



**MWD**

METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

**9-9**

June 17, 1998

**To:** Board of Directors (Engineering and Operations Committee--Information)  
(Special Committee on Water Quality, Desalination,  
and Environmental Compliance--Information)

**From:** <sup>for</sup> General Manager

**Submitted by:** Mark D. Beuhler  
<sup>for</sup> Director of Water Quality

  
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**Subject:** California Energy Commission Applied Research Proposal

## **RECOMMENDATION**

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For information only.

## **EXECUTIVE SUMMARY**

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The California Energy Commission (CEC) sponsors research activities in the field of water and wastewater treatment to improve energy efficiency at municipal facilities and to support research and development of new electrotechnologies. Metropolitan and its partners recently submitted a proposal to the CEC titled, *Electrotechnology Applications for Potable Water Production and Protection of the Environment*. The goal of this project is to develop new and innovative electrotechnologies, such as brackish water desalination, to mitigate the environmental impacts associated with collecting and treating more imported water. The proposal is expected to be approved by the CEC, and a research grant in the amount of \$2.9 million will be awarded, of which \$710,000 will go directly to Metropolitan. Metropolitan's partners in this project include Edison Technology Solutions, the Electric Power Research Institute, Orange County Water District, the University of California, Riverside, Lawrence Livermore National Laboratory, and West Basin Municipal Water District.

## **DETAILED REPORT**

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Deregulation of the electric power industry in California has had a major impact on the way energy research grants are awarded, managed, and allocated. The California Energy Commission (CEC) is now responsible for managing and awarding all public interest energy research funds. The Electric Power Research Institute and the electric utilities can no longer sponsor energy research in California (as of January, 1998, research dollars from Southern California Edison, Pacific Gas and Electric, and San Diego Gas and Electric must go to the CEC). They will have to compete for these funds along with other utilities, universities, and consultants throughout the state of California.

One of the areas of focus in the CEC's "Request for Proposals" was on environmental enhancement research, development, and demonstration projects which apply energy technologies or facilities to solve environmental problems. As such, Metropolitan formed a team with a number of premier organizations in southern California and submitted a proposal to the CEC titled, *Electrotechnology Applications for Potable Water Production and Protection of the Environment*. Metropolitan had the lead role in preparing this proposal. Our research team developed a project which focuses on electrotechnologies that have the potential to significantly reduce the environmental impacts associated with conventional water treatment practices, and to develop non-traditional water supplies such as desalination of Colorado River water, reclaimed water, brackish groundwater, and agricultural drainage.

The proposal is expected to be approved by the CEC on June 24, 1998, and a research grant in the amount of \$2.9 million will be awarded, of which \$710,000 will go directly to Metropolitan. This will be the largest single grant awarded by the CEC.

Six innovative, electrically-driven water treatment processes will be evaluated. The electrotechnologies were chosen for their ability to remove salts to improve water quality and develop non-traditional water supplies, and their potential to mitigate existing environmental problems associated with conventional water supply. Technologies to be evaluated include existing processes such as membranes and ozonation, and cutting-edge processes such as carbon aerogel capacitive deionization (desalination), pulsed-ultraviolet (UV) irradiation, and freeze-thaw sludge conditioning.

A project organizational chart showing the relationship of the project team members is shown in Attachment No. 1. The project will be managed by Edison Technology Solutions (the research arm of Southern California Edison). Metropolitan will be responsible for conducting the desalting, ozone, and pulsed-UV work related to Colorado River water, and the University of California, Riverside will perform similar studies with agricultural drainage water. The Orange County Water District will lead the research on desalination, ozonation, and pulsed-UV irradiation for reclaimed water and groundwater. A peer review panel assembled by the West Basin Municipal Water District will consult with the Orange County Water District on these efforts. Lawrence Livermore National Laboratory will coordinate the research on carbon aerogel capacitive deionization (desalination). The Electric Power Research Institute will be responsible for the work on mechanical freeze-thaw processing of residuals, energy and process assessments, and biological denitrification.

Contract negotiations between the parties will commence immediately and should be completed by the end of the summer. Staff will request approval from your Board to enter into a contract with Edison Technology Solutions at that time.

The team approach was a key element in our success on this applied research endeavor. The contributions by the Orange County Water District and the West Basin Municipal Water District during the preparation of the proposal are certainly appreciated. In addition, letters of support were received from the Los Angeles Department of Water and Power and the Municipal Water District of Orange County. Collaborations with other member agencies on related water quality activities will also be pursued. We anticipate submitting similar proposals for CEC grants in future years because the CEC will be allocating a larger amount of research grants in 1999 and

beyond. This project will form a key component in Metropolitan's efforts to achieve a technological "breakthrough" in desalinating Colorado River water and other waters by leveraging Metropolitan's and member agency's resources to achieve a strategic goal.

JFG/MDB/cs

Attachment

# Attachment No. 1. Project Organization

Attachment 1 to 9-9  
 Water Quality Division  
 June 17, 1998

