

Official Transcript of Proceedings  
NUCLEAR REGULATORY COMMISSION

Title: Advisory Committee on Reactor Safeguards

JOINT MEETING OF THE  
REGULATORY POLICIES AND PRACTICES  
AND  
RELIABILITY AND PROBABILISTIC RISK  
ASSESSMENT SUBCOMMITTEES

Docket Number: (n/a)

Location: Rockville, Maryland

Date: Tuesday, October 2, 2012

Work Order No.: NRC-1930

Pages 1-185

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UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION  
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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS  
(ACRS)  
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JOINT MEETING OF THE REGULATORY POLICIES  
AND PRACTICES  
AND  
RELIABILITY AND PROBABILISTIC RISK  
ASSESSMENT SUBCOMMITTEES

TUESDAY  
OCTOBER 2, 2012

ROCKVILLE, MARYLAND

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The Subcommittees met at the Nuclear  
Regulatory Commission, Two White Flint North, Room  
T2B3, 11545 Rockville Pike, at 1:00 p.m., William J.  
Shack and John W. Stetkar, Chairmen, presiding.

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COMMITTEE MEMBERS:

WILLIAM J. SHACK, Regulatory Policies and Practices

Subcommittee Chairman

JOHN W. STETKAR, Reliability and Probabilistic

Risk Assessment Subcommittee Chairman

J. SAM ARMIJO, Member

DENNIS C. BLEY, Member

MICHAEL L. CORRADINI, Member

JOY REMPE, Member

MICHAEL T. RYAN, Member

STEPHEN P. SCHULTZ, Member

CONSULTANTS PRESENT:

THOMAS S. KRESS

GRAHAM B. WALLIS

1 NRC STAFF PRESENT:

2 DEREK WIDMAYER, Designated Federal Official

3 CHARLES ADER

4 MAITRI BANERJEE

5 ALYSIA BONE

6 DAVE BROWN

7 RICHARD CORREIA

8 KEVIN COYNE

9 JERRY DOZIER

10 TINA GHOSH

11 KATHY GIBSON

12 ANDREW PERRIN

13 DON PLUMMER

14 BRIAN RICHTER

15 FRED SCHOFER

16 AARON SZABO

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C-O-N-T-E-N-T-S

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Staff Presentation SECY-12-0110

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U.S. Nuclear Regulatory Commission's Regulatory  
Framework"

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

(1:03 p.m.)

CHAIRMAN STETKAR: The meeting will now come to order. This is a joint meeting of the Advisory Committee on Reactor Safeguards Subcommittees on Reliability and Probabilistic Risk Assessment and Regulatory Policies and Practices.

I am John Stetkar, Chairman of the Reliability, PRA Subcommittee. Dr. William Shack, is the Chairman of the Regulatory Policies and Practices Subcommittee.

ACRS members in attendance include, Steve Schultz, Joy Rempe, Dennis Bley, Bill Shack, Mike Ryan, Sam Armijo and Mike Corradini. We also have attendance by Tom Kress, our consultant. And Graham Wallace, our consultant.

I think I'm having a bad day today for some reason. The purpose of this meeting is to review and discuss SECY-12-0110. Consideration of Economic Consequences within the U.S. Nuclear Regulatory Commission's Regulatory Framework.

The SECY Paper contains the staff's recommendations on considering the radiation contamination of property and the economic consequences associated with that from a large release

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1 of radioactive material due to an accident at a  
2 nuclear facility in NRC's Regulatory framework.

3 Subcommittees will gather information,  
4 analyze relevant issues and facts and formulate  
5 proposed positions and actions as appropriate.  
6 Subcommittees plan to propose a letter report for this  
7 matter for consideration of the Full Committee at the  
8 upcoming November Full Committee Meeting.

9 The meeting is open but we have not had  
10 any requests for time to make statements to the  
11 subcommittee. However, we will provide time at the  
12 end of the subcommittee discussions for anyone to make  
13 a comment if they so desire.

14 A transcript of this meeting is being kept  
15 and will be made available. It is requested that  
16 speakers first identify themselves and speak with  
17 sufficient clarity and volume so that they can readily  
18 heard.

19 Derek Widmayer is the designated federal  
20 official for this meeting. We will now proceed with  
21 the meeting and I call upon Mr. Richard Correia,  
22 Director of the Division of Risk Analysis and the  
23 Office of Research to open the proceedings. Rich?

24 MR. CORREIA: Thank you and good  
25 afternoon. I'd like to thank the Committee for the

1 opportunity to brief you today on how the NRC  
2 considers economic consequences within its regulatory  
3 framework.

4 As a way of background, the accident at  
5 Fukushima raised questions on how the Agency considers  
6 economic consequences from severe accidents, because  
7 the radiological releases from the plant resulted in  
8 contaminated land, but the public was safely  
9 evacuated.

10 In April the EDO directed the staff to  
11 develop a notation vote paper to the Commission by  
12 early August. The paper was to explore the NRC's  
13 current consideration of economic consequences and  
14 provide options for future regulatory approaches.

15 The staff formed a multi-office working  
16 group, many of which are here today, to develop a SECY  
17 Paper. SECY Paper 12-0110 contains the results of the  
18 staff's efforts.

19 They concluded that economic consequences  
20 are appropriately considered in the Agency's processes  
21 and offered three options for the Commission's  
22 consideration.

23 The staff recommended Option 2, which  
24 would systematically update and enhance our regulatory  
25 framework in a more comprehensive, systematic way than

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1 we currently do.

2 I'll now turn the presentation over Alysia  
3 Bone, who is our lead project manager for this effort.  
4 Also Kevin Coyne, our chief of the PRA Branch at my  
5 division is here also. Thank you.

6 MS. BONE: Thank you, Rich. Good  
7 afternoon. I am Alysia Bone in the Office of  
8 Research, Division of Risk Analysis and the  
9 Probabilistic Risk Assessment Branch. And today I  
10 will be providing you a briefing on SECY-12-0110,  
11 which is consideration of economic consequences within  
12 the U.S. Nuclear Regulatory's regulatory framework and  
13 seek ACRS feedback.

14 This was somewhat of a unique SECY paper,  
15 a unique project, in that we had just about four  
16 months from the time we received the tasking to  
17 complete the SECY paper and submit it to the  
18 Commission.

19 So in the next few hours I'm going to go  
20 through the past four months, essentially. Beginning  
21 with the tasking itself, the status of the paper and  
22 then walking you through the content of the SECY paper  
23 and its enclosures, including the NRC authority to  
24 consider economic consequences or property damage, as  
25 the legal authority. Discuss the analyses in which

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1 NRC does consider property damage.

2 And followup with the SECY paper options  
3 and recommendations proposed in SECY-12-0110. And  
4 then give you some highlights from the public meetings  
5 we've had and the Commission meeting that we had on  
6 September 11th.

7 So on Slide 3, this is beginning with  
8 really the motivation for the SECY paper. This is,  
9 and you can tell, an aerial view of Japan following  
10 the accident at Fukushima Dai-ichi in 2011. And  
11 really the emphasis here is to explain that at  
12 Fukushima, there was a successful evacuation, however,  
13 clearly there was a lot of land contamination that  
14 resulted in the accident at Fukushima.

15 So stakeholder questions were raised as to  
16 how the NRC does consider economic consequences  
17 following a severe accident within its regulatory  
18 framework.

19 MEMBER ARMIJO: Alysia, before you do that  
20 could you, for us folks that still think in terms of  
21 millirem per year, could you convert that 19 to 91  
22 microsieveverts per hour into millirem?

23 MS. BONE: Sure, sure. So the red, just  
24 as a benchmarking, is 1.9 millirem per hour and the  
25 29.1 millirem per hour.

1 MEMBER ARMIJO: Per hour?

2 MS. BONE: Yes.

3 MEMBER ARMIJO: Okay. Thank you.

4 MS. BONE: You're welcome. So given that  
5 motivation, the staff received the tasking in early  
6 April, April 6th, to complete the SECY paper, and in  
7 the next slide we'll go over --

8 CONSULTANT WALLIS: Why do you put per  
9 hour, because surely what matters is the total  
10 contamination? We don't know how many hours or  
11 minutes this lasted for. Shouldn't you say how much  
12 the ground ended up being contaminated?

13 MS. BONE: That's good feedback. I think  
14 that really the point of this slide was really just to  
15 get the illustrative, sort of picture of what the  
16 motivation was for the tasking itself. But you're  
17 certainly right, I could have captured it in a  
18 different photograph.

19 MEMBER RYAN: Just to help a little bit  
20 if I may, Alysia.

21 MS. BONE: Sure.

22 MEMBER RYAN: I think, Dr. Wallace, that  
23 this metric really came from the most extensive  
24 database measurements, which is the direct radiation  
25 readings in the flyovers. So that's where that

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1 picture comes from. So I think with a little bit of  
2 conversion you could certainly get to a calibration of  
3 ground contamination, and I'm sure that's ongoing.  
4 But I think this is pretty --

5 CONSULTANT WALLIS: This is a rate?

6 MEMBER RYAN: It's a gross rate, but you  
7 can convert that to picocuries to create something on  
8 the ground.

9 CONSULTANT WALLIS: This is a southeast  
10 wind. And when the wind changes the rate changes  
11 somewhere else.

12 MEMBER RYAN: Let me clarify again, this  
13 was what was measured in the flyover of what was  
14 deposited. So this was already on the ground.

15 CONSULTANT WALLIS: Oh, it was actually  
16 there?

17 MEMBER RYAN: Yes, sir.

18 CONSULTANT WALLIS: Oh, okay.

19 MEMBER RYAN: You're right, it's a  
20 exposure or a dose rate measurement, but it is  
21 reflective of what's on the ground. The other stuff is  
22 up the valley and all of that.

23 MEMBER BLEY: So it's kind of fair to say  
24 for a long time this is all we had, were does  
25 measurements?

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1 MEMBER RYAN: Correct, it was the first --

2 MEMBER BLEY: Somebody got out on the  
3 ground and actually --

4 MEMBER RYAN: That's right. And I think  
5 those calibrations and the cross-referencing that  
6 you're looking for is ongoing, in fact.

7 MEMBER SCHULTZ: And this date's about  
8 seven weeks after the accident.

9 MEMBER RYAN: Yes.

10 MS. BONE: Yes.

11 MEMBER RYAN: I think, I'm guessing still  
12 that beyond the first calibration this probably was  
13 not the priority and it's just now beginning to get  
14 some more attention. Is that fair enough?

15 MEMBER ARMIJO: So if you're in the red  
16 zone you'd be getting a about two millirem per hour,  
17 in the red zone?

18 MS. BONE: Correct.

19 MEMBER ARMIJO: Okay.

20 MS. BONE: Thank you. So in early April  
21 the staff received the tasking from the Office of  
22 Executive Director of Operations to provide the SECY  
23 paper in early August 2010. The NRC formed an Agency-  
24 wide working group consisting of members from all of  
25 the program offices, including Office of General

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1 Counsel and the Office of Research, to perform an  
2 analysis of the methods in which NRC conducts analyses  
3 of economic consequences.

4 The staff held two public meetings in this  
5 timeframe of four months. And the staff did submit  
6 SECY-12-0110, Consideration of Economic Consequences  
7 within the U.S. Nuclear Regulatory's Commission's  
8 Regulatory Framework to the Commission on August 14th.

9 Additionally there was a Commission  
10 briefing on the subject on September 11th. And that's  
11 just a really brief overview. And in the coming  
12 slides we'll go into these topics in more depth.

13 The tasking itself was to provide a vote  
14 Commission paper with options to address the policy  
15 question of to what extent, if any, should NRC's  
16 regulatory framework modify consideration of economic  
17 consequences of the unintended release of licensed  
18 nuclear material to the environment. And that was the  
19 overarching policy question that the staff was to  
20 answer.

21 Additionally there were ten subtopics, or  
22 specific questions, that the staff was to provide  
23 background information on for the Commission.

24 And just a few things to point out with  
25 regards to this tasking. We really used this policy

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1 question to hone in on our scope. So one word I'd  
2 like to point out is unintended release. So  
3 intentional releases, REDs, RDDs, sabotage events, for  
4 instance, are beyond the scope of the SECY paper and  
5 options.

6           Additionally, pointing out licensed  
7 nuclear materials that would have the capacity to  
8 potentially cause a large land contamination following  
9 a severe accident. So in the paper we talk about the  
10 scope consisting of Parts 30, 40, 50, 52, 70, 72, 76,  
11 et cetera.

12           And additionally we have these ten  
13 subtopics. And so in the following slides what we're  
14 going to do is just go through each subtopic and  
15 explain how we addressed the question at hand and how  
16 it leads to our overall analysis and best  
17 recommendations and options.

18           MEMBER CORRADINI: So maybe you're going  
19 to get to this. So does Price Anderson fit into this  
20 at all?

21           MS. BONE: Price Anderson came in a topic  
22 early in the discussion. We mention it in the legal  
23 authority enclosure. But it became more of a  
24 background point really than part of our options or  
25 recommendations. But we have working group members

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1 here that might want to elaborate on this subject, but  
2 essentially it's something that we definitely  
3 acknowledged as being a related topic, but it wasn't  
4 an extensive point in formulating our options since it  
5 was not part of regulatory analyses.

6 MEMBER ARMIJO: But, just at a top level,  
7 how much of the economic consequences are covered by  
8 Price Anderson? You know, compensation for loss in  
9 the U.S., what fraction of the economic consequences  
10 did you calculate are actually insured in one way or  
11 another?

12 MEMBER CORRADINI: Actually, you've  
13 actually got to what I was hoping you'd say, which is  
14 my intention is that's equivalent of no-fault  
15 insurance. Anything off-site should be covered under  
16 Price Anderson.

17 MEMBER ARMIJO: That's what I thought.

18 MEMBER CORRADINI: That's what I thought  
19 too.

20 MEMBER ARMIJO: But I'm not sure.

21 MS. BONE: Sure I see our OGC rep here  
22 perhaps wanting to make a statement about this.

23 MR. PESSIN: Good afternoon. My name is  
24 Andrew Pessin, I'm an attorney in the Office of  
25 General Counsel. I assisted the workgroup in drafting

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1 the legal opinion that supported this paper.

2 Price Anderson Act is on the background of  
3 land contamination and this paper is more looking at  
4 the front end. It's looking at what is our authority  
5 to regulate licensees to prevent contamination of  
6 land, or to mitigate that kind of contamination. So  
7 it's to prevent it.

8 Price Anderson doesn't kick in until the  
9 land is already contaminated. So that's not the  
10 focus. So it was not the focus of this paper.

11 MEMBER ARMIJO: But my question was just  
12 really simple. Is there compensation available to  
13 people who've been damaged, or property that's been  
14 damaged, through Price Anderson?

15 MR. PESSIN: I believe so. But again we  
16 didn't look at that as part of this effort.

17 MEMBER RYAN: And just one followup  
18 question, so that if the Commission chooses to change  
19 what it wants to regulate upon, that would have an  
20 effect on Price Anderson and potential damages. In  
21 other words, if I regulate to make it less likely to  
22 have land contamination, then the potential damages  
23 and what Price Anderson would have to cover would  
24 change. Actuarially I think it would, right?

25 MR. PESSIN: Yes, perhaps with an actuary

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1 point of view that's correct.

2 MEMBER RYAN: Okay. Mike, I'm not sure  
3 but I think American Nuclear Insurance is an  
4 organization that deals with this topic, particularly  
5 for --

6 MEMBER CORRADINI: Only up to \$650  
7 million, and after that everybody contributes in.

8 MEMBER RYAN: Right, there's some  
9 protection early on, you know, commercially and then  
10 they're out.

11 MS. BONE: Kevin, you had something?

12 MR. COYNE: Yes. Kevin Coyne from the  
13 Office of Research. One thing we can provide to you  
14 is we did ask American Nuclear Insurers to come to the  
15 Commission meeting on September 11th and they provided  
16 a presentation that we can make sure we get to Derek  
17 for distribution, that provides the background.

18 MEMBER CORRADINI: No I think at least for  
19 me, the comment from the gentleman that just left is  
20 proof, I can understand the connection.

21 MEMBER ARMIJO: So the topic is economic  
22 consequences. I didn't know what the economic  
23 consequences were and ultimately it's dollars and  
24 cents, right?

25 MEMBER RYAN: And I think it's, I mean

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1 it's maybe not a big part of the number, but a \$160  
2 million at the front end from a commercial source --

3 MEMBER ARMIJO: Price Anderson?

4 MEMBER RYAN: Yes, it's not something to  
5 gloss over.

6 MS. BONE: Thank you for that discussion.  
7 Though intentional releases were outside of the scope  
8 of SECY-12-0110, including radiological exposure  
9 device, radiological dispersal device and any  
10 deliberate sabotage events, one of the ten subtopics  
11 of the OEDO Green Ticket tasking was to discuss NRC's  
12 historical approach with regards to its security  
13 mission.

14 MEMBER CORRADINI: I'm sorry. I'm still  
15 processing the last thing. May I just --

16 MS. BONE: Of course.

17 MEMBER CORRADINI: So just for the general  
18 task force. So here's where I'm coming from. Is that  
19 as you said you're dealing with the front end and not  
20 the back end. But if the front end is going to cost,  
21 let's just pick some numbers, \$20 million to re-outfit  
22 a plant in some sort of new system. Then I would want  
23 to compute the savings going forward for the next 20  
24 years with the plant of what I pay into Price Anderson  
25 as essentially a cost/benefit calculation.

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1           To me, those two things are linked. I  
2 might want to invest early on in a system that reduces  
3 land contamination, yet I would essentially reduce the  
4 economic potential consequences on the back end, god  
5 forbid, if anything occurred. That's to me what I was  
6 thinking from a cost/benefit standpoint.

7           MR. SZABO: I'm Aaron Szabo. I'm one of  
8 the Reg analysts. At least when we do these  
9 cost/benefit analyses we don't really look at, we  
10 consider Price Anderson a transfer of payments. So we  
11 don't really consider Price Anderson at all when we're  
12 looking at the cost of the event prepping, because  
13 essentially when there's an accident, as we've seen,  
14 and once it hits the \$12 billion mark it's not like  
15 society won't still have to pay for that cost.

16           Someone in society is going to have to pay  
17 for it, whether it's the individual, the industry, the  
18 taxpayers or whoever. So we just don't make that  
19 distinction.

20           But I understand your question in relation  
21 to premiums in payment to ANI. As that would usually  
22 be too speculative we don't really consider that,  
23 because, once again, that cost is supposed to be  
24 incurred somewhere down the road. So whether it's  
25 incurred by premiums within the industry or whether

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1 these taxpayers or --

2 MEMBER CORRADINI: I appreciate it, but  
3 what I'm getting at is, this is highly speculative.  
4 But if one were a plant owner and one were to say I  
5 could put on System X and System X cost A but I saved  
6 an accumulation of a set of payments that add up to B,  
7 I'd look at A versus B and I'd expect there's a  
8 connection.

9 Otherwise I see no connection in terms of  
10 stimulating any sort of decision making. Maybe I'm,  
11 I'm looking at Sam, maybe I'm off base.

12 MEMBER ARMIJO: I'm just trying to  
13 understand. If provisions have been made, through the  
14 law, to provide insurance against economic  
15 consequences of such an accident. And people or  
16 businesses are going to be compensated with already  
17 existing insurance. Then what's new? I guess I'm  
18 trying to say is there additional economic  
19 consequences that we're worried about?

20 CONSULTANT KRESS: Yes, there are debt  
21 involved. I think we're looking at more than just  
22 land contamination. We're talking about, I think  
23 we're supposed to be dealing with all the consequences  
24 of a release aren't we?

25 MS. BONE: Well within the scope of this

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1 paper we're talking about economic consequences  
2 assuming that --

3 CHAIRMAN STETKAR: This is beyond health  
4 effects. I think that this is beyond directly  
5 measurable health effects.

6 MS. BONE: Exactly.

7 CHAIRMAN STETKAR: I'd say directly  
8 measurable in terms of early fatalities and --

9 MEMBER REMPE: When I was reading the SECY  
10 I kept wondering about how you're going to deal with  
11 interactions. Because if there's something you could  
12 do to reduce land contamination --

13 (Simultaneous speaking)

14 MEMBER REMPE: -- get the people out of  
15 there. And it just seems it might effect, in very  
16 convoluted ways, some of the decision making. And has  
17 that been considered by the staff yet? I mean going  
18 through some specific scenarios and thinking about  
19 what you'd do to reduce the economic benefits and if  
20 that would ever counter what you would do to the  
21 safety measures that would be taken.

22 MS. BONE: Within the scope of our  
23 research we looked at it at a very high level.  
24 Essentially if the Commission wanted to do something  
25 differently with regards to economic consequences,

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1 basically first defining how we currently do it. And  
2 then if we wanted to do something differently what are  
3 the avenues that are possible ways we could do  
4 something differently.

5 We haven't gone into the detail enough to  
6 do specific examples or using specific data. We were  
7 looking more of a high-level framework sort of  
8 question.

9 CHAIRMAN STETKAR: But at a high level I  
10 think you need to consider these issues.

11 MEMBER REMPE: I do too.

12 CHAIRMAN STETKAR: You don't pigeon hole  
13 accidents in terms of this accident is a land  
14 contamination accident. And this accident over here  
15 harmed people and for some reason they're different  
16 accidents. They are integrated.

17 I was going to phrase Joy's question  
18 differently for the risk assessment folks who may want  
19 to think about this. Is that, have our focus on only  
20 early fatalities resulted in a regulatory framework  
21 that neglects much more frequent, larger, costly  
22 events. And those are integrated.

23 But because we focused only on early  
24 fatalities we've made decisions about regulating  
25 plants and we've made decisions about spending real

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1 money to change plants, to reduce that. And it's not  
2 clear at all, in an integrated sense, what that means  
3 in terms of some of these other issues. Because an  
4 accident is an accident.

5           Fortunately we didn't kill anybody at  
6 Fukushima. Unfortunately we killed a bunch of folks  
7 at Chernobyl. They both had pretty severe land  
8 contamination, Chernobyl even worse. The accident  
9 didn't know which accident it was going to be. The  
10 accident didn't know which scenario it needed to be  
11 pigeon-holed into. So I think at a high level you do  
12 need to think about things in an integrated sense.

13           MEMBER REMPE: And hopefully safety comes  
14 above economics, because I think, well I think the  
15 staff will say also.

16           MEMBER SCHULTZ: And that has been the  
17 Agency's focus. It is in an integrated sense. We'll  
18 get to it I'm sure. It is in an integrated sense but  
19 you also have to look at the piece/parts and how the  
20 interrelate. And I think that's part of what you're  
21 saying.

22           CHAIRMAN STETKAR: I think -- If you don't  
23 move down through the possible effects and the  
24 consequences of what you do then the overall impact of  
25 the regulatory change won't be well understood or well

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1 formulated.

2 CONSULTANT WALLIS: If you want to lump  
3 all the types together the only way to do it is  
4 economically.

5 MEMBER CORRADINI: So may I ask another  
6 question since we're on high level things?

7 MS. BONE: Sure.

8 MEMBER CORRADINI: Did the staff look at  
9 other industries and other regulatory bodies and how  
10 they regulated off of economic consequences?

11 MS. BONE: We did based on possible. That  
12 was one of the taskings, was to look at IAEA, NEA,  
13 other federal agencies.

14 MEMBER CORRADINI: Non-nuclear economic  
15 consequences of unplanned releases of something  
16 noxious.

17 CHAIRMAN STETKAR: Chemical facilities.

18 MEMBER CORRADINI: Chemical facilities is  
19 what pops in my head.

20 MS. BONE: EPA was a federal agency that  
21 we probably looked the most too. They were a  
22 participant at the Commission meeting and we spoke  
23 with them beforehand and derived some of their  
24 research that they've done. They're a leader in  
25 regulatory analyses in this aspect. And so we did get

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1 some of their documents in the capacity of the time we  
2 had.

3 CHAIRMAN STETKAR: That was mostly for  
4 cleanup costs though?

5 MS. BONE: Right.

6 MEMBER BLEY: I mean if you were going to  
7 pursue that, looking at what the railroads have had to  
8 deal with might be another place, to other regulators  
9 do the same thing. Agriculture.

10 MS. BONE: Definitely. Thank you, I  
11 definitely appreciate that. We had communications  
12 with Department of Transportation as well. But our  
13 immediate conversations our point contact said that  
14 they didn't have specific guidance or specific  
15 regulations but they were obviously interested in the  
16 work that we were doing and pursuing more. But --

17 MEMBER BLEY: Not to be argumentative, but  
18 if you've ever gone down to DOT, it never used to be  
19 in one place, now it's one place. But it's really an  
20 amalgam of different regulatory agencies. And so a  
21 person over here doesn't know what the Coast Guard's  
22 doing, doesn't know what FRA is doing. And they all  
23 deal with the same kind of issues.

24 But in those smaller regulators within DOT  
25 are the folks who have to deal with this wreck. Go

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1 ahead.

2 MS. BONE: Thank you. So regarding  
3 another one of the taskings, which was intentional  
4 releases, secured. Even though this is beyond the  
5 scope of our SECY paper, we did cover it in an  
6 enclosure. And essentially to explain that the  
7 Commission has given direction in this matter  
8 separately. And we give a rundown of the most  
9 pertinent SRMs and SECYs that have come forth. And  
10 that's in Enclosure 4.

11 Specifically we also discussed some  
12 ongoing work the Agency is doing in regard to  
13 intentional releases and economic consequences. And  
14 this is most directly related to the Radiation Source  
15 Protection and Security Task Force, which is an  
16 interagency task force that reports periodically to  
17 Congress and the president.

18 And essentially, in the work that's most  
19 pertinent to this discussion, it was that in 2010 one  
20 of the recommendations of the report was that federal  
21 agencies reevaluate their strategies to protect  
22 against an RED or an RDD attack. And in order to  
23 answer this recommendation the NRC formed an informal  
24 working group to conduct this assessment. And this is  
25 conducted by the Office of FSME and NSIR.

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1           And essentially what they're doing is  
2           evaluating how consideration of economic consequences  
3           has an impact on the current security measures in  
4           place.

5           Conclusions from this informal task force,  
6           which was just formed in February actually of 2012,  
7           that may come out in the next Radiation Source  
8           Protection and Security Task Force Report, which is  
9           due to Congress and the president in August 2014.

10           But this slide here, really again just to  
11           emphasize, is more of an isolated background nugget  
12           that we have an enclosure. But it's beyond the scope  
13           of our recommendations and our discussion in the  
14           actual SECY itself.

15           Another tasking was to discuss the history  
16           with regards to the safety goal policy statement and  
17           how discussions around economic consequences were  
18           involved in the development period. And one of the  
19           reasons is because sort of at first glance, when this  
20           question first came up, questions were raised  
21           regarding the relationship of the safety goals and  
22           accidents such as Fukushima.

23           There was, at the beginning, a very clear  
24           nexus between the safety goals and this question. One  
25           thing to really point out here at the beginning is

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1 that retrospective comparisons of operational events  
2 to safety goals can be misleading. However, there was  
3 this underlying concern if the regulatory framework  
4 does adequately address economic impacts of severe  
5 accidents.

6 So this was really just summarizing the  
7 question and the point. And the next few slides will  
8 just go through some of the staff's research with  
9 regards to this topic.

10 So as just a refresher, of course the  
11 safety goal policy statement came out of  
12 recommendations following the Three Mile Island  
13 accident. And during this time there were debate of  
14 how offsite property damage or offsite economic  
15 impacts were considered during, or should be  
16 considered in the policy statement.

17 However, the statement does focus on the  
18 risks to public from a nuclear power plant to broadly  
19 define an acceptable level of radiological risk. The  
20 second subbullet here is to get back again to sort of  
21 dispelling that original question of relating  
22 Fukushima to the policy statement. Which is that the  
23 statement defines acceptable risks, not acceptable  
24 accidents.

25 Again, just as a refresher that the policy

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1 statement contains two qualitative safety goals and  
2 two quantitative health objectives. And really in  
3 these next two slides I've just put them there for  
4 your reference, I won't go through them. But this is  
5 just to have handy.

6 CHAIRMAN SHACK: Just to come back to a  
7 higher level thing. One of the things I think that's  
8 true here is that our safety goals focus on health and  
9 safety of the public. I looked in Europe, most of the  
10 high level goals also include an environmental  
11 statement. In Asia and the UK, they're all health and  
12 safety, they're health and safety here.

13 The Finns, the Swedes and the Canadians,  
14 for new plants, have an explicit restriction on  
15 essentially releases. You can only release so many  
16 becquerels of things.

17 And with some of the difference is you're  
18 going to tell us all about how you consider economic  
19 consequences, but we consider economic consequences  
20 only cost/benefit way here. We have nothing  
21 comparable to an adequate protection level for health  
22 and safety where you do certain things regardless of  
23 cost.

24 And, you know, it seems to me that's one  
25 thing that was missing in the staff's consideration

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1 here was no notion of whether in fact there should be  
2 something beyond the cost/benefit consideration of  
3 something like economic consequences or land  
4 contamination.

5 And that didn't seem to be addressed in  
6 the safety goal policies, or in the final SECY. I  
7 don't know, was it discussed within the working group  
8 and what were the reasons not to include  
9 considerations like that in the SECY?

10 MS. BONE: Thank you. We did discuss it.  
11 We discussed it in the context of this policy  
12 statement and that research as well as formulating the  
13 options. And exactly what the SECY says is what  
14 you've just recapped beautifully, is that we do  
15 discuss it only in the cost/benefit arena. However,  
16 when we get to the options we do have an Option 3 that  
17 discusses just this.

18 CHAIRMAN SHACK: Yes, but I mean it just  
19 sort of mentions it at the end. I mean there's no  
20 real discussion of it anywhere. It's a little  
21 surprising to me that they sort of left it strictly as  
22 something you would considering an option without any  
23 discussion previously of whether this was a good idea  
24 or a bad idea or had it been addressed before in the  
25 development of the original safety goals.

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1           MEMBER RYAN: How did the REA event scale  
2 factor your analysis? Or did it?

3           MS. BONE: Short answer. It didn't, but  
4 we did look at IAEA and NEA, again in the time that we  
5 had we didn't find direct guidance but we did --

6           MEMBER RYAN: I'm not sure it's taking  
7 care of Bill's question, but the IAEA Event Scale  
8 though I think is hitting along the lines that you're  
9 describing. Or 1 through 7 or whatever it will be.

10          MR. COYNE: Kevin Coyne from the staff.  
11 And I'll obviously defer to OGC if we need to. But  
12 the question of adequate protection and defining  
13 adequate protection is very specifically covered in  
14 the Atomic Energy Act. So that was --

15          CHAIRMAN SHACK: Well that's kind of a  
16 word. What I wanted to get was to get somehow beyond  
17 a strictly cost/benefit consideration.

18          MR. COYNE: Right, as Alysia is going to  
19 go through some specific examples of regulatory  
20 processes where we do consider the cost/benefit  
21 portion, and as she goes through those it highlighted  
22 areas where the Commission could consider, if they so  
23 desired areas in say the Backfit Rule process where  
24 you could inject a consideration of economic  
25 consequences, which would require a rule change and

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1 obviously Commission direction to do that.

2 We didn't fully develop that option in the  
3 absence of Commission direction to do so. Obviously  
4 we'd want extensive stakeholder engagement before we  
5 formulated say a proposed rule change, we don't want  
6 to go down that path without further direction from  
7 the Commission. So Option 3 is written to explore a  
8 number of alternatives.

9 And as Alysia goes through the  
10 presentation she'll be able to highlight some areas in  
11 our Regulatory framework where we think you could  
12 potentially inject greater consideration of economic  
13 consequences if the Commission so desires.

14 CHAIRMAN SHACK: You're going to flag this  
15 for me, like your hand will go up and --

16 MS. BONE: Yes, I will make sure.

17 MEMBER ARMIJO: I just would like to get  
18 back to trying to understand the benefit of these  
19 considerations. If we've done a good job of  
20 protecting health and safety of workers and the  
21 public. And we have insurance to provide compensation  
22 to individuals and businesses that are harmed,  
23 economically.

24 What additional things does the staff  
25 believe we should be doing? What additional benefits

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1 would we get from some changes? I don't know what  
2 changes you're contemplating. So it seems to me like  
3 things are covered already. Maybe they're not and  
4 correct me if I'm wrong.

5 MS. BONE: No, I definitely appreciate the  
6 comment. Ultimately, after we do this analysis, in  
7 the later slides I explain our recommendation actually  
8 is, or one of our conclusions really is that the staff  
9 does have sufficient flexibility to consider these  
10 economic consequences.

11 One thing that we do recommend though is  
12 we have identified areas where enhanced guidance or  
13 more centralized guidance can help with some of the  
14 staff efficiency when performing regulatory analysis,  
15 for example.

16 So we don't recommend actually a change to  
17 the framework itself. Going through we did analyze  
18 the framework, as we were discussing before, we did  
19 identify ways in which one might change the framework  
20 if the policy were to change the level of economic  
21 consequence consideration.

22 However, ultimately the staff did not  
23 decide to go down this route. But we did see ways of  
24 sort of constantly improving our current framework,  
25 our current practices.

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1                   MEMBER   CORRADINI:   So I'm kind of  
2                   listening to what Bill and Sam are asking, and maybe  
3                   it's contained in Option 3 and maybe I missed it.  So  
4                   the question that goes in my mind is what makes  
5                   nuclear power unique that I would have to consider  
6                   adequate protection of the environment, differently  
7                   than I consider it in the chemical industry?

8                   When W.R. Grace polluted upper state New  
9                   York, as long as they satisfied the EPA regs and were  
10                  sufficiently covered from an insurance standpoint that  
11                  they would have gotten it if they had gone  
12                  unintentionally offsite, I'm using Sam's way of  
13                  looking at it, then they're covered.

14                 So is there something unique about nuclear  
15                 that you would consider taking a step beyond?  I think  
16                 there is personally, but I'm kind of curious about  
17                 what the staff thinks about this.  And if so, how,  
18                 either historically or in other countries it's viewed  
19                 differently, philosophically.  Because I guess from  
20                 the standpoint of this, if you do a lot of  
21                 calculations it's going to come down to a policy  
22                 issue.

23                 Is it different?  Why is it different?  
24                 And if it's different what do we choose to do to  
25                 accommodate the difference?  After that you can do a

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1 lot of calculations, but that's kind of the essence of  
2 it. So I'm kind of curious, are we going to get into  
3 that part somewhere in here?

4 MS. BONE: The differences between how  
5 this --

6 MEMBER CORRADINI: Yes, I'm operating  
7 chemical plants all through the country whose chance  
8 of a risk is higher than this. That could have an  
9 unintended release and nobody seems to care. But they  
10 supposedly have insurance so that when it occurs  
11 somebody will be compensated or it will be cleaned up.  
12 That's what I think Sam is asking.

13 MEMBER ARMIJO: Yes, if that's not true I  
14 want to be corrected.

15 MEMBER CORRADINI: And the other side of  
16 it is maybe there's something unique about nuclear  
17 that we have to identify, clarify and say. And  
18 therefore, that's the reason I want to change the  
19 policy to provide adequate protection for  
20 environmental damage. That's what I was looking to  
21 get my hands on in this discussion. Is it coming?

22 MS. BONE: I don't think the slides will  
23 maybe get to the exact point that you have here.

24 MEMBER CORRADINI: But if I'm the  
25 Commissioner and you're informing the Commission on

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1 options it seems to me those are the sorts of things  
2 they're going to have to wrestle. Again, that's an  
3 assumption.

4 MR. CORREIA: Rich Correia from the staff.  
5 I understand your questions, in fact the Chairman  
6 asked us generally the same kinds of questions. And  
7 this isn't an excuse, but we had four months to put  
8 this whole thing together.

9 And Option 3 was, as Kevin said, if the  
10 Commission chose to go that way, to consider a policy  
11 change or rulemaking change then we would explore  
12 those kinds of things.

13 You know, what do we do? Should we change  
14 it? Should there be an explicit Commission policy  
15 statement on economic consequences or environmental  
16 impact? Those kinds of things. We just didn't get  
17 there.

18 It was an option for the Commission to  
19 consider if they chose to go further. And  
20 recommended not going that way because we felt that  
21 the current practices and policies were sufficient.  
22 And the other option was that the Option 3 would be  
23 very resource intensive.

24 CHAIRMAN STETKAR: I'm assuming you're  
25 going to inform us in some detail about the adequacy

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1 of the current practices and why you feel they are  
2 adequate and how they're actually implemented. I  
3 would certainly hope that we'll hear about that since  
4 you're resting your entire recommendation on that  
5 argument.

6 So I certainly want to make sure that the  
7 subcommittee understands why the current practices are  
8 adequate and how they're actually implemented in  
9 practice.

10 MS. BONE: Yes, the coming slides will go  
11 through those analyses.

12 CHAIRMAN STETKAR: Good.

13 MR. CORREIA: And we have, Rich Correia,  
14 we have, some of the panelists sitting here that  
15 actually do this for a living.

16 CHAIRMAN STETKAR: It's just a warning.

17 MR. CORREIA: Understand.

18 MS. BONE: Duly noted, thank you. Kevin?

19 MR. COYNE: Yes, Kevin Coyne from the  
20 Office of Research. And I want to make one point is  
21 we were going to cover this earlier, we didn't get  
22 into it. But this consideration of economic  
23 consequences is intensively linked to our legal  
24 authority under the Atomic Energy Act, so there are  
25 distinct limits of how far you can go when you

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1 consider adequate protection costs. Or it's something  
2 that we consider for an adequate protection question.  
3 Consideration of property damages, something that goes  
4 beyond adequate protection.

5 I'm not familiar with the legal basis for  
6 all the other federal agencies, but my understanding  
7 is NRC is somewhat unique and to make the kind of  
8 comparisons you're talking about would be useful but  
9 they would be time consuming to do to see how EPA's  
10 mandate for regulating chemical plants compares to us  
11 and how that context of their legal authority relates  
12 directly to what we do.

13 MEMBER CORRADINI: Somebody mumbled  
14 something to you.

15 MR. PESSIN: The other agencies, such as  
16 EPA, have broader authority than we do. Our authority  
17 under the Atomic Energy Act generally is within the  
18 radiological health and safety, at least for matters  
19 of adequate protection.

20 MR. COYNE: That helps.

21 MEMBER CORRADINI: That's interesting.  
22 That's clear or that's an interpretation?

23 MR. PESSIN: Clear.

24 MEMBER ARMIJO: I think it's clear.

25 MS. BONE: So summing up the safety goals,

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1 policy statement discussion, on Slide 11 I think that  
2 might get to Part A of your question before. That the  
3 staff, though the final policy statement was issued  
4 between 1997 and 2001, the staff did consider several  
5 modifications to the Safety Goal Policy statement.

6 And notably for this discussion is the  
7 land contamination and adding land contamination and  
8 an overall societal impact goal essentially. And that  
9 was in SECY-00-0077.

10 However, in 2001 the Commission ultimately  
11 disapproved any issuance of a revised safety goal  
12 policy statement in SRM SECY-01-0009. And all of this  
13 discussion can be found in Enclosure 2. We tried to  
14 summarize the high-level points of this development  
15 process.

16 Moving on to Slide 12, to get back to our  
17 discussion about the legal authority as well as with  
18 one of the specific subbullets. So now we've covered  
19 too, really the history, security and safety goals  
20 looking forward. And we recognized early on also that  
21 devising any sort of options would be intrinsically  
22 related to what NRC's legal authority is.

23 So we have two main bullets here, care of  
24 Office of General Counsel. And the first is that NRC  
25 requirements relating to adequate protection concern

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1 radiological health and safety and common defense and  
2 security. The NRC must find reasonable assurance of  
3 adequate protection before it can issue a license or  
4 amend an existing one.

5 MEMBER CORRADINI: So then, just to be  
6 somewhat catty, protecting people and environment  
7 shouldn't be there. On the upper left, based on  
8 legal authority is protecting people period.

9 MEMBER ARMIJO: That's a law. I think  
10 there's --

11 MEMBER CORRADINI: I'm just commenting on  
12 the fact that if the legal authority is X then we're  
13 not protecting people and the environment, we're  
14 protecting people, period. In terms of the WOGO for  
15 the Agency. Unless I misunderstood what you just  
16 said?

17 MS. BONE: Adequate protection is strictly  
18 a safety standard.

19 MEMBER CORRADINI: Okay, fine.

20 MS. BONE: However, separate and entirely  
21 distinct from adequate protection, the NRC under the  
22 AEA does have the authority to minimize danger to  
23 property. Then that's the specific terminology is  
24 property. And so paramount to this discussion early  
25 on we discovered having consistent terminology was

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1 really important to the conversation. And so to be  
2 consistent with the AEA and guidance, property damage  
3 was clearly the choice.

4 Historically within NRC guidance though,  
5 NRC has distinguished between onsite property damage  
6 and offsite property damage. And with regard to this  
7 conversation and Fukushima and the associated land  
8 contamination, offsite property damage was clearly the  
9 term that we needed to use. And so we've whittled  
10 down our scope and our terminology to offsite property  
11 damage.

12 But to note, offsite property damage  
13 includes more than one might think of just simply  
14 "property damage" in a common vernacular. It is costs  
15 of destroyed or damaged property of course, as well as  
16 costs of relocation and compensation from real  
17 property.

18 And land is a type of property that is  
19 distinguished as land by itself or together with  
20 improvements such as roads, infrastructures, et  
21 cetera, is referred to as real property. So that gets  
22 that second bullet.

23 And third is just that also offsite  
24 property damage includes these tertiary effects  
25 following a severe accident. Such as loss of business

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1 revenues, including the impact on business and  
2 manufacturing, agriculture, tourism, et cetera. So  
3 when you think about economic consequences really  
4 offsite property damage is the broader terminology  
5 that encompasses all of these considerations.

6 CONSULTANT KRESS: Does it include --

7 MS. BONE: Not in this situation, not in  
8 --

9 MEMBER RYAN: I'm sorry, I didn't hear  
10 what you said?

11 CONSULTANT KRESS: I said does it include  
12 health and expense?

13 MS. BONE: No.

14 CONSULTANT KRESS: Well they're calculated  
15 in your Level 3.

16 MS. BONE: Yes, sir, they are included in  
17 Regulatory Analysis, in all of these analyses, that is  
18 included. But the point of this particular slide is  
19 just making it very clear that adequate protection  
20 health effects are very different with relation to  
21 minimizing danger to property. It's very distinct.

22 CONSULTANT KRESS: I don't even know what  
23 minimized means.

24 MEMBER CORRADINI: Well what trumps what  
25 is what my question is. Does Bullet 1 trump Bullet 2

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1 or vice versa?

2 MS. BONE: I probably defer this  
3 discussion to OGC, but from the way we've discussed it  
4 it's just, it's distinct and they're separate. But I  
5 don't know if anyone --

6 CHAIRMAN STETKAR: Alysia, the particular  
7 definition of offsite property damage, is that derived  
8 directly from the Atomic Energy Act or through their  
9 usage?

10 MS. BONE: Property damage is from the  
11 AEA, but offsite property damage is a term that the  
12 staff has come up with. And that's within our  
13 NUREG/BR-0058, the Regulatory Analysis Guidelines and  
14 the Technical Handbook. So that's where we get the  
15 definition. And it's derived from the property damage  
16 which is found in the AEA. Does that answer your  
17 question?

18 MR. PESSIN: Alysia, can I just jump in?  
19 First of all the AEA doesn't the term property. So  
20 this is the staff's interpretation of that language in  
21 the AEA. All the Atomic Energy Act says in its  
22 discretionary authority is that the Commission may  
23 take steps or measures to minimize danger to property.

24 That's all it says. It says it in several  
25 different sections of the AEA but it's basically the

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1 same exact language that shows up.

2 So that's our interpretation of what that  
3 means in effect. And pertaining to your question as  
4 to what trumps what, what trumps what, adequate  
5 protection comes first. That is a shall, it's not  
6 discretionary. We have to ensure adequate protection,  
7 public health and safety, common defense and security.

8 MEMBER CORRADINI: So from a legal  
9 standpoint you might evaluate what the danger to  
10 property is only from the context that now that you've  
11 provided that protection you can look at and see what  
12 the property damage is given adequate protection is  
13 provided?

14 MR. PESSIN: Yes, sir.

15 MEMBER ARMIJO: Okay. And all of this  
16 damage is really tangible damage. This is not fear,  
17 this is not anxiety, mental health, that kind of  
18 stuff? Or is it?

19 MS. BONE: Is not. This is --

20 MR. PESSIN: No, sir, it's not. There's  
21 actually a case law, a Supreme Court case that dealt  
22 with the Three Mile Island restart. And that  
23 concerned damages from fear of a future nuclear  
24 accident. And that's not something that cognizable  
25 for the AEA.

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1                   CONSULTANT WALLIS:  If you ask me to vote  
2                   on this, I live in Vermont and if VY has an accident  
3                   which makes me leave the property I love that is an  
4                   effect on me.  I'm going to vote by emotion not just  
5                   some number you've come up with.

6                   MEMBER ARMIJO:  But that's, if you're  
7                   compensated,  financially,  you're still at an  
8                   inconvenience, right?

9                   CONSULTANT WALLIS:  Well it's very  
10                  difficult to know the value of what I'm talking about.

11                  MEMBER ARMIJO:  You're right.  Just trying  
12                  to find out what's compensated and what's isn't.

13                  CONSULTANT WALLIS:  I bring this up  
14                  because this is the kind of thing that comes up in  
15                  public meetings.  You hear a lot of this kind of thing  
16                  in a public meetings.  It's not just sometimes bring  
17                  it up, because that's what the people think about it.  
18                  And paying them to leave a place they don't want to  
19                  leave is not really something they're pretty happy  
20                  with.

21                  MEMBER ARMIJO:  Nobody would be happy.

22                  CONSULTANT WALLIS:  I don't see the  
23                  difference between nuclear and some other event.

24                  CONSULTANT KRESS:  Chemicals are  
25                  generally an individual risk.  They're not spread out

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1 over the whole country. The difference in scale,  
2 mostly.

3 MEMBER CORRADINI: Why is that? I don't  
4 understand your point.

5 CONSULTANT KRESS: Well it's a difference  
6 in scale. The burden is borne by --

7 MEMBER ARMIJO: Well, PCBs in the Hudson  
8 River. Big chemical contamination. A lot of costs,  
9 a lot of lawsuits, a lot of effort. And people argue  
10 about safety versus contamination. It wound up  
11 contamination call it's causing that thing to be  
12 dredged. And it's long-term, costly, large area.

13 CHAIRMAN STETKAR: How much is New England  
14 cleaning up with all of it's stuff from contaminate  
15 industries?

16 MEMBER ARMIJO: Right, and dioxins and  
17 things like that.

18 CHAIRMAN STETKAR: So it's not at all  
19 clear that the extent of land contamination from  
20 chemical facilities is necessarily less than what  
21 we're dealing with here.

22 MEMBER CORRADINI: But since we're on this  
23 roll, it's not clear that we even surveyed enough to  
24 know what the effective land contamination is for  
25 chemical effects. If you go to the students of the

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1 day in college and ask them about Love Canal they'll  
2 go, what? And it's still there and it still has the  
3 same concentrations.

4 MEMBER ARMIJO: Chemicals don't decay,  
5 isn't that right?

6 MS. BONE: Once we determined the  
7 appropriate terminology the staff identified in what  
8 analyses and what ways, current practice, we consider  
9 offsite property damage. And we do so in three  
10 analyses, Regulatory Analysis, Backfit and National  
11 Environmental Policy Act, NEPA analyses.

12 And within these contacts, this is just an  
13 overview slide, and in the coming slides I'm going to  
14 go through the purpose, the requirement and the way in  
15 which offsite property damage comes into play in each  
16 of these analyses.

17 But just as an overview, Regulatory  
18 Analysis is the structured analysis of proposed  
19 requirements estimating benefits and costs, as we were  
20 discussing. Backfit Analysis in the context of  
21 offsite property damage, we're using it to determine  
22 if the proposed backfit is cost-justified.

23 And with the NEPA's base, depending on the  
24 nature of the proposed regulatory or licensing action,  
25 the NEPA analysis may include consideration of

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1 potential damage to offsite property.

2 And these also were specific subtopics  
3 within the OEDO Green Ticket Tasking. And while  
4 they're a mean backbone of the paper they're also  
5 found in more detail in Enclosures 5 and 6.

6 MEMBER RYAN: Could you explain on the  
7 criteria for the third one? It says may include or  
8 does include, how do I get from may include to will  
9 include? Consideration of property damage.

10 MS. BONE: Sure, well within NEPA we're  
11 only talking about, in this discussion, we talk about  
12 NEPA as a whole. But then we discuss specifically  
13 SAMAs and SAMDAs and within these analyses we do  
14 include the damage to offsite property, that's an  
15 attribute.

16 So I guess that's what we're trying to say  
17 here is within these specific contexts of SAMAs and  
18 SAMDAs, looking at license renewal and new  
19 applications is where we're considering SAMAs and  
20 SAMDAs.

21 MEMBER RYAN: I'm just trying to  
22 understand the vagueness of this bullet. It may  
23 include, it either does or it doesn't. Or there's a  
24 criteria which says it will or it will not. I'm  
25 trying to understand how that thing works.

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1 MR. CORREIA: His question is is it may  
2 or not, in terms of the language? That's what I think  
3 --

4 MEMBER RYAN: Yes, that's what I'm asking.

5 MR. PESSIN: The NEPA Analysis was driven  
6 by the regulatory or licensing action the Agency is  
7 analyzing. So in some cases you're not going to have  
8 --

9 MEMBER RYAN: So it raises to the bar is  
10 there an offsite impact or not and that's the decision  
11 it's gets, it was considered but it was discounted  
12 because it wasn't, for whatever reason worth for  
13 consideration. Is that kind of where we're at?

14 MR. PESSIN: Right.

15 MEMBER RYAN: Thank you.

16 MR. PESSIN: You're welcome.

17 MS. BONE: Beginning with Regulatory  
18 Analysis. The purpose of the Regulatory Analysis is  
19 to identify and evaluate the likely consequence of  
20 rules, really at a high level. Simply it's a decision  
21 tool for policy makers, it aids in transparency and  
22 rationale of action.

23 And we perform this, it's a self-imposed  
24 requirement for the Agency, but we've been voluntarily  
25 complying with OMB Circular A-4, which is the Office

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1 of Management Budget's guidelines for performing  
2 regulatory analysis for all agencies. We've been  
3 performing these since 1976 voluntarily.

4 And it's just used at any point to  
5 evaluate or anticipate what the consequence of a new  
6 rule. And it's with the cost/benefit portion of the  
7 regulatory analysis that offsite property damage comes  
8 into play as an attribute.

9 MEMBER CORRADINI: So can I interpret that  
10 with an example, just so I can understand what you're  
11 saying? So if you do a regulatory analysis. Hardened  
12 vents and BWR Mark 1s and Mark 2s, that's a rule, I'm  
13 sorry that's an order. Excuse me. And a regulatory  
14 analysis must accompany that order?

15 You've given me three categories of  
16 analysis, I'm trying to figure out where are they  
17 used. Help me.

18 MR. SZABO: Aaron Szabo, for regulatory  
19 analysis, according to our guidelines and office  
20 director or above can have the regulatory analysis  
21 removed or modified. For that specific order, as  
22 hardened vents were for protection where other case  
23 costs can be considered, a regulatory analysis was not  
24 provided with it.

25 MEMBER RYAN: But it could have been?

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1 MR. SZABO: It could have been, yes.

2 MEMBER RYAN: So it's voluntary on the  
3 appropriate manager's part to ask for it or not ask  
4 for it?

5 MR. SZABO: Correct. And for instance for  
6 rules that have been actioned we also provide a  
7 regulatory analysis with it.

8 MEMBER RYAN: So if I go to station  
9 blackout, let's pick another example just so we're on  
10 a roll here, if I pick station blackout which is  
11 eventually going to become a modified rule there would  
12 be a regulatory analysis with it?

13 MR. SZABO: There should be, yes. Well  
14 there may be, sir, not should be.

15 MEMBER RYAN: It could be excused?

16 MR. SZABO: Yes, Office Director or above  
17 can remove that.

18 MEMBER ARMIJO: Waived.

19 MEMBER RYAN: So I can check guidelines?

20 MR. SZABO: They're usually included in  
21 rules.

22 MS. BONE: And there's a good point  
23 actually. The fact that the guidelines can be amended  
24 or eliminated at the discretion of Office level or  
25 above. That gets back to this flexibility that the

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1 staff has. So that's a really key point when we come  
2 up with our conclusions and recommendations.

3 MEMBER BLEY: Alysia, just a little thing,  
4 I'm having trouble putting all the pieces together.

5 MS. BONE: No problem.

6 MEMBER BLEY: I'm a little confused why  
7 under legal authority you didn't include NEPA, which  
8 was included on the next slide, because that is also  
9 a legal document. And I thought NRC, and I could be  
10 wrong on this, had some responsibilities under RCRA  
11 for the same kinds of environmental evaluations.  
12 There was two questions, can you say about this one?

13 MS. BONE: Sure I can take a shot at it.  
14 And then if Andy wants to elaborate. I think one of  
15 the reasons that we are keeping NEPA separate here is  
16 that NEPA doesn't mandate any specific outcome.

17 So we're keeping it separately here  
18 because it's a procedural staff kit essentially. We  
19 need to complete the NEPA implementing regulations in  
20 Part 51, however it doesn't mandate a specific  
21 outcome. So it doesn't give us any additional  
22 authority to propose requirements or conduct  
23 requirements.

24 So that's the reason we're keeping it  
25 distinct. I don't know if Andy wanted to add anything

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1 more to that. If that helps for some of the question.

2 MEMBER BLEY: Just a vague thing, way back  
3 in my memory, is that NRC didn't do that a long time  
4 ago. But after the Bailey case the court ordered that  
5 you had to look at the environmental requirements as  
6 well, which I guess comes under RCRA, although I don't  
7 track those things.

8 MR. PESSIN: No, sir, not under NEPA. But  
9 under NEPA we're required to look at the environmental  
10 impacts of a proposed Agency action. So in case of a  
11 regulatory agency, like the NRC, it would be if we're  
12 going to take a licensing action or a rulemaking. We  
13 would look at the environmental impacts of that  
14 proposed action. And you have the MOIs.

15 And the decision maker would have to  
16 consider the environmental impacts and also part of  
17 NEPA is that there's a public disclosure requirement  
18 so the public can have an idea of what the Agency's  
19 considering.

20 However, as Alysia pointed out, NEPA is a  
21 procedural statute, it does not provide a federal  
22 agency with any additional substantive or organic  
23 authority. All our authority to regulate our  
24 licensees comes from statutes like the Atomic Energy  
25 Act, not from a statute like NEPA.

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1                   MEMBER BLEY: So no matter how a NEPA  
2 analysis turns out you really don't have to consider  
3 that in issuing a license?

4                   MR. PESSIN: You're supposed to consider  
5 the environmental impacts. But the decision maker,  
6 the agency decision makers, which would be the  
7 Commission, can at the end of the day opt for a course  
8 of action or an alternative that is not  
9 environmentally friendly, if they so choose.

10                   And with respect to RCRA, I'm not familiar  
11 with that statute as much as I am with NEPA. I  
12 generally haven't seen anything where --

13                   MEMBER CORRADINI: So can I just get,  
14 here, understand what you just said. So what you said  
15 at the end there was that essentially the NRC and the  
16 Atomic Energy Act in some sense trumps NEPA if you  
17 need to protect health and safety?

18                   That is if you decide something is  
19 adequate protection and you've computed the property,  
20 the effect on offsite or onsite property, and NEPA  
21 comes in and says, geez it would be better if it were  
22 minimized further. Interesting but too bad.

23                   MEMBER RYAN: Isn't that a choice if the  
24 Agency made it subject to court challenge then?

25                   MEMBER BLEY: Of course.

1 MEMBER CORRADINI: Well I'm asking, just  
2 like I asked what trumps what within the Atomic Energy  
3 Act, I'm curious does NEPA trump the Atomic Energy Act  
4 in terms of offsite --

5 MR. PESSIN: No.

6 MEMBER CORRADINI: I sense not?

7 MR. PESSIN: No.

8 MEMBER CORRADINI: Okay.

9 MEMBER BLEY: I guess the environmental  
10 effects could have some perhaps equivalent economic  
11 impact, is that factored into what you're proposing?  
12 Or is it just cleanup?

13 MS. BONE: Well it's factored. It is  
14 factored in the analyses themselves. I just want to  
15 make sure that I understand completely. We do factor  
16 that in the analyses, it's part of the calculations,  
17 part of the attribute. As far as absolutely --

18 MEMBER BLEY: Is it part of the economic  
19 impact?

20 MS. BONE: The calculation?

21 MEMBER BLEY: Well that's what you're all  
22 about here, right? Economic consequences. Is it part  
23 of the economic consequences, the effect on the  
24 environment?

25 MS. BONE: Yes.

1                   MEMBER BLEY: Okay, we'll come back later  
2 and try to understand that when you get a little  
3 further along.

4                   MR. COYNE: This is Kevin Coyne, from the  
5 Office of Research. It's to property and the impact  
6 on property and the other impacts that Alysia  
7 mentioned. So relocation of people from their homes  
8 of that kind of interdiction is needed. Cleanup  
9 costs, disruptions to businesses, agricultural  
10 disruptions. Those kind of costs associated with  
11 property would be factored into the analysis. As far  
12 as putting value on the environment itself, that --

13                   MEMBER BLEY: Even though that might be  
14 an economic consequence, you're saying that's outside  
15 of your --

16                   MR. COYNE: The properties was considered  
17 but the --

18                   MS. BONE: Intrinsic.

19                   MR. COYNE: -- intrinsic value of things,  
20 that's a subject that the staff hasn't been able to  
21 resolve yet. How do you value national parks and  
22 major bodies of water and things like that? That is  
23 something that we don't have ways to quantify.

24                   CHAIRMAN STETKAR: Then for example, non-  
25 commercial species of fish or animal life, non-

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1 commercial, so it's not a quantifiable loss of  
2 commercial impact.

3 MR. COYNE: I'm going to look over my left  
4 shoulder here.

5 (Laughter)

6 CHAIRMAN STETKAR: Because I just can't,  
7 the notion of property. I'm trying to see where that  
8 line, I'm not talking about the intrinsic beauty of a  
9 tree for example. A species maybe, a species might  
10 disappear.

11 MEMBER BLEY: But think oil spill.

12 CHAIRMAN STETKAR: That's a good  
13 equivalent.

14 MR. PESSIN: The question is what's our  
15 statutory authority to prevent that?

16 CHAIRMAN STETKAR: No, how is the cost,  
17 economic impact, what dollar value is assigned to that  
18 species?

19 MR. PESSIN: Well legally I don't believe  
20 we have one.

21 CHAIRMAN STETKAR: So you're saying it's  
22 not considered?

23 MR. WIDMAYER: You bundle up the  
24 statement, we'll address whether or not you're going  
25 to accidentally eradicate the species, but not --

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1 CHAIRMAN STETKAR: We're talking about  
2 economic consequences and trying to understand what is  
3 in the equation and what is not in the equation. And  
4 it's my understanding that species impacts, if it's  
5 not a commercial species. I'm assuming that a  
6 commercial species would be in that --

7 (Simultaneous speaking)

8 MEMBER BLEY: What dollar value do you put  
9 on it and if it doesn't say a dollar analysis, it says  
10 an economic consequence, which could be a factor in --

11 CHAIRMAN STETKAR: That's correct.

12 MEMBER BLEY: I just wondered if the staff  
13 has considered that. If there's a place for that in  
14 what you're proposing?

15 CONSULTANT KRESS: What they done in the  
16 Environmental Impact Statement is assign a dollar  
17 value to person-rem of the release.

18 CHAIRMAN STETKAR: I'll hear a little more  
19 what they do.

20 MEMBER BLEY: Somebody back here.

21 MR. RICHTER: I'm Brian Richter, NRR.  
22 Just hopefully clarify, if not confuse the issue even  
23 more. There are economists, at Interior for example,  
24 that do have values they place on recreational  
25 fishing, on camping, other outdoor activities. We

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1 don't include this because when looking at and  
2 performing Reg analyses we don't do it at a site-  
3 specific basis.

4 It would be too difficult to look at each  
5 site and say which National Park is closest to this?  
6 Might it be impacted? Are there state recreational  
7 facilities? So we don't get into it at that level.

8 CHAIRMAN SHACK: No, but you do a license  
9 renewal in the SAMA you would look at it.

10 MR. RICHTER: The SAMA is not a reg  
11 analyses even though a lot of the guidance is the  
12 same.

13 CHAIRMAN STETKAR: That's why I want to  
14 get into this because I'm really confused.

15 MEMBER CORRADINI: Those two guys  
16 understood it. So you're saying the SAMA, although  
17 available, is not a regulatory analysis, it's third  
18 one. Wherever the hell it is. And a NEPA analysis?

19 MR. RICHTER: That's correct.

20 CHAIRMAN SHACK: So the Agency, it's a  
21 piece of information that's not used for regulation,  
22 is my understanding of it.

23 MEMBER ARMIJO: But it can be used for  
24 decision making.

25 MR. PESSIN: Certainly --

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1 MEMBER CORRADINI: You need a chair.

2 MR. PESSIN: I'm comfortable back here.

3 MR. WIDMAYER: Go get him a name tag.

4 MR. PESSIN: Under NEPA you can consider  
5 environmental consequences. And look at, if there's  
6 a conditional license on an environmental impact in  
7 order to really do it within the bounds of the Atomic  
8 Energy Act there's got to be some nexus to  
9 radiological compensation, common defense and  
10 security. That's the conservative answer.

11 There's some in OGC who would be willing  
12 to push that envelope a little bit. Particularly if  
13 the licensee agrees to do it voluntarily. But  
14 basically if you have that nexus to radiological  
15 health and safety.

16 MEMBER CORRADINI: All right. Thank you.

17 MS. BONE: So introducing a third category  
18 altogether that will tie up directly to all these  
19 three, Regulatory, Backfitting and NEPA Analyses and  
20 that they're different requirements but they have the  
21 same process for the cost/benefit evaluation.

22 This is Backfitting and Issue Finality,  
23 the middle one. And the purpose of this is it reads  
24 similarly in some respects to the regulatory analysis  
25 purpose, which is regulatory stability. Reasoned and

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1 informed agency decision-making and transparency of  
2 decision-making.

3           However, if needed if a proposed NRC  
4 action falls within the scope of what Backfitting and  
5 Issue Finality. We'll get into that in the next  
6 slide.

7           But here, a couple of points. The  
8 regulatory requirements for backfitting are, for  
9 operator reactors for instance, are in 10 CFR 50.109,  
10 analogous requirements for issue finality in Part 52  
11 and those analogous for materials are in Part 70, 72  
12 and 76.

13           So when discussing when the NRC needs to  
14 perform a backfitting, moving to the next slide, the  
15 process is really a four-step process. The first and  
16 the second steps are somewhat related. The first  
17 being is the NRC action subject to backfit rule and is  
18 there a backfit at all?

19           And a backfit we can define as a  
20 modification or addition to a structure, system or  
21 component, design or procedure. Additionally it's a  
22 new or amended rule or staff position interpreting  
23 Commission rules. So essentially a change.

24           Then we determine, once it is, this is in  
25 fact a backfit, we determine if, for instance with

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1 respect to nuclear power plants in Part 50.109(a)(4)  
2 if an exemption applies. So this is an exception to  
3 performing actually the backfit analysis.

4 And there are three of them found in Part  
5 50, which are is this backfit necessary for compliance  
6 with regulations? Is it necessary for adequate  
7 protection? Or, is it necessary for defining or  
8 redefining what is needed for adequate protection. If  
9 any of these exceptions apply then the analysis stops,  
10 or it really doesn't even start because the  
11 requirement can just be imposed.

12 However, for the sake of this exercise  
13 let's just say no, it doesn't pass any of these  
14 exceptions. So we move on to the fourth step. And  
15 the purpose of this fourth step, we split it into two  
16 parts. But essentially we're asking is this backfit  
17 necessary for, is it cost justified with regards to  
18 substantial increase in safety.

19 So the first part of that we ask the  
20 question does this backfit provide substantial  
21 increase and protection to public health and safety or  
22 common defense and security. And with regards to  
23 nuclear power plant the staff typically uses the  
24 safety goal screening criteria found in NUREG/BR-0058.  
25 And for the sake of this argument again, we're going

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1 to say yes it's required for the substantial increase  
2 in safety.

3 So then we move on to this last step, the  
4 second part of the fourth step, which is, is the cost  
5 of the backfit justified in light of this increased  
6 protection. And here it's in this cost/benefit  
7 analysis space that offset property damage again is  
8 considered. And the reason it -- Oh, go ahead.

9 CHAIRMAN STETKAR: I wanted to get you to  
10 that fourth step, but let me ask you, if the answer to  
11 one you characterized as the fourth step Part 1 is no,  
12 it does not provide a substantial increase in  
13 protection of public health and safety or common  
14 defense and security. Then by definition a backfit  
15 analysis is not required?

16 MS. BONE: Well at this point it's a  
17 little nuanced because at this point we're technically  
18 in the analysis. Technically this is the first  
19 question in the analysis.

20 CHAIRMAN STETKAR: Okay, so then what do  
21 I do if the answer to the first step is no?

22 MS. BONE: Is no, actually I'm going to  
23 move to this next slide because I think that might  
24 help.

25 CHAIRMAN STETKAR: Okay, I'm sorry.

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1                   CONSULTANT WALLIS: Why would the backfit  
2 roll it up in one direction? I mean you say does it  
3 increase? You could actually have some that would  
4 decrease, say if you had such a small amount but the  
5 savings are really worthwhile. But it doesn't work in  
6 the other direction ever?

7                   You can't remove something which is  
8 completely unnecessary to safety? You can, can't you?  
9 Do you use the backfit rule for that? It's only one  
10 direction. It's a very strange economic analysis if  
11 it only goes in one direction.

12                  CHAIRMAN STETKAR: Typically I think it's  
13 specific to one plant. Is that right, Rich?

14                  MR. CORREIA: I believe you can do that  
15 under the regulations, but I think that comes under  
16 the risk informed changes to --

17                  CONSULTANT WALLIS: It's very strange  
18 isn't it, to only go one direction?

19                  CHAIRMAN STETKAR: No, 1.174 allows you to  
20 decrease the risk --

21                                 (Simultaneous speaking)

22                  CHAIRMAN STETKAR: It's not part of the  
23 backfit rule.

24                  CONSULTANT WALLIS: It's still under a  
25 different rule ???

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1 MR. COYNE: Kevin Coyne from Research.  
2 That would use the 50.90 License Amendment Process or  
3 potentially the Exemption Process, 50.12.

4 CONSULTANT WALLIS: Is that cost/benefit  
5 the analysis? Is it some kind of cost/benefit  
6 analysis?

7 MR. COYNE: Well I think the short answer  
8 would be that would be up to the utility to decide  
9 whether it was cost beneficial for them to request the  
10 amendment and the staff would do a safety review on  
11 that.

12 CONSULTANT WALLIS: Essentially it  
13 eventually comes down to cost/benefit? No?

14 MS. BONE: I see one of our working group  
15 members from NRR wanting to add clarification.

16 MR. SCHOFER: Fred Schofer, NRR. If it's  
17 a relaxation, that is the safety is there and you're  
18 going to save money typically what's done is the NRC  
19 has the ability to do that relaxation through  
20 regulation. And then the licensee has the option as  
21 to whether to do that or continue doing what they're  
22 doing. So it's up to them whether they want to.

23 CONSULTANT WALLIS: Suppose it's a slight  
24 decrease in safety for a huge saving in cost. Is that  
25 ever allowed? Yes it is, isn't it?

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1 MR. SCHOFER: But they don't have to do it  
2 based on --

3 (Simultaneous speaking)

4 CONSULTANT WALLIS: -- the same kind of  
5 cost/benefit analysis that we're talking about here?  
6 Or not?

7 CHAIRMAN STETKAR: It's based on a risk.  
8 The risk is a delta, it's a delta risk which is a  
9 different issue that we'll eventually get into here.

10 CONSULTANT WALLIS: I think there really  
11 logically should be a continuity and they should both  
12 be treated the same way.

13 MEMBER CORRADINI: Nuclear is different.  
14 It is.

15 MS. BONE: So just hopefully answering,  
16 clarifying that question you had before. Part C is  
17 safety goal evaluation. Again, this just emphasize,  
18 this is just for reactors, answer the question if this  
19 is substantial increase in safety. If the answer is  
20 not we drop down to no regulatory action. So we don't  
21 even make it to that last step of estimating the cost  
22 and benefits.

23 CHAIRMAN STETKAR: But if the proposed, so  
24 if I can't demonstrate the savings of one person-rem  
25 it drops down into no regulatory action, is that

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1 right? I mean that's the way the current process  
2 works.

3 MS. BONE: Well the person-rem comes in  
4 Part D. The end of cost/benefit analysis.

5 CHAIRMAN STETKAR: Okay, I'll go down to  
6 Part D. If I can't demonstrate one person-rem, what  
7 we're trying to understand is are these decisions to  
8 go to a formal backfit analysis determined solely on  
9 health effects, period? Is that the way it's defined?

10 MS. BONE: I would say you have to  
11 demonstrate that there is a substantial increase. So  
12 yes you have to make it through that health portion.

13 CHAIRMAN STETKAR: Okay, now what defines  
14 health? Is that early fatalities, large early release  
15 frequency? What defines health? Suppose I could  
16 reduce the late containment over pressure failure or  
17 small release frequency by a factor of 1,000, which  
18 might not ever result in any change to early fatality  
19 risk, that would not ever make it past the evaluation  
20 of the backfit, is that correct?

21 MR. SCHOFER: This is Fred Schofer, NRR.  
22 You asked a number of questions, let me see if I can  
23 catch them all and then you can add to it.

24 For screening we do use core damage  
25 frequency, the LERF frequency, the qualitative health

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1 objectives all have screening criteria. As well as we  
2 then also look at averted dose, which you were talking  
3 about as well.

4 And then you indicated well what's our  
5 sensitivity from a quantitative perspective as to  
6 whether you afford if, for instance, you miss it by  
7 just a little bit, whatever that Delta might be.

8 We do allow for a qualitative assessments  
9 as well to also allow us to go forward. So together  
10 both quantitative and qualitative based upon that  
11 judgement as to whether there is a substantial safety  
12 net.

13 CHAIRMAN STETKAR: And you said averted  
14 dose. Is that population average dose?

15 MR. SCHOFER: Averted dose is typically  
16 you're talking about for the public it comes out to be  
17 a MACC, MACCS2 analysis, as well as the occupational  
18 dose. Accident is included in that as well.

19 CHAIRMAN STETKAR: Okay, thanks.

20 MS. BONE: So given that we do pass this  
21 safety goals screening criteria or the substantial  
22 increase in safety test and we do, the values exceed  
23 the impacts then the backfit can be implemented. And  
24 I'd like to use this flowchart again, to just sort of  
25 bring us around to Option 3, which we discussed a

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1 little bit earlier of how we might change the  
2 regulatory framework.

3 And this is really one of the central  
4 pieces that we looked at here. If you'd like to make,  
5 for instance, a rule change to elevate consideration  
6 of offsite property damage or land contamination or  
7 economic consequences at the level of the safety goals  
8 screening for instance.

9 You wouldn't have to make it past that  
10 screening before you considered such an attribute. So  
11 that's one way that we suggested if you'd like to  
12 change current consideration of economic consequences  
13 that's one place to do so.

14 Additionally, going back to that first  
15 step of an exemption. Currently we have three  
16 adequate protection, compliance, et cetera. If we  
17 were to add a new exemption on basis of land  
18 contamination then that again would change the  
19 regulatory framework to elevate consideration of  
20 economic consequences at the forefront of the  
21 backfitting process.

22 So these are just two examples of ways  
23 that we've identified possibly making a change within  
24 an Option 3.

25 MEMBER ARMIJO: The NRC unilaterally can

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1 create these exemptions and still be in compliance  
2 with the Atomic Energy Act? I mean who decides the  
3 exemption is okay, the commissioners?

4 CHAIRMAN STETKAR: Yes, policy call.

5 MEMBER ARMIJO: And they just basically  
6 make the policy and if somebody doesn't like it they  
7 go to court.

8 CONSULTANT KRESS: Let me ask you a  
9 question about safety goals screening. If I wanted to  
10 make backfit that applies to the whole bunch of 100  
11 plants up there and I want to check to a safety goal  
12 screen. What does that mean? Let's talk about CDF,  
13 what am I doing?

14 Some of those plants, practically all of  
15 them are below the CDF at the moment. So do I look at  
16 this backfit and see, some of them are closer to the  
17 goal than others, I'm going on a plant-by-plant basis?  
18 Or is this an average over all the plants? What does  
19 this screen by?

20 MS. BONE: I see some rumbling back here,  
21 but I'll give a shot at your answer first. That's  
22 also, we allude to that a bit in Option 3. Typically  
23 so far for generic backfitting we use generic average  
24 value for site specific, facility specific values.

25 One option, again, for changing some of

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1 the framework this is less of a rulemaking change for  
2 instance, it's more of like an overall practice.  
3 Framework change would be to say that for every  
4 generic backfitting would require using site specific  
5 values eventually. So I hope that answered or gets to  
6 some of part of your question.

7 CONSULTANT KRESS: Well you wouldn't have  
8 to do site specific, you could do a generic, but you  
9 have to have it doing something. Yes I think you  
10 answered my question.

11 MS. BONE: Thank you.

12 MR. SZABO: Yes, Aaron Szabo again. Just  
13 to give an example of what you're talking about with  
14 the various sites having various levels of how close  
15 they were to CDF and so forth is go back to the old  
16 SBO rule in '88, was the example we did use for the  
17 Commissioner briefing. It was actually determined by  
18 staff after the proposed rule that if you just tried  
19 to use one generic level for everybody it really  
20 wouldn't be at that substantial safety enhancement  
21 level.

22 However, if they decided then to go to a  
23 performance based rule which then allowed them to have  
24 to kind of be at the site-specific range so that you  
25 could have a meet overall, the safety goals.

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1                   CHAIRMAN STETKAR:  Something, only because  
2                   I'm not very familiar with backfit analyses.  Reading  
3                   through the SECY, and perhaps I've misinterpreted  
4                   something.  I have the impression that once you have  
5                   satisfied all S's or the formal cost/benefit analysis  
6                   for backfitting, do the benefits in that analysis  
7                   include economic consequences?  Or are they strictly  
8                   related to health effects?  I just wanted to  
9                   understand that.

10                   MS. BONE:  Sure, I see Fred coming in and  
11                   I appreciate --

12                   CHAIRMAN STETKAR:  Because we're going to  
13                   get into the SAMAs and SAMDAs where I think I  
14                   understand how they work.  This chart I don't  
15                   understand how it works.  So I wanted to make sure  
16                   that I wasn't misinterpreting something.

17                   MR. SCHOFER:  Okay, well was the question  
18                   on reg analysis and what costs are considered?

19                   CHAIRMAN STETKAR:  For a backfit what,  
20                   this would be on the benefit side of the ledger, what  
21                   benefits are included in that cost/benefit analysis?

22                   MR. SCHOFER:  It would include all the  
23                   benefits and all the costs.  It's only when we're  
24                   looking at the initial screening to ensure that it's  
25                   a substantial safety enhancement that use the only the

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1 averted dose for public health or security.

2 CHAIRMAN STETKAR: Okay, so that's  
3 something I wanted to get straight. The benefits in  
4 that backfit analysis would include the costs of  
5 property, correct?

6 MR. SCHOFER: If you'd already passed --

7 CHAIRMAN STETKAR: If you'd already passed  
8 your screening, which doesn't consider dose?

9 MS. BONE: Yes and averted cost would be  
10 economic consequence off the property damage, et  
11 cetera.

12 MR. SZABO: Aaron Szabo. I guess the best  
13 way I guess to think about this is the only benefits  
14 are your person you have averted. Everything else is  
15 costs, but everything else is considered. So all your  
16 economic consequences are cost offsets. So I mean it  
17 just comes --

18 CHAIRMAN STETKAR: Okay, I'm not an  
19 accountant. I can balance my checkbook but that's  
20 about it.

21 MR. SZABO: It comes into where you  
22 consider it. And background consequences not  
23 considered is part of the substantial safety  
24 enhancement. That is very cut and dried and very  
25 important.

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1 CHAIRMAN STETKAR: Okay, thank you.

2 MEMBER CORRADINI: I'm back. So you said  
3 if you were to have suggested in Option 3, examples  
4 for Option 3 would appear would be one, in the third  
5 step of the backfit you would add an exemption. And  
6 then you gave a second example but I don't remember  
7 where it fit into this process.

8 MS. BONE: Yes. So we get, Option 3 is  
9 exploring the merits of changing the framework. So we  
10 have a couple of different options. We have  
11 rulemaking change, so within the backfit we have, like  
12 you mentioned, a new exemption.

13 So before you even need to perform the  
14 analysis at all if we have a exemption based on land  
15 contamination, a certain threshold, you can just move  
16 forward and impose the backfit similarly parallel the  
17 way we can do for adequate protection or compliance.

18 Another option would be here at the C, in  
19 the Flowchart C, when we ask this question required  
20 for substantial increase in protection of, the wording  
21 is this, does the backfit provide substantial increase  
22 in protection to public health and safety or common  
23 defense and security.

24 So we have to get through that step to get  
25 to the last step which is where the cost/benefit

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1 analysis is.

2           However, if a rulemaking were to come into  
3 play that would change that first part to include  
4 substantial increase in protection to public health  
5 and safety or significantly minimize, I'm just  
6 completely speaking off the cuff right now, but  
7 significantly minimizing economic consequences  
8 following a severe accident.

9           Then that would allow you to consider  
10 economic consequences earlier on in the process. So  
11 that was the example.

12           MEMBER CORRADINI: Thank you.

13           MS. BONE: You're welcome. So that wraps  
14 up backfitting, for now.

15           CHAIRMAN STETKAR: What I'd like to do,  
16 because starting another topic that we'll have quite  
17 a bit of discussion, is to take a break and to  
18 reconvene at 2:45. So we're recessed until 2:45.

19           (Whereupon, the above-mentioned matter  
20 went off the record at 2:28 p.m. and resumed at 2:44  
21 p.m.)

22           CHAIRMAN STETKAR: Okay, we'll come back  
23 to session and learn about NEPA and SAMAs and SAMDAs  
24 and those sorts of things.

25           MS. BONE: Thank you very much. So our

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1 last category are the NEPA Analysis, a specific subset  
2 of the SAMAs and SAMDAs. But this first slide is just  
3 covering NEPA as a whole. So as a reminder it  
4 requires a federal agency to analyze the potential  
5 environmental impacts of its proposed action and  
6 reasonable alternatives to proposed action.

7 And specifically the regulatory  
8 requirements for the NRC with regards to NEPA are in  
9 10 CFR Part 51. But to emphasize the discussion we  
10 had earlier, NEPA is a procedural statute and does not  
11 mandate any particular outcome.

12 Under NEPA agencies must take what's  
13 called a hard look at the potential environmental  
14 impacts. And for NRC specifically, the NRC performs  
15 and Environmental Impact Statement for new reactors  
16 and operating reactor license renewals.

17 Specifically within the implementing  
18 regulations we're going to focus on Severe Accident  
19 Mitigation Alternatives. And Severe Accident  
20 Mitigation Design Alternatives, which we'll discuss in  
21 the next slide. SAMAs and SAMDAs.

22 CHAIRMAN STETKAR: Before you get into the  
23 purpose, do you have a definition within the context  
24 of these analyses of a severe accident?

25 MS. BONE: I do not personally.

1 CHAIRMAN STETKAR: Does someone have a  
2 definition of what a severe accident is for the  
3 purposes of these analyses?

4 CONSULTANT KRESS: That kind of goes into  
5 the design-basis accidents.

6 CHAIRMAN STETKAR: This is not, I'd like  
7 the staff to tell me what a severe accident is for  
8 these analyses.

9 MR. PLUMMER: I'm Don Plummer with the  
10 Office of Reactors. The severe accidents are those in  
11 which substantial damage is done to the reactor core,  
12 whether or not there are any serious offsite  
13 consequences.

14 CHAIRMAN STETKAR: So any core damage  
15 event, is that a fair interpretation?

16 MR. PLUMMER: Yes.

17 CHAIRMAN STETKAR: Okay, thank you. So  
18 the only reason I asked that is because for different  
19 purposes in the Agency there are very stylized  
20 definitions of what is a severe accident. And since  
21 I haven't done any of these analysis I wanted to  
22 understand what that definition was here. Thank you.

23 CONSULTANT WALLIS: That means that a fuel  
24 pool event is not a severe accident? Even if it  
25 releases huge amounts of radioactivity?

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1 CHAIRMAN STETKAR: No, it is not a core.  
2 Anyone want to answer that?

3 MR. WIDMAYER: I'll answer it but I don't  
4 have any. No answer.

5 MR. PLUMMER: Making sure I understand the  
6 question, is that in terms of environmental impact?

7 CONSULTANT WALLIS: A fuel pool has more  
8 radioactivity in it than the reactor in terms of heat  
9 decay. So it could rise to what I would think of as  
10 a severe accident. If the fuel pool dried up.

11 MR. PLUMMER: Yes, I guess the one thing  
12 that I'd point you to is in the guidance. The  
13 guidance does provide some discussion about a spent  
14 fuel pool accidents. And they bear very little  
15 probabilities with potential for high cost.

16 CONSULTANT WALLIS: So they're not severe  
17 accidents?

18 MR. PLUMMER: Not in, well I guess I'd  
19 have to --

20 CONSULTANT WALLIS: Well the question was  
21 what's a severe accident?

22 MR. PLUMMER: Yes. In the case for the  
23 NEPA analysis for the new reactors, this is involved  
24 just of the core damage.

25 CONSULTANT WALLIS: Thank you.

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1                   CHAIRMAN STETKAR:  And is that also the  
2 case, your answer said for the NEPA analysis for the  
3 new reactors.  Is that also the case for the SAMA  
4 Analyses that are performed for a license renewal?  I  
5 realize that's an NRR person who answered.

6                   MR. DOZIER:  The answer is yes.  It is  
7 addressed in the GEIS that is for the old reactors.

8                   MEMBER CORRADINI:  The GEIS?

9                   MR. DOZIER:  Generic Environmental Impact  
10 Statement.

11                  CHAIRMAN STETKAR:  Thank you.

12                  MS. BONE:  So specifically SAMs and  
13 SAMDAs, in the same parallel structure as we did for  
14 regulatory analysis and backfitting analysis we're  
15 going to go through the purpose, when they're needed  
16 and how offsite property damage comes into play.

17                  So the purpose is to ensure that  
18 alterative nuclear power plant design features and  
19 operational procedures with the potential for  
20 improving severe accident performance are identified  
21 and evaluated from an environmental standpoint.

22                  One thing to note though, SAMAs and SAMDAs  
23 do not apply to other facilities or material licenses.  
24 This is specifically for nuclear power plants.  When  
25 they're needed, we have a string of identifiers here

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1 essentially for new applications.

2 All applications for combined licences  
3 under Part 52. Additionally certain applications for  
4 limited work authorizations under Part 50, SAMDAs  
5 only. And all applications for license renewal if the  
6 SAMDA analysis was not performed earlier for the  
7 plant.

8 It's within the cost/benefit analysis of  
9 the SAMAs and SAMDAs that offsite property damage  
10 attribute comes into play, which is the same as the  
11 backfitting regulatory analysis. Again, the common  
12 thread here is that these are different regulatory  
13 drivers, as we noted before.

14 However, the staff uses the same guidance  
15 and tools to perform these cost/benefit analyses. And  
16 this is just a slide of the most prominent tools and  
17 guidance that the staff has.

18 Particularly, we have the regulatory  
19 analysis guidelines in NUREG/BR-0058 and the technical  
20 analysis evaluation handbook in NUREG/BR-0184.  
21 Additionally we have the reassessment of NRC's dollar  
22 per person-rem conversion factor policy in NUREG-1530.  
23 The backfitting guidelines in NUREG-1409. And the  
24 most prominent tool is the MACCS2.

25 CHAIRMAN STETKAR: You'll probably get

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1 into all these things, though maybe not. No, you're  
2 not going to. So let me ask you several questions  
3 here. Actually why don't you go through the next  
4 slide to get to the BR-0184 and then I'll ask you.

5 MS. BONE: Okay. So I do want to  
6 highlight a couple of things. One that the first two  
7 guidance documents that we have listed here are really  
8 our bread and butter. The ones that the staff uses  
9 most predominantly.

10 This was one of the taskings of the OEDO  
11 Green Ticket, which was to describe and summarize  
12 these guidance documents. Also one of the taskings  
13 was to discuss the ongoing staff initiatives with  
14 regard to updating these guidance documents.

15 So MACCS2, we have an entire enclosure on  
16 MACCS2, which is Enclosure 9. Additionally,  
17 tomorrow's ACRS subcommittee meetings there will be  
18 more of an in-depth discussion on MACCS I think. We  
19 have our working group members here for MACCS but I  
20 think largely we're going to defer most of that  
21 discussion when there will be a very robust discussion  
22 on that.

23 CHAIRMAN STETKAR: For the purposes of  
24 perhaps members that may not attend tomorrow's  
25 meeting, MACCS simply though takes a release,

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1 distributes it and quantifies dose rates and costs, is  
2 that correct? Puts backend analysis, it's what I  
3 might use for the backend of a Level 3 PRA?

4 MS. BONE: Yes. Yes.

5 CHAIRMAN STETKAR: It knows nothing about  
6 the frequency of those releases, it knows nothing  
7 about the evolution of the scenarios, is that correct?

8 MS. BONE: Correct.

9 CHAIRMAN STETKAR: Thank you.

10 MS. BONE: So first of all we're going to  
11 go to the next slide. We're going to talk about the  
12 Regulatory analysis technical handbook. It's a very  
13 thick document, it goes into in-depth discussion of  
14 the various attributes that we use in the cost/benefit  
15 analysis portion.

16 And some of these attributes used with  
17 regards to health and with regards to property damage  
18 include these. This is just a small chunk of a longer  
19 list.

20 So of course we do have public health,  
21 accident routine and monetized. That's monetized  
22 through the dollar per person-rem conversion factor  
23 policy. We have occupational health, also using the  
24 same conversion factor. We have offsite property  
25 damage, which of course is the central theme of this

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1 presentation.

2 And offsite property damage, as a  
3 refresher from earlier this afternoon includes  
4 evacuation and relocation, decontamination,  
5 interdiction and condemnation.

6 Onsite property damage however, and I  
7 should note of course that there's also the divider  
8 between the two of just purely the geographical  
9 location. Onsite is within the bounds of the licensee  
10 holder. Offsite is beyond the bounds.

11 On onsite property damage the attribute  
12 includes cleanup and decontamination and replacement  
13 power. Additional attributes include industry  
14 implementation and operation. NRC implementation,  
15 there are several other attributes found in the  
16 handbook.

17 MEMBER CORRADINI: And this is like a  
18 guide how to do the calculations?

19 MS. BONE: Correct. There are estimates  
20 in the handbook. Essentially the 0058, which is the  
21 guidelines, is much smaller. And it basically is an  
22 overall sort of procedural set. The guidelines refer  
23 to the handbook a lot for specific attributes for  
24 specific estimates, that sort of thing. And more  
25 definitions.

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1                   MEMBER REMPE: From experience with the  
2 SAMAs has there ever been an action that was included  
3 because of offsite property benefits that wouldn't  
4 have already been included because of public health  
5 benefits?

6                   CHAIRMAN STETKAR: I don't think we've  
7 seen, Bill tends to look at these and --

8                   MEMBER REMPE: I was involved with doing  
9 some calcs a long time ago and there weren't many  
10 alternatives that met the above criteria.

11                   CHAIRMAN STETKAR: I don't think there  
12 have been any.

13                   (Simultaneous speaking.)

14                   MEMBER REMPE: Yes, I just am kind of  
15 wondering if were ever picked up because of offsite.  
16 Is what I'm wondering.

17                   MEMBER BLEY: I think you'd have to ask  
18 licensees.

19                   MEMBER CORRADINI: So can I ask a  
20 different question? You said that the 0184 tells you  
21 that it's the cookbook on doing these estimates.  
22 Okay, so where have there been recipes made that we're  
23 actually sure the cookbook is right?

24                   In other words what is it they're compared  
25 to so that when it's done this you actually have a

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1 feeling that what you are estimating really has some  
2 semblance into reality?

3 MS. BONE: So I'll give you --

4 MEMBER CORRADINI: Sorry.

5 MS. BONE: No, no, not at all. I  
6 appreciate the question. A lot of the, specifically  
7 for offsite property damage, a lot of those numbers  
8 were derived from NUREG-1150 estimates. Additionally  
9 other attributes there are ongoing efforts to update  
10 those as well.

11 So I'm giving you information around your  
12 question, but I don't know hopefully that gives you  
13 some background. There are estimates based on the  
14 NUREG-1150. And then I'm also going to go into other  
15 attributes that we're actually updating based on more  
16 current data.

17 MEMBER CORRADINI: Okay. But are you  
18 saying to me that there really is no real world  
19 experiences that I can benchmark on? Because either  
20 when the accident happened nobody wanted to tell you  
21 the expenses or the costs?

22 MS. BONE: Oh, I see what you mean now.

23 MEMBER CORRADINI: I'm trying. I want to  
24 believe what the number is showing, so I want to know  
25 what it's compared to. I just have that unfortunate

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1 habit that I want to, so where is it done?

2 MR. SZABO: This is Aaron Szabo again.

3 MEMBER CORRADINI: We recognize you now.

4 MR. SZABO: What I was saying before, they  
5 usually or almost always include regulatory analysis  
6 that includes int the proposed rule phase. So people  
7 are allowed to comment on the regulatory analyses  
8 during that proposed rule phase. Traditionally we  
9 have not really received any comments on that.

10 However, part of CER does have a specific  
11 question asking for comments on that to try and, not  
12 to say try to find that issue, but try and solicit  
13 more feedback from either industry or other  
14 stakeholders to get, I guess, better information if  
15 there is such. But the technical handbook was based  
16 on various studies and so forth.

17 CHAIRMAN STETKAR: But the next page will  
18 suggest that the experience base is very limited in  
19 terms, it's been recent --

20 MEMBER ARMIJO: I just want to get one  
21 thing straight. This does not include loss of income  
22 to people who have to evacuate?

23 MS. BONE: I think it does. Yes,  
24 compensation, it does.

25 MEMBER ARMIJO: It's not property, but

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1 it's loss of income or a business that --

2 MS. BONE: Yes, that's included in offsite  
3 property damage. It's overall.

4 MEMBER ARMIJO: It does include it?

5 MS. BONE: Yes, relocation and  
6 compensation sort of go hand in hand in that  
7 attribute.

8 CHAIRMAN STETKAR: Before you go to the  
9 next slide, because we're going to talk about a couple  
10 of other topics there. I'd like to explore these  
11 analyses a bit. Because if you read through the SECY  
12 paper, at least as I read through it, the SAMAs  
13 conclusion, your endorsement of Option 2, places high  
14 emphasis on the fact that essentially the current  
15 regulatory framework already adequately accounts for  
16 property damage and economic impacts from accidents.

17 As best as I can tell in a practical sense  
18 this is where it doesn't. The SAMA analyses and the  
19 SAMDA analyses, regardless of anything else you say.  
20 So I'd like to understand how well it actually does it  
21 in these analyses.

22 For example, and these are not generic  
23 analyses, they're done for every plant that applies  
24 for a license renewal. And it's done generically  
25 albeit at the design certification stage and I think

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1 it needs to be revisited at the COL stage. At least  
2 to account for plant, site-specific features of the  
3 design.

4 So how does the staff have confidence that  
5 these analysis adequately characterize the frequency  
6 and consequences of that broad spectrum of accidents  
7 that involve any event that damages the fuel in the  
8 reactor core? We've already established that's the  
9 scope, it's not early health effects, it's any event  
10 that damages fuel in the core.

11 How do these analyses adequately capture  
12 the frequency and the extent of the offsite  
13 consequences of those events? And how does the staff  
14 develop adequate assurance that indeed those analyses  
15 are reasonably accurate? Regardless of how much  
16 dollar value you assign to a particular square meter  
17 of land.

18 MS. BONE: I appreciate the question. I  
19 see our working group members from NRO and --

20 CHAIRMAN STETKAR: Because there was some  
21 statements in the SECY paper that I'd really like some  
22 elaboration on but I'd like to hear what your answer  
23 is first.

24 MR. PLUMMER: Sir, I'll take, try to  
25 answer your question. My name is Don Plummer, Office

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1 of New Reactors. For the new reactor SAMA analysis  
2 the basis for the analysis is the PRA that's developed  
3 for the design.

4 So that gives you the sequences and your  
5 frequencies of the events. The PRA also provides the  
6 source terms for those sequences and those are  
7 provided in the input to the MACCS code. So that's  
8 the foundation for the SAMA/SAMDA analysis.

9 CHAIRMAN STETKAR: Thank you. I was  
10 hoping you would say that. What level of review does  
11 the staff perform of those PRAs? So that I have  
12 reasonable assurance that indeed the PRA is complete  
13 in terms of initiating events, event sequences,  
14 treatment of Level 1 and Level 2 core damage events  
15 so that I have assurance that the frequencies of  
16 these categories I'm quantifying are indeed reasonably  
17 complete?

18 MS. GHOSH: I guess we'll tag-team a  
19 little bit here, this is Tina Ghosh. I used to work  
20 on the SAMA reviews for the existing reactors for the  
21 license renewal.

22 CHAIRMAN STETKAR: Well let's keep it  
23 first for the new reactors, because that was, I know  
24 they have to have a PRA. So let's keep it new  
25 reactors phase first.

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1 MS. GHOSH: Okay.

2 MR. PLUMMER: I'm going to preface that my  
3 comments, I work on the NEPA side of it. The PRA  
4 analysis is done under the Chapter 19 review for the  
5 DCD. So the NRC safety reviewers for Chapter 19  
6 review the PRA analysis and do their appropriate  
7 review of that.

8 CHAIRMAN STETKAR: I'll ask it again.  
9 Dennis wants to say something. What level of review  
10 of that PRA is performed to give the staff adequate  
11 assurance that the PRA is sufficiently complete to  
12 quantify the frequency and the consequences of core  
13 damage accidents?

14 Does the staff perform a review of the  
15 PRA, including the PRA models data and supporting  
16 analysis. That's a question. Yes or no?

17 MR. ADER: Charles Ader with Office of New  
18 Reactors.

19 CHAIRMAN STETKAR: Hi there Charlie. I  
20 knew eventually I'd get him up here.

21 MR. ADER: I guess I'm struggling, because  
22 the staff has been down here with the committee, well  
23 with this committee and others on the design reviews,  
24 the PRA, the audits. You've been out to some of the  
25 applicants, looking at the PRAs, looking at that

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1 audits. I think one them, GE, actually came in with  
2 electronic and we, through them got to play with it.

3 So I'm not sure what part you think is  
4 missing. They haven't built the plant yet so they  
5 don't have all of the details but they have sufficient  
6 information in the PRA I think to make the types of  
7 decisions you would be making on the severe accident  
8 mitigation features and the stamina reviews. So there  
9 may be a disconnect here.

10 CHAIRMAN STETKAR: That may be true,  
11 Charlie. There may be and I'm willing to admit that.  
12 But that may be true but I think in my experience  
13 people have focused almost exclusively on scenarios  
14 that are perceived to result in large offsite  
15 consequences. And therefore audits may focus on those  
16 scenarios. So you look at severe events.

17 In my limited looks at those PRAs they're  
18 not complete in terms of a full spectrum of initiating  
19 events. They don't treat transients very well. They  
20 kind of treat LOCAs okay. They have a limited  
21 treatment of external events. And that's the way they  
22 are.

23 There have been statements made that, you  
24 know, PRA, to satisfy Chapter 19 requirements for  
25 design certification, only needs to meet in some cases

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1 Category 1 capabilities from ASME/ANS standard, which  
2 are pretty doggone thin in terms of having confidence  
3 in the frequency and the consequences of these events.

4 That's kind of the world we live in. The  
5 point is that if the staff is then saying, as its said  
6 in here, that a safety review of the PRA is done and  
7 that gives you confidence, indeed of that model and  
8 the frequencies of those sequences to make  
9 determinations about tradeoffs now, improvements that  
10 might result in an increase of offsite consequences or  
11 offsite costs.

12 I challenge you there. Because I don't  
13 think those models are very well developed. And I  
14 don't think the staff performs a review of the model  
15 for that perspective. Now you might disagree with me  
16 but that's my personal opinion.

17 MR. ADER: Don can correct me if I'm  
18 wrong, but I think one of the numbers I've seen the  
19 tradeoffs, that the frequency of some of the new  
20 reactors for the sequences in the costs that you could  
21 trade off on one alternative versus another. I think  
22 we've seen very, yes so you can have in my view a fair  
23 amount of uncertainty and you're probably not going to  
24 reach a different conclusion.

25 CHAIRMAN STETKAR: Primarily the total

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1 frequency is --

2 MR. ADER: Yes, the levels we're working  
3 at. And the improvements have been put into the  
4 plants and what more they could do.

5 CHAIRMAN STETKAR: And do their SAMDA  
6 before they came to you.

7 MR. ADER: Yes, I think in their design  
8 they use PRAs to influence, plus experience.

9 CHAIRMAN STETKAR: That may be generic for  
10 the new reactors. So I kind of understand that.

11 MR. ADER: So I think you could polish  
12 that to as much as you wanted, I don't know that you'd  
13 reach significantly different decisions that you would  
14 come --

15 CHAIRMAN STETKAR: In terms of  
16 alternatives?

17 MR. ADER: Alternatives, yes.

18 CHAIRMAN STETKAR: Thank you.

19 MEMBER CORRADINI: Are we done with  
20 frequency?

21 CHAIRMAN STETKAR: Well Tina's going to  
22 tell us about existing reactors. Well we'll get to  
23 existing reactors shortly.

24 MEMBER CORRADINI: I'm still on the  
25 consequence part. The frequency part I'll leave to

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1 Stetkar. So I'm curious, to get to his point, if  
2 there's what we think is a severe accident but then  
3 there's fuel damage accidents until there, are there  
4 any fuel damage accidents at all that have any offsite  
5 issues? That they would even compute anything other  
6 than zero?

7 MR. ADER: I don't do the specific  
8 reviews, so I don't know if there's any, Don, that  
9 come to mind. I wouldn't think there would be.

10 MEMBER CORRADINI: I don't know. I pulled  
11 up the NRBC right after Fukushima and came up with 25,  
12 24 fuel damage accidents. Not what I might think of  
13 as severe accidents, and all of them that I'm aware of  
14 historically are relatively small events that  
15 essentially had most onsite damage in the pool or in  
16 the reactor. It had no offsite consequence.

17 So my thought is, I'm kind of trying to  
18 ask is there a scaling effect. That is if I go from  
19 what I think is a fuel damage accident all the way up  
20 to what we think of a severe accident, pick TMI as an  
21 example case, that all of those things really don't  
22 have offsite consequences. Historically.

23 MR. PLUMMER: Historically. But for  
24 example, speaking for the new reactor SAMDA analysis,  
25 the sequences that are carried forward are ones that

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1 do have consequences.

2 MEMBER CORRADINI: They're TMI-like or  
3 larger in magnitude as far as I'm aware of.

4 MR. PLUMMER: I mean I can give you  
5 examples as far as the containment bypass scenario.

6 MEMBER CORRADINI: Thank you.

7 MS. GHOSH: So for the frequency part for  
8 the existing reactors. In terms of the SAMA reviews  
9 we rely pretty heavily on the industry peer reviews  
10 that are performed for the existing reactors.

11 And typically the last RAIs, requests for  
12 additional information, on any findings that the  
13 applicant hasn't adequately explained how they've  
14 dispositioned the findings from the industry peer  
15 review.

16 We'll ask what have they done since the  
17 latest information that we have on how they address  
18 the findings and what bearing it would have on the  
19 SAMA analysis.

20 So we rely heavily on the industry peer  
21 reviews of PRAs, which as Don mentioned that is the  
22 starting point for the SAMA analysis and the PRAs.

23 CHAIRMAN STETKAR: Tina, I guess it's  
24 something I didn't know. Are industry peer reviews  
25 performed for every PRA that's used in every SAMA

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1 analysis for every plant?

2 MS. GHOSH: I can't tell you historically,  
3 you know, going back to hteh beginning of the SAMA  
4 days, but certainly in the ones that I was involved in  
5 every plant that had come in had had some type of PRA  
6 reivews. Some of them very recent.

7 Some of them early, whenever the ASME/PRA  
8 standard was up. Since then the plants have, some  
9 have quicker than others, but they've all had at a  
10 minimum their Level 1 PRAs reviewed.

11 And most of the plants have limited Level  
12 2s and those would have peer review findings as well.  
13 But I can't tell you, I'm trying to remember the  
14 history of when the ASTHMA/PRA standard was put in  
15 place, but very early SAMA applications. I don't know  
16 the timing of that, but that was before my time.

17 MEMBER SCHULTZ: Kelly, you're talking  
18 specifically about those licensees that have come in  
19 for license renewal?

20 MS. GHOSH: Yes, right.

21 MEMBER SCHULTZ: And they have had PRAs as  
22 part of their application. And as part of that  
23 application the staff review of those applications  
24 have incorporated a review of the peer reviews?

25 MS. GHOSH: That's right.

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1 MEMBER SCHULTZ: And questions related to  
2 the peer reviews and how the peer review comments --

3 MS. GHOSH: Were dispositioned.

4 MEMBER SCHULTZ: -- have been  
5 dispositioned.

6 CHAIRMAN STETKAR: Just to make sure I  
7 understand, because I wasn't aware of some of these  
8 things. Are those peer reviews of the PRAs performed  
9 specifically to support the license renewal SAMA  
10 analyses?

11 Or are they purely used, for example if  
12 somebody made a change to their ISI program, a risk-  
13 informed change to their ISI program ten years ago.  
14 A PRA was used in some greater or lesser extent to  
15 perhaps support that risk-informed change.

16 And I'm assuming that some type of peer  
17 review or staff review of the PRA would have been  
18 conducted to support that specific licensing activity.  
19 Is that the type of peer review that you're relying  
20 on? Because that's an issue specific review that many  
21 not look at the whole spectrum of events.

22 MEMBER BLEY: Or did they do a base case  
23 review, which --

24 CHAIRMAN STETKAR: That's what I mean.

25 MS. GHOSH: Base case review. But the

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1 motivation, to my knowledge, has never been the SAMA  
2 application for license renewal.

3 It's the base case review, because from  
4 what I understand most of these applicants are  
5 interested in, at some point, using their PRA for risk  
6 informed licensing amendments, which is the safety  
7 side issue. It has nothing to do with SAMA. That's  
8 been the motivation for why they did the base case  
9 review.

10 But once they have it we ask questions  
11 about it when they come in with their SAMA  
12 applications. But to my knowledge no one has done it  
13 just for a license review.

14 CHAIRMAN SHACK: They were really, this is  
15 in the external events PRAs, which are largely  
16 imaginative in many cases.

17 MS. GHOSH: The existing --

18 CHAIRMAN SHACK: -- shut down modes,  
19 operation.

20 MS. GHOSH: Yes, and again I think the new  
21 reactors have different standards now. But yes for an  
22 existing that's true.

23 CHAIRMAN SHACK: And they call that an  
24 external event treatment.

25 MS. GHOSH: Well asked them for more than

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1 that. Most of them were proactive there. Providing  
2 analyses for the IPEEEs or their fire analyses. And  
3 then they have to make some qualitative arguments  
4 about why those estimates were probably overestimates.

5 And then they take estimate compared to  
6 their current internal CDF and then get the multiplier  
7 that way. So it's not always a doubling or tripling.  
8 We've seen applications that could be ten, you know,  
9 anywhere a magnitude higher when you account for  
10 external. If you don't have any better information to  
11 go on the IPEEEs is just for examples.

12 CHAIRMAN SHACK: Thank you.

13 MS. BONE: So moving on from the summary  
14 of some of the attributes in the technical handbook is  
15 our second to last subbullet that was we needed to  
16 address in the SECY paper, which were ongoing  
17 initiatives to update these events.

18 And this is contained in Enclosure 9, I  
19 believe. There are two ongoing initiatives that we  
20 highlight in the SECY. The first is an update to the  
21 dollar per person-rem conversion factor policy.

22 And just as a brief reminder, it's found  
23 in NUREG-1530 and it's a factor used to capture the  
24 dollar value of health detriment resulting from  
25 radiation exposure. It's really used to monetize the

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1 health factor so it can be used in the cost/benefit  
2 analysis. This factor is determined by multiplying a  
3 Value of Statistical Life by a risk-cancer factor.

4 A little bit of history. Again, in  
5 present form the dollar per person-rem is a separate  
6 and distinct factor from the offsite property damage  
7 review. The original factor of \$1,000 per person-rem  
8 however included an estimate of offsite property  
9 damage.

10 This historical nuance is in Enclosure 8  
11 and it's obviously interesting for this discussion  
12 because the two were couched in that \$1,000 it was  
13 thought to be a conservative estimate that would  
14 really capped both of those things.

15 MEMBER RYAN: How much of the original  
16 \$1,000 was offsite property damage versus direct  
17 exposure?

18 MS. BONE: I'm not sure. But I don't  
19 actually it was dileniated that way. I think it was  
20 just an overall \$1,000 was meant to be used, I think  
21 it said some of the documents a conservative estimate  
22 that would capture both. I don't believe that it was  
23 drawn out in health versus offsite property.

24 MEMBER RYAN: And the '95 update does not?

25 MS. BONE: I'm sorry?

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1 MEMBER RYAN: And that '95 updated to  
2 \$2,000 is not?

3 MS. BONE: Well the '95 update to \$2,000  
4 completely severed that connection between health  
5 detriment and offsite property damage. So now, in the  
6 '95 update of \$2,000, which is the current factor,  
7 doesn't include offsite property damage consideration  
8 at all.

9 MEMBER CORRADINI: So, what, is offsite  
10 property scaled off of total amount of radioactivity  
11 released? How is it scaled?

12 MEMBER RYAN: That's my question.

13 MEMBER CORRADINI: What's the fudge factor  
14 now?

15 MR. COYNE: While you're going for  
16 research, the '95 dollar for person-rem, I know it was  
17 a technically well based factor. It was a factor that  
18 was thought to be conservative in both the health  
19 effects and the offsite property.

20 In '95 when we updated it we had a much  
21 better technical basis for the health impact. Taking,  
22 as Alysia said, the cancer risk factor time this Value  
23 of Statistical Life. The offsite property costs then  
24 were to be estimated on their own merits.

25 MS. BONE: Right.

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1                   MEMBER CORRADINI: But are they scaled off  
2 of total reactivity released? Are they scaled off of  
3 what? When you do the calculations --

4                   MR. COYNE: Knowing nothing about it I  
5 think it would be scaled off a total.

6                   MEMBER RYAN: I think the point is where  
7 are the person-rem, what's that include? Who's  
8 getting the dose and from what, and what period of  
9 time and under what conditions? Person-rem comes from  
10 a calculation of people are exposed and people get a  
11 dose and there's some accumulation of all that. How  
12 is that done?

13                   MS. BONE: Right.

14                   MEMBER RYAN: But how is it done  
15 differently in the original estimate versus '95? Or  
16 was it the same?

17                   MS. BONE: I'm going to try to answer your  
18 question. I think I understand. You mean the way  
19 it's determined or the way it's used?

20                   MEMBER RYAN: Determined. I want to know  
21 how did you get to these metrics?

22                   MS. BONE: Right. So it's based on an  
23 estimated value of Statistical Life, which is  
24 currently \$3 million for the \$2,000. That's about \$3  
25 million per statistical life, if you will.

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1 MEMBER RYAN: Now what's a statistical  
2 life?

3 MEMBER ARMIJO: That's related, Mike,  
4 people are living longer. Is that what contributed to  
5 this increase in the statistical life?

6 MS. BONE: No. It's just a new value of  
7 statistical life based --

8 MEMBER RYAN: Well tell us what a  
9 statistical life is, we may not know what that means.

10 MS. BONE: Sure, I'm more than happy to.  
11 It's a general factor used across several different  
12 fellow agencies, actually, in the same sort of way as  
13 monetizing health impacts in the cost/benefit  
14 analysis.

15 The EPA has termed it a new term called  
16 the Value of Risk Reduction. And it's essentially  
17 this concept of any, how much what is worth, reducing  
18 of one statistical life, what's that worth in a  
19 population. And it's not related to a specific  
20 person, but just the value in a society, what is the  
21 value of that life?

22 MEMBER RYAN: Well in all these  
23 calculations we're predicting life ending for a  
24 certain part of the population. So a statistical life  
25 is actually lost in the calculation.

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1           You know, it's not a matter of, I don't  
2 understand what statistical life and it doesn't  
3 reflect a real person. Of course it has to, otherwise  
4 it's a meaningless calculation.

5           But \$1,000 per person-rem used to be a  
6 metric for an engineering change. If I could spend  
7 \$1,000 per person-rem saved for improving a certain  
8 activity, like add shielding or do something else, it  
9 was deemed to be a reasonable thing. And updated in  
10 '95 to \$2,000 and no longer includes offsite property  
11 damage.

12           So I don't have to pay for damage out of  
13 my \$2,000 per person-rem say. I really didn't either  
14 on the first go around, that was an estimate that was  
15 used in engineering assessments. So I'm trying to  
16 understand what we're doing with this metric or what  
17 it's supposed to be used for and not used for, more  
18 importantly.

19           MR. COYNE: Kevin Coyne from Research.  
20 This is actually one of the issues that OMB cautions  
21 all the federal agencies about misinterpretation of  
22 the value of statistical life. And one of the reasons  
23 the value of risk reduction term is trying to gain  
24 traction. What it refers to is for low likelihood  
25 events, how much value is a small change in risk for

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1 those likelihood events.

2 So it has everything to do with risk. It  
3 actually has very little to do with the actual value  
4 of a person's life. So that value is derived from a  
5 number of means. One of the common means are  
6 willingness to pay studies. I think one example is  
7 motorcycle helmet use.

8 So how much is a motorcycle rider willing  
9 to pay for helmet to achieve some reduction in their  
10 risk. And you can translate that cost of the helmet  
11 to some value for risk reduction.

12 We also looked at wage studies for high  
13 risk occupations to see how much workers, how much  
14 risk they're willing to take on for how much value --

15 MEMBER RYAN: So now I'm mixing apples and  
16 oranges with voluntary risk versus involuntary risk?

17 MR. COYNE: Yes, you are.

18 MEMBER RYAN: The motorcycle rider is a  
19 voluntary risk. The guy gets drunk and gets in his  
20 car is a voluntary risk. You know, other things like  
21 that. So I'm even more confused.

22 MR. COYNE: It's not a perfect figure of  
23 merit to use. We had a recent workshop with a number  
24 of federal agencies. A lot of the federal agencies  
25 have similar issues in applying this value of

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1 statistical life. But I think it's safe to say it's  
2 the best we have to use to get our arms around this  
3 concept.

4 CONSULTANT KRESS: Does it have a concept  
5 of distribution related to the population?

6 MR. COYNE: Yes, and that's one of the key  
7 issues that other agencies and ours have factored. It  
8 doesn't have how we applied and it doesn't have I  
9 believe EPA and DOT also applied.

10 Other agencies have considered it, the  
11 Food and Drug Administration, USDA, they have to apply  
12 in a little different paradigm than we have to deal  
13 with. So they've been forced to look at value of  
14 statistical light years I think is the concept that  
15 they might apply for the their unique situation. But  
16 that's a challenging part of this issue.

17 MEMBER CORRADINI: I don't have a  
18 sophisticated question, you said \$3 million dollars,  
19 I looked \$2,000, that means I need 1,500 person-rem to  
20 lose a statistical right, am I missing something?

21 Is that correct? You said \$3 million  
22 somewhere in this discussion. So I backed out, I took  
23 \$2,000 into \$3 million and I got, so am I off base?

24 MR. COYNE: The calculation is I think the  
25 ICRP cancer factor is 70 minus four cancers per

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1 person-rem.

2 MEMBER RYAN: But those vary within the  
3 magnitude as well, the cancer risk factor.

4 MS. BONE: Right.

5 MR. COYNE: Right and there's no doubt  
6 that there's some apples and oranges counted in there.  
7 But the NRC is an outlier because our value is so low  
8 from the other federal agencies. We're not an outlier  
9 in how we try to apply the VSL factor. We are about  
10 50 percent lower than EPA, DOT on the VSL value we  
11 use. And that's one of reasons we're trying to update  
12 it.

13 MEMBER ARMIJO: And the cancer risk  
14 factor, is that based on some LNT methodology or some  
15 other?

16 CHAIRMAN STETKAR: I knew he'd ask that  
17 question.

18 MEMBER ARMIJO: Well you know this is the  
19 foundation of all of this radiation safety, how safe  
20 is safe enough. And how do you calculate that cancer  
21 risk factor.

22 CHAIRMAN STETKAR: Has to be LNT.

23 MEMBER ARMIJO: Is it? Is it LNT?

24 MS. BONE: ICRT 60.

25 MR. COYNE: That's what we're currently

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1 based on there's a new update for that that we're  
2 evaluating whether that's the appropriate new metric  
3 keys for the update the dollar per person-rem  
4 conversion.

5 MEMBER CORRADINI: So can we take this  
6 back to property damage. So the third bullet says  
7 it's not there any more.

8 MS. BONE: Right.

9 MEMBER CORRADINI: So back to my original  
10 question so how is it scaled to compute property  
11 damage in that handbook somewhere.

12 MS. BONE: Those are based on NUREG-1150  
13 estimates. Kevin, you were about to say?

14 MR. COYNE: Yes, I think what you're  
15 assessing is this isn't the staffs finest hour in  
16 providing guidance. Our belief is that for each  
17 individual application the analysts and many of them  
18 that have spoken to you today have the capability to  
19 appropriately do the analysis.

20 Our guidance documents have lagged behind  
21 providing them really good value to use to make their  
22 job more efficient and effective. As far as the  
23 actual property values I'm wondering if it's going to  
24 come out of the MACCS code in general, how you would  
25 calculate the economic impact out of MACCS.

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1 MR. BROWN: This is Dave Brown, a health  
2 physicist in the Office of New Reactors. To  
3 specifically address that question. The data that we  
4 use is the U.S. Census data. We get information about  
5 property values and populations by census blocks  
6 throughout the U.S. So it's a site specific analysis,  
7 we're using census data to evaluate site specific  
8 economic consequences.

9 MEMBER SCHULTZ: And you are talking about  
10 evaluating it with the MACCS code.

11 MR. BROWN: Right.

12 CHAIRMAN STETKAR: Because some are hand  
13 calculation it could be, but the MACCS code has the  
14 capability.

15 MR. BROWN: Information is population data  
16 of our inputs for the MACCS.

17 MEMBER CORRADINI: I mean knowing nothing,  
18 forget about the code. Let's just call it an Excel  
19 spreadsheet for all that matters. Is I basically I  
20 have a radionuclide vector and I have a quantity of  
21 each of them. And I have a half life and I basically  
22 have to make some assumptions on how much scrape or  
23 bury or something. So that's in the 0184 document?  
24 And the source of 0184 is 1150.

25 MR. BROWN: The past experience in

1 developing these Level 3 type PRAs dates back to the  
2 NUREG-1150 and the assumptions we made there.

3 MR. COYNE: But I think the assumptions  
4 that you're referring to are assumptions that are  
5 going to be embedded in the MACCS input data for the  
6 specific application if I'm not mistaken.

7 MR. BROWN: For new reactors we're looking  
8 at site specific information. There's a little bit of  
9 a nuance there to referencing a certified design.  
10 Where the type of information they would need for  
11 design certification, they're not looking at a  
12 particular site.

13 MEMBER CORRADINI: So here's where I'm  
14 going with this. I was doing even just little hand  
15 calculations and when I was in Japan in June I was  
16 told that the cost of Fukushima offsite was \$100  
17 billion. And I wanted to get a feeling for where that  
18 came from, I couldn't.

19 So my next question is if I do the reverse  
20 calculation and ask the question if I had three plants  
21 releasing what is estimated radioactivity what does  
22 MACCS say is the offsite cleanup and decontamination  
23 property damage consequences. And my sense is there's  
24 a difference.

25 So I'm trying to see has anybody done this

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1 in some way so that there's a, I hate to use this word  
2 again, but a benchmark so I can believe what I'm  
3 computing.

4 MR. BROWN: I understand your question, I  
5 have not done the benchmark to compare the Fukushima  
6 release to what we've seen for hypothetical postulated  
7 accidents where the new reactor --

8 MEMBER CORRADINI: And nobody did it for  
9 Chernobyl. Since probably no information there is  
10 available.

11 MR. BROWN: But we don't have the detail  
12 source term with which to do a very detailed  
13 calculation. We certainly could do a rudimentary one.  
14 I haven't done it.

15 But we look at the offsite economic  
16 impacts for new reactors designs we're talking about  
17 values typically in the ten's of billions of dollars.

18 You just cited \$100 billion dollars, so  
19 you could see a factor of two to five or more  
20 difference. But I haven't looked at it any further  
21 than that.

22 MEMBER CORRADINI: That's fine but you've  
23 helped me, thank you.

24 MEMBER ARMIJO: I just want to get it  
25 clear the original factor went from \$1,000 per person-

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1 rem including property damage up to \$2,000 per person-  
2 rem excluding property damage. And my question is why  
3 did it go up? What drove it, the statistical life  
4 value or the risk cancer factor value or both?

5 MS. BONE: I would say both.

6 MEMBER ARMIJO: And we can find that in  
7 what document?

8 MS. BONE: NUREG-1530.

9 MEMBER ARMIJO: Okay. I got to do some  
10 reading.

11 CHAIRMAN STETKAR: Two questions, you  
12 mentioned NUREG-1150 as being the basis for some of  
13 the guidance from this handbook. And you  
14 characterized 1150 as a Level 3 tier, this has been a  
15 long time, I thought 1150 was primarily Level 2. Did  
16 1150 look at integrated offsite consequences, Level 3  
17 PRA?

18 MR. COYNE: We had, Kevin Coyne from  
19 Research, I guess I don't have to say it anymore.  
20 There were some follow on research projects I  
21 conducted mainly when I first came to National Lab to  
22 take some of the result and insights from 1150 and  
23 then come up with some the data that you find in  
24 NUREG/BR-0184.

25 So I think it was based and maybe extended

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1 from the old SECY results to provide. We can provide  
2 Derek a few pages to give you an example of what's in  
3 the NUREG.

4 But for the few tables that we could  
5 define in the NUREG-1150 plants and figures you could  
6 use to give you an idea of what offsite consequences  
7 could be for certain access areas.

8 But there had to be some massaging beyond  
9 what was 1150.

10 CHAIRMAN STETKAR: Give the stuff to Derek  
11 I think we'd be interested in looking at it. But  
12 again I would feel here for the purposes of this  
13 particular topic, that being land contamination and  
14 things that are not directly related to what was  
15 termed prompt fatalities in those days.

16 I'd be real interested to see how some of  
17 those other types, you said some of the analysis or  
18 some of the plants were developed and extended to look  
19 at some of the scenarios. If those only focused on  
20 scenarios that were directly associated with prompt  
21 fatalities I'd be really interested to see how that  
22 information was used to inform the guidance in the  
23 NUREG whatever it is BR-0184.

24 MS. BONE: The second ongoing initiative  
25 that we have highlighted in the SECY paper, in the

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1 same enclosure, is the initiative to update the  
2 replacement power estimates.

3 Replacement power costs are another  
4 attribute and they can be either short term or long  
5 term. Short term replacement power is required when  
6 regulatory activity performed while a plant is not  
7 operating. They're both considered an onsite cost,  
8 considered an industry cost.

9 And the ultra replacement energy cost  
10 estimates could be the result of a decrease in the  
11 risk of an accident. The benefit of which can be  
12 estimated through the change in replacement energy  
13 costs and that's called long term replacement cost.

14 Estimates for plant specific replacement  
15 energy costs are found in NUREG/CR-6080 which is the  
16 replacement energy capacity and reliability costs for  
17 permanent nuclear reactor shut down and in  
18 NUREG/CR-4012 which is replacement energy costs for  
19 nuclear electricity and generating units in the U.S.

20 However since these documents were  
21 finalized and published in 1993 and '97 many changes  
22 have occurred in the electric generation and  
23 transmission industry since these published dates,  
24 such as deregulation. Therefore there's an ongoing  
25 initiative to update these estimates the staff is

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1 conducting.

2 The last of the ten that we're going to  
3 discuss now is that we were to address in the OEDO  
4 Green Ticket tasking, we're discussing external  
5 organizations. Specifically IAEA and NEA were called  
6 out ASME or nuclear industry organizations and other  
7 government agencies.

8 And in the time and capacity we had in  
9 performing this review we've discovered that with  
10 regards to IAEA and NEA that there were little direct  
11 guidance to consider economic consequences. However,  
12 again, in this very high level review we identified a  
13 number of documents that are related to the topic  
14 discussing environmental --

15 MEMBER RYAN: Regarding IAEA and NEA?

16 MS. BONE: Yes.

17 MEMBER RYAN: So there is some guidance?

18 MS. BONE: There's not no guidance but we  
19 couldn't pinpoint guidance that directly tells us to  
20 consider economic consequences or how. But we just  
21 identified various documents that were related to the  
22 subject or worth perusing, but again we weren't able  
23 to do a very exhaustive study of that.

24 MEMBER RYAN: They really weren't all that  
25 worthwhile to provide the direct guidance you were

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1 looking for. You're saying two things it was valuable  
2 or it wasn't valuable. I was trying to figure out  
3 which, where the weight is.

4 MS. BONE: Right, what I would say is that  
5 we didn't find anything that directly told us  
6 definitively.

7 MEMBER RYAN: Okay.

8 MS. BONE: Additionally with regards to  
9 ASME there's the presidential task force that was  
10 performed on the response to the Japan nuclear power  
11 plant event.

12 And again at a very high level we reviewed  
13 this, they are calling for new safety constructs that  
14 using an all-risk approach. We looked at the  
15 presentation that was made at the RIC, I think last  
16 year. And we documented that and referenced that into  
17 the SECY paper as well.

18 MEMBER CORRADINI: My understanding is in  
19 December 4th and 5th there's going to be a meeting in  
20 Washington where they're actually going to put some  
21 flesh to those bones. Is NRC part of it?

22 MS. BONE: I am unaware of that  
23 specifically.

24 MEMBER CORRADINI: Are we participating in  
25 that in some fashion.

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1 MS. BONE: I'm not aware of that  
2 specifically, I don't know if anybody else in the room  
3 is aware?

4 MEMBER CORRADINI: On the IEAE NEA it was  
5 my impression at least from a policy perspective INSAG  
6 actually issued a report that recommended economic  
7 consequences should be considered.

8 CHAIRMAN STETKAR: That's their latest  
9 report. That's an INSAG report, it's not to the IEAE.

10 MEMBER CORRADINI: It's not a safety  
11 series document?

12 CHAIRMAN STETKAR: No. I think I sent it.

13 MEMBER SCHULTZ: There's a long way to go  
14 for INEAE to get it.

15 CHAIRMAN STETKAR: That's right. They're  
16 essentially independent commitment.

17 MEMBER SCHULTZ: Even from an inside  
18 report through safety series documents it's a long  
19 ways to go.

20 CHAIRMAN STETKAR: It's an independent  
21 advisory committee bur sanctioned through the  
22 organization.

23 MS. BONE: Thank you. With regard to  
24 other government agencies we've mentioned that the  
25 Environmental Protection Agency is really a leader in

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1 developing and implementing cost-benefit guidance.

2 We identified two useful guidance  
3 documents that they had. One was an overview of  
4 preparing economic analysis, and again that's at a  
5 high level. And then recently in I believe in 2010  
6 they produced benefits cost impact of land cleanup and  
7 reuse documents.

8 So we identified those two in our SECY  
9 paper. EPA was an external panelist in the recent  
10 September 11th commission briefing on this. And they  
11 gave some high level points from both of those  
12 documents.

13 Again, the way we sort of went about this  
14 review is we used, as Kevin mentioned, with regards to  
15 the dollar per person round we held an interagency VSL  
16 workshop where we discussed how each agency uses their  
17 VSL et cetera.

18 And so we used those contacts formed  
19 through that workshop to pulse and ask this new  
20 question about land contamination, economic  
21 consequences, et cetera.

22 MEMBER SCHULTZ: Alysia, with regard to  
23 EPA and NEPA as well, in your reviews have there been  
24 any looks at the BP Gulf oil spill? And the way in  
25 which those consequences were evaluated and how

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1 they're being handled in terms of the cleanup?

2 Or are we looking at lessons learned that  
3 EPA may have had. The number of the issues that we  
4 talked about today in terms of economic consequences.  
5 Including those environmental consequences, which  
6 include consequences to the environment beyond the  
7 commercial aspect have been addressed in that.

8 And those are new areas of interest for  
9 EPA and there's been a lot that has been learned  
10 there. I think it would be applicable here.

11 MS. BONE: Definitely, very much, I  
12 appreciate the point. We have not gone into that  
13 level of detail with EPA before. But that's a very  
14 worthwhile pocket for us to delve further in. But we  
15 have not at this point.

16 MEMBER SCHULTZ: I think it's a good place  
17 to look.

18 MS. BONE: Yes, I'm making a note.

19 MEMBER SCHULTZ: And BP has advertized  
20 many times how much they are spending this year and  
21 last year.

22 MS. BONE: So that concludes the ten  
23 topics that the staff were to cover in the Green  
24 Ticket. Based on this review that we conducted for  
25 the past two or three months the staff concluded that

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1 we do have sufficient flexibility to consider off-site  
2 property damage. With regulatory analysis fact  
3 fitting and environment analysis under NEPA.

4 The staff also recommended that an  
5 enhanced coordination would increase staff efficiency,  
6 and this gets to a lot of our discussion before with  
7 NUREG/BR-0184 and the guidance documents that enhance  
8 for centralized updating of these attributes would  
9 really help staff efficiency when it comes to the  
10 performance specific regulatory analysis and other  
11 analysis.

12 MEMBER SCHULTZ: Alysia, to that first  
13 bullet, the staff has the flexibility because their  
14 offset property damage. I would think that the group  
15 would want to then look at, we have the flexibility to  
16 do it. We have done it in the following places. It  
17 has made a difference in the following ways.

18 Has that been done in order to develop the  
19 recommendations?

20 MS. BONE: We didn't look at this from an  
21 example specific point of view, we were really looking  
22 at when go about the tasking we were trying to  
23 accomplish many things. One, that we haven't really  
24 besides today, but a lot of this became knowledge  
25 management.

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1           We really wanted to emphasize that we did  
2 consider economic consequences. At the very beginning  
3 of this project it was a little bit, it's really very  
4 nuance and complicated subject. So one of our goals  
5 was really just to provide information eventually.

6           Then it was to look at, from a framework  
7 point of view ways that could make the changes. We  
8 haven't been able to, time restrictions and other  
9 various reasons weren't able to go into examples of  
10 these applications.

11           One of the reasons I think would be that  
12 it is generally a policy decision. So we were just  
13 trying to look at it from a very high level point of  
14 view. And whatever that decision that the commission  
15 makes if for instance for Option 3 which is exploring  
16 the merits.

17           But if it's exploring the merits I would  
18 think it would be very much an avenue, one of the  
19 first steps is looking at concrete examples. But we  
20 haven't at this point. There was more of this really  
21 trying to define these processes than looking for  
22 possible framework changes.

23           MEMBER SCHULTZ: Now you've raised my  
24 curiosity, with regard to the bullets you had on  
25 \$1,000 per person-rem incorporating off-site financial

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1 consequences. Was that a surprise to the group? That  
2 property damage was incorporated into that number?

3 MS. BONE: I'm not sure about the group as  
4 a whole, I think it was certainly an interesting point  
5 of fact that we discovered. Particularly since that  
6 was the original attribute I think that, I would speak  
7 for myself, at this point when I was looking at the  
8 \$2,000 per person-rem and that's it's severed from the  
9 property damage.

10 I guess it wouldn't have necessarily  
11 occurred to me that it would have been together.  
12 Again, I'm just sort of speaking from personal  
13 experience. But we learned going through all of these  
14 reviews and looking at the past SECYS and SRMs that's  
15 it all, though in the tasking there was ten different  
16 tasks they were all very intra-related. So we  
17 discovered that information by going through looking  
18 at the safety goal policy phase and how and the  
19 background was all there.

20 So a lot of these discussions we put  
21 together by reading that position, et cetera. So we  
22 learned a lot by going through the history, if you  
23 will. So I don't know if that answers your question  
24 but it definitely was interesting for this discussion.

25 For two reasons, one that it answers the

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1 current initiative question as well as past process.

2 MEMBER SCHULTZ: There's a good  
3 perspective and some flavor to go to Mike's question  
4 earlier. What I do recall and I won't quote anything.  
5 But I do recall is that in the \$1,000 person-rem in  
6 those discussions, and I don't think it was just pre  
7 '95, I think it was back in the '80's.

8 But it was determined that there was some  
9 number, \$700 or \$800 per person-rem and then someone  
10 concluded, or some group concluded that another \$200  
11 or \$300 would adequately account for property damage.  
12 So it was something like 20, 30 percent was  
13 incorporated there.

14 MS. BONE: Yes.

15 MEMBER SCHULTZ: And again, I only mention  
16 that because it speaks to what the industry and the  
17 regulators have believed the off-site consequence with  
18 regard to property damage was about. It was about  
19 that value.

20 And of course it would be increased today  
21 because of plan value and a number of other features  
22 that one might incorporate today with the different  
23 type of thinking.

24 MEMBER CORRADINI: So, Steve, wasn't there  
25 something in the 1400 and it's strictly damage not

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1 cleanup? Because I'm pretty sure in one of the  
2 appendixes they actually went through the various  
3 source terms ST-1 through whatever. And I thought  
4 they estimated, am I remembering wrong? I thought  
5 that was the case, they actually did have a property  
6 damage number.

7 MEMBER BLEY: I think that's right.

8 (Simultaneous speaking)

9 MEMBER RYAN: Have you been in contact  
10 with American Nuclear Insurance? They would be an  
11 organization I would look to, because they've kind of  
12 got their finger on the pulse. People are talking  
13 about land values. They're going to have something at  
14 risk at some point. What do they say?

15 MS. BONE: Yes, they were instrumental  
16 panelists at the commission meeting. We weren't in  
17 touch with them significantly during this research  
18 process. But they were an external inlet.

19 MEMBER RYAN: Well as the insurance  
20 holders for many many facilities and power plants and  
21 otherwise I would think they would be an invaluable  
22 resource.

23 MEMBER CORRADINI: I was going to go  
24 further, I was going to say knowing nothing else I'd  
25 actually ask them given this source term what would

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1 they say is the property damage in decontamination.

2 (Simultaneous speaking)

3 MEMBER RYAN: On the basis of how they  
4 would arrive at it is probably the critical factor.  
5 I would say that we're missing an opportunity to  
6 better inform ourselves.

7 MEMBER SCHULTZ: I would agree with that.  
8 Alysia, something I just thought about. Steve  
9 prompted it. When we were talking about SAMA's we  
10 have a lot of plants that have already gone through  
11 the license renewal process and some number that still  
12 remain.

13 The statement was made that a SAMA  
14 analysis was performed for those plants if one had not  
15 been previously performed. And I just don't know  
16 this, has every plant that has gone in for license  
17 renewal over the last however many years you've been  
18 doing these things, seven, eight, performed an new  
19 SAMA analysis. Or are some of those analysis  
20 grandfathered in from the days when it was a \$1,000  
21 per person-rem?

22 MS. BONE: Sure, I see in NRR.

23 MR. DOZIER: I'm Jerry Dosier, NRR, for  
24 limited generating stations they're a current  
25 applicant for license renewal. They performed the

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1 SAMDA analysis earlier on and they are not providing  
2 a SAMA analysis in this license renewal application.

3 Was that the question?

4 CHAIRMAN STETKAR: Well okay.

5 MR. DOZIER: Earlier on being, I don't  
6 know when Limerick was first licensed, 1989, or in  
7 1999 or 2005. In other words if some of the guidance  
8 has changed regarding whatever the basis it may have,  
9 \$2,000 per person-rem versus without economic  
10 consequences versus \$1,000 with.

11 Are we dealing with any plants that we're  
12 currently re-licensing that have used those outdated  
13 values and were not challenging them today because  
14 their only required to submit an analysis if they  
15 hadn't had one in the past?

16 MR. DOZIER: That's exactly what occurred  
17 at Limerick. Limerick used the \$1,000 per person-rem  
18 value and there's given a significant portion of the  
19 environmental report, they addressed the cost going  
20 from \$1,000 to \$2,000.

21 They looked at their closest SAMA that  
22 occurred to see a kind of sensitivity on whether or  
23 not that it would now become cost beneficial. It did  
24 not.

25 CHAIRMAN STETKAR: So they did address it?

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1 MR. DOZIER: Yes, in the new and  
2 significant portion of the environmental report.

3 CHAIRMAN STETKAR: Okay. Thank you.

4 MEMBER SCHULTZ: Before we go on so I  
5 don't have raise it after we go through all the  
6 conclusion. There was one comment made about new  
7 reactors and I may have heard it correctly or I may  
8 have misheard it.

9 But the statement was that for new  
10 reactors the MACCS off-site consequences would be in  
11 the neighborhood of tens of billions of dollars? And  
12 I was trying to understand that for our new reactor  
13 design like AP-1000.

14 MR. BROWN: Dave Brown, I made that  
15 statement. So that's not the probability weight of  
16 consequences of that.

17 MEMBER SCHULTZ: I understand that.

18 MR. BROWN: So it's taking the frequency  
19 out of the calculation, what if. There's significant  
20 core melt containment bypass.

21 MEMBER SCHULTZ: Containment bypass. Okay  
22 I understand that.

23 CHAIRMAN STETKAR: But that specific set  
24 of accidents that typically have an extremely low  
25 frequency.

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1 MEMBER SCHULTZ: I would hope so for a new  
2 reactor.

3 CHAIRMAN STETKAR: You would hope so and  
4 especially for a new plant.

5 MS. BONE: So I believe we were on the  
6 last conclusion which is actually referencing the  
7 point you were making before about the safety goals  
8 early on in discussion.

9 We do recognize that the NRC's safety  
10 goals and specific regulations don't get at economic  
11 consequences or property damage specifically. So the  
12 staff has identified areas where we could alter the  
13 framework if the commission so desired. Ultimately as  
14 we divulged for us today as a policy decision.

15 Based on these conclusions the staff  
16 proposed three options. One is the status quo. Two  
17 is enhanced consistency of regulatory analysis  
18 guidance.

19 And the last is exploring the merits of  
20 potential changes to the regulatory framework. And in  
21 the following three slides we'll go through the pros  
22 and cons and I'll give you a little bit more  
23 information about each of these options.

24 CONSULTANT WALLIS: Aren't you always  
25 concerned with consistency? If this was inconsistency

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1 wouldn't you fix it?

2 MS. BONE: I'm glad you bring that up.  
3 Because we did identify it. Option 1, status quo,  
4 we're saying that a little largely, but there are, we  
5 do identify coordination issues that we do need to  
6 enhance.

7 So the difference between Option 1 and  
8 Option 2, they're not proposing a change in framework  
9 but we're saying that in Option 1 we'll enhance  
10 coordination and consistency to the extent possible  
11 with resources we currently have. Prioritize what we  
12 currently have budgeted.

13 Option 2 would require substantially more  
14 resources and that would be something that we would  
15 need to basically re-prioritize or re-adjust.

16 MEMBER CORRADINI: So you have, maybe  
17 you're going to do it in the next couple of slides.  
18 Do you have any samples of number two? I'm having a  
19 hard time getting my hands around what Option 2 is.

20 MS. BONE: Sure.

21 MEMBER CORRADINI: So when it's the right  
22 time can you give a couple of examples of what Option  
23 2 is?

24 MS. BONE: Sure I'm happy to. So just for  
25 completeness sake, we'll just thumb through Option 1

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1 really quickly again. It's the status quo with  
2 minimal additional coordination resources that we've  
3 identified.

4 Pros, maintains regulatory stability.  
5 Requires minimal additional resources.

6 The cons of this option would be that it  
7 may not accomplish consistency across programs. This  
8 is really getting at the fact that the way we  
9 currently do it is more of office specific priority  
10 level.

11 So the way for instance we've been doing  
12 the dollar per person-rem, NNR will have that as a  
13 priority. And give research that as a user need. And  
14 likewise placement power et cetera, so it's more of  
15 office level prioritization.

16 MEMBER ARMIJO: Consistency within the  
17 offices is that what you're talking about?

18 MS. BONE: Yes, right, because of the  
19 difference in prioritization might lead to different  
20 consistencies and just generally the current process  
21 is somewhat de-centralized. So that has lead to  
22 potential inconsistencies.

23 MEMBER ARMIJO: Alysia, with your ongoing  
24 initiative to update the dollar to person-rem factor  
25 policy, would that continue under Option 1?

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1 MS. BONE: It would, yes.

2 MEMBER ARMIJO: It's not just limited to  
3 Option 2 or 3?

4 MS. BONE: No, not at all. I'll just go  
5 to the third one, because that's sort of inline with  
6 the discussion we've been having. Because the way  
7 we've been doing it currently, different  
8 prioritization levels it would lead, without that sort  
9 of prioritization of current updates can lead to staff  
10 inefficiency without having as robust of tools as  
11 possible or as robust guidance.

12 It would be to more very specific  
13 regulatory analysis, estimates, et cetera every time.  
14 But having an Option 2 for instance which go into  
15 effect would, we're looking at more robust guidance.

16 More the guidance we have now, but then  
17 also additional guidance for discipline specific  
18 applications. So we'll go to that in a second.

19 The last con is this option may not be,  
20 this option may not be responsive to possible  
21 stakeholder concerns that we should change the  
22 regulatory framework for a higher consideration of  
23 economic consequences.

24 So Option 2, those would include the  
25 update that we're currently going through now as well

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1 as looking at this more an agency level  
2 prioritization. Centralizing the priorities of what  
3 guidance updates and going about them in a more  
4 systematic way to update them. And addressing agency  
5 level needs.

6 This could include additional guidance depending  
7 on, for instance a working group comes up with we need  
8 additional guidance in this area or this area. And  
9 it's just a more sort of systematic and comprehensive  
10 way of ensuring that the guidance are updated and as  
11 robust as possible.

12 MEMBER CORRADINI: So what would be a  
13 specific example that you would do under Option 2 that  
14 would be agency wide? The more specific the better.  
15 In other words if you're inferring the commission  
16 giving this response to their SECY and they say like  
17 what? What might you say?

18 MS. BONE: Sure.

19 MR. COYNE: I think one of the things that  
20 the working group had looked at for Option 2 and again  
21 going back to Alysia's point, the main difference  
22 between Option 1 and Option 2, and I realize it  
23 doesn't come across so cleanly in this the SECY paper.  
24 But it was this idea that there would be more  
25 resources applied to do these updates quicker.

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1                   These regulatory guidance documents are  
2 getting somewhat old.

3                   MEMBER CORRADINI: The ones you were  
4 working with?

5                   MR. COYNE: Right. So NUREG/BR-0184 is  
6 1997. But based on information that was developed a  
7 few years before then. We've done a lot of license  
8 renewal reviews, we've done a lot of new reactor  
9 reviews. We've gained some experience.

10                   We're doing a Level 3 PRA study  
11 independently of this project.

12                   MEMBER CORRADINI: I was waiting to hear  
13 that one.

14                   MR. COYNE: I understand that but let's  
15 just piggy back on that one for a minute. It seemed  
16 to me that if in Level 3 PRA this would be a part of  
17 a what I consider to be a comprehensive analysis.

18                   MEMBER CORRADINI: So in the process of  
19 doing a comprehensive Level 3 PRA for some volunteer,  
20 but you would actually do this and update all the  
21 associated documentation so that when you do it you  
22 actually feel that you actually have something close  
23 to okay.

24                   MR. COYNE: Absolutely and with one  
25 limitation that with earlier work, NUREG-1150 was five

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1 sites of different reactor design. In this case we're  
2 just doing one site, multi-unit but one site for a  
3 somewhat unique emergency planning zone. Due to the  
4 location of the Savannah River Reservation near the  
5 Vogtle site.

6 I think there will be some insights that  
7 will be useful for looking at, you know, due to modern  
8 techniques and hopefully more realistic analysis of  
9 off-site consequences. How would that play against  
10 what we have on NUREG/BR-0184.

11 But that would certainly be something that  
12 we would want to see and check to see does it pass the  
13 common sense test looking at the numbers we currently  
14 have, versus what the Level 3 PRA project would come  
15 up with.

16 I think more importantly would be this  
17 concept of more of an agency prioritization of what  
18 updates we're doing rather than doing more of, I'll  
19 use the word ad-hoc and it may not be fair, but more  
20 of an ad-hoc update for various aspects of the  
21 guidance to our per person-rem replacement power.

22 We would try under Option 2 to be more  
23 systematic as an agency to factor in all the various  
24 office needs and NMSS, NSIR, FSME, NRR, NRO. To see  
25 what the real prioritized needs where and try to get

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1 those together a little better so we can attack them  
2 a little quicker and think more as an agency rather  
3 than individual offices.

4 MEMBER CORRADINI: That is saying a task  
5 force?

6 MR. COYNE: I'm not into --

7 MEMBER CORRADINI: It's a little bit too  
8 high of level?

9 MR. COYNE: There certainly would be  
10 better integration across the offices under Option 2.  
11 And more resources applied to doing these updates  
12 quicker.

13 MEMBER CORRADINI: All right. Thank you.

14 MS. BONE: Steve has gone through the pros  
15 of this option already, more systematic, more  
16 comprehensive, more harmonized guidance.

17 For cons, again this is not an intricate  
18 change in the framework this would may not be  
19 responsive to possible stakeholder concerns to change  
20 the framework.

21 MEMBER ARMIJO: Which stakeholder are we  
22 so concerned about? I personally am not. I think the  
23 staff could focus on what's technically the right  
24 thing to do. And let the stakeholders voice their  
25 concerns anytime they wish. So I guess that's not a

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1 con. Because you're never going to please everybody.

2 MS. BONE: Right.

3 CONSULTANT WALLIS: I think it would be  
4 better if you said it was non responsive to specific  
5 concerns which haven't been raised by stakeholders.  
6 That would make some sense. You could cite something.  
7 But just to say possible it doesn't really say  
8 anything at all. Be specific.

9 MEMBER SCHULTZ: That is a very important  
10 comment.

11 MS. BONE: Okay.

12 MEMBER SCHULTZ: To be as specific as to  
13 identify it. Because I don't think generally that's  
14 a correct statement. I think we do, you do meet many  
15 of the stakeholders concerns. And some of what you've  
16 demonstrated today is that there's also a  
17 communication plan that ought to be surrounding all of  
18 this. Because it's what the agency has been doing I  
19 don't think has been clear.

20 MS. BONE: Right.

21 MEMBER SCHULTZ: In regard to land  
22 contamination and off-site consequences. It has  
23 impacted the regulation. And it could be well  
24 enhanced by determining just how it has impacted the  
25 accompanying results of regulation and address some of

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1 these things.

2 I think many of the public don't  
3 understand what has been done in the past and what the  
4 importance of the regulations as they have been  
5 probligated.

6 CONSULTANT WALLIS: Maybe should also put  
7 in national, in fact that all the stakeholders  
8 throughout the country who have changed the  
9 regulations. There are a lot of specific things that  
10 have happened in response to this concern.

11 MEMBER SCHULTZ: That's correct. That's  
12 a good addition also.

13 MS. BONE: Yes. And just to finish off  
14 the cons, the other con is that it would require more  
15 resources than Option 1. As we just discussed.

16 MEMBER SCHULTZ: Before you, I think you  
17 need to be careful of that statement too. I'm not  
18 talking about you personally. I think the staff needs  
19 to be careful about that kind of statement because  
20 you've already indicated that Option 1 is going to  
21 lead to inefficiencies. Is in fact leading to  
22 inefficiency.

23 Yes, additional resources may have to be  
24 required but I think the staff was asked to look at  
25 this because there's some feeling that we ought to

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1 move forward in a direction. So I don't see this  
2 necessarily as a fair reason to say this is a con.

3 MEMBER CORRADINI: What I hear you trying  
4 to say is it will take a larger initial investment  
5 over the long term it may end up to be a cost saving.

6 MEMBER SCHULTZ: Yes. You've already said  
7 that. Perhaps we can't. We just can't stand on our  
8 documentation and evaluations and analysis an  
9 approaches that were identified in the '80's and  
10 '90's. So therefore it's not a con we have to do it.  
11 It's just a matter of moving forward appropriately.

12 MR. CORREIA: This is Rich Correia, the  
13 main reason we put that in, that con, is simply  
14 because it would require resources that the commission  
15 would have to provide for. We wanted to make that  
16 clear.

17 MEMBER SCHULTZ: I was only reacting to it  
18 as a con. I think it's a consequence.

19 MS. BONE: Yes. Option 3, which we voted  
20 to draft this presentation is changing or exploring  
21 the merits of potential changes to the regulatory  
22 framework. And we have been. We discussed the rule  
23 making at length of predominantly the backfit rule.  
24 Either adding and exemption or changing or adding to  
25 substantial increase in safety tests.

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1 Additional though we talked about a new  
2 policy statement parallel to that of the safety goal.  
3 That would be geared toward land contamination or  
4 property damage. We add that as another potential  
5 change to the framework.

6 Another change which we've discussed  
7 earlier as well is that of the generic facts and  
8 methodology. Essentially when we use the methodology  
9 of the backfitting to potentially change using site  
10 specific information across the board for all generic  
11 backfit.

12 The pros of this option, again this is  
13 fundamentally looking at changing the framework is  
14 that it would provide a commission statement on the  
15 importance of land contamination. Additionally it  
16 allows for stakeholder input to propose revisions to  
17 the framework.

18 Cons would be that it could increase  
19 regulatory uncertainty as would accompany any change.

20 CONSULTANT WALLIS: So something like a  
21 QHO for land contamination?

22 (Simultaneous speaking)

23 CONSULTANT WALLIS: There are all kinds of  
24 detailed regulations about LOCAs and stuff, there's no  
25 reference whatsoever to QHO's So would this make any

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1 difference to what people do. Except in a few of the  
2 things you've said before.

3 MS. BONE: Sure, I think that we weren't  
4 there yet in determining that. We were identifying  
5 possible areas to explore. But we weren't yet at the  
6 level of determining how, if at all, what effect that  
7 would have eventually. We weren't there yet.

8 Possible cons to this approach potential  
9 regulatory uncertainty. Second is increased  
10 complexity. The staff recognizes that any activities  
11 under Option 3 would need to be closely coordinated  
12 with other large framework activities such as MTF  
13 Recommendation 1 or the RMTF. So we recognize that  
14 this would add an increased level of complexity.

15 CHAIRMAN STETKAR: Why does that  
16 necessarily increase complexity. It does if you put  
17 yourself in these little boxes and say this MTF  
18 Recommendation 1 there is this. There is NUREG-2150  
19 as three separate distinct activities.

20 If you think kind of a higher level which  
21 you said you were. They're all really part of the  
22 same issue, aren't they? The commission needs to come  
23 to some resolution about whether there should be a  
24 fundamental change to the regulatory process. And the  
25 focus of that regulatory process.

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1           It's all a single issue. Economic  
2 consequences is a part of it. What numbers you use  
3 for other things or another part of it. The tools  
4 that you use are other parts of it. But it's all a  
5 single fundamental thing.

6           It's not three separate tasks. I'm not  
7 downplaying the complexity of making that decision.  
8 It's a difficult decision. But it seems to me that  
9 it's a fundamental decision and that they're all  
10 inter-related when you say complexity.

11           But when you presented it it sounds as if  
12 your developing some sort to little diagram of arrows  
13 and curlicues that fold back on themselves. You may  
14 be over-emphasizing that. I'm not implying that this  
15 is an easy decision to make.

16           But saying that it's complex because it  
17 has a lot of different parts might not necessarily be  
18 appropriate. The parts kind of fall out from the  
19 upper structure I believe.

20           CONSULTANT WALLIS: The problem is  
21 something like the SOCA report which I assume is  
22 coming up. And it's going say that -- that the  
23 accidents are okay because nobody gets killed. And it  
24 meets our qualms. It would be good if there were  
25 parallel thing that said accidents are okay because

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1 the unadaptable to society is acceptable.

2 It seems to miss something which we all  
3 know happens with accidents. Isn't that the problem  
4 that your responding to that?

5 MEMBER ARMIJO: Well what's acceptable to  
6 some is unacceptable to others.

7 CONSULTANT WALLIS: There is obviously a  
8 gap. There are consequences that don't appear in this  
9 SOCA which says everything's okay. But it seems to  
10 say everything is okay because people aren't killed.

11 So that's our problem, there are other  
12 consequences. But maybe it doesn't have a problem.  
13 Is that what you're really responding to is that kind  
14 of a gap?

15 MS. BONE: Right.

16 CONSULTANT WALLIS: Okay. Are you going  
17 to tell the commission it's okay to pick Option 1  
18 because everything's isn't a worry? That this isn't  
19 a concern or something?

20 MS. BONE: No. Well --

21 MEMBER CORRADINI: You don't have to  
22 answer that because he's a --

23 MS. BONE: Maybe I should move on to the  
24 second line.

25 CONSULTANT WALLIS: What I'm responding to

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1 is if I stood up in front of a bunch of students or my  
2 colleagues or my friends or something. So this all  
3 this and they say how about all the other  
4 consequences? And I'll say the commission has no  
5 policy on the other consequences. And I'm not sure  
6 that's going to go over very well.

7 MEMBER RYAN: You might have considered  
8 this in all of your work. But there's a very large  
9 population of the so called down winder's from the  
10 Nevada Test Site.

11 There's all kinds of folks of Russia, in  
12 the have Ketchikan explosion, Chernobyl. Have you  
13 really mined those kind of downwind situations that  
14 maybe give some insights into this whole question that  
15 you're raising.

16 MS. BONE: No.

17 MEMBER RYAN: I think that's a gold mine  
18 that you shouldn't leave untapped. Because it's an  
19 awfully lot of information. Particular in the United  
20 States. You know the weapons testing program. How  
21 much went where and who was affected and all that kind  
22 of stuff. I wouldn't leave that untouched.

23 And the same for the Ketchikan explosions  
24 and the same for Chernobyl. Those are two well  
25 documented events now. It really could give some

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1 insights. It's maybe not the property guide because  
2 that's, at least when there is this kind of an event.

3 These are the kinds of releases, this is  
4 the eco-processing of this radioactive material itself  
5 and what do we make of that. I would take a look at  
6 those data.

7 MS. BONE: Okay.

8 CHAIRMAN STETKAR: Can I interject  
9 something here. One important member sitting around  
10 the table in particular consultant Tom Kress, has a  
11 real pressing time consideration and he's got to leave  
12 in the next 15 minutes.

13 So what I'd like to do, I know you have  
14 two or three more slides to go through. And I'm sure  
15 we're going to have a lot more discussion. But if I  
16 could just interrupt the proceedings here for moment  
17 and ask Tom do you have any statements that you'd like  
18 to make? Or comments or things like that. So that  
19 you don't run too close to your disappearing time.

20 CONSULTANT KRESS: I appreciate your  
21 giving me this opportunity. I will provide a  
22 consultants report and spell this out in better form  
23 and more detail more than this off the cuff right now.

24 My main comment is that I don't agree that  
25 the current framework properly deals with societal

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1 risks, societal consequences. So I don't think we  
2 have a choice here or an option. I think the ACR has  
3 got to urge the commission to Option 3.

4 And that Option 3, what I think is the  
5 meaning there is the new safety belt. A societal risk  
6 safety belt. And I have thoughts on what that ought  
7 to be. I'll put those in my report.

8 If you were able to make the safety goals,  
9 I think the NRC really complicates these things.  
10 When you're trying to figure out what the  
11 responsibility and the authority is. I think they  
12 have the authority to make a new safety guide.

13 And I also think they ought to make the  
14 safety goals part of adequate protection. So that you  
15 no longer have to worry about whether or not you have  
16 to require people to meet them.

17 I know that's a policy thing. But I think  
18 that's the way to go. And I think one has to define  
19 what you include in the consequences. I think it's  
20 very shortsighted to make it just -- it ought to be  
21 all of the offsite consequences. Include health  
22 effects as well as the other things that MACCS  
23 calculates.

24 MACCS needs to be reviewed and updated  
25 that's for sure. And I think one of the things that

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1 are needed is a re-look at how we use the LNT in our  
2 analysis. I think it really really makes things look  
3 bad when it shouldn't. I think the limit of 50 miles  
4 has to be done away with.

5 I think that limit can be determined by  
6 the new cutoff that's different from the LTN. But I  
7 think that's part of the things that's needed in the  
8 analysis.

9 I also think we have things that CDF and  
10 LERF designed the guides for the new plants. I think  
11 their good design guys but they don't deal with this  
12 societal risk. So I think you need a new design  
13 survey for what every safety board didn't come up with  
14 and I'm virtually certain that a new RAF can be  
15 serving a purpose and that we need to look at ways to  
16 determine what that LERF is going be.

17 And I don't think, if you make your safety  
18 go sufficiently conservative, I don't think you have  
19 to calculate all the consequences in your MACCS code.  
20 I think you can probably do something to develop a  
21 correlation between a couple of them and the overall  
22 risk that you get if you calculated all of them that  
23 would make things a lot simpler and easier.

24 And overall with this kind of concept I  
25 think you simplify the analysis. You spell out what

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1 NRC's authority and allow them to do their regulations  
2 properly and it deals with this problem of societal  
3 risk, which is not well dealt with in the regulations  
4 now.

5 That's basically the gist of what my  
6 feelings are. I'll put it down in a better form in my  
7 report. And I'll get it to you next week sometime.  
8 And for that I think I'm going to have to leave.

9 MEMBER BLEY: Before we come back to the  
10 general forum. You've made your point.

11 CONSULTANT KRESS: At least my  
12 understanding from the presentation.

13 MEMBER BLEY: Slide 11, they didn't  
14 consider what Tom just talked about because of the  
15 2000 and SECY SRM that didn't want to look at  
16 reissuing a policy statement. I think this is what's  
17 considering. Do we need to write a letter on this at  
18 full committee meeting this week?

19 CHAIRMAN STETKAR: No, in November.

20 MEMBER BLEY: Okay. So we've got time to  
21 think about this.

22 CHAIRMAN STETKAR: Yes, thankfully.

23 MEMBER BLEY: Yes, thankfully, too bad  
24 it's not two months.

25 CONSULTANT WALLIS: Can I just tell you

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1 something about Chernobyl?

2 CHAIRMAN STETKAR: You can but I want to  
3 get through the rest. You don't have a time restraint  
4 and Tom did. The only reason we interrupted is so he  
5 could leave. So we'll go back on the presentation and  
6 let Alysia finish. And then we'll do the standard and  
7 go around the table.

8 And thanks a lot for accommodating us, Tom  
9 had a real problem.

10 MS. BONE: My pleasure. I think actually  
11 the next few slides will go pretty quickly because  
12 it's a repeat of what we've been discussing. The  
13 recommendation is Option 2.

14 So we don't recommend a change to the  
15 framework but enhancing the guidance and going about  
16 it more consistently and more centralized prioritized  
17 fashion.

18 We believe that this would lead to more,  
19 like I said more systematic and comprehensive  
20 guidance. Again, going back to our conclusion that  
21 that does feel that current framework allows for  
22 sufficient flexibility to consider economic  
23 consequences for off site property damage.

24 There were two public meetings that the  
25 staff held on the subject. The first was on May 24th

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1 and that was really at the paper's infancy so it was  
2 very early on in the project. Again, we got the  
3 tasking in April.

4 The two points really here are that they  
5 were very strong stakeholder interest. The other is  
6 just that we had very limited specific feedback  
7 because we again, we couldn't offer too much specific  
8 details since it was early in the process.

9 We did as a result of that public meeting  
10 however make a tasking publicly available. The second  
11 public meeting was held on August 29th. And as a  
12 reminder that was after we submitted the paper to the  
13 commission but prior to the September 11th briefing.

14 Again, continued strong stakeholder  
15 interest. And at this meeting there was great  
16 interest or support for Option 3 and the desire for  
17 greater transparency on how offsite property damage is  
18 considered in the analysis. Very specific questions.

19 MEMBER ARMIJO: Specifically who are the  
20 public's? Public is a broad term. Were there  
21 specifics organization expressed forth?

22 MS. BONE: Yes. Just going there, but --

23 MEMBER SHULTZ: Alysia, were both meetings  
24 held here?

25 MS. BONE: They were, yes. So --

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1 MEMBER ARMIJO: These were the ones that  
2 expressed support?

3 MS. BONE: Well --

4 MEMBER ARMIJO: Or were they mixed --

5 MS. BONE: Yes, a couple of clarification  
6 points. One, we did not have a formal written public  
7 comment period. These were individuals that submitted  
8 written feedback to us.

9 MR. WIDMAYER: Can we get a copy of all  
10 five of these?

11 MS. BONE: Sure definitely. However there  
12 were more members of the public that participated in  
13 the August 29th meeting that were in support of an  
14 Option 3. But these were just the specific written  
15 feedback that we received.

16 I won't go into depth of these, of course  
17 Dr. Kress just so eloquently expressed his comment.  
18 The first one we had a Pilgrim Watch, Mary Lampert,  
19 submitted extensive comments and it was again at the  
20 same sort of, actually I believe her recommendation  
21 wasn't any of the options provided by the staff at  
22 this point. Rather it was an Amended Option 3 to  
23 change the regulatory framework based on real lessons  
24 from Fukushima.

25 I'm paraphrasing, but that is essentially

1 the title of the options she proposed. Additionally  
2 we've got written feedback from Dr. Apostolides,  
3 Ipatia Apostolides, I apologize for mispronouncing.  
4 And they were extensive as well.

5 Some of those were specific logistical  
6 comments, like spelling out acronyms and others were  
7 more technical questions leading to an Option 3  
8 essentially. The last two feedback, again I'm  
9 paraphrasing, but it was more of a consideration for  
10 Option 3 and the SanOnofreSafety.org, Donna Gilmore  
11 discussed specific considerations relating to  
12 SanOnofre.

13 MEMBER SHULTZ: Alysia, I presume you  
14 prepared minutes for the public meeting?

15 MS. BONE: It's in the process, yes.

16 MEMBER SHULTZ: It's still in the process?

17 MS. BONE: Yes it's still in the process,  
18 but we will make that --

19 MEMBER SHULTZ: Provide comment.

20 MS. BONE: Definitely.

21 MS. BONE: And some of these came prior to  
22 the public meeting and some of these came after, but  
23 before the September 11. This is just a recount of  
24 everyone who submitted written feedback. But we'll  
25 make sure that you have that all.

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1 CHAIRMAN STETKAR: Yes, I was going to say  
2 we need to stipulate --

3 MS. BONE: Yes, we'll make sure we get all  
4 --

5 CHAIRMAN STETKAR: -- make sure everything  
6 --

7 MS. BONE: -- of those document to you.

8 MEMBER REMPE: Before the Full Committee  
9 meeting?

10 CHAIRMAN STETKAR: Yes, what's your  
11 schedule for getting the minutes prepared?

12 MS. BONE: Within the next week I think.

13 CHAIRMAN STETKAR: Okay, good.

14 MS. BONE: Yes, very soon.

15 CHAIRMAN STETKAR: Okay.

16 MR. CORREIA: Rich Correia, staff. All  
17 these submittals were sent to the Commission for their  
18 consideration as part of the second paper. Not as  
19 part of the second paper, as part of the stipulation  
20 --

21 CHAIRMAN STETKAR: Under the stipulation.

22 MR. CORREIA: -- with the paper.

23 CHAIRMAN STETKAR: Okay.

24 MS. BONE: And the last slide, Path  
25 Forward, we anticipate a September 11th meeting at SRM

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1 as well the full committee meeting in November. But  
2 I don't know if that's been scheduled yet or when that  
3 is.

4 CHAIRMAN STETKAR: It's November 2nd, I  
5 believe.

6 MS. BONE: November 2nd?

7 MS. BONE: So that really concludes the  
8 staff's presentation. I'm happy to entertain any  
9 other questions that you have?

10 MEMBER REMPE: How far will the Level 3  
11 PRA, go? I know it's just one plan, but will it go  
12 ahead and do land contamination? Would it be that  
13 hard to apply some additional models and evaluations  
14 for --

15 MEMBER BLEY: Look at --

16 MEMBER REMPE: It will --

17 MEMBER BLEY: I mean it's got to be in  
18 there to calculate the doses, that's right.

19 MEMBER REMPE: Yes, but will they provide  
20 any cost information in the current work scope of it,  
21 is what I'm asking, and would it --

22 MEMBER BLEY: Yes.

23 MEMBER REMPE: It will include all that  
24 information?

25 MR. COYNE: Yeah, I'll shake my head yes

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1 with the provision that the hallmark of the Level 3  
2 studies, it's a state of practice study, except in  
3 certain areas where we know we have to go beyond the  
4 state of practice. So MACCS2 is the main tool used by  
5 the staff.

6 So you know we'll use MACCS2 for the Level  
7 3 portion, we'll follow the lead from the SOARCA  
8 project and develop the MACCS input deck an, you know,  
9 consistent with the types of modeling assumptions made  
10 in the SOARCA project and provide the outputs that  
11 MACCS would normally provide. Beyond that I guess I  
12 should make a plug for it.

13 Our December meeting where we're putting  
14 together a detailed technical approach plan, I'm  
15 hoping the Level 3 portion will be ready by then. So  
16 that would be one of the things that we'd see some  
17 ACRS feedback on, the actual technical approach we  
18 intend to take with the Level 3 PRA.

19 But resources schedule wise we're trying  
20 to stick to the state of practice approach as much as  
21 possible, but recognizing there's areas where we have  
22 to go beyond and meet the objectives of the study. I  
23 think the December 5th is the, I think John Lai told  
24 me December 5th is the date we're looking for, for the  
25 Level 3.

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1 CHAIRMAN STETKAR: That sounds right.

2 CHAIRMAN SHACK: Shaking his head yes.

3 CHAIRMAN STETKAR: Graham Wallis?

4 CONSULTANT WALLIS: Could I bring the  
5 point, Mike Corradini asked for benchmark. And I  
6 think Chernobyl does offer you some sort of a  
7 benchmark. And as far as I remember people died  
8 there, but they were they were people who were  
9 heroically trying to do something and they were not  
10 members of the public.

11 MEMBER BLEY: Well there were a few  
12 members of the public.

13 CONSULTANT WALLIS: Very few. So in terms  
14 of comparing with a couple of car accidents, the  
15 number of people who died instantaneously, members of  
16 the public is very small. It's not a very good  
17 measure of intensity in the accident.

18 But sheep farmers in the North of England  
19 and Scotland were unable to sell their sheep and lambs  
20 for slaughter for several years. And so they went out  
21 of business. People of Lapland couldn't slaughter  
22 reindeer and then the mushrooms in Norway kept  
23 bringing up new reactivity and so on.

24 These are very serious events for those  
25 people. They effect their attitude to nuclear power.

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1 And to use a measure of how many instantaneous deaths  
2 there were seems to completely ignore a worldwide  
3 effect. Which is very noticeable for those people.  
4 And is remembered, in those countries.

5 So I don't quite understand who you could  
6 not say this is a serious business. It should be part  
7 of the regulations in some way. You do have a  
8 benchmark.

9 This is just not a theoretical thing with  
10 a computer or MACCS or something, these things  
11 actually happened. And even if they didn't obviously  
12 kill people they put people out of business. They  
13 effected public opinion considerable and the places  
14 that were effected.

15 MS. BONE: Thank you, I appreciate your  
16 point.

17 CHAIRMAN STETKAR: Are there any other  
18 specific comments for Alysia or any of the staff?

19 MEMBER ARMIJO: You want wrap up comments  
20 or specific comments?

21 CHAIRMAN STETKAR: I'll ask for that in a  
22 moment.

23 MEMBER ARMIJO: If there aren't I'll have  
24 specifics in the wrap up.

25 CHAIRMAN STETKAR: Okay, but what I'm

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1 looking for now is any focus comments on the  
2 representation or questions? And if not what I'd like  
3 to do is first ask to see if we have any public  
4 comments and then we'll go have a wrap up. So as I  
5 understand it we don't have anybody on the bridge  
6 line, is that correct?

7 MEMBER ARMIJO: Correct.

8 CHAIRMAN STETKAR: So we don't need to  
9 open that. If there's any member of the public here  
10 who has any comments, statements, questions, anything?

11 If not then what I'd like to do is thank  
12 the staff very much for the presentation. I think we  
13 had some interesting discussions. I think we better  
14 appreciate some of the thought process that the staff  
15 actually used, that may not be quite as transparent.

16 I know it wasn't to me just reading  
17 through the SECY paper itself, so I really appreciated  
18 some of the discussion that we have. I think it was  
19 very informative for me and thank you all very much.

20 And with that, what I'd like to do is what  
21 we normally do is go around the table and see if there  
22 are any final wrap up comments, suggestions from  
23 members. And only because I know he likes to do this,  
24 I'll start with Graham first as our consultant. To  
25 see if you have anything to say, since I set the

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1 precedent and asked Tom, so you get the first up.

2 CONSULTANT WALLIS: Because I was here  
3 this morning. I haven't read this stuff, but --

4 CHAIRMAN STETKAR: You've not been silent  
5 though.

6 CONSULTANT WALLIS: I've read some of this  
7 stuff and I've said a few things. But I will send you  
8 some comments.

9 CHAIRMAN STETKAR: Okay.

10 CONSULTANT WALLIS: I do think that, I  
11 tend to agree with Tom. That there is a big gap in  
12 this presentation to the public for what are the real  
13 effects of nuclear accidents. And some of the metrics  
14 don't really cover what I think is really, it is a  
15 real concern of the public.

16 And I think that the Commission owes it,  
17 somehow, to explain this. I'm not quite sure how it  
18 should be done, whether it should it be done by new  
19 regulation or done by showing the present regulations  
20 cover these things. Well I don't think it can be  
21 absolutely ignored by some kind of Option 1.

22 CHAIRMAN STETKAR: Thank you. And because  
23 Dr. Corradini was chomping at the bit I'll start in  
24 that corner. Right?

25 MEMBER CORRADINI: Thank you.

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1 CHAIRMAN STETKAR: You're welcome.

2 MEMBER CORRADINI: I guess my only comment  
3 kind of goes back to, that I think the staff has done  
4 a good job at least trying to, at the very best trying  
5 to provide a history. Because as you go through the  
6 SECY it gives a nice history of kind of how we are up  
7 to this point.

8 The one thing that I guess you could tell  
9 I though was missing, and I think it's got to be  
10 there, is that if you're going to go through all this  
11 effort to use this I want to see a benchmark. And if  
12 it's not benchmarked I don't believe it. And so I  
13 would strongly urge that the staff somehow do it in  
14 some context that actually benefits them going forward  
15 whether they chose Option 2 or 3.

16 I don't see Option 1 as really an option.  
17 It's a nice place to put a marker that you know you're  
18 not going to go anywhere. But I really do think you  
19 got to benchmark this. And that's why I asked the  
20 question about could it be done within the context of  
21 the Level 3 PRA, because if it's not done in that  
22 context then it just sits out there as another  
23 independent calculation, we have no clue on how it  
24 fits.

25 So if to the extent you're going to do

1 something that's consistent and as you call, agency  
2 wide, I guess I would think it's appropriate to do  
3 within a Level 3 context since you already have a  
4 volunteer. And that volunteer happens to be an  
5 advanced plant next to a serious of, a couple other  
6 plants that aren't necessarily advanced and happens to  
7 be a multi-corporal unit site.

8 CHAIRMAN STETKAR: There not doing it for  
9 the new units at the site. This is strictly the  
10 current, the two --

11 MEMBER CORRADINI: That's okay, but there  
12 happen to be two more that are going to be there, so  
13 it seems to me that you have interesting attributes  
14 all the way around. But I think to the extent that  
15 you use this you have to benchmark it in some manner.  
16 Whether you benchmark it against unfortunate  
17 international experiences versus something, I just  
18 think it's got to be benchmarked.

19 My only second point is, is that what  
20 wasn't mentioned here, which kind of surprises me is  
21 somehow I like to link this back to the risk informed  
22 framework that was already discussed to happen before  
23 there even was an accident in Japan. Right, the  
24 Commissioner Apostolakis' need to essentially do this  
25 and from a risk informate fashion was already out

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1       there.

2                   But it just seems that, if you're going to  
3       tie this together in an Agency basis, I would step  
4       back and try to figure a way to do this so that you  
5       only deal with it, and I'll just repeat kind of what  
6       I think Tom was saying, that if you're going to go  
7       through this effort you got to be careful if you do it  
8       with a proper comparison basis. And I don't think  
9       necessarily LNT is the necessary comparison. So if  
10      you're going to go through all of this you might as  
11      well do it in a more holistic manner. I think I'm  
12      done.

13                   CHAIRMAN STETKAR: Sam?

14                   MEMBER ARMIJO: Yes, first of all I  
15      appreciated what I thought was a really good SECY  
16      paper. It really was very informative to me and so I  
17      think the staff did a good job there.

18                   And as far as the options, I personally  
19      think the staff's on the right track with Option 2.  
20      I'm a little concerned that we keep using the word  
21      safety and safety terminology with economic  
22      consequences. And I think that blurs the  
23      responsibility of this Agency.

24                   And I think we must continue to focus our  
25      efforts on health and safety and not distract

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1 ourselves on economic consequences as much as it  
2 might, as it would probably happen with Option 3. But  
3 I don't see any health and safety benefits.

4 Even in Option 2. It's administratively  
5 neater, more consistent, but that's, I don't see what  
6 the benefits are. It's certainly there's economic  
7 consequences that are, if you have a severe accident  
8 people suffer.

9 You know I don't deny that. But if we  
10 distract ourselves from our health and safety goal to  
11 worry about those economic consequences unduly, I  
12 think that's the wrong way to go.

13 My other question is, what will a  
14 regulator or a nuclear plant operator do differently?  
15 What would we do? We would we say, okay, we'll crank  
16 up the factor in such a way that we can require  
17 modifications without any opposition and make it  
18 easier to mandate changes because of economic  
19 consequences argument, even though there's no health  
20 and safety benefit.

21 If that happened I think that would be a  
22 mistake. I think Tom basically has some very good  
23 points. But you can't address Option 3 unless you put  
24 everything on the table and then if LNT remains a  
25 sacred cow, from a regulatory standpoint, then Option

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1 3 would be a disaster.

2 In my opinion. But since Option 3 is not  
3 on the table I'll withhold further comment. That's  
4 all I have to say.

5 CHAIRMAN STETKAR: Mike?

6 MEMBER RYAN: I pick up on a little bit of  
7 what Sam said and what Mike said. Now I'm struggling  
8 with how do I separate in my mind that radiological  
9 risk consequences to expose persons and the economic  
10 impacts in the large radiological release.

11 And I don't see then as clearly linked as  
12 some of the discussions, but I might have to think  
13 about it. So I would think about separating those two  
14 because they're very different.

15 And that's why I mentioned the examples  
16 of, about a test site from Marshall Islands, Japan.  
17 There's also the Atomic Broad Casualty Commission, but  
18 also it's interesting information that helps you deal  
19 with, okay here's a large release, what are the  
20 impacts and how do we deal with those impacts?

21 That's one outline. And the other is  
22 basically the same outline. So I think we're trying  
23 to put two things together that really don't have a  
24 glove and hand relationship, to me. And that's  
25 troublesome.

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1           So I would think about separating these  
2 two into two questions. So I think that's worthy of  
3 some thought. Thank you.

4           CHAIRMAN STETKAR: Bill?

5           MS. GIBSON: I'd like to make a comment.

6           CHAIRMAN STETKAR: Yes.

7           MS. GIBSON: This is Kathy Gibson from  
8 research. That works if you evacuate the people and  
9 they stay evacuated. But to the extent that you have  
10 a release and land contamination and then you reduce  
11 that land contamination to a certain level, whatever  
12 that level is, and you let people come back,  
13 ultimately they may get more dose overall than they  
14 would have gotten if the accident hadn't happened and  
15 they didn't have to evacuate.

16           MEMBER RYAN: I appreciate your comment,  
17 but that's kind of a would have, should have, could  
18 have situation. Where we don't know with all the  
19 facts the specific in front us is what that outcome  
20 might be. And I don't want to discount that kind of  
21 analysis because there might be one case where people  
22 do go back and get a dose.

23           MS. GIBSON: But that's what our  
24 assumptions are based on.

25           MEMBER RYAN: But I'm telling you I don't

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1 necessarily believe those assumptions, because of this  
2 other situation where they don't go back. Why not?  
3 And there's also --

4 MS. GIBSON: Yes, I guess what I'm saying  
5 is they're not completely separate, unless you do make  
6 the assumption that people leave don't come back.

7 MEMBER RYAN: Well I hate to tell there  
8 are Islands in the Marshal chain that were evacuated  
9 and stayed evacuated. So --

10 MS. GIBSON: And there are places around  
11 Fukushima that were evacuated and now people are being  
12 moved back.

13 MEMBER RYAN: And that's fine, but don't  
14 cutoff the other possibilities is all I'm asking.  
15 Don't discount them simply out of hand. They need to  
16 be evaluated in the context of these same questions  
17 that we're asking in the case that you do support.

18 CHAIRMAN SHACK: I think we ought to move  
19 ahead with Option 3, sort of my recommendation.  
20 Again, I guess I'm less enthusiastic about new safety  
21 goals then I am about changes to the backfit rule. In  
22 particular I like very much this notion that we get  
23 rid of the safety threshold before we consider the  
24 cost/benefit type of analysis.

25 I mean even if it's to do a fundamental

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1 change to this framework or else, you know, we can  
2 also do it ad hock. I foresee, we've already declared  
3 harden events for BWRs are a matter of adequate  
4 protection now. If we had Fukushima Rule 1, we'll  
5 probably have a new definition of adequate protection  
6 for that.

7 I suspect a new station blackout rule will  
8 require a new definition of adequate protection,  
9 because it probably wouldn't fly under our current  
10 cost/benefit analysis.

11 So I think the choice is either to change  
12 the framework or depend on the Commission to going  
13 ahead on kind of a ad hock basis, declaring adequate  
14 protection where they sort of suddenly in their guts  
15 feel that adequate protection is called for. And so  
16 I do that.

17 Again I think if we go to the safety goal  
18 thing we'll get hung up on questions about linear, no  
19 threshold kind of effects that will be very difficult  
20 to get consistent technical resolution of.

21 I mean those are just to me, and I'll find  
22 opposing camps everywhere and it just seems to me, but  
23 the dealing with the backfit rule seems to me a more  
24 practical way to go to get a change to the framework  
25 that would let us get a lot of things done that I

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1 think probably should get done in a fairly consistent  
2 fashion.

3           Again, just if we're going to make a  
4 change I'm a fan of LRFs. And it's unfortunate that  
5 the staff, well it's unfortunate one of the safety  
6 goals interfered with a sensible definition of a large  
7 release so that we could work with an LRF. Which has  
8 a lot nice simple features and essentially addresses  
9 I think a lot of issues in a very effective way.

10           But that's on the side. I'm on off to the  
11 backfit rule. Which means Option 3. It's only a  
12 mater of considering that, but that would be where my  
13 direction of effort would be under an Option 3, would  
14 be to consider changes there.

15           MEMBER ARMIJO: Can I ask a question on  
16 the backfit rule? If they're pursuing this change in  
17 the dollar per person-rem already under the, without  
18 even Option 1 would do that.

19           MS. BONE: Right.

20           CONSULTANT WALLIS: I'm looking for more  
21 extensive change to the backfit --

22           CHAIRMAN SHACK: I'm looking for a more  
23 extensive one.

24           CHAIRMAN STETKAR: My sense Bill, I was  
25 trying to scribble notes, is more on the criteria that

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1 you use to provoke --

2 CHAIRMAN SHACK: To provoke a cross  
3 benefit --

4 CHAIRMAN STETKAR: Now again, it's the  
5 value that you assign once you do that analysis.

6 CHAIRMAN SHACK: Clearly I don't think  
7 there's any disagreement between Option 1, 2 and 3  
8 that you need to update the regulatory analysis. And  
9 we shouldn't be dealing with 1993 and 1997 values any  
10 more.

11 MEMBER CORRADINI: But I'm listening to  
12 you and I'm trying to figure out, in the decision, in  
13 the boxology of the backfit you're trying to exact,  
14 what are you proposing to do exactly? I'm not --

15 CHAIRMAN SHACK: Alysia, go back to your  
16 Slide Number 18 when we were talking about boxology.  
17 We have a boxology. I think Box C gets in the way of  
18 things and I would like to go to essentially skip it  
19 and go to a cost/benefit analysis of proposed safety  
20 benefit and --

21 MEMBER CORRADINI: And look at it all the  
22 time every time.

23 CHAIRMAN SHACK: I wouldn't necessarily,  
24 I mean obviously you have to make some judgement as to  
25 whether you think it's going to be significant. But

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1 the safety goals to me are so high level and so  
2 difficult to get past that it's hard to.

3 This would be, I think in a more realistic  
4 sense we have plants that are safe and are there  
5 reasonable ways to make them safer without having to,  
6 I mean it is a drastic change and in a sense it kills  
7 the, when are you safe enough?

8 We would change that number that we have  
9 now in a quantitative safety goal to say that you're  
10 safe enough when you know longer can have a cost  
11 effective way to increase safety.

12 MEMBER SHULTZ: Bill, are you suggesting  
13 that Box C goes away in this form?

14 MEMBER CORRADINI: That's what I thought  
15 he just said, is eliminate Box C.

16 MEMBER SHULTZ: Or are you saying it's  
17 going to be an or between the two? Another words you  
18 need to consider both C and D?

19 CHAIRMAN SHACK: Well personally I kill  
20 Box C, but as long as we have just a reconsideration  
21 of the backfit rule that lets you get more directly to  
22 essentially, benefits and safety that may not  
23 necessarily get past the safety goal screening but  
24 still are cost effective.

25 MEMBER SHULTZ: If that is done, and I was

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1 going to go with you on it, but if it is done then  
2 with respect to issues for the evaluation, like LNT,  
3 wouldn't that need to be considered and determined and  
4 decided by the staff?

5 CHAIRMAN SHACK: It's certainly, there's  
6 no way of getting around LNT. Whether I give up on  
7 the safety, it's just --

8 MEMBER SHULTZ: Wherever it --

9 CHAIRMAN SHACK: I highly will do better  
10 down here than I do when I have to attack it directly  
11 as a high level safety goal where I embed it --

12 MEMBER SHULTZ: I understand.

13 CHAIRMAN SHACK: -- very deeply into the  
14 whole regulatory framework. Down here where it  
15 becomes part of a NUREG and how I do an evaluation,  
16 that's something I can change as scientific evidence  
17 changes.

18 MEMBER SHULTZ: I see your point.

19 CHAIRMAN STETKAR: And you might be able  
20 to address in the sensitivity studies and things like  
21 that down at --

22 CHAIRMAN SHACK: Like sensitivity level  
23 that I can't do --

24 CHAIRMAN STETKAR: -- that perhaps doesn't  
25 make it a large difference on the overall decision.

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1 MEMBER REMPE: And so you're going to do  
2 a cost/benefit on land contamination too?

3 CHAIRMAN SHACK: On total benefits and  
4 costs.

5 MEMBER REMPE: Okay, so what if there's  
6 something that helps you with land contamination, but  
7 it doesn't help you with protecting the public's  
8 health and safety?

9 CHAIRMAN SHACK: Hurts you or doesn't help  
10 you?

11 MEMBER REMPE: It hurts you, I'm thinking,  
12 I mean something where you might have more iodine  
13 release but less cesium release. And so you've done  
14 something to help with your land contamination but you  
15 may have zapped the folks.

16 CHAIRMAN SHACK: You know none of these  
17 give me an automatic pass on a do it basis. They're  
18 input for making judgments. Again I don't think they  
19 are technically correct answers to many of these  
20 questions.

21 This is a question of an input, that would  
22 be a no. They certainly should be kept as separate  
23 kind of things where you look at them so you realize  
24 what the costs are and what the benefits are and where  
25 they're accruing.

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1 MEMBER CORRADINI: So Bill, I guess I  
2 don't appreciate how much that filter weeds out things  
3 if C where to go away. But nothing, well I don't  
4 really appreciate it. So but the second part of what  
5 you said though I'm still struggling with is, where  
6 does redefinition going out of LERF to an LRF?

7 That to me is, and I'm trying to think of  
8 where does that change in the analysis. Because that  
9 one actually to me would make a big difference.

10 CHAIRMAN SHACK: Because that would, again  
11 you would have economic impacts of going from LERF to  
12 LRF. And you would see the difference there, you  
13 wouldn't see it necessarily in a health and safety  
14 benefit. But again, it's not really in any  
15 regulation, you really are still taking into account  
16 cost and benefits.

17 MEMBER CORRADINI: Thank you.

18 CHAIRMAN STETKAR: Provoked some  
19 discussion didn't it? Dennis?

20 MEMBER BLEY: Yes, I wish we had, well  
21 like you folks probably did, more time to really work  
22 this through and think. Before we got your materials  
23 and got here I was, Tom, was hoping to see something  
24 on the societal goals in here.

25 But I saw how you stepped the side of that

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1 up. I'd eventually like to see that addressed, but  
2 until you can do something with LNT, your dead over  
3 there, because if you go out beyond 50 miles forever,  
4 and you keep LNT and believe it and let stuff wander  
5 forever, the dose just go up.

6 The mathematics of the thing just gets you  
7 into trouble. I don't come down quite where Sam was.  
8 An accident like what happened in Japan was something  
9 we certainly don't want to see here and even though  
10 anybody nobody was killed, that we know of directly  
11 from it, it's something ought to be there to keep us  
12 out of that situation.

13 I think what we already have probably is  
14 doing a good job, but looking at this is another way  
15 to do it. I hadn't thought it through anywhere to the  
16 point Bill has. I like most everything you had to  
17 say. I don't know if it really works.

18 CHAIRMAN SHACK: Well yes --

19 (Simultaneous speaking)

20 MEMBER BLEY: I lean the way Bill was  
21 talking and, you know, the stuff Mike said I certainly  
22 agree with. Getting information from more sources is  
23 important.

24 Considering Option 3 and digging further  
25 and looking at some of the alternative source of

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1 information that weren't looked at yet, I think is  
2 probably very important and that's the way I lean. I  
3 wish I had it formulated in a tight package like it  
4 sounds like Bill does, but that's the way I lean John.

5 CHAIRMAN STETKAR: Thank you.

6 MEMBER REMPE: I guess I would like to  
7 also reiterate some of the comments you heard earlier  
8 about the SECY Paper, I thought it very informative.  
9 I guess I'd be interested in seeing an example of what  
10 Bill's suggesting in some of these different options  
11 and so I would really like to see the Level 3 --

12 CHAIRMAN STETKAR: Sounds like Option 3 to  
13 me.

14 MEMBER REMPE: About the concrete example,  
15 yes. But I think again it's the letter, if I was to  
16 agree, it's a way just build on some funding that's  
17 already been allocated and expanded as the Option 3,  
18 that could be used with that example in the analysis  
19 and look at different options.

20 CHAIRMAN STETKAR: But you'd like to see,  
21 if I can paraphrase the 3a, 3b, 3c. There's one way  
22 to attack it and another way, the third way.

23 MEMBER REMPE: Yes, are any interactions  
24 where guidance would be confusing on what's the right  
25 approach. Would you have to say safety has priority

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1 over economics? And look at some concrete examples  
2 and see what happens with different types of  
3 cost/benefit evaluations.

4 CHAIRMAN SHACK: Well I'm not quite sure  
5 what you have in mind. I mean one thing I can think  
6 of doing is like with the Level 3 PRA. If I do it  
7 sort of with the existing backfit rule, I mean  
8 existing station backout rule, and then I do it over  
9 again with a new improved station blackout rule, I can  
10 compare costs and benefits.

11 MEMBER CORRADINI: That's why --

12 CHAIRMAN SHACK: In a very detailed way.

13 MEMBER CORRADINI: -- because I'm still  
14 back to the Level 3 PRA project, is a perfect way to  
15 specifically see the effects.

16 CHAIRMAN SHACK: I mean if we were doing  
17 five plants, I'd be a whole lot happier.

18 MEMBER CORRADINI: No, but --

19 MEMBER REMPE: Maybe we'll have to do --

20 MEMBER CORRADINI: -- the assumptions  
21 though you at least, at least you can see, in a  
22 practical way, possible differences. Because I'm not  
23 sure there's that much difference between two and  
24 three, if I basically redefine what a LRF is.

25 Because it seems to me the LRF is, the way

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1 you said, at least the way, I didn't mean to interrupt  
2 Joy but that's why I'm going to wait until everybody's  
3 done, but the way you said it on the record could be  
4 totally based on health and safety and still  
5 accomplish the same thing relative to economic  
6 effects.

7 CHAIRMAN SHACK: Well at the moment since  
8 we have no definition of LRF --

9 MEMBER CORRADINI: But that's the whole  
10 point.

11 CHAIRMAN SHACK: -- it's very hard to  
12 apply it. Well but it may change, supplying a  
13 definition to LRF is also a big statement because it  
14 would in fact conflicted with one of your safety  
15 goals. So that's a big decision for the Commission to  
16 make.

17 So these things all need consideration I  
18 guess is all I say at this point. I don't think any,  
19 these just haven't been thought through to enough  
20 depth. But I certainly wouldn't like to see Option 2  
21 and foreclose the further consideration that I'd like  
22 to see under Option 3.

23 MEMBER REMPE: I think what I wanted to  
24 say guys been pretty much is that I'd like a concrete  
25 example.

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1 CHAIRMAN SHACK: Sorry.

2 MEMBER REMPE: It's okay.

3 (Off record comments)

4 CHAIRMAN STETKAR: She still has the  
5 option. She'll come back at about 500.

6 MEMBER SHULTZ: I also want to express  
7 what I feel is an excellent, especially short term  
8 study, for a topic of this magnitude as performed by  
9 the staff in the last few months.

10 And the approaches that you took all  
11 within the appropriate purview of public engagement  
12 and involvement as well as very good background  
13 evaluation with what the Agency has done. I think you  
14 did find some surprises that ought to be explored more  
15 and advertised.

16 With regard to the options, I don't  
17 believe that status quo is really possible in any  
18 case. That's not where we are, it's not where we are  
19 going to go.

20 Option 2, and then looking at Option 2 and  
21 3 I would not be able to pick one or the other.  
22 Because I believe that Option 2 needs to be done. We  
23 need to enhance the consistency of the regulatory  
24 guidance analysis guidance.

25 And I would expand that to do what I think

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1 needs to be done as well under that level of activity.  
2 And that's to identify how the current considerations  
3 of economic consequences and societal risk effects,  
4 how those considerations effect our current regulatory  
5 decisions or our past regulatory decisions.

6 So we really understand how this has fit  
7 together. Because as the staff has found this is not  
8 new, this is something that has been incorporated for  
9 reasons of improved understanding or events, it  
10 becomes more important.

11 With regard to Option 3, the way it's  
12 phrased, Exploring the Merits of Potential Changes to  
13 the Regulatory Framework, those types of phrases I  
14 just can't really comprehend or put my hands around.  
15 As Joy says, examples or something that would get us  
16 into an appropriate focus on what might be done.

17 Going back to other general statements in  
18 terms of policy, NEPA says the agency must, must take  
19 a hard look at the potential and environmentally  
20 impact. So the latitude and the direction is clear,  
21 that the agency must move forward and has adopted NEPA  
22 with respect to that.

23 So I would look for something like what  
24 Bill has suggested in terms of a specific road forward  
25 and very clearly try to identify what Option 3 might

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1 be. And we do have, as we've discussed, as we've gone  
2 around the table, a number of different projects that  
3 are already being underway.

4 The other comment I would make, because it  
5 came up during the discussion, we talk about, well if  
6 we move forward on something like this we would have  
7 to do site specific evaluations. Would we do that?

8 I don't see how you can avoid that. I  
9 really don't. I don't know how you do a generic  
10 evaluation of this type without getting into a site  
11 specific evaluation or at least having a methodology  
12 that allows that.

13 MEMBER CORRADINI: Mr. Chairman, can I go  
14 back since we write all these letters? Didn't we  
15 write a letter, because staff came into us with what  
16 an LRF is. And we had, or for something to that  
17 effect. If you remember correctly back --

18 MEMBER BLEY: We didn't write a letter on  
19 that, that was a subcommittee meeting for information  
20 --

21 MEMBER CORRADINI: Was that a status  
22 report?

23 MEMBER BLEY: Right.

24 CHAIRMAN SHACK: Yes.

25 MEMBER CORRADINI: Okay. So I guess I

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1 want to connect these because I don't want to reinvent  
2 this. It's seems to me that if we don't really know  
3 what an LRF is from the staff, how can we do Option 3?  
4 It makes no sense.

5 Is an LRF essentially to cite 10 CFR 100  
6 definition of 25 rem whole body or is it ten times  
7 less then that or is it essentially what gets me to  
8 fail an integrative containment leak rate test? It's  
9 seems to me that until we do that, there's no point in  
10 getting high and mighty about an Option 3. Because we  
11 don't even know what we're computing.

12 CHAIRMAN SHACK: No, Option 3 doesn't  
13 require an LRF. That's a possibility if you do it  
14 like that, but it's strictly not.

15 MEMBER CORRADINI: But if I just strictly  
16 stick, but I'm linking the two. If I strictly stick  
17 with the health and safety as my main objective and I  
18 look at that carefully, we might decide that, one  
19 might decide, the staff might decide that an LRF with  
20 some margin might satisfy things that on essentially  
21 on offsite economic consequences perfectly fine. And  
22 what we focused on is still what we should be focusing  
23 on. Which is the health and safety.

24 I mean I go back to, Dr. Powers is not  
25 here but I remember when we had, it was subcommittee,

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1 I thought it was full committee. We had this  
2 subcommittee, Dana's point was that he would not think  
3 10 CFR 100 definitions of an LRF is appropriate.

4 Rather it's essentially what it takes me  
5 past, essentially a large release that would fill  
6 integrative container leak rate. If I just decide  
7 that, that might mean the dose release from there is  
8 so small that I don't have any kind of consequences of  
9 site.

10 CHAIRMAN SHACK: That's you know --

11 MEMBER CORRADINI: I figured that would  
12 cause Charlie to go out of his chair.

13 MR. ADER: I swerved long enough. I hate  
14 to interject to this.

15 CHAIRMAN STETKAR: Charlie?

16 MR. ADER: Charles Ader.

17 CHAIRMAN STETKAR: Thanks.

18 MR. ADER: Office of New Reactors. The  
19 briefing you were talking about, the staff effort to  
20 define an LRF before, Large Release Frequency, was  
21 tied to the safety goals and was tied to the early  
22 health effects. So in essence it was a large early  
23 release before that term came into play. That was the  
24 challenge.

25 If you change the game and say I want to

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1 define a, I'd rather use the term late large release  
2 just not to confuse the history, then you have the  
3 question, what's it going based on? And you're going  
4 to get back into Option 3 of economic consequences.

5 CHAIRMAN STETKAR: Oh, thank you.

6 MR. ADER: The other was, you had one  
7 tenth of one percent had actuarial data on health  
8 effects, so you could do a correlation of what size  
9 release would give you an early fatality.

10 CHAIRMAN STETKAR: Bill mentioned that  
11 other countries have implemented release limits,  
12 terabecquerels. How they derive those I have no idea.  
13 I mean you know that's, I would hope that they have  
14 some rationale.

15 MR. ADER: But I --

16 CHAIRMAN SHACK: You would assume later  
17 you have to come with a rationale for whatever value  
18 you pick. And if you pick it based on health effects  
19 you get one answer, if you pick it based on land  
20 contamination you get another.

21 MEMBER CORRADINI: But this was the  
22 subcommittee meeting, I'm just trying to reflect back.  
23 It would be nice if we're consistent. It seems to me  
24 that, that was the subcommittee meeting where I'm  
25 pretty sure it was one of your staff that said that he

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1 used Finland as the example case. And I can't  
2 remember what the Finns have as their basis.

3 MR. ADER: The new reactors came in, each  
4 application came in with their own definition. But  
5 they were not tying it to where staff was looking  
6 10/15 years ago. We were trying to define a large  
7 release frequency as a lower tier safety goal  
8 consistent with the safety goal, but not so  
9 conservative it be de facto the new safety goal.

10 So we were tying it to the large early  
11 release. If you go back to the various papers it went  
12 back and forth. We would propose the definition, a  
13 release in curies would result in a lot of more early  
14 fatalities.

15 And that was fairly consistent through  
16 those papers. It was really an LERF by another name.

17 CHAIRMAN STETKAR: Oh okay.

18 MR. ADER: So that's the confusion.  
19 Because now you people talk about large release  
20 frequency. Plain English would say it's something  
21 that would come exposed in early in a light.

22 But the history, that was what I wanted to  
23 try and clarify the history of why we couldn't define  
24 it before. It was an over construing problem. We  
25 were told to define what at  $10^{-6}$  that didn't do a de

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1 facto new safety goal. And large early release at 10  
2 <sup>6</sup> is a de facto new safety goal.

3 MEMBER BLEY: And some of the confusion  
4 you heard at that meeting was brought by folks from  
5 industry, who went back and used an unfortunate  
6 sentence in NUREG-1150 that also bound them into  
7 confusion about LRF. Which you really wouldn't want  
8 to be stuck with. So I don't think it's that hard of  
9 thing to deal with in the future.

10 CHAIRMAN STETKAR: Dennis, did you have  
11 something else?

12 MEMBER BLEY: No I just wanted to slip  
13 that in.

14 CHAIRMAN STETKAR: Now I guess I don't  
15 think I personally have anything to add to the  
16 discussion. Just for the record, I tend to lean  
17 towards Bill's notion. I personally support going  
18 forward with Option 3, whatever that means.

19 I believe that this issue cannot be  
20 divorced from either the decisions regarding near term  
21 task force recommendation 1 or Commissioner  
22 Apostolakis' task force on revising the framework.  
23 Because the way you treat economic consequences,  
24 whether it's in the context of a backfit rule type of  
25 calculation or whether it's treated more at a higher

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1 level in then context of some de facto adequate  
2 protection notion, could substantially effect how the  
3 rest of those issues are resolved.

4 I don't think we can necessarily divorce  
5 or should divorce both of those. With that, any other  
6 comments, questions from members or anyone else in the  
7 room?

8 MEMBER ARMIJO: Yes, sir.

9 CHAIRMAN STETKAR: Go ahead.

10 MEMBER ARMIJO: I just want to repeat,  
11 which ever way the staff goes, which ever those  
12 options they finally recommend, if they would just  
13 make it clear what would we do differently as  
14 regulators or as a power plant operator to achieve  
15 what it's they're trying to achieve?

16 CONSULTANT WALLIS: What is one thing that  
17 would denote that?

18 MEMBER ARMIJO: I don't know. I like to  
19 know what the benefits are.

20 CHAIRMAN STETKAR: Anything else? If not,  
21 thank you we're adjourned.

22 (Whereupon, the above-entitled matter was  
23 adjourned at 5:05 p.m.)  
24  
25

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## **Consideration of Economic Consequences within the NRC's Regulatory Framework**

Alysia Bone, RES/DRA  
ACRS Joint Subcommittee Briefing  
October 2, 2012



## **PURPOSE AND AGENDA**

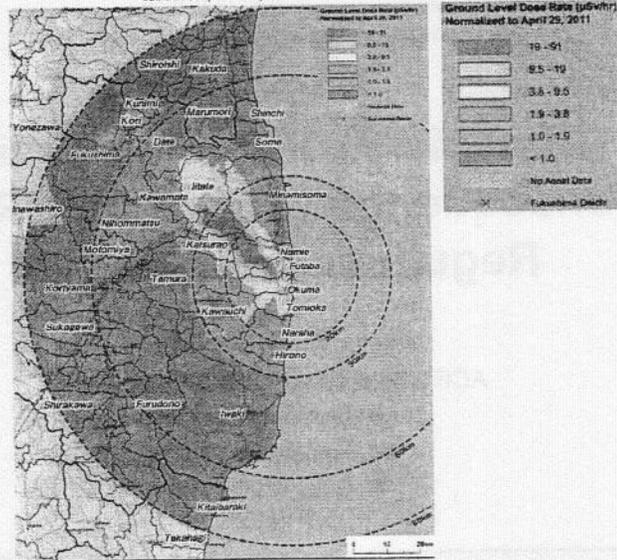
- To provide a briefing on SECY-12-0110 and seek ACRS feedback
- Topics:
  - Tasking and status
  - NRC authority to consider property damage
  - Property damage considerations in NRC analyses
  - SECY-12-0110 options and recommendation
  - Public meetings and Commission feedback



# MOTIVATION FOR SECY

## Aerial Measuring Results

Joint US / Japan Survey Data



3



# STATUS

- Staff received tasking in early April.
  - Due date of August 7, 2012 to OEDO
- Agency-wide working group active.
- Staff held public meetings in May and Aug 2012.
- Staff submitted SECY-12-0110, "Consideration of Economic Consequences within the U.S. Nuclear Regulatory Commission's Regulatory Framework" to the Commission on August 14.
- Commission briefing held September 11, 2012.

4



## TASKING

- Provide a vote Commission paper, with options, to address the following policy question:
  - *To what extent, if any, should NRC's regulatory framework modify consideration of economic consequences of the unintended release of licensed nuclear materials to the environment?*
  - Tasking included 10 detailed questions/subtopics to be addressed

5



## INTENTIONAL RELEASES

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  - Radiological dispersal device (RDD)
  - Any deliberate sabotage event
- The Commission has given direction in this area separately.
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  - NRC formed an informal working group to conduct assessment
  - Conclusions may be presented in the next Radiation Source Protection and Security Task Force report, due August 2014

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## SAFETY GOAL POLICY STATEMENT

- Questions were raised regarding the relationship of the safety goals with accidents such as Fukushima.
  - Retrospective comparisons of operational events to safety goals can be misleading.
  - Underlying concern if regulatory framework adequately addresses economic impacts of severe accidents.

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## SAFETY GOAL POLICY STATEMENT (cont.)

- Statement focuses on the risk to the public from nuclear plant operation to broadly define an acceptable level of radiological risk.
  - Offsite impacts were considered during development but ultimately not directly addressed.
  - Defines acceptable risks, not acceptable events.
- The policy statement includes 2 qualitative safety goals supported by 2 quantitative objectives.

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## QUALITATIVE SAFETY GOALS

- Individual members of the public should be provided a level of protection from consequences of nuclear power plant operation such that individuals bear no significant additional risk to life and health.
- Societal risks to life and health from nuclear power plant operation should be comparable to or less than the risks of generating electricity by viable competing technologies and should not be a significant addition to other societal risks.

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## QUANTITATIVE OBJECTIVES

- The risk to the population in the area near a nuclear power plant of cancer fatalities (i.e., latent fatalities) that might result from nuclear power plant operation should not exceed one tenth of one percent of the sum of cancer fatality risks resulting from all other causes.
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## SAFETY GOAL POLICY STATEMENT (cont.)

- Staff has considered several modifications to the safety goal policy (1997-2001).
  - Elevating core damage frequency to fundamental goal
  - Treatment of uncertainty
  - Defense in depth
  - Land contamination and overall societal impact
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11



## LEGAL AUTHORITY

- NRC requirements relating to adequate protection concern radiological health and safety and common defense and security.
  - NRC must find reasonable assurance of adequate protection before it can issue a license or amend an existing license.
  - Adequate protection is a safety standard.
- Distinct from adequate protection, the NRC has authority under the Atomic Energy Act to “minimize danger” to property.
  - Offsite Property Damage (OPD) can include:
    - Costs of destroyed or damaged property,
    - Costs of relocation from real property, and
    - Loss of business revenues

12



## OPD CONSIDERATIONS IN NRC ANALYSES

- Regulatory Analysis: Structured analysis of proposed requirements, estimating benefits and costs.
- Backfit Analysis: When determining if the proposed backfit is cost-justified.
- National Environmental Policy Act (NEPA) Analyses: Depending on the nature of the proposed regulatory or licensing action, the NEPA analysis may include consideration of potential damage to offsite property.

13



## REGULATORY ANALYSIS

- What is purpose of regulatory analysis (RA)?
  - To identify and evaluate the likely consequences of rules.
  - Decision tool for policymakers.
  - Rationale for action.
  - More transparent of agency decision-making.
- When is RA used?
  - Per Office of Management and Budget Circular A-4, a regulatory analysis is a tool regulatory agencies use to anticipate and evaluate the likely consequences of rules.

14



## BACKFITTING AND ISSUE FINALITY

- Purpose of NRC backfitting and issue finality provisions.
  - Regulatory stability.
  - Reasoned and informed agency decision-making.
  - Transparency of agency decision-making.
- When must NRC address backfitting and issue finality?
  - If proposed NRC action falls within intended scope of backfitting and issue finality.
  - If proposed NRC action constitutes a backfit or is subject to issue finality.
  - If no exceptions to preparation of a backfit analysis apply.

### Regulatory Requirements:

10 CFR 50.109	Operating Reactors
10 CFR 52	New Reactors
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10 CFR 72.62	Independent Spent Fuel Storage Installation
10 CFR 76.76	Gaseous Diffusion Plants

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## BACKFITTING: FOUR STEP PROCESS

- First Step: Is the NRC action subject to the backfit rule?
- Second Step: Is there a backfit?
- Third Step: Do one of the exceptions in 50.109(a)(4) apply?
  - Compliance,
  - Necessary for adequate protection, or
  - Defining or redefining what is needed for adequate protection.

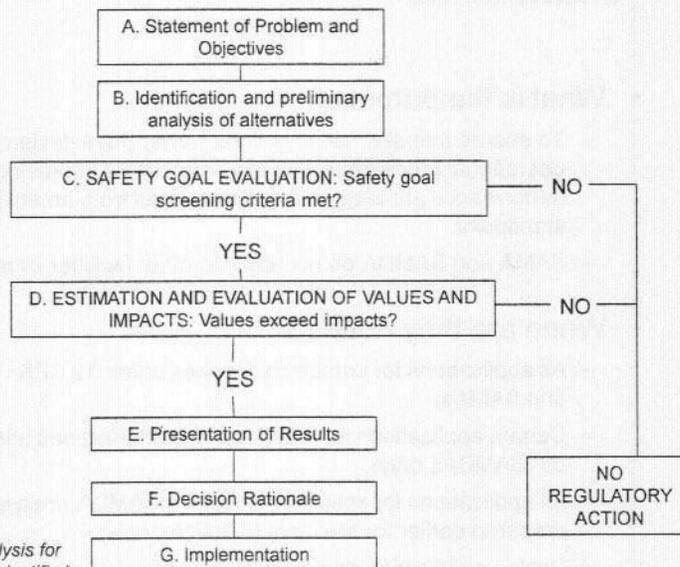
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## BACKFITTING (cont.)

- Fourth Step, Part 1: Does the backfit provide substantial increase in protection to public health and safety or common defense and security?
- Fourth Step, Part 2: Is the cost of the backfit justified in light of the increase in protection?
  - The RA methodology and specific values and parameters are used to perform a backfit cost-benefit determination.

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## BACKFITTING



NUREG/BR-0058, Rev. 4  
Figure 3.1 Regulatory Analysis for Nuclear Power Plant Cost-Justified Substantial Safety Enhancements

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## NEPA

- Requires a Federal agency to analyze the potential environmental impacts of its proposed action and any reasonable alternatives to proposed action.
- Procedural statute—does not mandate particular outcome.
- Under NEPA, agency must take a “hard look” at the potential environmental impacts.
- NRC performs an environmental impact statement for new reactors and operating reactor license renewals.
- Severe Accident Mitigation Alternatives (SAMA) and Severe Accident Mitigation Design Alternatives (SAMDA).

**Regulatory Requirement:**

NEPA implementing regulations are in 10 CFR Part 51.

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## SAMAs & SAMDAs

- What is the purpose?
  - To ensure that alternative nuclear power plant design features and operational procedures with the potential for improving severe accident performance are identified and evaluated from an environmental standpoint.
  - SAMA and SAMDA do not apply to other facilities or materials licenses.
- When are they needed?
  - All applications for combined licenses under 10 CFR Part 52 (SAMDAs and SAMAs).
  - Certain applications for limited work authorizations under 10 CFR Part 50 (SAMDAs only).
  - All applications for license renewal if a SAMDA analysis was not prepared earlier for the plant (SAMDAs only).
  - Design certification rules (SAMDAs only).

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## **GUIDANCE AND TOOLS**

- Regulatory Analysis Guidelines, NUREG/BR-0058, Rev. 4 (2004).
- Regulatory Analysis Technical Evaluation Handbook, NUREG/BR-0184 (1997).
- Reassessment of NRC's Dollar per Person-Rem Conversion Factor Policy, NUREG-1530 (1995).
- Backfitting Guidelines, NUREG-1409 (1990).
- MACCS2

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## **NUREG/BR-0184**

- Some of the attributes considered in assessing the cost and benefits to public health or averted property damage resulting from a proposed regulatory action include:
  - Public Health (accident and routine)
  - Occupational Health (accident and routine)
  - Offsite Property
  - Onsite Property
  - Industry Implementation and Operation
  - Replacement Power

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## **ONGOING INITIATIVES: \$/PERSON-REM**

- Factor used to capture dollar value of health detriment resulting from radiation exposure (NUREG-1530).
  - Determined by Value of Statistical Life and a risk-cancer factor
- Original factor of \$1000/person-rem included offsite property damage.
- Updated in 1995 to \$2000 and no longer includes offsite property damage.
- Ongoing initiative to update \$/person-rem conversion factor policy.

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## **ONGOING INITIATIVES: REPLACEMENT POWER**

- Replacement power costs can be either long-term or short-term.
- Estimates for plant-specific replacement energy costs are in NUREG/CR-6080 (1993) and NUREG/CR-4012 (1997).
- Many changes have occurred in the electrical generation and transmission industries since NUREG/CRs published.
- Ongoing initiative to update estimates.

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## EXTERNAL ORGANIZATIONS

- IAEA and NEA
  - Provide little direct guidance to consider economic consequences.
- ASME
  - Formed Presidential Task Force on Response to Japan Nuclear Power Plant Events, which has called for a new “safety construct” using an “all-risk approach.”
- Other government agencies
  - EPA is a leader in developing and implementing cost-benefit guidance.

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## CONCLUSIONS FROM STAFF REVIEW

- Staff has flexibility to consider offsite property damage.
- Staff recommended enhanced coordination to increase staff efficiency.
- Staff identified areas where framework could be altered if Commission so desired.

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## SECY-12-0110 OPTIONS

- Option 1: Status Quo
- Option 2: Enhanced Consistency of Regulatory Analysis Guidance
- Option 3: Exploring the Merits of Potential Changes to the Regulatory Framework

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## OPTION 1

- **Pros**
  - Maintains regulatory stability.
  - Requires minimal additional resources.
- **Cons**
  - May not accomplish consistency across programs.
  - May not be responsive to possible stakeholder concerns.
  - May result in inefficiency.

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## OPTION 2

- Pros
  - Systematic approach to updating guidance and addressing agency-level needs.
  - More comprehensive guidance for methods and parameters.
  - More harmonized regulatory analysis guidance.
- Cons
  - Would require more resources than Option 1.
  - May not be responsive to possible stakeholder concerns.

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## OPTION 3

- Pros
  - Provide a Commission statement on the importance of land contamination.
  - Allows for stakeholder input to proposed revisions.
- Cons
  - Could increase regulatory uncertainty.
  - Increased complexity.
  - Would require substantial staff resources.

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## RECOMMENDATION

- Staff recommends Option 2.
  - Would enhance the currency and consistency of the existing framework.
  - Would be done more systematically.
  - Would provide more comprehensive guidance.

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## PUBLIC MEETING FEEDBACK

- May 24, 2012 public meeting
  - Strong stakeholder interest
  - Limited specific feedback
- August 29, 2012 public meeting
  - Continued strong stakeholder interest
  - Public expressed support for Option 3 and a desire for greater transparency on how offsite property damage is considered in analyses

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## WRITTEN PUBLIC FEEDBACK

- Dr. Richard Denning and Dr. Tom Kress
- Pilgrim Watch, Mary Lampert
- Dr. Anthony Apostolides and Ipatia K. Apostolides
- Dr. Vojin Joksimovich
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## PATH FORWARD

- September 11, 2012 Meeting SRM
- ACRS full committee meeting in November

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# **Consideration of Economic Consequences within the NRC's Regulatory Framework**

Alysia Bone, RES/DRA

ACRS Joint Subcommittee Briefing

October 2, 2012

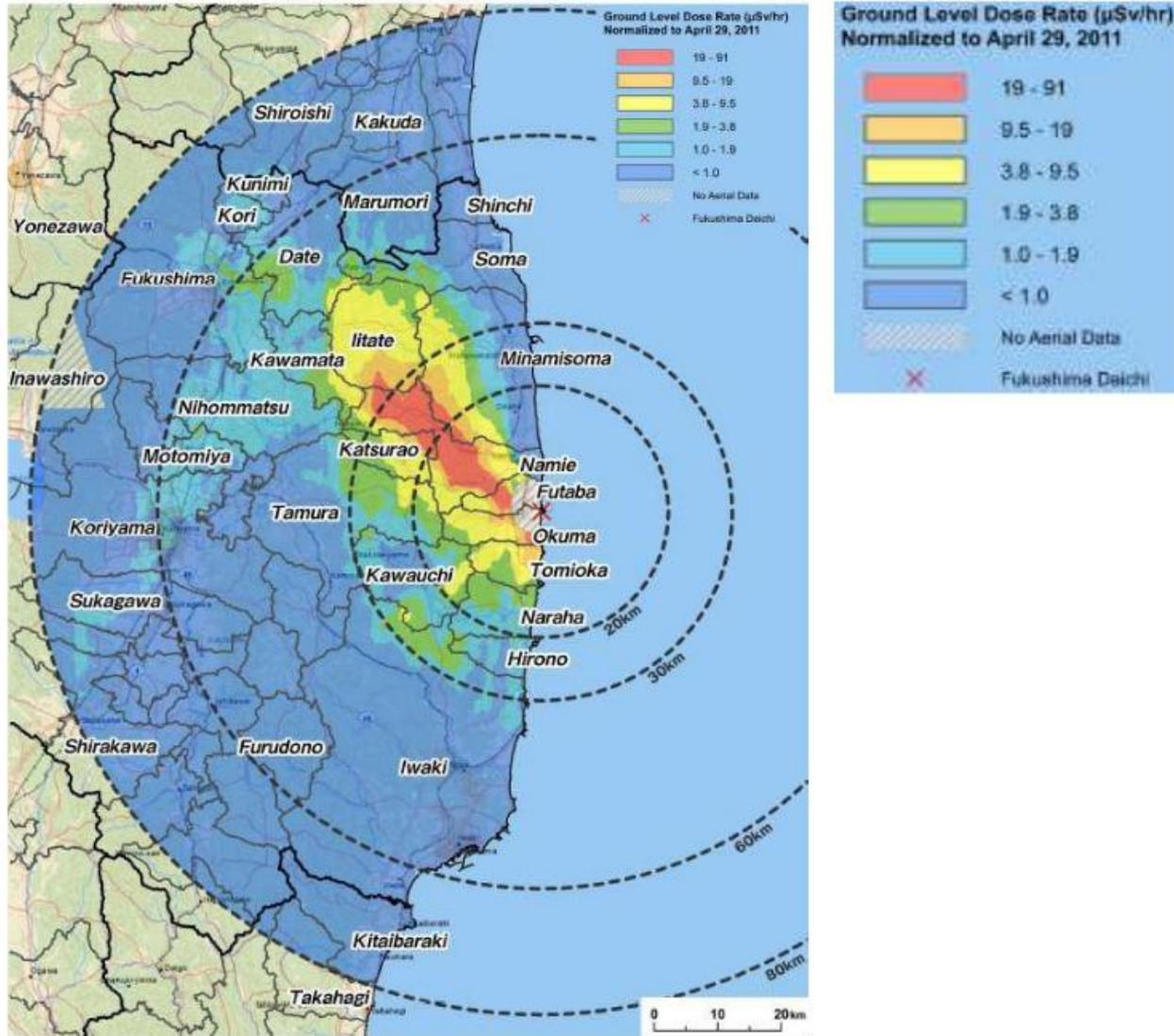
# PURPOSE AND AGENDA

- To provide a briefing on SECY-12-0110 and seek ACRS feedback
- Topics:
  - Tasking and status
  - NRC authority to consider property damage
  - Property damage considerations in NRC analyses
  - SECY-12-0110 options and recommendation
  - Public meetings and Commission feedback

# MOTIVATION FOR SECY

## Aerial Measuring Results

Joint US / Japan Survey Data



# STATUS

- Staff received tasking in early April.
  - Due date of August 7, 2012 to OEDO
- Agency-wide working group active.
- Staff held public meetings in May and Aug 2012.
- Staff submitted SECY-12-0110, “Consideration of Economic Consequences within the U.S. Nuclear Regulatory Commission’s Regulatory Framework” to the Commission on August 14.
- Commission briefing held September 11, 2012.

# TASKING

- Provide a vote Commission paper, with options, to address the following policy question:
  - *To what extent, if any, should NRC’s regulatory framework modify consideration of economic consequences of the unintended release of licensed nuclear materials to the environment?*
  - Tasking included 10 detailed questions/subtopics to be addressed

# INTENTIONAL RELEASES

- Intentional releases are out of scope of SECY-12-0110.
  - Radiological exposure device (RED)
  - Radiological dispersal device (RDD)
  - Any deliberate sabotage event
- The Commission has given direction in this area separately.
- In 2010, Radiation Source Protection and Security Task Force recommended that Federal agencies reevaluate strategies to protect against an RED or RDD attack.
  - NRC formed an informal working group to conduct assessment
  - Conclusions may be presented in the next Radiation Source Protection and Security Task Force report, due August 2014

# **SAFETY GOAL POLICY STATEMENT**

- Questions were raised regarding the relationship of the safety goals with accidents such as Fukushima.
  - Retrospective comparisons of operational events to safety goals can be misleading.
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# **SAFETY GOAL POLICY STATEMENT (cont.)**

- Statement focuses on the risk to the public from nuclear plant operation to broadly define an acceptable level of radiological risk.
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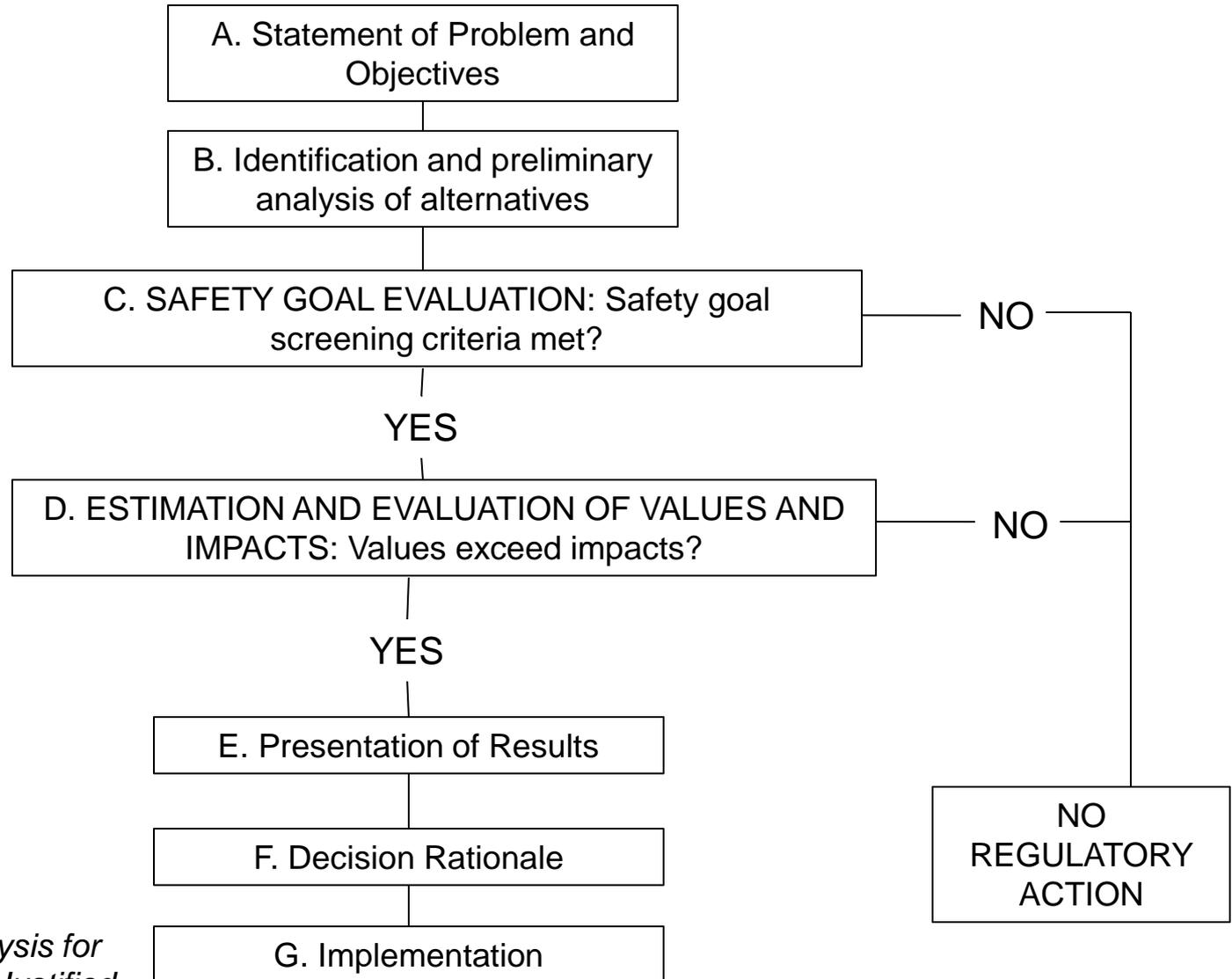
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- **Cons**
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