COMMITTEE WORKSHOP

BEFORE THE

CALIFORNIA ENERGY RESOURCES CONSERVATION

AND DEVELOPMENT COMMISSION

In the Matter of:	)	
	)	
Application for Certification	)	Docket No.
AES Huntington Beach Generating	)	00-AFC-13C
Station Retool Project	)	
_____	)	

HUNTINGTON BEACH CITY HALL

COUNCIL CHAMBERS

2000 MAIN STREET

HUNTINGTON BEACH, CALIFORNIA

TUESDAY, JULY 25, 2006

10:00 A.M.

Reported by:
Troy Ray
Contract No. 170-04-001

COMMITTEE MEMBERS PRESENT

John L. Geesman, Presiding Member

Jeffrey Byron, Associate Member

STAFF and CONSULTANTS PRESENT

Paul Kramer, Staff Counsel

Joanna Reinhardt

Roger Johnson

Noel Davis, Consultant

Pete Raimondi, Consultant

APPLICANT

Rick Rothman, Attorney

Eric Pendergraft
Paul Hurt
AES Huntington Beach, LLC

David Bailey, Consultant
EPRI Solutions, Inc.

John Steinbeck, Consultant
Tenera Environmental

Shane Beck, Consultant
MBC

ALSO PRESENT

Tom Luster
California Coastal Commission

Ken Theisen
Santa Ana Regional Water Quality Control Board

ALSO PRESENT

Tim Geddes

Joe Geever
Surfrider Foundation

Conner Erbis (phonetic)
Southern California Watershed Alliance
Desal Response Group

Debbie Cook

I N D E X

P R O C E E D I N G S

10:00 a.m.

PRESIDING MEMBER GEESMAN: This is a meeting of the California Energy Commission's Facility Siting Committee; it's a workshop designed to discuss the recently completed report on impingement and entrainment associated with the AES project here in Huntington Beach.

I'm John Geesman, the Energy Commission's Presiding Member of its Facility Siting Committee. Next to me is our newest Commissioner, Commissioner Jeff Byron.

ASSOCIATE MEMBER BYRON: Good morning.

PRESIDING MEMBER GEESMAN: Neither of us were on the Commission when the AES facility was originally licensed. The Energy Commission, as our notice makes quite clear, this workshop is to gather information. Commissioner Byron and I will ultimately be called upon to make a recommendation to the full Commission.

I want to assure everyone that that recommendation will be based on the evidence developed in our docket, the written report, the presentations here today and written comments filed with the full Commission.

The agenda we're going to follow I believe has been distributed. First we're going to have a --

(Teleconference System Interruption.)

PRESIDING MEMBER GEESMAN: First we're going to have a presentation from the Energy Commission Staff. Then we're going to have a presentation from the project owner. And then we'll take comments from the public.

Commissioner Byron, anything that you want to say?

ASSOCIATE MEMBER BYRON: No, John, thanks. I appreciate it, thank you very much. Just glad to be here this morning.

PRESIDING MEMBER GEESMAN: Okay. Why don't we start with introductions along the table. Mr. Kramer, I recognize you as the staff counsel. Why don't you lead off.

MR. KRAMER: Okay. I'm Paul Kramer, Staff Counsel, advising the staff on this matter. I also happen to have been the attorney that advised the staff in the original permitting case, just for your information.

Joanna Reinhardt is trying to make the phone behave.

(Laughter.)

MR. KRAMER: She's one of our staff biologists. And I'll let our other witnesses sitting behind me -- these are, for the most part, members of the technical review team you'll hear about -- introduce themselves. Start with Pete.

DR. RAIMONDI: My name is Pete Raimondi. I'm a Professor (inaudible) with the Energy Commission.

DR. DAVIS: I'm Noel Davis from Chambers Group and I'm a consultant to the Energy Commission.

MR. LUSTER: Tom Luster with the California Coastal Commission.

MR. THEISEN: Ken Theisen with the Santa Ana Regional Water Quality Control Board.

MR. KRAMER: And Roger Johnson, the Siting Program Manager, is in the audience, as well.

PRESIDING MEMBER GEESMAN: Okay, why don't we then gather introductions from the project owner. And I'm afraid I don't recognize any of you, so please introduce yourselves.

MR. PENDERGRAFT: My name's Eric Pendergraft; I manage the AES facility.

MR. BAILEY: My name's Dave Bailey; I'm with EPRI Solutions, and I'm a consultant to AES.

MR. ROTHMAN: Rick Rothman, Counsel to AES.

MR. HURT: Paul Hurt, Environmental Manager for AES Huntington Beach.

MR. STEINBECK: John Steinbeck, Tenera Environmental; I'm a consultant to AES Huntington Beach and also a member of the research team that worked on the study.

MR. BECK: I'm Shane Beck with MBC, consultant to AES Huntington Beach; I worked on the study as part of the working group.

PRESIDING MEMBER GEESMAN: Okay. Thank you very much. Mr. Kramer, why don't we proceed then with the staff presentation.

MR. KRAMER: Okay, and that will be a combination of Dr. Davis and Dr. Raimondi.

DR. DAVIS: Is the mike on here?

PRESIDING MEMBER GEESMAN: Yes, it is.

(Teleconference System Interruption.)

(Off the record.)

DR. DAVIS: So the Huntington Beach Generation Station, which is just down the coast here, has four power units, Units 1, 2, 3 and 4.

And they use seawater for cooling.

The intake of ocean water into the power plant causes the marine organisms that live in the water to be subject to two kinds of impacts. One kind of impact is impingement and that affects the larger organisms that are drawn into the water, become trapped in the holding tank, that are too big to pass through the screens. And they eventually die and get stuck on the screens. That's impingement.

The other kind of impact is entrainment. And that refers to the passing of all the small organisms that are small enough to pass through the screen. They're drawn in with the cooling water. They go through the power plant, and then they're discharged, mostly dead, with the heated water.

So just to give some background about how we came to be here. In 1995 Units 3 and 4 were retired. And then in 2000, AES, the current operator of the plant, filed an application for certification to the Energy Commission to retool and restart Units 3 and 4.

Energy Commission Staff was charged with the responsibility to identify and mitigate for

impacts under the California Environmental Quality Act, CEQA. There's never been a study of entrainment at the Huntington Beach Generating Station, so without any information on the magnitude of entrainment, staff was unable to make a finding about the impacts and identify appropriate mitigation.

Now, under most circumstances, and in other siting cases, an entrainment study has been done before certification. But in this case the application for retooling of Units 3 and 4 occurred during the energy crisis, when there was a large push to get more power operating to meet California's power needs.

And therefore in 2001 the Energy Commission granted an expedited certification to AES to restart Units 3 and 4. And with the certification there were conditions of certification that applied to impingement and entrainment.

And these were Bio-4, which required AES to fund a study of impingement and entrainment; and that's the study that we're talking about today. That study was done and the results have been made available.

Then Bio-5 was if the impacts were determined to be significant, to identify appropriate mitigation in the form of restoration of coastal habitat.

This is the Huntington Beach Generating Station. I'm just going to say a few brief words about the marine environment around the generating station. The beach in front of the generating station is sandy beach habitat. It's used by a variety of species including the federal threatened western snowy plover.

The intake and the outfall lie in shallow subtidal sand bottom habitat offshore. I believe the intake is in about 27 feet of water. And the outfall's in about 22 feet of water.

And the waters around the intake and the outfall are used for foraging by a variety of birds, including the endangered California least tern, which has a very large breeding colony just downcoast of the power plant by the Santa Ana River mouth. And also the endangered California brown pelican that doesn't breed locally, but that's very common in local waters.

The study was overseen and designed by a technical working group or biological resources

research team that included the Energy Commission Staff and its consultants, the applicant, AES, and its consultants, the California Coastal Commission, the California Department of Fish and Game, the National Marine Fisheries Service, the Santa Ana Regional Water Quality Control Board and the U.S. Fish and Wildlife Service.

And this working group provided input into the sampling design and the methods for the impact analysis; approved the final study plan; reviewed progress reports; and approved the final report, which was submitted in April of 2005.

I'm now going to introduce Dr. Pete Raimondi, who is going to explain the study, the technical aspects of the study and the models that were used.

DR. RAIMONDI: If you have any questions just interrupt me, okay? So what I'm going to talk about is the study design and the way -- one approach to estimating the impacts due to entrainment, in particular. A little bit about impingement, but especially about entrainment.

Up on the screen here is a diagram of the intake and outfall at Huntington Beach. There's intake that comes in from about 1500 feet

offshore. It's in usually about 27 feet of water. The outfall is this little curved structure that comes out, and it's in about 22 feet of water. That's where the discharge of the warmer water comes.

Next slide. I want to give you some general conclusions first. So, the first general conclusion is, in my opinion, and I've worked on a whole bunch of these cases, and so this comes with some experience, is that the sampling design, the methodology, the analyses are consistent with -- I know this isn't a 316(b) determination, but that really is the state of the art right now, and so it's consistent with recent 316(b) determinations and are adequate for the determination of entrainment rates.

And I want to say a little bit more to that. That work that was done by (indiscernible), especially on these models is really state of the art, and we have no reservations about the work that was done in estimating these impacts.

PRESIDING MEMBER GEESMAN: When you say recent 316(b) determinations, could you elaborate a little bit more on what you mean by recent and what you mean by determinations?

DR. RAIMONDI: Well, -- that there are, when you're permitting a power plant under --

PRESIDING MEMBER GEESMAN: No, assume that we know the legal --

DR. RAIMONDI: Okay.

PRESIDING MEMBER GEESMAN: -- environment, but what's recent?

DR. RAIMONDI: Within the last five to seven years.

PRESIDING MEMBER GEESMAN: Okay. And that's federally, not simply restricted to California, 316(b) determinations?

DR. RAIMONDI: I can't speak to that. I've been only working on California cases. But there has been an overview that was done by Stratus that's out of Boulder, Colorado. And what they had proposed to NEPA in support of their rewriting of the 316(b) rules was consistent with what is being done in California recently.

PRESIDING MEMBER GEESMAN: Okay.

DR. RAIMONDI: The entrainment assessment was conducted for a period of one year. That's very typical. In some ways it's limiting, but it's very typical of all the recent determinations with the exception of Diablo

Canyon. Other ones have been for a year period.

Of the three approaches used to estimate the impact, one model, I've abbreviated as ETM, it's short for Empirical Transport Model, is the most robust in my opinion, to a sampling period so short. And you'll see evidence of this later on.

For reasons indicated above and others discussed below, only the empirical transport estimate is valuable, in my opinion, again, for estimating entrainment impacts. And you'll see clear-cut reasons why this is true.

Impingement rates, we're not going to talk very much about this, but impingement rates were consistent with expectations for offshore intake. They're relatively high compared to onshore, low velocity intakes. This is an offshore fairly high velocity intake. But it's an order of magnitude less than, say, SONGS. And, so, you know, SONGS is the bad standard in terms of impingement. This is far less than that, but higher than it would be were it an onshore intake, which would have all sorts of other problems associated with it.

I want to just briefly overview what goes on in a power plant with respect to thermal,

which we're not talking about impingement and entrainment. What normally happens is either in offshore or onshore intake, fish and other organisms are generally entrained in the cool water that's used to cool the plant.

And they come in almost always to the forebay where there's a traveling screen apparatus that filters out most of the big stuff. And the big stuff in this case is about three-eighths of an inch and larger. There's screens that have a hole size about three-eighths of an inch.

Those things that are impinged, the big things, are then deposited typically into trash, though not always. There are some power plants that have return elevators that return impinged, but not dead, organisms back to the ocean. SONGS is an example of that. But at Huntington Beach there isn't a return elevator for impingement.

The things that go through it -- and so they're dead. The things that go through the traveling screens are typically larval forms, or the planktonic forms, because they're less than three-eighths of an inch. And they go into the plant.

And there, through a mixture of heat and

velocity, the assumption is that they are all killed. Now, there have been some reports in some studies that have suggested that that may not be true, that not all things get killed. But an underlying assumption of this study and all recent studies has been that there's 100 percent through-plant mortality. That was an understanding that was accepted when we started this procedure, and has been the accepted practice throughout all recent 316(b)s in particular.

Then the warm water exits the environment; typically is -- permitted level is about 20 degrees. I think at Huntington Beach the average is about 18 degrees above ambient.

Next slide. Again, this is a schematic of the Huntington Beach Generating Station. The intake is here; it comes into the forebay where the traveling screens occur.

Next slide. Here are some characteristics of Units 3 and 4 at Huntington Beach. And about 176,000 gallons per minute are withdrawn, 253 million gallons per day. The intake velocity is pretty high, and that's mainly because there's a velocity cap on the intake. It's between two and four feet per second on

average, which is considerably higher than a lot of other power plants. The screen opening is three-eighths of an inch. The number of pumps is four. Power capacity is about 225 megawatts per unit.

Here are some comparisons to recent power plants that have been evaluated, in terms of withdrawal, El Segundo Units 3 and 4 about 276,000; Moss Landing 250,000 gallons. The intake velocity is much higher than at those two plants. The stream measures about the same, and the power capacity is lower than at the other two plants, and particularly lower than at Moss Landing, which just repowered. Those are brand new units there.

So, we, not we, but Tenera and MBC estimated impingement rates, and this is the only slide that I'm going to talk about with respect to impingement. This is the impingement by number. Just a couple of things are interesting about this.

One is that the endangered species out there in terms of impingement is the same as it is, say, at most of the central California coastal power plants. That's the queenfish. They are roughly 7 percent by number, and about 50 percent

by weight. There are some big things like torpedo rays, they're very rare, but really big. And so they add up to a lot of weight.

And these values here and the distribution of these things is very consistent with other power plants along the coast here in terms of the makeup of the species there. They're croakers, primarily you've got queenfish, white croaker. Then you've got surf perch, anchovies, which are schooling fish and they sometimes get sucked in in huge numbers; and then they get rare from there.

And so this is the impingement rates. Again, they're relatively high compared to other power plants, but low compared to some of the offshore intake power plants like SONGS. And we're not going to discuss impingement any longer.

Now we want to talk about entrainment, which is the big issue here. Next slide. This is the study grid. Going to come back to this in a couple of slides. But one that's indicated in the red, and this comes right out of the report, is the location where entrainment was estimated. And entrainment is the number of larvae that come into the plant, that are taken into the plant, itself.

And so that's got an E there. So that's roughly in the vicinity of the intake structure for Huntington Beach.

Next slide. And the way you do it, it's very simple to do this stuff. You calculate the volume of the water that enters the plant per year. And that is generally based upon the pump capacities. But sometimes it's actually measured.

Then you measure the concentration of larvae that is in the water column that would be taken into the plant. You multiply them together and you get the number of larvae that are entrained per year. So it's just the concentration times the volume gives you the total number of larvae. And that gives a reasonable estimation of the things that are taken in.

Now, that's a simplification. What actually happens is these -- MBC's collecting these things. They take them back. They have to sort through them. This is a ton of work. And so that's one of the reasons why there is some variance associated with these estimates, is there's so much work involved in estimating these things. Because we want to take them to species.

And, again, they've done a really good

job of this part of the study. They've counted them; they've taken the species. And so we have, I think, really good estimates of the loss rates based upon entrainment.

The third part that I want to just reinforce is we're assuming that there's no survival. That's a simplifying assumption that everyone agrees to. But then you just multiply the two together, the concentration times the volume, gives you the ones that are dead.

Next slide. And this is just an overview of the types of species that are entrained. And remember, these are the larval forms of these; they're not the adults. They're the little guys. And so you have somewhat of a different composition than impingement, which are the adults.

You get mostly gobies. Gobies, as I think with AES and, we'll talk about later, our species that -- these particular species that are, for the most part, adults in estuaries and harbors and, you know, sort of embayments, and not so much in open water. And so those larvae are probably produced by individuals that are actually spawning them in estuarine habitats.

We get anchovies, croakers, white croaker, queenfish, those are more based or open-water, subtidal, sandy-bottom species. And you can see it's really dominated by croakers, queenfish is a croaker species, as well.

And then it moves down to species that are of more interest to some fishermen, at least, which are things like halibut and turbot and kelp bass and sand bass. Although croakers are big, at least sport fishing species, in southern California, white croaker and queenfish.

Next slide. Going to the estimation of ecological effects due to entrainment. And this is where we really are going to try and zero in on what the effects are, or what the impacts are, due to entrainment.

There are three methods that are commonly used. This is not just in California, this is across the country. For estimating ecological effects due to entrainment.

The first two are derivatives of the same overall mathematical model. They're called fecundity hindcast and adult equivalent loss. The third one is the one that we're going to talk about and used mostly, which is proportional

mortality.

Next slide. So this is just a little schematic of what it means to talk about fecundity hindcast and adult equivalent loss. And so this is just a cartoon of this. You can imagine that you got a population of adults out there, and half of those on average are females. And they're spawning larvae. Eggs, maybe, that turn into larvae.

And so you have a stock of females and they're spawning larvae. And those larvae, if they're in the vicinity of the plant, might be taken into the plant and killed.

And if they had not gone into the plant and were killed, then those larvae would have produced a certain number of adult individuals.

So what we have is females that produce larvae. And the larvae that produce the next generation of adults.

And fecundity hindcast aims to take the larvae that were taken into the plant and killed and hindcast them back to the number of females that it would have taken to create those. And so you get an estimate of the lost production of a certain number of females.

Adult equivalent loss takes those same larvae and projects them forward to the next generation of adults. And so what you need for both of these is you need an estimate of the natural survivorship. So how many of these thousands of larvae a year would it have taken to produce one fish, had there not been a power plant.

And that implies that you have some understanding of the natural survivorship out in the open ocean. And for most of the species, as you'll see in just a second, we just don't have that. And we also don't have good estimates of what the survivorship is between spawning by the females and the larval population that is taken into the plant.

And so what that does is it limits the utility of these models for California. This is true for most of the situations in California. We have very limited life history information. As opposed to places on the east coast where they're sometimes on rivers and they're only looking at striped bass and they know everything there is on earth about striped bass.

And so, these models aren't particularly

appropriate for the types of species that are typically entrained in coastal California.

Next slide. You can see where this is a slide taken directly from the report. I just highlighted here, these are estimates of loss for using fecundity hindcast and adult equivalent loss. And the point that I wanted to make here is that most of them are N/A. And the reason that they're N/A -- there's a variety of reasons, but the main one is we don't have the life history information that would allow us to make estimates of the adults that would have been produced, or the females that would have produced those larvae.

And so, in my opinion, they're inappropriate, these two models are inappropriate for estimating impacts. And so that really leaves us with only one model that has utility for this sort of determination.

Next slide. So, fecundity hindcastings we can't do. Adult equivalent loss we say we can't do and this is because life history information for these things is just not known.

And so that leaves us with the empirical transport model which yields a number which is the proportional mortality.

Next slide. And so I want to walk you through very briefly how to interpret proportional mortality because I think this is probably the most misunderstood set of logics that you need to know before you can understand the impacts.

And so in particular I want you to think about this question. Although proportional mortality-wise did give insignificant mortality rates, and my contention is no, you need to know something else besides just what the piece of M is. I'm going to walk you through this.

So, the next slide is to understand proportional mortality you need to also understand this other concept that sometimes is either hidden or not very present. And that is the source water population which I'll abbreviate SWP.

The source water population is that spatial area that contains the larvae that are grist to entrainment; it's that body of water. It has dimensions, X, Y and Z dimensions. And the larvae in that are at risk to entrainment. So that's the source water population. I'll give you a concrete example in just a second.

Next slide. Piece of M, the proportional mortality is that number or the

percentage of the larvae at risk that are actually killed due to the operation of the power plant. And so you might have a piece of M of 2 percent, which would mean 2 percent to the larvae at risk are killed by the operation of the power plant through entrainment.

Next slide. So, again, they did a very good job here, MBC, and sampled the first water population. These are the source water sample stations, two upcoast, two downcoast and two across. This design was advocated by the technical working group of which I was a part of. And so I'm completely comfortable with the design and with what they've done with the data here.

Next slide.

PRESIDING MEMBER GEESMAN: Let me ask you, what considerations go into determining the size or the spatial area affected?

DR. RAIMONDI: Affected or sampled?

PRESIDING MEMBER GEESMAN: Start with affected.

DR. RAIMONDI: Well, I'll get to affected in just a second, so --

PRESIDING MEMBER GEESMAN: Okay.

DR. RAIMONDI: -- hold on. In terms of

the design that you're trying to do there is you're trying to capture representative habitats. And so if you go upcoast a bit and downcoast a bit and offshore, the idea is simply that this is representative of a body of water that it would be subject to entrainment. So the water could come from any part in this grid, sometimes this is called a grid, and be taken in at the entrainment here.

And then the next part of the idea is once you are able to sample this, then you can project that, that grid, to what is the source water population, which we'll talk about in just a second, which is the area that's affected. Okay.

Next slide. So, here's an example. Each species is going to have a different source water population for an open coast withdrawal. And example is of queenfish. Queenfish has a source water population that is about 51 miles long, which means that any larval form in that 51 miles of water that goes offshore about 5 kilometers, 4.75 kilometers offshore, this is this little region here, is at risk to entrainment.

And the way that that's calculated and the reason that they're different for each species

is that they do, as I said, an amazing job. They collect all these larvae and they go through them and they classify them by their sizes. And they say each larvae has a size associated with it. And you know the size and you know the age, and so they'll say, well, all the larvae that were entrained here came from an age range of say between five and 40 days. Which means they're vulnerable to entrainment for 35 days, because this is the difference between those two. How far could a larvae have come in 35 days? Fifty-one miles.

And so it would change for the next species, because they'll get the age distribution for that species and then the next species, and the next species, the next species. So each species has a different source water population. Queenfish is a big one in terms of the source water population; it's 51 miles long.

And so that is the area over which losses have come from. Larvae in this area here. It might be shifted downcoast or upcoast depending upon the currents, but this is a representative of the area. Okay.

Next slide.

ASSOCIATE MEMBER BYRON: Excuse me, Dr. Raimondi.

DR. RAIMONDI: Sure.

ASSOCIATE MEMBER BYRON: How is that 51 miles determined?

DR. RAIMONDI: The 51 miles is determined by saying, let's say that the period of vulnerability for the larvae is 35 days, meaning you have individuals that are five days, six days old, seven days old, eight days old, up to 40 days old that were larval forms. Which means they could have come from as far away as 35 days ago.

And then you multiply that, this is a little bit of a simplification, but you multiply that by the net current displacement, how far water could have traveled. We're assuming that they're not swimming in any way that changes how far they would have gone.

And so you get a displacement. How far the larvae could have come from in that period of time. And that's done for every single species based upon the age distributions and the net displacement of water. Does that help?

ASSOCIATE MEMBER BYRON: Thank you.

DR. RAIMONDI: Okay, so, here's two

examples. Queenfish, as I said, was 51 miles, white croaker is about 29 miles. And so you have different source water populations. In almost all cases, and in all cases we're talking about today, the offshore extent of this is constant. And that's 4.76 kilometers, John?

MR. STEINBECK: 4.5.

DR. RAIMONDI: 4.5 kilometers offshore.

PRESIDING MEMBER GEESMAN: Why is that held constant?

DR. RAIMONDI: Well, there's a couple reasons for it. That's where we, number one, we agreed to, so that's the distance. Most of transport of water is along shore and not cross-shore. And so you can imagine that these things, if they are subject to currents, are mostly transporting along and not cross-shore. And so that's just an estimate of how far.

Although there has been some estimates for certain species that they might have gone further offshore, coming from near shore.

But all the stuff I'm talking about holds this extent constant. Okay.

Go back one slide, will you. Okay. And so what you can see is there's a range. There's a

range. Some of them ar short, like blennies, 7.7 miles; some are big like queenfish, 51 miles.

Next slide. Okay, so here's the model that we use. You determine the entire species. They're not going to do all the species. Some of them are too rare. Doesn't mean they're not important, just that they're too rare.

Some of them you can't tell what the species are based upon the larvae. Some of them might not be important, so there's a set of what are called target species, the ones that are actually evaluated. And those are typically the ones that are the most common.

You determine the period when the larvae are at risk, this period of vulnerability that I just talked about. You calculate this proportional mortality rate, which I'm going to discuss in just a second.

Now one of the things that we do is we assume that these target species are representative of species that actually weren't sampled. Because the vast majority of species are not sampled. That's not true of fish, but lots of other things besides finfish are captured due to entrainment. And the vast majority of those are

not sampled in this particular type of sampling.

And it was by agreement. So that's a decision made by the technical working group. It's not a feature of this.

PRESIDING MEMBER GEESMAN: In terms of the representative of the target species?

DR. RAIMONDI: Yeah. Well, and also is by agreement there was not an effort to sample a lot of the invertebrate species --

PRESIDING MEMBER GEESMAN: Sure.

DR. RAIMONDI: -- and all the other types of things.

These values represent the estimated rate of mortality for the species having a larval stage whose rates themselves weren't also determined. So we're hoping that that kind of brackets what the truth is across a bunch of different species.

Next slide. And so here's the entrainment study. These are the ETM model based upon first this here, which is the best estimate of the piece of M. And then secondly, and this is just to give you an idea of the level of uncertainty that can sometimes be associated with these estimates, and that's including an estimate

of including variability in the data, which is an estimate of the uncertainty surrounding these things.

And so if you go down this column here you come up with an average entrainment of about .56 percent, which seems relatively low. I'm going to argue in a second that you can't interpret that number without the source water populations, but just based upon those numbers alone it would seem relatively low.

I want to also point out the next column, which is including an estimate of the variance, which is, you know, there's uncertainty associated with this. And when you include an estimate of the variability in the data, you come up with a number that's 30 percent, which is a really big number.

And we've talked, I've talked to Tenera a lot about this, and this and other cases, and this estimate of variability is a real estimate of the variability and it's caused because there's a lot of natural variability out there.

But I want to bring to your attention that while this is the single best estimate of it, there is a considerable uncertainty about the

magnitude of effect.

PRESIDING MEMBER GEESMAN: How much uncertainty compared with other similar studies?

DR. RAIMONDI: It's relative -- we just did one up at Potrero, and it's similar to that. Wouldn't you say, John, the level of variance is roughly similar to that?

MR. STEINBECK: Yes.

DR. RAIMONDI: Yeah. So, and these, again, this is not a flaw, I want to be very clear. I'm not criticizing the study at all. This is just the nature of natural systems, especially marine natural systems.

PRESIDING MEMBER GEESMAN: Have you compared it to any of the other ocean-sited plants, El Segundo, Moss Landing?

DR. RAIMONDI: Moss Landing is not an -- it's an open discharge --

PRESIDING MEMBER GEESMAN: Okay, --

DR. RAIMONDI: We've compared it in some ways to Diablo Canyon, which is sort of like this, and to SONGS, in particular.

PRESIDING MEMBER GEESMAN: Um-hum.

DR. RAIMONDI: SONGS was done slightly differently. But I think these estimates, when

they're calculated similarly, now one of the things to keep in mind is other than Diablo, a lot of the power plants that were permitted more than five to seven years ago, they didn't have very good estimates of the variance, of the variability in the data. And so it's a little bit like comparing apples to oranges.

This is the modern method, and, in fact, they're estimating these numbers better than anyone else has ever estimated them. But there's a lot of variance associated with it. And it's not atypical.

PRESIDING MEMBER GEESMAN: Thank you.

ASSOCIATE MEMBER BYRON: Let me ask a question.

DR. RAIMONDI: Sure.

ASSOCIATE MEMBER BYRON: Is there any variability assigned to the area that's used in the calculation? For instance, back a few pages to that --

DR. RAIMONDI: Sure.

ASSOCIATE MEMBER BYRON: -- 51 miles versus --

DR. RAIMONDI: There's variability associated with everything.

ASSOCIATE MEMBER BYRON: It's not just a calculated area? There is some probablistic --

DR. RAIMONDI: All this is probablistic, and I've skimmed over top because I don't want to get -- talk about that, but all this is probablistic.

ASSOCIATE MEMBER BYRON: Thank you, Doctor.

DR. RAIMONDI: Next slide. So now we have to interpret this stuff, right. We've got these pieces of M and now we have to interpret it. And I think that where there is a difference of opinion between the CEC and its consultants and AES and its consultants is in the interpretation of impact.

Not in terms of guts of the model or any of that other kind of stuff, unless something new is coming up today. But we have not been in disagreement about any of this other stuff.

And then real caution is what level of loss is environmentally important and what counts as being important. Do you care about things on a local level, on a regional level, on a global level or national level.

Next slide. And what we've been using

in a number of these cases is this concept that's called the area production foregone. It's a way to interpret loss. And the key word here is interpret loss, okay. So, I want you to keep that in mind.

This method allows for the conversion of organismal loss to habitat. It doesn't mean habitat loss, okay. And I want to be very clear. Because some people make that mistake, and it's not habitat loss. It's just a conversion.

It can work for any source of loss. It can work for impingement or entrainment, it can work for fecundity hindcast or AEL if we had good numbers, which we don't. And it works particularly well for proportional mortality.

Next slide. So here's some scenarios, and I just want to walk you through this so you can understand why I said you can't interpret piece of M or proportional mortality without understanding the source of water population.

So here's two scenarios where we have two different piece of Ms. In scenario one we have a 10 percent piece of M; and the next one, scenario two, we have a 1 percent piece of M. And what that means is 10 percent of the population at

risk is lost, or 1 percent for the population at risk is lost. That's what piece of M means.

The we have the source of water population. In the first scenario it's one acre. So that's 1 percent of all the larvae that were in one acre are lost. And the next one's 1 percent of all the larvae that are in 640 acres, which is a square mile, are lost.

Now when you multiply the two together, which is what APF, does, it tells you the amount of habitat that you would have to replace in order to produce those lost larvae.

And in the first scenario it's .1 acre. And in the second scenario it's 6.4 acres. And so by incorporating these things, integrating these two concepts together you can get an idea of occurrence here, that in my mind, at least, makes more sense than either piece of M or SWP, source water population, because it integrates the two things together. And it gives you occurrency that says if you were going to replace those lost resources, how much habitat would you have to produce.

It does not mean, and I want to emphasize this, that 6.4 acres of habitat were

completely lost to the system. Doesn't mean that at all. 4.1. It means simply that if you wanted to replace those lost resources you would have to replace or put in 6.4 new acres or .1 new acres. Okay.

Next slide. So, here's an example of proportional mortality. I'm going to use -- the average piece of M there was .6 percent -- wait, yeah, .6 percent. So less than 1 percent.

We calculate the source of water population which is here, then the habitat required to compensate for the larval losses of queenfish would be the source water population area times .006, which is .6 percent, which is, you know, the source water population is 140 square miles or 89,000 acres. We multiply the two together, you get that you would need 539 acres of new habitat to compensate for the losses due to queenfish. So about .8 square miles.

Next slide. If you incorporate the variance term like we did before, it comes out to a huge number which is about 40 square miles of habitat would need to be created. That's not the truth. I want to make sure that you understand that I don't believe that number is real. Meaning

that I don't think that the losses are that extreme. But that there is uncertainty in the loss rate. And that needs to be thought about when you're making decisions about impacts, that that value, 530 acres or whatever it was, is the best estimate. But it could be much larger than that based upon the uncertainty associated with these numbers. Okay.

Next slide. Now, when you use all the data together and you come up with a total area, APF, total area of production foregone, of 208 acres, using the best estimate, which half of that would be attributable to Units 3 and 4, so 104 acres of habitat would be needed to be added to the system to compensate for those losses on average. Key point here. You can see for some of the species are going to be more and some of the species are going to be less, but on average, across all species, it would be about 104 acres.

On average, across all species, if you're including an estimate of the variability, it would be about 4800 acres. And so, again, a huge amount of acreage there.

And so the point here is that, you know, the 104 acres is probably the minimum number that

I would think would be a reasonable approximation of the lost habitat or the APF. Because it is the average across all species, and it's based upon the best estimate. It doesn't include an estimate of uncertainty. But 4800 is too much.

So, it's somewhere between there is probably the reasonable number.

Next slide. So, what does it mean. If 104 acres of new bay habitat were added to the system in the general area of the first water body, then -- and this is only for Units 3 and 4, for direct impacts the sampled fish and inverts would be mitigated for, those direct losses, the things that died.

The direct impacts to other entrained species would probably also be mitigated for; the things that weren't measured but were also there. And also the indirect impacts would probably also be mitigated for because you'd be producing all these larvae that were taken out of the system and things that fed upon them would also be supported in that case.

And that's assuming that the new habitat was comparable to the mixture of habitats that was in that source water population to begin with.

Now, I was going to tell you, that's a very difficult thing to do. And, you know, to create new subtidal benthic habitat. And so then you have to go to an alternative type of compensation. But that's the guts of the estimation, using the piece of M and the APF.

And that's the end of my part in this.

PRESIDING MEMBER GEESMAN: Thank you, Dr. Raimondo, that's very helpful.

DR. DAVIS: So staff was charged with making a determination of significance under CEQA, because this was a CEQA-equivalent process. So, in order to make a determination we had to use CEQA mandatory findings of significance.

So thresholds of significance under CEQA are listed protected species, candidate species or species of concern is impacted. If migration of a species is interrupted. If there's a reduction of native fish, wildlife and plant habitat. If a fish or wildlife population is cause to drop below self-sustaining levels. If a wetlands marsh, riparian habitat or other wildlife habitat is disturbed. Or if there's a substantial degradation in the quality of the environment.

In addition, CEQA guidelines specify a

mandatory finding of significance. If the impact is contributing to a cumulatively significant impact.

We did determine, based on these -- or at least some of those findings of significance, that impingement and entrainment of marine life by Units 3 and 4 is a significant impact under CEQA.

And I want to go back here again and just reiterate one of the points that Dr. Raimondi made in his presentation. The study focused on a few target species of fish because basically it would be prohibitively expensive and incredibly time consuming to identify everything. So it focused on the common fish larvae that were in the sample.

But there were many other organisms in the samples that were not counted and identified. And then there's many other organisms that are entrained that aren't even sampled. So, the organisms that are the focus of the study represent just a small amount of the organisms that are actually affected by entrainment in the power plant. And the --

PRESIDING MEMBER GEESMAN: Were any of those target species fully protected?

DR. DAVIS: No.

PRESIDING MEMBER GEESMAN: Were any of them candidates for listing?

DR. DAVIS: No.

PRESIDING MEMBER GEESMAN: And were any of them species of concern?

DR. DAVIS: No.

PRESIDING MEMBER GEESMAN: But you believe that they did represent species that are, in fact, protected?

DR. DAVIS: There were -- there's a very few marine species that are listed. Some of the salmonads and the white abalone. So that, unfortunately, may change in the future as we're having more and more concerns about the health of our coastal fish populations.

And then the other point is that the losses of these organisms, it's not just the organisms that are directly killed, but particularly in the case of entrainment, and also in impingement, these organisms are the basis of coastal food chains. So you're not just affecting the populations that are directly killed, but you're also affecting the populations that feed on them.

PRESIDING MEMBER GEESMAN: Which would include listed species.

DR. DAVIS: Exactly. So, it's a degradation. I was going to get there a little bit later. But it's a degradation of the foraging habitat of listed species, the California least tern, the California brown pelican and the western snowy plover, all feed in this Huntington Beach environment, and they all feed on species that were entrained and impinged by the power plant.

In addition, while it's not a physical loss of habitat, it's a loss of some of the functions of that habitat. I mean, in essence, as much as 253 million gallons a day go into that power plant. And that water that goes into the power plant, it isn't just water. I mean it's habitat. There's many things that live in it.

And once it's gone through the power plant and the water comes out again, while the water is still there, virtually everything that lives in it is dead. And so therefore, that water has lost some of its functions. And those functions include supporting reproduction, because he young of all of these organisms that go through the power plant are killed. And also its function

as supporting feeding.

We don't know if power plant losses caused any population to drop below self-sustaining levels. But what we do know is that the marine environment of California is not healthy. There's been increasing concerns about it. And many fish species are crashing. There's been declines in a number of the fish species that are entrained and impinged at the power plant.

And these losses, the impacts to southern California, well, California in general, coastal ecosystem, come from a whole variety of reasons, including temperature change, pollution, fishing. Power plants are just one of the impacting agents, but they certainly add to what are significant cumulative losses.

The involved agencies concurred with staff finding of significant impact; the National Marine Fisheries Service, the California Department of Fish and Game, the Santa Ana Regional Water Quality Control Board and the California Coastal Commission have all written letters stating that they determine the impacts to be significant.

So, because there are significant

impacts, staff is charged with recommending mitigation to offset those impacts.

Now, the protocol for mitigation is, first of all you determine if there's any way that you can avoid or directly reduce those impacts. And there may be an opportunity to reduce cooling water flows, which would reduce entrainment, because the Huntington Beach Generating Station has not been operating at its full permitted capacity. And AES did indicate some interest in possibly exploring a reduced flow below their permitted amount for Units 3 and 4. So that may be a possibility to actually directly reduce some of the impacts by reducing flow.

PRESIDING MEMBER GEESMAN: That would entail reduced operation of the plant, itself?

DR. DAVIS: Not necessarily. I mean I would have to ask AES --

PRESIDING MEMBER GEESMAN: Well, --

DR. DAVIS: They haven't been using -- on an average annual basis they haven't been using their full permitted amount. So, the idea is that they would agree to a lower average annual amount, although there may be times, and we actually modeled -- their consultants modeled some

different scenarios -- there may be times like now when they would be running at full capacity. But there's other times of the year when they probably don't have to; in fact, never do run at full capacity.

PRESIDING MEMBER GEESMAN: If I may ask, was there a seasonal aspect to the study so that --

DR. DAVIS: Yes. Absolutely. Because that is a very important consideration because fish larvae have peaks at different times. And, in fact, they tend to peak, at least some of the species, right around the time when you need power the most, like now.

So, when they calculated what the reduced flows might be, what the area of production foregone would be, they took into account the seasonal distribution of the larvae.

PRESIDING MEMBER GEESMAN: And were those similar across the target species?

DR. DAVIS: No. It varies completely from species to species.

But even if cooling water flows can be reduced, there still would be use of cooling water, so there still would be mitigation

required.

And for offset for habitat restoration or creation as mitigation, the preference is for in-kind habitat in the same area as the impact. While there's no real way to create false bottom water column habitat in southern California, so there's been a history of using out-of-kind mitigation, particularly coastal wetlands, to mitigate to near-shore, soft-bottom habitats.

And the San Onofre Nuclear Generating Station, SONGS, is a good example. They restored the San Diegito wetlands as part of the mitigation for the impacts of their intake.

And there are opportunities for wetlands restoration in the vicinity of the Huntington Beach Generating Station. The best opportunity that we've identified is the restoration of the Huntington Beach wetlands.

The Huntington Beach wetlands basically surround the power plant. They're right in the area. And what's also really important is they have a conservancy, the Huntington Beach Conservancy that is -- the Huntington Beach Wetlands Conservancy that is trying to get the wetlands restored. And they have a restoration

plan.

So they're pretty much ready to go. They just need to go through their permitting and their final design and they're ready to go for restoration.

There are other wetlands that could be restored in the area. The Santa Ana River Marsh is one. But there's no plan in place. So before those could be restored I think first of all property would have to be purchased, because I believe those are privately owned. And then secondly they would have to go through a two- and three-year process at least to come up with a plan.

The other potential habitat restoration that is used sometimes for mitigation for impacts to offshore, soft-bottom habitat is creation of artificial reefs. But since it's sand-bottom the water column species that are affected by the power plant, the species that would benefit from artificial reefs are hard-bottom species.

So while artificial reefs increase productivity, they increase the productivity of a different kind of species. And, again, you couldn't just go and dump a bunch of rocks down.

You would have to go through a process to design and permit and locate an appropriate artificial reef.

So, staff believes that restoration of the Huntington Beach wetlands would be the most appropriate mitigation to offset the impacts of cooling water use of Units 3 and 4.

This is a picture of the Huntington Beach wetlands. There's the power plant. And the wetlands occur in several parcels that surround the power plant. There's Talbert Marsh, which has its own intake to the ocean. And then most of the wetlands are -- the other wetlands are cut off either entirely or almost entirely from tidal flow. And those are Brookhurst Marsh, Magnolia Marsh and Newland Marshes.

And the wetlands plan that's been developed, it called for the wetlands to be restored in phases. And phase one is restoration of Talbert Marsh and Magnolia Marsh at a cost of $5.46 million. Phase two is the restoration of Brookhurst Marsh at a cost of $6.05 million. Phase three is restoration of the Newland Marshes; those are the ones that are in a couple of parcels, for $2.75 million.

So the total cost to construct this restoration is $14.26 million. In addition, it would cost another $149,767 per year for maintenance operation and monitoring of the restored marshes.

ASSOCIATE MEMBER BYRON: Excuse me, Dr. Davis.

DR. DAVIS: Yeah.

ASSOCIATE MEMBER BYRON: How are these values determined? I'm sorry, right here. How are these values determined.

DR. DAVIS: How are the costs --

ASSOCIATE MEMBER BYRON: The costs that you --

DR. DAVIS: Well, as I mentioned earlier, the Huntington Beach Wetlands Conservancy has had a detailed plan developed by an engineering firm, Moffet and Nichol Consultants, who are very experienced in wetlands restoration. And so they have gone through and figured out the costs of implementing each of those phases.

ASSOCIATE MEMBER BYRON: Thank you.

DR. DAVIS: And if you have any more detail questions about the Huntington Beach wetlands restoration, Gary Gorman, who is

President of the Conservancy, is here today. And so he could come up and answer questions later if they come up.

So staff's recommended mitigation is restoration of a portion of the Huntington Beach Wetlands. And we recommend a mitigation ratio of one to one.

Now, there's usually out-of-kind mitigation requires more than a one-to-one ratio. In other words, more acres of restored habitat for the affected habitat. However, we feel that a strong argument can be made that the value of wetlands overall probably surpasses that of near-shore, soft-bottom habitat. So therefore, a one-to-one ratio is appropriate.

And that's because even though the wetlands only directly will provide habitat for a few of the species that are impacted by the power plant, they provide many other values. For example, they're very productive, and that production is exported to the ocean. They also help to trap and reduce pollutants. And then they provide a lot of values to a lot of species that aren't directly affected by the power plant, but that certainly enhance our coastal environment.

So, our recommendation is that AES contribute money sufficient to restore 104 acres of the Huntington Beach wetlands and maintain them for ten years. And we say ten years because the license, AES' license for Units 3 and 4 is only for ten years. And that cost would be $7,956,000.

Now, if AES would agree to cap the flow of Units 3 and 4 an annual average of 126.7 million gallons per day, and according to the models that would be run, on a reasonable worst case, which would be pumping full bore during the summertime. This would be equivalent to an area of production foregone of 74.7 acres.

If they would agree to that flow cap then we would recommend that they restore 74.7 acres of the Huntington Beach wetlands and maintain them for ten years. And that cost would be $6,162,750.

And the other thing I would say is that the commenting agencies have concurred with this mitigation proposal.

PRESIDING MEMBER GEESMAN: Let me ask of those two alternatives, does the staff have a preference for one over the other? Or are they interchangeable in your judgment?

DR. DAVIS: Well, I think our preference would be for the flow reduction because that directly would lessen the impacts of entrainment. So, the preference would be for the flow reduction and then the restoration of wetlands to make up for the flow that's still going to happen.

PRESIDING MEMBER GEESMAN: I think among the different things the Commission will need to consider are the -- of that foregone production amount which can have some very significant (inaudible) as well. I think I understand the nature of the wetlands, but I do think we probably take into account broader considerations.

DR. DAVIS: I understand.

MR. KRAMER: Commissioner, --

PRESIDING MEMBER GEESMAN: Mr. Kramer.

MR. KRAMER: The project is currently permitted to run 24/7. And I don't think we're proposing to impose upon them flow reductions. But if they choose to do that for their own reasons, staff would be happy with the result.

PRESIDING MEMBER GEESMAN: Yeah, I'm not certain that (inaudible) would, and I'm not certain that that's the kind of decision that the Commission would necessarily feel is appropriately

left to AES' own considerations.

I understand the nature of the preference that the staff may have. And I do think that it is similar to approaches that we've offered applicants in the past. But I think that Commissioner Byron and I will need to consider a variety of different factors in determining whether the approaches outlined here are equal or one should have a preference over the other.

MR. KRAMER: Remember also that even the reduced flow rate assumes 100 percent operation during the summer peak.

DR. DAVIS: Yeah, that was the other part. I was just going to come up and -- we were not proposing that we put any restrictions on them, any seasonal restrictions. So if they did need to pump full bore in the summertime, because we have weather like we have now, it would assume that they would then make up for it by much lower withdrawal rates during the winter.

PRESIDING MEMBER GEESMAN: Okay.

MR. KRAMER: That's it for our presentation unless you have some more questions. Again, we have the members of the working group sitting behind me who could also answer questions

if you have any specific questions of their agencies.

PRESIDING MEMBER GEESMAN: Commissioner Byron, I think we probably ought to hear from the project owner before we get into other questions for the staff. Does AES wish to proceed?

(Pause.)

MR. PENDERGRAFT: Good morning, Commissioners. As mentioned earlier, my name's Eric Pendergraft, and I am the General Manager of the AES facility.

I'd like to thank Dr. Raimondi for about the best explanation of the three models that I've heard. I'm more educated now than I was before, so, thanks for that.

Paul, why don't you go to the next slide. I'm just going to talk about a little of the background here, as my part of this. Then I'm going to turn it over to Dave Bailey, who's going to cover the other four bullets on this slide.

But we're going to go through some of the regulatory developments that have occurred since Bio-5 was put in place. Address some of your questions on 316(b). We're going to discuss the determination of significant impacts and some

concerns we have, or issues we have with that determination. We're going to talk about the restoration scaling and then conclude with a proposal that we'd like to offer.

Next slide. Just a little bit of the background, and Dr. Davis covered some of this, but in sort of the midst of the energy crisis AES applied to retool Huntington Beach Units 3 and 4. It actually was in 2000.

These units were really a good candidate for the emergency order that was issued by the Governor because they had been retired, and required minimal work, as opposed to a brand new facility, to get back into service.

So, you know, it should be noted that we completed all the necessary certification requirements. We went through all the public hearings, all the documentation requirements in a very expedited timeframe. And thanks to some diligent and hard work by the Commissioners, by the CEC Staff and ourselves, managed to get this thing permitted in record time.

And I think as we experience weeks like we have, and days like yesterday, I think it just reinforces the importance of these units to help

fortify the energy supply needs of California.

We talked a little bit, or Dr. Davis mentioned a little bit about Bio-4 and Bio-5. I think hopefully if the parties have learned anything through this proceeding, they've learned that it's important when drafting conditions such as this, that we're specific and the words actually reflect the interpretation that the parties understand. And I think, as we get into this, you will hear more about some interpretation differences that exist in particular with Bio-5.

So, next slide. I'm not going to read this; it's for the record. But Bio-4 talks about our study and then Bio-5 talks about if there's an impact to coastal fish, that we then must -- or a significant impact to coastal fish, then we must mitigate. Dave Bailey will talk about that in more detail.

As previously discussed, we completed the study in 2003 and 2004. The study methodology was agreed to by the technical team. And I think it should be noted that the technical team determined that the three models were going to be used in this study. Fecundity hindcasting, the adult equivalent loss, and the proportional

mortality were all determined to be elements of this study.

I will also point out that the staff has argued that because there is a significant amount of uncertainty in the fecundity hindcasting and adult equivalent loss methods, that those were discarded and the proportional mortality and ETM and associated APF was relied on.

However, they then go in to talk about all the uncertainty related to the APF determinations and why they believe the 104 acres is extremely conservative.

So I think what I've learned through this process is there's uncertainty in all of these models, in all these techniques. And it's a very difficult thing to predict our impacts. And I don't think there's any reason why we should ignore any of the study results, particularly when the group determined that all three of the models would be used.

The final report was issued in April 2005, and then the CEC Staff issued their recommendation recently.

In summary, as far as the background is concerned, you know, we disagree with the

conclusion on significant adverse impacts, and we'll talk more about this in the coming slides.

We disagree with the methods that were used to determine the amount of restoration that is needed or recommended.

However, we're committed to compensate for our actual losses. We've got four years worth of actual operating history under our belt. We don't need to estimate what our maximum permitted flow is or how much we're going to run. We have data. We also have a reasonable forecast of our future operations.

So, you know, we've demonstrated while we've been in California that we care about the environment. We've invested millions of dollars in emissions controls. We have some of the cleanest burning plants in the nation. And we're committed to mitigate for any losses that are actually determined to be attributable to our plant operations.

PRESIDING MEMBER GEESMAN: Let me make certain I understand what you said about the value of your historical operations, since you got the license; and the reasonable forecast of your projected operations.

Why is that important?

MR. PENDERGRAFT: The first recommendation by CEC Staff relies on maximum permitted operations for the life of the -- actually, not only for the life of the license, but basically indefinitely.

We've ran significantly less than that. We don't need to try and predict; we actually have four years worth of our actual operating history. We can use that to determine what our actual estimated impacts were, rather than a model that's based on maximum permitted flow.

PRESIDING MEMBER GEESMAN: What if the Energy Commission would like you to operate more?

MR. PENDERGRAFT: We're willing to operate as much as we're needed to operate. And as we get into the meat of our proposal we will provide you information on how we intend to try to compensate for that eventual outcome if it should happen.

PRESIDING MEMBER GEESMAN: Okay.

ASSOCIATE MEMBER BYRON: Mr. Pendergraft, you referred to the actual operating history. When you say that do you mean flow rates, or do you mean actual count or valuation of

impingement?

MR. PENDERGRAFT: Basically flow rates.

ASSOCIATE MEMBER BYRON: Okay.

MR. PENDERGRAFT: When the plant is operating, whether it's, you know, producing minimum load or maximum load, the circulating water pumps are generally running, and they're not variable speed, so they run -- they either run or they're not run. So they run when the plant operates, and they don't run when the plant shuts down.

So the amount of circulating water flow is not dependent on how many megawatts we put out. It's dependent on whether we're running or not. So you'll see some numbers in the coming slides that talk about our operating profile or, you know, the percentage of the year that we're actually running the units.

I'd like to introduce Dave Bailey. We're going to move into talking about some of the regulatory changes that have occurred since Bio-5 was first agreed to. He's worked for about six years on the regulations related to 316(b) before moving to EPRI, the Electric Power Research Institute. And he's been working for the last

couple years with AES evaluating compliance options. So he's going to handle the remainder of the presentation.

MR. BAILEY: Okay, thank you very much, Eric, for the introduction. And if we could move on to the first slide.

What we're going to talk about first is new regulatory developments that have transpired since that Bio-5 was put into place. And basically there's been three significant developments that I think it's important to consider.

The first is EPA has now passed a final phase two rule. And in the presentation I'm going to focus on entrainment because, as Dr. Raimondi indicated, that's the real issue here. And what that rule will require is that Huntington Beach reduce entrainment by 60 to 90 percent through technologies, operational measures, or restoration measures.

But in order to get to the restoration measures, it has to demonstrate that the technologies are either less feasible, much more less cost effective, or will be less environmentally beneficial than going straight to

the restoration measures.

So if they pass the test they could use it. However, there's a second piece of uncertainty, and that is litigation on the phase two rule. And one of the major issues is can you use restoration for compliance.

EPA first passed a phase one rule for new sources. And in that rule the one thing they changed from what EPA did was not allow use of restoration. So there is a significant risk that it will just not be allowed for compliance.

And then the most recent development is a proposal for regulations in California that go beyond the phase two rule. And in that proposal for entrainment Huntington Beach would be required to reduce entrainment by 90 percent, the top end of the performance standard.

Now the rule does have a provision that if Huntington Beach cannot achieve more than 60 percent then it has to do at least 60 percent, but it can make up the remaining 30 percent through use of restoration measures.

So, as a result of -- and if you'd go ahead and go to the next slide, there's a very strong potential that AES may have to go to

technology or operational measure controls for fish protection over the period of the license. And if those technologies are installed, then it just wouldn't be necessary to address those impacts through mitigation measures.

Now, let's talk a little bit about the determination of significant adverse impacts. What Bio-5 focuses on, in terms of significant impacts, would be impacts to one or more species of finfish. And if that occurs then mitigation is required.

So the report did not identify any significant impact to any species of fish or shellfish addressed in the study that was overseen by the biological resources review team.

Losses to target species, on the contrary, as Dr. Raimondi pointed out, were significantly less than 1 percent; they're in the range of a half a percent. And these levels of entrainment to not present significant threats to the sustainability to finfish populations.

And these losses are significantly less than other similar projects that have been licensed in this time period.

PRESIDING MEMBER GEESMAN: Can I ask you

if you would be more specific about the other projects that you were referring to?

MR. BAILEY: We have a slide where we'll look at --

PRESIDING MEMBER GEESMAN: Okay.

MR. BAILEY: -- Morro Bay and Moss Landing.

PRESIDING MEMBER GEESMAN: Okay.

MR. BAILEY: We're going to take a look.

So, what the report then goes on to do is look at four things to base the -- and this is a list; we'll talk about each. So let's go to the first one which is impacts in terms of loss of native fish habitat.

Okay, current data and information did not support, in our opinion, a loss of significant habitat. The picture that was painted is the cooling water going through the power plant results in virtual 100 percent mortality to all larval entrained organisms, not only fish, but other forms such as phytoplankton, zooplankton, et cetera.

There's actually no data to support that these other live forms actually suffer mortality. It is absolutely correct, and agreement was made

in terms of finfish, that we would make the assumption of 100 percent mortality. And very likely it's close to that, if not 100 percent.

However that's not the case for zooplankton and phytoplankton. In fact, there's been studies conducted at SONGS in California and similar studies conducted in estuaries on the east coast, in which the issue of phytoplankton, zooplankton and these other live forms have been studied. And the SONGS studies done under the auspices of the independent marine review committee unequivocally states there were no direct impacts to zooplankton, the secondary producer.

And similar studies have indicated no significant impacts to zooplankton and phytoplankton.

PRESIDING MEMBER GEESMAN: When was the SONGS study performed?

MR. BAILEY: SONGS was -- excuse me --

MR. BECK: Finalized in 1983.

MR. BAILEY: Yeah, it was late '70s and early '80s.

PRESIDING MEMBER GEESMAN: Thank you.

MR. BAILEY: And I might say that that

study was reviewed in a 2005 whitepaper by CEC. And that paper concluded, even though the age was somewhat older than some of the more recent studies, it was a technically sound study.

Okay, so what would be the reasons why we wouldn't see this observed effect, this large biological desert in the area of a cooling water intake structure? And the reasons are that unlike fish, many of these species of zooplankton and phytoplankton are much more tolerant passing through passage through the power plant than larval fish are.

The second thing that results in these areas being actually very productive areas is that mortality rates, natural mortality rates for these life stages in terms of phytoplankton and zooplankton are extremely high. Phytoplankton, regardless of a power plant, are going to have life spans that are measured in days. Zooplanktons are going to have life spans that are measured in weeks.

The result is they have very high reproductive rates to compensate for the fact that the population is continually turning over. And as a result of that, because of the high

reproduction and natural mortality, the effect of the power plant is almost noise.

So if you actually go in and take sample in the discharge, what you find is not a biological desert, but a very productive area.

And the final point is yes, it's true that the larvae, the fish larvae and shellfish larvae, may suffer natural mortality rates. But the biomass is still available to the system, the ecosystem, as food.

Go ahead and switch to the next slide. So, the bottomline is all the water goes back for habitat by fish. Studies conducted actually in that water have indicated productive ecological areas with live zooplankton, phytoplankton, larval fish --

PRESIDING MEMBER GEESMAN: Which studies are we talking about here?

MR. BAILEY: We're talking about studies like the one conducted at SONGS, and similar studies on the east coast --

PRESIDING MEMBER GEESMAN: Okay.

MR. BAILEY: -- that looked specifically at zooplankton, phytoplankton, the ecosystem.

PRESIDING MEMBER GEESMAN: The studies

in California you're referring to are the SONGS study?

MR. BAILEY: Exactly. And so the other point I'd like to make is in the 2005 CEC whitepaper issued, the issue of these ecological effects to lower trophic levels like zooplankton and phytoplankton, was identified as a potential concern. But it was identified in the context of this is an area where we need more research. Not in the context of we have definitive information to say it's a major problem and we can make a decision on it.

PRESIDING MEMBER GEESMAN: Can I ask our staff to tell me the reference to the whitepaper, the paper that staff presented in our IEPR hearings last, about a year ago? Okay, thanks.

MR. BAILEY: Okay. So, the next thing we're going to talk about then is the threats to -- a decision on the significant impacts, the threatened and endangered species.

And basically the report documents, as you've already heard, no such threats to fish or shellfish species. But what the report does state is there are potential impacts to two species of birds, the brown pelican and the California least

tern, because they feed on northern anchovies and northern anchovies are one of the species entrained. They're the one entrained in the second largest number.

And there's a threat to snowy plover because they eat sandcrabs. And sandcrabs were entrained. Well, in terms with the sandcrabs we can't say a whole lot, because in the whole course of the study only two megalops larvae were collected. A number so small it just doesn't suggest a significant impact to snowy plovers.

Go ahead to the next slide. In terms of the northern anchovy, that is an area where we can do some further analysis to look at significance. And again, we point out, first of all, in terms of the overall population of -- well, the overall loss effect in terms of the empirical transport model, the estimate is a 0.5 percent loss.

Now as Dr. Raimondi indicated, it is worthwhile to look at more than just the loss over this area. And the issue in terms of these birds is something we can clearly explore using the adult equivalent loss model, where we did have enough data to be able to make some estimates of how many adult anchovy are being lost. Because

it's the adults that brown pelican and the California least tern would feed on.

And those estimates range in terms of the equivalent adult loss and the fecundity hindcasting between 300-some-thousand and 53-some-thousand. So we took an average and said, okay, we'll use 150,000, the middle of the two.

Based on that number this would equate to a total of 850 pounds spread over 340 acres, which is also equivalent to, say, 17 50-pound bags of food. But you can also think about it in terms of what does it mean for the birds in terms of how much food is not available on a per-acre basis per day. And what that calculation says is what you will see is one-tenth of one ounce per acre per day. And that just doesn't seem like a significant basis to conclude that it's going to be a major food problem for birds, since this wouldn't even equate to one anchovy per day per acre.

Go ahead and go to the next slide. Now, the next issue was substantial degradation of the environment. And again what we point to is the SONGS studies where we actually go look downstream of the discharge and look at the habitat.

And do we see a substantially degraded environment? And the answer is no. That that finding is not supported. And it is acknowledged the nature of the biomass is clearly altered. Larval fish are going to suffer mortality. But the fact is a lot of that biomass is still available for consumption in the food system, and results in some of the productivity you see downstream of the discharge.

So, the last of the four points was the determination of significant adverse impacts. And the report clearly states there was no study done to determine the significance of the cumulative losses at Huntington Beach.

So, the conclusion then goes on to say there are significant cumulative impacts. But what this means is it suggests that any use or impact to coastal waters would fail the test. But you don't need to do any assessment to look at the incremental risk of any new project to reach that conclusion.

And further, this same type of approach was used at the El Segundo retool hearing. And the Commission rejected that conclusion as inappropriate in that proceeding.

Go ahead to the next slide. So, in summary, we don't have any technical data or information provided to support a determination of impacts to one or more species of coastal fish. In fact, the BART-approved study indicates we're looking at impacts to populations on the order of 0.5 percent. And that's at full design flow.

While the report makes some statements in reference to the CEQA guidelines, those statements are inconsistent in terms of the impacts to these lower trophic levels, since they move from a statement that it's an area of research to an area where there's a problem.

And I think a final statement on that point, if those kind of criteria were going to be used to make a decision on significant impact, you could have concluded there would be a significant impact before the plant was ever built. All the information was available to say that was the case. So if that was the real intent, then what BIO-5 would actually have stated is measure the impacts and mitigate them, not go look at the significance of them and mitigate them.

Move on to the next slide. So now I'm going to spend a bit looking at the restoration

scaling. And in terms of the scaling, the Huntington Beach wetlands, of course, we've already discussed. It's been identified as a potential project. Scaling currently is proposed based on the APF method. And the method used to estimate the coastal wetland larval fish production is based on the gobies. Because the gobies are the dominant fish entrained; they also are fish that actually lives in that kind of habitat.

And then the report estimates 104 acres of wetland at a cost of just under 8 million is necessary to compensate for losses.

First of all, AES fully agrees that they're willing to engage in mitigation for entrainment losses at Huntington Beach for the retool project. However, there's some disagreement about the level of scaling that's necessary to offset those losses.

One of the first things we want to point out is the very high natural mortality rates of the fish, because the larval fish is the basis of the APF method. And the point here is regardless of the power plant, the gobies are going to have mortality rates in the range of 98 to 99 percent

regardless of whether or not there's a power plant.

And many of the other species, such as croaker and anchovies, are going to have even higher natural mortality rates.

The second conservative assumption is, as discussed, gobies live in the coastal wetlands. However, some of the larvae produced in those coastal wetlands, goby larvae, get transported out of the system. Once they're out in the offshore currents they're kind of at the mercy of the currents in terms of where they go.

And it is true some of those gobies will actually make it into downcoast wetland to grow and mature into adult fish. What the report assumes is 100 percent of those gobies that get transported offshore all make it back into the wetlands and survive. When the reality is it's actually going to be a small fraction that make it back in and survive.

Now the adult equivalent loss model used in the study is a tool to help get at these issues, the high natural mortality rates. And while it isn't directly related to the scaling that's been done, it is a tool that can be used as

kind of a litmus test on is the amount of scaling we're talking about reasonable in the context of the adult commercial and recreational value of the losses that are going to take place.

It is acknowledged it's somewhat limited in terms of the species that we can address in detail, although more could be done with the data that's currently available.

PRESIDING MEMBER GEESMAN: And how would you do that?

MR. BAILEY: Well, for example, some of the largest losses were the gobies and the northern anchovy. But we could do something. What you could do is estimate, well, let's assume those gobies all got eaten by halibut. How many more halibut would there be there? Because the gobies, in and of themselves, don't have any commercial or recreational use. So that's the kind of thing you could do to help estimate the economic value and production from a social standpoint.

PRESIDING MEMBER GEESMAN: That would be applying some exogenous assumptions as opposed to gathering new data?

MR. BAILEY: It would. That is the

approach basically that EPA used in the phase to rule in order to estimate what the benefit of that rule is going to be socially, which they have to do. Whenever they write a rule, of course, they have to say what's the benefit of it, what's the cost of it's going to be. When they did the national benefit assessment, that's the approach they used.

Now, acknowledge Dr. Raimondi is absolutely correct. In California you don't have the data for as many species as you do in other parts of the country, the east coast.

Other things not considered in the current analysis. First of all, the biomass resulting from the entrainment is still available to the system for fish production along the coast.

The second thing is right now the assumption in terms of densities produced by an acre of wetland is solely based on the gobies. The fact is an acre of wetland is going to produce more than just gobies. So the actual amount of fish larvae to get generated is going to be more than the calculated amount because of the other species that would also be produced.

The third key thing is the ten-year

license period granted for Units 3 and 4. Right now you scale the wetland, it's there virtually in perpetuity, certainly over a 30- or 40-year license period, which is often the case in new projects. There isn't a specific sunset date. In this case September 2011 this license is over.

Another factor, the actual first five years of the license we know what the flows are. We can calculate what those losses are right now because we have the actual data to do it. And then another point is the additional technology and operational measure controls that may well have to be implemented during the course of this license period.

Now, here's the table that provides a comparison. How does what's being proposed for this project look in the context of some other projects? And, first of all, in terms of numbers of larval fish. What you see is at Huntington Beach about 25 percent of what you see at these Morro Bay and Moss Landing.

And in addition, there were more species looked at, whereas in some cases such as the annual larvae entrainment for Moss Landing only looked at the cancer crab. In spite of that,

you're looking at 20,000 -- this is the smaller of these two -- you're looking at 20,000 megalops larvae just this one species, compared to -- or 20 million compared to 2 million, 2.7 million for all the species that were looked at at Huntington Beach.

In terms of ETM estimates, one of the primary tools in terms of loss, you're comparing 2 percent and 10 percent to a loss of 0.3 percent. And that's for shellfish. For finfish it's well over an order of magnitude less, 0.3 compared to 10 percent and 13 percent.

So while we have an order of magnitude less impact, over an order of magnitude less impact, the cost being proposed for Huntington Beach compensation is a million dollars more, 8 million compared to 7 million, for Moss Landing. And in terms of project lifespan, there wasn't a specific date set on the termination of the project, whereas we have a very specific ten-year life to the project.

Go ahead.

PRESIDING MEMBER GEESMAN: Let me make certain I understand the ramifications of that. My understanding, and as I indicated at the

beginning of the meeting, I wasn't on the Commission at the time, but the limitation to the license life, I believe, was a part of the expedited licensing process under which you actually were certified when you applied?

MR. BAILEY: I believe that's correct, but --

MR. ROTHMAN: That's generally correct. The Commission, at the time of licensing, established conditions that limited the overall term of the license to ten years total.

PRESIDING MEMBER GEESMAN: And is there anything that would preclude the Commission, at the exploration of that license, from extending it?

MR. ROTHMAN: Without providing legal advice to the Commission, I would say that there was nothing that would preclude the Commission from considering a new license for the facility. But I think that that license would have to be applied for.

PRESIDING MEMBER GEESMAN: Thank you.

ASSOCIATE MEMBER BYRON: May I ask one more question in regard to that. Is AES considering, at this point, an application to

extend that license?

MR. PENDERGRAFT: We certainly -- that would be one thing we would consider. There would be other things that would be considered at that time that would include, you know, a repower, a modernization of the facility. Which is one of the concerns we have, there is that level of uncertainty out there in the future, and we wouldn't want to mitigate for basically an indefinite project life, you know, without having done a little more analysis about a modernization or some other potential options at that time.

MR. BAILEY: Okay, I guess another point is that wetlands, and this is discussed in the report, provide a number of significant benefits other than just producing larval fish. These include removal of urban runoff pollutants; export of organic matter for use in the ecosystem; habitat provided to birds and other forms of wildlife; and public environmental education benefits. And under the current proposal some of these things aren't quantitatively included in terms of the overall wetland value on an acreage basis.

So I guess the summary, in terms of the

current level of mitigation that's being proposed, is it has multiple assumptions that are highly conservative and tend to over-estimate the amount of wetlands needed.

The recommendation doesn't seem to be consistent with some similar projects in terms of the amount that's being requested for the compensation. There is the issue of potential other entrainment controls that may have to be installed during the license period that could reasonably reduce entrainment and therefore wouldn't require the mitigation. And the term of the license is finite. We know it's only going to go through September of 2011.

PRESIDING MEMBER GEESMAN: When does your 316(b) review next come up?

MR. BAILEY: What the rule requires is that all facilities submit their comprehensive demonstration study that says how they're going to comply with the rule in January of 2008. And then based on the method that they plan to use to comply implementation may vary accordingly.

For example, if you use certain technologies it may take a couple of years to get them in. For other things you might reasonably

get something in within a year, once the comprehensive demonstration study was proved.

PRESIDING MEMBER GEESMAN: So that would presumably be sometime in 2008, 2009?

MR. BAILEY: 2009 I think is the assumption; and that's what we will discuss in the AES proposal.

PRESIDING MEMBER GEESMAN: Okay.

MR. BAILEY: Okay, so now let's get into what is the AES proposal. Go ahead to the next slide.

So I guess while there is some agreement on the issue in terms of significance, -- entrainment for Units 3 and 4. The AES proposal is directly tied to the Unit 3 and 4 operations. Considers the new regulatory requirements that may be implemented in the term of the license. And it makes use of best data and information in order to come up with an accurate estimate of losses.

So, these are the five items in the proposal, and we'll go through them one-by-one. Go ahead to the first one.

First of all, the idea is to base the entrainment mitigation on the actual flow. It is that flow that is resulting in entrainment losses.

We will take the records on an annual basis and use the entrainment data collected during the license 2003/2004 study, and we can calculate what the loss is for each year during the license period.

Currently we already have four years of data available. Those are reflected in this slide. And as you can see capacity utilization has been running between approximately 30 percent, 35 percent, since the plant started operation, well, it was kind of at the end of 2002. But full years of operation occurred in 2003 through 2005.

Go ahead. Point two. There shouldn't be any requirement to mitigate losses that are addressed through operational controls or technologies that are implemented under requirements of the new federal or potential state regulations.

Point three. We would base mitigation on operations during the license period, period. Which is September 2001 to September 2011.

Point four. AES is willing to agree now to compensation for the losses that have already occurred, and the losses that would reasonably occur between now and when new control

technologies might be required under the new regulations. This represents basically 70 percent of the license period.

Thank you. Okay. And point five, any additional mitigation necessary, and you discuss years like now when unanticipated usage events might require higher levels of generation, can be compensated for at the end of the licensing period. And any shortfall that AES has in order to fully compensate for the entrainment losses over the period would be made up at that point in time in terms of funding additional wetland mitigation.

So those are basically the five elements of the proposal. I guess now we're open for questions.

PRESIDING MEMBER GEESMAN: Well, as is our tendency, we've interrupted you enough for questions so I have none remaining. Do you, Commissioner Byron?

ASSOCIATE MEMBER BYRON: Well, I would like to ask a few questions, if I could, to understand your proposal at the end here. And I'll be brief. On point one when you say use of actual flows, would that include AES' willingness

to commit to a lower max flow rate for all future operation?

MR. BAILEY: I'm going to let Eric answer.

MR. PENDERGRAFT: We prefer, and I think probably the general public and even the Commission would prefer not to take a hard limit in our permit for flow.

However, I think, you know, the past is a pretty good indication of the future, unlike the stockmarket, and I think it's reasonable to anticipate we're going to run on order 30 to 35 percent of the year. So I think what we're talking about is mitigation based on our reasonable expected operations.

If, you know, a transmission line goes down or there's, god forbid, a terrorist attack on SONGS or something, you know, dramatic happens or significant happens in the power generation industry and we're required to run a lot more than that, we're offering to make up for that, as well.

But we don't believe that the time that we should have to try to forecast that unlikely probability and mitigate for that now, but rather reduce, say, in the event that something like that

occurred. Though hopefully it won't.

ASSOCIATE MEMBER BYRON: Thank you.

MR. PENDERGRAFT: But even though, just one more point, you know, this week has been a good reminder to us, but the peak season is really relatively short in duration. It is, you know, reasonable to expect that we may run on the order of 70 to 80 percent of the year. But the remainder of the year, I mean the demand in California drops in half, approximately.

So there's a large portion of the year where the facility doesn't run at all. And I don't think it's weather-related issues that would create a significant operation above what we would forecast. It is unanticipated significant events, either the transmission system or other generation plants, that would require us to run more than forecasted.

ASSOCIATE MEMBER BYRON: Thank you. A no would have been sufficient for my purposes.

(Laughter.)

ASSOCIATE MEMBER BYRON: On point four, could I just ask for a clarification, Mr. Bailey. When you say near-term losses, for -- let's see, mitigate now for past and near-term losses. Am I

to understand that to mean up to the implementation of any 316(b) requirements?

MR. BAILEY: Yes.

ASSOCIATE MEMBER BYRON: Okay. Thank you.

PRESIDING MEMBER GEESMAN: Thanks very much. My understanding is we have to be out of this room at 2:00. So I would propose that we simply plough forward, those of you who were thinking we might have a lunch break.

So I think next we have a presentation from the agencies. Or am I wrong in that? Let me invite the agencies to comment if they care to do so.

MR. KRAMER: I think that would be appropriate.

MR. THEISEN: I'm Ken Theisen with the Santa Ana Regional Water Quality Control Board. And I'd just like to point out that AES is committed to giving us their compliance demonstration study by January of next year.

PRESIDING MEMBER GEESMAN: And that would be for the 316(b)?

MR. THEISEN: Yes.

PRESIDING MEMBER GEESMAN: Okay.

MR. LUSTER: Tom Luster, California Coastal Commission. Just a few brief comments. First, thanks to your staff and the Energy Commission for allowing this to be pulled together. In the last few years the science of the understanding of impingement and entrainment and once-through cooling on the California coast has really been advanced through efforts like this, a lot due to the Energy Commission and staff and consulting scientists. Thank you for that.

Just a general comment. The Coastal Commission Staff overall supports the approach that the Energy Commission Staff has taken with this mitigation proposal. We see the one-to-one ratio as a minimum acceptable ratio for a number of reasons, many of which you've heard today.

A couple other considerations to include perhaps is one is the delay between the impact being caused by power plant versus the time when mitigation starts performing as it's intended to.

Another consideration --

PRESIDING MEMBER GEESMAN: Would you expand on that, Tom?

MR. LUSTER: Sure. One of the reasons that most mitigation plans have a higher ratio

than one-to-one is the delay between the time the impact occurs and when, for instance, a wetland is being restored or created, starts functioning to replace the functions that are lost due to the impact.

And even though we're talking about impacts to nearshore environment versus mitigation in the wetlands, you still have that time delay. And so there should be some consideration to include in the ratio. And normally that would require, you know, two-to-one, four-to-one mitigation ratio. So that's one of the reasons we see one-to-one as the minimum.

Another consideration, the original review back in 2001 was done during the energy crisis, it was done under emergency review. And for those reasons, and understandably, the review did not include the alternatives analysis that is normally associated with retooling projects such as this.

Had that been done we might not be meeting here today. We may have had a dry-cooling system or some sort of alternative cooling system already in place and operating.

PRESIDING MEMBER GEESMAN: Or a negative

decision on the license application.

MR. LUSTER: Correct. So, not depending too strongly on hindsight versus foresight, but I think the potential for this plant being able to use a dry-cooling system, or a cooling system that does not cause entrainment is something to consider in your deliberations now. And will be considered over the next couple years as part of the 316(b) review.

The other main point I'd like to make is more of an offer to you. During the initial review in 2001 the Coastal Commission did not fulfill its obligation to provide a 304 and 3(b) report, letting the Energy Commission know what it would take for the project to meet Coastal Act requirements.

I'd be able to get a report to our Commission at its September meeting, and provide that to you before your decision date, assumably by the end of September, with our Commission's perspective on the proposed mitigation.

Also this is the first time I've seen the AES proposal, so we would review that, as well, and provide not just staff's comments to you, but the view of the Coastal Commission, if

you'd like that to happen.

PRESIDING MEMBER GEESMAN: Well, I would certainly invite your comment. I'm not certain that I would really rely on legal counsel to determine if providing it under that section of the code which our two agencies have had some differing interpretations of in the past, would be germane to the decision that we have in front of us in September.

But I would invite your comments and legal counsel's response. You can characterize your comments however you feel would serve the interests of the Commission.

MR. LUSTER: Yeah, I think at this point the information is more important than the format.

PRESIDING MEMBER GEESMAN: Well, in that spirit, then let me invite your comments prior to our decision.

MR. LUSTER: Okay, thank you.

PRESIDING MEMBER GEESMAN: Anything else from any of the agencies?

MR. KRAMER: Commissioner Geesman, this is Mr. Kramer. Staff does want to make -- our witnesses would like to make a few rebuttal comments.

PRESIDING MEMBER GEESMAN: Okay. I don't want you to go on too long because then we'll have to get into surrebuttal, but --

MR. KRAMER: -- otherwise they're going to chew on me or something.

PRESIDING MEMBER GEESMAN: No, we'll give them that opportunity now.

DR. RAIMONDI: This is Peter Raimondi again. I was really disappointed actually. There was a bunch of things that were said that were just wrong in the testimony. And I wanted to go over just a few of them.

They referred to the SONGS study, and in particular the report that was done last year by Mike Foster. I wrote the sections on SONGS. I worked for the California Coastal Commission on the scientific advisory panel to SONGS. I was involved in the marine review committee.

They talked about phytoplankton and zooplankton not being different near SONGS versus far; that's true, but it was measured in a way completely different from the way that larvae were measured. And so that wasn't a relevant comparison whatsoever. And was never intended to be taken that way.

The second thing is we would love to use FH and AEL in our determinations. We can't do it. It's not that we're not considering them, there's nothing to consider except for a couple of species. And so it's incorrect to say that we're not utilizing them, they're just not there to utilize.

The third thing is, you know, saying that the biomass is still there at the end of the pipe, to me is really comparable to saying we're going to allow hunting, indiscriminate hunting, in Yosemite, as long as you leave the carcasses. It's a really different thing. This is dead biomass that's deposited at the end of a pipe; not living stuff that is being distributed throughout the ecosystem and that can grow up and become an adult.

There was a slide that indicated that only two sandcrab megalops were found. That's true. But there were 465 million zoia, which is the earlier stage of the larval form of crabs, sandcrabs. So two megalops, which is the later stage, but 465 million of the earlier stage was noted there.

In particular, the comparison to Moss

Landing and Morro Bay is particularly inappropriate. Those are withdrawals that occur within estuaries. They are constrained water masses. And so the source water body in those two things is not on the order of square miles, it's on the order of 2000 to 3000 acres total; 2000 for Morro Bay, 3000 for Moss Landing.

And so those estimates of loss rates are based upon a constrained water body; where, of course, the proportional mortalities are going to be much higher. If you look carefully at the EPS they are much closer. We are at about 300 for Moss Landing versus about 104 for Huntington Beach.

And so I think that throughout that you just have to be very careful about interpreting these things. And because we never had a chance to take a look at any of the stuff that was presented, we weren't able to respond to it earlier.

PRESIDING MEMBER GEESMAN: Thank you very much. I'd like to turn to the public comment. Any members of the public care to address this? Come on down.

MR. GEDDES: Good afternoon,

Commissioners. It is now afternoon. My name is Tim Geddes, and I live on Windsong Circle in southeast Huntington Beach within a mile or so from the AES power plant.

I have served for a number of years on the Executive Board of the Southeast Huntington Beach Neighborhood Association, which represents the neighborhood interests of over 1600 households and thousands of area residents.

The Southeast Huntington Beach Neighborhood Association, or SHBNA, is on record as opposing the Poseidon Desalination Plant project, and has had a long-term concern over the operation of the AES power plant.

This includes the use of its once-through cooling process which has been shown to be destructive to marine life through impingement and entrainment. Although I'm not here specifically as a spokesperson for SHBNA today, and I'm speaking as an individual, what I'm about to say is shared by many in our area.

And I just wanted to make one point related to the topic discussed today. It has come to my attention that Poseidon and/or AES may be alleging that members of my community might be

opposed to switching from once-through cooling to alternative technology cooling methods because of the fear of visual obstruction or blight due to required construction of cooling facilities.

The reasoning is that if the community objects to the construction of alternative cooling facilities and that once-through cooling is allowed to continue, the property and the opportunity for a desalination plant would be preserved.

I have heard the specter of large, dry-cooling towers erected that would be highly objectionable to our City's residents. I'm here today to state that this is nonsense. Our citizens are smart enough and aware enough to understand that there are a variety of alternative technology cooling configurations that would be acceptable in all respects to the community. And that it is the once-through cooling process causing the destruction of marine life through both intake and discharge that is truly objectionable.

Any argument of community objection to the use of alternative cooling technology is a red herring, if you'll pardon the impingement pun.

And should not deflect the community's objection to any continuation of the once-through cooling process currently in operation.

Thank you.

PRESIDING MEMBER GEESMAN: Thank you.

MR. GEEVER: My name is Joe Geever; I'm the Southern California Regional Manager for Surfrider Foundation. Actually I didn't come prepared today to say anything. I just wanted to gather --

PRESIDING MEMBER GEESMAN: Sure.

MR. GEEVER: -- and learn more. So if you'll allow me I'll kind of flip through my notes and try and make sense of stuff that sometimes I can't even make sense of.

One thing I'd like to ask is if we can have access to some of the slide shows that were put up today, and some of the information that was shared --

PRESIDING MEMBER GEESMAN: You can get a hard copy of all of it before you leave, because I'll give you mine.

MR. GEEVER: Okay, oh, that's great.

PRESIDING MEMBER GEESMAN: And they are listed on the internet right now.

MR. GEEVER: On the website, as well? Okay. That's great.

MR. KRAMER: Let me ask if AES will give us theirs so we can post it, as well.

MR. PENDERGRAFT: It's already been posted.

MR. KRAMER: Okay, good.

MR. GEEVER: I'm losing --

MR. KRAMER: It's on our internet site; that's another good place to find a lot of this stuff.

MR. GEEVER: On the CEC site?

MR. KRAMER: Yes.

MR. GEEVER: Okay. Including the project proponent --

MR. PENDERGRAFT: Yes.

MR. GEEVER: -- everybody's slide shows are all -- okay. If I can take a second to just kind of flip through these and see if I can find some of the more pertinent notes.

Some of the things, some of the -- as you know or may not know, but we're in the midst of this federal litigation on 316(b) and working on the state implementation of those regulations. And there are still some open questions for sure.

One of the big ones, I mean when you look at the regulatory structure, it's kind of built like a house of cards. And the one thing that's holding it all together is the calculation baseline.

And so some of this discussion today about, you know, permitted use versus actual use, gets at the heart of reducing entrainment. You know, depending on how you define that calculation baseline, the whole house of cards could collapse.

PRESIDING MEMBER GEESMAN: We've found that to be a threshold issue in some of our other siting cases, as well. So we're familiar with that.

MR. GEEVER: Okay. I'm probably not telling you anything you don't know already. But, so that's a biggie with us. And, of course, we disagree with -- well, not of course, but we disagree with some of the interpretations that the project proponent has put forward.

Restoration is another, you know, tricky kind of subject. We feel very strongly that first off, it's not legal. It's not a legal interpretation of the Clean Water Act. It was never meant to be interpreted that way.

And, you know, the Second Circuit has found that way in the phase one litigation; and has added, dictated in phase one decision to indicate that they will likely find that way in phase two. And we're relying on it.

But in either case, the state's process and some of their draft documents are discounting restoration. And so all of this reliance and all this kind of bizarre calculation on the value of wetland species for offshore species restoration, which to me just is mind-boggling that you could even make that argument, is probably moot because restoration is not going -- shouldn't be left in the rule in the first place.

And let's see, the other thing that I didn't think of before now, but I'm glad I came today too because to get more of a little bit more insight, and it actually raised more questions for me about the impact on endangered species and the scope of species that we're talking about.

When you're talking about listed species, you know, I guess I'd be curious if, you know, the impact on pelicans and least terns and some of these already listed species, they have gone through the trouble of getting section 10

permits to allow the impacts that they're having on these listed species, which I guess I wouldn't be surprised that they have.

But the reason that you don't find marine species on the endangered species list more often is because we know so little about them. We don't know their population size; we don't know their life history; we don't know their behavior; we don't know how they change their behavior when there are el ni¤o conditions. I mean the limits on what we know about, you know, marine life is just, you know, -- well, it's kind of a backwards thing. We could fill the room with what we don't know about marine life.

And so, you know, making the case for listing a marine species for the endangered species list is a monumental task. And we tried it with one species of fish that had been so over-fished that we knew it was well below at 4 percent of its historical population. And still couldn't get over this hurdle of getting an endangered species list characterization.

So the fact that those fish are not on the endangered species list does not indicate that they're not species of important concern. There

are a number of species, a long number of species that are below 10 percent of their historical baseline. And most of the species, when you go through Fish and Game's book on what they know about life history and population assessment about marine life in California, invariably what they will say in their analysis is, we don't know. Right.

And so of those ones where it's mostly targeted species, and when I say targeted I mean targeted by commercial and recreational fisheries, that's the ones where we have the most data. And of those, a lot of them are below 10 percent of their historical populations.

And so, you know, it's not just about ESA. All this stuff is important.

Rather than taking too much more of your time going through my notes, I'll just close with that. But I do want to thank you guys for taking the time to come all the way down here and hold this hearing. It's been very informational for me, and I'm glad that you're taking an interest in this thing.

The Clean Water Act is 30 years old. We've been trying to get this section of the Clean

Water Act implemented for that amount of time. And it's, you know, I guess we're hopeful that it is finally about to happen. And that, you know, -- oh, one more point.

A lot of the discussion I heard today was about reducing volumes as opposed to reducing entrainment. And this kind of goes back to this calculation baseline thing, you know. If we got -- if we use 100 percent or permitted volume, as the baseline, and reduce volume, then we're going to use that as a surrogate for reducing entrainment.

There was nothing in the Clean Water Act about reducing volume. This is about reducing entrainment. That's the target that we need to keep our eye on. Not just reducing volumes of water.

So, with that kind of rambling on --

PRESIDING MEMBER GEESMAN: Before you leave, I do want to ask you a question based on your comments. Based on your comments about habitat restoration, I conclude that you're not much of a fan of that portion of the staff's recommended mitigation strategy.

And yet based on your other comments I

think that you agree with the staff that there is a significant adverse impact. If the Energy Commission finds that there is such a significant adverse impact from the once-through cooling system, what would the Surfrider Foundation recommend as a mitigation strategy?

MR. GEEVER: Well, we're actually suing against restoration. We don't --

PRESIDING MEMBER GEESMAN: I understand.

MR. GEEVER: -- think restoration is even an option out there --

PRESIDING MEMBER GEESMAN: -- talking about this plant, this decision.

MR. GEEVER: Alternative cooling technologies.

PRESIDING MEMBER GEESMAN: Okay.

MR. GEEVER: You know, the problem with restoration is, you know, I don't buy any of the --

PRESIDING MEMBER GEESMAN: I know all the arguments, so you don't need to make those. The difficulty with your recommendation is that horse left the barn when the Energy Commission issued its license five years ago. So we don't have the ability to revisit that particular

option.

MR. GEEVER: Oh, well, then that's a characteristic of what you're discussing today that I wasn't aware of, that mitigation was imposed and not just an optional solution to the problem. Because if you're compelled to do mitigation or some sort of a restoration project, that's a mandatory compulsory thing to do.

Then I think you're in a legal conflict with what's happening with 316(b) and the state regulations. And, boy, I'm reluctant to give you any advice on what to do with that.

PRESIDING MEMBER GEESMAN: Okay, I appreciate that.

MR. GEEVER: Thanks.

PRESIDING MEMBER GEESMAN: Thanks very much.

MR. ERBIS (phonetic): Conner Erbis; I'm representing the Southern California Watershed Alliance and the Desal Response Group.

I'm actually not a marine person. On these issues I kind of got sucked in by the intakes. My background is really energy and water conservation. I think it's, again, somewhat ironic in the midst of potentially a crisis as we

talk about going into serious shortages of energy, we're here, thanks to the City of Huntington Beach, and I do appreciate everyone who is here at this location, as we discuss it, in a well air conditioned room without serious cutbacks in the demand.

And I think we have to talk about those cutbacks and the demand as much as these other issues. You're not here to do that.

I'm actually a southern California steelhead fisherman, which is becoming as rare as the fish, themselves. And someone who grew up fishing along this coast. The more I know the less I fish, and the less there is to fish for.

We go further and further, even off the coast of Mexico now to catch less than we once caught here.

So when I head a discussion about the biomass which we would really call chum, the dead stuff that's thrown back out, and then there's not much left to feed on it, it made me so upset I really had to leave the room.

The thing with this discussion of going to mitigation. I understand you're moving through your process -- I'll finish up. But none of the

options I heard of a one-to-one ratio or the limited number of acres could really offset what we're talking about here.

And lastly I'd like to refer to Dorothy Green who started Heal The Bay; the L.A./San Gabriel Watershed Council; and the group that I chair, Public Officials for Water Environmental Reform Power, that we're really sucking the life force out of the ocean by these intakes, 17.2 billion gallons a day from coastal generators. And there's a cumulative impact, as well. And we have to look at that in the long term, just not in the immediacy of the power we may need today.

Thank you very much.

PRESIDING MEMBER GEESMAN: Thank you for your comments. Anyone else care to address us?

MS. COOK: Last one. I wasn't planning on saying anything, but Conner always inspires me. I have a suggested mitigation measure which you may find --

PRESIDING MEMBER GEESMAN: You need o identify yourself --

MS. COOK: Oh, I'm sorry, my name is Debbie Cook. You may find it humorous, but I'm going to throw it out there anyway. I'm one of

those people that doesn't believe that -- well, I believe that California's going to be in a particularly bad shape going forward because we rely so heavily on natural gas.

So, maybe an optional mitigation measure is that if we are not able to secure adequate natural gas going forward, that we shut off -- we have a plan developed that we shut off natural gas supplies to those power plants first that are the most inefficient.

I don't know if the state has a plan. I believe I've been told by someone at the CEC that if we are not able to get adequate natural gas they do cut it off to the power plants first. At least that's what I was told. And then if they have a plan to actually identify those plants first, so that's just an optional.

Thank you.

PRESIDING MEMBER GEESMAN: Thank you. Anyone else care to address us?

Mr. Kramer, you're probably the best one to answer this. The Commission is scheduled to take this up in September? Or have we selected a business meeting?

MR. KRAMER: No, we haven't yet.

Perhaps Mr. Johnson could help me guide you. What we're looking to today is work to resolve what you perhaps perceive as an impasse between staff and AES. And so we'd like to hear your guidance about the way you see the issues. It may help the parties go back and be able to hammer out a solution; it may not.

But it also has served to inform you so that you can make a recommendation to the full Commission if there is a need to resolve the impasse.

Hasn't been scheduled yet. This, at least at the moment, is related to another AES application; and that's the five-year review of their permit. And a decision does need to be made on that by the end of September.

I would think that going all the way to the end of September is cutting it pretty close, because if certain findings aren't made, then the plant has to shut down.

PRESIDING MEMBER GEESMAN: Roger?

MR. JOHNSON: Paul's pretty well covered that. We are working towards AES' application for a continuation of their license. They made their filing within the required timeframe to show

compliance with all conditions of certification. And this is one of those conditions that is not yet complied with.

And so I believe that most, if not all, of the conditions have been met, save this one.

PRESIDING MEMBER GEESMAN: Well, let me say that I'm hesitant to box in the newest of my colleagues by trying to respond live to this discussion. At the same time I recognize the time constraints, and I'll offer my own opinions without speaking for the Committee.

But I would like to keep the plant operating. I found the staff's presentation compelling. I don't like the idea of the operating limitations. I have not liked that when it's come up in earlier cases, and I don't find the rationale particularly overwhelming here.

I prefer that the straight mitigation option through restoration, having gone through with the Morro Bay and El Segundo decisions, I am familiar with the methodologies that have been used. I wasn't on either Committee, but I did certainly consider the record in each of those cases.

And I frankly did not find the

applicant's rebuttal particularly convincing. I have a sense that a lot of this, both in terms of the staff and the applicant, may be framed more in terms of -- impact. I don't think it should be. I think we ought to address the specific factual situation in front of us of this project.

And on that basis I would be inclined towards the staff recommendation, but not with the operating limits that were proposed.

ASSOCIATE MEMBER BYRON: I suppose you're looking for a response from me, as well. Thank you, Commissioner. I concur with much of what Commissioner Geesman just said. The circumstances under which this permit was granted five years ago were somewhat different or extraordinary compared to the way we normally do things, as I understand it.

However, it was lawfully and correctly done, so I'm inclined to agree that we really do want to see this generation asset continue to operate without operational constraints.

But I think at this time that would be about all I'm prepared -- all I would be prepared to contribute to a decision.

MR. JOHNSON: According to the

condition, the applicant was to meet with the agencies and the compliance project manager to essentially agree upon the impacts and the mitigation.

And essentially we've come to where we are today with those differences of opinion. And so staff will, I think, go back and prepare our recommendation for the Committee.

PRESIDING MEMBER GEESMAN: Yeah, I have a suggestion -- a business meeting in September for the Commission to take action. And then back up from there the necessary time for us to put out a written recommendation. It does not need to be a particularly detailed decision. I think that we can rely on the record developed by the staff report and various comments filed.

I believe we're taking written comments until August 2nd?

MR. JOHNSON: That's correct.

PRESIDING MEMBER GEESMAN: So, assume that essentially what the courts would describe as a minute order or something close to that in terms of providing adequate notice of the Committee's recommendation to the full Commission. And then the Commission will take up the matter at one of

its business meetings in September.

MR. JOHNSON: Okay.

MR. KRAMER: Then I would imagine we would also calendar that five-year review at the same time.

PRESIDING MEMBER GEESMAN: That's was implied.

Anything else? Okay, I want to thank everybody for your participation today. We'll be adjourned.

(Whereupon, the Committee Workshop was adjourned.)

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CERTIFICATE OF REPORTER

I, TROY RAY, an Electronic Reporter, do hereby certify that I am a disinterested person herein; that I recorded the foregoing California Energy Commission Committee Workshop; that it was thereafter transcribed into typewriting.

I further certify that I am not of counsel or attorney for any of the parties to said workshop, nor in any way interested in outcome of said workshop.

IN WITNESS WHEREOF, I have hereunto set my hand this 6th day of August, 2006.