One Billion Gallon Water Challenge

As population increases, the demand for clean, fresh water will also rise, making existing supplies a very precious resource in Illinois and other parts of the U.S. ISTC is helping businesses, industries, communities, and the general public with developing more awareness of water conservation and implementing measures such as:

- Using water more efficiently
- Reuse of water
- Finding new ways to keep our water resources as clean as possible

By initiating its One Billion Gallon Water Challenge in spring 2014, ISTC is also funding projects and conducting its own research along with other scientists, industries, and experts that is looking at:

- Improved treatment of wastewater
- Reuse of process water in factories
- Novel recycling methods
- Other significant water-saving measures

Example of a typical Illinois reservoir - Lake Decatur

Example of a cooling tower at the University of Illinois - Urbana Champaign

Example of a Wastewater Treatment Plant: Woodridge Greene Valley Plant - DuPage County

ISTC Funded Water Conservation Projects

The **ISTC Grant Program** funded the following projects in fiscal years 2015 and 2016 in conjunction with ISTC's goal of saving Illinois one billion gallons of water. Results of the projects will be shared via case studies, conferences, and webinars. ISTC continues to work on water conversations projects with its **research** and through its **technical assistance programs**.

Carus Corporation Water Conservation

July 1, 2014 to December 31, 2014 / **Carus Water Conservation Fact Sheet** / **Carus Final Report (TR-060)** / **Carus Webinar**

Carus Corporation in LaSalle, IL, estimated that they used approximately 47 million gallons of raw city water per year to meet boiler house and other process water requirements. The raw city water runs through water softeners and then is treated with a reverse osmosis system. The treated water is used for the steam production in the boiler house and for other water applications throughout the site. Instead of using raw city water, Carus recycled the water that has already been utilized by their crystallizer vacuum system as non-contact cooling water. By recycling this "used" non-contact cooling water they were able to save 133 gallons of water per minute (or 56-65 million gallons per year) of raw city water.

Energy

Pollutants

Waste Utilization

Water Use and Reuse

Striped Bass Saline Aquaculture in Illinois

Use of Treated Effluent Water in Cellulosic Ethanol Production

Aquapod

One Billion Gallon Water Challenge

Hazardous Waste Research Fund

Reduction of Non-Revenue Water through Continuous Acoustic Monitoring

July 1, 2014 to June 30, 2015 / **Acoustic Monitoring Case Study Fact Sheet** / **American Water Final Report (RR-132)** / **American Water Webinar**

American Water evaluated ways to reduce water waste in the state of Illinois at the water utility level with a pilot project conducted in Des Plaines, IL. This project used advanced continuous acoustic monitoring technology by Echologics (Canada) that alerted the utility to water leaks literally when they begun rather than when they surfaced. At the same time, the metering of the system water supply served to both quantify leakage and determine the extent of non-revenue water losses. Economic analysis included water production cost savings but also added in secondary benefits which included reduction of worker overtime for leak repair and damage caused by leaks. The results will be published in spring 2016.

Loyola University Chicago's Gallons Saved & Shared Project

July 1, 2014 to December 31, 2015 / **University Water Conservation Program Fact Sheet and Took Kits** / **Loyola Webinar**
Loyola University Chicago piloted and evaluated a series of water conservation measures, on its campus in order to reduce water use, engage students and employees with behavior-focused water conservation measures, and then share best practices with other Illinois colleges and universities. Based on existing water conservation practices for the higher education sector and the results from their own 2013 Water Audit, water conservation efforts focused on three primary actions: (1) residence hall conservation retrofits; (2) student and employee behavior change campaigns; and (3) Green Lab building water conservation retrofits and programming. Loyola expects 2.5 to 3 million gallons could be saved annually once these three measures are implemented on their campus. A Resource Tool Kit is being created to share with universities and institutions seeking to conserve water.

Urbana Irrigation Controls Study

July 1, 2014 to November 30, 2015 / **Urbana Irrigation Controls Study Final Report (TR-062)**

The City of Urbana aimed to measure potable water and financial savings from the installation of irrigation controls on automatic landscape irrigation systems. The study utilized three existing irrigation meters at two different locations. One location received a rain sensor control added to its meter and usage was compared to its historic use. Another location had separate meters on both sides of a street. One meter received a combination evapotranspiration control, rain sensor, and freeze sensor (i.e., ET control) while the other side only had the existing timer. Project investigators expected the installation of a rain sensor would conserve more water compared to a timer only and that the installation of an ET control would conserve an even greater percentage of water. This pilot project was a novel implementation of a sensor irrigation system used in a community setting and could be used as a template for other communities. Complications arose because of old infrastructure making data gathering and the subsequent analysis of the results difficult.

Evaluation of Zero Blowdown Cooling Towers with Soft Water Makeup

July 1, 2014 to December 31, 2015 / **Zero Blowdown Webinar** / **Zero Blowdown Final Report (TR-074)**

Refrigeration, air conditioning, and process heat removal— ubiquitous operations employed by a variety of sectors— rely on cooling towers to avoid excess heat. The evaporative cooling of these towers, if operated efficiently, performs an indispensable function. However, efficient operation is often not the norm and can result in enormous water waste. Typical barriers to achieving efficient operations include lack of availability of skilled water treatment professionals, need for diligent monitoring, and need for regular use of hazardous chemicals. This project conducted by the Illinois State Water Survey (ISWS) evaluated a technology offered by Water Conservation Technology International (WCTI) that uses soft water to efficiently maintain and operate cooling towers. Maintaining the cooling towers in this manner would allow for less chemicals use and also increase the cycles of concentration, thereby conserving water. The study involved cooling towers at the Champaign Regional Office Building and Chicago Data Center as well as two refrigerated warehouses in Minooka, IL.

Water Use and Conservation on Illinois Community College Campuses: The Ripple Effect

September 1, 2014 to May 31, 2015

The Illinois Green Economy Network (IGEN) worked on a three-phase project with groups of colleges that was planned to have a "ripple effect" in identifying opportunities for increasing the efficiency of water management on college campuses across Illinois.

- In the first phase of the project, IGEN hosted a **"pre-program" webinar** for all Illinois community colleges and colleges that educated stakeholders about the basics of water auditing.
- In the second phase, IGEN arranged regional training sessions at several campuses around Illinois to train community college and university staff on how to conduct a comprehensive water audit on their campuses.
- In the third phase, the colleges are conducting water audits on their campuses and will make recommendations that will reduce water consumption on their individual campus.

Water Use Facts

Most people use between **70 and 100 gallons of water a day.**

Flushing a toilet uses between **2 and 7 gallons of water**. To reduce the amount of water required to flush, you can add a displacement device (a water-filled plastic bottle or bag) to your tank.

Washing dishes by hand uses about **5 gallons per person**; a dishwasher uses **9 - 12 gallons per load**.

A shower uses **2 - 5 gallons a minute**; a bath uses about **50 gallons**.

Most people use about **2 gallons** to brush their teeth.

(from **Debra Shore MWRD Commissioner**)

Water News Archive

- **WaterSense 2013 Accomplishments Report Released**
- **Illinois Sustainable Technology Center Challenges Researchers, Businesses, Citizens to Save Water in Every Sector**
- **Illinois Sustainable Technology Center's One Billion Gallon Challenge Announces First Research / Technology Demonstration Grants for Illinois**
- **States, Cities Get Creative About Recycling Water** - Stateline
- **Water Use and Conservation on Illinois College Campuses: The Ripple Effect**

Related Water Conservation Links

- **WaterSense U.S. EPA**
- **Water Analysis Tool for Energy Resources (Water)**
- **16 Ways to Be a Better Water Steward** - The Frog Blog

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