Illinois Sustainable Technology Center - Research and Service
Prairie Research Institute: Illinois-focused Resource Research and Service
Addressing societal challenges that impact Illinois and the global community
**ISTC’s Mission:**

To encourage and assist citizens and businesses to prevent pollution, conserve natural resources, and reduce waste to protect human health and the environment in Illinois and beyond.
Pollution Prevention

- Pharmaceuticals and Personal Care Products (PPCPs)
  - Concentrations are found in 80% of streams and rivers in U.S.
  - Very minute quantities (ppm, ppb)
  - Potential synergistic effects on biota
  - Can be sorbed onto microplastics in the water
What is ISTC doing -

• Research on fate and transport of PPCPs from use of treated wastewater for irrigation

• Examining municipal and agricultural wastewater treatment options to reduce discharges

• Proper disposal of PPCPs
Pollution Prevention

- Metals and other industrial chemical contaminants
- Radon and lead in homes
- Nutrient loading and treatment
- Microplastics in water
Water Use and Reuse

Earth’s water percentage:

- 71% Earth surface is covered by water
- Only 0.3% of the fresh water or 0.007% earth water can be readily access
What is ISTC doing -

Forward osmosis desalination
What is ISTC doing -

- Water Reuse in Industrial Processes

**Water used in other industries:**

<table>
<thead>
<tr>
<th>Product</th>
<th>Gallons of water</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 gal. of gasoline</td>
<td>2 to 2.5</td>
</tr>
<tr>
<td>1 gallon of ethanol</td>
<td>3</td>
</tr>
<tr>
<td>1 can of fruit</td>
<td>9.3</td>
</tr>
<tr>
<td>1 gallon of paint</td>
<td>13</td>
</tr>
<tr>
<td>1 lb of sugar</td>
<td>14</td>
</tr>
<tr>
<td>1 lb of plastic</td>
<td>24</td>
</tr>
<tr>
<td>1 lb of synthetic rubber</td>
<td>55</td>
</tr>
<tr>
<td>1 lb of cotton</td>
<td>101</td>
</tr>
<tr>
<td>1 Sunday newspaper</td>
<td>150</td>
</tr>
</tbody>
</table>

Source: U.S. Grains Council/U.S. Environmental Protection Agency
Billion Gallon Water Challenge

ISTC set a goal of conserving One Billion Gallons of water in Illinois. We are funding projects and conducting our own research along with other scientists, industry and other experts that will be looking for:

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

Encouraging individuals to save water at home
http://www.istc.illinois.edu/water.cfm
Projects Funded in the FY15 RFP Cycle

- **Carus Corporation** – Completed recycling the non-contact cooling water - will save over 60 million gallons of city water annually.

- **American Water** – Using advanced continuous acoustic monitoring technology that will alert the utility to water leaks literally when they begin rather than when they surface. Also will serve to both quantify leakage and determine the extent of non-revenue water losses.

- **Loyola University** – Piloting and evaluating a series of water conservation measures in its campus facilities including engaging students and employees with behavior-focused water conservation measures. Best practices learned will be shared with other Illinois colleges and universities.
 **City of Urbana** – Testing the implementation of a sensor-based irrigation system to reduce water use. If effective, will serve as a template for other communities.

 **Illinois State Water Survey** – Evaluating technology offered by the Water Conservation Technology International (WCTI) to test whether cooling towers can be efficiently operated with very little water loss under a specific operational regime.

 **Illinois Green Economy Network** – Hosting a water audit webinar & several water audit training workshops to identify opportunities for increasing the efficiency of water management on college campuses across Illinois, with special emphasis on community colleges.
Material Use and Reuse

What is ISTC doing –

• Hard-to-recycle waste plastics used for bio-oils and biofuels production

• Biomass (wood, algae, grasses) used for syngas, bio-oils and biochar production

• Waste biomass used for supercapacitors for energy storage and water filtration
Material Use and Reuse

- Sustainable Electronics – Reuse, Design for Recycling, E-waste
ISTC Sustainability Seminar Series

http://istc.illinois.edu/about/sustainability_seminars.cfm

Covers a wide range of topics relating to environmental sustainability:

- Reuse and Recycling (begins Feb. 12)
- Sustainability Planning
- Alternative Energy
- Energy Efficiency in Buildings
- Sustainable Communities

Held at ISTC from noon – 1 pm

Also broadcast via webinar and archived for later viewing
THANK YOU

Nancy Holm
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Illinois Sustainable Technology Center
ISTC Locations

**Headquarters**
One East Hazelwood Drive
Champaign, Illinois

**Satellite Offices**
Chicago Region
Oak Brook, Illinois

Central Illinois
Peoria, Illinois

Southern Illinois
Godfrey, Illinois
ISTC’s Technical Assistance Program (TAP) helps businesses and citizens:

• Reduce solid and hazardous wastes before they are released to the air, water and land.

• Works with companies to identify and implement opportunities to meet their waste reduction and efficiency goals.
On-Site ISTC Services

- Administer the Illinois Green Office Challenge
- Environmental Regulatory Compliance Assistance
- Research & Pilot Testing
  - Metal Working Fluids
  - Solvent Parts Cleaning
  - Fluid Purification (filtration)
- Water Use Reduction
- Energy Use Reduction
- Greenhouse Gas Emission Reduction
- Waste Minimization Assessments
- Waste Characterization (Zero Waste to Landfill)
- Environmental Management Systems
- “Green Chemistry” to Reduce or Eliminate Wastes
ILLINOIS GREEN OFFICE CHALLENGE

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Purchasing Standards

- USDA Organic
- WaterSense
- Energy Star
- EPEAT
Tracking Energy Usage

EANERGY STAR® Portfolio Manager®

The most-used energy measurement and tracking tool for commercial buildings.
Lighting Audit
Incentives

ActOnEnergy

Corn Belt Energy

Nicor Gas
An AGL Resources Company

ILLINOIS
DEPARTMENT OF COMMERCE & ECONOMIC OPPORTUNITY
Renewable Energy
Implementing a Zero Waste program helps eliminate discharges to land, water or air

• Reduce Costs
• Reduce the volume of material going to landfill
• Increase recycling
Office Recycling Station
Sorting Table
Buried in garbage?
Turning Problems into Solutions
Change Behavior
Student Section Card Trick
Game Day Impact
Impact of Technical Assistance Program on Illinois

Supporting Illinois’ business base

Benefits to Illinois in 2013

- Annual savings: +$900,000
- Annual reduction: 580 MTCO$_2$
- Annual kWh savings: 9,000,000
- Companies visited: 172
Illinois Governor’s Sustainability Award
Start the Assistance Process

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