

**COMMISSION FILE NO:** 17-048-5 **DATE INTRODUCED:** May 8, 2017

**INTRODUCED BY:** Executive Director (Signature on File in the Office of the Commission)

**REFERRED BY COMMISSION CHAIRPERSON TO:** Policy, Finance, and Personnel Committee

**RELATING TO:** Authorization to Execute a Professional Services Agreement with Marquette University to Develop a Multidisciplinary Research Program to Enhance the District's Research Program and Improve Capital Project Selection

**SUMMARY:**

The Commission is requested to authorize and to direct the Executive Director to execute a five-year research agreement with Marquette University to establish a multidisciplinary research program to enhance the District's research program and improve capital project selection in an amount not to exceed \$1,375,000, or \$275,000 per year. The period of performance for the agreement is August 2017 to July 2022.

The goal of this agreement is to strengthen the District's research program by incorporating multidisciplinary expertise to meet District objectives and deliver more robust, ready-to-use research deliverables. A successful program will generate innovative technologies, enhance communication efforts, and develop policy information that will help the District advance a healthier Milwaukee region, maintain its position as an industry leader, strengthen its research section, and help promote a cleaner Lake Michigan. As part of the District's capital planning process, the data and results from this research will determine what specific capital improvement projects are needed.

Examples of potential research areas include, but are not limited to, hydrothermal processing, enhancements to anaerobic treatment systems, and nutrient recovery. These in turn may lead to capital investment in advanced biosolids handling and solids destruction technologies, renewable energy infrastructure, and systems with the potential to generate water quality trading credits. As part of the District's capital planning process, the results from research projects will help determine what specific capital improvement projects are needed to increase efficiency and save money.

**ATTACHMENTS:** **BACKGROUND** ☒ **KEY ISSUES** ☐ **RESOLUTION** ☒  
**FISCAL NOTE** ☒ **S/W/MBE** ☐ **OTHER** ☐ \_\_\_\_\_

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**COMMITTEE ACTION:** \_\_\_\_\_ **DATE:** \_\_\_\_\_

**COMMISSION ACTION:** \_\_\_\_\_ **DATE:** \_\_\_\_\_

## **SUMMARY (Cont'd)**

### **Authorization to Execute a Professional Services Agreement with Marquette University to Develop a Multidisciplinary Research Program to Enhance the District's Research Program and Improve Capital Project Selection**

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To ensure that the District's interests are strongly represented in the program, key District personnel will be assembled to include their multidisciplinary research needs in a request for proposals (RFP) that will be released within the colleges of Marquette University. The faculty will then submit proposals to the District that will be evaluated for completeness and adherence to terms within the RFP. Further, proposers will collaborate with District staff on study design and execution to ensure meaningful projects and on-target deliverables that are aligned with regulatory requirements, the 2035 Vision, 2016-2018 Strategic Plan, and post-2050 Facilities Plan recommendations. Examples of potential topics are an audit of counting methods for green infrastructure gallons captured to optimize tracking of progress toward 740 million gallons; a baseline evaluation and comparison of MMSD research efforts to other similarly sized water reclamation districts; visualization and modeling of conveyance features and green infrastructure; evaluation of water reclamation district patent ownership practices, terms of negotiation, and royalty collections; and advancements in co-digestion, nutrient removal, and hydrothermal processing to eliminate waste and recover renewable energy.

## BACKGROUND

### Authorization to Execute a Professional Services Agreement with Marquette University to Develop a Multidisciplinary Research Program to Enhance the District's Research Program and Improve Capital Project Selection

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The District is seeking academic partners that can provide in-depth research and development of new technologies on a compressed schedule. District staff has consulted with Marquette University Associate Vice President for Research and Innovation Carmel Ruffolo to identify research opportunities in District treatment processes, overflow reduction, and rainfall capture goals. Marquette's local presence and significant research capabilities make their academic staff uniquely qualified to provide services under this program. As it relates to the District, Marquette offers numerous areas of study across several divisions, the faculty from which is expected to competitively apply for research funding, including faculty from:

- College of Arts & Sciences (Environmental Studies; Bioinformatics; Biological Sciences)
- College of Engineering (Civil, Construction and Environmental Engineering; Mechanical Engineering)
- Office of Research & Innovation initiatives (multidisciplinary research and development efforts at the Global Water Center and Innovation Campus)

Although Marquette is being selected for this program, its faculty will still have to competitively propose for research funding, fulfilling the District's objectives for securing the best services at the lowest possible price. Each faculty member (Principal Investigator) will have to declare any potential conflicts of interest in the proposed research (e.g., financial ties to the process or product, copyrights/patents held or applied for). The District will evaluate each proposal based on criteria similar to grant evaluations from the National Institutes of Health:

1. Significance. Is there convincing evidence in the application that the proposed program will significantly advance the stated goals of the program?
2. Investigator(s). Do the Principal Investigators have complementary and integrated expertise; are their leadership approach, governance, and organizational structure appropriate for the project; does the Principal Investigator possess preeminence in the field?
3. Innovation. Does the proposed project develop or utilize innovative approaches and latest best practices to improve the knowledge of the District?
4. Approach. Is there evidence that the proposal is based on a sound rationale, as well as sound engineering/scientific concepts and principles?

## BACKGROUND (Cont'd)

### Authorization to Execute a Professional Services Agreement with Marquette University to Develop a Multidisciplinary Research Program to Enhance the District's Research Program and Improve Capital Project Selection

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5. Environment. Will the scientific and educational environment of the proposed research education program contribute to its intended goals? Is there evidence of collaboration and buy-in among participating programs, departments, and institutions?

The funding level of \$275,000 per year for five years (total award of \$1,375,000) reflects an amount similar to other research projects of similar size and scope. The District expects these funds to support multiple projects in the \$50,000-\$100,000 range, although it is feasible that one large research project involving multiple faculty members across several disciplines could secure the bulk of the research funding. Each selected project will be referred to the Commission for approval if the research funding amount exceeds \$150,000 in accordance with the Executive Director's authority under Commission Policy 1-78.08, Contract Award Authority. Funding source will be determined on a case-by-case basis for projects recommended for funding. Unexpended Operations and Maintenance ~~and/or Capital Budget~~ funds in any given year will be reviewed for ~~carryoveried over~~ in to the following year in accordance with Commission Policy. Finally, it should be noted that this resolution does not commit funding to any particular project. Funding commitments will only be made after the RFP process is complete.

As part of the District's capital planning process, the data and results from each research project will help determine what specific District-wide capital improvement projects are needed to increase efficiency and conserve capital expenditures. District staff managing these research projects will be primarily housed in the Planning, Research, and Sustainability Division, although other Divisions (Technical Services, Water Quality Protection) may be involved, depending on the nature of the research project.

## RESOLUTION

Authorization to Execute a Professional Services Agreement with Marquette University  
to Develop a Multidisciplinary Research Program to Enhance the District's Research  
Program and Improve Capital Project Selection

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**RESOLVED**, by the Milwaukee Metropolitan Sewerage Commission, that the Executive Director is authorized and directed to execute a five-year research agreement with Marquette University to establish a multidisciplinary research program to enhance the District's research program and improve capital project selection in an amount not to exceed \$1,375,000, or an annual allocation of \$275,000 ~~per year~~.