one of the biggest safeguards for  
6 dam safety that we can think about.

7 I have gone through many of them and I think it  
8 is a way, at least one way, to help train our folks on how  
9 the dam was designed, how it was worked, how did it work in  
10 the last 50 years, to ward off some of this aging and some  
11 insight to folks.

12 So again, my concern is training, and I know  
13 FERC has been mentoring their people from my experience at  
14 Taum Sauk, they bring folks to the meetings and we do the  
15 same thing as a company and have that, have that concern of  
16 mentoring as a key issue in our future.

17 COMMISSIONER MOELLER: Thank you, good  
18 observation.

19 Well, in my opinion, partly because of the  
20 emerging trend of hydrokinetics, hydro is cool again, so we  
21 are hopefully getting a wave of new engineers to be in the  
22 business. Mr. Chairman.

23 CHAIRMAN KELLIHER: Thank you. I just really  
24 had a question about the Emergency Action Plans. What is  
25 really the biggest challenge to developing good Emergency

1       Action Plans? Is it actually modeling the consequences of  
2       a dam failure and what areas have to be evacuated, is it  
3       fully developing the plan, or is it getting the cooperation  
4       of the local authorities in that plan.

5               MR. BALDDWIN: To me it is all about  
6       relationships. I have given talks to many dam owners and  
7       my, the way you know to have a relationship of the local  
8       fire company or local police department, what kind of  
9       donuts does he like? If you don't know that answer, you  
10      don't have that relationship.

11             CHAIRMAN KELLIHER: You are basically, at one  
12      level you are in position on that, you are adding to their  
13      labor, to guard against some conceivable public threat, and  
14      they may not see the threat as readily as you do, and I  
15      guess the level of cooperation or response has got to be  
16      variable. In some cases they say look, we don't view that  
17      as very likely and we will worry about that tomorrow. But  
18      I guess in some cases it is a really robust agreement and  
19      cooperation, and in the first case you just have to nudge  
20      them along and figure out what their favorite doughnut is.

21             MR. BALDWIN: For us it is actually the reverse,  
22      what has happened is they have actually come to us and said  
23      you have done this emergency planning around flooding, can  
24      you help us on Emergency Action Planning if there is a  
25      railcar explosion, if there is a chemical gas release,

1 weapons of mass destruction? So we have actually  
2 participated in those exercises and helped them with their  
3 emergency planning, so it is actually the reverse has  
4 happened.

5           Because some of the elements will be  
6 transferrable, I mean at some level it is evacuation of  
7 areas, it might be a different area in the case of a  
8 chemical release versus a hydro dam failure, but there will  
9 be closing roads, evacuating people, so yeah, the elements  
10 I guess are transferrable. And the other thing that is  
11 useful as a result of 9-11 there has been monies available  
12 for training, and there is grants available for training.  
13 So when they participate in our dam failure drills, to  
14 actually get funding for that from not just the federal  
15 government but from the state, and that has helped them  
16 all.

17           CHAIRMAN KELLIHER: Does Joe have any comments  
18 to that emergency action planning and what the biggest  
19 challenges are, anything to add?

20           MR. EHASZ: Well, the only thing I could add is  
21 I was recalling, we talked earlier about Taum Sauk, and I  
22 think that Emergency Action Plan that went into effect at  
23 Taum Sauk really saved the four people that were saved in  
24 that incident, and we have all thought about that a whole  
25 lot, being involved with that project. So I really can't

1 emphasize the importance of that planning enough.

2 MR. MAHONEY: If I could just add the details  
3 because that is an incredible flurry about emergency action  
4 plans. Once that breach occurred, the sheriff, town  
5 sheriff was 30 miles south of the project, because of the  
6 coordination that they had done with Emergency Action  
7 Planning with him, he was able to from 30 miles away call a  
8 local fire department, which was 10 minutes down the road,  
9 and told them basically exactly where to look for the  
10 family, in other words the Emergency Action Plan had the  
11 scenario of a breach down that way and affecting and  
12 basically showed where everything would end up.

13 So as I said really, they got them out of the  
14 water within 20 minutes, which was kind of an incredible  
15 story.

16 CHAIRMAN KELLIHER: What we, let's say in the  
17 case where local authorities don't readily cooperate in the  
18 development of an Emergency Action Plan as well as drills,  
19 do we then contact local authorities if the licensee is  
20 having difficulties, do we contact either the regional  
21 office or headquarters and just say look, we are going to  
22 explain to you the U.S. government and federal dam  
23 regulators, and we urge your cooperation?

24 MR. MAHONEY: I am not sure our owners know this  
25 but a part of our oversight includes we will periodically

1 just go right to the local emergency managers and talk to  
2 them, and basically ask them to give us a report card on  
3 the owners with respect to coordination, so we do check  
4 that. And it used to be as far as the getting the local  
5 emergency managers to cooperate, it used to be a lot bigger  
6 problem than it is. I think with everything happening over  
7 the last 10 years, you know, I have seen a big increase in  
8 the capabilities of the local emergency managers, so I am  
9 not sure it is as big a problem as it was to get them to  
10 participate.

11 CHAIRMAN KELLIHER: That is great, I just want  
12 to thank all the panelists, I think it has been a very  
13 interesting. Mark?

14 MR. ROBINSON: With Joe on the phone could I  
15 take advantage of that for a moment?

16 CHAIRMAN KELLIHER: Yes.

17 MR. ROBINSON: Joe, can you hear me?

18 MR. EHASZ: Yes.

19 MR. ROBINSON: Dan knows my concern with risk  
20 informed decision making in the maximum applied precision,  
21 and the sense of security that you get from that, how do  
22 you view that rising use of that technique in relationship  
23 with the PFMA?

24 MR. EHASZ: Well, I think it is, you know, it  
25 could and should be part of that PFMA. In other words, the

1 PFMA is in my mind, a lot more physical and just what could  
2 happen, how was the project built, and where should you  
3 look for problems. So to me the PFMA is more focused on  
4 the physical nature of a failure associated with the  
5 original construction, the design and the aging, but rolled  
6 in all of that I do think the risk analysis has a place,  
7 and I believe, as I believe Dan mentioned, the Bureau of  
8 Reclamation has been trying to really enhance that  
9 technique, and I do think it is an important one to pursue  
10 as part of PFMA analysis.

11 MR. ROBINSON: You don't see it as in any way  
12 substituting for a PFMA but ultimately something that would  
13 complement?

14 MR. EHASZ: Absolutely, not a substitute at all.

15 MR. MAHONEY: And actually the PFMA is one of  
16 the initial steps that you have to do before you, as part  
17 of a risk, total risk analysis, so that is in there. And  
18 that is kind of what I guess got our attention that there  
19 were some really legitimate engineering techniques inside  
20 this risk analysis procedure.

21 CHAIRMAN KELLIHER: I just had a question about  
22 state programs as well as other federal agencies, federal  
23 hydro operators. Do they use PFMA, do they use the same  
24 kind of risk assessment?

25 MR. MAHONEY: They could probably address this a

1 little better during their session. I know that there are  
2 some states that are pretty advanced as far as using risk  
3 assessment techniques.

4 CHAIRMAN KELLIHER: Again, I just want to thank  
5 the panelists. It has been very interesting, very helpful,  
6 and thanks for giving us part of your Friday.

7 MR. MAHONEY: Could I have 15 seconds?

8 CHAIRMAN KELLIHER: Yes, sir.

9 MR. MAHONEY: It has been very pleasant to sit  
10 here and listen to, you know, the positive things said  
11 about Dam Safety Program, particularly the PFMA, and I, I  
12 feel I just have to say for the record, that the PFMA, were  
13 Gus Tumeson's brilliant idea.

14 So thank you.

15 CHAIRMAN KELLIHER: Thanks a lot.

16 We are going to skip the break, go directly to  
17 the second panel.

18 MR. KATZ: If we can just take a couple minutes  
19 to get the second panel up here we will proceed.

20 All right, we are ready to start with our next  
21 panel. Our first panelist is Robert Martinez, who is Chief  
22 Engineer in Dam Safety Section of the Nevada Division of  
23 Water Resources. He joined the division in 1987 and been  
24 in command of the section since 2000. His section and he  
25 are responsible for flood control projects, river and

1 stream restoration and regulating over 600 dams.

2 He was previously a state hearing officer  
3 dealing with water rights issues, something we tend to be  
4 very scared of, and I am impressed.

5 He attended the University of Nevada Reno, he is  
6 a professional engineer, and he is currently President of  
7 the National Association of State Dam Safety Officials.

8 Our second panelist, David Gutierrez, is the  
9 Chief, Division of Safety of Dams for the California  
10 Department of Water Resources. He joined the Division in  
11 1980, and has been Division Chief since 2002. Division  
12 regulates over 1200 dams. He was previously the deputy,  
13 among other things, Deputy Director for DWR Schluts State  
14 and Public Safety where he oversaw development of a  
15 \$5 billion flood safety program.

16 He is on the Board of Directors of the  
17 Association of State Dam Safety Officials. He received his  
18 bachelor degree and Master's Degree, specializing in  
19 geotechnical water resource engineering from California  
20 State University Sacramento.

21 Our third panelist is Alon Dominitz is the Chief  
22 of the Dam Safety Section of the Bureau of Flood Protection  
23 and Dam Safety, Division of Water for the New York  
24 Department of Environmental Conservation. That department  
25 regulates over 5000 dams.

1           Alon's section is responsible for enforcing  
2 New York dam safety laws including inspections, technical  
3 reviews, enforcements, and development and implementation  
4 of guidance and regulation documents. He joined DEC in  
5 1993 and has been Section Chief since 2005.

6           He previously worked for the DEC in New York  
7 City on Air Quality Implementation. He has got a Bachelor  
8 and Master's degrees from Cooper Union University.

9           Our fourth panelist, Fred Sharrocks, is the  
10 Chief, Assessments and Planning Section of the Risk  
11 Analysis Branch, Mitigation Division of the Federal  
12 Emergency Management Agency, FEMA. He has been with the  
13 federal government for over 40 years, with management  
14 responsibility for a number of FEMA's programs. He is the  
15 Vice Chair of the National Dam Safety Review Board and  
16 Chair of the Interagency Committee on Dam Safety. He has a  
17 degree in civil engineering for Norwich University and a  
18 Master's of Business Administration from Suffolk  
19 University.

20           Thank you all for being here, and Mr. Martinez,  
21 you can start.

22           MR. MARTINEZ: Thank you, John.

23           On behalf of the Dam Safety Association I would  
24 like to thank Dan Mahoney for putting this thing together.  
25 The Association of State Dam Officials is a national

1 nonprofit organization serving state and safety programs in  
2 the broader dam safety community, which includes federal  
3 dam safety professionals, dam owners, operators,  
4 engineering consultants, manufacturers, suppliers, and  
5 others interested in improving dam safety.

6           The mission of the Association of State Dam  
7 Safety Officials is to advance and improve the safety of  
8 dams by supporting the dam safety community and the state  
9 dam safety perhaps, raising awareness of dam safety issues,  
10 facilitating cooperation, providing a forum for the  
11 exchange of information, representing dam safety interests  
12 before governments, and providing outreach programs and  
13 creating a unified community of dam safety advocates.

14           Dams in the United States under the state  
15 regulated dams is approaching 90,000. There are almost  
16 10,000 state regulated high hazard dams in the NID which is  
17 the national inventory of dams database. The database is  
18 housed with the Army Corps of Engineers.

19           ASDSO we have many objectives. We have  
20 approximately eight goals in our strategic plan. One of  
21 primary objectives is training and education. We have our  
22 National Conference that is generally in the fall. We he  
23 have technical training guides and seminars that have been  
24 put together. We have worked with the FERC in training  
25 state regulators, we have also an Information Clearing

1 House and guidelines.

2 One of the main items that has come about over  
3 the years is the state model programs which was  
4 underwritten by FEMA. We have a database on dam safety and  
5 a library where if you have a new project or you are  
6 looking at rehabbing, you can gain information on previous  
7 projects that may have been done and you can get assistance  
8 through ASDSO to help you find those items.

9 ASDSO produces a quarterly journal and it has a  
10 monthly electronic news letter, and we have news services.  
11 Through the information that ASDSO collects we have  
12 performance measures and analysis of all the information  
13 relative to safety of dams programs that are operated by  
14 all the states.

15 The membership is from all 50 states, however,  
16 in the U.S. there is only one state that does not have a  
17 safety exams program, and that is Alabama.

18 Puerto Rico is also part of our organization and  
19 we have also members from other countries.

20 The peer review program that we have is  
21 consisting of members that are state regulators,  
22 professionals from the private industry where we reviewed  
23 the programs of not only state agencies but also federal  
24 agencies such as dam safety programs within the U.S.  
25 Department of Interior, as well as the Army Corps of

1 Engineers.

2 Moving forward with legislative advocacy is  
3 ASDSO is trying to help hand assist not only on national  
4 basis but also on the state and local basis to help state  
5 agencies implement rules, regulations and laws to improve  
6 dam safety.

7 We have coordination with the National Dam  
8 Safety Program through FEMA is where that is currently  
9 located.

10 We have initiatives relative to dam security  
11 which we heard about this morning, and also the  
12 infrastructure protection program ASDSO assists on the DCC  
13 with the national inspections with that program there.

14 We have the model program that is a different  
15 component. We have legislation and regulation, permitting,  
16 experience and professional staff. And in trying to look  
17 at the programs, all the different components, is kind of a  
18 measuring stick for all the states to look at and compare  
19 their programs, because the laws and regulations across the  
20 state vary widely.

21 Some states have the ability to meet all of the  
22 goals in the model program and some states are working  
23 towards that, enforcement, emergency response, and put  
24 together emergency action plans.

25 Here is a slide depicting a comparison based on

1 the results of the report from the 2007. We have been  
2 looking at legislation which we can see that most of the  
3 states have that, the other components of permitting  
4 section, EAP and response education and training.

5 An area that is kind of weak across the nation  
6 is public relations, and we are trying to improve that  
7 through ASDSO's training efforts and looking at public  
8 outreach.

9 Some of the differences in the state programs  
10 are the maturity of the programs. You have programs that  
11 are relatively been around a long time, such as my neighbor  
12 California. We have new programs that have practically  
13 disappeared. ASDSO went through some efforts with the  
14 State of Michigan to make sure that their program didn't go  
15 away.

16 We are continuing to work forward with the State  
17 of Alabama to demonstrate that there is a need for a safety  
18 of dams program within each state. We have also helped  
19 with Rhode Island. Currently we review and we compile all  
20 the state regulations so that is readily available through  
21 ASDSO.

22 Looking at the funding and staffing really  
23 hasn't changed over the years, and regulations and  
24 statutes, some of the model law has demonstrated that this  
25 is what you should have as a state regulator, and what you

1 can do to improve that is continue to move forward and get  
2 more experience with your staff, seek state safety  
3 programs. The budgets range essentially from zero to 10  
4 million, and there is an average there.

5 Looking at the budgets for the states the states  
6 have to decide what they are going the do with their time  
7 and effort that they have to dedicate that area, are you  
8 going to do inspections, do you have to review each dam  
9 design, issue a permit and then for the facilities that  
10 have been out there a number of years, what type of  
11 inspection are you going to conduct, in depth,  
12 non-destructive testing, and so forth.

13 And the limited staff that the states have, you  
14 know, you have got zero to 69. My staff consists of two  
15 full time equivalents in the State of Nevada.

16 There is other states that are changing. You  
17 look at the numbers of the dams relative to inspections,  
18 high hazard, significant hazard, low hazard. Ideally with  
19 the high hazard structure you want to visit that at least  
20 once year, significant ones every three years; low hazard  
21 once every five years. The information that has been  
22 provided to us indicates that on a national basis we are  
23 getting out to the high hazard facilities about once every  
24 18 months, and 60 percent of them were inspected in 2007.  
25 So we are trying to get out to the states that you do need

1 to get an inspection, whether that is hands on or a full in  
2 depth review of the entire project.

3 Emergency Action Plans, for the high hazard  
4 facilities in the U.S. approximately 10,000 dams, we only  
5 have 50 percent have Emergency Action Plans. We are trying  
6 to work with that. ASDSO has training that they provide to  
7 the states for Emergency Action Plan training.

8 Some of the observations looking at model Dam  
9 Safety Program and the efforts of ASDSO creates compliance  
10 with the programs, continues to be in enforcement and the  
11 least is in public relations.

12 Inspections are up, they seem to be maintaining,  
13 and the high hazards are being inspected, on an interval of  
14 one and a half years. High hazard dams and DAP's is  
15 changing gradually, but what is happening as we move  
16 forward you could ask the question about some of the dams,  
17 in 2000 we had approximately 150 dams that were completed,  
18 the average age of a dam in the NID is about 49 years.

19 With the growth that is occurring in the U.S.  
20 you have dams where you have the high hazard criteria, and  
21 then as you have a low hazard facility or a significant  
22 hazard facility the growth down stream changes that  
23 facility. So that dam can meet criteria now, it is  
24 determined that it is safe, but as the hazard changes that  
25 facility isn't constructed to pass the PMF, so now that

1 hazard isn't deemed sufficient. So hazard is continuing to  
2 modify the numbers for high hazard dams.

3 Dam safety budgets are increasing but what is  
4 happening seems to remain the same. And, what is happening  
5 also is through new technology, the State of Washington  
6 recently has found out that they have about another 100  
7 more dams than were previously on their inventory, so that  
8 number is going to jump up.

9 We have many challenges within ASDSO and time to  
10 communicate with the states, the states give us feedback  
11 and we collaborate. We try to get together at our annual  
12 conference about the funding of these programs. Nothing  
13 has changed in getting that to our local legislators and to  
14 the dam safety community that it is important that this  
15 risk that may sit there, a lot of people aren't aware of  
16 that live down stream, and state agencies are working  
17 forward through ASDSO in an effort to communicate that risk  
18 to down stream public at large.

19 High hazard dams are increasing. Development  
20 and updating of inundation maps and distributing these maps  
21 is a concern because of security issues these days.  
22 However, some states view that they are going to provide  
23 that to everybody no matter what, they put it on the web  
24 site so anyone can look at where you are at, type in your  
25 street address and then you can determine if you are in a

1 flood inundation zone.

2 We have identified dams not currently under  
3 state regulation and that is being increased as we move  
4 forward.

5 I think that is about all I have.

6 MR. KATZ: Thank you very much.

7 Mr. Gutierrez.

8 MR. GUTIERREZ: Thank you. Again, my name is  
9 David Gutierrez, I am the Chief of the California Division  
10 of Safety of Dams. I would like to thank the Commission  
11 for listening to us on this very important topic of dam  
12 safety, and what I would like to do today is talk to you a  
13 little bit about the California program.

14 What I am trying to do, along with my  
15 colleagues, is express to you the variations of the  
16 program. There are some wide variations of the program  
17 and, therefore, the needs of the program aren't identified  
18 very well.

19 So, starting off with the first slide, our  
20 program got its start like many of the programs throughout  
21 the country with a dam failure. This is a photograph of  
22 St. Francis Dam. This is a 200-foot high concrete dam,  
23 concrete gravity dam in the Los Angeles area, and it  
24 failed. It was constructed in the 1920s, late 1920s and  
25 shortly after construction it failed. This failure was

1 sudden, it was sudden, it was in the middle of the night,  
2 and as you can tell by this photograph the power of the  
3 water scarred the entire Canyon downstream. Not only did  
4 it scar the entire Canyon downstream, but there was  
5 approximately 500 people who lost their lives as a result  
6 of this particular failure.

7 As a result of that failure --

8 CHAIRMAN KELLIHER: Can I interrupt, and ask a  
9 question, this is going to be an odd question. I am a  
10 movie buff, and the movie Chinatown, is this the project  
11 that is alluded to in Chinatown where the chief engineer of  
12 what is now LADWP refused to build a dam and you referred  
13 to a dam failure where hundreds of people were killed?

14 MR. GUTIERREZ: William Mulholland.

15 CHAIRMAN KELLIHER: Yes. It is a different name  
16 in the movie but that is who it was in the --

17 MR. GUTIERREZ: Yes, it was.

18 CHAIRMAN KELLIHER: Thank you very much. That  
19 was my most important question of the day, so thank you.

20 MR. GUTIERREZ: All right. Moving on, as a  
21 result of this particular failure the statutes and  
22 regulations are well established and, therefore, we do have  
23 a well established program. Our mission is very simple,  
24 protect lives and property against dam failures.

25 Like many of the states, we look at only

1 particular dams in the state and that is what we call our  
2 jurisdictional dams. And generally the dams are based on  
3 the height of the dam and the capacity of the reservoir or  
4 a combination thereof. In simple terms, basically a dam of  
5 about 25 feet tall and 50 acre feet or more in reservoir  
6 capacity would be within the jurisdiction of the California  
7 Division of Safety of Dams, which is similar to the  
8 National Dam Safety Act in its definition of the dams.

9 That results in about 1250 dams throughout the  
10 state that is represented in this particular slide by the  
11 red dots throughout the state. You also notice that we  
12 have some blue dots up there, and those are FERC regulated  
13 dams.

14 So of the 1250 dams that we regulate, FERC is  
15 also regulating about 200 of those dams, so cooperation is  
16 absolutely mandatory in our business of dam safety.

17 Now, I think California has a well resourced Dam  
18 Safety Program, and the reasons are clear when you start  
19 looking at the population and the types of dams that we  
20 have in the state. So here is two good examples or  
21 Oroville and New Bullard Bar Dam. Oroville Dam is over  
22 700 feet tall, it has a capacity of well over a million  
23 acre feet. New Bullard Bar is about the same. These are  
24 both some of the tallest dams in North America, and the  
25 populations of many of our dams are not in the tens or

1 hundreds, but they are in the hundreds of thousands or  
2 several hundreds thousands of population as risk where we  
3 are protecting over 30 million lives in California.

4           You have heard a lot about the aging  
5 infrastructure, and that is certainly a component that I  
6 was going to talk about with this slide. I won't repeat  
7 myself, but the other part about old infrastructure, the  
8 fact that many of these old infrastructure dams are not  
9 meeting the current standards, this is going to be an  
10 extreme case of that.

11           This is a dam that was actually constructed in  
12 1917 prior to the development of the Dam Safety Program in  
13 California. This was constructed by a method we call  
14 hydraulic fill where you are basically just shooting in mud  
15 to create the construction of a dam. This actually failed  
16 during construction in 1917. It didn't kill anyone, but  
17 what we were left with is a failed mass of mud, and  
18 unfortunately in 1918 they didn't remove this mud and they  
19 built the dam on top of that.

20           So we are left with a dam in our inventory that  
21 is 200 feet high, has about 150,000 people downstream of it  
22 and now we are going to have to deal with is this dam safe  
23 or not. It is just about 700 feet off of the Calaveras  
24 Fault, so this is a good extreme example of the dams that  
25 do not meet standards of the current age.

1                   Another example in California, of course we have  
2                   to deal with earthquakes, this is probably the most famous  
3                   example of a near failure of a dam as a result of an  
4                   earthquake. This is Lower San Fernando. We have a sister  
5                   dam just to the side of it called Upper San Fernando Dam.  
6                   What happened in this particular incidence is you are  
7                   looking at a photograph just after the earthquake. Prior  
8                   to the earthquake the distance between the reservoir and  
9                   the top of the crest was about 40 feet. What you are  
10                  looking at there, at that particular photograph, is about  
11                  three feet of, three or four feet of material between the  
12                  reservoir and the top of the dam. The rest of the dam  
13                  actually slid into the reservoir. If that slid just four  
14                  more feet we most likely would have lost that reservoir, it  
15                  would have went over the top, it would have failed. And if  
16                  you look at this photograph, there is 80,000 people  
17                  downstream of that dam. This would have been probably the  
18                  worst disaster, man-made disaster in the United States, and  
19                  we were that close in 1971.

20                  We are also dealing in California with actually  
21                  quite a few new dams. This is a dam that we constructed in  
22                  San Diego. This is a 200-foot roller compacted concrete  
23                  dam. We worked with our colleague of this particular dam.  
24                  It is an example that we are continuing to build large dams  
25                  in California due to the drouth of water in the state. We

1 are going to be continuing to be working on large dams.  
2 Calaveras Dam is actually being completely rebuilt. This  
3 dam here is a new dam. We are raising another concrete  
4 gravity dam by about 150 feet. So large projects are still  
5 part of the state.

6 I am not going to repeat on this particular  
7 slide. This is going into the program of the Dam Safety  
8 Program, the different components of the program, and I  
9 think we have heard quite a bit about the various  
10 components, all of which are incorporated in our California  
11 program. We do this by a very well experienced and  
12 actually a well-resourced staff. We have about 60  
13 engineers and geologists. We break up our organization  
14 into the field branch, the design branch and then our  
15 geologists.

16 I say experienced engineers. This is also like  
17 any organization, we are going in peaks and valleys in  
18 terms of our experience. If you look at the top four  
19 managers in the division right now, we have well over 100  
20 years of combined experience in the division, just for just  
21 the four managers.

22 That is going to change as retirements come  
23 about, and so I think some of the points that you have  
24 heard are extremely valid, that we are losing our  
25 experience through the dam safety community.

1                   We in California have a very complex program,  
2                   the picture on the right, we do break up our state into the  
3                   areas where we assign two engineers for any particular  
4                   area. We want them to know the owners really well, we want  
5                   them to know the dams with really well. And so they are  
6                   doing inspections, annual inspection and construction  
7                   inspections.

8                   On the upper left hand picture there, what you  
9                   see is model, it is a mathematical model of the dams.  
10                  These are very complex. Our engineers do these complex  
11                  analyses, and what we are doing is to we are trying to  
12                  simulate how a dam would behave in a particular load, and  
13                  in this case it is an earthen dam.

14                  On the bottom picture it is to demonstrate the  
15                  fact that we do have specialized geologists. The geology  
16                  in California is extremely complex, the seismicicity is  
17                  also complex and, therefore, we have a team of geologists  
18                  that work in our program.

19                  Now, that kind of gets to my final slide, and  
20                  that is that California does need FERC cooperation. I  
21                  think cooperation is absolutely critical in our business,  
22                  as well resourced as we are here in California, there is  
23                  never enough resources to go around. We are constantly  
24                  battling the resource issue and, therefore, we work very  
25                  closely with FERC and Dan Mahoney's group.

1           I am just going to give you kind of an example  
2 of some of that. You heard a lot about the possible of  
3 failure of PFMA's and what they are. And in the '70s and  
4 '80s California took a very close look at many of the dams  
5 throughout the state, not quite the PFMA kind of style, but  
6 we did do a focused look at all the dams, but now we are in  
7 the 2000's and it is time to look at them again, instead of  
8 us looking at them again, is we have participated with  
9 FERC, where we put our experts on their team that actually  
10 do the PFMA's with FERC.

11           Coordination with dam owners, you saw that we  
12 have 1250 dams, but out of those, about 200 of those dams  
13 are actually regulated by both FERC and DSOD, so it is  
14 absolutely important that FERC and DSOD are independently  
15 looking at these dams yet coordinating, so that indeed it  
16 works well with the dam owners, so he knows the direction  
17 that it is necessary to go.

18           Development of national guidelines is another  
19 good example. FERC has taken the lead in trying to develop  
20 a national guidelines for seismic issues, and obviously  
21 that is an area that California has extensive experience  
22 in, and so Dan Mahoney and his group has invited us to  
23 participate on that membership, and actually develop those  
24 guidelines. So, I think that is another good point of  
25 cooperation that we have.

1           The other one is working with dam owners. We  
2           have got two examples here that demonstrate to you, in Palm  
3           Springs at the national conference of ASDSO we recently  
4           invited all the California dam owners to start talking to  
5           them about the dam programs, trying to train them about dam  
6           safety issues. We invited FERC to participate with us to  
7           give a dual presentation of some of the issues associated  
8           with California dams.

9           On the flip side of that, now FERC has taken the  
10          lead and they are developing a western forum in  
11          San Francisco in January where we have been invited to  
12          actually participate in that forum and we will be giving  
13          our expertise and advice on things such as seismology along  
14          with FERC, and others, dam owners, et cetera.

15          Then again, we do have a good program in  
16          California, but there is always room for improvement, and  
17          there is always areas of weakness.

18          And the two areas that we are going to follow  
19          the lead of FERC is, one being the EAP, the Emergency  
20          Action Plan. When you look at the risk of dams, what we  
21          look at is the probability of failure times the consequence  
22          of that failure, and historically the California division  
23          of safety of dams has looked at that one side of the  
24          equation, and that is we are making sure that the  
25          probability of failure is extremely low with dam sites, so

1           that is the piece that we are working on.

2                         It is our sister agency, the Office of Emergency  
3           Services who deals with the emergency aspects of dam  
4           failures, and, therefore we are not really working on the  
5           consequence aspect of the failures. However, we have seen  
6           the need to increase this, and so what we are doing is,  
7           fortunately for us FERC put the 200 dams, some of the most  
8           critical dams in the state have required emergency action  
9           plans on most of these dams, and so we are following that  
10          lead, we are using that model, as well as FEMA models and  
11          other models to get our dam owners to get those emergency  
12          action plans in place with the emergency managers in  
13          California, so, that is one example where we can use the  
14          help and I think we are looking to FERC for guidance on  
15          that.

16                        Another issue is dam security. In the dam  
17          safety business this is a relatively new term. Many of us  
18          know dams and we understand how dams behave during things  
19          like earthquakes and floods and stuff like that, but we are  
20          not really trained yet in areas such as security.

21                        FERC along with the DHS has been a leader in dam  
22          security across the nation, and again we will be following  
23          the lead of FERC and other the organizations in this area  
24          as we train ourselves and then try to get the dam owners up  
25          to speed on security on many dams throughout the country.

1                   That kind of gives kind of a broad background of  
2 one of our programs, and I think again what I will come  
3 back to is to try to impress on you the fact that there are  
4 50 different states and there are 50 completely different  
5 programs, they have many different needs, and therefore  
6 working with our organizations I think it is important to  
7 understand that. Thank you.

8                   MR. KATZ: Thank you very much.

9                   Mr. Dominitz?

10                  MR. DOMINITZ: Thank you very much. I really  
11 appreciate the opportunity to come and speak to you about  
12 my Dam Safety Program, and you will see it is quite a bit  
13 different than California's.

14                  Some of the similarities are that our program is  
15 quite mature. We started also in the early 1900's. There  
16 were some dam failures back then, we have still records in  
17 our files of Mr. McHenry, the State Inspector of Dams in  
18 the 19's and 1920's, and he is sort of a hero because he  
19 inspected every dam in the state by himself, it seems. But  
20 the program has been around for a while. We have had  
21 pretty good statutory authority for a very long time.  
22 Traditionally we have focused on the fundamental aspects of  
23 dam safety programs. We have had a construction permit  
24 program of one type or another for quite a long time. We  
25 have had good authority to do enforcement, formal

1 enforcement, to force dam owners to do corrective measures  
2 at dams when they were necessary. We have had the  
3 authority to do dam inspections for a long time. What we  
4 have not had historically is the actual ability to do those  
5 things because of resource issues, that is technical  
6 resources as well as legal support.

7           Despite those obstacles we have been able to get  
8 many dams in New York repaired over the years, many of them  
9 through the owners voluntary cooperation and as well as  
10 through the State's formal enforcement process. However,  
11 our focus has not really been on some of the things that  
12 have been talked about today, which are sort of the more  
13 ongoing efforts that dam owners have to take with their  
14 dams to make sure that they are safe on a continuous basis,  
15 like routine inspection and periodic engineering reviews to  
16 make sure that the dams continue to meet current standards  
17 and meet the state of the art.

18           Emergency Action Planning, Probable Failure  
19 Modes Analysis is almost completely unknown among the  
20 non-FERC regulated dams. We are now in the process of  
21 promulgating some regulation that we hope will fill some of  
22 knows gaps. Now, in modern times our program has had, just  
23 to give you an idea, about five to seven full time  
24 equivalent folks, and so I would say that we have  
25 chronically been understaffed for the last 20 or 30 years.

1 The low point was around 2004 we had two senior engineers,  
2 two PE's responsible for covering the entire state. We  
3 were assisted by one junior engineer, and we had a manager  
4 whose duties were split among three programs including the  
5 Dam Safety Program. So that just gives you an idea of the  
6 scale of our programs.

7 Then in 2005 we had a high hazard dam failure,  
8 and I am proud to say that at the insistence of our staff  
9 there was an Emergency Action Plan for that dam, and that  
10 Emergency Action Plan, the dam owner has told us, did  
11 literally save lives that day. So in a way it was a  
12 success story.

13 And like much of the infrastructure that we hear  
14 about today, it sometimes takes that kind of event to  
15 create more resources and more attention on the issue. And  
16 so just to give you a sense of what the resources that we  
17 have had, what we have been able to accomplish, I will give  
18 you an example of our status of EAP in New York.

19 Despite the fact that our regulations do not  
20 explicitly require EAP's at this time, we have been able to  
21 get about 50 percent of all high hazard dams in the state  
22 to have EAP's. Unfortunately we have been less successful  
23 of making sure those EAP's are up to date and meet the  
24 current standards for Emergency Action Plans, so 27 percent  
25 of those high hazard dam's EAP's on file are over 10 years

1 old, so basically they are not being exercised, they are  
2 not being reviewed, 58 percent are under five years old,  
3 and in those numbers are included the FERC-regulated dams  
4 which in New York I believe number around 100 high hazard  
5 dams. So that accounts for much of that higher percentage.

6 New York is a diverse state. In the down state  
7 area it doesn't take a whole lot of water or a very tall  
8 dam to put life at risk, and so when you hear numbers like  
9 5000 dams in our inventory, that is part of the reason why  
10 is because our jurisdictional thresholds are actually quite  
11 low. They are lower than California, significantly lower.

12 In the other parts of the state, the upstate  
13 areas, we have small cities and have rural areas, travel,  
14 you know, it is long distances to travel, and there is a  
15 lot less economic means for dam owners to inspect and  
16 maintain their dams, and then rehabilitation funding is  
17 even more of a challenge, and I think for state-regulated  
18 dams that is even more of a challenge than for  
19 FERC-regulated dams, because often there is not a steady  
20 stream of income or, you know, revenue-generating source  
21 for dam owners to use for some of that work.

22 Now, I want to give you an idea of the staffing  
23 picture just to give you a flavor for our program. What  
24 you will see here is that we had, these are the number of  
25 full-time employees on the technical staff who reported to

1 FEMA, who asked through ASDSO, and it includes contribution  
2 of our nine regional offices who are vital to helping us  
3 with doing some of our inspections, they help us to be able  
4 to respond very quickly when we get a report of a dam  
5 emergency, but they, those folks only have part of their  
6 job being dam safety.

7           So, when dam safety needs specialized staff, we  
8 are in the central office. Traditionally we have had three  
9 dam engineers covering the state. After the failure in  
10 2005 when we got a significant increase in staff resources,  
11 I was able to build the program back up, and we now, I am  
12 now very fortunate, I have six senior engineers covering  
13 the entire state, we have some more support staff, we have  
14 more regional staff contribution, and I am especially  
15 grateful because the staff I have been able to hire are  
16 just incredibly talented engineers, and the team, they have  
17 really formed a team with our legal staff and with our  
18 regional staff, to really get our Dam Safety Program back  
19 on track and back moving in the right direction.

20           We have been able to push forward some of the  
21 long deferred enforcement cases that we have been wanting  
22 to do. We have been starting to work on the same  
23 regulations. We have been able to work more closely with  
24 owners on developing EAP's, develop some technical  
25 guidance. We have initiated a database security project

1       which has long been overdue, and so really our program is  
2       in the best shape it has ever been, for a very long time.

3               But even with these increases, as it may be hard  
4       to read in this graph, but six senior engineers means each  
5       engineer covers on average 65 high hazard dams, and then  
6       several, twice that number of intermediate hazard dams, and  
7       several hundred low hazard dams.

8               So if we had the current level of staffing that  
9       we do today over the last 30 years, we would be in much  
10       better shape today. And so my number one goal is to  
11       maintain that staffing level, and the significant  
12       investment that we have put into that staff in training  
13       them, and to keep that level of effort going.

14              As the economic picture has gotten worse we have  
15       had to look very closely at even how we do inspections, and  
16       we have had to cut our travel budget very severely. So for  
17       the next year we are planning to do our inspections based  
18       on our normal inspection schedule, which is two years for  
19       every high hazard dam, four years for intermediate hazard  
20       dam. We don't have a regular inspection schedule for low  
21       hazard dams, but we try to, we are aiming to try to get  
22       them on about a 10-year schedule, so that is half the  
23       frequency that FEMA recommends in the model state Dam  
24       Safety Program.

25              If travel budgets get cut further, which all the

1 time we are getting news that we have to cut more and more  
2 and more and more, we may have to look at different ways of  
3 doing our inspections and possibly curtailing some. We are  
4 promulgating the regulations. I expect that process will  
5 be difficult, it will be even more difficult to try to get  
6 compliance with those regulations once they are promulgated  
7 with the way that, with the challenges the dam owners have,  
8 with the financial challenges of the dams.

9 And we are starting to look at technical  
10 guidance which we haven't updated since 1989. We have  
11 often looked to FERC for the technical guidance, and FERC  
12 is not only a premier dam safety agency in the world, but  
13 is sort of, I think of them as a sister agency, because of  
14 the regulatory role that FERC plays on the Corps of  
15 Engineers or Bureau of Reclamation, which are more  
16 ownership-type organizations.

17 We have also been fortunate in the past few  
18 years to get a very substantial training budget to train up  
19 the new staff that we got, and I expect that that is going  
20 to be curtailed very severely in the next few years, and it  
21 is going to be a challenge to do any kind of training at  
22 all. So I think that that is another place where FERC has  
23 been very helpful in the past.

24 This past year FERC was very kind to send Jeremy  
25 Varner and Dr. Steve Collins to provide geotechnical

1 training to my staff, and we found that training really  
2 invaluable, because the experience that the FERC staff has  
3 just cannot be duplicated anywhere else. I have talked to  
4 Dan, I haven't talked to Bruce yet, but we are hoping to  
5 have Bruce Rand speak to us this year and do a similar kind  
6 of training again, and that looks like that is going to  
7 happen, and that is just tremendously, tremendously  
8 valuable to us.

9 Other areas where we really need to improve is  
10 in the area of funding to help dam owners. You know, that  
11 is always a challenge. And also in the area of education  
12 and outreach for dam owners, and this may be an area where  
13 FERC can also help us to some degree.

14 I again want to thank you for listening to us  
15 and having an interest in this very, very important issue.  
16 We are like the other, some other states, have dual  
17 jurisdiction with FERC on some dams, and we don't always  
18 agree, but the New York Regional Office staff and Dan  
19 Mahoney and some of the staff here in Washington have just  
20 been tremendously, tremendously supportive to me personally  
21 and to my program in some very, very difficult times that  
22 we went through, and I hope that we can continue to develop  
23 that relationship and improve on that relationship and work  
24 together to improve dam safety in the country.

25 Thank you again.

1 MR. KATZ: Mr. Sharrocks.

2 MR. SHARROCKS: Thank you, and I really want to  
3 thank FERC again for having this meeting. It is very much  
4 an eye opener to us, and I just wish and I hope that the --  
5 but FERC is really the leader in helping -- (inaudible).

6 CHAIRMAN KELLIHER: Is your microphone on, sir?  
7 That banging usually means that.

8 MR. SHARROCKS: Thank you. I am sorry.

9 It is great to be here, I am glad that FERC had  
10 this meeting, it is a great step forward to us in dam  
11 safety, and I hope that people listening from other states  
12 and the other federal agencies, because this has been very,  
13 very beneficial.

14 My presentation is going to be a quick overview  
15 of the National Dam Safety Program, and also trying to  
16 tie-in how FERC and other federal agencies can help the  
17 states during this situation.

18 Basically this is my outline of where we are  
19 going here, but I would just like to go back, even though  
20 Dan mentioned a history of the Dam Safety Program. It did  
21 start when President Carter signed EO 12148, and  
22 established a National Dam Safety Program. It was a  
23 National Dam Safety Program that probably went on in its  
24 current state for 17 years, and it was just the federal  
25 government, and federal dam owners and dam regulators in

1 FEMA that were involved, and this was good, that it brought  
2 the federal family into one unit, but it was also bad that  
3 it did not have the state governments at the table.

4 And in 1996 is when Congress first established  
5 the National Dam Safety Program, and we are now in the  
6 third version of it. We are now under the National Dam  
7 Safety Program of 2006.

8 The Dam Safety Act and one thing that I wanted  
9 to highlight here, and others have mentioned it, the real  
10 purpose of the National Dam Safety Program is to reduce the  
11 risks to life and property from dam failure. This is a  
12 real challenge, and FEMA, who doesn't own dams or regulate  
13 dams, has been given the lead agency. I might think one of  
14 the reasons that we are dealing with this issue in the  
15 hurricane program and the earthquake program and the flood  
16 program, and this is the great challenge that we have here  
17 is making sure that the people living down streams,  
18 downstream of the dams, know their risks.

19 Another great part of this Act is that the  
20 National Dam Safety Act established the National Dam Safety  
21 Review Board, and it mandated that the composition of this  
22 board be five state people, five federal people and one  
23 private sector person. And the goal of that is to give  
24 guidance and advice to the head of FEMA who is the actual  
25 chair of the board.

1           I am just going to talk about very briefly the  
2 major elements of the program, the state grant assistance  
3 program, the research program, and the training program.  
4 Those are the only elements of the Dam Safety Program that  
5 get funding. And I would just like to point out, because  
6 this is the national Dam Safety Program, the total budget  
7 that this program received in FY '08 was \$4.5 million, and  
8 we were authorized to have the range of \$10 million. And  
9 \$3.3 million, a very small amount, split among the 49  
10 states and Puerto Rico, so we are not a big player in  
11 giving them funding, and the burden is definitely on the  
12 states. And the other 1.2 million was basically split  
13 between research and training.

14           The fourth item down here is the public  
15 information and outreach. This has been in the law I think  
16 since it started, it has never been funded, but all of a  
17 sudden things are happening where people are talking about  
18 it. When the levees failed in 2005 down in the Gulf,  
19 followed by the highway bridge that failed, that was a  
20 great amount of press about the National Dam Safety  
21 Program. After that highway bridge failed, all the  
22 national news said, if you think that is a danger, the  
23 National Dam Safety situation is worse. That was on all  
24 the national news.

25           As a result, FEMA is now getting a lot of

1 interest in both O & B and Congress to make sure that we  
2 get the message out to the people living and the local  
3 officials, the firemen, as they say, the emergency managers  
4 living downstream. We have a challenge there. There is  
5 still no funding for it, but it is a great thing. There is  
6 a big role which I was going to say, but it is obvious from  
7 what has gone on today, the big role in FERC is taking it,  
8 FERC is, your infrastructure, your training, your exercises  
9 I assume your brochures and things you have, to give  
10 downstream, could be of great value to FEMA. We could take  
11 those, customize them and get them out to states and dam  
12 owners that don't have them. I am sure Dan will be very  
13 helpful in that.

14 Here are some facts about it and I know you have  
15 heard them, you know there are about 83,000 dams in the  
16 country, and 86 percent of them are regulated by the  
17 states. You have heard the figure about the 11 million  
18 high hazard dams, and of those 11 high hazard dams, of  
19 those 11,000 high hazard dams, 1300 of them have been  
20 identified as either unsafe or deficient based on whatever  
21 the word of the day is. And we are, as mentioned, every  
22 local, every low hazard dam out there is just a high  
23 hazard dam waiting to be born when someone goes and builds  
24 something downstream of it. So our base of high hazard  
25 dams is getting higher.

1           Now, 50 percent of those high hazard dams have  
2 no EAP, and of those 5000 or so that don't have EAP's, 1700  
3 of them are 50 years old or older. Many were built in the  
4 1800's. I looked at one yesterday that was built in the  
5 1700's. It was recently inspected and didn't pass. I don't  
6 know who is living downstream of it to make it a high  
7 hazard dam, but there are a lot of situations like that.

8           The national inventory has recently started, at  
9 the request of Congress, capturing the data on the most  
10 recent inspection and what was the result, and of those  
11 1700 dams, 40 of them are unsatisfactory.

12           Here is another little bit of information that I  
13 know you have heard it, and I am running out of time again,  
14 the states give about, have about \$40 million programs,  
15 FEMA gives them about \$3.2 million, and that adds up to  
16 about \$864,000 average. Based on what the situation is on  
17 the dams this is not going to be really adequate money, and  
18 this is why I hope as we get the federal government  
19 involved we can, as a federal family, once again do things  
20 to help the situation. But we are not the answer as far as  
21 funding.

22           And I just want to give a little run-down on  
23 ICOD. This has been around for 30 years, and one of our  
24 goals is to re-energize ICOD based on what happened in this  
25 meeting and the type of stuff that we have learned here

1           today, so that the federal family can really increase its  
2           efforts to help the states meet their goals.

3                       FEMA, excuse me, FERC, has been the most  
4           proactive federal agency. And talked about the training  
5           last given us and look at the estimates, and FEMA is now  
6           going to try to get others outside of the safety world to  
7           those trainings. We are going to try to give money to  
8           bring the emergency managers and other stakeholders to make  
9           the EAP process a lot easier.

10                      I think the bottom line is I have three seconds,  
11           and three seconds will not help. I think one of our goals  
12           of the Dam Safety Program is to bring, is to change the  
13           balance and make it not just a program about dams but to  
14           also make it a program about the people at risk. We have  
15           to move there. And the current state of the dam safety  
16           situation in the nation is a challenge, but it gives us all  
17           opportunities to make a difference.

18                      Thank you.

19                      CHAIRMAN KELLIHER: Thank you very much, I want  
20           to thank all the panelists for your excellent  
21           presentations. Were you going to say that, John?

22                      MR. KATZ: You said it better than I could and  
23           we are now available for questions.

24                      I wanted to jump in and say one thing that was  
25           very instructive in the presentations. Mr. Martinez said

1       there is one FPE for 379 dams overall nationally, and I did  
2       a back of the envelope calculation, I think California has  
3       one FTE for 20, and the Commission's inspectors I know are  
4       out there all the time working really hard, one in 25. So  
5       that really shows that you there is a big need out there in  
6       the state programs.

7                   Mark, do you want to start this?

8                   COMMISSIONER SPITZER: Just, Mr. Chairman, I  
9       don't think I have ever heard such positive statements  
10      about our agency.

11                  CHAIRMAN KELLIHER: It feels nice.

12                  COMMISSIONER SPITZER: Maybe we will have  
13      another one of these next week. Maybe we can get all of  
14      you to come to some of the electricity complaints.

15                  And I thank you for traveling. And you know, as  
16      a former state legislator I am solicitous of the states and  
17      supportive. I am very aware of the, it is one of those  
18      competing interests, where most any area of the law,  
19      including this, there is a desire for some uniformity at  
20      the federal level, but that desire of uniformity needs to  
21      incorporate the unique circumstances of the states. And  
22      there are times when we, the federal government, is forced  
23      to be coercive, at times in history, civil rights for  
24      example, but usually it is not coercive action by the  
25      federal government, it is the cooperative, at least the

1 good changes are.

2 And I am very encouraged and it is interesting  
3 to have the perspective of states. California and New York  
4 are very large programs, Nevada is smaller, and then of  
5 course, Mr. Martinez, you were speaking on behalf of the  
6 association that is all 50 states.

7 I wanted to follow up on the question I posed to  
8 the earlier panel with regard to the development in the  
9 downstream areas, and the fact that it seems to be the law  
10 in most jurisdictions that zoning decisions, for  
11 applications that could have fairly drastic consequences,  
12 oftentimes are not even notice of the proceeding, much less  
13 consideration by the local planning and zoning authorities  
14 of the consequences.

15 And is that something that you have been  
16 thinking about and have any of your states been successful  
17 in getting? I have got to tell you the local zoning folks  
18 zealously guard their events, and they always view zoning  
19 as uniquely local. There is planning and zoning processes,  
20 they don't even like counties or states interfering in the  
21 cities, much less folks in Washington, D.C. What can you  
22 share with us on that?

23 MR. GUTIERREZ: I can share a couple things on  
24 that. First of all, let's talk a little about the dams and  
25 it obviously is an issue, so what you have is you have the

1 local agencies approving development downstream.

2 Obviously, what you have is development  
3 downstream of dams if they don't share in the  
4 responsibility of upgrading those dams. We do have a  
5 correlation, I know here in California we have actually  
6 passed legislation recently in November of 2006 where we  
7 have actually tied the responsibility of local agencies in  
8 improving of development within flood zones of levees for  
9 the first time I think in the nation, so this could be kind  
10 of a model that we could probably use to move forward, so  
11 historically it has been the State of California and the  
12 Central Valley who is responsible for the failure of the  
13 levee, yet the zoning agencies have the responsibility to  
14 improve the development, so we finally have tied that  
15 together in terms of levees, so I think that could be a  
16 model to maybe move forward.

17 COMMISSIONER SPITZER: Was that done by  
18 legislation?

19 MR. GUTIERREZ: This is actually state  
20 legislation, in November 2006, and signed by our governor.

21 MR. DOMINITZ: Now, this is an issue that you we  
22 have dealt with quite a bit in New York. We got many  
23 comments when we went out with our draft regulations  
24 exactly about this issue, that here you are proposing to  
25 strengthen your regulatory oversight over dam owners, but

1       it is punitive against dam owners who may not have control  
2       over a change in the hazard class and that brings them out  
3       of compliance.

4               I think that there are some -- and we haven't  
5       figured out how to really deal with that issue. There are  
6       some things that we can take from the levee safety program  
7       and the levee certification issues that we are all dealing  
8       with right now. One of the challenges is for say a low  
9       hazard dam, you don't have an inundation map so you don't  
10      know exactly where that impact area is unless you spend  
11      significant resources to map that out and do the modeling,  
12      and so, you know, to make a low hazard dam owner do that  
13      is, you know, is exorbitant, it is exorbitantly expensive  
14      for that dam owner.

15             On the other hand we also talked a little bit  
16      today about abandoned dams, dams without owners, and so  
17      that becomes a problem as well, you know, when compliance  
18      becomes so difficult for a dam owner and the benefit from  
19      the dam outweighs the liabilities they find creative ways  
20      to distance themselves from that problem.

21             And so I think that planning boards and local  
22      municipalities need to think about that as well, and so  
23      what we have done in New York is we have tried to make as  
24      much information known about where the dams are, what the  
25      hazard classifications are, if there are emergency action

1 plans we encourage the dam owners to release the inundation  
2 mapping and that information so that the communities around  
3 those dams are as informed as they can be about the risks,  
4 but oftentimes the risks are not well enough defined to be  
5 able to make good judgments about that.

6 MR. MARTINEZ: To elaborate a little bit more,  
7 most of the dam safety programs, they are just trying to  
8 look at the dam itself, and they are aware of these  
9 problems that are occurring downstream with the local  
10 planners, and most of the time the state rules and  
11 regulations are on a state basis, and they don't get  
12 involved with the planning downstream. There are many  
13 facilities that are built, constructed, such as warm water  
14 retention facilities, they may protect, and now you have  
15 got the change in the flood zone, so now they build so it  
16 generates tax dollars, and what is below the spillway?

17 And most of the time those are constructed to  
18 impound the 100-year event, when the spillway is activated  
19 those homes are going to be flooded. There are some  
20 interesting points on that throughout the nation and in Las  
21 Vegas specifically, we have a facility where there is a  
22 whole subdivision right below the spillway, that happens  
23 all the time. A lot of the states with their programs they  
24 don't have the statutes and the authority to form these  
25 critical regulatory functions and requiring EAP's, and so

1 without an EAP requirement you don't have an inundation  
2 zone, it is up to the planners to work with the state  
3 regulatory agency to address this issue.

4 CHAIRMAN KELLIHER: Mr. Moeller? Questions?

5 COMMISSIONER MOELLER: Just to say that I'm  
6 sorry that my schedule conflicted with this panel, but I  
7 will review I guess our video version of it to make sure  
8 that I heard everything.

9 CHAIRMAN KELLIHER: You missed my Chinatown  
10 movie question.

11 COMMISSIONER MOELLER: Oh, that is too bad.

12 But, again, thanks to the efforts that you do  
13 and for the travel that was involved in getting here, and  
14 this was, this entire theme has been a good one to focus  
15 on.

16 My little anecdotal story is that I think I was  
17 probably a teenager, but for some reason we took a road  
18 trip from our ranch down through southern Idaho not long  
19 after the Teton Dam failed, and it is a memory that I have  
20 certainly told Mr. Robinson about, but to see 100 feet of  
21 two-lane highway picked up and put on a distant hillside  
22 and to see pieces of farm equipment twisted into pretzel  
23 shapes, has been an indelible image in terms of the power  
24 of water and the consequences of a dam failure.

25 So I send collective thanks to our staff and to

1 your staffs for what you do to prevent that from happening.  
2 Thank you.

3 CHAIRMAN KELLIHER: I have a couple questions.

4 First of all, what do you see as the greatest  
5 challenge to improving the state dam safety programs? Is  
6 it lack of funding for the state program itself, which  
7 limits resources, staff resources? Is it the limits on the  
8 owners' resources themselves so that the program does  
9 identify improvements that that they claim or actually  
10 prove to be unable to make improvements? Is it limits on  
11 state authority, can states require emergency action plans  
12 as a general matter? Do the state dam safety agencies  
13 generally have authority to review construction permits for  
14 new projects, and have to approve the design, or, I guess  
15 that vary from state to state? In some cases it is  
16 resources, other cases, lack of authority, so that is kind  
17 of my question really in terms of improving going forward,  
18 what are the biggest challenges?

19 Mr. Dominitz?

20 MR. DOMINITZ: Thank you, Mr. Chairman.

21 Some of the challenge is public awareness and  
22 reaching out to not only the dam owner and making the dam  
23 owner more aware of the responsibility he has, and the  
24 state regulators are trying to do that because as we move  
25 forward we have got all these dams that are growing older,

1       you have got new challenges because the maintenance effort  
2       on the dam owners has gone by the wayside, you know, zero  
3       to minimal effort, and trying to reach out to the state  
4       legislators to make them aware that they need to support  
5       state Dam Safety Program and institute new laws and rules  
6       and provide the regulators with the ability to enforce an  
7       Emergency Action Plan on a dam owner so that the downstream  
8       community can be aware of this risk that sits above them on  
9       a daily basis.

10               CHAIRMAN KELLIHER: Mr. Martinez, you talked  
11       about dam safety as being something that your organization  
12       is pursuing as a national organization. Is there a model  
13       code that you are encouraging state legislators to  
14       consider? Are there groups like -- there is different  
15       groups like the National Conference of State Legislators,  
16       they develop model codes, they are shared with state  
17       legislators, is there something like that that would help?

18               MR. MARTINEZ: Probably on the model State Dam  
19       Safety Program. To answer that question directly, there is  
20       actually a model statute in the model program, and so it is  
21       up to the states to try to achieve that model the best as  
22       possible. I think to further answer some of the questions  
23       that you have had, I think you have pretty much nailed all  
24       the issues, and those are all the issues, the funding of  
25       the program, which we continually are have to work with the

1 states to try to increased the funding for those programs.

2 CHAIRMAN KELLIHER: Sorry to interrupt, but is  
3 it unusual for the state programs, do you recover your  
4 budgets through fees like we do, or do you have to compete  
5 with all other state agencies for budget in the usual  
6 manner, or can you charge fees?

7 MR. GUTIERREZ: As a matter of fact, this of  
8 course is definitely varies to it to state, and a state  
9 like myself in California, we are actually 100 percent like  
10 I think FERC is, funded through fees and, therefore, we  
11 don't go through the up and down cycles of the general fund  
12 cuts that many other states do. However, most of the  
13 states are actually funded through there general fund  
14 program and general tax dollars.

15 Funding for owners is a huge issue and so many  
16 of the FERC dams I think have actually a revenue source. I  
17 think many of the dams actually in California also have a  
18 revenue source, they are selling water or they are selling  
19 electricity. So those are generally the dams that can pay  
20 for themselves and that can operate and maintain those type  
21 of structures adequately. However the 90,000 dams or so  
22 that are out there is not a whole lot of percentage that  
23 are under that category, and those are the ones that are  
24 having a problem with revenue sources. They don't have a  
25 revenue source in some cases.

1           The downstream population increases and,  
2           therefore, the risk is going up and it is programs such as  
3           these that are well meaning, and I think ASDSO is actually  
4           trying to pursue, trying to get funding for some of these  
5           dam owners as far as cost sharing, to try to get some of  
6           these dams repaired adequately.

7           CHAIRMAN KELLIHER: Is the ownership really hard  
8           to trace in some instances, or is that --

9           MR. GUTIERREZ: I think this is really a state  
10          issue and I think generally, I know in my experience in  
11          California, that is actually a very rare instance. I can  
12          think of one dam maybe out of 1200 dams that has a problem  
13          of actually trying to identify who the owner is, but there  
14          are some states where these dams are out in the middle of  
15          nowhere and we are really not too sure about who owns the  
16          structure.

17          MR. DOMINITZ: Gentlemen, just to give you an  
18          idea, it is not a huge percentage but a huge problem. In  
19          New York there are three high hazard dams I can think of  
20          off the top of my head that don't have an owner. In one  
21          case there is part of a dam that doesn't have an owner, the  
22          dam is actually subdivided under three property lots and  
23          there are two owners we can identify, and the most  
24          deficient part of the dam has no identifiable owner.

25          So you know, it is three dams off the top of my

1 head, it is not a huge number but it is a huge problem  
2 because we haven't found a way to effectively deal with it.  
3 And so there are three decisions tied in with that, and I  
4 think that as dams age, you know, economic resources are  
5 always a challenge, even in the best of times, as dams age  
6 they may become more expensive and so not only do you have  
7 hard economic times but you also have increased costs. And  
8 so I see that dam abandonment as a trend going forward,  
9 more than it is a really huge problem today.

10 CHAIRMAN KELLIHER: If there are questions about  
11 state authority though, if someone wants to build a dam,  
12 generally do state dam officials have some right to review  
13 it and to bless it or direct --

14 MR. DOMINITZ: Yes, I think that that is one of  
15 the first type of dam safety authorities that was  
16 implemented nationwide, and I think most states have some  
17 authority with regard to construction of new dams. It is  
18 these more, you know, once the dam is there how do you feel  
19 with it type of issues that I think the states struggle  
20 with it.

21 CHAIRMAN KELLIHER: Mr. Martinez.

22 MR. MARTINEZ: Yes, Mr. Chairman, in the  
23 breakdown of all the states, the ownership of the dams you  
24 are looking at 65 percent are privately owned. Then  
25 looking at local governments, federal and state owned where

1 they are publicly owned facilities is about, what have we  
2 got, about 30 percent.

3 What we are looking at with ASDSO is the  
4 National Dam Rehab and Repair Act, and we are trying to  
5 gain support for that. It was passed on the House side  
6 earlier this year, and unless something magical happens it  
7 is probably going to have to be reintroduced next year, and  
8 that would have been a program on a cost share basis to  
9 rehab and repair publicly owned facilities modeled after  
10 NRCS, small watershed rehab program that they have. Thank  
11 you.

12 CHAIRMAN KELLIHER: Mark, Dan, any questions?

13 What other questions do I have? I guess a  
14 generic question. There has been a very good level of  
15 cooperation from FERC and state dam safety officials. I  
16 think we have the same interest with respect to different  
17 projects, and I think the cooperation has been excellent,  
18 but is there anything else more that FERC can do than what  
19 we are doing now? Is the message from state officials  
20 really stay the course and maintain the current level of  
21 cooperation out there? Are there other areas where you  
22 think we could improve the collaboration?

23 MR. MARTINEZ: Yes, Mr. Chairman, looking at  
24 scheduled dam safety workshops, the Association of Dam  
25 Safety Officials annual and regional conferences, set aside

1 states as local and state programs where FERC invites the  
2 state regulators to participate in those. Also, looking at  
3 training, essentially through Internet, video conferences,  
4 things like that, provide that outreach to the states and  
5 hopefully coordinate more with ASDSO. Thank you.

6 CHAIRMAN KELLIHER: Anything to add, gentlemen?  
7 I really left myself wide open on that question.

8 One thing we can't provide, money. I know we  
9 can't do that. Our fees, we can recover the costs of other  
10 federal agencies, but not for state officials.

11 Did you have a question?

12 MR. GUTIERREZ: Just a comment. I think both  
13 Dan and myself aren't usually too shy to ask each other for  
14 help, so I think we are doing some of the efforts. I think  
15 I demonstrated some of the efforts. So, I think in terms  
16 of many of the efforts that we are doing, of course it is  
17 stay the course, and some of the things that have been  
18 introduced recently to help some of the other states also  
19 is to stay the course, and we continue to appreciate that  
20 type of help nationwide.

21 MR. DOMINITZ: Well, I would say stay the  
22 course. If the last year is indicative of the course, you  
23 know, this last year's effort of bringing FERC's best to  
24 us, because we have such a problem traveling and spending  
25 any non personal sort of money right now, that is a big

1 help, and I think that is both helpful for keeping our  
2 staffs interested in their work and excited about their  
3 work and, you know, just engaged, and it is also helpful as  
4 we, you know, for my program specifically as we develop our  
5 technical guidances to try to modernize them, FERC is a  
6 huge resource for that, and so the FERC's training  
7 opportunities really help us to further our own programs,  
8 programatically the structure of our programs.

9 MR. ROBINSON: Mr. Chairman, I should mention as  
10 Dan did earlier in recognizing Gus, it is not Dan's idea or  
11 my idea, that was at your request that we get more involved  
12 with the states and the result is what I think you have  
13 been hearing about today.

14 CHAIRMAN KELLIHER: Thank you for pointing that  
15 out. Well, to me, I hate to bring this meeting to an end,  
16 it is such a nice warm feeling, but I think we all have a  
17 story to tell. I think the improvement at the state levels  
18 has been very impressive as Mr. Martinez laid out, and I  
19 think we all have the same object in mind and the level of  
20 cooperation has been impressive, we have a strong program  
21 here, and I commend the OEP staff for all their  
22 developments, and Gus, I want to thank you, I didn't  
23 realize you were going to be here, but I am glad you are  
24 here. And you must have a warm feeling, too, after today's  
25 conference. But we have a strong program but we are always

1 looking for improvement, and hope we can continue to work  
2 together and make progress.

3 I want to thank everyone, thank the staff  
4 organizing this conference, and I thank all of the  
5 participants, and thanks to my colleagues. Thank you.

6 (Whereupon, at 12:15 p.m., the hearing was  
7 concluded.)

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