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2-25-2010

Sustainability and water at the University of Iowa Facilities Management

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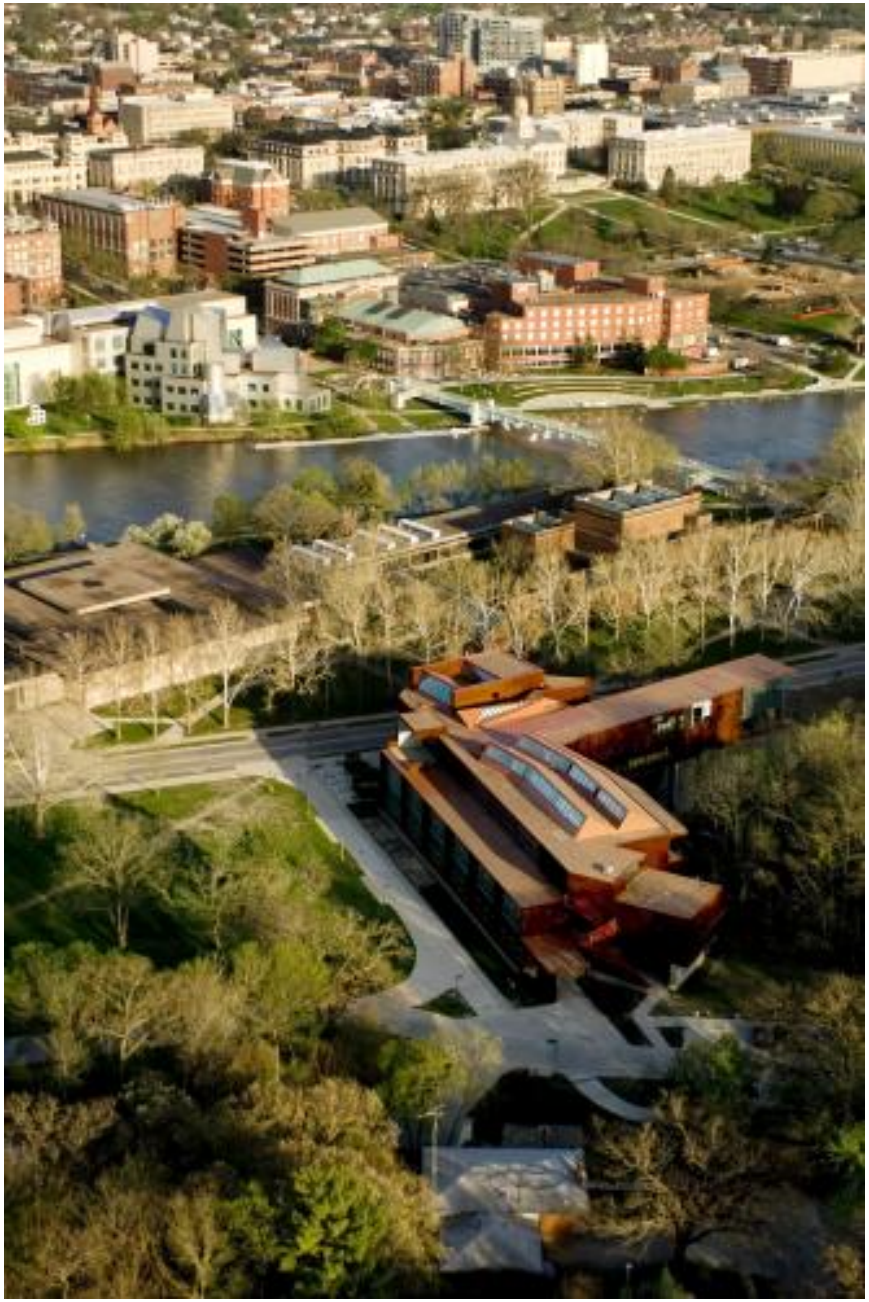


Sustainability and Water at University of Iowa Facilities Management

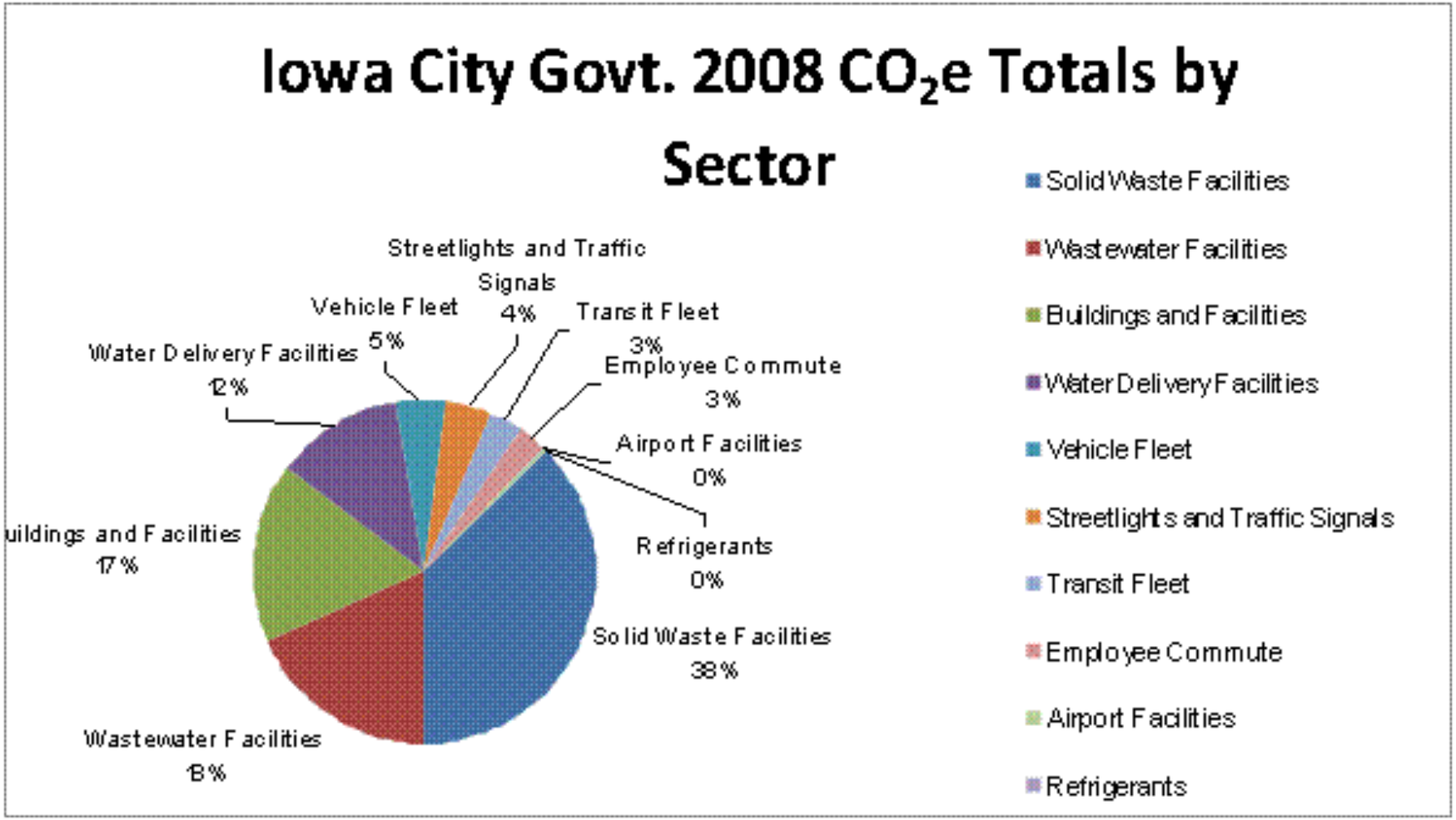
Liz Christiansen

UI Office of Sustainability

The University of Iowa
SUSTAINABILITY AT IOWA

A few facts to start with…

- The UI operates its own Water Plant.
- The UI purchases small quantities of water for remote locations from Iowa City or Coralville.
- The UI relies on the City of Iowa City for waste water treatment for main campus, and City of Coralville for Oakdale Research Park.
- The University uses millions of gallons of water a day for washing, drinking, cooking, cooling, steam production, irrigation – Big users are UIHC, Dorms, Laundry, and industrial users (Power Plant and Central Chilled Water Plants).
- The UI campus contributes effluent to Iowa River from storm water collection points, from runoff from hard surfaces and from Power Plant coolers, other uses.
- The campus must also respond to periodic flooding events.



From Iowa City GHG Emissions Inventory Report

The UI Water plant pumps 1-2 M gallons a day; in the summer that doubles to around 3-4 M gallons a day. We can reduce GHG impacts by reducing water sent to be treated at City of Iowa City Wastewater Treatment Plant.

Sustainapalooza

How can the University of Iowa be more sustainable in water usage and water quality?

- Reduce water consumption and be more efficient in our water use.
  - In industrial uses, dorms
  - In offices and dorms
  - On landscapes
- Improve the quality and quantity of that water which reaches or is released to the Iowa River
  - Use of green roofs, landscape improvements such as rain gardens, permeable paving, buffers
  - Reduce paving and impermeable surfaces in proximity to the Iowa River
- Build and redevelop to reduce flooding impacts
  - Build out of flood-prone areas
  - Plan for better flood control to reduce impacts
  - Plan for long-term flood mitigation in watershed

Reduction in industrial water use

- Centralized chilled water production
  - UI previously incorporated 11 wells for one-pass cooling water for comfort and cooling equipment.
  - Now centralized chilled water production has resulted in reduced water usage and steam use.
- Treated water production has been reduced and has saved money in production costs - $360,000/year.
- By permit, UI is allowed to release non-contact cooling water to the Iowa River. This has saved $1.0 M/year in WWT costs.

In the Power Plant

- RO system allows boiler water to be used longer and to use less corrosion-avoidance chemical.
- River water is used for non-contact cooling water for condensers, UI is permitted to return to Iowa River
- This river water is not chemically treated and has acceptable temperature – Zebra Mussels may change that!

In Buildings and Grounds

- Use of waterless urinals and low-flow toilets in various places across campus – these are installed when remodeling is done
- Sensors on toilets and faucets – must be calibrated to reduce water use
- Challenge at the sink – to wash or not to wash
  - Current hand dryers
  - Dyson Airblades to be installed – save energy and paper towels

In Buildings and Grounds

- Dorms are significant water users
  - Showers, bathrooms, washing
- As these areas are remodeled, more water-saving devices are installed
- Irrigation on campus and golf course uses moisture-tracking system

Sustainapalooza

Other efforts to improve UI water sustainability

- MS4 storm water permitting efforts
  - Capture with underground storage and reuse. Examples: South plaza of Kinnick Stadium and future Pappajohn Biomedical Discovery Building.
- Use of green roofs, rain gardens, better landscaping, reconstruction of wetlands, example, bio-swales incorporated into landscaping at College of Public Health
- Moving buildings out of flood-prone areas, better parking options?
- Permeable paving
- Storm sewer labeling
- Sustainable energy fuel systems

Challenges

- New facilities, such as recreation center
  - 787,400 gallon competition pool, recently filled and allowed to return to Iowa River, saving $4,000 in wastewater treatment costs
  - Dive pool has 534,400 gallon capacity
  - Recreation pool has 106,050 gallon capacity
- Reducing water use on campus
- Planning and mitigating flooding in partnerships with other cities and organizations