



## Legislative Fiscal Bureau

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Joint Committee on Finance

Paper #639

### Freshwater Collaborative (UW System)

[LFB 2021-23 Budget Summary: Page 608, #9]

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#### CURRENT LAW

The Freshwater Collaborative is a partnership between the 13 UW-System public universities, connecting students and faculty with industry partners, local communities, policymakers, non-profit organizations, and advocacy groups. The Collaborative's mission is to train the next generation of water researchers and problem solvers and to establish Wisconsin as a global leader in water-related science, technology, and economic growth.

#### DISCUSSION POINTS

1. The UW System in its 2021-23 agency budget submission requested \$3,000,000 GPR in 2021-22 and \$6,000,000 GPR in 2022-23 in a new, continuing appropriation to provide funding for a systemwide freshwater collaborative. The 2021-23 biennial budget recommendations of the Governor would provide this requested funding.
2. In June, 2019, UW System announced the formation of the Freshwater Collaborative of Wisconsin (FCW). A primary focus of the Collaborative is fostering collaborative research and initiatives across the 13 campuses, private sector, and state institutions to address significant modern water challenges including an initial focus on the challenges of agricultural water management, water quality and safety, and emerging contaminants. In August, 2019, the Wisconsin Economic Development Corporation awarded \$670,000 to FCW, and UW System pledged \$1.4 million in funding as seed money for the initial phase of the Collaborative. In addition, each campus provided staff time to create a steering committee for the Collaborative to work on planning and programming, with UW-Milwaukee serving as the lead institution.
3. Of the initial \$2.07 million, the FCW allocated \$1.06 million for research along five

tracks: research collaboration summits/working groups (\$60,000); strategic research (\$500,000); undergraduate interdisciplinary curriculum, training, and course development and design (\$240,000); freshwater research experience for undergraduate awards (\$160,000); and inter-institutional undergraduate training programs (\$100,000). A list of these projects is shown in the attachment. The remaining funding was utilized for staff and operational costs. The request for proposals (RFP) for research funds specifies that any institution within the UW System may submit proposals and collaborations with UW-Madison or UW-Milwaukee must include one or more of the comprehensive institutions.

4. According to UW System, the \$9 million provided under the Governor's proposal is viewed as the first phase of a three-biennia, \$27 million total investment. Approximately 50% of funding would be utilized for faculty and staff support. The initial \$3 million provided in fiscal year 2021-22 would allow institutions and central administration to set up and begin initial hiring of 26 new faculty and 13 support staff in the first two years. These staff would be expected to bring in research grant dollars to provide an immediate return on investment.

5. Approximately 40% of funds would be utilized for student support through scholarships, fellowships, and internships, including hands-on field and lab opportunities to prepare students for future careers. The FCW would create an array of collaborative cross-institution programs that would be degree-granting at each institution. For instance, there would be a FCW certificate at Eau Claire, a FCW major and minor at Milwaukee, and a FCW concentration at each institution. The pilot program funded with WEDC and UW System funds is currently developing the structure for these programs. For example, current proposals under consideration include requiring each institution collaborative programming to include, at a minimum, a FCW introductory level "101" course and secondary level "201" course, approximately eight credits of hands-on electives, and a capstone that bridges more than one institution. Working groups are in the process of determining the content and delivery of the FCW 101 course, the mechanics of cross-institution curriculum development and faculty sharing, and how to highlight these features to recruit students. Virtual and online courses would be key elements, combined with in-person coursework and experiences reflective of the strengths and geography of each institution. In addition, the FCW is currently organizing its internship program and plans to reach out to current and future industry collaborators across many sectors such as environmental research, environmental engineering, environmental restoration, marine construction, power and water, and public health.

6. The remaining 10% of funds would be used for institution programs and operations, the director's office, career services, and student orientation. UW System also plans to create and maintain marketing and recruitment efforts including communication with the Department of Public Instruction to encourage interest in water careers. An annual water conference is also planned.

7. Under this proposal, the Board of Regents would allocate FCW funding to each institution. Currently, each of the 13 institutions is working on a six-year plan to submit to the FCW steering committee. Allocation of the funds would likely be based on the submitted six-year plans with some flexibility to accommodate changes or developments.

8. It could be argued that the FCW would be beneficial to the state as a whole through

increased job opportunities, research dollars, and environmental and public health benefits and the \$9 million in GPR funding over the 2021-23 biennium should be provided. Citing a UW-Milwaukee analysis of workforce data, UW System points to a Wisconsin water workforce of more than 60,000. According to UW-System, two-thirds of this industry surveyed expressed a lack of qualified water employees, and stated that those hired required extensive training. UW System argues the FCW will meet this critical need creating more than 200 new jobs by 2025. Additionally, by 2025, the FCW plans to have 400 new undergraduate students studying water science generating approximately \$4 million in tuition, 150 new graduate research students, and 26 new faculty, researchers and water professionals involved.

9. On the other hand, it could be argued that if the FCW is a priority for the UW System, then UW System should provide some measure of additional funding for the program alongside state funds. If the proposed funding is not provided, UW System indicates there is presently no plan for system to continue funding for the FCW beyond the initial \$1.4 million committed to the FCW as a match to the WEDC grant. The Committee could consider providing a lesser amount over the biennium. In January 2020, an Assembly Speaker's taskforce recommended providing \$2 million in funding in fiscal year 2020-21 in a continuing appropriation for the freshwater collaborative. The resulting bill, 2019 AB 801, would have provided \$2 million a year in ongoing funding for the collaborative beginning in fiscal year 2020-21. Based on that proposal, the Committee could consider providing \$4 million in fiscal year 2021-22 and \$2 million in fiscal year 2022-23. This would provide the \$6 million that would have been provided from fiscal year 2020-21 through 2022-23 under 2019 AB 801, and would provide ongoing funding of \$2 million annually in a continuing appropriation. If UW System wants to reach a funding level of \$9 million over the 2021-23 biennium, they would need to provide the additional \$3 million through internal resources or secure other external funding sources.

## ALTERNATIVES

1. Provide \$3,000,000 in 2021-22 and \$6,000,000 in 2022-23 in a new, continuing appropriation to provide funding for a systemwide freshwater collaborative. Require the Board of Regents to fund a freshwater collaborative and allocate funding from this appropriation to each institution for this purpose. Specify that freshwater collaborative funding be used to do the following: (a) devise new water-centric training programs focused on undergraduates; (b) provide scholarships and student support to retain and attract new talent; (c) amplify marketing and recruiting relating to Wisconsin's role in freshwater science, including branding Wisconsin as the "Silicon Valley of Water"; (d) enhance workforce development programming; and (e) recruit new faculty and staff to advance training programs, research, and innovation.

ALT 1	Change to Base
GPR	\$9,000,000

2. Provide \$4,000,000 in 2021-22 and \$2,000,000 in 2022-23 in a new, continuing appropriation to provide funding for a systemwide freshwater collaborative. Require the Board of

Regents to fund a freshwater collaborative and allocate funding from this appropriation to each institution for this purpose. Specify that freshwater collaborative funding be used to do the following: (a) devise new water-centric training programs focused on undergraduates; (b) provide scholarships and student support to retain and attract new talent; (c) amplify marketing and recruiting relating to Wisconsin's role in freshwater science, including branding Wisconsin as the "Silicon Valley of Water"; (d) enhance workforce development programming; and (e) recruit new faculty and staff to advance training programs, research, and innovation.

ALT 2	Change to Base
GPR	\$6,000,000

3. Take no action.

Prepared by: Erin Probst  
Attachment

## ATTACHMENT

### Freshwater Collaborative Research Tracks and Initially Funded Research Projects

<b>Research Collaboration Summits/Working Groups</b>	\$60,000
<b>Strategic Research</b>	500,000
UW-Green Bay, UW-Stevens Point, UW-Platteville, and UW-Madison: Land application and the occurrence, fate, and mitigation of per- and polyfluoroalkyl substances (PFAS) and nitrate	122,700
UW-Eau Claire, UW-River Falls: Mitigating Eutrophication Events: Understanding Controls on Phosphorus Contamination in Surface Water and Groundwater in Western Wisconsin	61,800
UW-Madison, UW-Platteville: Groundwater-forest interactions as guide for artificial groundwater recharge strategies to support agricultural and ecosystems in the Central Sands	73,300
UW-Milwaukee, UW-Madison: Micro- and nano-plastics as vectors for the transport of organic contaminants in freshwater environments: influence of natural organic matter and plastic weathering	68,000
UW-Madison, UW-Superior, UW-Eau Claire: Microplastics- A multidisciplinary approach to the understanding of sources, transport, adsorption of POPs, and fate in St. Louis River Estuary and Western Lake Superior	113,300
UW-Oshkosh, UW-La Crosse: Microplastics in the Lake Winnebago and Upper Mississippi River systems and the implications for food webs and water treatment infrastructure	60,800
<b>Undergraduate FCW Interdisciplinary curriculum, training, and course development and design</b>	240,000
<b>Freshwater Research Experience for Undergraduate Grants</b>	160,000
UW-Green Bay, UW-Madison: Evaluation of Filter Media for Phosphorus Removal in Agricultural Runoff Treatment Systems	10,000
UW-La Crosse, UW-Whitewater: Examining the Neurobehavioral Toxicity of the Emerging Contaminant Imidacloprid	9,000
UW-Whitewater, UW-La Crosse: Effects of a Mixture of Two Neonicotinoid Insecticides on Survival and Growth of Gammarus Pseudolimnaeus Amphipods	9,500
UW-Eau Claire, UW-Milwaukee: Creating and characterizing a zebrafish knockout line for studying methylmercury metabolism	10,000
UW-Platteville, UW-Madison: Comparative Wisconsin Freshwater Mussel Assessment: An Undergraduate Research Initiative	10,000
UW-Eau Claire, UW-River Falls: An Evaluation of Phosphorus Loading through Lacustrine Groundwater Discharge in Lake Altoona, Eau Claire County	10,000
UW-Platteville, UW-Green Bay: Evaluation of Filter Media Sorption Kinetics and Flow through Performance for Phosphorus Removal in Agricultural Runoff Treatment Systems	5,000
UW-Green Bay, UW-Milwaukee: Leachability and plant-availability of phosphorus sorbed to agricultural runoff filter media	5,000
<b>Inter-Institutional Undergraduate Training Programs</b>	100,000
UW-Oshkosh: Surface and well water field sampling and lab analysis experience	<u>25,000</u>
<b>Total</b>	<b>\$1,060,000</b>