Ocean Protection Council Meeting
June 14, 2007
Public Comment

Date	Name	Affiliation	Subject of Communication
June 14, 2007	Satie Airame	PISCO	Research on Climate and Ocean Change
June 14, 2007	Melina Williams Kate Wing	NRDC	Agenda item 11 - Ocean Energy Study
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Partnership for Interdisciplinary Studies of Coastal Oceans

University of California, Santa Barbara
University of California, Santa Cruz
Stanford University and Hopkins Marine Station
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June 14, 2007

To: California Ocean Protection Council
From: Satie Airamé, PISCO Policy and Outreach Coordinator, Marine Science Institute, University of California, Santa Barbara
Re: PISCO Research on Climate and Ocean Change

The science of climate and ocean change is advancing rapidly. **A top priority for our research group, PISCO (Partnership for Interdisciplinary Studies of Coastal Oceans), is the study of biological and physical impacts of climate and ocean change.** PISCO is a group of about 150 research scientists and students at four universities in California and Oregon. Since 1999, PISCO scientists have studied intertidal and subtidal marine communities in the California Current Large Marine Ecosystem from Baja California to Alaska.

PISCO scientists have made some important discoveries about how climate and ocean change affects marine ecosystems.

- By studying historical records, PISCO scientists and collaborators have documented the northward migrations of dozens of marine species, a prediction consistent with models of global climate change.
- PISCO scientists have used genetic techniques to track the spread of invasive species and we have identified ocean warming as one of the factors that contributes to invasions of non-native species.
- PISCO scientists are learning how increased seawater temperatures affect an animal's physiology, such as heart rate and function, growth, and reproduction.
- PISCO scientists are asking "How does acidification of seawater affect development of young marine animals?"
- PISCO scientists have tracked the formation of a massive hypoxic (or low-oxygen) zone of the coast of Oregon and Washington. The low oxygen zone has occurred every summer since 2002 and has become larger and shallower each year. The low oxygen zone causes massive die-offs of crabs, worms, and other marine invertebrates that live on the seafloor. During low oxygen events, fish move out of the affected region, causing fishers to shift their efforts to other locations. The repeated formation of the low-oxygen zone is likely caused by fundamental oceanic and atmospheric changes that are consistent with changes expected under a changing climate.

By using diverse and innovative techniques, PISCO scientists are learning what we can expect with climate and ocean change. **PISCO scientists are can serve as information resources for policymakers, managers, and others who are seeking information about the biological and ecological impacts of climate and ocean change in coastal California, Oregon, and Washington.**

Additional information about our research program is available at our website (www.piscoweb.org) and in our annual publication *PISCO Coastal Connections*. Please feel free to contact PISCO Policy and Outreach Coordinators Satie Airamé (airame@msi.ucsb.edu) or Liz Riley (liz.riley@science.oregonstate.edu) if you have any questions about PISCO's research program.

NRDC
THE EARTH'S BEST DEFENSE
NATURAL RESOURCES DEFENSE COUNCIL

Testimony before the California Ocean Protection Council
Agenda Item 11. Consideration of Ocean Energy study
June 14, 2007

On behalf of the Natural Resources Defense Council (NRDC) and our more than 1.2 million members and e-activists we are pleased to offer these comments in support of the proposed study of the Environmental Implications of Ocean Energy.

Wave and tidal energy projects have the potential to help reduce the state's dependence on fossil fuels and ameliorate environmental problems associated with carbon-based energy sources, including the emission of greenhouse gases. However, all energy production has some effect on the environment. These new technologies are in the earliest stages of development and much remains unknown about their potential environmental impacts, making further research essential to ensure that they are developed and implemented as sustainably as possible.

In order for wave and tidal energy projects to succeed, they need to be environmentally responsible as well as technically feasible. Project design and siting decisions are crucial to limiting potential impacts of wave and tidal energy projects as well as maximizing power generation. We support integrating the analysis proposed by the OPC with the work being done by the California Energy Commission's Public Interest Energy Research program, particularly as it relates to identifying specific areas that should or should not be used for energy projects. Special consideration should be given to potential effects on rare or endangered species and sensitive or important habitats.

We encourage the OPC to examine three additional research areas beyond the ones outlined in the current proposal:

- **Adaptive management**: given the nascent state of wave and tidal technologies, an important question is how to proceed in the face of uncertainty. We support an approach of adaptive management, which encompasses ongoing research and environmental monitoring, especially for early projects and untested technologies. Adaptive management requires ongoing evaluation of the interaction between a technology and its environment and allows unforeseen environmental impacts to be recognized early and addressed as they arise. In some circumstances, this may necessitate removal of a project. We encourage the state to design an adaptive management framework that allows for the free flow of critical environmental data among relevant agencies and provides managers regular opportunities to review and evaluate the progress of a project. If this framework is developed in advance, it can offer appropriate environmental safeguards without hindering progress of this important sector.

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- **Community impacts**: we encourage the state to look not only at impacts on biological communities but also at the communities of Californians living along the coast. Researchers at California Sea Grant and Ecotrust, among others, have developed approaches to look at the costs and benefits of management measures on coastal communities. Wave and tidal energy projects have the potential to bring cleaner power to more remote areas, but at the same time they could disturb the aesthetics or recreational and commercial activities that drive local economies. Thus, we feel the state should adopt a methodology for carefully evaluating these kinds of community effects.
- **Cumulative impacts**: the state should create a process for evaluating cumulative impacts. Cumulative impacts may arise from the compounded effects of multiple installations within one project, the compounded effects of multiple projects, or the interactions between ocean energy projects and other uses of the marine environment. For example, cumulative impacts could be important for migratory species, which may encounter multiple projects. Additionally, consideration of cumulative impacts helps illuminate how impacts will vary based on the scale and location of a project.

Finally, to the extent that the state is considering streamlining the permitting process, we recommend that the OPC use the study to identify how that streamlining could occur while providing sufficient environmental review and public comment.

We are pleased that the OPC plans to use the final report to facilitate discussions with the public, industry, and with federal and state agencies. Ongoing public engagement with the development of these technologies is crucial, both to ensure consideration of diverse perspectives and to build public support. We encourage the OPC to share all information and research results with the public as they become available. We specifically request that the OPC provide an opportunity for public comment before the report is completed so that public input can be considered in preparing the final draft.

Thank you for the opportunity to offer comments. We look forward to continuing to be involved with the development of these new and promising technologies and the protection of California's marine resources.

Melina Williams
Kate Wing

June 13,2007

Mike Chrisman,
Chair, Ocean Protection Council

Dear Mr. Chrisman,

I regret that I cannot attend the Ocean Protection Council's meeting today. I have been getting regular reports and watch the video feeds and want to say that I appreciate the Council's interest in the clean water issues here in San Luis Obispo County. In particular I write regarding the sewage treatment issues affecting the Morro Bay National Estuary.

I'm sure you know that the City of Morro Bay is currently upgrading their aged treatment facility and that the County of San Luis Obispo is developing project alternatives to replace septic tanks in high groundwater areas of Los Osos. What isn't being accomplished yet is a look at how the two projects might interface to produce a regional solution to water issues. This study needs to be done now and neither the City nor County has the resources to undertake this effort without assistance from the State.

I urge you to find a way to fund this badly needed study before the individual projects are so far into development that it will be deemed to late to turn back even if there is a better way. Of course this effort needs to be independent ofthe current efforts so that neither is unnecessarily delayed should the study determine the regional approach infeasible.

Regarding the County's current efforts in Los Osos, I urge you to support an evaluation that is open and comprehensive; one that is not burdened by the agendas of state agencies or other coastkeeper-taxpayer organizations that have unresolved issues with the Los Osos Community Services District. The alternatives analysis must not be forced back to prior determinations for the sake of expediency. Not when less costly, environmentally superior methods such as pressurized collection systems have not been given a fair evaluation in the past.

Again, I thank you for your efforts to protect this paradise we call Earth.

Chuck Cesena
President
Los Osos Community Services District