

PUBLIC WORKSHOP
BEFORE THE
STATE OF CALIFORNIA
WATER RESOURCES CONTROL BOARD

In the Matter of:)
)
Implementation of Federal Clean Water)
Act Section 316(b) Regulations)
_____)

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FIRST FLOOR AUDITORIUM
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OAKLAND, CALIFORNIA 94612

WEDNESDAY, DECEMBER 7, 2005

10:00 A.M.

Recorded by:
State Water Resources Control Board

PETERS SHORTHAND REPORTING CORPORATION (916) 362-2345

APPEARANCES

BOARD MEMBERS

Tam M. Doduc, Chairperson

Gerald "Jerry" David Secundy, Vice Chairperson

STAFF MEMBERS

Dominic Gregorio

ALSO PRESENT

John Maulbestsch, Consultant
California Energy Commission

Bob Lucas
California Council for Environmental and Economic
Balance

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P R O C E E D I N G S

10:00 a.m.

VICE CHAIRPERSON SECUNDY: Good morning and welcome to this workshop of the State Water Resources Control Board. I'm Jerry Secundy, Vice Chair of the Board. Tam Doduc, our Chair, will also be joining us shortly.

Also present are staff members from the State Board (inaudible) Water Quality (inaudible), Bill (inaudible), (inaudible) Adams (inaudible), Steve Seitz, Shelia (inaudible) from the Office of Chief Counsel.

And I believe we also have (inaudible).

The purpose of this workshop is to receive comments on whether the State Water Board should develop a statewide policy to implement federal Clean Water Act 316(b) regulations on cooling water intake structures.

This workshop (inaudible) prior workshop at Laguna Beach, California (inaudible).

As you may know, there's a growing scientific and public concern (inaudible) health of (inaudible) bay estuaries (inaudible). The impact of impingement and entrainment on (inaudible) life of cooling water intake

1 structures of power generating facilities is our
2 focus today.

3 The State Water Board also seeks public
4 comment on issues that should be addressed to the
5 state water policy relating to the 316(b)
6 regulations were to be developed. In addition,
7 the State Water Board is especially interested to
8 hear suggestions or ideas that will help to
9 control or mitigate the entrainment and
10 impingement on marine life of power generating
11 facilities.

12 On today's agenda we will have a brief
13 statement by staff, followed by a presentation on
14 alternative cooling technologies by Mr. John
15 Maulbestsch, consultant to the California Energy
16 Commission.

17 In addition, Bob Lucas, (inaudible).

18 After the presentations, we will open
19 the workshop to the public for comment. If you
20 intend to speak today, again, please fill out the
21 blue speaker cards and give it to the staff at the
22 registration table.

23 We will also accept written comments.
24 Depending on the number of cards that I receive,
25 we may limit the amount of time that each speaker

1 has. Right now it looks like we'll probably be
2 limited to about five minutes for each speaker.

3 Thank you all for attending. We're
4 going to try to move this along very quickly.
5 (inaudible) few minutes after ten.

6 If you have already submitted written
7 comments please, please, do not come up and read
8 your written comments. That really does not prove
9 to be very useful at all. We actually, as Board
10 Members, read your comments, believe it or not.
11 So I don't need to hear them again.

12 With that, I'll turn this over
13 (inaudible).

14 MR. GREGORIO: Thank you. Just to let
15 everybody know we're having a moment of technical
16 difficulty with the PowerPoint presentations, so
17 we'll need to move to the slides, especially for
18 the other speakers, fairly quickly it seems we
19 have some sort of turn-off (inaudible) hard time
20 mastering it. So we'll see how it goes.

21 Some of this will be redundant. It's a
22 repeat from the Laguna Beach workshop. But I
23 realize that there might be people in the audience
24 today that were not at the first workshop, so I'm
25 just going to cover a little bit of that

1 information, also.

2 There are 21 coastal power plants in
3 California. We estimate that over 16 million
4 gallons per day are sent through the cooling water
5 systems. There was some discussion at the last
6 workshop whether that is 17 million or 15 million.
7 It's a large number. And over 16 million was
8 actually a figure from our database at the Water
9 Board. So we'll stick with that, but it's
10 actually like 16.2 million.

11 We've got a system for permitting the
12 power plants, and that includes their intakes.
13 The Regional Water Boards issue and review the
14 NPDES permits which are done on five-year cycles.

15 EPA's new 316(b) rules are implemented
16 in these permits. And up until now each Regional
17 Board, and now you can see the problem I'm
18 having -- each Regional Board has been
19 independently addressing the intake (inaudible) in
20 the renewal process.

21 The EPA rules are really in two phases.
22 There's phase one rules, which are for new
23 facilities. And essentially all of the new
24 facilities are prohibited from using once-through
25 cooling. That's the net effect of the phase one

1 rules.

2 One of the questions that came up from
3 the Board Members during the last workshop had to
4 do with how do the rules relate to new versus
5 retrofit facilities. A new facility would fall
6 under phase one after January 2002, if a newly
7 constructed intake structure were designed to pass
8 the increase for additional cooling water flow.
9 So, new facilities, again, and that was 2002.

10 But there is a possibility of
11 retrofitting an existing facility, and that could
12 be considered an existing phase two facility as
13 long as the old intake structure is used and the
14 design capacity is not increased at that intake
15 structure.

16 However, for the discharge side a
17 retrofit could also be considered a major
18 modification in terms of the NPDES discharge
19 permit.

20 So, for phase two existing the
21 facilities, under the 316(b) rules, the data
22 collection requirements, the (inaudible), the
23 comprehensive demonstration studies, that's the
24 CDS, and the NPDES application, the deadline for
25 all of that is January 7, 2008.

1 The performance standards for the
2 reduction of impingement are 80 to 95 percent. So
3 there's a range given. And (inaudible) today.
4 And for entrainment it's 60 to 90 percent, that's
5 the range.

6 It allows mitigation in restoration
7 projects. And there is litigation going on in a
8 court back east. The ultimate decision at that
9 court could change the ability to use mitigation
10 in restoration projects.

11 Also the 316(b) phase two rules allow
12 site-specific determination by the Regional Board.

13 One of the other questions that came up
14 at the last workshop was what does the State of
15 New York 316(b) implementation policy require.
16 The State of New York has an existing regulation
17 now on the books that relates to the 316(b) rules.
18 So it is a state regulation there.

19 Intake structures must meet best
20 technology available. The target reductions for
21 impingement and entrainment are at the highest of
22 the ranges for their rule. The State of New York
23 has determined that restoration and site-specific
24 determinations do not meet BTA, best technology
25 available. So those are essentially not allowed.

1 And for the baseline calculation they
2 allow the maximum permitted flows. So that's a
3 summary of the New York rule.

4 One of the things that we were asked to
5 do from the last workshop was to have a meeting
6 with other state agency staff; and we did that.
7 It was two or three weeks ago, I believe, when we
8 had that meeting. Members of staff from the
9 Coastal Commission, the Coastal Conservancy, the
10 Resources Agency representing the Ocean Protection
11 Council Staff, Department of Fish and Game and the
12 California Energy Commission were all participants
13 in that meeting.

14 The major topics, you can see there,
15 were fairly technical, (inaudible) 316(b) rules,
16 restoration, (inaudible), power generation and
17 outcome on the end of our discussion here
18 (inaudible). So these were the kinds of things we
19 talked about.

20 We thought just for general information
21 purposes that we would share what we've been
22 considering at the staff level. None of this is
23 set in cement. This is all just sort of at the
24 discussion stage within the condition of water
25 quality staff at this point. But we thought we'd

1 share some of these thoughts.

2 At the last workshop we did recommend
3 that we would like to see -- having a heck of a
4 time with this -- make that as big as we can. So,
5 anyway, we've been thinking about having the
6 policy, if one exists, go into the thermal plan.
7 Because the thermal plan would be the logical
8 place from our standpoint where to put a policy
9 regulation. A power plant's thermal plan
10 currently regulates the discharge from the power
11 plant, so it seems logical that the intakes of the
12 power plants would go into the same policy
13 document.

14 So that, again, was our recommendation
15 from the last workshop. And we thought we'd just
16 reiterate that.

17 We would propose in a 316(b) policy that
18 we would have standardized data collection methods
19 for all of the regional boards and all of the
20 power plant data submittals. And we would
21 encourage a baseline calculation to use the actual
22 flows rather than the permitted maximums.

23 And that's a little bit different than
24 our typical way of approaching discharges where we
25 usually work out the permitted maximums for

1 calculations. But in terms of an intake
2 situation, if you mitigate or reduce the impact
3 from the intake of marine life, I think that it's
4 more realistic to go from what the actual current
5 impact is. In other words, the current flows.
6 And I think that's the direction we're going, at
7 least at the staff level.

8 We would encourage the upper end of the
9 performance standards for impingement and
10 entrainment; so 95 and 90 percent would be the
11 targets. Realizing that not all power plants
12 might be able to meet those targets, but those
13 would be where we would encourage the upper end.

14 We would discourage the use of cooling
15 water with no powers generated. One of the things
16 that came out of the interagency meeting that we
17 had was that there are some power plants that run
18 their cooling water systems even when there's not
19 significant power being generated. And that's
20 something we see as a way of reducing the
21 impingement and entrainment.

22 Mitigation and restoration, we had some
23 thoughts down here where we would standardize the
24 calculations for determining how much area needed
25 to be used for mitigation and restoration. The

1 one example that was given by Michael Foster at
2 the last workshop was habitat production -- and so
3 that was one example of how that could be done.
4 It seems to make sense, so that would be one way
5 to standardize that process.

6 We would prefer to see in-kind
7 mitigation rather than other types of mitigation
8 if it's possible. And we would like to see a
9 mitigation where for the net impacts, or going
10 back up to the target, let's say, for 90 percent
11 control of entrainment. Let's say a power plant
12 can only get 60 percent, so we'd like to see a
13 mitigation for the difference between that. So
14 that we really reduce the overall impact on the
15 marine environment.

16 We would like to see in situations where
17 there's more than one plant in close proximity,
18 for example we have three plants in Santa Monica
19 Bay down in southern California in our region IV.
20 We'd like to see cumulative impacts addressed.

21 And one of the things that -- probably
22 this isn't something that would be germane to a
23 statewide 316(b) policy, it might be somewhere
24 else, but we'd like -- probably the Water Code,
25 I'd imagine, or not the Water Code, but our

1 regulations, if (inaudible).

2 The regional boards have very extensive
3 work cut out for them in reviewing the mix at CDS
4 at the entire NPDES application for a power plant,
5 a coastal power plant. So we'd like to see an
6 additional surcharge to help the regional boards
7 fund that effort. We don't have all the figures
8 for you, this is just all conceptual at this
9 point. These are ideas that we might direct,
10 maybe, to the Board. So those are just our ideas
11 at this point.

12 There was one other question at the last
13 workshop. What are the alternatives to once-
14 through cooling, and what are the economics of
15 diversions to those alternatives. And we have
16 representatives from the California Energy
17 Commission here today. John Maulbestsch will be
18 making a presentation, but Jim McKinney from the
19 Energy Commission will introduce him. So, if it's
20 okay with the Board, we can proceed with that.

21 VICE CHAIRPERSON SECUNDY: I should
22 introduce our Chair who has now joined us, Tam
23 Doduc. Welcome.

24 CHAIRPERSON DODUC: Thank you. Traffic
25 was a nightmare.

1 VICE CHAIRPERSON SECUNDY: Welcome to
2 the Bay Area.

3 I also was neglectful in mentioning that
4 Pete Silva, our former Vice Chair, is no longer
5 with the State Water Board. He's in a position on
6 the Water District; certainly our loss. We're
7 down one member at this point in time. Pete was
8 my co-hearing officer at Laguna Beach on this
9 topic, so we certainly miss his knowledge and
10 experience.

11 MR. McKINNEY: Members of the Board and
12 Staff of the State Water Resources Control Board,
13 my name is Jim McKinney, staff with the California
14 Energy Commission. I'd just like to make a brief
15 introduction for Mr. John Maulbestsch, who is a
16 long-time contractor in our Public Interest Energy
17 Research program.

18 He's been doing work on alternative
19 cooling technologies, power plant efficiencies,
20 with different cooling technologies and the costs
21 of these alternative cooling technologies.

22 We have been asked to provide a number
23 of presentations in the course of this proceeding,
24 and at the last one another contractor for us, Mr.
25 Mike Foster, presented on the scientific aspects

1 of once-through cooling and the associated
2 impacts.

3 Today Mr. Maulbestsch will talk about,
4 again, the cooling technologies and their costs.
5 As time allows, in written form, we may also
6 present information on the current state of the
7 energy markets and capacity factors with the
8 coastal power plants here in California.

9 There's a lot going on at the policy
10 level in California that could affect how these
11 plants are operated and will be powered.

12 So with that I'd like to introduce Mr.
13 Maulbestsch.

14 MR. GREGORIO: I've turned it off from
15 the slide show, just showing it as the regular --

16 DR. MAULBESTSCH: Whatever works, you're
17 in charge.

18 Good morning. I've been asked to cover
19 quite a bit of material. I understand that the
20 time limits are rather stretched. So, we will get
21 right into it. And I want to make it clear at the
22 outset what I'm covering, what I'm not covering.
23 And then we'll go straight to the conclusions in
24 advance so you'll see where we're going to end up
25 about eight minutes from now.

1 Everybody in the room knows that power
2 plants use water. They use it for a lot of
3 different things. I'm talking about the water
4 that is used in plants that have steam turbines,
5 and have steam that needs to be condensed. And
6 water is used to cool those condensers in which
7 the steam is condensed.

8 Some cooling systems bring into the
9 plant, and then either do or do not consume more
10 or less water than others. So there are systems
11 available with which you can reduce the amount of
12 water used. Those reductions come at a cost.

13 And what we're going to talk about is
14 the tradeoffs between the amount of water saved
15 and the cost of doing so, in either capital costs
16 of building the cooling system and the plant, to
17 begin with; or the cost of operation and
18 maintaining of the plant after you use it.

19 Slide. Okay, --

20 (Laughter.)

21 DR. MAULBESTSCH: The next slide is
22 intended to show, as I say, the conclusions in
23 advance, where we're going to end up 20 minutes
24 from now.

25 I say water conserving cooling systems

1 are available at a price. The price includes
2 increased capital costs. And depending on what
3 kind of plant we're talking about, we're going
4 to -- the examples I'm using this morning are
5 going to be 500 megawatt plants, 500 megawatt
6 combined cycle plants, 500 megawatt stand-alone
7 steam plants.

8 We're going to look at the use of once-
9 through cooling, wet cooling towers, and dry
10 cooling, as alternatives. Depending on which
11 plant we're talking about and which cooling system
12 we're talking about, the use of water-conserving
13 systems, wet or dry, compared to once-through
14 cooling can increase the capital costs from a half
15 a percent or so up to 12 percent.

16 It can increase the amount of power that
17 the cooling system uses in the form of power to
18 pump some fans by a half to maybe 3 megawatts for
19 a 500 megawatt plant.

20 It can increase the plant heat rate from
21 say .4 of a percent up to about 4 percent. And it
22 can increase the power production cost, the
23 levelized cost in capital and fuel costs by just
24 under 2 percent to maybe just under 5 percent.

25 So, what we're going to see in the next

1 few minutes is the sort of individual results
2 leading up to those conclusions.

3 We're going to restrict the attention to
4 combined cycle and steam plants, because they're
5 the ones that have steam turbines with steam that
6 needs to be condensed. So we're not going to talk
7 about simple cycle turbine plants or reciprocating
8 engine plants, even though they use hot water, as
9 well.

10 We're talking about new plants and not
11 retrofit plants. We've done a study on the cost
12 of retrofits, as many people have. It's an
13 interesting story to tell, it's not (inaudible).

14 I was asked to give a brief primer, so
15 combined cycle plants, about two-thirds of the
16 power is generated by gas turbines. The hot gas
17 from the turbines is then sent to a heat recovery
18 steam generator. Steam is raised; steam is sent
19 to a steam turbine where the other one-third of
20 the power, roughly, is generated. The steam then
21 goes to a condenser.

22 Of you want a stand-alone steam plant,
23 on the next slide, you simply take the gas turbine
24 part away, and now instead of sending hot gas
25 through turbines or in fuel to the boiler, you

1 still raise steam, you still send it to a turbine,
2 you still condense the turbine in a condenser.

3 The condenser has to be cooled, and the
4 systems we're talking about refer to the sort of
5 lower right-hand corner of those slides in the
6 cooling system associated with the steam
7 condenser.

8 Slide. We're going to talk, as I said,
9 once-through wet and dry cooling. If we have any
10 time left at the end we can talk a little bit
11 about hybrid systems and spray enhancement of dry
12 cooling, which is a way of mitigating some of the
13 problems by using a little bit of water.

14 Once-through cooling. Cold water is
15 taken from some natural source. Run through the
16 condenser; it heats up as it condenses the steam.
17 The hot water is returned to the source.

18 If you use a wet cooling system instead
19 of returning the hot water from the condenser to
20 the original source, you take it someplace and
21 cool it. And then you take it back to the
22 condenser to use it again.

23 And so we see the hot water from the
24 condenser coming in at the top. It runs down over
25 some splash fill or slash bars. Air is drawn up

1 counter-current to the falling water. Some
2 portion of it is evaporated, a relatively small
3 portion, 1 to 2 percent of the water, is
4 evaporated to cool the remainder.

5 The next slide is -- for you who have
6 never seen a wet cooling tower. That's
7 (inaudible) probably about -- that first group
8 there is probably about the appropriate size for a
9 500 megawatt steam plant, (inaudible). That white
10 cloud above it is so-called water that's being
11 evaporated to cool the remainder.

12 The next slide shows an air cooled
13 condenser, or a dry system. Here the steam
14 doesn't go through the condensers that we saw
15 before. The steam comes from the turbine to the
16 top of a bunch of thin tube heat exchangers. Dry
17 air is blown across those exchangers; the steam
18 runs down the tubes, condenses, and is returned
19 back to the boiler or the steam generator.

20 Again, if you haven't seen one of these
21 there is one that's installed at a 500 megawatt
22 combined cycle plant in Las Vegas. Those vertical
23 pipes are the steam risers, taking the steam up to
24 the top of the -- into the condensers. The
25 condensers are hidden behind that wall which is a

1 wind wall to protect its performance during windy
2 conditions. They're pretty great. Okay.

3 Other sources for the wet systems, which
4 we know, can come from a variety of natural
5 sources. Surface or groundwater. The use of
6 reclaimed water from either municipal treatment
7 plants, ag runoff, or other sources is becoming
8 increasingly widespread. We're not going to
9 really talk about the costs of that this morning,
10 either, at least in my presentation.

11 Next slide. What I'm going to do is go
12 through some water use figures and some cost
13 figures for both the 500 megawatt combined cycle
14 plant and a 500 megawatt steam plant, and then
15 we'll consolidate them at the end in a comparative
16 cost of watts cost of energy production.

17 This is the water withdrawn from the
18 coast, if we can go back to that, please. Water
19 withdrawn from the source. And you can see with
20 once-through cooling, it's for a 500 megawatt
21 combined cycle plant, we're looking at over
22 130,000 gallons per minute. That's a lot of
23 water. That'll fill your backyard swimming pool
24 in something like 20 to 30 seconds.

25 The wet system withdraws considerably

1 less water, as you can see on that slide. It's
2 about 2300 gallons per minute. And the dry
3 system, and remember we're just talking about
4 water intake for cooling, doesn't use any.

5 Now, what happens to the water when you
6 get it. The once-through system returns it all to
7 the source water. The wet system evaporates a
8 couple of percent of what's being circulated, but
9 that's essentially most of the water that's being
10 brought in for makeup. So, out of the 2300
11 gallons per minute that we brought in, we
12 evaporate a couple of thousand of those gallons
13 per minute.

14 The once-through system nominally
15 returns everything to the source. There have been
16 discussions about whether there is any enhanced
17 evaporation of the source water because of
18 heating. That's a subject that's never been
19 figured out very precisely, and has had some
20 controversy. My guess is that for ocean
21 conditions the assumption that very little
22 enhanced evaporation takes place is an accurate
23 one.

24 The dry system, again we don't consume
25 any of the water.

1 Now, to the costs. The capital cost of
2 once-through wet and dry systems are greater than
3 once-through systems. The wet system, not
4 enormously so. We're looking at below a 1 percent
5 increase in capital cost. So the dry system,
6 because the air cooled condensers are larger and
7 more expensive, and affects some of the cost of
8 the remainder of the plant, we're looking at a
9 cost increase here of about 12.5 percent.

10 Note that the Y axis does not go to
11 zero. So, the visual impression is that it costs
12 a great deal more. I did that so that you could
13 see on that slide not only the percent increase,
14 but the absolute difference, as well.

15 And go to the once-through cooling
16 system type, this coast site costs about \$25
17 million out of the plant cost, in the range of a
18 couple --

19 We can also present that as a normalized
20 cost dollars to kilowatt. In capital cost you see
21 about the same thing.

22 The next slide, modest increases in the
23 design heat rate of going from once-through to wet
24 to dry.

25 The next slide shows what happens on the

1 hottest day of the year. The selection of the
2 design point is done in an optimization procedure
3 at the beginning. The hot day temperature is
4 significantly higher than (inaudible). And that
5 affects dry systems more than wet systems because
6 there's more variation in dry bulb temperatures
7 than there is in wet bulb.

8 And we're looking here at a decrease of
9 plant output of the difference between the once-
10 through and dry of 25, 27 megawatts.

11 Now, we're showing on hot days a
12 capacity loss to the once-through system. That
13 has nothing to do with the cooling system. That's
14 because the gas turbines are less effective, less
15 efficient, and put out less on hotter days. So,
16 that's the difference between those. It's
17 important to the capacity (inaudible).

18 The next slide. Now the same set of
19 slides for a stand-alone steam plant. And I think
20 I'll just go through, just roll through those
21 slides, because they are essentially the same.
22 Here again, we evaporate most of the water we take
23 in in plant systems. And once-through systems we
24 take in enormously more, but put most of it back.
25 The next slide shows an increase in the capital

1 cost. The capital cost is higher for these
2 systems but the percent increase in going for
3 once-through dry is comparable.

4 The next one, the heat rates, in fact,
5 is slightly higher in the steam plants than in the
6 combined cycle plants because the whole steam
7 plant is dependent on the cooling system, the
8 steam turbine exhaust; whereas the combined cycle
9 plant it's only about one-third of the output
10 that's affected by that.

11 So, here rather than showing a hot day
12 capacity loss, I show a hot day heat rate
13 increase. And that's because the steam plants are
14 typically designed so that they can be over-fired,
15 extra fuel sent to them so that they can maintain
16 the design output on the hot days. But you have
17 to burn more fuel to do it, so the heat rate goes
18 up.

19 We're looking at a modest increase for
20 wet systems. And these conclusions may change --
21 will change, and will change in some cases
22 dramatically, with the meteorology of the site.
23 And we're talking here about coastal sites in
24 California. So it never gets really hot for very
25 long. And under those conditions the heat rate

1 increase from design to hot day on the wet systems
2 is not very great; but for dry systems it can be 8
3 or 9 percent.

4 The cooling system, wet or dry, uses
5 more power than the cooling systems, a once-
6 through cooling system. For both dry and wet
7 towers you have to have fans that pull the air in
8 the system. And a wet system, in addition to
9 having to pump the same amount of circulating
10 water to the condenser, you have to pump it to the
11 top of the tower.

12 The effect is greater for steam plants
13 because we're rejecting more heat through the
14 cooling system in a 500 megawatt steam plant that
15 we are a 500 megawatt combined cycle plant. So
16 there's some increase to the system, greater for
17 steam plants (inaudible).

18 Maintenance costs are pretty specific --
19 site specific. It depends a lot on the quality of
20 the water and (inaudible) and so on. They are
21 usually estimated in sort of overview studies as a
22 couple of percent of the cooling system capital
23 costs. Whatever you use they're not very big
24 compared to the other costs that we're looking at.
25 That doesn't mean they aren't a problem for the

1 people who operate the power plant, but there are
2 tens of hundreds of hours, hundreds of thousands
3 of dollars a year compared to annualized capital
4 costs of a couple million and fuel costs of
5 (inaudible).

6 So, next slide. This is a slide
7 provided to me by the California Energy
8 Commission. And I show it because particularly to
9 the Board this may be information in a form that
10 you're used to seeing it in. And it includes
11 certain things in the costs that I don't include
12 in the analyses that I have done.

13 I don't include financing; I don't
14 include taxes and insurance and that sort of
15 thing. And the O&M that's shown here, both fixed
16 and variable, is for the whole plant. Whereas the
17 O&M that I look at is just for the cooling
18 systems, because I'm just interested in the
19 difference between cooling systems.

20 So my version of this same pie chart,
21 the next slide, shows (inaudible) costs, capital
22 costs and maintenance and power of the cooling
23 systems. The maintenance and power O&M numbers
24 are lower because, as I said, it's just the
25 cooling system.

1 The conclusion is the same. Fuel is
2 most of it; capital is next; and maintenance,
3 although it's important, is not a big factor in
4 the comparison of the systems.

5 So, the consolidation of all this is a
6 levelized cost of electricity. I used -- what I
7 did was I took the capital costs and I applied an
8 annualization factor of about 87.5 percent. That
9 depends on your tax rates and your idea of the
10 future inflation rates and so on, 87.5 percent.

11 I used fuel cost at \$6 per million Btu.
12 And I used a capacity factor below 90 percent,
13 8100 hours a year.

14 So with those assumptions we see modest
15 increases in the power production cost, a couple
16 of percent going from once-through to wet.
17 (inaudible) but I think it's a little over 3
18 percent -- once-through to dry for a 500 megawatt
19 combined cycle.

20 The next slide is exactly the same thing
21 for a 500 megawatt steam plant. Here the
22 production costs are higher because those plants
23 cost more and the heat rate is higher. And the
24 increase in going from one cooling system to
25 another is slightly more again, because for the

1 same amount of megawatt outputs you condense more
2 steam in a steam plant than you do in a combined
3 cycle plant.

4 So, do we have another couple of minutes
5 to talk about the hybrid system? It's your call.

6 UNIDENTIFIED SPEAKER: Go ahead, please.

7 DR. MAULBESTSCH: All right. Suppose
8 you have a little bit of water that you can use
9 for some of the time, not enough water for a wet
10 system, but maybe enough water to try and mitigate
11 some of the hot day penalties associated with the
12 dry systems. You remember? We put the hot days,
13 -- we saw a pretty significant heat rate increases
14 in the steam plant and some pretty significant
15 capacity reductions in the combined cycle.

16 Two ways of looking at that. One is
17 becoming increasingly -- is, anyway, not very many
18 of them have been purchased yet -- so-called
19 hybrid wet/dry systems.

20 The next slide gives you (inaudible)
21 steam coming out of the steam turbine, so nothing
22 is going to the air-cooled condenser. And that
23 runs most of the time all year. Some of the steam
24 can also go to the -- two condenser. The cooling
25 water for that condenser is circulated to a wet

1 cooling tower. Those systems are self balancing.
2 Run on the dry system until the back pressure gets
3 so high you can't stand it. And then you turn on
4 the circulating water. The steam goes to the
5 coldest place, and so it balances itself.

6 There's a picture of the largest one
7 that I know about is in Argentina. There's a
8 smaller one in the State of Washington at
9 Goldendale. And I think it's operating now but
10 I'm not sure of that. Do you know, is Goldendale
11 up?

12 UNIDENTIFIED SPEAKER: I think it's
13 operating.

14 DR. MAULBESTSCH: You can see
15 (inaudible) steam generator behind the dry tower;
16 that's a dry tower on the left you see those
17 (inaudible) stacks in the front row; and over on
18 the right-hand side is a four cell wet cooling
19 tower.

20 You can design these things to use a lot
21 of water or a little water, depending on how much
22 you have. And the cost of the system varies on
23 what you choose. There is a kind of hybrid wet/
24 dry system just used strictly for plume abatement,
25 put a little bit of dry tower on the top of a wet

1 tower. You run wet most of the time; and on cold
2 days when the plume's visible, you turn on the dry
3 and have dry tower cooling. Those cost about two
4 to three times what a standard wet cooling tower
5 does.

6 On the other hand, for water
7 conservation purposes, like (inaudible), say that
8 you can, if you have available to you, say, 15
9 percent of the water that you would use if you had
10 an all wet system, the cost of those systems are
11 about comparable to having an all dry system.

12 If you go closer to even less water you
13 find yourself in the position of having to build a
14 wet cooling tower which you hardly ever use for
15 very little benefit. And the costs actually
16 exceed the costs of an all dry system. Although
17 it may still improve your performance on hot days.

18 Spray enhancement is another approach to
19 this which almost everybody that's ever owned the
20 dry cooling tower has tried. They are not, to
21 date, anyway, as far as I know, offered as a
22 commercial alternative on new dry cooled towers,
23 but they may be.

24 What you do is you take this little bit
25 of water that you have on the hot days, and you

1 spray it into the inlet air stream of an air
2 cooled condenser. On the next slide we see where
3 that's being done as a test setup at a CEC-
4 sponsored project that I and one of my colleagues,
5 Mike (inaudible), did a couple years ago. And
6 that's spraying water right under the intake fan
7 of a cell, dry cooled, air cooled condenser in
8 Crockett, California, which is 30 miles from here
9 up on the San Francisco, shores of the San
10 Francisco Bay.

11 In round numbers if you spray 25 gallons
12 per minute into each cell you will reduce the
13 inlet air temperature by about 10 degrees. That
14 makes a big difference in the back pressure. If
15 you're at a place in the world where these hot
16 days go on for the whole summer, you end up using
17 a fair amount of water. If you're in a place
18 where you just get a few hot days, like Crockett,
19 with a very little bit of water you can get
20 yourself through a few bad days.

21 These summary slides simply put all in
22 one place the results that we rolled through in
23 the last 20 minutes. This one for the combined
24 cycle plant. The next one for -- steam plant.
25 And I think I'm not going to read it to you. It's

1 there.

2 It says a summary, and those -- I don't
3 know what the plants are, whether these -- copies
4 of the presentation are going to be made available
5 or --

6 VICE CHAIRPERSON SECUNDY: Well, that's
7 exactly what I was going to say. (inaudible)
8 copy of the presentation and then I'll ask Mr.
9 Gregorio if we have put that on the web.

10 MR. GREGORIO: Absolutely.

11 VICE CHAIRPERSON SECUNDY: Thank you
12 very much.

13 MR. GREGORIO: All of the presentations
14 today will (inaudible).

15 VICE CHAIRPERSON SECUNDY: -- move right
16 along. Mr. Lucas.

17 MR. LUCAS: My name is Bob Lucas; I
18 represent the California Council for Environmental
19 and Economic Balance. I want to thank you for
20 letting us have some time this morning to present
21 our views.

22 The Council is a nonpartisan nonprofit
23 organization of business, labor and community
24 leaders that strives to achieve environmental
25 goals consistent with a sound economy.

1 Our interest today is reflected in our
2 membership which includes over 75 percent of the
3 owners of the existing power generating facilities
4 that currently use the once-through cooling
5 systems.

6 These are the companies that will be
7 impacted by the retrofit requirements of the phase
8 two rules that is the subject of this meeting
9 today.

10 And so while we found the last
11 presentation to be very informative, it does not
12 reflect the situation as faced by the CCEEB
13 membership in dealing with phase two regulation.

14 And just to provide some overview of
15 what that impact might be, the 21 power plants
16 that currently use once-through cooling in
17 California generate approximately 24,000 megawatts
18 of electricity. This translates into about 40
19 percent of the electricity demand in California.

20 And they're also, by being located in
21 coastal communities, many of them are actually
22 located in the heart of some of the highest demand
23 areas, which means that these facilities provide
24 important load stabilization function to the grids
25 in those areas. Thus, these areas need to have

1 power located in close proximity to the users.

2 So each and every one of these
3 facilities is very important to the electrical
4 needs of the state.

5 and with that, I would like to introduce
6 Tim (inaudible) who is the Director of
7 Environmental Business for West Coast Power, to
8 walk through the slide presentation we've prepared
9 today to deal with some of the specific issues
10 that companies are facing.

11 Thank you.

12 UNIDENTIFIED SPEAKER: Good morning,
13 everyone. I'd like to immediately get right into
14 the presentation as Bob gave a great overview of
15 the impacts of regulation to the existing power
16 plants.

17 And so I wanted to hit on three subjects
18 today. One is the impacts of once-through
19 cooling. And we talked in the last meeting a lot
20 about impacts. And so I'd like to address are
21 they biologically significant or not.

22 I also want to get into some discussion
23 about the viability of alternative cooling
24 systems. And we heard previously about how that
25 applies to new facilities. And I'm talking about

1 the retrofit of existing facilities.

2 And then finally recommendations for
3 state guidance.

4 So, what are we talking about when we're
5 talking about environmental impacts. Well,
6 there's two sources. And we didn't really get
7 into a lot of detail on this, so I'll talk briefly
8 about it. One is impingement of adult fish and
9 shellfish; and another form of potential impacts
10 is entrainment. And that would be at larval stage
11 fish and shellfish. We spent a lot of time at the
12 last meeting discussing this, so I won't get into
13 detail.

14 But also previously we talked about the
15 large volumes of water used by these power plants.
16 And there's no dispute that there's a lot of water
17 being used in these power plants. However, there
18 is an important point that needs to be made is
19 that just because there's a lot of water being
20 used, it does not equal significant impacts to
21 marine biology.

22 That's an important distinction because
23 there are enormous quantities of planktonic
24 organisms in seawater. And the reason for that is
25 that there's natural spawning going on of these

1 fish, and they produce huge numbers of eggs and
2 larvae.

3 Just as an example, a single female
4 halibut will produce as many as 50 million eggs a
5 year. And they can do that for as long as 20
6 years, which is about a billion eggs over a
7 lifetime. So there is lots of eggs and larvae in
8 the water, in the source water.

9 And, of course, if everyone of those
10 matured into an adult fish, there would probably
11 be more fish than water in the ocean. So, of
12 course, natural functions take care of that
13 possibility. And 99 percent of these fish
14 actually have natural mortality. And about .1
15 percent survival is needed to adulthood to
16 maintain fish populations.

17 So those are some of the factors that go
18 into why large volumes of water doesn't equate to
19 large impacts to marine biology.

20 So what do power plants do to marine
21 biology, which is the relevant question. And this
22 is not a new issue. It's been going on for many
23 many years. And around late 1970s and early 1980s
24 the power plants that used once-through cooling
25 did do impact assessments. This was really the

1 first phase of 316(b) regulations.

2 And all these things were done, really
3 there have been a variety of different ways, but
4 generally they followed what they called an adult-
5 equivalent lot study modeling approach. What that
6 means is recognizing the natural mortality of fish
7 and the large volumes of larval stages that are
8 drawn into power plants. What does that mean to
9 adult fishes.

10 So they modeled what the natural
11 mortality and survival of those fish species would
12 be. And what we found was that generally the
13 adult losses at these power plants was about 1 and
14 2 percent of the adult fish stocks in those areas
15 of the power plants. I'm going to provide a table
16 in a second that shows some of the results of
17 those studies.

18 So now we have a number. What does that
19 mean to marine biology in the form of is it a
20 significant impact or not. One thing to compare
21 that to is the California Department of Fish and
22 Game's Near Shore Fisheries Management Plan, where
23 it talks about an overfished stock being one that
24 has over 30 percent of its unfished biomass taken.
25 So anything less than that would be -- would not

1 be an overfished stock.

2 Drastic, you know, measures to, in the
3 form of fishery controls, are not required until
4 there's a 60 percent take from the unfished
5 biomass. And we're talking about adult fish here,
6 we're not talking about the larval stages.

7 So 1 to 2 percent compared to those
8 numbers demonstrated an insignificant impact to
9 the adult fish populations. So that was the first
10 phase.

11 There's basically a second wave of
12 studies that are being done currently and over the
13 last few years. And they follow similar
14 approaches for how larval stage fish are sampled
15 and adult fish are sampled. But they have a new
16 form of modeling approach, and I'm calling that
17 proportional entrainment.

18 And what that means is what is the
19 number of larval stage fish that are taken into
20 the power plant; how does that relate
21 proportionately to the number of those larval
22 stage fish that are out in the source water from
23 the power plant.

24 And the studies on average are finding
25 it's about a 10 percent or less cropping effect of

1 the source water populations. It varies by
2 species, it varies by power plant. And remember,
3 the numbers of entrained organisms, that 99
4 percent of those all have natural mortality.
5 Again, I'm going to have a table that summarizes
6 this on the next slide.

7 What we're finding, the facts of these
8 findings of the studies demonstrate a number of
9 things. One is that once-through cooling systems
10 are not damaging coastal fisheries. I relate that
11 back to the Fisheries' plan from CDFG in comparing
12 the numbers to what they determine to be
13 significant thresholds where measures on
14 restricting fisheries are necessary or not.

15 Once-through cooling plants are not
16 adversely affecting California's present or future
17 populations of marine organisms. And I'm going to
18 get into this a little more in a second. And it
19 doesn't affect the beneficial uses of California's
20 coastal waters.

21 So, here's the table. And this is a
22 number of studies, both historically and more
23 recently. One I think is important to point out
24 is the Huntington Beach study. And it measured,
25 what I talked about, proportional entrainment,

1 which is a new modeling approach. It was
2 conducted last year and found 26 percent source
3 water populations are being entrained at that
4 station. That is, again, the larval stage fish;
5 not the adult fish. You relate that into an adult
6 equivalent and you model that, it's going to be a
7 very very small percentage, because 99.9 percent
8 of those larvae are going to have natural
9 mortality.

10 There's a number of studies both showing
11 the adult equivalent lots in the second column,
12 and proportional entrainment in the third column.

13 A couple of real examples of trying to
14 look at whether or not impacts are biologically
15 significant. Trying to focus on the species of
16 fish, the gobies. It's one of the more abundant
17 fishes that are found being entrained in power
18 plants.

19 And when we look at older versus newer
20 studies we can see, we can compare and see if
21 there's been a change in the number of larval fish
22 out in the water. And we're finding that those
23 populations are not declining since the original
24 studies 20 years ago.

25 Another example is gobies around the

1 Agua-Hedionda Lagoon in front of the Encina power
2 station. There's also a lagoon just south of that
3 station, Vadaquitas (phonetic). And it doesn't
4 have a power plant. We're finding that there's
5 actually more abundant gobies in the Agua-
6 Hedionda Lagoon than Vadaquitas. So, in fact,
7 there are quite a few more per variant.

8 Also, another good source of data is the
9 20 years of studies at Diablo Canyon. They show
10 that there's no significant declines in near-shore
11 fish populations. And that power plant's been
12 drawing water for many many years.

13 So, one of the things we're kind of, I
14 think that's causing, you know, the lack of
15 declines of fish in these areas is the
16 compensatory mechanisms that are naturally
17 occurring in these fish species.

18 It allows survival, even though there
19 are a lot of impacts to those fishes, including
20 fishing and other factors, human factors.

21 Next slide. And really it's essentially
22 kind of interesting. We're talking about impacts
23 because the phase two 316(b) regulation actually
24 tries to avoid discussing impacts. Historically,
25 316(b) did focus on impacts, and the studies were

1 trying to address whether or not there were
2 significant impacts and change needed. And the
3 results were no change was needed at these power
4 plants.

5 But the new phase two regulation focuses
6 in on trying to find an easy and more certain
7 method to drive the performance standards for
8 reduction. So you can have a power plant that has
9 no impacts and the power plant still has to meet
10 the performance standards.

11 There are options. In fact, EPA
12 recognized that at power plants with low impacts
13 that the costs outweigh the benefits. And so
14 there's a mechanism called the cost/benefit test
15 that allows for reduction in the number of the
16 standard form impingement reduction, and
17 entrainment reductions. Recognizing that the
18 costs may outweigh those benefits.

19 What EPA tried to do is avoid whether or
20 not in a subjective way there's impacts or not.
21 Just reduce from your baseline and reduce the
22 impingement and entrainment. And (inaudible) the
23 best available technology requirement of the Clean
24 Water Act section 316(b).

25 The second thing I'd like to address is

1 about retrofitting these once-through cooling
2 systems to wet or dry cooling. And since phase
3 two facilities are existing power plants, they're
4 basically the 21 power plants in California that
5 use the system, representing 24,000 megawatts. It
6 doesn't apply to new facilities. The phase one
7 regulation applies to new facilities.

8 What EPA found was that both wet and dry
9 cooling would not be mandated as part of the phase
10 two regulation. There's a number of
11 considerations. They're well documented in the
12 Federal Register for the phase two regulation. I
13 put a couple citations in here.

14 But generally they were not economically
15 practical, as well as technically -- there are
16 technical feasibility challenges, as well, on
17 retrofits.

18 Another issue was the high energy
19 penalties associated with those. So I'll get into
20 some detail on each of these.

21 First of all, the retrofit costs. I'm
22 not going to provide nearly as much detail as
23 presented on new facilities. But generally -- let
24 me go to the next slide -- but there are a number
25 of sources of data on retrofit costs, including

1 some local California power plant owner estimates.
2 And they're presented up here.

3 EPA also estimated costs in the Federal
4 Register, in the preamble of the phase two 316(b)
5 regulation, which is the middle set; and EPRI has
6 some cost estimates, as well.

7 I'm going to get to what this means in
8 the big picture in a moment. But you do see the
9 very substantial retrofit costs for these large
10 power plants.

11 Other issues associated with
12 retrofitting would be real estate. Coastal power
13 plants are on very highly desired locations along
14 the coast. There's not a lot of available real
15 estate to expand those. And a lot of them are
16 tucked in pretty tightly without real estate
17 available for retrofit to wet or dry cooling
18 systems.

19 In fact, EPA recognized this in the
20 preamble to the rule. They said they did not
21 consider land issues and just estimate the costs
22 associated assuming there was available land to
23 retrofit.

24 There's also a number of environmental
25 impacts actually that would be created due to

1 retrofit to wet or dry cooling. The first one is
2 increase in air emissions. There's two ways,
3 there's direct and indirect, that increases. I
4 think the indirect is probably the more
5 substantial of the two. What should be that the
6 penalties associated with energy efficiencies
7 would create the need to fire that natural gas
8 somewhere else to make up for the lost efficiency,
9 to meet electrical demand, which would then have
10 direct air emissions.

11 There's also direct air emissions
12 associated with the wet cooling towers in the form
13 of particulate matter from the water droplets.

14 Second issue is community noise impacts.
15 As Bob pointed out, these are -- a lot of the
16 power plants are in the load centers where
17 there's, you know, large populations. So we have
18 to consider what the noise from fans might do to
19 those localities.

20 There's also visual resources. I think
21 some of the pictures presented earlier were very
22 good at displaying the visual resource impacts
23 from wet plumes as well as the large equipment,
24 for instance, heights of these wet and dry cooling
25 systems.

1 And finally, the use of potable and
2 reclaimed water. And we know that that is a major
3 issue in the State of California. To try to
4 retrofit to wet cooling using substantial volumes
5 of water, in fact State Water Board resolution
6 7558 actually goes the other way and says look to
7 the ocean first for power plant cooling, and
8 inland water second or last.

9 And lastly, on the water side, there's
10 pumping, moving water around in the State of
11 California has its own set of environmental
12 impacts about transportation and damming up water
13 supplies.

14 I'd like to get into energy penalties,
15 energy efficiency hits that would result from a
16 wet or dry cooling retrofit of a power plant.
17 These are EPA's numbers. EPA spent 2.4 to 5.3
18 percent efficiency loss from a wet cooling
19 retrofits. And dry cooling would be 8.6 to 10
20 percent.

21 What I did is I took the averages of
22 those two numbers to put this into perspective,
23 what this means to California's generating
24 capacity potential. And also the earlier cost
25 estimates I had presented, and took the range of

1 the low to the high. And said this is what it
2 means to California if we did retrofit at all of
3 these power plants.

4 And basically with the wet cooling
5 towers it would be 924 megawatts of lost capacity
6 from the inefficiencies of that system. If you
7 want to replace 924 megawatts you need about a
8 billion dollars investment in a new power plant.

9 Dry cooling is, of course, a substantial
10 energy penalty. It's equivalent to about one of
11 our nuclear power plants, or four to five large
12 combined cycle plants. You'd need several billion
13 dollars to replace that loss of capacity.

14 But that's not the only dollar, and of
15 course the dollar is associated with the retrofit
16 of wet and dry cooling. And again, the range from
17 low of 1.1 to high of 4.2 billion. And what we've
18 seen is the reality in California with real estate
19 issues, high cost of real estate, it's generally
20 on the higher end of that range.

21 So the final thing I'd like to talk
22 about is what kind of guidance is needed; what do
23 we need to do about -- what does the state need to
24 do about this regulation.

25 I have a number of recommendations. One

1 is that the state should be working towards
2 consistent, making sure this regulation is
3 consistently applied to the Regional Boards.
4 There's areas for guidance, absolutely; we don't
5 dispute that.

6 But we don't believe a new or different
7 formal policy is needed. And a number of reasons
8 why. One is that EPA did this already. They
9 considered the options. If you read the preamble
10 to the regulation there's a lot of detail in
11 there. There's a number of documents that came
12 out, very large volumes of - in fact, you could
13 read this for weeks and still be reading it.

14 But we don't believe that we should be
15 re-exploring those debates. There is some
16 insufficient time to complete policy development
17 is another one of our (inaudible). The federal
18 rule requires action now. We are acting now. We
19 are complying now.

20 And the federal rule does significantly
21 reduce impingement and entrainment at these
22 systems. It, like I said earlier, it doesn't
23 matter if there is or isn't an impact to the
24 environment. It still requires each plant to act.

25 So, some specific examples of what kind

1 of state guidance do we suggest. Some of these
2 were mentioned earlier by Dominic. (inaudible)
3 baseline is one. What area we think there's some
4 value in discussing.

5 Compliance implementation challenges.
6 What I mean by that is once you decide what you're
7 going to do, how are you going to do that. How
8 are you going to comply with local rules and
9 regulations, and CEQA is one of the main
10 challenges that I see, how you do that in a quick
11 manner.

12 Another area is benefits evaluation. I
13 talked earlier about the cost/benefit compliance
14 option. I believe that will be applicable to
15 several facilities in California.

16 And then lastly restoration measures, or
17 not lastly, second to the last is restoration
18 measures. There's definitely some areas where we
19 could be talking about how to implement
20 restoration as a compliance option.

21 And then lastly, definition of not
22 significantly greater than. I mean it's the key
23 subject. And there, EPA kind of left this open.
24 But if you're going to do a cost/cost or cost/
25 benefit test, what is that not significantly

1 greater than test that you're trying to meet.

2 Certainly this may not be all the ideas
3 that could be explored. We think it should be
4 done in a manner of addressing some of these
5 definitions in a guidance approach, not a policy
6 approach.

7 And actually the EPA believes that
8 they're going to address all these in a Q&A type
9 guidance document. So really what we suggest is
10 in the absence of EPA doing that, then the state
11 would consider this. But if EPA does come
12 through, we'll get that guidance that we need.

13 So, I think I've hit on the subjects
14 that were brought up at the Laguna Beach workshop
15 regarding feasibility of alternative rulings and
16 cost, as well as impacts, and biologically
17 significant or not. And we've made our
18 suggestions for how the state should proceed. And
19 I'll address any questions that you may have.

20 VICE CHAIRPERSON SECUNDY: I don't have
21 any at this time. I've had an opportunity to see
22 this presentation prior to this meeting, so I'm
23 fairly familiar with it. And I've also had an
24 opportunity to ask questions in advance. Thank
25 you very much for your presentation.

1 We're now going to go to public comment.
2 If anyone has not put in their blue card now is
3 the time to do so. Pretty much going to cut off
4 any more blue cards.

5 And I am limiting to five minutes
6 (inaudible). I have grouped you in, I think, a
7 logical order, at least. We have some
8 presentations from governmental entities; we have
9 presentations from (inaudible) representatives,
10 and also from the environmental community. If I
11 have (inaudible), please speak up and let me know.
12 And I, as always, will apologize in advance for
13 butchering your names. Sometimes it's my
14 (inaudible), sometimes it's your handwriting.

15 We will start off with Sam Schuchat,
16 who's with us in a different guise.

17 MR. SCHUCHAT: Morning, Members of the
18 Board and Staff. My name is Sam Schuchat. My day
19 job is the Executive Officer at the State Coastal
20 Conservancy. Since last year, by statute, the
21 Executive Officer of the State Coastal Conservancy
22 is also the Secretary to the newly created Ocean
23 Protection Council.

24 The Ocean Protection Council is a new
25 entity in state government. The Council, itself,

1 consists of the Secretaries of Resources, and EPA,
2 the Chair of the State Lands Commission, which
3 rotates between the (inaudible) and Treasurer, as
4 well as two non-voting members, one from the
5 Assembly and one from the Senate.

6 One of the reasons that the Council was
7 created was to play a coordinating role in state
8 government regarding ocean issues. If you're
9 familiar with either the (inaudible) Ocean Report
10 of the U.S., Ocean Report, both of those documents
11 call for the more coordinated approach to ocean
12 policy.

13 The Council has a number of other roles,
14 as well. I have no particular point of view or
15 recommendation for you on this issue, but I simply
16 wanted to come up and introduce myself and the
17 Council to you, and tell you that the Council has
18 taken an interest in this issue.

19 The reason I think that is the case is
20 that while we have governmental perspective is at
21 issue, once-through cooling, that involves at
22 least three different regulatory agencies in state
23 government, all of which have different things
24 that they regulate, different statutory bases and
25 background and different compositions when you

1 look at the Board.

2 The Council is interested in this issue
3 and I think will be looking for a way to play a
4 constructive role with and between the at least
5 three agencies involved.

6 As some of you know, Dominic has
7 actually been on the staff level representing the
8 Water Board with the Council. Dominic also
9 provides -- our PowerPoint services usually, and
10 he seems to have lost his touch today --

11 (Laughter.)

12 MR. SCHUCHAT: Normally he's an ace, but
13 maybe it's the pressure of the issue.

14 So, that's really all I wanted to tell
15 you. I just wanted to introduce you and let you
16 know that the Council is very interested in this
17 issue, and as we like to say, we're from the
18 government, we're here to help.

19 VICE CHAIRPERSON SECUNDY: Thank you,
20 Mr. Schuchat.

21 Tom Luster from the California Coastal
22 Commission.

23 MR. LUSTER: Thank you. Good morning,
24 Chair Doduc and Board Members and the interested
25 folks. I'm Tom Luster, Staff of the California

1 Coastal Commission. Thanks for the opportunity to
2 speak with you about some of these shared concerns
3 and jurisdiction we have related to these
4 important issues.

5 I have some prepared comments for your
6 consideration related to once-through cooling.
7 And also a couple of recommendations, and a
8 request for continued coordination to resolve some
9 of the concerns you've heard about today.

10 Once-through cooling is a largely
11 outdated technology that causes significant
12 environmental impacts. Once-through cooling
13 systems on California's coast are generally
14 several decades old and were sited before we knew
15 about the many significant adverse effects on
16 marine biology.

17 You've already heard about many of these
18 adverse effects at the last workshop. To provide
19 a sense of scale, the 16 billion gallons per day
20 of permitted cooling water flow is equal to about
21 50,000 acrefeet per day. That represents a one-
22 foot-deep area about 80 square miles of near-shore
23 and (inaudible) waters being pulled through these
24 power plants. That's 80 square miles every day of
25 lost habitat and lost fish production and lost

1 environmental and economic benefits to the state.

2 Even on days when less than this maximum
3 permitted flow, this may be the single largest
4 ongoing water quality impact permitted by Regional
5 Boards.

6 Importantly, as you saw earlier today,
7 there are feasible and less environmentally
8 damaging alternatives to once-through cooling.
9 The issue is not about whether California will
10 have the electricity it needs, it's about whether
11 we can have the necessary electricity without
12 suffering these huge losses to the state's
13 resources.

14 We can readily provide for our
15 electrical needs with less harmful alternatives to
16 once-through cooling that you heard about today;
17 dry cooling, hybrid cooling, using recycled or
18 reclaimed water and others. Many of which would
19 reduce or entirely eliminate the adverse effects
20 on marine organisms and could overall have fewer
21 adverse environmental impacts.

22 Further, these other cooling methods are
23 available, feasible and economically viable.
24 They're the ones used by power producers in
25 noncoastal settings, and most of them can be used

1 in coastal locations.

2 Once-through cooling can only be
3 considered efficient or less costly if you ignore
4 its losses and impacts on the marine environment.
5 We recognize, too, that for some of the state's
6 coastal power plants once-through cooling may be
7 the only feasible alternative, due primarily to
8 space constraints or lack of a nearby alternative
9 water source. In those cases we recognize that
10 the best we can do is to develop effective
11 mitigation, reduce the adverse impacts, pending,
12 of course, the decision in the federal court case
13 on the east coast regarding that issue.

14 Finally, just a few recommendations for
15 you. We largely concur with your staff
16 recommendations we saw earlier today. We
17 recommend continuing the coordinated approach
18 between the State Board, the various Regional
19 Boards, the Energy Commission, the Coastal
20 Commission and the Ocean Protection Council on
21 these issues.

22 We also recommend coordination among the
23 agencies as to how to study these issues; review
24 and permitting for continued once-through cooling
25 operations will require these up-to-date studies

1 you heard about earlier to determine how
2 significant the cooling systems' adverse effects
3 are, and what the available alternatives are, and
4 which mitigation measures are best suited to
5 address the impacts.

6 These studies need to be adequate not
7 only for 316(b), but for purposes of the Porter-
8 Cologne Act, the Warren Alquist Act, the Coast Act
9 and CEQA.

10 Several recent studies were completed
11 under the Energy Commission's review, and with the
12 assistance of at least two of the Regional Boards.
13 In each case they identified significant impacts,
14 well beyond the level identified in the studies
15 done several decades ago.

16 Two quick examples. The study at Morro
17 Bay found that 17 to 33 percent of the Morro Bay
18 marine production is being pulled through the
19 power plant. The study at Huntington Beach, the
20 losses there were found to be equivalent to about
21 two square miles of ocean production. So these
22 are significant impacts being found with the more
23 recent studies.

24 Several weeks ago we provided a letter
25 to your staff and to the Regional Boards listing

1 many of the protocols we believe are necessary for
2 these studies to be adequate.

3 We also recommend you consider updating
4 and revising your policy related to the use of
5 different types of water for cooling purposes.
6 Your resolution 7558 from 1975 lists ocean water
7 as the second of five choices in a priority list
8 of sources from which cooling water should be
9 obtained. This is based in part on a belief at
10 the time that ocean waters were more forgiving
11 than inland waters of this type of use.

12 We recommend that this policy be updated
13 to better address feasible alternatives other than
14 those dependent on fresh water or ocean water, and
15 that the priorities be re-established to recognize
16 the substantial effects once-through cooling is
17 having on California's marine environment.

18 These changes may be along the lines of
19 what's being considered by the Energy Commission
20 as part of its policy development.

21 VICE CHAIRPERSON SECUNDY: You need to
22 wrap it up.

23 MR. LUSTER: Okay. Thank you. In
24 closing we recognize it's just a matter of time
25 before many of these once-through cooling systems

1 are replaced with less (inaudible) methods of
2 providing electricity. Your support for
3 (inaudible) would be most appreciated.

4 And with that I'll thank you again and
5 be happy to answer any questions. Thank you.

6 VICE CHAIRPERSON SECUNDY: Jim McKinney
7 and Melinda Doran from the California Energy
8 Commission.

9 MS. DORAN: Good morning. I just wanted
10 to give a brief second update on the PIER program
11 (inaudible) Energy Commission. My name's Melinda
12 Doran; I'm Technical Lead for the once-through
13 cooling research program in the PIER program,
14 which is the Public Interest Energy Research
15 program at the Commission.

16 VICE CHAIRPERSON SECUNDY: Can you move
17 the microphone closer.

18 MS. DORAN: Sorry. Since we presented
19 some of the information at the Laguna Beach
20 workshop the RFP is closed. We got 12 proposals
21 totaling over \$200. We have about a million or so
22 to fund, so the technical advisory group will be
23 meeting and are presently reviewing the proposals
24 that we received. And hopefully we will be
25 awarding, after it goes through the Commission

1 process, we'll be awarding the ones that have been
2 approved sometime in the beginning of 2006.

3 The proposals that we did receive mostly
4 focus on impingement and entrainment and life
5 history. Some of the samples for that. So, the
6 grid cross-sections from industry, researchers and
7 also consultants. (inaudible).

8 VICE CHAIRPERSON SECUNDY: Thank you.

9 MR. MCKINNEY: Chairman Doduc, Vice
10 Chair Secundy, Staff of the State Water Resources
11 Control Board, again my name is Jim McKinney. I'm
12 with the Office of Energy Planning and Policy at
13 the California Energy Commission.

14 Thus far our involvement with this
15 proceeding has been of a conventional nature.
16 We've prepared or coordinated three presentations
17 on different aspects of this issue. We now will
18 be advancing this to policy level and
19 recommendations. I have a preliminary policy
20 statement I'd like to enter into the record. That
21 will be followed by a letter signed by B.B.
22 Blevins, our Executive Director at the Energy
23 Commission.

24 First off I'd like to summarize the
25 policy work our Commissioners have done in the

1 Integrated Energy Policy Report proceeding; it was
2 just concluded this last October.

3 In sum, in terms of findings, once-
4 through cooling can contribute to declining
5 fisheries, and the degradation of estuaries, bays
6 and coastal waters.

7 Two, in terms of recommendations, the
8 Energy Commission has the opportunity to work with
9 the Ocean Protection Council, the State Water
10 Resources Control Board, and other agencies to
11 address once-through cooling issues in the broader
12 context of protecting the state's fragile marine
13 ecosystems.

14 Our Public Interest Energy Research
15 program should continue to collaborate with the
16 State Water Board and other agencies and
17 stakeholders to develop sampling and other
18 analytic protocols to provide clear and consistent
19 approaches for assessing the ecological effects of
20 once-through cooling.

21 The Energy Commission Staff should
22 update its memorandum of agreement with the State
23 Water Resources Control Board, the Regional Boards
24 and the Coastal Commission to develop a consistent
25 regulatory approach for the use of once-through

1 cooling, including investigating retrofit control
2 technologies to minimize impacts to the marine
3 environment.

4 And finally, Commission Staff should
5 update its data adequacy regulations with respect
6 to once-through cooling at coastal power plants,
7 because the existing regulations do not provide
8 sufficient guidance regarding the type of data
9 needed to complete an environmental analysis.

10 So these are the policy recommendations
11 from our Commissioners. As of October they've
12 been forwarded to the Governor and Legislature,
13 again, as part as the Integrated Energy Policy
14 Report.

15 I'd like to enter a brief staff
16 statement into the record.

17 VICE CHAIRPERSON SECUNDY: (inaudible)
18 we have copies of this and you needn't read the
19 whole statement. If you can summarize it in some
20 way, that would be fine.

21 MR. McKINNEY: I would like to just, you
22 know, highlight the key points. I appreciate the
23 (inaudible).

24 Is a new rule needed? Yes, staff at the
25 Energy Commission believe that a new rule is

1 needed by the State Water Board. And we believe
2 that the new rule should lead to measurable
3 reductions in biological resource impacts.

4 At the statutory level, the Energy
5 Commission has the general authority to balance
6 energy needs with energy production and
7 environmental protection. On a case-by-case basis
8 we have the authority to limit environmental
9 impacts.

10 It is up to the State Water Resources
11 Control Board, with its statutory mandate and
12 authorities, to set broad policy guidance to
13 protect near-shore marine ecosystems and estuarine
14 systems. We look forward to the Board enacting
15 that level of its policy and statutory
16 responsibility.

17 The many Regional Boards on the coast
18 are going to be on the front lines in terms of
19 enacting and implementing the new standards
20 promulgated by the State Water Board. It's
21 important that there be a consistent regulatory
22 approach in each of the Regional Boards here in
23 California.

24 And lastly, as I alluded to earlier in
25 my introduction of Mr. Maulbestsch, the energy

1 industry, energy markets in California are going
2 through substantial changes. Although there are
3 24,000 megawatts of capacity on the coast, the
4 actual energy produced by those plants is
5 significantly lower than that. Most of these
6 plants, with the exception of the (inaudible), are
7 operating in the 10 to 20 percent capacity factor;
8 it's a very low range.

9 Over the next five to ten years we
10 expect each of these plants and their operators
11 and owners to make individual decisions on whether
12 to repower or retire those power plants. They may
13 say that this will be done in the context of new
14 environmental regulation promulgated by the State
15 Board. We ask the State Board to work with the
16 Energy Commission to interpret the actions of
17 individual generators for coastal power plants
18 over the next five to ten years, again, as they
19 choose to retire or repower their facilities.

20 Members of the Board, thank you very
21 much for the opportunity to make these comments.

22 VICE CHAIRPERSON SECUNDY: Thank you.
23 We're now going to return to comments from the
24 environmental community. Heal The Bay, Sarah
25 Abramson.

1 MS. ABRAMSON: Good morning, thank you
2 for the opportunity to comment. My name is Sarah
3 Abramson; I'm a Staff Scientist at Heal The Bay.

4 As was stated earlier, the federal rule
5 for -- facilities requires impingement mortality
6 reduction of 80 to 95 percent, and entrainment
7 reduction of 60 to 90 percent.

8 Although this sounds like an
9 environmentally protective measure, it's not. The
10 rule provides five compliant alternatives which
11 weaken the regulatory strength these reductions
12 have.

13 Additionally, in the federal rule, the
14 basis on which to calculate the impingement
15 mortality and entrainment reductions -- the
16 calculation baseline is arguably unclear and
17 provides too many options for measure of
18 impingement mortality and entrainment reductions.

19 California should take a more defined
20 and more scientific approach to determining the
21 calculation baseline on which to base impingement
22 and entrainment reductions.

23 These facilities have been taking in
24 cooling water and marine life for decades. And
25 are likely to have depleted invertebrate and fish

1 populations in their coastal vicinity.

2 Using examples from the waters at or
3 nearby once-through cooling facilities, as
4 proposed in the federal rule, could result in a
5 skewed baseline.

6 Thus, we recommend that the methods to
7 determine the calculation of baseline involve the
8 identification and monitoring of a series of
9 reference sites that represent similar habitats
10 and support similar fauna of the coastal power
11 plant facilities.

12 The density of marine life, including
13 adults and larval stages of fish and
14 invertebrates, should be surveyed at the reference
15 sites to provide a characterization of a natural
16 diversity without the impacts from cooling water
17 intake systems.

18 In the state policies phase two
19 facilities should be responsible for achieving
20 entrainment reductions based on the density of
21 marine life at these reference sites, with
22 upgraded technology such as dry cooling.

23 Additionally, we recommend that this
24 method for determining calculation baseline is
25 used universally throughout the state for coastal

1 facilities.

2 I understand that this is a complex idea
3 and we will provide comment letters on the
4 following up of our idea for --

5 VICE CHAIRPERSON SECUNDY: I was just
6 wondering, do you have some specific reference
7 sites in mind at this point?

8 MS. ABRAMSON: Do you recommend a series
9 of reference sites. It would have to be multiple
10 ones that represents habitats --

11 VICE CHAIRPERSON SECUNDY: No, no, I
12 understand that. Have you identified the specific
13 sites you would like to use as reference sites?

14 MS. ABRAMSON: No, we have not, at this
15 point.

16 We also believe the cost/cost and cost/
17 benefit exceptions should not be included in the
18 state policy for phase two facilities.

19 California's the largest ocean economy in the
20 nation. In the year 2000 the gross state product
21 for coastal tourism and recreation alone was over
22 \$12 billion.

23 An economic analyses, such as the cost/
24 benefit test, environmental benefits are often not
25 fully known and difficult to monetize. In a cost/

1 benefit analysis the cost portion if usually
2 complete because costs are easily documented.
3 However, in the case of the environment, economic
4 benefits are usually only partially recognized.
5 Thus the comparison of cost to benefits is
6 fundamentally unbalanced and may often skew the
7 analysis to result in costs outweighing benefits.

8 So, in closing, we urge the State Board
9 to continue California's legacy of coastal
10 protection by adopting the most protective policy
11 possible regarding phase two facilities to
12 safeguard our valuable marine life and habitats.
13 Thank you very much.

14 VICE CHAIRPERSON SECUNDY: Thank you.
15 California Coastkeeper Alliance, and here I have
16 no first name, Haren?

17 MS. HAREN: Angela.

18 VICE CHAIRPERSON SECUNDY: I'm sorry?

19 MS. HAREN: Angela.

20 VICE CHAIRPERSON SECUNDY: Angela.

21 MS. HAREN: Good morning; my name is
22 Angela Haren. I'm with the California Coastkeeper
23 Alliance. The Alliance represents ten waterkeeper
24 groups from the Oregon border to San Diego.

25 Thirty years of litigation, a recent CEC

1 Staff report and testimony today from the Coastal
2 Commission and CEC Staff -- I'm sorry -- all show
3 that there are significant impacts from once-
4 through cooling.

5 So, for example, Mr. Lucas' presentation
6 ignores the very significant impacts of removing
7 the larvae, specifically their role as a major
8 food source of other fish.

9 We're not here today to debate these
10 impacts. We're here to decide how to phase out
11 once-through cooling. Because of the enormous
12 volumes of water involved impacts on coastal
13 ecosystems can be significant. Some of these
14 plants are drawing water from habitats known to
15 support endangered species, including marine
16 mammals who have been known to get trapped and
17 killed in intake pipes.

18 The federal rule will not guarantee the
19 protection of our coastal marine resources from
20 the impacts of once-through cooling. As the rule
21 stands, there are significant loopholes that can
22 allow plants to continue this harmful technology
23 in exactly the same manner that they have been for
24 decades. California's water deserves better.

25 As other states have, California should

1 go beyond the federal minimum and move to close
2 these loopholes. Separate from interpreting the
3 new 316(b) rule the state should develop a
4 coordinated policy that goes beyond the minimum
5 federal requirements and phases out once-through
6 cooling as soon as possible.

7 Alternative cooling methods are
8 available that are far less damaging and are
9 technologically and economically feasible. These
10 methods offer better alternatives that would
11 protect our marine and coastal environment, the
12 same environment that fill 86 percent of our
13 state's total economic activity, according to
14 California's Ocean Economy Report published in
15 July of this year.

16 We call on you now at this critical time
17 to take an active role in protecting our coastal
18 and ocean resources by developing a statewide
19 policy to phase out once-through cooling, and to
20 develop a specific schedule, including milestones,
21 to reach this goal.

22 Thank you.

23 VICE CHAIRPERSON SECUNDY: I do have a
24 question or two. I just want to be certain I
25 understand what you're calling for. Are you

1 basically asking for these 21 plants to be shut
2 down and replaced by, quote, "modern plants"? Or
3 are you asking these plants to change their
4 cooling methodology by going to a closed-cycle
5 process?

6 MS. HAREN: To be honest I think we'll
7 probably address that in our written comments. I
8 don't think that we are proposing them to be shut
9 down, but we think there are alternatives that are
10 available that would be more be more beneficial.

11 VICE CHAIRPERSON SECUNDY: I'd love to
12 see your written comments ASAP.

13 MS. HAREN: Thank you.

14 VICE CHAIRPERSON SECUNDY: Thank you.
15 Kaya Freeman, Surfrider Foundation.

16 (End Tape 1A.)

17 MS. FREEMAN: My name is Kaya Freeman
18 and I represent the Surfrider Foundation, more
19 than 50,000 members. Thank you for having the
20 opportunity to share our comments and our
21 recommendations on clean water intake structures.

22 California is somewhat unique in that
23 we've already enacted legislation that reflects
24 some recommendations from the U.S. Commission on
25 Ocean Policy and two Ocean Commission reports.

1 Principles like ecosystem-based management and
2 intrinsic values are important to the State of
3 California and drive laws like the Marine Life
4 Protection Act and Marine Life Management Act to
5 protect marine resources. And these are not found
6 in federal law.

7 So, consequently we believe you have the
8 duty to insure that the current federal 316(b)
9 regulations are consistent with California law.

10 In Laguna Beach the industry told you
11 that the state had no business adjusting the
12 federal 316(b) rule. This argument is not only
13 offensive to California's interest in protecting
14 marine ecosystems, it is offensive to the
15 delegation of authority to the state.

16 In fact, EPA's reply brief in phase two
17 litigation relied on the states to adjust the rule
18 to meet state policy. In other words, the EPA
19 says you have the authority, if not the duty, to
20 insure the rule is strong enough to mean something
21 for California.

22 The problem with EPA's rule is that the
23 many exemptions swallow up the intent of the rule.
24 It seems irrelevant to talk about the details of
25 the performance standards until California makes

1 it clear they're compulsory. Otherwise the rules
2 are meaningless and California will not see
3 environmental benefits.

4 We understand that it may take time for
5 California to review the federal rule and
6 implement regulations. However, there's one issue
7 that demands immediate guidance. There are 20
8 proposals to build desalination facilities in
9 California. Many of them are relying on source
10 water from once-through cooling intake structures.
11 We believe permitting these co-located facilities
12 prior to implementing 316(b) will only serve to
13 complicate the process, and likely undermine the
14 intent of reducing marine life mortality.

15 The environmental impact reports for
16 these proposals are being drafted and certified as
17 we speak. Local governments are considering these
18 proposals without all the necessary background
19 information.

20 We strongly encourage the Regional
21 Boards to insist that these EIRs analyze the
22 impacts of these proposals as stand-alone projects
23 so that is in the absence of the once-through
24 cooling intake structures, which is consistent
25 with requests from the California Coastal

1 Commission and reflects CEQA mandates to consider
2 reasonably foreseeable circumstances.

3 What we don't want to see is the
4 Regional Boards having to consider implementation
5 of 316(b) after desalination facilities have been
6 permitted, or worse yet, built.

7 We fear that the co-located desal
8 facilities will consume the limited real estate
9 available for alternative cooling technology.
10 That is putting the cart before the horse.

11 There are environmentally preferable
12 source water technologies for desalination.
13 There's environmentally preferable cooling
14 technologies for generators and fresh water supply
15 alternatives that should be implemented first.

16 Interestingly, some of the water supply
17 alternatives like recycling wastewater and
18 irrigation conservation can also induce pollution
19 loading in our waterways. We can submit written
20 comments on this issue for the Board's
21 consideration.

22 So, again, thank you for the opportunity
23 to address this critical issue. We look forward
24 to working with the Board on crafting regulations
25 that are consistent with California's heightened

1 interest in restoring our precious marine life and
2 protecting healthy marine ecosystems.

3 Thank you.

4 VICE CHAIRPERSON SECUNDY: Thank you.
5 San Francisco Baykeepers, Ms. Choksi.

6 MS. CHOKSI: Good morning; my name is
7 Sejal Choksi, San Francisco Baykeeper. We wanted
8 to urge the State Board today to create a
9 significant and stringent statewide policy. There
10 are four power plants in the Bay Area, at least
11 three of which are still operational and using
12 once-through cooling.

13 The Potrero Hill and Hunters Point power
14 plants are located a few miles from each other in
15 low-income communities of San Francisco. And the
16 Hesperia and Antioch plants are located a few
17 miles from each other in the industrialized areas
18 of Contra Costa County.

19 Most of the studies for these thermal --
20 most of the studies for thermal pollution,
21 impingement and entrainment at these plants are
22 decades old, inadequately documented and refuted
23 by the California Energy Commission.

24 No one in the past seems to have
25 considered the cumulative impacts of these power

1 plants operating so close to each other. Or in
2 such poor communities. And considering that all
3 San Francisco plants are discharging into a
4 historically toxic environment in parts of the
5 Bay, someone should be looking at these particular
6 plants in terms of synergistic impacts that they
7 are already having on an already burdened system.

8 Our Bay Area Estuary is one of the most
9 diverse in the country, with over 130 species of
10 fish, including four separate runs of Chinook
11 salmon which migrate right past two of the
12 northern San Francisco Bay power plants.

13 Recreational fishing and duck hunting
14 generate hundreds of millions of dollars every
15 year in the San Francisco Bay Area. But the
16 industry's analysis fails to acknowledge the
17 impacts that these power plants have on key
18 members of the food chain.

19 So we must require these plants to
20 update their studies using independent third-party
21 science. And more importantly, while these
22 studies are being conducted, protective interim
23 action should be required through a statewide
24 policy and in permits for better alternative
25 technologies.

1 I am encouraged today by staff's
2 proposal and guidance on the policy that they want
3 to implement, although it does raise particular
4 questions. In my mind I wonder how the baseline
5 actual flow is going to be divined.

6 It's also a question about what the
7 deadline will be for achieving the upper end
8 performance targets that are proposed. And does
9 in-kind mitigation equal in-place mitigation. I
10 think that's an important question we should
11 address.

12 VICE CHAIRPERSON SECUNDY: I'm glad you
13 brought up that last point, because it's one of
14 the questions I was going to ask, since we're
15 running out of environmental speakers.

16 I recognize that the environmental
17 community is no more monolithic than the industry
18 or the discharge community, but do you have a
19 particular view in terms of mitigation? I'm sure,
20 as you know, back east there's a great deal of
21 controversy as to whether mitigation should be
22 used at all for once-through cooling. There are a
23 number of lawsuits.

24 What is your view?

25 MS. CHOKSI: I was going to get into

1 that, but I have no right (inaudible). I don't
2 believe that restoration and mitigation should be
3 allowed. I think that the impacts that these
4 plants have on the communities that they are
5 located in need to be addressed by stopping that
6 pollution or preventing that pollution or reducing
7 that pollution.

8 It doesn't help for some mitigation
9 project to take place in some other part of the
10 Bay where there's probably a more affluent
11 community who's going to benefit from that
12 improvement, and then have that power plant still
13 located in a poor community where it's having
14 localized impacts. The power plant's discharges
15 are having localized impacts.

16 And not only that, but as I was
17 mentioning before, all four of the power plants in
18 the Bay Area are already located in pretty toxic
19 environments. So, you've not only that to
20 consider what the power plants are putting into
21 the environment, but you also have to consider
22 what's already there. And what that cumulative
23 impact is from all of the pollution.

24 So, by just focusing on the power
25 plant's pollution and trying to mitigate that in

1 some other part of the Bay, I don't think that
2 that addresses adequately the problem that we're
3 facing in this, especially in the Bay Area.

4 So that was my preventing-local-
5 pollution part of the speech.

6 I guess I'll close with saying that I
7 also think that the cost of technology and looking
8 at technology should not be a predominant factor
9 in these considerations. I think it's a
10 distraction and I think we should be looking at
11 technical feasibility.

12 It is possible, there are alternatives,
13 and if we actually want these plants to operate,
14 and if these plants want to profit, they should be
15 looking at these alternatives, and not actually
16 placing the burden at the expense of the
17 communities and the Bay Area.

18 I just think that if these plants can
19 prevent the harm, they should be required to do
20 so. If they want to consider the costs, they have
21 to actually consider their revenue and compare
22 their yearly revenue to what the cost would be of
23 upgrading their plant. And they also should be
24 considering the competitive advantage that they
25 have by not upgrading their plants. I think those

1 are important considerations.

2 You also need to be looking at the
3 environmental impacts and the environmental costs
4 that are --

5 VICE CHAIRPERSON SECUNDY: Thank you
6 (inaudible).

7 MS. CHOKSI: Sure. No problem. So I
8 look forward to working with the staff on creating
9 a more stringent policy. Thank you.

10 VICE CHAIRPERSON SECUNDY: Thank you.
11 Two law students, Rhett Millsapps and Ben
12 Rottenborn. Gentlemen, we are running out of
13 time, so --

14 MR. MILLSAPPS: We'll be pretty brief.

15 VICE CHAIRPERSON SECUNDY: Okay.

16 MR. MILLSAPPS: Thanks, good morning;
17 thanks for the opportunity to comment. I'm Rhett
18 Millsapps with Stanford Law School's environmental
19 law clinic.

20 We've been involved in these coastal
21 plant matters for various cases involving specific
22 plants, including those at Moss Landing, Morro
23 Bay, El Segundo. And we'd like to share some of
24 our experiences briefly today. We'll follow up
25 with more extensive written comments.

1 I urge you to take a look at our oral
2 comments from the September 26th meeting
3 transcript, as well. At that meeting I discussed
4 California's broad authority to set more stringent
5 standards and closing the loopholes in the federal
6 Clean Water Act regulations.

7 The will of the people in California has
8 been clearly expressed to the Legislature and the
9 Governor's Office time and again on this issue
10 with the Porter-Cologne Act, the Coastal Act, the
11 Marine Life Protection Act and the Ocean
12 Protection Council, just to name a few acts.

13 These legislative acts place priority on
14 the protection of California's coastal health and
15 it would make little sense for this Board to fail
16 to set stringent guidelines for the implementation
17 of 316(b) regulations in this context.

18 I want to briefly touch on two points
19 today. One is regulations of other states,
20 specifically in New York, and why that matters for
21 California. And secondly, the public trust duty
22 that you have in California regarding tide and
23 submerged lands, such as those impacted by these
24 coastal power plants.

25 Now, as you've heard today, California

1 wouldn't be alone in its efforts to rein in the
2 harmful effects of coastal power plants. The
3 State of New York has taken a strict approach to
4 the regulation of once-through cooling
5 technologies. New York has outlined stringent
6 data collection standards for existing facility
7 permittees, requiring permittees to conduct rigorous
8 studies to document impacts on aquatic organisms
9 where the state determines previous studies were
10 inadequate.

11 New York requires a reduction of
12 impingement and entrainment in the upper ranges
13 set by EPA's phase two rules. And the state does
14 not consider restoration plans an acceptable best
15 technology available alternative for any facility
16 because there's simply no science available saying
17 that these restoration measures actually work.

18 Nor does the State of New York allow for
19 site-specific cost based best technology
20 available. Now, why should this matter for
21 California? For one thing, California, as you've
22 heard, has the largest ocean economy in the U.S.
23 making up 19 percent of the national ocean economy
24 as of the year 2000.

25 The fastest growing coastal economic

1 sectors, tourism and recreation, making the
2 protection and enhancement of coastal resources of
3 fair amount of importance.

4 Furthermore, as of 2000, 77 percent of
5 California's population lived in coastal
6 communities which represent just 25 percent of the
7 land. Coastal counties gross state product in
8 2000 accounted for approximately 86 percent of
9 California's total gross state product.

10 So, in light of this, it's pretty clear
11 that California should take a position on once-
12 through cooling technology at least as restrictive
13 as that taken by New York.

14 Now, California also has a duty mandated
15 by the state constitution and a long line of state
16 supreme court cases to hold coastal lands in trust
17 for the people of California. The state can
18 abdicate this public trust responsibility only in
19 the rarest of circumstances, when the land is
20 found to be useless for public trust purposes.
21 Even then an act of the Legislature is required to
22 release the land from the public trust burden.

23 Valid public trust uses recognized by
24 the courts include navigation, commerce, fisheries
25 and ecological preservation. In the National

1 Audubon Society v. Superior Court, the California
2 Supreme Court recognized that this public trust
3 springs from the fact that these lands are common
4 to all the people by the very law of nature. The
5 doctrine has been recognized as far back as the
6 sixth century in the Codes of Justinian.

7 The court also acknowledged in the City
8 of San Diego v. Kymotha (phonetic) Water Company
9 that this public trust does not allow authorities
10 to make concessions to individuals for the
11 perpetual and exclusive use of portions of the
12 waters without reference to the needs of other
13 inhabitants. According to the court such
14 concessions would be a clear abuse of the public
15 trust.

16 Now, failure to set stringent
17 regulations for once-through cooling coastal power
18 plants would amount to a grant of such a perpetual
19 and exclusive use of portions of public trust
20 waters, since these plants are destroying coastal
21 resources on a daily basis.

22 Allowing these plants to use the
23 outdated technologies unfettered with less harmful
24 technologies feasible, and giving them a
25 competitive advantage over inland plants, while

1 allowing them to use billions of gallons of
2 publicly held seawater each day for free, arguably
3 is an abuse of the public trust and would be
4 recognized by the courts.

5 This Board should take strong and
6 decisive action to exercise its public trust
7 responsibilities by implementing stringent
8 regulations for these coastal power plants in
9 order to protect the interests of its coastal
10 residents and other industries that make
11 California by far the country's biggest coastal
12 treasure --

13 VICE CHAIRPERSON SECUNDY: Wind it up,
14 sir.

15 MR. MILLSAPPS: Yeah. Thank you.

16 MR. ROTTENBORN: Good morning; my name's
17 Ben Rottenborn and I'm at the Stanford Law School
18 environmental law clinic.

19 The one point that I'd like to get
20 across to the Board today is that it should not
21 have a cost/benefit exemption for whatever rule it
22 proposes, it puts forth.

23 This loophole allows nearly all plants
24 to avoid being subject to requirements because an
25 honest, meaningful cost/benefit analysis is so

1 difficult to conduct.

2 First, I'd like to address the problem
3 with the cost side of a cost/benefit exemption.
4 The problem, quite simply, is that energy
5 companies can manipulate cost numbers to insure
6 that they qualify for the exemption. You'll hear
7 how this happened in Morro Bay. But I'd like to
8 share with you some of the experiences that we
9 have found are ones on the Moss Landing case.

10 Moss Landing was the first power plant
11 in recent years to go through this type of 316(b)
12 processes that bring us here today. And that's
13 why they are particularly relevant.

14 In the proceedings at Moss Landing the
15 plant attempted to make once-through cooling seem
16 extremely cheap relative to other forms of cooling
17 at the time that it expanded the plant in 2000.

18 For example, in 2000 Duke Power said
19 that once-through cooling was at least \$12 million
20 cheaper than the next cheapest alternative, which
21 was cooling towers. At that time it had an
22 incentive to make once-through cooling seem like
23 the cheapest alternative.

24 But in 2004, following a finding by the
25 court, that the permit was inadequate and a remand

1 to the Regional Board, the plant changed its tune
2 and portrayed once-through cooling as more
3 expensive to try to convince the Regional Board
4 not to rescind its approval of the once-through
5 cooling system that was already online.

6 In that, 2004, Duke said that once-
7 through cooling was \$7 million more expensive than
8 the cooling towers, but then dismissed the towers
9 as being infeasible without explanation.

10 That's a \$19 million difference in
11 Duke's estimated price of once-through cooling
12 relative to cooling towers between 2000 and 2004.
13 And if you're wondering why Duke would make once-
14 through cooling sound as expensive as possible in
15 that year, it's because the company wanted to make
16 its sunk costs seem as high as possible, so that
17 the Board would not require another alternative.

18 The bottomline here is that it is so
19 easy for plants to manipulate cost numbers,
20 especially when they are shielding profit and
21 revenue numbers, that it is nearly impossible to
22 determine whether cost analyses are accurate.

23 Now I'd like to move very briefly onto
24 the benefit side --

25 VICE CHAIRPERSON SECUNDY: Well, before

1 you move very briefly, some of us that used to be
2 CFOs that have some passing familiarity with
3 numbers, is your testimony basically that closed
4 cycle plants are cheaper than once-through
5 cooling? Are you saying that in order to retrofit
6 the plants there's no incremental cost? I'm not
7 quite following you, except to say that -- to try
8 to understand that you were saying that industry
9 manipulates figures and they can go all over the
10 place. I understand they have that ability.

11 But what are you saying in terms of
12 actual costs? We had a presentation earlier this
13 morning that shows the differential costs for new
14 plants. And we certainly understand that in order
15 to retrofit existing plants there will be an
16 incremental capital charge. So what are you
17 trying to tell me?

18 MR. ROTTENBORN: What I'm trying to say
19 and just by using this anecdote from Moss Landing
20 is that there are different times when a company
21 might want to make once-through cooling sound very
22 cheap; and there are different times when it might
23 want to make it sound a little bit more expensive.

24 In 2000 it wanted to make it sound as
25 cheap as possible; in 2004 it wanted to make it

1 sound a little bit more expensive because it
2 wanted to incorporate the sunk costs that it had
3 spent in the year 2000, to make it seem that it
4 spent a lot of money, to try and coerce the Board
5 not to rescind --

6 VICE CHAIRPERSON SECUNDY: I understand
7 what your testimony was. What I'm trying to get
8 at is what is your belief. Are you saying that in
9 order to retrofit an existing once-through cooling
10 plant, there is no incremental capital cost? Are
11 you saying that you're building the plant
12 grassroots, that there's not a difference in cost
13 between once-through cooling and closed cycle
14 plants? And, indeed, what is the incremental cost
15 there?

16 MR. ROTTENBORN: I'm certainly not
17 saying that there is no cost to retrofit a plant.
18 what I'm saying is that using the cost analyses
19 that we experienced in Moss Landing it's very hard
20 to get an accurate picture of what that cost would
21 be.

22 And I'm just trying to caution the Board
23 that that is one of the problems using a
24 cost/benefit exemption, is to try to get an
25 accurate picture of how much once-through cooling

1 would cost vis-a-vis --

2 VICE CHAIRPERSON SECUNDY: Give the
3 Board a break. Some of us actually are familiar
4 with financing, and I think we will be able to
5 look at those numbers.

6 MR. ROTTENBORN: Absolutely. Well, if
7 you don't mind I'll move on to the benefits side,
8 very briefly.

9 Quite simply it's very difficult to
10 monetize the benefits the reductions in once-
11 through cooling would bring. For example, the EPA
12 has said that it can't put a dollar value on the
13 benefits associated with 98 percent of the marine
14 life that would be saved by compliance with the
15 phase two regulations.

16 That means that the benefit side of the
17 cost/benefit test includes only the benefits of
18 conserving 2 percent of the organisms that once-
19 through cooling kills.

20 Benefits are not so hard to monetize,
21 but -- excuse me -- benefits are so hard to
22 monetize because they only measure direct
23 commercial benefits and fail to take into account
24 ecological or conservation benefits.

25 Consider this example from Moss Landing.

1 There the plant attempted to monetize the benefit
2 of reducing impingement and entrainment by
3 examining a variety of target species that the
4 company said had no economic value. The plant
5 asserted that fish with a commercial value were
6 worth a grand total of \$2900 over 30 years.
7 That's 1.2 billions of gallons of water per day
8 for 30 years at a total environmental worth of
9 \$2900.

10 With all due respect to that analysis,
11 the organisms in your drinking water are probably
12 worth more than that over 30 years.

13 I note that this is only an anecdote,
14 but it shows the type of ludicrous estimations
15 that make benefits so hard to measure.

16 The last point I'll make is about
17 restoration. You asked the question about whether
18 or not certain of the environmental groups here
19 today believe that restoration is a good idea.

20 We believe that restoration is not a
21 viable alternative to reductions in once-through
22 cooling. There's no evidence that restoration
23 provides anywhere near the benefits that a
24 reduction in once-through cooling would bring.

25 And at Moss Landing, Duke admitted that it didn't

1 have any study to show that restoration would
2 work.

3 Moreover, the company estimated proper
4 restorations cost only \$18,000 an acre, when it
5 created its restoration fund. Even though all
6 past studies in that record show that the cost was
7 between \$60,000 and \$260,000 per acre.

8 That means that it set aside only \$7
9 million for a mitigation fund, even though studies
10 suggested that it should set aside between \$31- to
11 \$130 million. Proper pricing would have shown
12 that restoration was actually more expensive than
13 other cooling alternatives. But the Regional
14 Board disregarded science and economics and took
15 what the company said as the truth. The State
16 Board knows better.

17 Restoration is not a proper substitute
18 for conserving the marine resources that we
19 already have. And if millions of resources of
20 organisms are killed every day by once-through
21 cooling, the Board should know that simply
22 restoring habitat does not guarantee the return of
23 a single one of these.

24 In conclusion, I'd just like to say the
25 cost/benefit exemption that EPA has built into

1 phase two has rendered 316(b) an empty statute. I
2 urge this Board not to make the same mistakes that
3 the EPA made, and to write a regulation without a
4 cost/benefit exception.

5 Thank you.

6 VICE CHAIRPERSON SECUNDY: Thank you.
7 Bill Powers, Chair, Border Power Plant Working
8 Group.

9 MR. POWERS: Thank you, Board Members.
10 I'm a, as well as the Chair of the Border Power
11 Plant Working Group, a registered mechanical
12 engineer in California with approximately 20 years
13 experience in the energy business, based in San
14 Diego.

15 I've participated in a number of
16 California Energy Commission licensing cases to
17 present the case for dry cooling, and to
18 critically examine the rationale given by the
19 applicants for not using dry cooling.

20 I'm also the engineering consultant to
21 Riverkeeper of the Hudson River once-through
22 cooling cases, and my responsibility there is to
23 preliminary design on once-through retrofits.

24 And this issue of in New York the full
25 flow being the baseline, that is controversial,

1 that is not settled. And I would really recommend
2 and advocate that you use the actual flow and not
3 the full flow.

4 In San Diego, prior to Duke divesting
5 itself of its power plants, they made a commitment
6 to the community of San Diego that they would not
7 use any bay water if they repowered the South Bay
8 Power Plant. And that commitment will hold
9 regardless of who picks up that power plant. And
10 I think that commitment by Duke should really
11 frame the argument about what is BTA in California
12 for coastal plants, given they have made that
13 commitment voluntarily.

14 The case-by-case approach that's used by
15 the California Energy Commission to evaluate
16 projects has been consistently resulting in the
17 lowest common denominator of end point for the
18 cooling system. And in contrast, our neighbor to
19 the east, Nevada, requires dry cooling in
20 virtually all their plants. And they're competing
21 in the same power market that California plants
22 are competing in. It's a much tougher application
23 for dry cooling than nearly ideal coastal
24 environment.

25 I'd like to second the comments of the

1 last speaker that in this case-by-case approach
2 the applicants chose the most arcane, difficult to
3 corroborate, rationales for upping the cost,
4 sometimes by a factor of -- an order of magnitude,
5 in the case of Morro Bay, which provides the
6 ammunition to the Commissioners if they're
7 inclined to reject closed cycle cooling on these
8 arguments.

9 In Morro Bay both staff and the
10 intervenors, who said dry cooling is the way to
11 go, were overridden by the Commissioners. Appeals
12 directly to the Supreme Court. They haven't taken
13 or heard a power plant case in 20 years. So
14 essentially there is no appeal of that decision.

15 While that Morro Bay determination was
16 made that dry cooling was infeasible, Duke was
17 building a 1200 megawatt, dry-cooled project in
18 the Nevada desert, which, based on numbers
19 provided by Duke, would have been one of the most
20 cost competitive projects in California, had it
21 been built in our state.

22 One comment on the issue of the air
23 cooled system suffering power loss on hot days. A
24 properly designed air-cooled condenser will suffer
25 no power loss on hot days; it will use more fuel;

1 it will not suffer power loss. And I know that's
2 always a critical issue for the Commission, that
3 they might be requiring a technology that would
4 actually reduce California's power availability on
5 hot days.

6 Two final comments, one on Mr. Hemig
7 mentioned the efficiency penalty of air cooling
8 and the -- unfortunately the EPA, when it prepared
9 the 316(b) documents and did a technical analysis,
10 in my opinion they compared apples to oranges on
11 wet and dry systems. They compared conservatively
12 designed wet systems to under-sized dry systems
13 and came up with an efficiency penalty that was
14 quite high.

15 I, in response, wrote a paper that
16 compared apples and apples of wet and dry systems,
17 which Dr. Maulbestsch was the technical reviewer
18 on. And I presented it to the California Energy
19 Commission EPRI conference in June. And the
20 results of that was the efficiency penalty is less
21 than 3 percent dry versus once-through. And that
22 the cost increment is on the 5 to 10 percent
23 level.

24 And, in closing, I would really
25 recommend that you require closed-cycle cooling is

1 BTA in California, preferably dry cooling, but
2 definitely closed-cycle cooling.

3 Thank you.

4 VICE CHAIRPERSON SECUNDY: Thank you.
5 Jack McCurdy, Co-President of Coastal Alliance
6 Unplanned Expansion.

7 MR. McCURDY: Good morning, Members of
8 the Board. My name is Jack McCurdy; I am Co-
9 President of the Coastal Alliance Unplanned
10 Expansion, a nonprofit citizens group that is an
11 official intervenor in the regulatory review of
12 Duke Energy's application to replace the existing
13 Morro Bay power plant with a new and larger plant.

14 I want to congratulate you, Mr. Secundy
15 and Mr. Silva, I was not at the workshop; I did
16 read the transcript. And you zeroed in on the
17 exact correct issue. Alternative cooling
18 technology, specifically closed-cycle cooling,
19 such as dry cooling, has been rejected because it
20 had initially been considered to be too costly
21 compared to either the benefits or the BTA
22 standards.

23 But it is a myth, a myth that has been
24 developed by dischargers, embraced by regulatory
25 agencies, and perpetuated throughout the energy

1 community in a pattern that can only be labeled as
2 deception.

3 There is only one little problem, it
4 doesn't square with reality, as reflected by the
5 hard evidence in the records of agency reviews.

6 I want to describe one glaring example
7 of how that myth was created in Morro Bay, in the
8 Morro Bay planning and siting case. The Energy
9 Commission approved a restoration program as
10 mitigation for the significant adverse impacts
11 from entrainment of 17 percent to 33 percent of
12 the larvae sampled from the Morro Bay National
13 Estuary.

14 The mitigation plan was devised after
15 the Commission Staff recommended dry cooling to
16 avoid the impacts entirely. To justify its
17 opposition to dry cooling, Duke claimed the
18 additional cost of the dry cooling conditions
19 would range from more than 100 million to more
20 than 200 million, depending on which of two
21 possible sites the new plant would be located.

22 The CEC Staff and their consultants
23 estimated the additional cost of dry cooling would
24 be between 40 million and 50 million. About 6
25 percent of the proposed overall \$800 million cost

1 of building a new plant, and tearing down and
2 removing the old plant.

3 How could there be such a disparity in
4 cost estimates? The main reason is that Duke
5 proposed dry cooling units much larger than
6 necessary to accommodate ambient temperatures
7 significantly higher than those typically
8 experienced in Morro Bay, according to the CEC
9 Staff studies.

10 Duke claimed the new plant must be
11 capable of generating 1200 megawatts at 85
12 degrees. The staff said this is, quote,
13 "irrational" end quote, because the ambient
14 temperature in Morro Bay is 64 degrees. And
15 temperature of 84 degrees only .04 percent of the
16 time.

17 Therefore, much smaller and less costly
18 units would be needed. The additional cost of
19 appropriately sized units would be less than .004
20 cents per kilowatt, which the staff said, quote,
21 "does not seem to be unreasonable in light of the
22 impacts caused by the applicant's proposed use of
23 once-through cooling." end quote.

24 The other major reason Duke produced
25 excessive cost estimate for dry cooling is that

1 Duke wanted the existing plant to continue to
2 operate while the new plant was being built, to
3 provide a revenue stream for about two years while
4 it was being built.

5 Duke insisted that the old plant could
6 operate for many years while the staff estimated a
7 much more limited life span of a few years, five
8 or so.

9 In order to make room for the equipment
10 and material to build the dry cooling units at the
11 preferred plant site, Duke argued it would be
12 necessary to move numerous large ancillary
13 facilities needed to allow the existing plant to
14 operate, driving up the cost to allow the --
15 driving up the cost of dry cooling to about 200
16 million.

17 Not only would the units be
18 unnecessarily large, as proposed by Duke, but as
19 it turned out, the staff was right. Two of the
20 generating units of the existing plant were shut
21 down in the fall, just a couple years after the
22 evidentiary hearings were held. And that was
23 2003.

24 VICE CHAIRPERSON SECUNDY: Sir, you're
25 going to have to wind it up.

1 MR. McCURDY: And the other two have
2 operated minimally starting this last year. With
3 no need to keep the plant operating, about 100
4 million is eliminated in costs using Duke's own
5 estimates.

6 The CEC bought this \$200 million --

7 VICE CHAIRPERSON SECUNDY: -- you are
8 out of time.

9 MR. McCURDY: Okay.

10 VICE CHAIRPERSON SECUNDY: Do you have a
11 conclusionary mark --

12 MR. McCURDY: No.

13 VICE CHAIRPERSON SECUNDY: All right.
14 Joe Dillon.

15 MR. DILLON: Good afternoon; my name is
16 Joe Dillon. I'm with the National Marine
17 Fisheries Service, Habitat Conservation Division.

18 We did deliver a letter to you today in
19 support of policy development. So I won't go
20 through that too much, (inaudible) dominates
21 presentation. Also touched on the two points that
22 were in that letter, so things have changed a
23 little bit already, or potentially are changing.

24 So I'm going to hit just a couple of
25 highlights quickly.

1 We do support the policy development.
2 Basically I think some side-boards need to be put
3 into this argument, and properly channel
4 everything so that we're all talking apples-to-
5 apples, instead of apples-to-oranges.

6 Policy development on calculating
7 baselines, some of the methodologies for doing the
8 316(b) studies could use some guidance so that
9 they're standardized. And that's not necessarily
10 technical guidance like what size net do you use,
11 but should the companies to require to also
12 collect fish eggs and enumerate those in their
13 impacts, or it's okay for them to just look at
14 fish larvae, invertebrate water (inaudible).

15 Let's see, a lot of this has already
16 been gone through, so one thing that I think I've
17 heard the last few speakers talk about is that a
18 lot of us do not have experience as CFOs or with
19 economics. So recommend as part of your policy
20 development that a third-party independent
21 economist be hired to look at these different
22 evaluations. It would give certainty, not only to
23 fellow regulatory agencies such as us, but also to
24 the general public so things are being played on a
25 level playing field.

1 VICE CHAIRPERSON SECUNDY: Just to
2 respond to that, I'll certainly take that
3 suggestion under advisement, but we did have a
4 presentation this morning by a consultant to the
5 California Energy Commission, which for new plants
6 certainly gave us a range of estimates. Whether
7 you agree or not is neither here nor there. But
8 it certainly gave us a range of estimates there.

9 That is maybe where some confusion comes
10 is quite different than trying to modify an
11 existing plant and what that would cost in order
12 to change that plant to a closed-cycle cooling
13 methodology, whether it be wet or dry.

14 MR. DILLON: I concur. I think that the
15 point is that there's not a lot of confidence that
16 an analysis that we believe to be third party
17 (inaudible) what comes out of the Energy
18 Commission will necessarily come out of the CEQA
19 or NEPA processes by the industry.

20 And I'm not, you know, jumping on
21 anybody in the alley here, it's just this is the
22 perception.

23 A couple policy points that would be
24 good for you to touch on are if a restoration
25 project is found to be BTA for any development,

1 what will the monitoring requirements be. What is
2 the time someone will have to monitor to establish
3 if the project is working as initially planned.

4 How often would it have to go back if
5 the project does -- if it's shown to be working
6 for five years, do they get to quit monitoring
7 forever, or every five years they have to go back
8 and check on it.

9 The standards Dominic discussed a little
10 bit. I'm happy to hear that at least recommended
11 go for the higher range. And adaptive management
12 requirements should be part of the policy. That
13 should address things such as if they plan for a
14 90 percent reduction, and that is what everyone
15 evaluated in their NEPA, CEQA, Porter-Cologne
16 processes, and then we only get a 70 percent
17 reduction, will there be an adaptive management
18 plan in place that will require them to go back
19 and do supplementary mitigation to utilize some
20 other new technology.

21 Policy needs to address a re-evaluation
22 schedule. There will be facilities that do not
23 do, cannot do an environmental restoration
24 project. How often will they have to go back and
25 look at the new technologies to see if something

1 has been developed, or the economics on something
2 are clearer, so that it should now be best
3 technology available. BTA is not a static term.

4 And finally, just a couple of quick
5 points based on what I've heard today. The phase
6 one rule development record contains a lot of
7 information concerning biological impacts. That
8 is not necessarily repeated in the phase two
9 record. But biology is biology, so I encourage
10 you to go to the phase one record to look up some
11 of that stuff.

12 Your presentations, when they're put on
13 the web, will show the cost estimates for
14 (inaudible), and there is indication that that is
15 the cost estimates for redoing one of these
16 plants. I think common sense dictates that the
17 nuclear power plants are much larger volume, and
18 they are the special cases in this system. The
19 other 19 or 18 operating plants will have a set of
20 numbers attached to them.

21 And finally, our authorities under the
22 Magnuson-Stevens Fishery Conservation Management
23 Act (inaudible) habitat are similar to your
24 requirement for beneficial use protection, where
25 the impact is not based upon population of the

1 impact. It's not required to have an impact to
2 the small defined set of commercial or
3 recreational species. It's a overall impact on
4 beneficial use, including those species that we do
5 not (inaudible).

6 Thank you.

7 VICE CHAIRPERSON SECUNDY: Thank you.
8 Just so the audience knows, we have about eight
9 more speakers and some concluding remarks. It
10 looks like we'll be here till 1:00 by the time we
11 adjourn. I do want to give everybody an
12 opportunity to speak. We obviously under-
13 estimated the (inaudible) interest, which is nice.
14 It's nice to see the interest.

15 Tim Eichenberg.

16 And for all the remaining speakers,
17 please, no more than five minutes. If you can do
18 it in less than five minutes, the Board will
19 remember you.

20 (Laughter.)

21 UNIDENTIFIED SPEAKER: Fondly.

22 VICE CHAIRPERSON SECUNDY: Fondly, yes.

23 MR. EICHENBERG: Thank you; my name is
24 Tim Eichenberg. I'm with the Ocean Conservancy.
25 And what do I get if I go less than five minutes?

1 I'm just here to support a clear and
2 consistent state policy on this issue for all the
3 reasons that have been expressed by my colleagues.
4 I don't want to reiterate them.

5 But I do think that there are
6 alternative methods that have been reviewed today.
7 That California has a series of policies to
8 increase the abundance and diversity of marine
9 life; that's been cited today, as well.

10 The California Ocean Protection Act to
11 the Governor's Ocean Action Plan to the Marine
12 Life Management Act, the California Coastal
13 Commission, all these statutes have that mandate,
14 which I think needs to be reviewed and needs to be
15 implemented through a strong, clear state policy
16 to provide that alternatives need to be looked at
17 to evaluate cooling technologies that are not as
18 damaging as (inaudible). We're just here to
19 support that view.

20 Thank you.

21 VICE CHAIRPERSON SECUNDY: Thank you
22 very much. I'll (inaudible), Calimpong --
23 Institute for Fisheries Resources.

24 MS. CALIMPONG: Hello. I'm with the
25 Institute for Fisheries Resources. My name is

1 Crescent Calimpong. And we're just here to
2 support clear and consistent policy, also.

3 Once-through cooling is one of only the
4 many things that have been affecting fish and
5 larval in the San Francisco Bay. So we just need
6 stricter information for the conservation and
7 restoration of the San Francisco Bay.

8 Thank you.

9 VICE CHAIRPERSON SECUNDY: Thank you.
10 Golden Gate University School of Law and
11 Environmental Law and Justice. Two students, Pam
12 Palitz and Alan is that Ramo?

13 MR. RAMO: Ramo.

14 VICE CHAIRPERSON SECUNDY: Ramo. Sorry.

15 MS. PALITZ: Hi, I'm Pamela Palitz of
16 Golden Gate University, Environmental Law and
17 Justice Clinic. And this is Alan Ramo, our
18 Director. We represent Communities for a Better
19 Environment and Bayview Advocates.

20 We've been involved in the permitting
21 process for the antiquated Potrero Power Plant and
22 the once-through cooling -- southeast San
23 Francisco. We previously submitted written
24 comments, but we should focus on a few points not
25 covered at the last hearing.

1 Our experience with Potrero convinces us
2 that while the Board must take a long-term
3 approach to such facilities, you cannot ignore the
4 ongoing impacts of a plant like Potrero.

5 The Regional Board's consultants
6 reported last summer, after analyzing the plant,
7 the plant operators' entrainment data, that the
8 plant has impaired up to 900 acres of Bay habitat.
9 So despite the earlier presentation by the
10 industry representative, there are significant
11 biological impacts of once-through cooling.

12 The Potrero Plant's NPDES permit expired
13 six years ago in 1999 and it has not been renewed.
14 According to the Code of Federal Regulation
15 (inaudible) 125.95 a phase two facility is
16 required to use the best technology available to
17 minimize (inaudible) impact until it completes the
18 requirements for a new permit under 316(b).

19 In the case of Potrero, damage to the
20 Bay continues unabated, while the Bay Area
21 Regional Board Staff uses the 316 requirements for
22 studies as an excuse to further delay issuance of
23 the permit.

24 316(b) was not adopted as a moratorium
25 for federal permitting. And you should instruct

1 the Regional Boards to use their best professional
2 judgment to abate impacts now, as explicitly
3 required in federal regulation.

4 Ultimately we agree that the best long-
5 term solution to Potrero and all the other
6 facilities using once-through cooling is to
7 require alternative (inaudible) cooling and
8 technically feasible.

9 The CEC Staff found (inaudible) cooling
10 feasible for the Potrero site as did the BCDC,
11 that's the Bay Conservation and Development
12 Commission. (inaudible) cooling, whether dry or
13 with a cooling tower, avoids impingement and
14 entrainment and is consistent with policies like
15 the San Francisco Basin plan which prohibits
16 shallow water discharge, and (inaudible) thermal
17 plan, which requires power plants to avoid adverse
18 impacts.

19 Finally, using restoration for
20 mitigation of damage in the Bay in San Francisco
21 and other communities may raise environmental
22 justice concerns, as well as the other kinds of
23 concerns that have been mentioned at the hearing.

24 We agree with the Stanford Clinic and
25 the Baykeepers' position on this issue. If a

1 restoration plan were to allow continued
2 degradation of the shoreline near a minority
3 community, such as the one adjacent to Potrero,
4 where our clients live, while improving shoreline
5 areas of affluent communities, that would be a
6 classic example of the kind of unfairness
7 prohibited by Cal-EPA's environmental justice
8 policies, as well as state and federal civil
9 rights laws, such as Government Code 11135.

10 Ultimately that solution is not the
11 exchange of the site of damage, but an end to the
12 source of damage.

13 MR. RAMO: Members of the Board, I am
14 Alan Ramo, the Director of the Clinic. I just
15 have a few comments in response to the staff's
16 proposed policy today.

17 It looks good as far as it goes. There
18 needs to be more definition as you've heard from
19 my colleagues about baseline. I think you have to
20 start consistent with Cal-EPA's environmental
21 justice guidelines and their embrace of the
22 precautionary principle.

23 The first question you need to ask, is it
24 technically feasible for a facility to have
25 (inaudible) cooling. If not, you have to go into

1 more analysis. if it is, you should require it.

2 Secondly, you need to make absolutely
3 clear, consistent with Pam's comments, that
4 permitting needs to proceed in accordance with
5 federal law and state law. Right now, this Board
6 here in San Francisco thinks that 316(b) created a
7 moratorium in a proposed delay permit for a permit
8 that's now soon to be seven years overdue, another
9 two to three years overdue.

10 Third, the thermal plan needs to be
11 clarified to make it clear that more stringent
12 requirements at the local Board level is not
13 preempted. This is particularly important. For
14 the secondary impacts of the discharge from the
15 power plants produce toxics, are discharging into
16 shallow water where there's insufficient dilution
17 in cases of upset. These aren't really addressed
18 by the thermal plant. They should be preempted.
19 I think they were, but there's a lot of confusion
20 at the local board level.

21 Finally, as was indicated, restoration
22 is too vague. We have enough problems under
23 existing law to determine under such provisions as
24 basic plan prohibition one, the San Francisco
25 area, what protection means. We're going to be in

1 the same hole, and as indicate, are very serious
2 environmental justice issues that have mired this
3 Board and the State Board and the local boards if
4 you start going down that road. It doesn't solve
5 departmental problems. Getting it out of the
6 (inaudible) where feasible, does.

7 Thanks.

8 VICE CHAIRPERSON SECUNDY: Thank you.
9 Dave Bailey, Associate Director, Clean Water Act
10 Program.

11 MR. BAILEY: Basically I want to quickly
12 run through the alternative technologies that are
13 available focusing on quote, wet or dry, closed
14 cycle cooling.

15 Next slide. As indicated in the rule
16 there is no magic bullet, single technology that
17 works for every single facility. All these are a
18 list of factors that are going to influence what
19 you can use.

20 Next slide. These are the categories
21 I'll quickly run through. Next slide. First of
22 all, physical barriers and particularly for
23 facilities at the shoreline like Diablo Canyon or
24 offshore like SONGS and a number of other
25 facilities, we're dealing with very harsh

1 environment.

2 Next slide. First one of physical
3 barriers is aquatic filter barrier; it's good for
4 I, M and E. Basically you're passing a whole lot
5 of cooling water through some very small porous
6 (inaudible) and you're using an air blast system
7 to blow the material away.

8 Some of the issues or concerns for this
9 particular technology are first of all, it's never
10 been successfully deployed in a full-scale manner
11 at any facility at this point in time. It was
12 attempted last year, and the technology failed at
13 this Hudson River application.

14 In terms of onshore, inshore (inaudible)
15 back up one, there are issues in terms of
16 obstructing navigation and so forth. And in terms
17 of facilities located offshore, it's not really
18 feasible because of the harsh environments.

19 Next one is weight wire screen. This is
20 one T84 screen module for facilities like SONGS or
21 Diablo Canyon. You basically need 50 of these
22 devices employed offshore.

23 Some of the concerns are first of all
24 you need adequate velocity; you can't put it in a
25 containing area, or you don't have the sweeping

1 velocity to carry the fish past the technology,
2 the entrainable life stages. And in terms of
3 offshore, you're having to make that thing work in
4 a harsh environment where you have serious wave
5 action.

6 And the other big issue is biofouling.
7 This is controlled by an air blast system at the
8 base, and when you go offshore with a large
9 tunnel, you're not going to have adequate
10 pressure. So that particular design does not
11 work. And they can also have a lot of buildup of
12 biofouling in the piping that goes out there.
13 That's controlled now at offshore intakes like
14 Scattergood and El Segundo by doing a heat
15 treatment. But, of course, this technology and
16 the fine mesh at the end, you can't get all that
17 debris out.

18 Barrier net is feasible, but only good
19 for impingement. Next slide. Collection and
20 return systems. Next slide. Basically this is a
21 demonstration fine net spraying. You basically
22 collect the eggs and larvae in buckets. They're
23 put in a return system that takes the organisms
24 back to the source water.

25 Next slide. Basically the issues

1 required here are you got to get the fish
2 impingible or entrainable back to a place where
3 they're not going to be reimpinged or re-
4 entrained. If you have a high velocity you're
5 going to have to look at installing additional
6 screens to lower the velocity and that can
7 significantly increase costs.

8 And there's little data on survival
9 rates. Some of the places where this has been
10 tested, like Prarie Island in the midwest, a lot
11 of species you only get like 20 percent survival
12 rate.

13 (inaudible) screens is a new technology.
14 These are fish buckets on one recently installed
15 in the Potomac River Estuary near Washington.
16 Testing is going on. The point here is there are
17 new things underway that may be of benefit. This
18 one, however, is only for impingible organisms.

19 Flow reduction, next slide. Basically,
20 let's skip over that, we've pretty much covered
21 cooling towers, issues associated with those.
22 Operational measures, the other flow reduction has
23 reduced pump operations. The fact is most
24 facilities on the west coast operate substantially
25 below design capacity in flow. But for some

1 facilities like nuclear facilities, like Diablo
2 and SONGS, they're not designed to follow
3 (inaudible). They're baseloaded facilities and
4 therefore that's not going to work for those kinds
5 of facilities.

6 And then you also need replacement
7 power, again because there's potential impact on
8 generation of power.

9 Next slide. Diversion systems. Next
10 slide. These only work for impingible sized
11 organisms. Basically what you're doing is using
12 behavior to divert them to an area where you can
13 relocate them.

14 Behavioral devices. Again, IM only
15 tends to be fairly species-specific. There is a
16 lot of testing under way right now.
17 Unfortunately, most of the testing that we're
18 aware of is all in east coast waters. And there's
19 little data on west coast species.

20 Next slide. And finally, velocity caps.
21 Velocity caps also have been shown to be effective
22 for impingement only. And, again, are working on
23 fish sensing a slope flow field and avoiding it.

24 So, basically I think that was the last
25 slide. So, if you have any questions I'll be

1 happy to answer them.

2 VICE CHAIRPERSON SECUNDY: You provided
3 a copy of this to us?

4 MR. BAILEY: Yes.

5 VICE CHAIRPERSON SECUNDY: Thank you
6 very much. Three more speakers. David Abelson,
7 attorney.

8 MR. ABELSON: Thank you, Members of the
9 Board and Staff (inaudible). My name is David
10 Abelson; I'm retired from 31 years as a state
11 attorney this past August. The last 18 years were
12 with the California Energy Commission. My history
13 includes several years at the Attorney General's
14 Office representing the State and Regional Board
15 in court, and also with the Air Resources Board.

16 In my professional capacity at the
17 Energy Commission I had extensive exposure to both
18 the legal and policy and practical issues
19 concerning once-through cooling. And I wanted to
20 offer to the Board and the staff today something I
21 think that's a little different than the comments
22 that you've heard up to now.

23 It has to do with basically an approach,
24 a conceptual approach to putting California back
25 in the forefront on the issue of policy regarding

1 once-through cooling.

2 The approach draws on economic concepts
3 concerning avoided costs, liquidated damages and
4 nonquantifiability of harm. It draws on court
5 cases which can be documented, and which I'm
6 prepared to make if you request me to do so after
7 today's oral presentation.

8 Basically the approach starts with what
9 I understand to be the State Water Resources
10 Control Board's primary policy with regard to
11 water quality in any event. Which is first and
12 foremost, do no harm, avoid. Avoid harm where
13 possible.

14 That policy can be captured in the once-
15 through cooling debate by starting with a policy
16 that states that there is a presumption, a
17 presumption against the use of once-through
18 cooling over some period of time, because we are
19 dealing with existing facilities. And this is
20 clearly going to have to take place over some
21 reasonable period of time.

22 The issue of whether or not someone can
23 overcome that presumption that we are going to
24 phase this antiquated technology out is something
25 that needs, as a practical matter, to be left

1 open. You cannot say, as a practical matter,
2 under no circumstances will we ever allow once-
3 through cooling in the State of California.

4 The question becomes when should we get
5 away from the presumption that over a specified
6 period of years we are going to phase this
7 technology out.

8 And I would pose to you that what we do
9 is adopt a concept related to liquidated damages,
10 the presumption that it is only to be avoided or
11 not complied with, that policy, if the people that
12 are saying they need once-through cooling are
13 prepared to assume the full avoided cost of that
14 which they are foregoing.

15 Specifically, what they ought to be
16 doing in that situation is getting rid of the free
17 rider aspects that are going with the use of
18 public trust resources at the moment.

19 I don't know what the appropriate proxy
20 or (inaudible) is. I don't know whether it's wet
21 cooling; I don't know whether it's dry cooling; I
22 don't know whether it's hybrid cooling. But what
23 we know is that any of those three technologies
24 will, in fact, either avoid or substantially
25 reduce the impact of once-through cooling.

1 So, if a generator says, well, the site
2 is too constricting, well, it's too much noise,
3 well, the visual impacts are overwhelming, well,
4 the time to build it is too consuming, fine. Pay
5 the avoided cost. Pay the avoided cost of the
6 appropriate (inaudible) technology, which again I
7 would defer to some degree to the expertise of
8 your staff.

9 Now, is that an absolute? Is that
10 something that never varies at all? No. Even
11 that rule should be subject to one further
12 iteration where the facts warrant. That iteration
13 is that if the generators can show by a
14 preponderance of the evidence, not merely
15 substantial evidence, by a preponderance of the
16 evidence that that cost is too high, given the
17 harm that will occur, fine, (inaudible) should be
18 allowed to adjust it.

19 Conversely, if people from the
20 biological community and scientific community can
21 establish by a preponderance of the evidence that
22 the substituted cost is too low, that it will not
23 even begin to address the environmental harm, that
24 should be considered as well.

25 What I'm basically proposing to you is a

1 balancing test. One that sets clear policy that
2 this technology is something that the State of
3 California wants to avoid and wants to phase out.
4 But the State of California is pragmatic, it's
5 realistic, it understands that there may be
6 circumstances where that's not possible. And in
7 those cases no free ridership, people will pay
8 full avoided costs or prove beyond a preponderance
9 of evidence why not.

10 Thank you for listening to my --

11 VICE CHAIRPERSON SECUNDY: Under your
12 proposal how would these funds be utilized?

13 MR. ABELSON: My feeling is that the
14 funds are primarily, as a practical matter, going
15 to have to be used for some sort of compensation.
16 And I recognize fully, because I litigated San
17 Francisco Bay cases where this issue was debated
18 in time before the San Francisco Bay Regional
19 Water Quality Control Board, that we can never
20 fully quantify the nature of the harm, and fully
21 match fish for fish, location for location, what's
22 going on.

23 In a situation like that, a particular
24 agency, such as the Coastal Conservancy, the Ocean
25 Protection Council and others, are probably well

1 situated to decide or to help decide where those
2 funds should be best be used for in effect offsite
3 mitigation.

4 VICE CHAIRPERSON SECUNDY: Thank you
5 very much. Patrick Tennant, Aquatic Biologist,
6 Southern California Edison.

7 MR. TENNANT: All right. I'm the
8 second-to-the-last speaker; I know you just want
9 me to go away. But, I just want to make a couple
10 of points. I thank the staff and the Board for
11 allowing me a chance to give my comments and I'm
12 going to make them very brief.

13 I did present a copy of a letter to the
14 Board last week. I don't know if you've received
15 or not. I left a copy, about 25 copies here on
16 the table. I won't go into detail about that
17 because, as I said, I had submitted that.

18 I do want to just make a couple of
19 comments, and it has to do with some of the claims
20 regarding impingement and entrainment, primarily
21 on SONGS. And the reason being that Southern
22 California Edison is the principal owner of SONGS,
23 that (inaudible) seen interspersed in a lot of
24 these discussions.

25 A couple of them are just kind of pet

1 peeves, so I'll move through them quickly. One of
2 them is kind of an analogy that there's a lot of
3 impact on recreational fisheries because of SONGS
4 impingement.

5 The problem here, when you look at the
6 composition of what's actually impinged at the
7 plant, it's composed of about three species, about
8 96 to 98 percent of our impingement is composed of
9 these three species. One species which shows up
10 on recreational lists is the queenfish. And this
11 kind of distorts a lot of the figures, giving very
12 high percentages on recreational impacts.

13 The problem with queenfish is I don't
14 know any recreational angler that gets up in the
15 morning and I want to go out and catch a
16 queenfish. They're primarily a fodder fish;
17 they're a food source for other species. There
18 are, you know, obvious impacts on this fish
19 immediately offshore, but in the context of actual
20 recreational impacts it's very minimal.

21 The other two species which makes up
22 more than 75 percent of the species impinged are
23 sardines, Pacific sardines and northern anchovies.
24 Now, again, it's acknowledged that these are food
25 species for other species within the marine

1 environment. But these are primarily species that
2 are fished on a commercial basis. And when you
3 look at these fish, on these bait fish, in the
4 context of what's being impinged in the plant,
5 it's not this 8 to 30 percent that you're seeing;
6 it's more along the lines of about 4 percent of
7 the commercial fishery out of San Pedro, not
8 statewide. And only .4 percent of the Pacific
9 sardine. So there's a little bit of exaggeration
10 in a lot of these claims.

11 The other issues regarding these
12 recreational fish, the comparisons that were made
13 do not take into account other sources of
14 mortality, which kind of is echoed in some of the
15 entrainment studies. Well, just a quick fact to
16 kind of put it into perspective. Based upon the
17 fact that an adult California sea lion eats 15
18 pounds of fish a day, roughly equates to about 2.4
19 metric tons a year of fish consumed. San Onofre
20 averages about 32 metric tons each year. So when
21 you do the math it's about 13 to 14 adult sea
22 lions consume about the same amount that are
23 impinged at San Onofre.

24 When it gets to entrainment it's a
25 little bit difficult. We are working on that, we

1 have submitted -- to study the entrainment. But
2 even the estimates of entrainment that we saw at
3 the last meeting were exaggerated. If you do the
4 actual calculations that were shown on the screen,
5 an estimate of 50 million marine larvae were
6 entrained. If you did the calculations, what was
7 shown on the screen, it was actually 28 -- 26 to
8 39 million. I'm sorry. That leaves an error of
9 somewhere around a line of 28 percent to 50
10 percent on a rough estimate that was used to
11 quantify larval impacts.

12 And, again, this does not take into
13 consideration that only .1 percent of these fish
14 will actually survive to adulthood.

15 I'm not going to go over the cooling
16 towers. That's really been beaten to death. We
17 have conducted studies in the early '90s,
18 independently reviewed by outside contractors. It
19 was determined back then that it was not cost
20 feasible for SONGS. It was somewhere along the
21 lines of about \$300 million just to complete the
22 project, which did not include the eight acres of
23 coastal sage scrub habitat surrounding the
24 facility that would need to be removed for these.

25 There are studies out there. I don't

1 want you to think that there aren't. We did do
2 studies.

3 And finally, I would like to say some
4 have asserted that California does not have the
5 ability to assess the impacts upon the coastal
6 environment. SCE disagrees with that.

7 For the last 15 years we've spent over
8 \$9 million working with the California Coastal
9 Commission to develop monitoring programs and
10 restoration programs to help offset some of these
11 potential impacts from the plant.

12 The Commission experience anticipated
13 the EPA rule and provides a model for Regional
14 Board oversight. We're working with requirements
15 for contact, technical expertise may be
16 significant. The Coastal Commission is a
17 definitely a resource that SCE feels should be
18 utilized.

19 Again, I really flew through that very
20 quickly. It looks like the last copy of my letter
21 was gone. I don't know if that'll be placed on
22 the website or not, but --

23 VICE CHAIRPERSON SECUNDY: It will.

24 MR. TENNANT: -- if not, tackle me as
25 I'm walking out the door and I can get you a copy

1 of the letter.

2 Thank you.

3 VICE CHAIRPERSON SECUNDY: All right.

4 MR. GREGORIO: Excuse me, I have several
5 questions for you. I know that from some
6 newspaper accounts that we received recently that
7 at San Onofre back in August in one single event,
8 which looks like it was about one day, that 5.5
9 tons of anchovies were taken in and killed. And
10 then there was a similar event, I guess it was for
11 sardines, in February of 2004.

12 My question is how frequently do these
13 really large fish kills take place?

14 MR. TENNANT: It's actually very rare.
15 The last year we did experience quite an influx of
16 sardines. We're assuming it has to do a lot with
17 the actual recovery of the species.

18 The species, themselves, the fishing
19 industry was really shut down in the '60s, '70s
20 and a lot of restrictions were put on how much can
21 be captured. Over the years they've been
22 rebounding pretty well.

23 The difficulty is, yes, we did get a
24 large -- and we are required by the Nuclear
25 Regulatory Commission that if we do have large

1 kills like that, that it has to be reported to the
2 public.

3 Last 2004 year the sardine, we did have
4 a couple of events where we had a large amount of
5 sardines. And, again, they make up the vast
6 majority of the biomass of the fish that were
7 impinged that year.

8 And if you look at the 2004 annual
9 report, it's somewhere along the lines of 76
10 percent of the total mass was sardines.

11 So it did happen in 2004, and it's not a
12 frequent occurrence. But, as we see some of these
13 species, especially, it's just kind of the nature
14 of the heat treat process and some of the intakes
15 that just happen to have a large school that
16 congregates offshore that you can entrain them.

17 VICE CHAIRPERSON SECUNDY: Do you have a
18 velocity cap --

19 MR. TENNANT: We do have a velocity cap.
20 One other thing that SONGS does employ, we have a
21 fish return system. And if you look at our 2004
22 report it enumerates the amount of fish that are
23 actually returned to the ocean.

24 In the case of the sardines during a
25 heat treatment process we typically change the

1 fish out operationally by slowing increasing the
2 temperature of the water, and most of them leave
3 the plant. And then we close the valves and we
4 heat treat to kill off any fouling organisms
5 within the system.

6 What we assumed happened with the
7 sardines is there was a lag time in between the
8 fish chase and an actual switching of the valves.
9 And what happens is sometimes they'll follow some
10 of the warmer water and some of the organic
11 material that's stirred up during a fish chase
12 process, into the plant.

13 VICE CHAIRPERSON SECUNDY: Thank you.

14 MR. TENNANT: Okay.

15 VICE CHAIRPERSON SECUNDY: Any other
16 questions? Our last speaker, John Steinbeck. Mr.
17 Steinbeck, I apologize. I just saw the note that
18 said (inaudible).

19 MR. STEINBECK: Okay. Thank the Board
20 and Staff Members. The information, the
21 presentation is based on my experiences from
22 having worked on a lot of the 316(b) studies done
23 in California over the last ten years; and also
24 having worked at Diablo Canyon on all the
25 environmental work there over the last five years

1 or so.

2 One of the problems in presenting a
3 context for assessing entrainment effects is the
4 large numbers involved. You've heard this
5 numerous times today, you're talking about
6 hundreds of millions, sometimes billions of
7 larvae. And briefly I just want to try to show
8 you some examples of why these large entrainment
9 numbers don't necessarily equate to large impacts
10 on adult fish populations, and some of the reasons
11 why.

12 Next slide. One of the reasons for the
13 large entrainment numbers is the cooling water
14 (inaudible) for some of the coastal power plants.
15 In the case of Diablo Canyon, we're talking about
16 2.5 million gallons a day.

17 And so therefore when we started the
18 316(b) study at Diablo back in '96 I really
19 expected that we would feel that the impacts, both
20 for that reason and also some of the other reasons
21 listed up there, and also because -- monitoring
22 had -- adult fish populations for the plant.

23 I thought it would also be easier to
24 detect effects at Diablo relative to other plants.
25 Where multiple impacts may have already occurred

1 and affected some of those fish populations.

2 Next slide. Well, that assumption was
3 wrong, and it was primarily just the
4 characteristics and dynamics of the source water
5 that the plant uses for cooling.

6 Diablo is located on this headland and
7 as a result of the location it has a couple of
8 consequences. Strong currents that run along the
9 entire coast sweep past Diablo and result in
10 transfer of larvae over large sections of
11 coastline. Therefore, any effects of entrainment,
12 if they are occurring, are spread over, you know,
13 many miles of coast. And that makes them also
14 difficult to detect, but also the scale magnitude
15 of the processes involved in both the larval
16 transport and recruitment and growth make it
17 really hard to detect, and (inaudible)
18 significant.

19 Next slide. One of the other reasons
20 that it makes it hard to detect these effects is
21 when they average only 8.6 percent for the 12 fish
22 that we analyzed. And so given the large
23 potential larval supply from adults over the large
24 area of coastline I was talking about, it's hard
25 to see how there could be any impacts to adult

1 fish populations, given those low impacts, and the
2 conservative assumptions that we used in the
3 model, the models that were used in the
4 assessment.

5 Next slide. So, given the spatial scale
6 of the source water, it really wasn't too
7 surprising that we didn't see any effects locally,
8 as expected. Here's a couple of nonfishery
9 species, data starting '76 and going through 2004.
10 You really don't see any trends in these two
11 species. And these are two that were entrained in
12 fairly high numbers.

13 Here's two fishery species. And what I
14 think is interesting is that even though the plant
15 was operating through this entire period of time,
16 you can actually see the effects of the onset of
17 this fishery, and then starting in 2000 this
18 implementation of regulations and actually, you
19 know, slight increases or leveling off of these
20 declines in commercial species.

21 So if the plant was having an effect you
22 wouldn't be seeing these kind of subtle effects of
23 changes in fishing pressure.

24 Next slide. So, as I said, you can
25 argue that given the spatial scale processes we're

1 talking about here on the open coast, you wouldn't
2 expect to see any effects near the plant.

3 So what do you see on a larger scale?

4 Well, unfortunately there isn't any existing
5 monitoring data up and down the coast that you
6 could use to look at the fish populations on this
7 larger scale, but CalPoly University in San Luis
8 Obispo recently had a fishery study funded through
9 those groups up there, and the study showed no
10 declines in local party boat fishing success over
11 a fairly long period (inaudible).

12 Next slide. So, what about entrainment
13 effects for plants that aren't located in these
14 open systems that are subject to these large
15 coastal processes. Plants in estuarine systems.
16 Next slide. I'll briefly discuss the South Bay
17 Power Plant. In this assessment we treated the
18 South Bay Power Plant as a closed system, the
19 source water as a closed system. It's located way
20 down here at the south end of San Diego Bay.

21 And as a result the turnover in the
22 water down there takes so long that the larvae in
23 that area are essentially subject to entrainment
24 the entire time they're, you know, -- or for a
25 number of days, large number of days, much moreso

1 than they would be at like Diablo where they're
2 sort of passed by currents.

3 But even in this closed system at South
4 Bay the average entrainment mortality was only
5 slightly higher than the results from Diablo
6 Canyon. There was less fish analyzed, so average
7 13.4 percent. And these numbers are still well
8 below the allowable catch rates for sustainable
9 fisheries used by Fish and Game.

10 In a closed system you might expect
11 localized effects unlike Diablo, but we didn't
12 really see those effects based on anecdotal data.
13 Study on adult fishes that were done there showed
14 no trends in abundance. In fact, they were
15 increasing in this period from '95 to -- '94 to
16 '99 in gobies, which we had the highest
17 entrainment mortality for larvae.

18 And really amazing, the entrainment
19 estimate for gobies in 1980 was, what, about 2
20 billion. And the estimate in 2001 was like 1.9
21 billion or something of this, just amazing how
22 close the numbers were.

23 Again, these aren't evidence that
24 there's no impact, but it's just kind of anecdotal
25 evidence that, you know, under the weight of

1 evidence doesn't support that there's large
2 (inaudible).

3 These results are consistent with other
4 long-term studies from the east coast. And the
5 best evidence for the cooling water intake system
6 entrainment isn't affecting the fish populations
7 comes from some of these studies, as they were
8 done before, during and after plant operation,
9 like in the Connecticut River. And there just
10 really wasn't any trends in any of the commercial
11 and recreational species that were tracked during
12 that period. And there's been large increases of
13 striped bass in the Hudson River.

14 So, in conclusion, I hope that the
15 examples I presented show that large numbers don't
16 necessarily equate to large impacts, which is the
17 last slide.

18 If there's any questions I'd be happy to
19 answer them.

20 VICE CHAIRPERSON SECUNDY: No, thank you
21 very much.

22 MR. STEINBECK: Okay.

23 VICE CHAIRPERSON SECUNDY: Appreciate
24 it. And, again, we will post that on the web.

25 Just a few concluding remarks. It is a

1 privilege to be on any of the state boards, and
2 it's also a responsibility.

3 I know that Tam and I both come to these
4 hearings with our minds absolutely not made up.
5 We have listened to proposals from staff; we've
6 heard certain stakeholders, those that have come
7 to Sacramento to give us presentations. And our
8 doors are frankly always open for others that want
9 to do that.

10 But we really come here to glean
11 information and to take in that information so
12 that we will have the widest possible knowledge
13 upon which to base our ultimate decisions.

14 So, this is not only not a waste of
15 time, this is absolutely invaluable. And I very
16 much appreciate everyone coming out and giving us
17 the benefit of their knowledge.

18 Tam, anything you wanted to add?

19 CHAIRPERSON DODUC: No. Just
20 (inaudible) I second everything my Vice Chair just
21 said. Appreciate it, thank you.

22 VICE CHAIRPERSON SECUNDY: Thank you.
23 I'm going to just ask Dominic to give you two or
24 three sentences of closing remarks in terms of,
25 quote, where do we go from here. We've now had

1 two workshops, so what's our time schedule?

2 MR. GREGORIO: Well, if we move ahead
3 with our proposal, which is, as you can see from
4 our presentation, is very skeletal at this point,
5 we have a lot of work to do in order to comply
6 with CEQA.

7 Whenever we change one of our water
8 quality control plans we have to have what we call
9 a functional equivalent document. That does take
10 some time.

11 This has been identified as a high
12 priority by not only the State Board, but also by
13 the Regional Boards. So we realize that we have
14 to get moving on this. But still, that process
15 can take some time.

16 So, as far as the staff goes, we're
17 going to go back to the drawing board, work with
18 some of the other state agency staff and try to
19 come up with a little bit more concrete
20 suggestions, a little bit more details added to
21 the suggestions and next start the FED process.

22 I think the next public step would be to
23 have a scoping meeting. And I can't give an exact
24 date for that yet, but that would be the next
25 step.

1 VICE CHAIRPERSON SECUNDY: Anyone else?

2 Thank you all very much for coming.

3 (End Tape 1B.)

4 (Whereupon, the State Water Resources

5 Control Board public workshop was

6 adjourned.)

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CERTIFICATE OF TRANSCRIBER

I certify that the foregoing is a correct transcript from the electronic sound recording of the proceedings in the above-entitled matter, to the best of my ability.

Official Transcriber

Date

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