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Milwaukee Strives to Educate a New Kind of Water-Industry Boom Town



Kevin J. Miyazaki, Redux

A scientist aboard the "Neeskay," the research vessel of the School of Freshwater Sciences at the U. of Wisconsin at Milwaukee, collects samples from Lake Michigan. The region aims to be the Silicon Valley of water-related research, and to bring more students to higher education in the process.

By Jennifer Gonzalez

Milwaukee

Drive north here along Lincoln Memorial Drive, and Lake Michigan soon comes into full view. The lake, on this unseasonably sunny and cloudless day, is a spectacular hue of blue that stretches for miles.

Water is not just a pretty backdrop and source of recreation here but a strong economic driver, with more than 130 water-technology-related businesses in the region bringing in \$10.5-billion annually in revenue. Recognizing that the industry's growth is directly tied to the strength of the region's talent, colleges and companies have joined to create new academic programs, part of a movement to build a "water generation" where elementary-school students to career-changers realize the potential of pursuing jobs in the water industry. Creating that pipeline is part of a larger effort by the industry's leaders to position the Milwaukee region as a global center for freshwater research and technology.

At least a dozen new or retooled academic programs now emphasize water. Marquette University offers options like a program in water law, and the University of Wisconsin at Whitewater, about 50 miles to the west, now has a water-resources concentration. The School of Freshwater Sciences at the University of Wisconsin at Milwaukee, established in 2009, prepares graduate students for jobs in research, government, and business.

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Russell Cuhel is a senior scientist at the U. of Wisconsin at Milwaukee's School of Freshwater Sciences, which was established in 2009 to train students for jobs in research, business, and government.

Higher-education partnerships with other industries are on the horizon as the region competes for the Talent Dividend Prize—a \$1-million prize to be awarded in 2014 to the city that produces the greatest increase in the number of postsecondary degrees granted per capita over a three-year period.

The competition is part of an effort by the group CEOs for Cities to encourage cities to improve their economic potential by raising their college-attainment rate by at least one percentage point.

In the Milwaukee region, that means college attainment would have to rise from 30 percent to 31 percent, or an additional 10,000 four-year degrees. The increased number of college graduates, if employed by regional businesses, would translate into more than \$1-billion of annual economic value in the region.

The region's prize organizers, which include colleges, businesses, nonprofits, and civic groups, are just beginning to share ideas in four areas: improving students' preparation for college, raising graduation rates, easing transfer from two- to four-year colleges, and improving continuing education. They say winning would be icing on the cake; more important is creating an infrastructure that results in more college graduates and improved economic development for decades to come. That's important given that the area has seen a sweeping shift from manufacturing to a service- and technology-based economy.

By 2018, 61 percent of jobs in Wisconsin will require postsecondary education, according to a report by the Georgetown University Center on Education and the Workforce. Today, about 35 percent of students who graduate from Milwaukee Public Schools attend college. (That number is not representative of the larger region.)

"Ultimately, access to college will be more attainable," says Eileen Schwalbach, president of Mount Mary College, and co-chair of the Greater Milwaukee Committee's Talent Dividend Prize initiative. "Any forward movement in this area is positive."

Creating Talent

Milwaukee's proximity to water has always played a central role in its economy. The breweries and tanneries started by German settlers in the 1840s relied on large amounts of freshwater and provided the city with its economic base. Today those industries no longer exist or have grown smaller in size, but the ancillary businesses that supported them have remained, and in some cases have grown substantially. The nuts and bolts of the water industry—pipes, water heaters and meters, controls, sensors and filters—are still manufactured in the area by more than 130 companies. In fact, the region is home to five of the 11 largest water-technology companies in the world.

Water-technology industry leaders decided a few years ago that water could play an even more significant role in the region's economy and beyond, especially given the fact that 48 nations with a combined population of 2.8 billion will face freshwater "stress" or "scarcity" by 2025, according to the United Nations. That led to the current movement to turn the Milwaukee region into the Silicon Valley of water technology, where entrepreneurs, scientists, engineers, educators, and manufacturers gather to do research, develop new products, and tackle global freshwater issues.

Leading the charge is the Milwaukee Water Council, a nonprofit organization created four years ago, which has concentrated on fostering collaboration between the water industry and area institutions. Early discussions to find out what types of academic programs colleges could offer to meet the needs of the water industry identified two areas of need: legal and business professionals.

Marquette University Law School stepped up to offer the region's only water-law program. As the region tries to become a "world water hub," a term heard often in Milwaukee, lawyers are needed for a range of jobs, like filing patents for scientists or lawsuits against polluters. Integrated science and business majors at the University of Wisconsin at Whitewater can now pursue a water-resources concentration. The university's college of business and economics developed the concentration to train students to work on the business side of science and technology companies, in positions such as project manager.

The college also introduced a water minor this fall for undergraduate accounting, finance, and economics students. It was developed after business leaders expressed a desire to hire business graduates with knowledge of the water industry, says Linda A. Reid, who teaches business and water law at the college.

Dean Amhaus, executive director of the Milwaukee Water Council, says that economic-development efforts often focus on bringing in companies and talent from the outside, but that the region is more interested in "growing its own."

That's the approach behind the creation of a collaborative research center supported in part by a \$2.75-million National Science Foundation grant and scheduled to open in 2013, which will house research activities by the University of Wisconsin's Milwaukee and Whitewater campuses, the Water Council, six companies, and an "accelerator space" where water-related start-ups can get legal and business support. Mr. Amhaus, whose office in downtown Milwaukee is quite sparse save for a few poster-size architectural designs of the center's seven-story warehouse loft building, says a focus of the center will be to "ignite" new businesses.

To further promote interest in water-related careers, five colleges now have student chapters of the water council, and the council has worked with water-related companies to create internship opportunities for college students. At the University of Wisconsin at Whitewater, students concentrating in water resources have been placed at Pentair, a water-technology company with offices in Milwaukee.

Elizabeth Thelen, talent and education adviser at the Milwaukee Water Council, says companies interested in expanding in the region usually make their decision based on the availability and strength of the local talent pool.

"We have to demonstrate that we have the talent here," she says.

Mike Pagel, 25, a master's-degree student in the University of Wisconsin at Milwaukee's School of Freshwater Sciences, who grew up outside Chicago and wants to be an environmental consultant, spent the summer as an intern at a Minneapolis energy company. One task involved riding in a boat and scooping up fish along the Mississippi River as part of a fish-population survey, required because the company operates a nuclear plant near the water.

Mr. Pagel, who will graduate in the spring, says the buzz around the region's water-science efforts drew him to study in Milwaukee and may be enough to entice him to stay. "It's certainly attractive," he says. He's optimistic about the future of the region but also realistic about what can be accomplished.

"It's a good start, but the region is far from being a freshwater-sciences hub," he says.

The council realizes that efforts to become such a hub must start earlier than the college years. That is the motivation behind building what it calls a "water generation," where a schoolchild might dream of becoming a limnologist (inland waters researcher) rather than a doctor or lawyer. In April, the Milwaukee Public Theatre staged a circuslike musical show, backed by companies like A.O. Smith, a maker of water heaters, that introduced students to the importance of conserving water and taught them about different types of jobs available in the water industry.

The "water generation" effort extends to the opposite side of the education pipeline, too: adult students. Several community colleges are embedding water concepts into existing academic programs to help career-changers find work in the water industry.

Changing Perceptions

Other businesses, including arts and design and food production, are looking to the water-industry effort as a model, though perhaps with less ambition to become the Silicon Valley equivalent of their trade.

The food-production industry is in the early stages of creating its own projects to boost economic development and create academic pipelines. The region has several culinary programs, but no academic programs that teach the production side of food, says Shelley Jurewicz, vice president for economic development at the Metropolitan Milwaukee Association of Commerce. Her organization is in talks with officials from the Milwaukee Area Technical College to develop one-year diplomas in food production, food quality and science, and food-manufacturing mechanics and maintenance.

The college is also considering an associate degree in food production and food quality and science, along with transfer agreements that would allow students to earn their bachelor's degree at the Madison, River Falls, and Stout campuses of the University of Wisconsin.

Ms. Jurewicz says the region's food-industry work force is aging, so there is good reason to begin creating career pathways now. "It's important to maintain a certain amount of intellectual capital in the region," she says.

In many ways that is what the region is trying to accomplish by competing for the Talent Dividend prize and expanding its water industry. It also helps change the perception of the area, says Ms. Jurewicz, from the blue-collar brewery town popularized in the hit show *Laverne & Shirley* to a region that is trying to put itself on the world map.