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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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DECOMMISSIONING FUNDING WORKSHOP

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BREAKOUT SESSION 2

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WEDNESDAY

MARCH 2, 2011

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The breakout session convened in the ASLB Hearing Room at Two White Flint North, 11545 Rockville Pike, Rockville, Maryland, Bret Leslie, Facilitator, presiding.

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25  
26

TABLE OF CONTENTS

	Page
Welcome and introductory remarks	
Bret Leslie.....	3
Use of Monte Carlo Techniques to Assess Likelihood of Meeting Trust Fund Goals	
Ming Chen.....	4
Nuclear Decommissioning Trust Asset/ Liability Modeling	
David Emerson.....	25
Kathy Taylor.....	30
David Emerson.....	34
Historical NDT Fund Balances	
David Krause.....	42
Calibrating Investment Return Expectations	
Jon Brusven, NDT Associate Director.	62
Wrap up and adjourn.....	78

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

(10:00 a.m.)

1  
2  
3 MR. LESLIE: Hello again. My name is Bret  
4 Leslie and I am going to be facilitating this breakout  
5 session for the Decommissioning Funding Workshop.  
6 This is Breakout Session 2 and this is colloquially  
7 known as the Chapel. And one of my challenges as a  
8 facilitator today will be passing the mike. So as a  
9 good minister would say, could you all kind of scoot  
10 in closer? Because if I need to go to the end of the  
11 aisle and I need to pass a microphone, you at least  
12 need to be arm's length away. So again I ask for your  
13 patience for you and the audience as you may have  
14 questions for the speaker, I will be passing a mike  
15 and I can't really get down through the pews so to  
16 speak.

17 We have four speakers and again Brian  
18 earlier this morning told people how this would  
19 operate. We have people in the audience here. We  
20 have people on the bridge line, we believe. We know  
21 we have people on the webinar. Each of the speakers  
22 will be making a presentation with slides. The  
23 slides, the handouts are in the back they will also be  
24 available online after this public meeting on our  
25 website.

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1           The idea is to have the speakers go  
2 through their slides, have an opportunity for people  
3 to ask questions here. I will go first to the people  
4 here in front of me and then I will see if there are  
5 questions either on the webinar or on the bridge line.

6           And the first speaker will be Ming Chen  
7 from the Government Accountability Office. And Ming  
8 and the other speakers, you will just come up here and  
9 speak into the mike. Your slides, could you go ahead  
10 and put up the first set of slides? Your slides, if  
11 you need to look will be -- You will be able to look  
12 on either side from here. You will be able to see it.

13         Okay? Ming, if you want to begin.

14           So if anyone needs to leave, just for the  
15 record, if anyone needs to leave after their talk to  
16 go to the other room or needs to leave, you will need  
17 to be escorted and Anneliese will serve as your  
18 escort.

19           MS. CHEN: Well good morning, everyone.  
20 Can you hear me okay? Well Tom, thank you for  
21 inviting me to do this presentation and I am happy to  
22 be here.

23           I work for GAO. I am a senior economist  
24 with the International Affairs and Trade Team. The  
25 full disclosure, I don't know much about nuclear,

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1 nuclear decommissioning fund. I am here to talk about  
2 the Monte Carlo simulation. It is a technique that  
3 can be used in analyzing uncertainties.

4 Some of you here probably have heard or  
5 have used Monte Carlo simulation. Can I see a show of  
6 hands? Okay.

7 So as kind of introduction, I guess to  
8 Monte Carlo simulation and I will also go through  
9 examples GAO has used in our report, looking at a  
10 trust fund for Palau, looking, assessing the adequacy  
11 of the trust fund.

12 Monte Carlo got its name from the famous  
13 casino area in the principality of Monaco, and it's a  
14 technique that has become more popular as computers  
15 have become more powerful. And a lot of programs can  
16 view the Monte Carlo simulation. Now in Excel, it is  
17 widely available. There is an add-on called Crystal  
18 Ball that you can use to implement Monte Carlo  
19 simulation pretty easily.

20 It is a technique that performs random  
21 draws from a pre-defined distribution, like drawing  
22 numbers from a hat, in a way, that you are interested  
23 in the outcome by generating these, you know, massive  
24 number of draws, basically a thousand, ten thousand  
25 draws, and see how your outcome, the variables you are

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1 interested in, how that looks, either being how much  
2 balance is in your trust fund or how much withdraw you  
3 will be able to withdraw every year.

4 So there is a lot of variables that have  
5 uncertainties. You know something about it, like you  
6 know, March the temperature in Washington, D.C., you  
7 can't really tell how exactly the temperature will be  
8 but looking at the past history, you will have a good  
9 idea what the distribution looks like, you know, their  
10 rain fall in a particular month or here we are  
11 interested in --

12 You know, there are a lot of variables  
13 like in the stock market returns, interest rate, a lot  
14 of these variables have some pretty good idea what the  
15 distribution would be like. But you know, you don't  
16 have the exact value so you generate. You do the  
17 simulation by doing random draws. For people who have  
18 used, you know this already.

19 We at GAO have used Monte Carlo simulation  
20 in quite a few reports. If you go on GAO's website,  
21 gao.gov, you know, search for Monte Carlo, you get  
22 more than a hundred search results.

23 GAO has used Monte Carlo simulation in a  
24 lot of different ways. One area is looking at capital  
25 program costs. These are projects that are long-term

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1 and there are a lot of uncertainties. The first one I  
2 listed there, it is a *GAO Cost Estimating and*  
3 *Assessment Guide: Best Practices for Developing and*  
4 *Managing Capital Program Costs*. This is an attempt to  
5 establish a consistent methodology that is based on  
6 best practices. It can be used across federal  
7 government for developing, managing and evaluating  
8 capital program costs.

9 And in that report, we listed Monte Carlo  
10 simulation as one tool for looking at these long-term  
11 projects, a lot of uncertainties involved. You know,  
12 the cost can go up or down as you get closer to the  
13 end of the project, the distribution will narrow. You  
14 will know more. But at the beginning, there is just a  
15 lot of uncertainties which will affect the planning of  
16 the project, the investment.

17 We have also used Monte Carlo simulation  
18 looking at trust fund sufficiency. I listed two  
19 examples here. These are two projects at work. These  
20 are tiny little countries in the Pacific and the U.S.  
21 has set up trust funds for these countries. And these  
22 trust funds are intended to provide long-term  
23 assistance to these countries. So we evaluated their  
24 trust fund sufficiency, whether it is going to be  
25 adequate in 30, 35 years.

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1 Other U.S. Agencies have also used Monte  
2 Carlo simulation. CBO has used in its Social Security  
3 projection. As you can see, there is just a lot of  
4 uncertainties in their economic development, economic  
5 growth, population, demographic information. All  
6 these things can be simulated to look at the future,  
7 how Social Security is going to be doing. There are a  
8 lot of numbers that are uncertain. So this is a good  
9 methodology used in that situation.

10 And the Treasury has also used the  
11 simulation and where they did the bank stress test,  
12 you know, similar to the Social Security projection,  
13 there are a lot of economic and financial variables  
14 that are uncertain.

15 So, the questions Monte Carlo simulation  
16 can help us answer. These are just what is the  
17 likelihood of a particular fund that is going to be  
18 sufficient in the future which is relevant to the  
19 nuclear decommissioning fund.

20 What if you put in additional funding?  
21 How that is going to affect the likelihood of the fund  
22 being sufficient. And what if the accumulation  
23 schedule changes? How is that going to affect the  
24 likelihood?

25 These are questions that Monte Carlo

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1 simulation can help you try to get some insight on  
2 these questions.

3 Like many tools, it has its own -- It is a  
4 wonderful tool but it also has its own limitations.  
5 They key to Monte Carlo simulation is really you have  
6 a predefined distribution. You think that these  
7 uncertainties of these variables will be coming from  
8 this distribution. You think it is either you have  
9 this is the mean, this is the standard deviation  
10 around these mean but these assumptions a lot of times  
11 come from the past performances. How realistic this  
12 is going to be for the future, if you have big  
13 changes, these past performances may not be the most  
14 accurate in representing the future.

15 If you have, you know, for example let's  
16 talk about the March temperature in D.C. If you do  
17 think there is underlying change happening with the  
18 climate, then the past performances may not be  
19 accurate indicator of the future.

20 The results can be sensitive to how you  
21 specify your equations and the interdependence among  
22 the different variables.

23 The last one listed on this slide, it is,  
24 Monte Carlo simulation, is a tool. It generates a lot  
25 of wonderful information for decision makers to look

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1 at but it does not make the decision for you. You can  
2 say well the likelihood of this fund falling short is  
3 X percentage. But is that percentage too high? Is  
4 that too low? What is acceptable level of risk?  
5 These are things that decision makers have to make a  
6 decision on. The model, the tool is not going to be  
7 able to tell you that.

8 So there are several types of Monte Carlo  
9 simulation. I listed here ranging from the simplest  
10 to the more sophisticated ones. The most simple one  
11 is to say well I am going to use the historical data  
12 and just simply drawing from that historical data. I  
13 am putting the historical data in a hat and I will  
14 draw randomly a thousand times, ten thousand times and  
15 see what I get. This is very easy to implement and it  
16 is very simple. But you know, it is limited in terms  
17 of the information it is using. It is only using the  
18 numbers that happened in the past. It is called the  
19 non-parametric way.

20 The second one in the middle is the  
21 parametric type, which looking at the past  
22 performances, you can say well this is a distribution  
23 that fits these data pretty well.

24 It could be, actually, first of all, it  
25 has a function for you to put in a historical data.

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1 It will try to fit whatever it thinks is the best  
2 distribution around the data. It could be a normal  
3 distribution. You know, it could be something looking  
4 very different, you know, truncated so you don't have  
5 the extreme values.

6 So this is, it will give you a richer set  
7 of data of results, but sometimes you may not find a  
8 distribution that truly represents the historical  
9 data, any predefined distribution that fits that  
10 historical data very well.

11 And the last one, economic modeling, that  
12 gets more sophisticated. You use the yield curve over  
13 time and then you add on risk premium of whatever; the  
14 stock market returns, the risk premium of different  
15 asset classes. You model it that way. This is the  
16 most realistic but it is also the most complicated one  
17 to implement.

18 There a steps to implement a Monte Carlo  
19 simulation. The first step is really to generate the  
20 numbers in the hat. Here is, you know, either through  
21 a predefined distribution or you use historical data  
22 directly from there. This is to generate those  
23 numbers.

24 And the second step is the computer will  
25 do it for you, generate random drawings from these

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1 assumptions. This is actually drawing the numbers  
2 from the hat.

3 The third step is to calculate and to look  
4 at how these random draws from each one, you know,  
5 from either one input or several inputs, you generate  
6 the possible outcomes and looking at the distribution  
7 of the possible outcomes and generate probability and  
8 all that good information from there.

9 I thought I would go through an example  
10 here on the project we did looking at Palau's trust  
11 fund. A little bit of background. The U.S. has this  
12 compact with a Pacific island nation, the Republic of  
13 Palau. In 1995, the U.S. contributed \$66 million into  
14 this trust fund. And then later, two years later, an  
15 additional \$4 million.

16 The goal of the trust fund is to produce  
17 an annual disbursement of \$15 million a year, starting  
18 from the fiscal year 2010. Prior to fiscal year 2010,  
19 Palau receives direct assistance from the U.S. and  
20 after 2010, the direct assistance stops and the goal  
21 is for the trust fund to kick in and to be able to  
22 generate this \$15 million a year to support the  
23 government functions there.

24 So our question is, what is the  
25 likelihood? This is a really long time frame. It is

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1 35 years out in the future and what is the likelihood  
2 of the trust fund will be able to provide that desired  
3 level of income?

4           Where is Palau? Here is a quiz. Who  
5 knows how many people? What is the population of  
6 Palau? Any guess? Close. A little more. It is  
7 20,000. It is about 80,000 something miles from the  
8 U.S. It is pretty far out there, about 500 miles  
9 southeast of the Philippines. There are historical  
10 reasons why we have a compact with Palau but I won't  
11 get into that.

12           So, the methodology. We looked at -- You  
13 know the first step is looking at the balance. How  
14 much money is in the trust fund at the beginning of  
15 our projection? And we look at the disbursement  
16 schedule and the inflation adjustment. Then we also  
17 have this equation, basically looking at the trust  
18 fund balance. What is the investment fees? What is  
19 the disbursement? What is the -- If there is any  
20 deposit into the trust fund. So, this helps us  
21 starting from the balance to get to the point of what  
22 we are interested in, is how much they are going to  
23 have in that trust fund in 35 years.

24           And then Monte Carlo simulation comes in  
25 when we look at the distribution. They have three,

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1 they are investing in maybe three asset classes, large  
2 company stock, small company stock and Treasury bills.

3 And so these are the three returns that have the  
4 uncertainties around which we used Monte Carlo  
5 simulation to analyze.

6 There is three main asset classes they are  
7 investing in, small/large company stocks and U.S.  
8 Treasury bills. And we also built in there, there are  
9 some cross-correlation and serial correlation.

10 If you look at the historical returns,  
11 these numbers, these returns are not independent of  
12 each other. What years that you have usually a good  
13 performance in the stock market, in large company  
14 stocks, usually you will have a good year. Also in  
15 the small company stocks. So these are, we built in  
16 these correlations to be more realistic.

17 The next few slides it is very difficult  
18 to see but I wanted to put some, these are the screen  
19 shots of when I did the analysis. This is what it  
20 looks like. As you can see, this is in Excel and the  
21 ones, the green highlighted columns, these are I think  
22 one is small company stock, one is large company  
23 stock. These are the ones that what Excel or Crystal  
24 Ball will call it the assumptions. We put what we  
25 assumed the distribution is going to be built around

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1 these numbers and the column that is highlighted in  
2 blue, light blue there, is the outcome, the forecast.

3 This is where we tell Crystal Ball Excel to capture,  
4 the runs, the outcome of each of the runs.

5 The next one, the next screen shot is our  
6 assumption on the returns of this is, I think it is  
7 small company stocks. As you can see, it really  
8 ranges. If you look at the historical data, you know,  
9 from negative 30 something percent a year to positive,  
10 the highest number is 60 percent, really wide range.  
11 I mean, that just shows there is just a lot of  
12 uncertainties when you are putting the money in the  
13 stock market.

14 So this is kind of our assumption on the  
15 distribution. I used a custom distribution rather  
16 than a predefined distribution. Actually, Crystal  
17 Ball allows you to do that. What I did was I took the  
18 30 something years of returns in the past and built a  
19 custom distribution around there. And once I start  
20 the simulation, it will draw from the distribution.  
21 You know, this is a small. And then for each one, you  
22 know, for the small company stock, large company  
23 stock, and Treasury bills. Treasury Bills, you know,  
24 their distribution will be just a lot tighter because  
25 it doesn't have this wide range of negative 30 to

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1 positive 60 percent.

2 The next screen shot, this is a cross-  
3 correlation we built in. Large company stock, I think  
4 it is large and small company stock, they are  
5 correlated into one year. I think the correlation  
6 coefficient is 0.66. So it is pretty highly  
7 correlated. They were also building the serial  
8 correlation, one year's performance how that is  
9 related to the next year's performance.

10 So these are just some screen shots to get  
11 some idea how this is carried out in Excel.

12 What we found for Palau's trust fund is  
13 that if you just look at no uncertainty, every year  
14 you are going to earn the same return. What they need  
15 to be able to earn is 8.1 percent every year in order  
16 for them to be able to withdraw \$15 million from their  
17 trust fund.

18 I don't know whether any investment  
19 advisor will tell you I can guarantee you 8.1 percent  
20 every year. If there is someone like that, maybe I  
21 will put my money with them. Forecasting the future  
22 really has a lot of uncertainty. Looking, you know,  
23 35 years down the future, Monte Carlo simulation was  
24 able to give us some insight of the likelihood of the  
25 trust fund being depleted. We found that the trust

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1 fund will have no probability of disbursing that \$15  
2 million a year until 2016. And after that, there  
3 starts to you run into some risk of depleting the  
4 trust fund.

5 So the next slide, the blue line is the  
6 projection we did based on March 2008 balance. As you  
7 can see, you know, there was no probability of  
8 depleting the trust fund at the beginning and then the  
9 probability increases. For 2044, that is the end of  
10 the 35 years, the probability was around 48 percent.  
11 It is less than 50 percent.

12 So, we then updated the projection. In  
13 2009, we used the balance they had in June 2009. If  
14 you remember between March 2008 and June 2009, the  
15 stock market took a big dive, yes, and Palau's trust  
16 fund lost a lot of money, probably like a lot of  
17 people's investment. So we updated the projection.  
18 As you can see, the prospect was a lot worse. The  
19 probability of depleting the trust fund was a lot  
20 higher.

21 So this is -- I guess there are really two  
22 points here. One is the projection seems to be fairly  
23 sensitive. Where you start your projection, it is  
24 going to affect, you know, it is kind of like where  
25 you stand affects what you see. It is not to say one

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1 is wrong or one is right but, you know, updating that  
2 information as information becomes available is  
3 important.

4 And we also did some simulation trying to  
5 figure out how to deal with this potential shortfall.

6 There are several proposals out there. One is you  
7 know, you can pay as you go. If there is a  
8 probability of having a shortfall, that does not mean  
9 you are going to have a shortfall.

10 So, you can say well I am not going to do  
11 anything about it until it actually happens, we can  
12 put more money in. So we did a simulation kind of  
13 looking at the expected contribution to the trust  
14 fund. If you do have a shortfall in one year, you  
15 know, you put in the \$50 million to cover that year.

16 The way the model is set up, they will  
17 deplete the -- Once there is a shortfall, every year  
18 after that, you just run out of money. So if it  
19 happens, let's say 2024, then you have to put in money  
20 every year after that.

21 So, another option is to generate, to put  
22 in money now so it can reduce this probability of a  
23 shortfall in the future. So and then you can take a  
24 look. You know, which way might make more sense in  
25 terms of the funding that is going to be needed to

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1 deal with the potential shortfall in the future.

2 Okay. That is it.

3 MR. LESLIE: Ming, thank you very much for  
4 your presentation. Are there any questions in the  
5 audience here? Okay, I will come over to you. I am  
6 going to start on my right. Can you just pass this  
7 mike to her and then pass it right back?

8 MS. KASS: Thank you. This is Leslie Kass  
9 with NEI. I appreciate the information. I have used  
10 Monte Carlo myself and it is kind of fun.

11 Just a couple of comments. In terms of  
12 the historical data that we have for nuclear plants,  
13 we always find when we try to apply some simulations  
14 we have a very small universe of data. And as we  
15 talked about this morning earlier, the number of  
16 decommissioning projects that we have had to date,  
17 every one has been unique going forward, they will  
18 tend to have some unique qualities and our licensees  
19 will respond to the market conditions of the time and  
20 make adjustments.

21 In terms of probability of making sure we  
22 have money, I think that actually through that 2008-  
23 2009 period we showed that our investment strategy was  
24 very sound. A very high percentage of the plants do  
25 that, not a very high percentage of all of our

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1 retirement plans were well funded to the minimum  
2 levels, and we were very well protected, I think by a  
3 relatively conservative not an 8.1 percent per year  
4 investment strategy. And we also have the benefit  
5 that we don't take the money out until end of life.  
6 So we are not depleting our funds any earlier.

7 So I guess that, you know, some of the  
8 examples, if we were looking to apply this one, why, I  
9 think we are financially covered. If you are trying  
10 to figure out the cost, it is extremely challenging.  
11 How would you come up with the data set and the  
12 assumptions, given the unique nature of these  
13 projects? I am concerned that it could be an academic  
14 nightmare given the cost.

15 MR. LESLIE: I would like to kind of  
16 remind both the speakers and the people in the  
17 audience that we do have a schedule and we are running  
18 a little bit behind. I know you all will be taking  
19 questions so I will remind you of Brian's ground  
20 rules, which are concise as much as we can.

21 Steve, first could you introduce yourself,  
22 please?

23 MR. SHORT: Yes, Steve Short. Just a  
24 quick question. Do you have some kind of policy on a  
25 confidence level that they strive to achieve or they

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1 expect to achieve, like your graph here shows 90  
2 percent for 48 percent in 2044. Is there a standard,  
3 is there a policy regarding what the level of  
4 confidence is that you should be obtaining, so that  
5 you are below some point? You know, if you are only  
6 at 60 percent, do you have to get up to 80 percent?

7 MS. CHEN: I am not aware of such a  
8 policy. I mean this is really not a decision for GAO.

9 This is a decision for when the State Department  
10 negotiates with the Palau government, they actually  
11 just reached a new agreement at the end of last year,  
12 we provided the information to Congress and this is a  
13 decision they -- You know, they look at the  
14 information what is the likelihood this will have a  
15 shortfall and they decide do we want to give Palau  
16 more money. So yes, I guess we don't have a policy on  
17 that.

18 MR. LESLIE: Other questions? Okay, we  
19 will take Tom and then I will move to the front.

20 TOM: Thank you for that presentation,  
21 Ming. I thought it was very interesting. Do you know  
22 what the outcome was from Congress when they, after  
23 looking at this information, what did they decide to  
24 do?

25 There is actually, initially the compact

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1 direct assistance was going to expire at the end of  
2 last year. But the trust fund did take a dive and I  
3 think in the initial negotiation, they were very  
4 optimistic in terms of the returns. I think the new  
5 agreement that actually they reached at the end of  
6 last year, the U.S. is going to continue to provide  
7 some direct assistance and contribute more to the  
8 trust fund. That hasn't passed as a law yet but it  
9 still goes through Congress.

10 MR. LESLIE: Question?

11 MR. WILLIAMS: I am Dan Williams. I  
12 retired from GAO about four years ago.

13 MS. CHEN: I read your paper.

14 MR. WILLIAMS: Thank you. At GAO, I built  
15 models to look at scenario simulations at two  
16 different times, the late 90s and then in the early  
17 2000s now as a non-GAO product, it was my own  
18 publications. I actually applied Monte Carlo  
19 simulation to all of the funds for 2004, although I  
20 extrapolated a bit they were basically 2000 or 2001  
21 data.

22 Anyway, the main and I published in a  
23 number of locations but the two main ones were in  
24 *Energy Economics* and they came out in paper in 2007.  
25 The main thing I got out of this stuff is that and I

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1 remember when I gave a seminar at GAO, don't focus on  
2 do you want a 90 percent confidence interval, 95.  
3 There is so much uncertainty that you really have got  
4 to focus on which of your variables contribute the  
5 most toward the uncertainty. You have to break down,  
6 it is an analogue to the analysis variance, a  
7 breakdown of your variation of however you modeled it  
8 minus how your fund levels, the level and also looking  
9 forward how the recent funding has compared to where  
10 it should be if it would match some benchmark that I  
11 have established. I won't get into that.

12 But the two most important variables were  
13 the rate of return on the funds, the after tax rate of  
14 return, and the cost escalation rate. A lot of the  
15 other things that can vary and don't.

16 You know, I remember Pete and I gave the  
17 talks. They asked questions about why did you use 90  
18 percent versus instead of 95 or what have you. It is  
19 a misplaced emphasis. Focus on what affects your  
20 variability the most and then focus your resources on  
21 getting greater knowledge a Bayesian sort of input  
22 into these other variables so that you can reduce the  
23 range of results.

24 I mean, it isn't much use if you are going  
25 to say well there is a 95 percent change, a 90 percent

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1 chance you are going to be 50 percent below where you  
2 ought to be or up to 60 percent above what you ought  
3 to be and policy makers are going to say, well that is  
4 no use. You have to refine your analysis because  
5 there is so much variability. That is the main thing.

6 MR. LESLIE: Thank you.

7 MS. CHEN: That is an excellent --

8 MR. LESLIE: I need to go to the next  
9 speaker or the next question because we still need to  
10 get all the speakers in and you still all deserve  
11 lunch. So again, remind yourself to try to be as  
12 concise as possible.

13 MR. ANDERSON: Thank you. Rick Anderson,  
14 Dominion. Two quick comments and that is, number one  
15 I think that based on the recent economic downturn,  
16 that is in fact talking to Leslie had commented  
17 earlier, is a testament to the industry and to the NRC  
18 minimum formula that so many of the plants did survive  
19 through that recent economic downturn and still had  
20 sufficient funding. I think we saw a minority of  
21 plants did not but again, the majority did.

22 The second point as Leslie had also  
23 commented, we are not allowed to take funds out of the  
24 decommissioning fund. And just to be clear about  
25 that, if we were, I suspect that it might be to lessen

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1 the liability of the eventual decommissioning cost,  
2 such as if we were able to dispose of steam  
3 generators. That is just something that would be done  
4 now instead of later.

5 So, those two quick points. Thank you.

6 MR. LESLIE: Thanks. Are there any  
7 questions on the webinar? And are there anyone on the  
8 phone that have questions? Well, I don't hear any.

9 So with that, I would like to thank Ming.  
10 Thank you very much.

11 (Applause.)

12 MR. LESLIE: I would like to invite up the  
13 next speaker David Emerson from LCG Associates. Oh,  
14 and Kathy Taylor from LCG.

15 Again, this meeting is trying to be  
16 transcribed. So if you are going to speak, try to  
17 speak right into the microphone. And I think your  
18 slides are up and ready to go. Again, try to make it  
19 20 minutes so we have time to have some questions  
20 afterwards. Thank you.

21 MR. EMERSON: We will jump right in.

22 Good morning. I am David Emerson with LCG  
23 and to my left is Kathy Taylor with LCG. We are a  
24 consulting firm that works with a number of utilities  
25 on the asset side. But part of the process that we

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1 put in place is modeling the assets versus the  
2 liabilities and that is what we are going to focus on  
3 and to continue on from the prior speaker's dialogue  
4 on Monte Carlo, we will focus on our Monte Carlo  
5 simulation with a hypothetical nuclear decommissioning  
6 trust.

7 Anything that you see that may resemble  
8 another one is purely coincidental. It is completely  
9 hypothetical.

10 So if we look at page two, our thoughts on  
11 modeling the assets versus the liabilities, this is a  
12 difficult process. For the most part, decommissioning  
13 is not going to start for over 20 years when most of  
14 the plants are out there, and within that, may take  
15 another 10 to 20 years to complete that process. And  
16 so there is a lot of variables that we look at and  
17 have to consider in modeling this to get an idea of  
18 what the funded status is going to be in that plant.

19 So number one, how are the equity and bond  
20 markets going to perform? How will the cost  
21 escalation rates change? And what costs do we not  
22 know about that may appear down the road?

23 So we use the stochastic analysis that can  
24 incorporate many of the variables that we are looking  
25 at. But again, keeping in mind that because of all

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1 these variables, and these variables can and will  
2 change, there is a wide range of potential outcomes  
3 when we look at this.

4 We go to page three. Number one, our  
5 model and many Monte Carlo models rely on the asset  
6 class assumptions, which can include the return, the  
7 risk, the income, turnover, taxes for those that are  
8 taxable. It includes funding assumptions, any  
9 contributions that may or may not be made; as well as  
10 the liability assumptions, the cost schedule, the  
11 escalation rate sensitivity.

12 And a change in any of these can affect  
13 what we call the success ratio. So that is the  
14 percent of observations in the model that meet or  
15 exceed the expected costs at the end of  
16 decommissioning.

17 Look at page four. So this is our sample  
18 NDT. It is LCG1, for lack of a better name. It has  
19 current assets of \$345 million. It has an expected  
20 future liability in present value of \$600 million.  
21 Current assets as you can see about 57 and a half  
22 percent of the liability. Decommissioning is expected  
23 to begin in 2033 and end in 2042. We made up these  
24 costs. So we will call it from the XYZ Utility cost  
25 study in current dollars, a current escalation rate of

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1 three percent. We will be looking at present value  
2 data here. So we discounted it back to the five  
3 percent rate.

4 We did not assume any contributions. You  
5 certainly could. And based on what we will be showing  
6 you, this is a utility, the price should and does have  
7 contributions coming in. And then we will talk about  
8 our capital market assumptions that we used to form  
9 this analysis.

10 Page five, please. So the target  
11 allocation and current allocation of this NDT is 45  
12 percent in domestic equity, five percent in  
13 international equity, 50 percent in fixed income. And  
14 if you look back at recent analysis put forth, this is  
15 a rough approximation of what a number of nuclear  
16 decommissioning trusts look like. This investment  
17 advisor puts this analysis together and they come out  
18 with their survey every two years. We would expect  
19 that you will some changes to this.

20 In this particular case, we had a special  
21 transfer. So all the assets are now qualified trust  
22 assets. It is taxable at the qualified rate of 20  
23 percent. Because our model does factor in the taxable  
24 side of things, we said there is a \$103 million in  
25 built-in unrealized gains that must be accounted for.

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1 And we are going to begin to de-risk this portfolio  
2 at 2028, which is five years prior to the start of  
3 decommissioning and it will occur all the way up until  
4 2038, at which point there will be a 15 percent fixed  
5 income and 50 percent in cash.

6 Page six, please. Just a brief definition  
7 on the asset class definitions. So All-Cap U.S.  
8 Equity was the domestic equity. This incorporates  
9 broadly diversified U.S.-based equities across market  
10 capitalization sector and industry. There may be some  
11 multinational exposure within this.

12 International Equity which is broadly  
13 diversified by market cap, country developed and  
14 emerging markets, sector and industry. But these are  
15 companies that will be based outside of the U.S.

16 Fixed Income broadly, again diversified  
17 across the sectors, typically tracks the duration of  
18 the Barclays Aggregate Bond Index, which is a fairly  
19 common standard. And then we briefly mention  
20 alternative investments. And when I mention you will  
21 see potentially a change in the target allocation or  
22 the common allocation across the number of nuclear  
23 decommissioning trusts, there is a potential that you  
24 will see an inclusion of alternative investments.

25 We did not, again, include that in our

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1 current allocation but it could be considered going  
2 forward. And these include things like hedge funds,  
3 real assets, which is physical assets, real estate,  
4 commodities, natural resources, and private capital,  
5 which is private investments as opposed to the public  
6 equity market.

7 And with that, I am going to turn it over  
8 to Kathy to talk about the history of investments.

9 MS. TAYLOR: Before we look at the results  
10 of the modeling, what I would like to do is just walk  
11 through a couple of points on where we have come. And  
12 many of you, as I look around the room, probably also  
13 set up the first NDTs back in the mid-80s. I was at  
14 Wisconsin Power and Light at that time and they in  
15 fact said you have got to set these things up. Nobody  
16 really knew what to do with them. They were taxable  
17 and we figured it out.

18 And as you remember, initially it was only  
19 Black Lung Trust restricted type investments,  
20 government funds, very, very plain vanilla. Nothing  
21 for real growth of capital.

22 And then the Energy Policy Act came out  
23 and with the Prudent Investor Standard we were able to  
24 start diversifying more, getting some growth in the  
25 portfolio in terms of equities, which has helped, I

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1 think, quite immensely. Next slide, please.

2 In the 90s, we saw a diversification from  
3 just the large-cap U.S. stocks into small-cap  
4 international. Non-qualified trusts were still  
5 primarily muni bonds because of the higher tax rate.  
6 And then we had the meltdown in 2008 and 2009. Next  
7 slide.

8 And now we are looking at diversifying  
9 even further and I want to show you why. Dave  
10 mentioned some of these alternative investments. They  
11 are really not alternative anymore. Next slide,  
12 please.

13 Here is what happened in 2008. The green  
14 bars on the right-hand side are the only positive  
15 asset classes in 2008. And the red bars, you can see  
16 left, it is pretty bad.

17 MR. LESLIE: Well everybody else saw their  
18 assets fall that much.

19 MS. TAYLOR: Exactly. And you can see  
20 that what the NBTs were invested in for the most part,  
21 U.S. small-cap, U.S. large-cap, international  
22 developed markets. They did pretty poorly down to 35  
23 to 45 percent.

24 Now bonds held up, Treasury bonds did  
25 pretty well. Anything though with a credit rating

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1 tanked.

2 Let's look at the next year. Big change.

3 What was on the bottom is now on the top and emerging  
4 markets were leading the way. As we heard from Ming,  
5 there is wide range in some of these asset classes.  
6 Plus 78 percent in one year is pretty good but it can  
7 happen. It has happened before.

8 But you were probably not invested in  
9 those assets classes that did the best in 2009, so you  
10 may not have come back as much as people that were.

11 Now in 2010, the next slide, everything is  
12 green on this. Now, this makes you think, good, we  
13 are back to normal. Well, this gets me nervous  
14 because when you see everything doing well, it is time  
15 for something to start underperforming.

16 So we are at an inflection point now that  
17 we think could be, and if we look at -- Actually why  
18 don't we skip two slides. We have got to be looking  
19 at our asset mix and how we are diversifying. This is  
20 the ten-year annual average of these different asset  
21 classes. Emerging market is still great.

22 The first yellow bar there, that is a  
23 typical required breakeven rate of return that we have  
24 found, obviously they vary between utilities, but on  
25 average, this seems to be about where they need to be.

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1 So to earn that in the last ten years, look what you  
2 would have had to have had a significant portion in.  
3 Emerging market stocks, RETTs, emerging market debt.  
4 I don't know any NDTs that have concentrated in those  
5 kinds of things.

6 Very interesting. Look at the bottom.  
7 Large-cap stocks. This was the "lost decade" and it  
8 wasn't lost for everything but just for U.S. large-  
9 cap. And obviously making predictions is very, very  
10 difficult but this is a survey we do annually, Wall  
11 Street strategists on what they expect for the coming  
12 decade. And this was done in December, so it is for  
13 2011 through the end of the decade.

14 Not surprising private equity is right up  
15 there at the top. A few utilities are considering  
16 private equity. It has a long-term lockup but these  
17 are long-term funds. You don't want to be committing  
18 to it when you are getting near decommissioning but  
19 you sure could now. And when you look at that  
20 breakeven rate, you see a lot of these things that  
21 need to be invested in, but you also want to protect  
22 for a 2008. And that is where, if you think about it,  
23 hedge strategies, where they don't go down as much in  
24 a down market but keep up pretty well in the other  
25 markets, they tend to work. So it is not that you

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1 have to jump into these things but we need to be  
2 studying them and see which make sense and which  
3 don't.

4 I am going to turn it back to Dave to  
5 answer the rest.

6 MR. EMERSON: Okay, great. On page 16, we  
7 go through the capital market assumptions. I am going  
8 to gloss through this. The key points here are long-  
9 term returns and expected long-term volatility,  
10 expected portfolio turnover, taxes as we mentioned, 20  
11 percent in yield, and trading costs. And this is what  
12 goes into our model to feed the asset side of the  
13 equation.

14 If we look at page 17, we look at the  
15 liability side, we are relying on the cost studies  
16 that the utilities provide. In this case, it was a  
17 made up cost study. And we are looking at a couple of  
18 different things here. Number one, escalation rate  
19 sensitivity.

20 We used a three percent rate and we looked  
21 at three different scenarios with that. Number one, a  
22 three percent constant rate. Number two, a three  
23 percent stochastic rate where we tie the escalation  
24 rate to the returns of the equity in the bond market  
25 and then we also look at a six percent shock rate that

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1 we call which is obviously more pessimistic. But  
2 given where we are with inflation and escalation  
3 rates, potentially down the road could be a possible  
4 outcome.

5 And with that, we also looked at two cost  
6 scenarios. Number one was what we had created to be  
7 the primary cost study; and number two, not that we  
8 are going to go in and define how we can extend some  
9 of the cost but in some cases there may be a  
10 possibility to extend some of the costs out a year or  
11 two. And this was a process that we determined to be  
12 a 12-year cost study to see if that might help a  
13 little bit with the funding.

14 So if we look at the results on page 18,  
15 and we are looking at in the blue here is a Cost  
16 Schedule 1, the ten-year and Cost Schedule 2 in  
17 yellow, we look at the three liability rates, the  
18 three percent constant stochastic and six percent.  
19 And what you can see here are success ratios.

20 So 56 percent, for instance, and the three  
21 percent constant rate on Cost Schedule 1, 56 percent  
22 of the time we saw where we met or exceeded the cost  
23 of decommissioning, that increased to 63 percent. But  
24 what is really striking here is the six percent shock  
25 number where only one percent of the time did we meet

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1 or exceed and that is something we think about.

2 If we look on the next page, page 19,  
3 these are the present values based on the median case,  
4 and we ran 2000 loops in this Monte Carlo simulation,  
5 as well as two and a half percent number. And that is  
6 really what we consider to be our downside or worst-  
7 case scenario.

8 So again, looking on Cost Scenario 1 on  
9 the left-hand side, we see \$17 million was the median  
10 case and the three percent constant a little bit  
11 better, and the stochastic at \$31 million. But  
12 compare those to the worst-case scenarios in those  
13 situations of negative \$118 and negative \$107. And  
14 then moving forward to the six percent shock, which is  
15 a significantly higher downfall that we would have to  
16 consider.

17 Cost Scenario 2, where we extended the  
18 decommissioning process out a little bit, you get  
19 slightly better results as we saw on the prior page as  
20 well.

21 If we look at page 20, we also said well  
22 what would happen if we extended the amount of risks  
23 that we are taking in this portfolio and increased it  
24 to a 60 percent equity, in this case 50 percent  
25 domestic, 10 percent international and 40 percent

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1 bonds? And this would give us a little bit more  
2 volatility potential and little more upside in the  
3 portfolio. And we can see on page 21 that did  
4 increase the results a little bit, up to 63 percent  
5 and 68 percent for Cost Schedule 1 and 64 to 69 for  
6 the extended version, but only to three percent on the  
7 six percent shock escalation rate.

8 And you can see the actual present value  
9 dollars on that on page 22. Again, an increase as we  
10 would expect but not much of an increase on the  
11 downside for the six percent shock.

12 And when you see the change on the  
13 following pages here, page 23, you can see that  
14 basically we saw a seven percent increase in Cost  
15 Schedule 1 for the three percent cost and five percent  
16 for the three percent stochastic. So there were  
17 measurable increases by increasing the amount of  
18 equity exposure that we had in the portfolio.

19 And also page 24, just what the increase  
20 in the present value by increasing the amount of  
21 equity exposure.

22 So in conclusion on page 25, we do believe  
23 that Monte Carlo simulations are a good estimate but  
24 it is a wide range of outcomes that we can see. So it  
25 gives us that range of potential outcomes but knowing

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1 that this is a long process, that we are a long way  
2 away in many cases from the decommissioning process.

3 We do believe that stochastic modeling of  
4 the escalation rate is a little bit more robust than  
5 the constant rate. We saw that in the results. We  
6 just think that moving the escalation rate in  
7 conjunction with the equity and bond markets, we think  
8 that that makes a little bit more sense but we do have  
9 concerns about that escalation rate shock. If that  
10 were to happen, that would obviously significantly  
11 change the funding status. And so it is something to  
12 consider.

13 That being said, a new Monte Carlo  
14 simulation should be rerun every time that you have a  
15 change, a significant change in your assumptions,  
16 whether that be a new cost study or a change in any of  
17 the other assumptions, we believe that should be rerun  
18 and have a new baseline to consider.

19 As we saw, a change in the liability  
20 schedule did make marginal improvements, not  
21 significant improvements but it did improve a little  
22 bit.

23 And then finally, the asset allocation  
24 targets and the asset class assumptions, they are  
25 critical as well, critical inputs. And increasing

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1 risk in the portfolio may be necessary and there may  
2 be other situations where it is a lot better funded  
3 where taking risk off the table makes more sense.

4 So with that, we are open to questions.

5 MR. LESLIE: David and Kathy, thank you  
6 very much. And Kathy, could you just sit at the table  
7 because there is a mike there.

8 MS. TAYLOR: Oh, okay, sure.

9 MR. LESLIE: If someone asks you can speak  
10 in there.

11 I will open it to the floor here in the  
12 audience. Are there questions? Okay, I am coming  
13 over.

14 MR. ANDERSON: Thank you. Rick Anderson  
15 with Dominion again.

16 Regarding the six percent shock, as so  
17 often goes the escalation rates, so goes perhaps the  
18 fixed income and expectations. It appears here that  
19 why you did model a percent shock rate but you didn't  
20 give any bump, shall we say, to fixed income.  
21 Therefore, you increased one but yet frozen the other.

22 I would I assume that there should be some  
23 correlation between the two of them in that both of  
24 them should increase somewhat.

25 MR. EMERSON: Yes, that is a good

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1 observation. Obviously, that could have an impact and  
2 probably should have an impact on the fixed income  
3 percentages. We did not factor it into this  
4 particular model.

5 And again, this isn't meant to be, you  
6 know, if six percent happens, therefore it is a bad  
7 situation, it is just more of an example. But you are  
8 absolutely right, it would impact the fixed income  
9 returns.

10 MS. TAYLOR: Well and that is where we  
11 could do more of the stochastic escalation rate model.

12 MR. LESLIE: Another question here.

13 MS. BALLENGER: Hi. Josey Ballenger from  
14 the Government Accountability Office. I am just  
15 wondering if LCG or anyone else has done an analysis  
16 of what the licensee's types of investments are.  
17 Because I don't think that is something that they  
18 submit in their DFA reports to NRC so the NRC  
19 evaluates. So I am just wondering if you any  
20 observations on the asset mix.

21 MR. EMERSON: NISA Investment Advisors  
22 actually does a survey every two years where they, and  
23 their next survey will be coming out from what we  
24 understand, in May, where they do do a survey based on  
25 a number of responses from the utilities on the

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1 average allocation. And again, the allocation that we  
2 use here was very similar to what the 2008 survey came  
3 out a little bit more broad-based than what they had  
4 done. But yes, that survey is done and this is fairly  
5 representative of that.

6 MS. TAYLOR: If anybody is interested in  
7 getting the previous survey, just give me your  
8 business card and I will make sure you get it.

9 MR. LESLIE: Other questions here in the  
10 audience? All right, over to the other side.

11 MR. BAILEY: Paul Bailey, ICF. I got lost  
12 with the blue and the red in your modeling for some  
13 reason; blue says 50 percent, the red two and a half  
14 percent. What do those represent?

15 MR. EMERSON: So of the 2000 loops that we  
16 ran in a Monte Carlo simulation, that represents the  
17 50th percentile or the median and the two and a half  
18 is the tail. We cut off the remaining two and a half  
19 and we will call that two and a half our worst-case  
20 scenario.

21 MR. BAILEY: Thank you.

22 MR. EMERSON: Yes.

23 MR. LESLIE: Other questions? Anyone on  
24 the phone have questions? And there is no one on the  
25 webinar that has questions? Last chance for David and

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1 Kathy.

2 Well, thank you very much.

3 MS. TAYLOR: Thank you.

4 MR. EMERSON: Thank you.

5 (Applause.)

6 MR. LESLIE: And could I get David Krause  
7 to come on up?

8 I just want to thank David and Kathy again  
9 for getting us back on track. So David, you have got  
10 your full allotted time.

11 MR. KRAUSE: Very good.

12 MR. LESLIE: And if people are leaving, I  
13 have got to remind folks that if you are a visitor,  
14 you will need to be escorted out. And I think  
15 Michael, if you will raise your hand, you will need to  
16 go with him. So hold on a second.

17 MR. KRAUSE: Well good morning, everyone.  
18 Good morning a lot this morning. My assignment here  
19 is to try to share to share with you some numbers into  
20 the mix here so that everybody is sort of on the same  
21 page in terms of where the status of these  
22 decommissioning funds in terms of both absolute  
23 numbers and relatively how they changed over time.

24 A little background on Duff and Phelps.  
25 Duff and Phelps has been a very active participant in

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1 the nuclear decommissioning arena for more than 20  
2 years. Their decommissioning funds make up a fairly  
3 significant percentage of the assets in the management  
4 of our firm. And through a combination of either  
5 working directly with utilities and managing funds or  
6 the investment portfolios that we manage, more than 80  
7 percent of the assets are directly tied to utilities.

8 So it something that we have had been a long history  
9 at Duff and Phelps in terms of working with utilities  
10 and the clients that we work with, both as an investor  
11 and also as an investment manager.

12 I am going to cover a couple of things  
13 relative to these funds. I am going to look at the  
14 study that we update every year. And because the data  
15 is not yet currently available as of 2010, the study  
16 will focus on data through 2009. I will try and make  
17 some observations relative to some estimates that we  
18 think the funds stood as of the end of 2010.

19 I am not going to directly comment on the  
20 specific company data that is also in the  
21 presentation. It is for your reference but it is the  
22 basis of the underlying findings that we have had in  
23 our study.

24 So if we look at the basis of our  
25 analysis, what we do is we look at any reports that

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1 companies file with the SEC, their 10-Ks or their  
2 overall company reports. We also look at the filings  
3 that the companies submit to the NRC every other year.

4 Where that really comes in handy is in the public  
5 power side. Because public power companies, as you  
6 may be aware, do not have the same requirements in  
7 filing their financial information. And so literally  
8 the only source we have for the public power companies  
9 is what they file with the NRC. That numbers are the  
10 basis of how we do the analysis.

11 Our analysis that you are going to see in  
12 the report is for the five year period 2005 through  
13 2009. We do break it down into two separate groups.  
14 One is the investor-owned utilities and the other is  
15 the public power utilities. And the specific reason  
16 we do that is because investor-owned utilities are  
17 subject to tax so there are tax implications  
18 associated with those funds. Public power companies  
19 are not subject to tax and so that is not a factor.

20 There is another element which really  
21 doesn't come into our analysis but it is something  
22 that you should be aware of and something that will  
23 show up in the data. Investor-owned companies have,  
24 in general, much more leeway in the type of  
25 investments they can invest in. Most -- Many of, not

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1 most, but many of the public power companies are  
2 restricted by state law in what they can invest in in  
3 their funds. And in many, many cases, those state law  
4 restrictions are fixed income only. So there is a lot  
5 of public power companies that have not been able to,  
6 well, there is the two, one of which they haven't seen  
7 the volatility over the last couple of years but they  
8 also haven't had the same returns as their investor-  
9 owned brother.

10 The study right now consists of 104  
11 operating nuclear plants. We also include data for  
12 five companies who, five plants, I should say, that  
13 are non-operative, but which decommissioning has not  
14 yet commenced. Now remember this is 2009 data. There  
15 is going to be an exception to that starting -- We  
16 haven't quite concluded how to deal with this in the  
17 Zion plant.

18 Zion is now under decommissioning. The  
19 Energy Solutions Firm in Salt Lake City started  
20 decommissioning that plant last fall and have already  
21 started to spend money and the practice has been that  
22 we would exclude companies that the decommissioning  
23 process has been underway. And that is consistent in  
24 the data that you will see.

25 The most significant impact of that in

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1 terms of the data you will see here is SONGS 1, which  
2 is a jointly owned plant by Southern California Edison  
3 and San Diego Gas and Electric, is not included in  
4 this data. And its fund at the end of 2009 was about  
5 \$375 million. So it is not an inconsequential amount.

6 It is about one percent of the total assets of NDT  
7 assets but just to make sure you understand the basis  
8 of the numbers we looked at.

9 The table that is in the study and also  
10 the graphs, probably the biggest single issue that you  
11 are going to see some significant inconsistencies  
12 among companies is the decommissioning cost estimate.

13 We take the number, like in the case of investor-  
14 owned utilities, we take it out of the 10-K and it is  
15 what the company says it is. And the fact is about  
16 that is that there is a huge range of the basis that  
17 goes into that number that is published. In some  
18 cases they will say publicly that okay, this is 2009  
19 annual report but they will say something like, this  
20 is based on the 2006 site-specific cost estimate not  
21 updated for 2009. So it is 2006 data.

22 In other cases, it will be a site-specific  
23 estimate but that site-specific estimate may include  
24 total green fielding of the facility. And that  
25 specifically applies like in the California situations

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1 where green fielding has a huge impact on the  
2 decommissioning cost estimates.

3 So the data you will see in the tables has  
4 a huge range of what the decommissioning cost estimate  
5 might be. We go through a procedure, it is not going  
6 to be in the graphs but I want to just point this out  
7 to you, of normalizing that particular cost estimate  
8 and that we bump it up to an average number per  
9 kilowatt. An average number, if I recall, in 2009 was  
10 \$618 per kilowatt. So it is a way of sort of looking  
11 at normalizing everybody and trying to, if you are not  
12 at least up to that standard, we will bump you up a  
13 little bit. Again, the number is not going to show up  
14 on the graph but you will see that in the table that  
15 is in the back.

16 Another number to point out that is in the  
17 tables of the individual company data is the average  
18 years to life of the nuclear plants in a company's  
19 portfolio. To us that has very significant  
20 implications because it tells you basically the period  
21 of time in which they can theoretically make  
22 contributions to this fund so that they are adequately  
23 funded when the decommissioning process starts.

24 Let's take a look at the data and what we  
25 see.

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1           This first graph is the NDT fund balances  
2 and again, we mentioned that we broke this down  
3 between investor-owned utilities and public power  
4 companies and then showed the total.

5           As I mentioned earlier, public power  
6 companies, a vast majority of them use only fixed  
7 income, which explains why that line is pretty  
8 straight. They didn't see the big volatility that  
9 occurred in 2008 and 2007 -- 2008. Excuse me.  
10 Whereas, the investor-owned companies did.

11           But there is another very important  
12 element in this in terms of what the investor-owned  
13 utilities experienced. These are nominal dollars, but  
14 if you would convert this table into what I will call  
15 percent change data, that percent change would, almost  
16 exactly, emulate a portfolio that is approximately  
17 six percent large-cap stocks, 40 percent investment  
18 rate fixed income securities, which reflects the very  
19 conservative way that these portfolios have been  
20 managed over this period of time.

21           And just I will read this in numbers; 2008  
22 the change was about 20 percent, 2009 about 18 percent  
23 increase. And those particular percentages are almost  
24 exactly what a balanced portfolio of 60 percent  
25 equities and 40 percent fixed income experienced.

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1           The next graph gives you the indication of  
2 the annual contributions that went into these funds  
3 over the last five years. Again the public power  
4 companies have been fairly constant, where there has  
5 been a fairly significant decrease among the investor-  
6 owned utilities. There is a specific reason for that  
7 and that is, for the most part, when investor-owned  
8 utilities had these transactions that have gone over  
9 the last several years, transactions being companies  
10 actually sell their nuclear plants to some other  
11 investor or a company would acquire another company  
12 that had interest in a nuclear plant. That  
13 consolidated the interest of nuclear utilities in the  
14 investor-owned space.

15           To give you a number of that, there are  
16 currently 28 companies that have an interest in -- 28  
17 investor-owned companies that have an interest in a  
18 nuclear plant. There used to be about 60. So, we  
19 have had a huge shrinkage in that number over the last  
20 couple of years.

21           Almost in all of those cases, those  
22 companies that have taken over those nuclear plants  
23 are so-called non-regulated utilities. And under the  
24 NRC standards, if you are a non-regulated entity, you  
25 have to pre-fund the liability. That doesn't mean

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1 that you can't make contributions. It is just that  
2 under the regs theoretically you are funded so you  
3 shouldn't need to make contributions.

4 Well companies have interpreted not need  
5 meaning that they don't. And as a result, these  
6 contributions have come down and they have come down  
7 on price substantially. If you look back, we have  
8 been doing this study since the early 90s. And if you  
9 look in the mid-90s, these contributions were running  
10 at an annual rate of about a billion and a half  
11 dollars. So they have come down from a billion and a  
12 half to the last few in 2009, there was only \$450  
13 million in round numbers. So the client has been  
14 very, very substantial.

15 The next graph is the decommissioning cost  
16 estimates. And again, this number is the numbers that  
17 are published by the companies. It is not adjusted.  
18 This graph doesn't reflect that adjustment that I  
19 mentioned earlier. So this just comes out of what the  
20 company says is that they are thinking of what it  
21 costs decommissioning these plants collectively. And  
22 that number, you know, at the end of 2009, was a  
23 little over \$61 billion and there has been come  
24 variance in that, largely because there was a slight  
25 and again a significant number of these are done on

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1 the NRC minimum. And for reasons maybe somebody at  
2 the NRC can explain, but the burial cost number  
3 actually declined in 2008, so the cost estimate went  
4 down. And then it bumped back again in 2009.

5 But these are the published numbers. What  
6 we think is helpful is getting an idea of what that  
7 number relates to in terms of the assets prior graph.

8 So this next graph gives the funding  
9 status and this is what some might call the shortfall  
10 in current dollars and it gives you an idea of what  
11 that amount is and what that trend line has been over  
12 the last five years.

13 Again, the public power companies have  
14 been pretty consistent, right around \$5 billion. It  
15 has had a variance for the investor-owned utility  
16 because the investor-owned utilities have experienced  
17 the market volatility over the last five years. And  
18 so it has been in the range of about \$15 billion to  
19 \$20 billion over time and it is reflected in the total  
20 amount for all funds.

21 The next graph explains this in the  
22 context of on a percentage basis. And a couple things  
23 that stand out here, which we will point out in our  
24 comments is that basically there has been a higher  
25 funding ratio for the investor-owned utilities than

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1 their public power counterparts. So despite the fact,  
2 and I think that relates directly to the investment  
3 strategy that public power companies have been using.

4 Less use of equities I think has had a significant  
5 impact on their funding status versus their investor-  
6 owned brother.

7 So what are our conclusions or  
8 observations on these funds over time? We did have a  
9 pretty significant decrease in 2008, followed by a  
10 pretty significant increase in 2009. And those  
11 returns did pretty much emulate the returns in a very  
12 conservatively managed portfolio. So we didn't see  
13 the big swings that came about because they weren't  
14 using high yield, they weren't using emerging market  
15 equities for the most part. So they didn't experience  
16 the big high volatility that could have been  
17 experienced.

18 As I mentioned earlier, contributions have  
19 continued to decline over the last several years. And  
20 we have had a situation where the assets of cost  
21 estimates have increased by the same amount between  
22 2005 and 2009, which means basically over that time,  
23 five-year time frame, there has been no change in the  
24 funding status. There has been some intermittent  
25 volatility but the actual funding level status

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1 remained the same over that five-year period.

2 To carry that out in real numbers, the  
3 funding status ranged from about \$15 billion, these  
4 are negative numbers by the way, to \$20 billion and  
5 stood at about \$20 billion at the end of 2009, which  
6 was pretty much unchanged from 2005.

7 The funding ratio for the investor-owned  
8 utilities has been consistently higher than their  
9 public power counterparts and is basically somewhere  
10 between two-thirds and three-quarters funded. Again,  
11 these are assuming that the fund is going -- that our  
12 cost estimate related to the current dollars in the  
13 funds.

14 Now let's turn to what we think may have  
15 happened last year on the presumption that, and we  
16 think that this is a very highly probably assumption,  
17 that the funds that were managed the same way as they  
18 have been, basically about 60 percent in stocks, 40  
19 percent in investment-grade fixed income. The market  
20 experience provided a 12 percent return last year. So  
21 it is our assumption that the assets increased by  
22 about 12 percent. And therefore, they went up by  
23 about \$5 billion to approximately \$46 billion.

24 And also in the broader public, the full  
25 presentation is our cost estimates based on the NRC

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1 minimum. And just eyeballing that table between 2009  
2 and 2010 we think the decommissioning cost estimate  
3 went up by about seven percent last year. And that  
4 means that yes, you had a higher increase in assets  
5 than you did in the liability. That is a good thing.

6 The funding status improved by about \$1 billion we  
7 think from negative \$20 billion to a negative \$18 or  
8 \$19 billion in round numbers. That is a good thing.  
9 But we still have a shortfall in current dollars.

10 But the one thing that everybody is going  
11 to get out of this conference is a huge amount of  
12 uncertainty, not only about the growth of the assets,  
13 but what exactly is the cost of decommissioning these  
14 funds, these plants.

15 This question of the availability of the  
16 burial site I think is an ongoing one that is still  
17 yet to be resolved. When the funds will actually be  
18 needed, when the decommissioning actually occurs I  
19 think is actually a greater uncertainty. We have had  
20 a whole wrath round of license extensions. There is  
21 no reason to think that those extensions won't happen  
22 again 20 years from now.

23 You know, we have got a lot of hydro  
24 facilities that were built back in 1880 that still  
25 operate. So that is 130 years of operating of those

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1 and they seem to do pretty well. One can think that  
2 license extensions should be granted for nuclear  
3 plants and keep operating. So when do you actually  
4 start spending money? Highly uncertain.

5 And then the last one is a favorite topic  
6 of ours, many have heard my question earlier, that  
7 there is an apparent disconnect between what the IRS  
8 believes and what the NRC believes in terms of the  
9 spent fuel costs. And I think that is a significant  
10 element that needs to be resolved because it will have  
11 a significant impact on the status of these funds.

12 Thank you very much. I would be delighted  
13 to entertain any questions you might have, Bret.

14 MR. LESLIE: Well I see at least one  
15 question. So let me walk it over.

16 MS. KASS: Thank you. Leslie Kass with  
17 NEI. Two points on your slides.

18 Slide number eight, annual contributions  
19 to NDT funds, I think that actually, you know, it  
20 looks like it is a lower contribution. But as you  
21 said, the merchant plants are required to fund up-  
22 front. So if you did a historical review, they are  
23 required to put in kind of larger chunks of money  
24 during some of the conversions that are not reflected  
25 there. So it looks like they are somehow not meeting

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1 their obligation when in fact they have done it prior  
2 and so they shouldn't have as big a need to add funds  
3 in response to changes because they should be able to  
4 rely on their growth. So that can be a little  
5 misleading.

6 And second, when you talk about the  
7 negative funding status, are you saying today's fund  
8 versus what we would need and not implying new growth?

9 MR. KRAUSE: No, I just -- It is a current  
10 dollar number. You know, much like the whole process  
11 of Monte Carlo simulation, it makes some assumptions.

12 You have to make some assumptions on what assets grow  
13 at and what the liability grows at.

14 The bad news is that if you look at the  
15 escalation of decommissioning liability since the  
16 start of this process back in 1986, the liability has  
17 grown at greater rate than the assets have in that  
18 period of time. Is that going to continue? I don't  
19 know the answer to that question but the NRC has an  
20 assumption of a real rate of return of two percent,  
21 which effectively means that they think that the  
22 assets will grow at a two percent greater rate than  
23 the liability will. That may happen. It may not. It  
24 is not built into our analysis but it is what the NRC  
25 is basically assuming.

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1 All I am saying is that if you make a  
2 worst, not even maybe the worst case scenario, but if  
3 you assume that the asset and the liability grow at  
4 the same rate out in the future, which actually has  
5 been the reverse of that in the last couple of years,  
6 it will have negative implications for the status of  
7 these funds.

8 MR. LESLIE: And we have one more question  
9 here.

10 MS. KASS: Just in response to that, I  
11 think what you are failing to discount for is the fact  
12 that we do every two years look at this. We update  
13 NUREG 1307. The process itself, you know, the  
14 framework that was developed originally is very robust  
15 because of the flexibility, because of all the checks,  
16 because we update when we update, we to provide more  
17 funding.

18 So I think you are creating a very  
19 negative projection without also stating that we are  
20 doing things, we are taking measures to keep up with  
21 that and that we will be forced to all the way along  
22 because we, as utilities, also want to make sure we do  
23 the right thing.

24 MR. KRAUSE: All right. I am not trying  
25 to give a negative indication. That is not my intent.

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1 This is a point time analysis, which at that point in  
2 time is what it is. I am just --

3 But obviously all those assumptions will  
4 change and will be different in the future. It is  
5 just that at this point in time, this is where we  
6 stand and that is what I am just trying to convey. At  
7 this point in time, this is what the status of these  
8 funds are.

9 And you are 100 percent right. There were  
10 significant amounts of what they call top off amounts,  
11 top off contributions back when several of these  
12 transactions did occur. Some of the later ones,  
13 however, did not have top off contributions. It was  
14 some of the earlier ones that there were some top off  
15 contributions and some of them were quite substantial,  
16 \$100 million in a couple different cases. So you are  
17 right, the contributions that we are showing, first of  
18 all, they probably predated 2005 but they did impact  
19 the status of those funds. So the assets do reflect  
20 those top off amounts. You are right.

21 MR. LESLIE: Other questions?

22 MS. SIMMONS: Anneliese Simmons from the  
23 NRC and this is one of my favorite reports. And I  
24 want to talk about the same chart that Leslie spoke  
25 about, the annual contributions, just to clarify a

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1 couple of points.

2 Of course we see that after the top off  
3 contributions, is this chart basically saying that the  
4 contributions that are made are really only related to  
5 growth? They are not above and beyond growth. In  
6 other words, what we have seen is that --

7 MR. KRAUSE: No. Cash contributions that  
8 they make, they are not related to the asset growth or  
9 the growth of the underlying assets.

10 MS. SIMMONS: Okay.

11 MR. KRAUSE: It is the actual cash  
12 contributions that go into the fund from the company -  
13 -

14 MS. SIMMONS: Right.

15 MR. KRAUSE: -- or the company's customers  
16 in most cases, that they are collecting from customers  
17 and that they contribute to the funds.

18 MS. SIMMONS: And then you also made  
19 another point and I just wanted to have your  
20 perspective on it.

21 You know, we talked a little bit, well we  
22 talked a lot about risks. When you consolidate 60  
23 owners down to 28, wouldn't you agree or perhaps you  
24 wouldn't agree, but what would your perspective be on  
25 some consolidation of risk when they shrink the number

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1 of the pool of merchant-owned facilities? Just are  
2 there any impacts there that you have seen that might  
3 be --

4 MR. KRAUSE: Well you have two issues; one  
5 of which there is still a lot of single-owned plants  
6 out there; that is, one entity owns one. And that has  
7 risk in and of itself.

8 And conversely, they have the other side  
9 of that equation. Some folks own a lot of plants.  
10 And so there is, they have a risk of owning too much,  
11 if you will.

12 I don't have an answer as to what the  
13 right number is but there is risks on both sides of  
14 the issue. No question about it.

15 One thing I would like to, that I meant to  
16 point out relative to the NDT assets that I didn't say  
17 but I would like to make sure I make a point of,  
18 investor-owned utilities are subject to tax. The  
19 numbers in the table are gross of that. And at the  
20 low point of the assets, it is highly likely that the  
21 cost and market were pretty close to each other. So  
22 the liquidation of those assets being at the very low  
23 point of this five-year study, the liquidation at that  
24 point in time probably didn't have big tax  
25 consequences but as the market continues to grow here,

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1 that ratio will change.

2 And so the number that they report to the  
3 NRC, which is gross, is not a true representation of  
4 the assets they have available to spend. And I would  
5 urge the NRC to give some serious consideration to ask  
6 them to give you the net of tax number that if they  
7 looked at this portfolio today, what it's a value  
8 would be. Because I think that is a more true  
9 representation of the dollars that they have available  
10 to spend.

11 MR. KELLER: Peter Keller, BNY Mellon.  
12 Just two points; one, the point you just made David  
13 about taxes, which I think is important.

14 But Leslie to your point earlier, I think  
15 the concern we all have is for years, you know, first  
16 round of license extensions the hope was the  
17 additional life gave you the chance to accumulate  
18 assets. But I think you know, we would have to have  
19 that every year.

20 Two, at the NDT conference, the concern is  
21 we have had too many years where costs have exceeded  
22 the escalation of asset accumulation. So it is not at  
23 all clear to me that license extensions do anything  
24 for us. In fact, if cost trends continue the way they  
25 are, we get deeper in the hole.

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1 MR. LESLIE: Other questions? Comments?  
2 On the webinar? Okay. Anyone on the phone have  
3 questions? One last chance for the people here.

4 All right, David, we appreciate that.

5 MR. KRAUSE: Thank you very much.

6 MR. LESLIE: And Jon, could you come up?

7 MR. BRUSVEN: Is it good morning or good  
8 afternoon at this point? It is still good morning. I  
9 am Jon Brusven with the NDT Fund Study Group. We are  
10 typically more of a facilitator of NDT knowledge than  
11 a repository. But given my background as a  
12 professional investor and a corporate finance advisor,  
13 I guess I was solicited to provide some insights into  
14 asset class return expectations.

15 Obviously stock markets and other  
16 financial markets have not performed well in the last  
17 decade, which has been a big setback for dedicated  
18 funds, not only NDTs but pension funds and other  
19 dedicated funds as well.

20 Well one thing that I think you would be  
21 forgiven if you thought that the returns in the  
22 financial markets, whether they be stock returns or  
23 other things are random because they are not. In  
24 fact, back in the late 80s is when it started. So  
25 there was a lot of academic research done by the

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1 University of Chicago and other places sort of  
2 discussing the fact that there are actually ways to  
3 better understand the trajectory of investment returns  
4 than just saying well the long-term average is, well,  
5 it is now down to ten percent but probably up until  
6 about five years ago, everybody assumed that stocks  
7 were 11 percent. After what has happened in the last  
8 ten years, it is now ten percent. But at any rate,  
9 there are better ways to estimate investment returns  
10 than simply taking a hundred year average and saying  
11 that is what we are going to get.

12 So there continue to be strong reasons to  
13 believe that there will be substandard, I am not  
14 saying negative but substandard, returns in many asset  
15 classes that are invested in by NDTs. That is not to  
16 say that beyond this I don't even think the new normal  
17 is kind of a buzz word or a buzz phrase that goes  
18 around. And I don't think this is a new normal. This  
19 is something that I have been talking about since  
20 probably about 2003. So this is not a new normal.

21 And just one final comment. People are  
22 frequently saying well the equity premium is very,  
23 very high right now. There are a number of other  
24 premiums in the financial markets that are very, very  
25 high right now. It probably has very little to do

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1 with those asset classes and a lot to do with what  
2 Treasuries are and other sovereign bonds are doing  
3 right now.

4           Everybody has seen the Ibbotson graphs and  
5 so over the long-term, basically you get what you  
6 expect. More risk provides more return. Small stocks  
7 have done better than large stocks, which has done  
8 better than government bonds, which have done better  
9 than Treasury bills, which fortunately have done  
10 better than inflation.

11           You got to the next slide and you can see  
12 that international has historically provided low extra  
13 return. Next slide.

14           And I think this kind of falls into some  
15 of the things that David and Kathy were saying earlier  
16 is that it may be time to start thinking a little more  
17 broadly than just large-cap U.S. equity. Maybe a  
18 little international and, you know, some municipal  
19 bonds in terms of the asset classes to invest in  
20 because there are other areas that provided additional  
21 return or better risk return-type results.

22           So, obviously, you know, you see the REITs  
23 over this period of time have done better than stocks,  
24 although you could also see that since 2000, there is  
25 a lot of new capital put into there and so a lot of

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1 that run came just before the crash.

2 And then in that same period of time,  
3 commodities have done particularly well, although I  
4 think there would have to be a lot of inflation to  
5 justify the run up in commodities in the last ten  
6 years.

7 So if you go to the next slide, this is  
8 the problem. Everything in that long-term chart got  
9 turned on its head. Bonds outperformed -- Actually  
10 small stocks did particularly well but in 1999 nobody  
11 wanted to a small stock. I work for a group, a  
12 research group that is now part of Credit Suisse and  
13 they were having a problem in that period of time  
14 where Microsoft had an estimated cost of capital of  
15 0.01 or something like that and small stocks had these  
16 outrageous under-valuations and they just said well we  
17 are going to have to separate out how we look at these  
18 things. And actually it created, it was a symptom.  
19 Small stocks were undervalued and large stocks were  
20 overvalued. And well, I will get to it a little bit  
21 later but it is a symptom of the times where everybody  
22 just said well the world has changed and in fact the  
23 world hadn't changed. It re-converged in a different  
24 direction but it did provide some interesting  
25 information, which I will get to later.

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1           So, this is updated only to 2009.  
2 Ibbotson don't have their 2010 until probably about  
3 two to three weeks from now. But it basically tells  
4 the same story. Now over the long period of time,  
5 small stocks have done better than large stocks, have  
6 done better than government bonds, have done better  
7 than Treasury bills. Is this the best estimate for  
8 what returns are going to be in the future?

9           I think, like I said, you would be  
10 forgiven if you thought returns were random and start  
11 to understand that the best estimate of the future is  
12 not necessarily the long-term averages. You have to  
13 start to look at the fact that returns aren't random.  
14 This is just purely the difference between large stock  
15 and small stock performance. And you can see that  
16 there is nothing random about this chart.

17           Now you will get a stretch of three or  
18 four years where one outperforms the other and then it  
19 just reverses. It is not random at all. They are  
20 signals.

21           You go to the next slide, which is asset  
22 class winners and losers going back to 1995. In this  
23 particular case, you will see large-cap stocks had a  
24 four-year run. Then bonds had a three-year run,  
25 actually with small stocks kind of stuck in there.

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1 And then international had a run. There is nothing  
2 random about that.

3 So, on a long return basis to kind of  
4 understand what, and this is, you know, I think this  
5 slide I have had since, like I said, since probably  
6 2003, you know, what drove returns during the '80s and  
7 the '90s. And a lot of people had assumptions that a  
8 while stocks, you know, in '95 or something like that,  
9 well I have gotten a 15 percent return off my stocks.

10 So why shouldn't I assume that I am going to have a  
11 15 percent return going forward? And that got built  
12 into a lot of expectations.

13 But you know, an average dividend yield  
14 during that 20-year period of three and a half  
15 percent, roughly, profit growth of six and a half  
16 percent, roughly. And you know, P/E increase of five  
17 and a half percent, for a total of 15.7 percent return  
18 in that 20 years. That is compared to, like I said, a  
19 long-term return of 11 percent. So that is  
20 significant out performance.

21 You know, at this point, the dividend  
22 yield for the S&P 500 is under two percent. The  
23 finance companies will be reinstating dividends and  
24 there is some noise in there but let's say it is two  
25 and a half percent or something like that. Profit

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1 growth five to seven percent.

2 But P/Es increase when interest rates are  
3 going down and inflation is going down. You know,  
4 unless you are predicting the double dip that  
5 everybody was concerned about last summer, that we are  
6 just going to go right over the cliff again, inflation  
7 is not going down. Interest rates are not going down.

8 So you will not get a P/E increase. In fact, you  
9 will get a P/E decrease but we will just say zero at  
10 this point. So I think just kind of on that surface  
11 level, you can just say okay, you know, seven and a  
12 half percent.

13 But the other question is at what level.  
14 Okay, we can do the same analysis of S&P 500 is at  
15 1500 or the S&P 500 is at 750. You know, it obviously  
16 isn't going to have the same outcome. So we go to the  
17 next slide and you know, actually this was a very  
18 popular statistic that was thrown around during the  
19 depths of fourth quarter 2008 and the first quarter of  
20 2009. They said you know, the market hasn't gone down  
21 far enough yet because the Shiller 10-Year P/E is  
22 still only average. And so this is just a diagram of  
23 the Shiller 10-Year P/E, which basically just averages  
24 ten years' of earnings and to just kind of smooth out  
25 some of the rough spots and just say, okay, if there

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1 is growth over time, obviously the aggregate grows at  
2 the same rate as the aggregate economy grows over  
3 time. What is the stock market placing for a value on  
4 this?

5 You know, so the 100-year mean is 16 times  
6 earnings. The 100-year median is about 14 and a half  
7 times. And during the worst days of the financial  
8 crisis in 2009, the market only got down to about  
9 average. And so people said well we haven't gone down  
10 far enough. Well the mistake here is you have to  
11 understand that actually this is a terrible predictor  
12 of where that market is going in the next year or the  
13 next two years but it does tell you over the next ten  
14 years what your return is likely to be.

15 And in fact in a low interest rate and in  
16 a low inflation environment, this should be high. So  
17 it is not mis-priced at all. The problem is you are  
18 going to be swimming upstream against higher inflation  
19 and higher interest rates.

20 And so you know, the level is basically we  
21 are at fair value and we are going to be swimming  
22 upstream against some trends that are probably not  
23 favorable to high rates of return in the financial  
24 markets.

25 So, fair enough. So now we have talked

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1 about large-cap domestic U.S. equities. And I am a  
2 former equity analyst, so that is where I started. I  
3 could have started in bonds but I am not necessarily a  
4 bond guy.

5 So you know, we don't know that  
6 historically you have gotten excess return out of  
7 small-cap stocks. So is that where we need to put a  
8 lot of our money so that kind of gets additional  
9 return and make up some of our problems?

10 Well normally, as you would expect, it is  
11 higher return and higher risk. Small-cap stocks have  
12 higher risk. They are less likely -- You know, one  
13 investor decides to get out of a small-cap stock and  
14 it can change the price by 10 or 15 percent. I mean,  
15 it is just -- There is just higher risk. And so  
16 normally the discount rate that you would apply to a  
17 small-cap stock would be expected to be higher than  
18 the discount rate that you could apply to the large-  
19 cap stock because it has greater liquidity than the  
20 large-cap stock.

21 And most of the time, that is the case.  
22 You can see this discount rate that has applied and my  
23 source is my former employer, Credit Suisse. But that  
24 through the 2000 era, particularly starting about 2004  
25 or 2005, that discount rate has been actually lower or

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1 at least closer to the large-cap discount rate than  
2 normal. So what that basically says is that small-cap  
3 stocks are kind of overpriced right now. So you are  
4 not going to get -- you could run in there saying oh  
5 well over time I will get a lot more return. You have  
6 got to be careful of your starting point.

7 So maybe foreign markets. This graph is  
8 basically just, I can explain it in more detail if  
9 somebody really wants to know. But above the green  
10 line is basically saying it is expensive relative to  
11 the cash generation of the aggregate stock market and  
12 below the line is inexpensive. And you know there  
13 really aren't any outliers here. You are not really  
14 going to say okay, I am going to get, you know, a  
15 check of a lot more return if I put my money in UK  
16 stocks. I actually got this chart from a former  
17 colleague of mine who is a hedge fund manager for the  
18 emerging markets. And he says he is actually having  
19 difficulty finding anything worth buying in emerging  
20 markets at this point. And China being kind of the --  
21 is really about the only outlier on here. It is  
22 fairly expensive.

23 I guess the sole thing here might be, you  
24 know, just too much hype for China and too much fear  
25 the European markets.

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1           So now let's turn to bonds. You know, I  
2 probably put the cart before the horse but as I said,  
3 I am a former equity analyst. So but basically as you  
4 would expect, more risk, more return. You know, high  
5 yield corporate has, over time, has provided better  
6 than regular corporate bonds, which have been more  
7 than government bonds and more than municipal bonds.  
8 And so obviously I don't -- I am not certain whether  
9 this is a tax-adjusted return for municipal bonds or  
10 not. I don't know how Ibbotson breaks that out  
11 exactly but basically it is as you would expect.

12           So now looking at this chart on the wall  
13 happens to go back to December of '87. But the long-  
14 term trend through the '80s and the '90s and even the  
15 200s has been a downward trend in rates. And it is  
16 just how much lower can you go. Rates are going up.

17           You know, the other comments that I have  
18 is actually spreads in many areas are fairly  
19 attractive, particularly munis which this is sort of  
20 happy for this crowd. But you know, spreads are  
21 actually pretty good but I think once again you are  
22 actually looking at, not as good as they were a year  
23 or ago or two years ago but I think it is more of a  
24 commentary on where the sovereign bonds are as opposed  
25 to any particular commentary on the valuation for

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1 high-yield bonds.

2           The next side, here is your dilemma.  
3 There is a small bond shop in Newport Beach,  
4 California that says duration is basically fairly  
5 priced. And so you are making the assumption there  
6 that there is no huge uptake in longer rates because  
7 inflation will stay subdued but there is, obviously,  
8 more risk if you go out longer in the period. You are  
9 basically making an article of faith that you are not  
10 taking a lot of interest rate risk if inflation does  
11 happen to heat up or the U.S. loses their AAA status  
12 or something else.

13           But what do you do? There is no yield on  
14 the short end of the curve if you want to wait it out.

15           And so it is fine if you say well I am going to wait  
16 it out and just earn half a percent of my money in the  
17 meantime but what if it takes two years or three years  
18 for short rates to come up. Now, I don't personally  
19 believe that but the whole time you are waiting there,  
20 you are diluting your long-term returns by earning  
21 nothing in the short-term.

22           So, 17, so what do we do about that? And  
23 this is just one possible example. You know, David  
24 and Kathy alluded to this to some degree. I mean,  
25 private equity is one example. There is not a lot of

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1 private equity in NDTs. We could have a robust  
2 argument whether there should be. But this should be  
3 a particularly interesting time to be getting into  
4 something like that. Unfortunately, when everybody  
5 goes piling in is when the returns are actually low.  
6 When you want to get in is, the funny thing is when  
7 the least risk -- you have the least risk when the  
8 risk feels the highest. And so the risk feels the  
9 highest right now in private equity because the  
10 returns have been cruddy. I will use that as a proxy  
11 for what I was going to say. So, as I said, one  
12 example.

13 So just to kind of wrap it up, most of the  
14 major asset classes that NDTs are invested in right  
15 now I think, I would say fortunately, I think some of  
16 distortions right now in the municipal bond market,  
17 actually, provide a little hope. But in terms of  
18 equities and some of the other potential asset  
19 classes, they are just sub-par. If you are assuming  
20 well because we had terrible returns in the 2000s,  
21 that we are going to get 50 percent better than  
22 average or double average, I think you are going to be  
23 disappointed.

24 Where you could possibly be wrong is if  
25 emerging markets somehow spur a lot of earnings growth

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1 in developed economies, companies that could actually  
2 create the additional value.

3 But an incremental return might be able to  
4 be found in alternative investments. I am not a big  
5 hedge fund guy but, you know, certain flavors of  
6 private equity, certainly right now some safe spread  
7 approaches, which is basically okay I can go to say  
8 Brazil and it is still pretty safe but I get 400 basis  
9 points more for pretty safe credit. You know, maybe  
10 that is not a bad bet.

11 But I think you just need to think a  
12 little more creatively. There is a whole generation  
13 of investors which would be me as well, since I  
14 started in the mid-80s, that sort of believe that you  
15 just, you have your bonds for kind of a savings  
16 account, your equities give you your growth, and then  
17 you go to sleep at night with your 60-40 or 50-50 or  
18 30-70 and sleep well. I think that is, I think at  
19 least in the short-term that is the world has changed  
20 there. And it is actually going to take probably  
21 another crisis to get back to where people say, oh,  
22 there is a lot of additional return available in some  
23 of these are just plain vanilla areas.

24 You know and yes it is higher risk to be  
25 in some of these areas but there is a risk to being

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1 too conservative as well. You know, insurance is  
2 expensive and so I think you have to be very, very  
3 careful about that. I mean, if you really didn't want  
4 any risk, you know, the NRC should just say you have  
5 to reserve 200 percent of your projected liability and  
6 put it all in Treasury bills and you still wouldn't  
7 have zero risk but what would happen is that would  
8 probably get to be sort of intolerably expensive to  
9 the rate payers. So risk actually does provide some  
10 additional benefits to a lot of the stakeholders.

11 So I guess we won't get to some of my  
12 other scribbling but I think I pretty much have gotten  
13 my thoughts out. So, any questions?

14 MR. LESLIE: Thank you, Jon. Any  
15 questions in the audience here? Okay, just one  
16 second. No problem. Just raise your hand.

17 MS. SIMMONS: You know you mentioned that  
18 kind of, I think Dave mentioned this too, that there  
19 is typically the asset class, at least for NDTs is the  
20 60-40 split. Is that, you know, through this crisis,  
21 you have said that is probably what is going to be  
22 moving forward, it is just sort of how that is  
23 tinkered with. Is that a little bit --

24 MR. BRUSVEN: I imagine. I mean, I think  
25 if the equity premium is high, you probably should be

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1 more tilted towards equities. Am I confident that  
2 that is likely to happen? I mean, the 60-40 split is  
3 almost sacrosanct in the, it is even just the  
4 consultant community, it is just pretty much in the  
5 institutional community.

6 So, I mean yes, it should be more dynamic.  
7 I am not highly confident it will be more dynamic.

8 MR. LESLIE: Other questions from the  
9 audience? Okay, coming up front.

10 MS. BALLENGER: This is a really easy  
11 question.

12 MR. BRUSVEN: Those are the worst.

13 MS. BALLENGER: I missed it in the  
14 beginning if you said something, what is the India  
15 Fund Study Group? What do you do?

16 MR. BRUSVEN: Oh, I think that is actually  
17 a typo. It is the NDT Fund Study Group, Nuclear  
18 Decommissioning Trusts.

19 MS. BALLENGER: And what do you do?

20 MR. BRUSVEN: I am the Associate Director.

21 MS. BALLENGER: What does --

22 MR. LESLIE: What does the -- Let me see  
23 if I can rephrase it. What does your organization  
24 actually do?

25 MR. BRUSVEN: We have an annual

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1 conference, it is kind of our main event, in which the  
2 fund sponsors are sort of the hosts. And so what we  
3 do is it is kind of a mutual education among a variety  
4 of stakeholders in the NDT interest area.

5 I am kind of a ring leader, basically. As  
6 I said, I am more of a facilitator than a repository.

7 MR. LESLIE: Other questions here? Any  
8 questions on the phone? And there are no questions on  
9 the webinar? Okay. One last chance for questions.  
10 Okay.

11 Well, I want to thank all of the speakers  
12 and Jon, you, too.

13 (Applause.)

14 MR. LESLIE: A couple of things. We  
15 actually finished a few minutes early but more  
16 importantly, they were very interesting discussions  
17 and I am not a financial analyst but this was pitched  
18 right at the right level. So for those that aren't  
19 experts here, it was a good job by all of the  
20 presenters.

21 Some logistics before we leave. You will  
22 need to be escorted down to the first floor by NRC  
23 folks and we will have the escorts --

24 MS. SIMMONS: Yes, there are three of us  
25 here.

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1 MR. LESLIE: And each of us can have five.  
2 Another logistical issue we will start  
3 promptly at 1:30 in the other building. Your options  
4 are you can have -- You can retain your visitor tag  
5 and eat in the cafeteria or in the NUREG Café but if  
6 you try to leave the building, you will have to turn  
7 in your badge and then recheck in. And so there might  
8 be tastier options outside the building, just keep in  
9 mind that you will still have to check back in when  
10 you come back.

11 And I guess with that -- Anneliese?

12 MS. SIMMONS: I think you were much more  
13 militant about keeping us on time.

14 MR. LESLIE: Hold on a second.

15 MS. SIMMONS: Oh, sorry. The other group,  
16 I think is running a little bit behind. So if people  
17 are interested in catching any of those, you can, you  
18 know, once we drop you at the cafeteria you can walk  
19 down there but I think they are running behind. So we  
20 are still planning to start, though, and they don't  
21 get any extra time.

22 MR. LESLIE: Yes, Brian and I had realized  
23 that, you know, I didn't want to cut off the questions  
24 here, which I figured we could go almost 20 minutes  
25 beyond 12:00 and still people would get an hour. At a

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1 minimum you guys were going to get an hour. You guys  
2 get more now.

3 All right. Thank you very much.

4 (Whereupon, at 11:57 a.m., the foregoing breakout  
5 session was adjourned.)

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