

California Energy Commission PIER Program

Background Information

The California Energy Commission's Public Interest Energy Research (PIER) Program supports energy research, development and demonstration (RD&D) projects that help improve the quality of life in California by bringing environmentally safe, affordable and reliable energy services and products to the marketplace.

The PIER Program annually awards up to \$62 million to conduct the most promising public interest energy research by partnering with RD&D organizations including individuals, businesses, utilities, and public or private research institutions.

PIER brings new energy services and products to the marketplace and creates state-wide environmental and economic benefits. PIER funding efforts are focused on the following RD&D program areas: Buildings End-Use Energy Efficiency, Energy Innovations Small Grant Program, Energy-Related Environmental Research, Energy Systems Integration, Environmentally-Preferred Advanced Generation, Industrial/Agricultural/Water End-Use Energy Efficiency, and Renewable Energy Technologies

The Energy-Related Environmental Research (otherwise called the PIER Environmental Area, or PIER-EA) is responsible for addressing the environmental impacts of electricity infrastructure and use in California. The Aquatic Resources program area is heading the effort with the Moss Landing Marine Labs to develop research that addresses the ecological effects of once-through cooling.

Water Intake Structure Environmental Research

In order to improve our understanding of the ecological effects of once-through cooling technology on California's coastal and estuarine waters, the PIER Program is funding research through the Water Intake Structure Environmental Research (WISER) Program at the Moss Landing Marine Laboratories of the California State University. The purpose of this program is to identify and fund research that will further our understanding of these effects as well as provide better tools for their reduction or removal if necessary. The program will address both the biological and technological aspects of all phases of this cooling technology, from cooling water withdrawal to discharge.

To date, WISER has held a workshop that brought together scientists, consultants, industry representatives, environmental groups, and state and federal agencies with the goal of identifying research priorities within the scope of the PIER program. We plan to release our first RFP in October highlighting the following research areas. The effect of greatest interest is entrainment, but proposals that address impingement and/or thermal effects will be considered without bias.

*Studies would be supported that provide comparative data on the vulnerable life-history stages of particular species or populations such that the present application of entrainment-loss models, and their underlying assumptions, can be evaluated.

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specific interest is how well different models can be applied to species not currently evaluated in entrainment studies such that total cooling-water intake effects can be estimated more accurately.

*Presently data are collected for only a subset of species entrained, yet we have no direct knowledge regarding how well these actually represent the community being impacted. Development and testing of criteria for designating species that could serve as indicators of population level effects on all species that are entrained (e.g., fishes, invertebrates) would be supported.

*We also are interested in the identification and demonstration of new tools or technologies for detecting entrainment effects, such as new techniques (i.e., molecular markers) to identify species that are entrained but not presently quantifiable. This might include new tools or techniques that make detecting effects more accurate, more effective, and/or more cost efficient.

*We support the application of new sampling methodologies for quantifying the spatial and temporal effects, including cumulative effects, of cooling water intake. The development of models that specify how such a program would be enacted most effectively could be supported within this context.

*We are interested in the determination of when entrainment studies are needed beyond the initial permitting requirements and how these should be conducted. This could include a determination of the scope and magnitude of these studies, as well as the appropriate the frequency and duration of such efforts.

*The development and testing of measures, including both the addition of new technology and the modification of existing water intake practices, that can reduce the ecological effects of cooling water intake and discharge could also be supported.

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