



UNIVERSITY  
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# Conservation Programs

SFWMD Water Conservation Expo

Teddy Lhoutellier

# UM Water Conservation Program

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What we are doing:

- Our Programs
- Our Campuses
- Net Zero Water building Project

**UM is taking action!**

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*Green* 

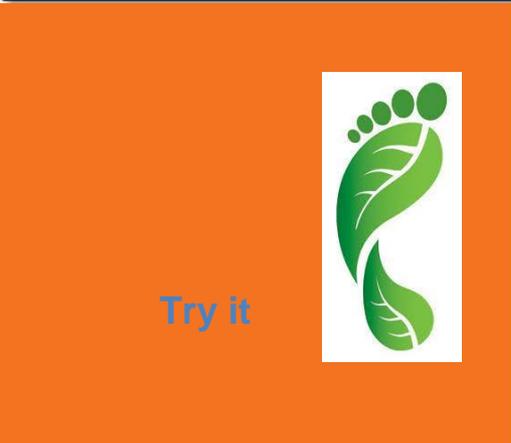
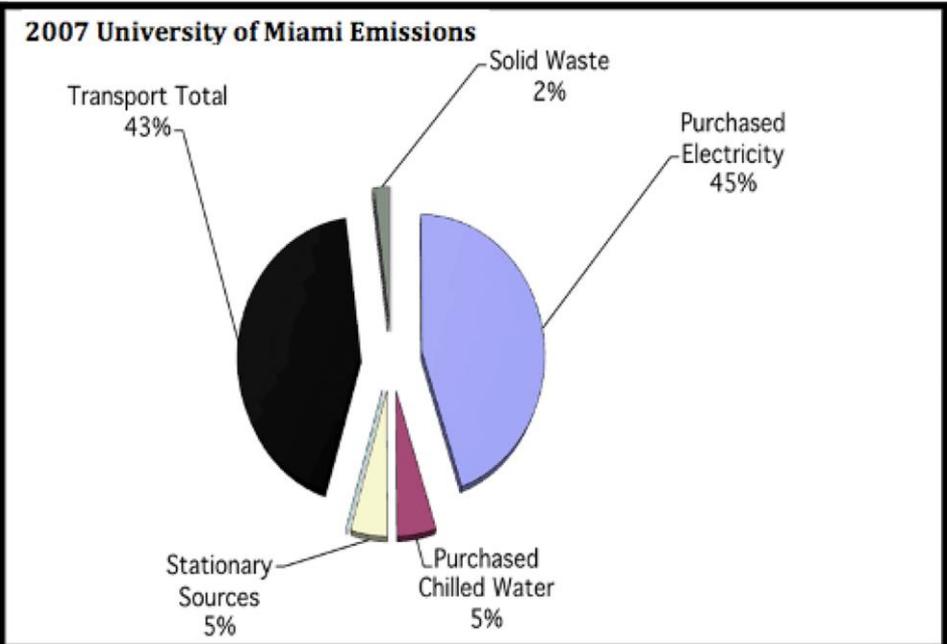
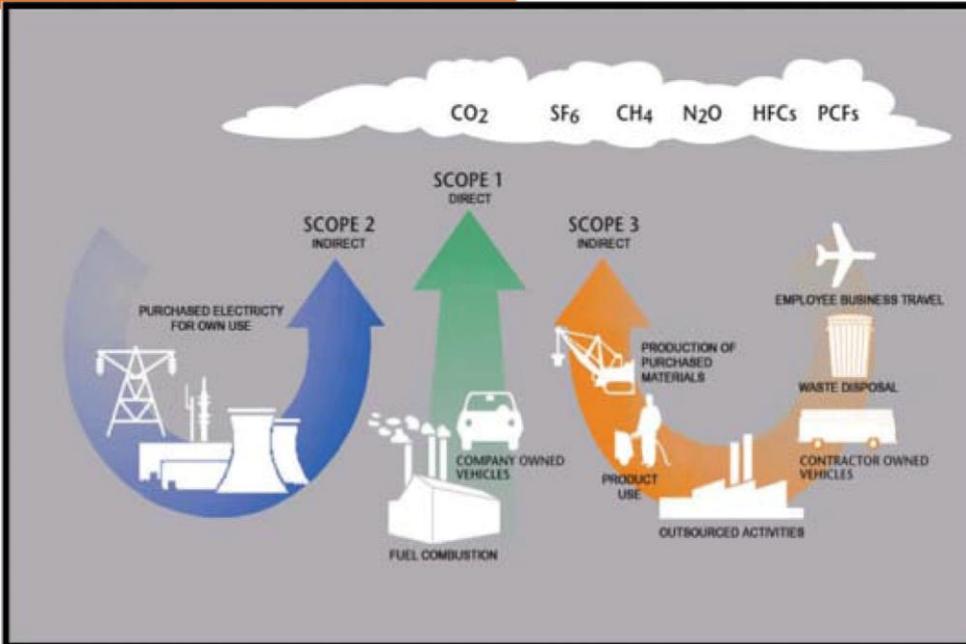
# UM President signed the President's Climate Commitment!

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Green  
U

a program aimed at making UM a community leader in the practice of ecologically sound principles and procedures. ▶



Try it

# Our Carbon Footprint

Goal for UM: to reduce greenhouse gas emissions to 20 % of 2005 levels by the year 2020 > HOW?

# How Is Our Campus Doing?



The Princeton Review

120,000 STUDENTS  
SPEAK OUT  
ABOUT THEIR  
COLLEGES

The Best **368**  
Colleges  
2009 Edition

With 62 Ranking Lists: Academics,  
Financial Aid, Dorms, Social Life, and more

"Provides the kind of  
feedback students would  
get from other students in  
a campus visit."  
— USA Today

UM is the recipient of the  
**Green University Award**  
by **The Princeton  
Review Green  
Rating**

# Behavioral Changes: Education campaigns



## Green Office Program and U Conserve:

- Early detection of leakage and broken irrigation heads

## Green Building Educational program:

- Learning about Stormwater management

A green and white poster for the "Conserve Campaign Energy Conservation Awareness". It features the University of Miami logo and a globe graphic. The text includes: "Become a Green Leader in the workplace!", "Apply to our NEW GREEN OFFICE CERTIFICATION PROGRAM", "Contact the Green U - Office of Sustainability", "Teddy Lhoutellier: teddy@miami.edu - 305-284-8520", "Green Tips for the Office" with a list of seven tips, and contact information for the Facilities Customer Service Department. It also lists examples of energy waste and provides a QR code and website for a 2-minute survey.

**Conserve Campaign**  
Energy Conservation Awareness

*Become a Green Leader in the workplace!*

Apply to our **NEW GREEN OFFICE CERTIFICATION PROGRAM**  
Contact the Green U - Office of Sustainability  
Teddy Lhoutellier: teddy@miami.edu - 305-284-8520

**Green Tips for the Office**

- > Turn off all the lights in all unoccupied spaces such as offices, conference rooms, maintenance closets, restrooms, etc.
- > Turn off all non-critical computers, office equipment, and other electronics during evenings, weekends, and holidays.
- > Configure the settings on your computer, office equipment, and other electronics to sleep mode when not in use.
- > Take advantage of natural day light and use task lighting, when possible.
- > Review documents electronically and use electronic filing, when possible.
- > Set your printer default settings to double-sided copies.
- > Recycle! Recycle! Recycle! Use the single-stream recycle bins in your area. If you do not have a recycle bin, please contact us.
- > Order eco-friendly office supplies, and eliminate small orders.

University of Miami is committed to meeting its academic, research and philanthropic missions in an environmentally sustainable manner. You can support this effort by reporting any energy or water waste to our Facilities Customer Service Department at (305) 284-8282 or email us at fcs@miami.edu

Examples of such energy waste includes:

- Energized space heaters
- Cold spaces
- Running toilets
- Broken irrigation heads
- Leaking interior or exterior faucets
- Propped open windows or doors

Take our 2 minute Energy Conservation survey and get a chance to win gift cards! Visit [www.miami.edu/green](http://www.miami.edu/green)

# Behavioral Changes: Education campaigns (cont.)

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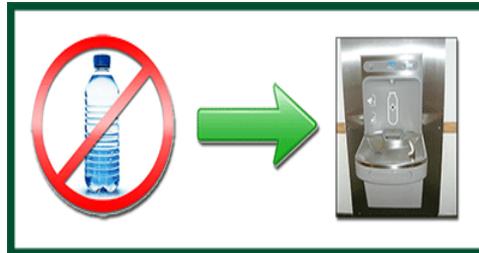


## Take back the Tap Campaign :

- Investment in new automatic water filling stations
- 1 reusable bottle for every freshman

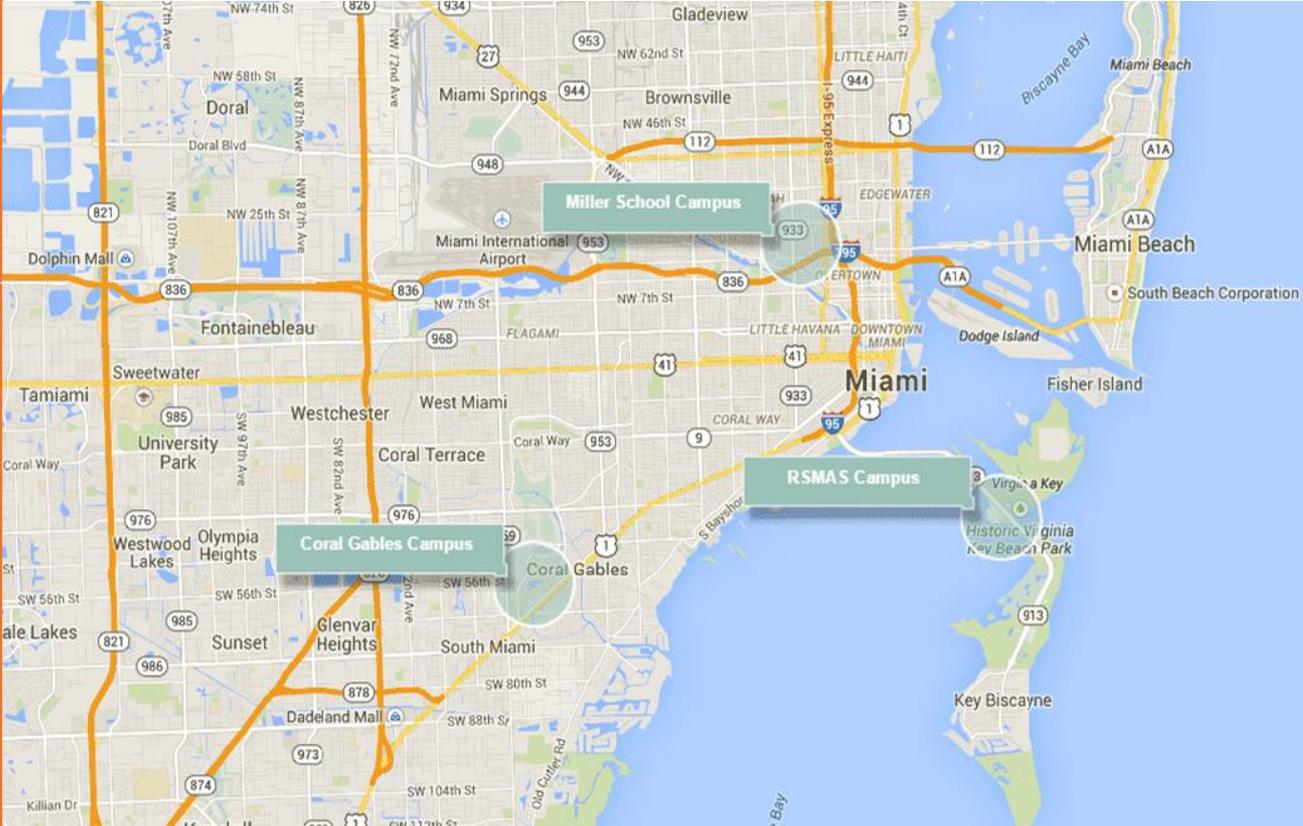
## Goal:

- Reduce plastic waste
- Bring awareness about the impact of overpumping in certain regions of the country



# Campus Locations

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# Coral Gables Campus



**260 acres**

**125 buildings** - lavish vegetation

**4,500 students** in student housing

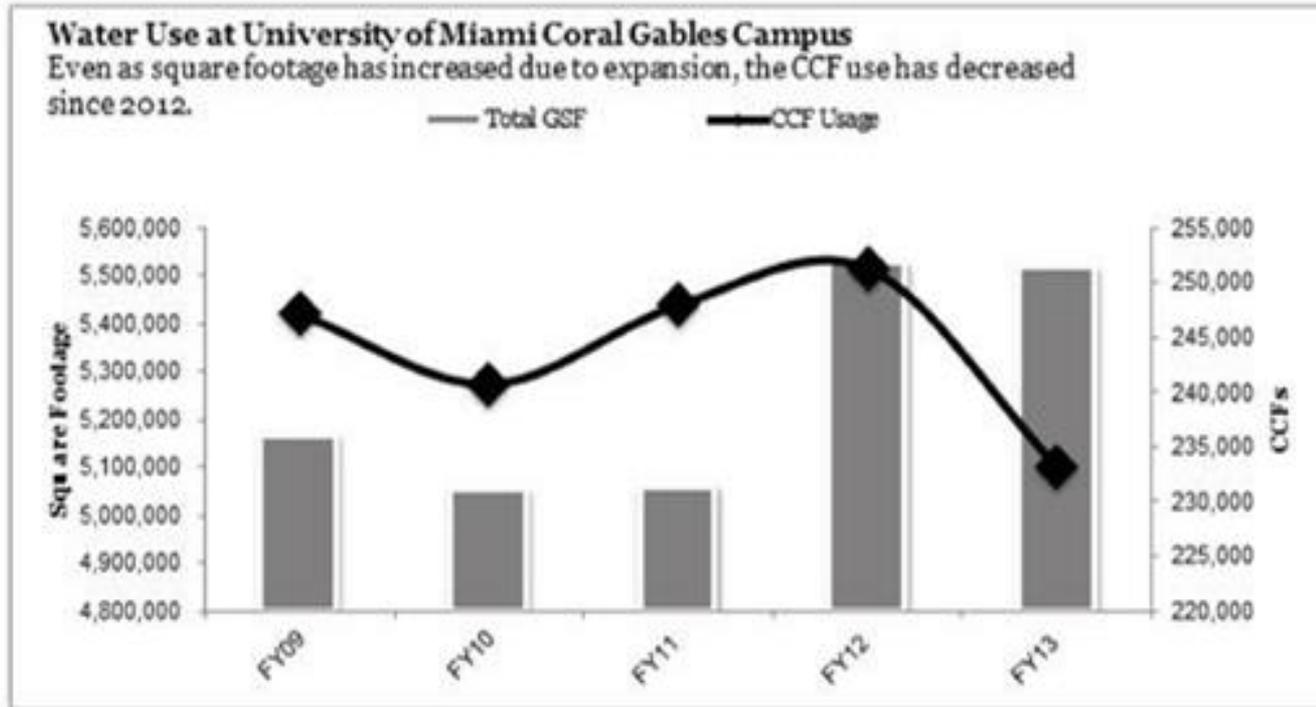
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5 dorm buildings + apartments

**More than 15,000 enrolled students**

**New buildings since 2008 are all LEED certified**

# Coral Gables Campus Water Footprint



# Coral Gables Water Efficiency Improvements



## Indoor:

- The replacement of all resident halls and apartments shower heads to low flow models.
- An ongoing aggressive leak detection program to prevent excessive water consumption.
- An ongoing replacement program of urinals and toilets to low flow models.
- Water efficient washing machines in our Residences

# Coral Gables Water Efficiency Improvements

## Outdoor:

- An ongoing conversion of campus irrigation systems to well water in lieu of domestic water usage.
- The installation of timer setting controls on the campus irrigation systems.
- Native landscaping guidelines for new planting on campus (Tree Campus USA)



# Coral Gables - Future Water Conservation

## NEW Frost School of Music Building



- Rainwater collected will be treated, along with condensate water, to be **added as makeup water** for our renovated chilled water plant **reducing our consumption by 35-40%**.

The water plant serves nearly half of our buildings, using an average of **100,000 gallons of water a day**.

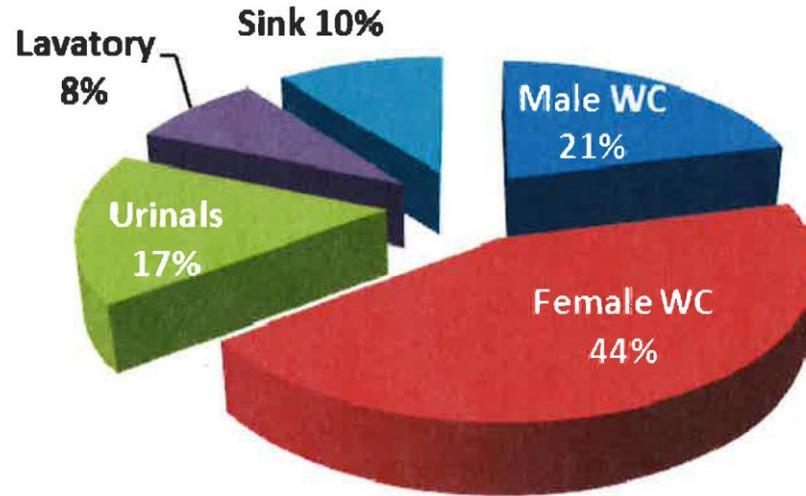
2 cooling towers to be added to accommodate future growth of load

# Coral Gables - Future Water Conservation

**NEW Frost  
School of Music  
Building**



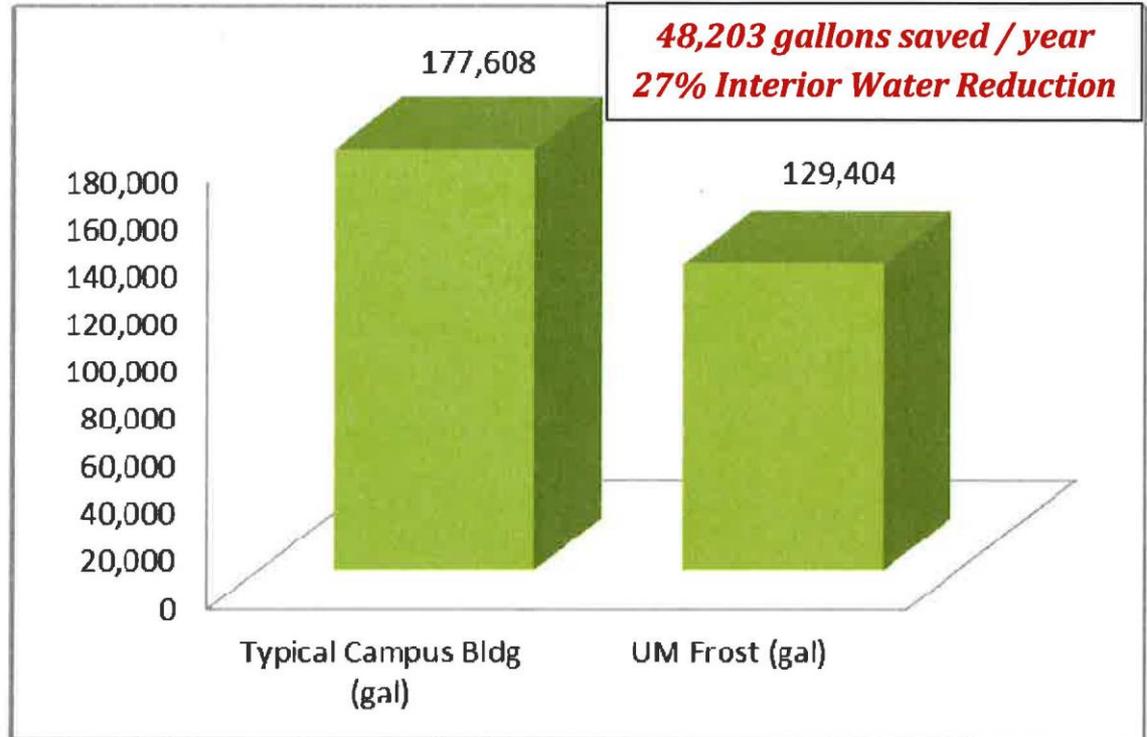
**UM Frost, North Studio - Daily Water Usage**



**DAILY WATER USAGE - NORTH STUDIO**

# Coral Gables - Future Water Conservation

## NEW Frost School of Music Building



ANNUAL WATER CONSUMPTION – NORTH + SOUTH STUDIOS

# Coral Gables - Future Water Conservation

**NEW Frost  
School of Music  
Building**



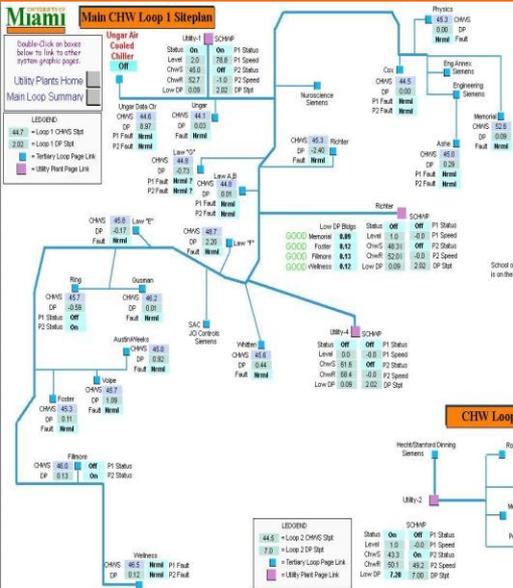
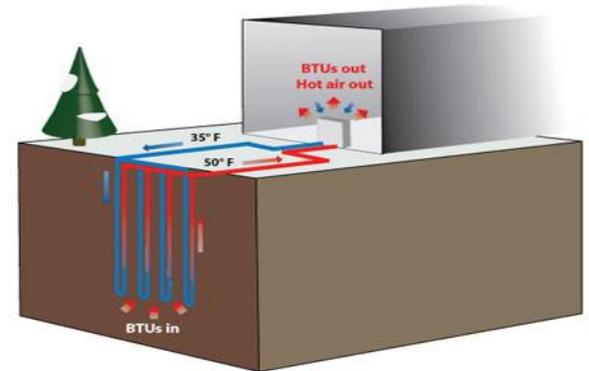
- Use of High efficiency fixtures, waterless urinals and occupant sensors will **reduce potable water use by 20%**
- Use of Efficient Irrigation techniques, drought resistant plants and captured rainwater **will reduce potable water use for landscaping by 50%**

# Possible projects at Coral Gables

- > **Geothermal heat Exchanger** for the new U Health Center
  - 200 ft well, closed loop



- > **Utility # 3 chilled water plant** in Coral Gables will use **rainwater, condensate and possibly treated grey water** for makeup water



# RSMAS Campus

**NEW:** 75,000 sqft Marine Technology and Life Sciences

Seawater Research Complex

**18 acres** - research facilities

**New Building is LEED Certified**

- Efficient irrigation
- Waterless urinals
- Sensors and high efficiency fixtures



# RSMAS Campus

Replaced chiller plant in 2008 to increase cooling efficiency.



## Closed loop system:

- **90% of condensate** water is recirculated in the system as makeup water for the cooling towers.
- Submeters have been installed to measure percentage of condensate in the mix. We anticipate generating an average of 300 gallons per day or **10% of the demand**

# Medical Campus

**3 Hospitals on 68 acres**

**31 buildings** all connected to a **49,000 SF Central Energy Plant**, designed to provide for 20,000 tons of chilled water

Efficiency upgrades:

- low-flow water closets
- sensor activated fixtures



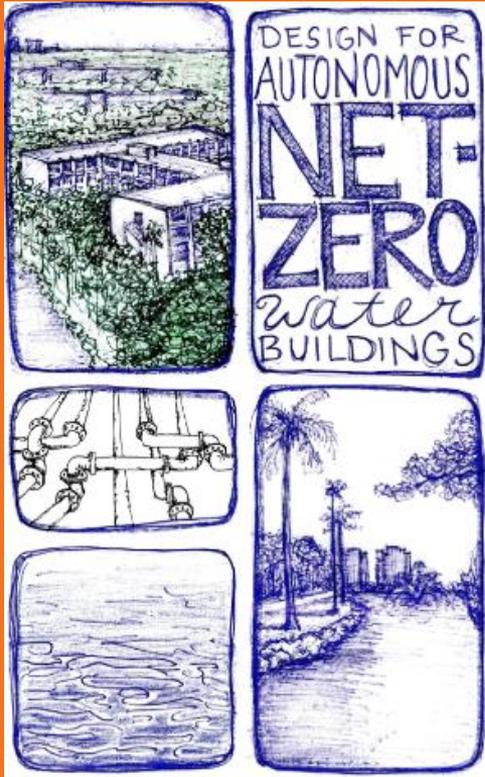
# NET ZERO WATER BUILDING

Decentralized, off grid water treatment system

GOALS:

1 - **Save energy** normally used for conveyance

2 - Alleviate water restrictions and the need for future desalination. Desalination to drinking water standards is energy intensive when impurities in treated wastewater in S. Florida currently meet **87 of the 93 numerical drinking water standards** on average without further treatment

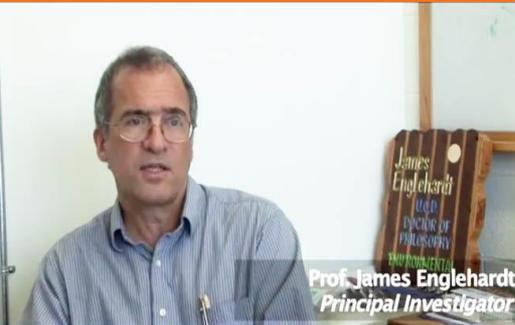


# NET ZERO WATER BUILDING

## GOALS:

3 - Alleviate the need to treat for **pesticides and toxic chemicals** in regions that use surface water as their main source of Drinking water supply.

4 - Allow treatment to focus on permanently destroying the **pharmaceuticals** and **cleaning chemicals** that go down our drains, removing them from the environment where they cause endocrine disruption in animals and humans



Prof. James Englehardt  
Principal Investigator

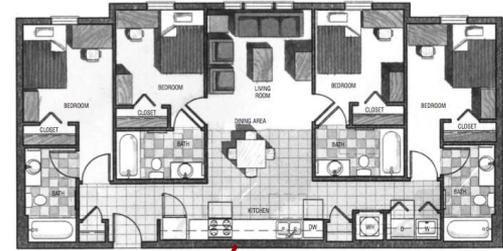
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# NET ZERO WATER BUILDING

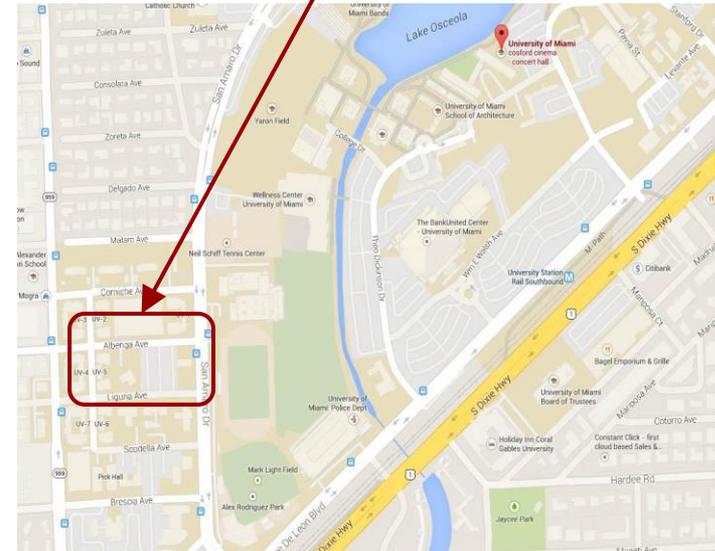
Where?

4-bed unit in the University Village



How? A mix of

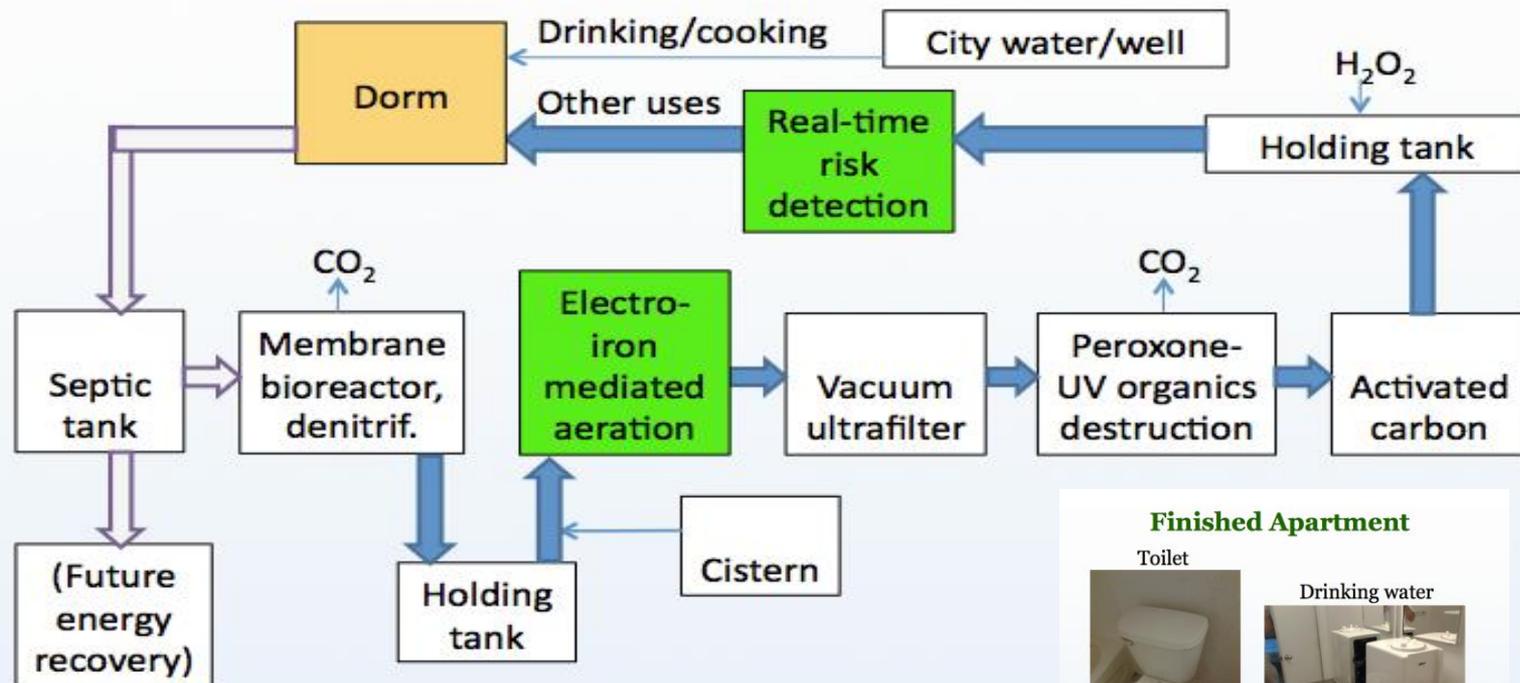
- Biological treatment-2psi
- Iron-mediated aeration
- Vacuum ultrafiltration
- Peroxone advanced oxidation with rainwater makeup



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# UM Autonomous Net-Zero Water Dorm System



## Finished Apartment

Toilet



Drinking water





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**Questions?**

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# Thank You!

For more information,  
contact us at [greenu@miami.edu](mailto:greenu@miami.edu)