

# Embracing the Challenge of Sustainability

Transforming  
Campuses,  
Reshaping Minds &  
Investing in our  
Common Future

Siena Heights University  
Issa Speaker Series  
April 6, 2016



**Justin Mog, Ph.D.**

**University of Louisville**

**Assistant to the Provost for Sustainability Initiatives**



LOUISVILLE.EDU/SUSTAINABILITY

**EARTH FIRST!**

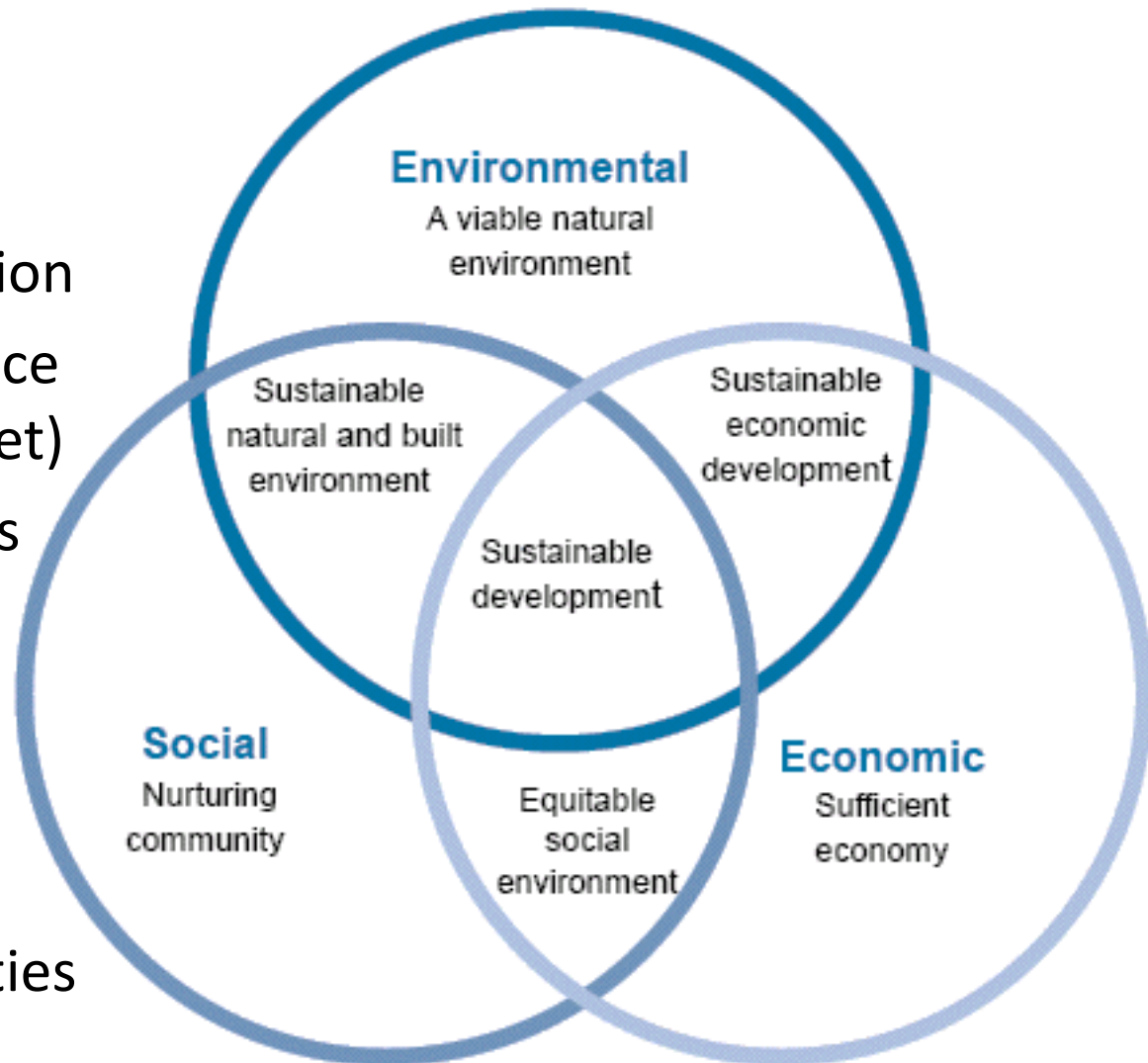


**No Compromise in the Defense of Mother Earth!**

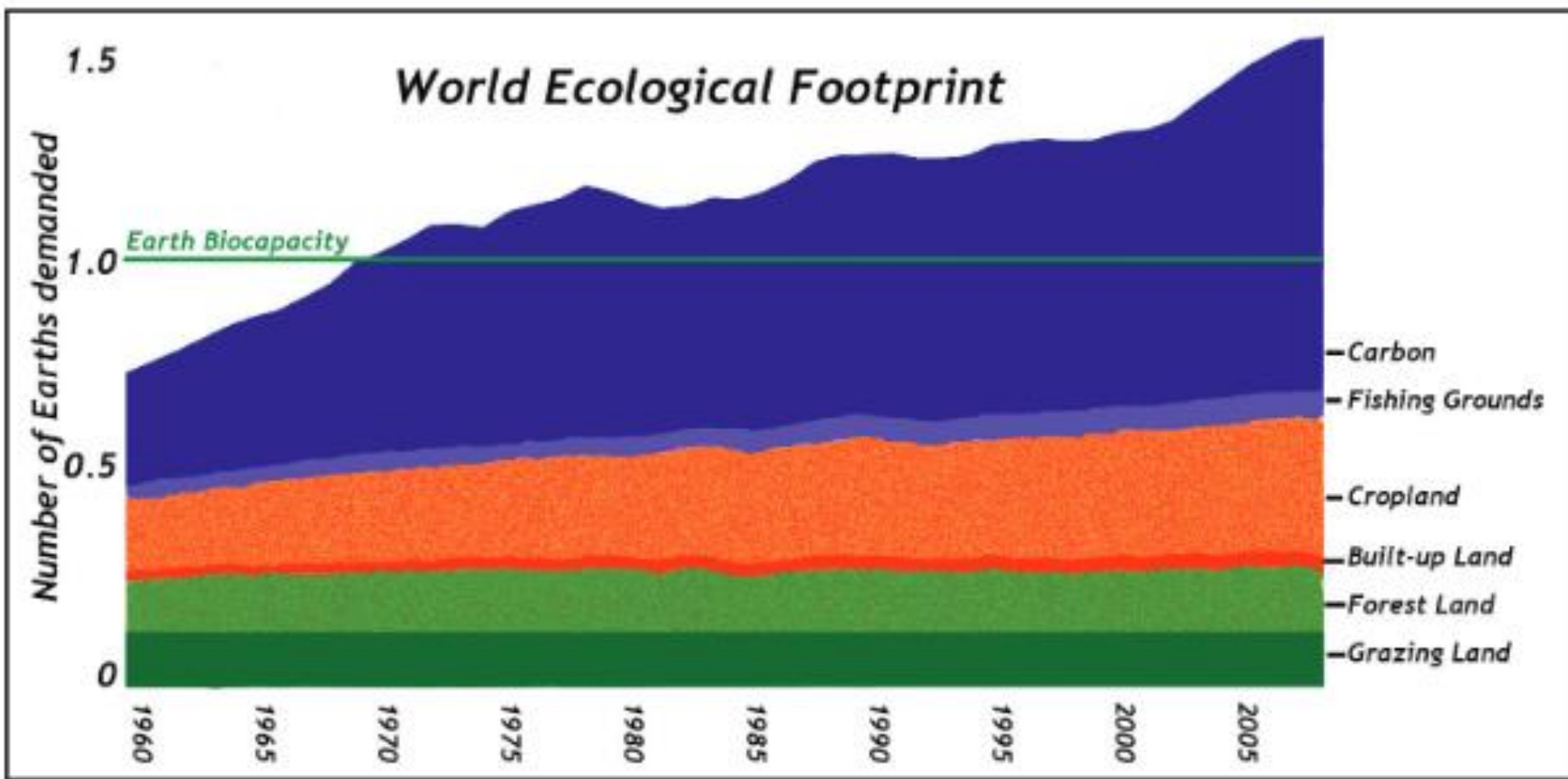
# Sustainability = Balance

## Sustainability Requires Us To:

- Eliminate Waste & Pollution
- Eliminate Abuse & Injustice (to people, animals, planet)
- Tap Renewable Resources
- Trash Disposability
- Cultivate diversity (both human and ecological)
- Recognize Limits
- Build Resilient Communities



Since 1968, we have been living far beyond our means.





Central Valley CA

WATER + QUALITY

Louisville  
pure tap

@puretapcards

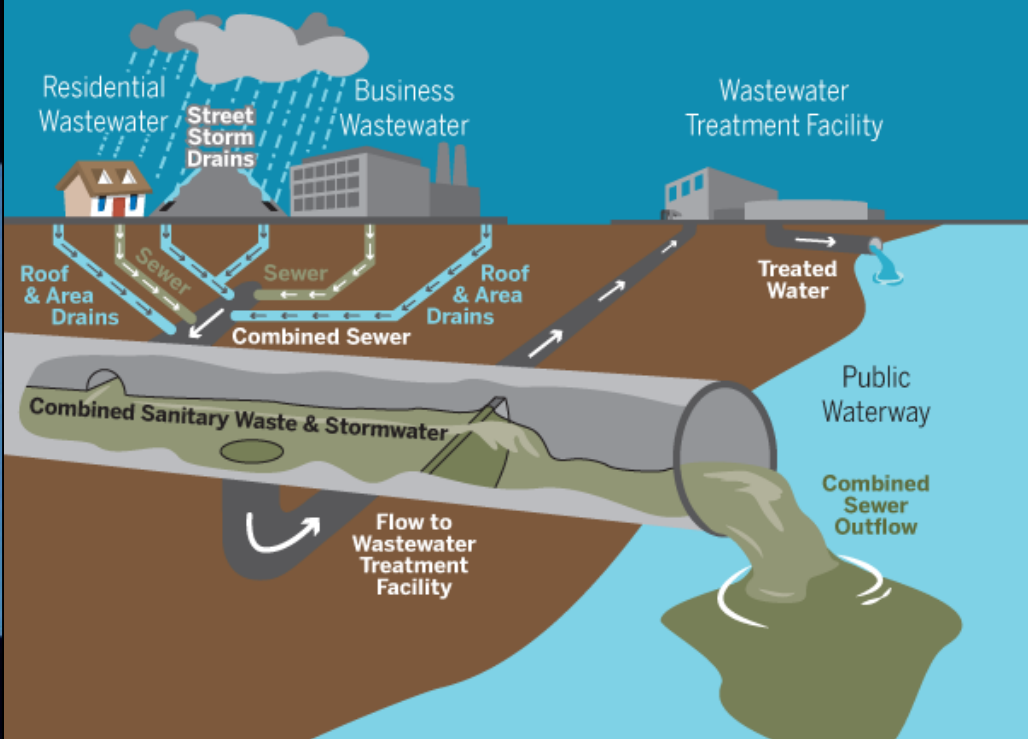
Every day is like finals week at Louisville Water. Over **200** tests daily to ensure the quality of your drinking water.

W

UL

4  
12

louisvillepuretap.com



## Bottled Water

Americans consume 8.6 BILLION gallons of bottled water annually

  x 91,733,000,000

We consume 53 BILLION gallons globally

  x 563,829,000,000

For every 12 ounces of water bottled, 36 ounces are consumed



40% of all bottled water comes from the tap and 0% has to adhere to government standards for clean water

Each year 17 million barrels of oil are used to produce bottled water  
That's 340 million gallons of gasoline

Only 1 in 5 bottles are recycled



The other 4 contribute to the 3 billion pounds of plastic water bottles added to land fills each year

It's Up To You To Change The World

[www.ecenter.colorado.edu](http://www.ecenter.colorado.edu)

Sources: [www.ewg.org/reports/bottledwater](http://www.ewg.org/reports/bottledwater)

# Pike County KY

(photo: Dr. Keith Mountain, UofL)





Ohio River

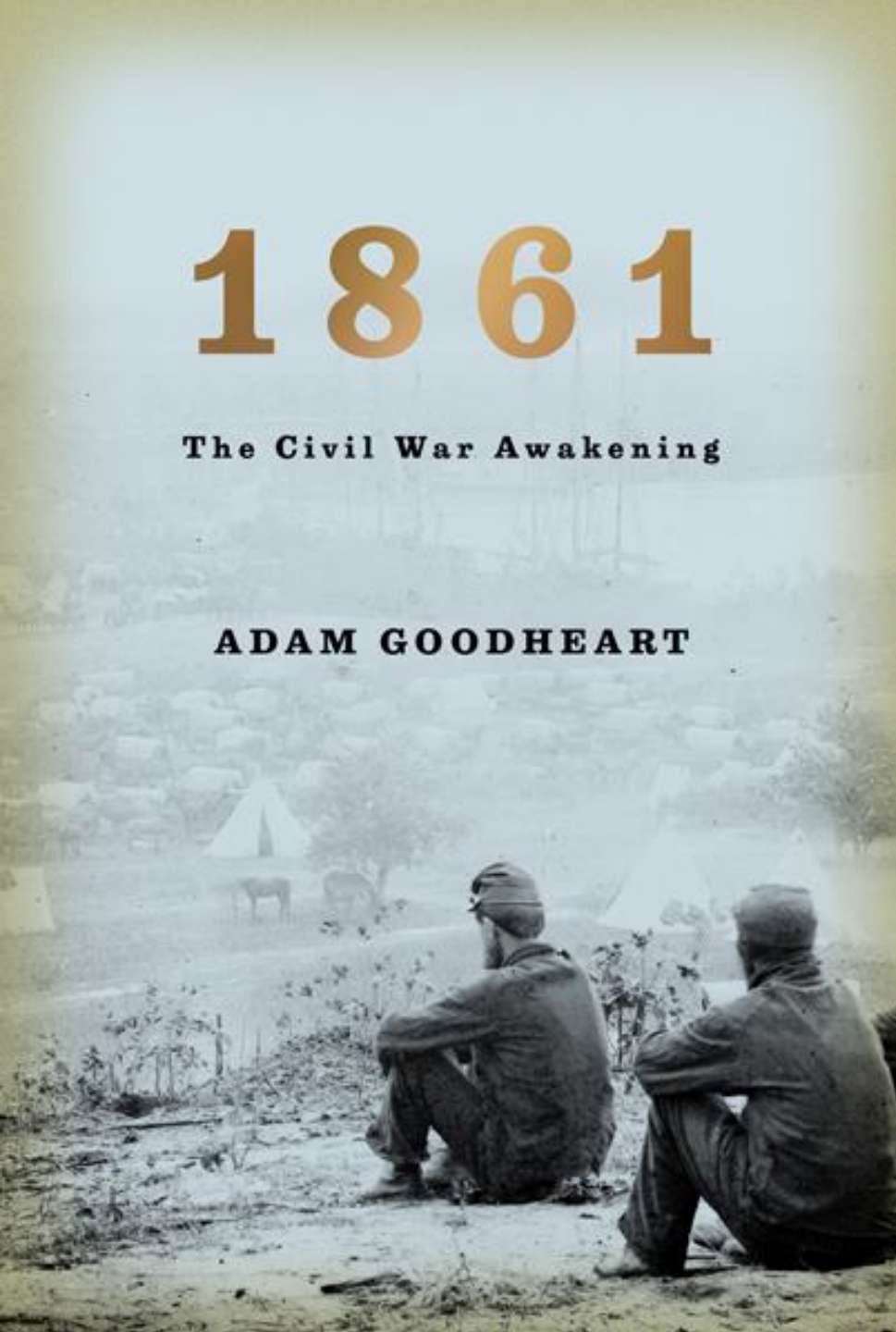
LG&E's Cane Run Coal-Fired Power Plant  
Google



# 1861

The Civil War Awakening

ADAM GOODHEART











# What do we need to do to reshape minds around sustainability?

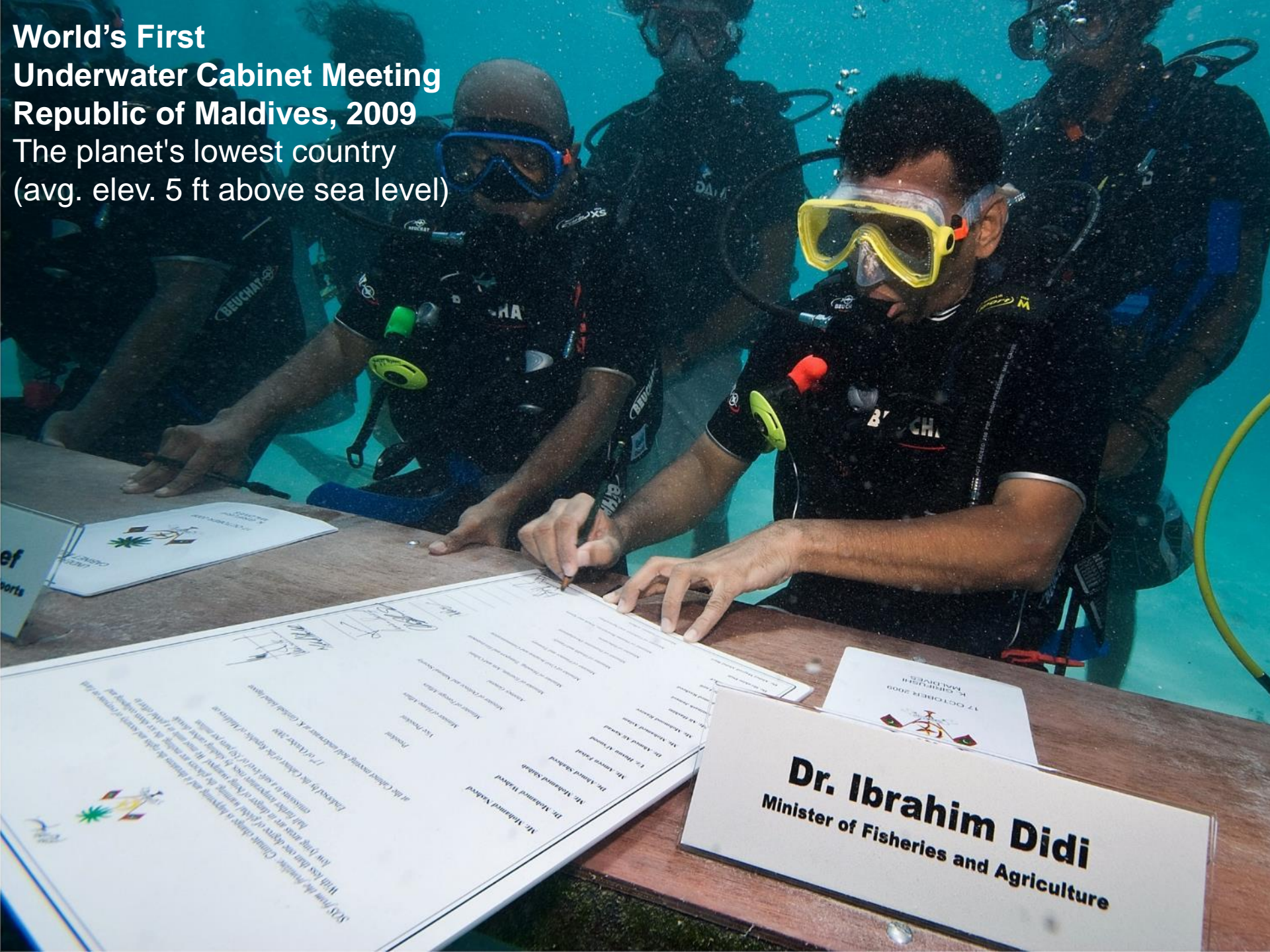
---

- Envision a different future
- Investigate problems & solutions
- Raise awareness
- Change attitudes & behaviors
- Share info, ideas, resources, lifestyles
- Create new norms
- Build community
- Make it fun and “sexy”
- Tell our stories
- Put a human face on it



# World's First Underwater Cabinet Meeting Republic of Maldives, 2009

The planet's lowest country  
(avg. elev. 5 ft above sea level)



# UofL Recognized for Sustainability



Sierra Club's Cool Schools

Princeton Review's Guide to Green Colleges



THE COLLEGE SUSTAINABILITY REPORT CARD

[Home](#)
[Report Card](#)
[Compare](#)
[Get involved](#)
[About](#)
[My Research](#)

Search for a school

Report Card 2011

Change year

[Schools](#)
[Executive Summary](#)
[Categories](#)
[Awards](#)
[Methodology](#)
[Indicators](#)
[Surveys](#)

University of Louisville

Compare with another school

School details:

▼ Grade lower than last year

Endowment: \$682 million as of March 31, 2010

Location: Louisville, Kentucky

Campus Survey: Yes (see response)

Dining Survey: Yes (see response)

Endowment Survey: Yes (see response)

Student Survey: Yes (see response)

Data compiled from survey responses, when available, and from independent research, when available.

Overall grade

B

SUSTAINABLE ENDOWMENTS INSTITUTE

Administration

A

The University of Louisville incorporates sustainability into the campus master plan and strategic plan and has developed a green purchasing policy for appliances, cleaning products, and paper. The university collaborates with the city on sustainability initiatives through the Partnership for a Green City, and the Sustainability Council has launched programs to engage the campus community and promote transportation alternatives. [See complete survey data](#)

Climate Change & Energy

B

U of L has pledged to reduce its carbon footprint by eliminating the use of coal on campus. The university has installed several energy efficiency technologies, such as economizers and energy management systems, and has implemented temperature setbacks. The university has

Tools

[Print](#)
[Save](#)
[Share](#)

# Sustainability is a Strategic Goal for UofL

## UofL Strategic Plan (2008-2020):

“Expand our efficiency and sustainability initiatives to achieve the highest STARS rating from the Association for the Advancement of Sustainability in Higher Education.”



**SIGNATORY OF**  
AMERICAN COLLEGE & UNIVERSITY  
PRESIDENTS' CLIMATE COMMITMENT





# UofL Sustainability Groups

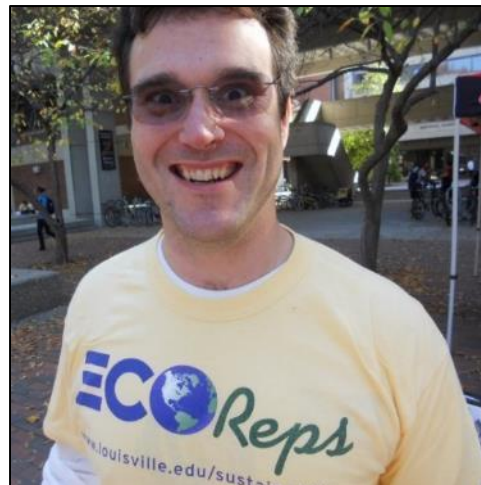


## Collaborative Groups

- Sustainability Scholars Roundtable
- Green Threads Faculty Cohorts
- Law School Sustainability Comm.
- Eco-Reps – Peer-to-Peer Advocates  
[tinyurl.com/UofLEcoReps](http://tinyurl.com/UofLEcoReps)
- **Green Unit Teams for Sustainability**

## Student – Led Groups

- Engage Lead Serve Board - Green Initiatives
- Group Recycling And Sustainable Solutions
- US Green Building Council Student Chapter
- Renewable Energy & Energy Efficiency Club
- Cardinal Student/Farmworker Alliance
- “Green House” Residential Life Group
- Cards United Against Sweatshops
- Students Athletes Taking Action
- UofL Habitat for Humanity
- Garden Commons
- Expedition Cards



# Institutional Structure

**Kentucky Institute for the Environment & Sustainable Development (KIESD)**

**Center for Environmental & Occupational Health Sciences**

**Center for Land Use & Environmental Responsibility**

**Conn Center for Renewable Energy Research**

**Renewable Energy Applications Laboratory**

**Center for Infrastructure Research**

**The Stream Institute**

**Center for Environmental Policy & Management**

**Center for Sustainable Urban Neighborhoods**

**Anne Braden Institute for Social Justice Research**

**Muhammad Ali Institute for Peace and Justice**

**Sustainability Council** – Chair, Dave Simpson

**Operations Committee** – Chair, Mitchell Payne

**Planning & Administration** – Chair, Rodger Payne

**Education & Research** – Chair, Margaret Carreiro

**Engagement** – Chair, Brian Barnes

**Center for Environmental Education**

**Center for Environmental Science**

**Center for Environmental Engineering**

**Kentucky Pollution Prevention Center**

**Urban Design Studio**

**City Solutions Center**

**Urban Studies Institute**

**Center for Hazards Research & Policy Development**

# Planning & Administration

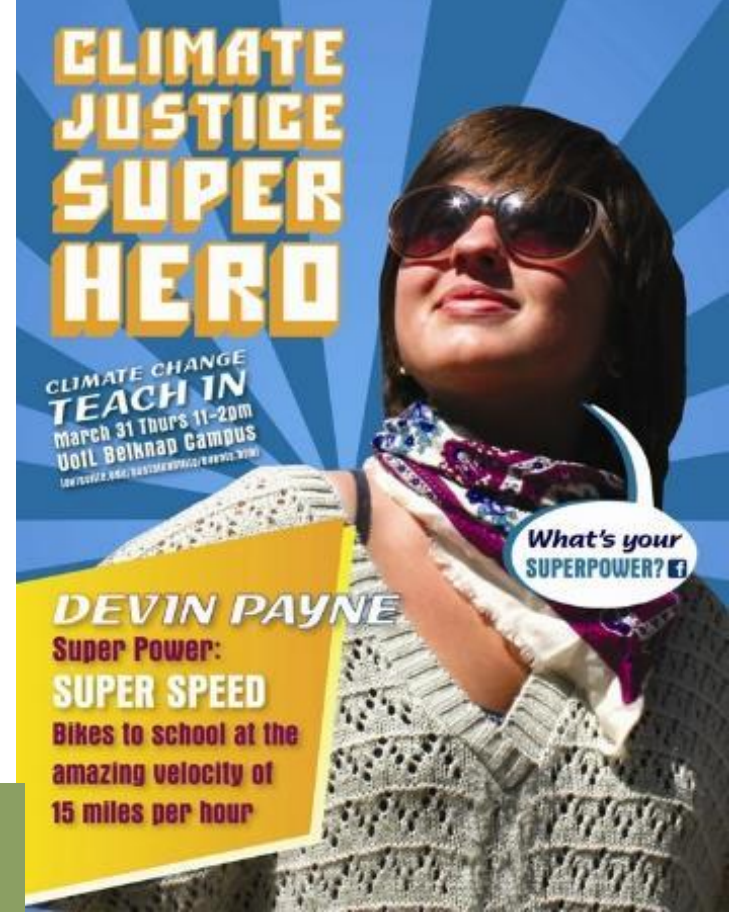
---

- Sweatshop-Free Apparel
- Socially-Responsible Investing (SRI)
- Diversity & Accessibility
- Affordability
- Living Wages
- Participatory Governance
- Employee Health & Wellbeing



# Engagement

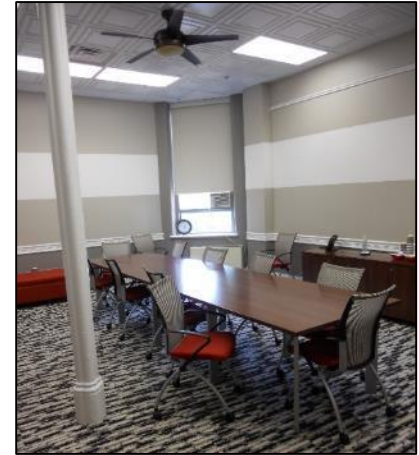
- Public Events
- Service Projects
- Community Partnerships
- Campus Gardens
- **ECO**Reps
- Ecolympics
- Model Green Rooms
- Campus Sustainability Tours



# Competitions



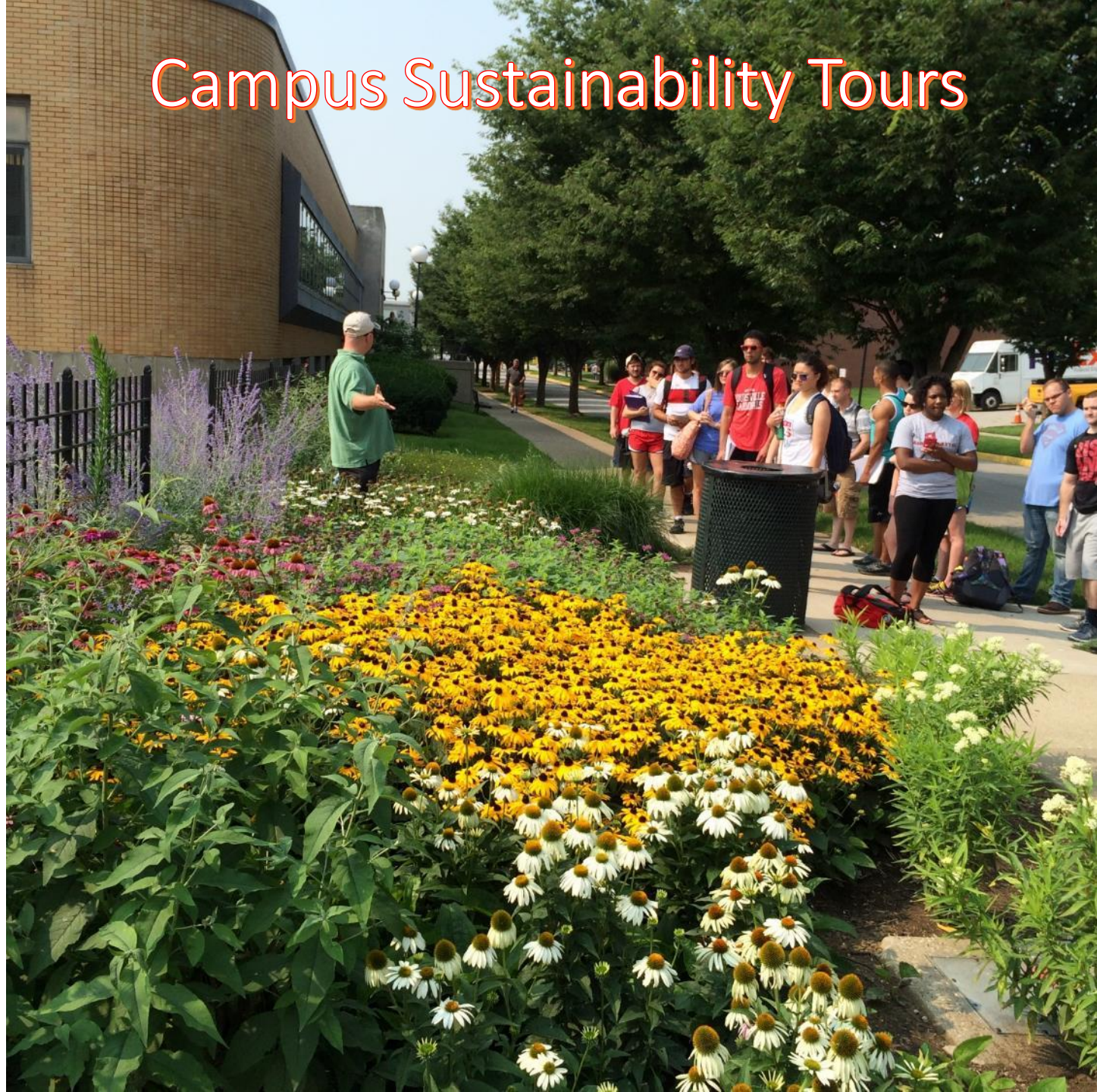
- **Model Green Dorm Room**  
Louisville Hall Rm 605  
Fall 2009
- **Model Green Conference Room**  
A&S Dean, Gardiner Hall Rm 230  
Fall 2010
- **Model Green Office**  
Chair, Urban & Public Affairs Rm 100  
Spring 2012
- **Threlkeld Hall Green Renovations**  
Ecolympics Grand Prize  
Spring 2014 & 2015



# A Powerful Tool

- For educating
- For raising awareness
- For instilling a sense of place
- For sparking Campus As A Living Lab
- For raising profile of university / fundraising
- For taking stock, seeing things afresh

## Campus Sustainability Tours








## UofL Tour Highlights

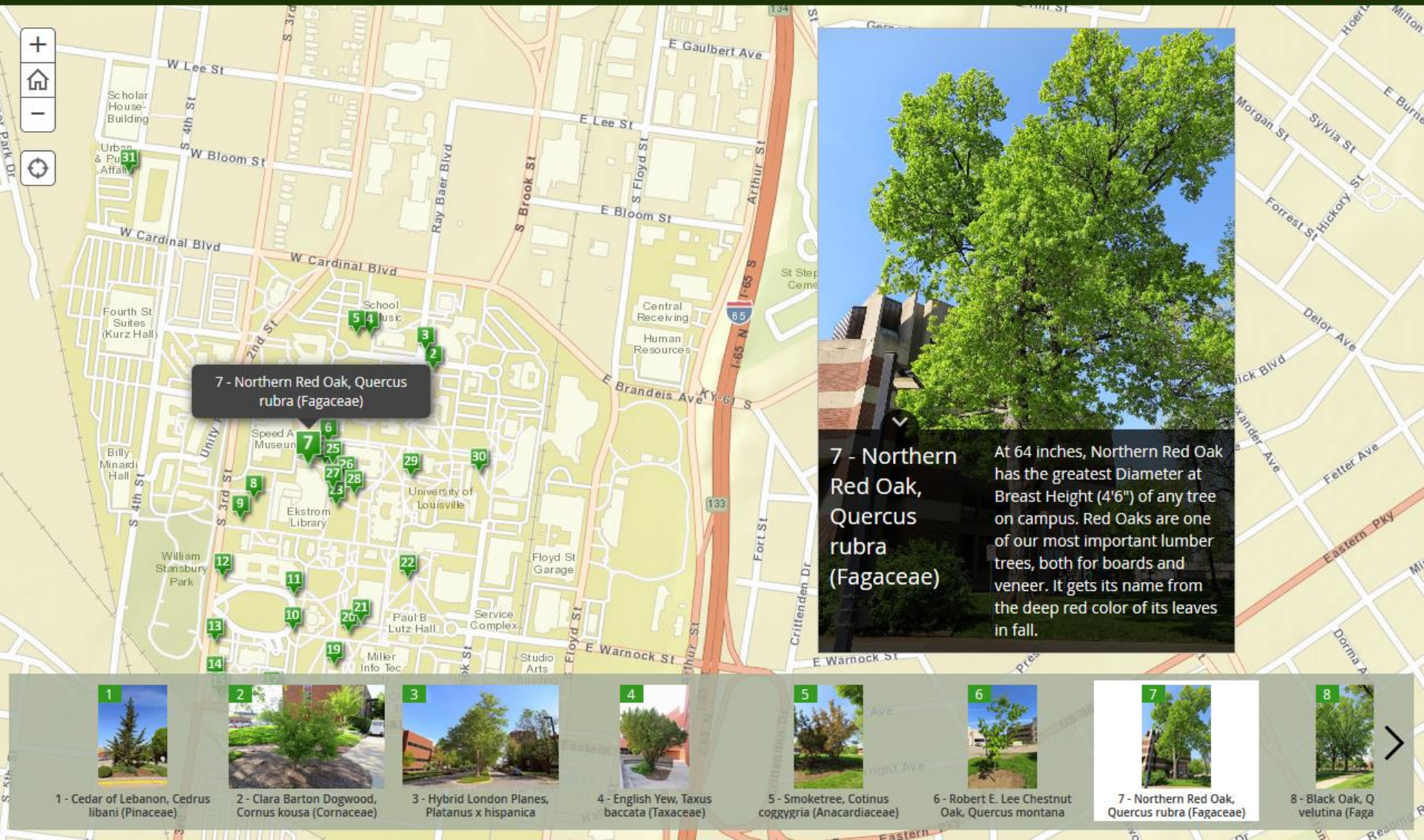
- Urban Agriculture / Edible Landscaping / De-Lawning
- Transportation Alternatives
- Renewable Energy
- Energy Efficiency
- Central Steam & Chilled Water Plant
- LEED Buildings
- Vegetated Roofs
- Campus Trees
- Solid Waste Streams
- Stormwater Management
- Sustainable Dining
- Model Green Rooms

# Interactive Online Story Maps

## University of Louisville - Belknap Campus: Tree Tour

Tree Campus USA   

A Tree Campus USA Member



Map showing the University of Louisville - Belknap Campus with tree locations marked by numbered green pins. The map includes street names and building labels. A callout for tree 7 is active, showing a large Northern Red Oak.

**7 - Northern Red Oak, *Quercus rubra* (Fagaceae)**

At 64 inches, Northern Red Oak has the greatest Diameter at Breast Height (4'6") of any tree on campus. Red Oaks are one of our most important lumber trees, both for boards and veneer. It gets its name from the deep red color of its leaves in fall.

1 - Cedar of Lebanon, *Cedrus libani* (Pinaceae)

2 - Clara Barton Dogwood, *Cornus kousa* (Cornaceae)

3 - Hybrid London Planes, *Platanus x hispanica*

4 - English Yew, *Taxus baccata* (Taxaceae)

5 - Smoketree, *Cotinus coggygia* (Anacardiaceae)

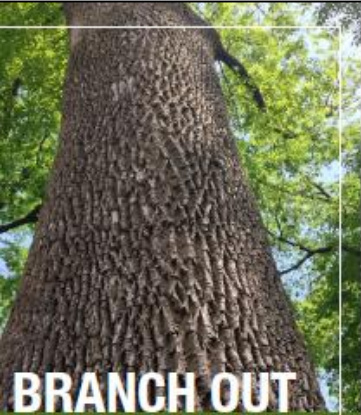
6 - Robert E. Lee Chestnut Oak, *Quercus montana*

7 - Northern Red Oak, *Quercus rubra* (Fagaceae)

8 - Black Oak, *Q. velutina* (Fagaceae)



# Campus Tree Tours



## BRANCH OUT

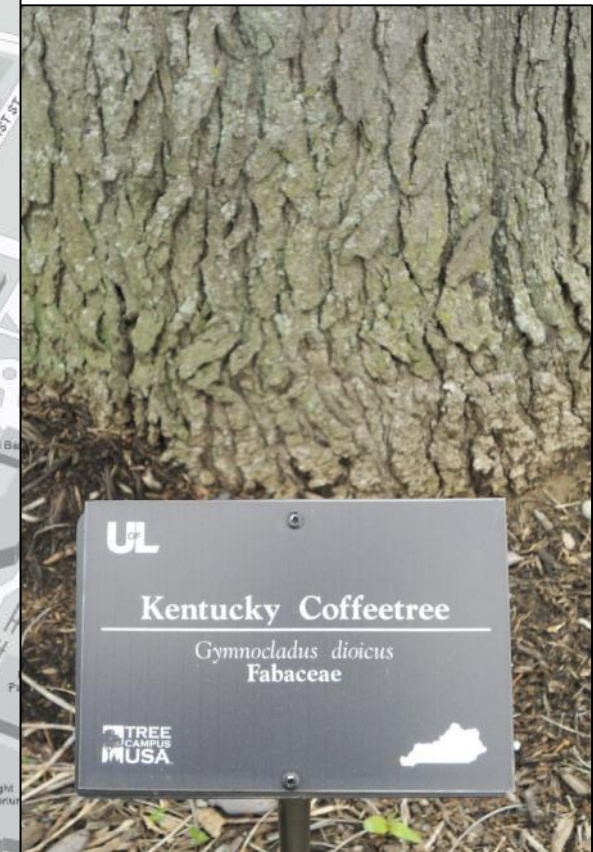
Welcome to the University of Louisville's Belknap Campus. Although we're located in an urban area, our 309-acre, park-like campus has more than 1,100 trees representing many species. We invite you to take this self-guided tour to see some of the more significant and interesting among them.

Not a tree expert? No worries. Identification plaques will help you identify the trees. The full tour will take about an hour and a half, approximately a 1.75 mile walk.

### WHERE TO START

To check out our bark, here's where to park:  
North Information Center  
2000 S. First Street, Louisville, KY.

You can begin the tour outside the center.



# Education & Research

---

- Green Threads faculty workshop
- Identifying SUST courses
- Developing interdisciplinary academic programs
- Promoting collaborative, interdisciplinary research
- Campus as a Living Laboratory



# Campus as a Living Laboratory of Sustainability

- Gardens, Trees & Grounds
- Air Quality
- Renewable Energy
- Energy & Water Efficiency
- Building Design & Master Planning
- Green Roofs & Walls
- Transportation Demand Management
- Stormwater Management
- Life Cycle Cost Analysis
- Waste Minimization
- Recycling, Reuse & Composting
- Food & Farmers' Markets
- Health & Wellness
- Mindfulness & Conflict Resolution
- Socially-Responsible Investing
- Communication & Engagement
- Behavior Change



## Goals:

- Facilitate cross-disciplinary engagement in sustainability research
- Develop awareness of sustainability research at UofL
- Develop networks of scholars to enhance collaboration and sharing of ideas
- Enhance research grant capacity & opportunities through interdisciplinary proposals
- Improve & increase sustainability-related research at UofL.



# Green Threads: Sustainability Across the Curriculum

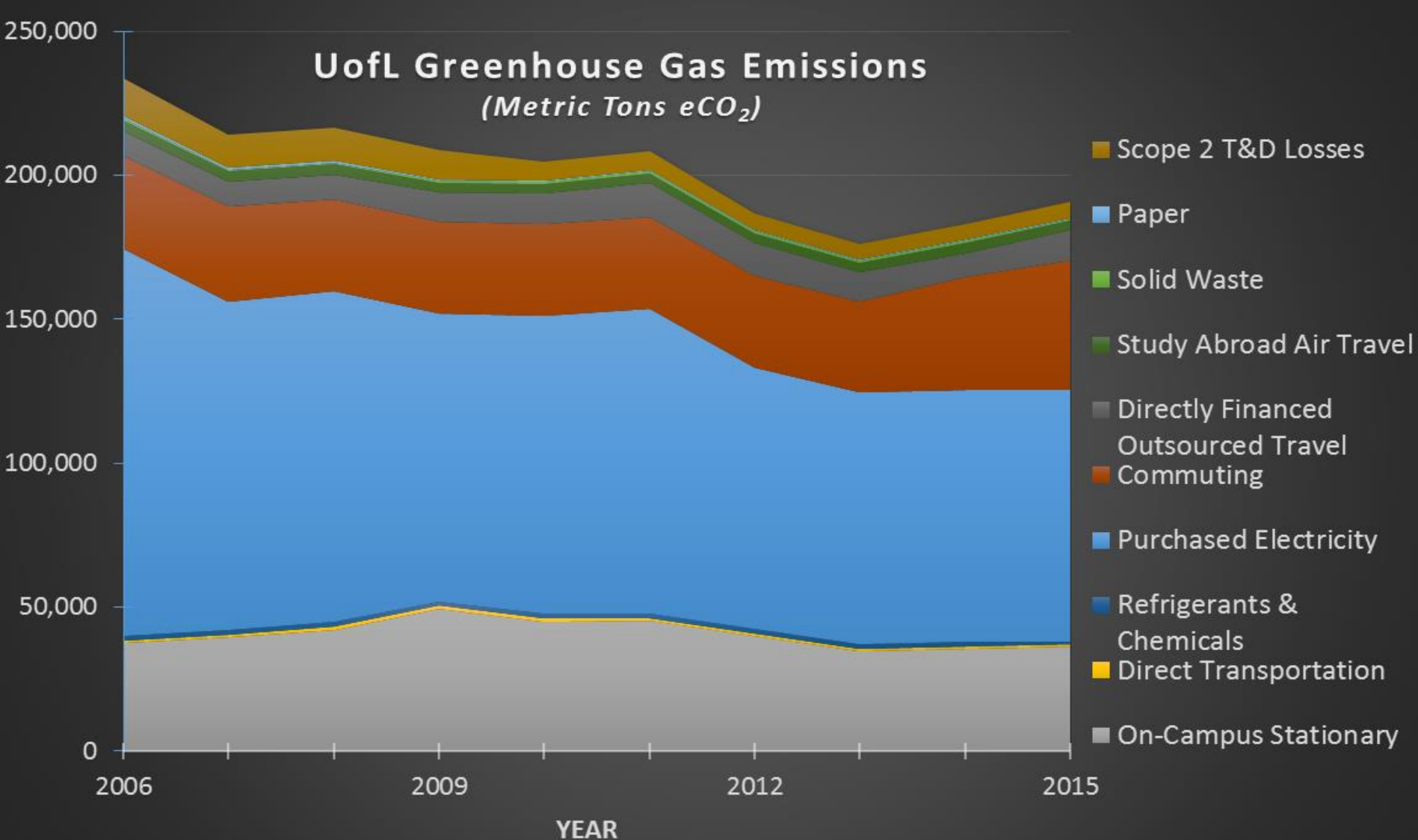
- Cross-disciplinary Faculty Workshops
- New Cohort each spring since 2009
- Now Open to ALL faculty and GTA Academy
- \$500 honorarium for modifying or creating courses
- 50 Total alumni



# UofL's Carbon Footprint

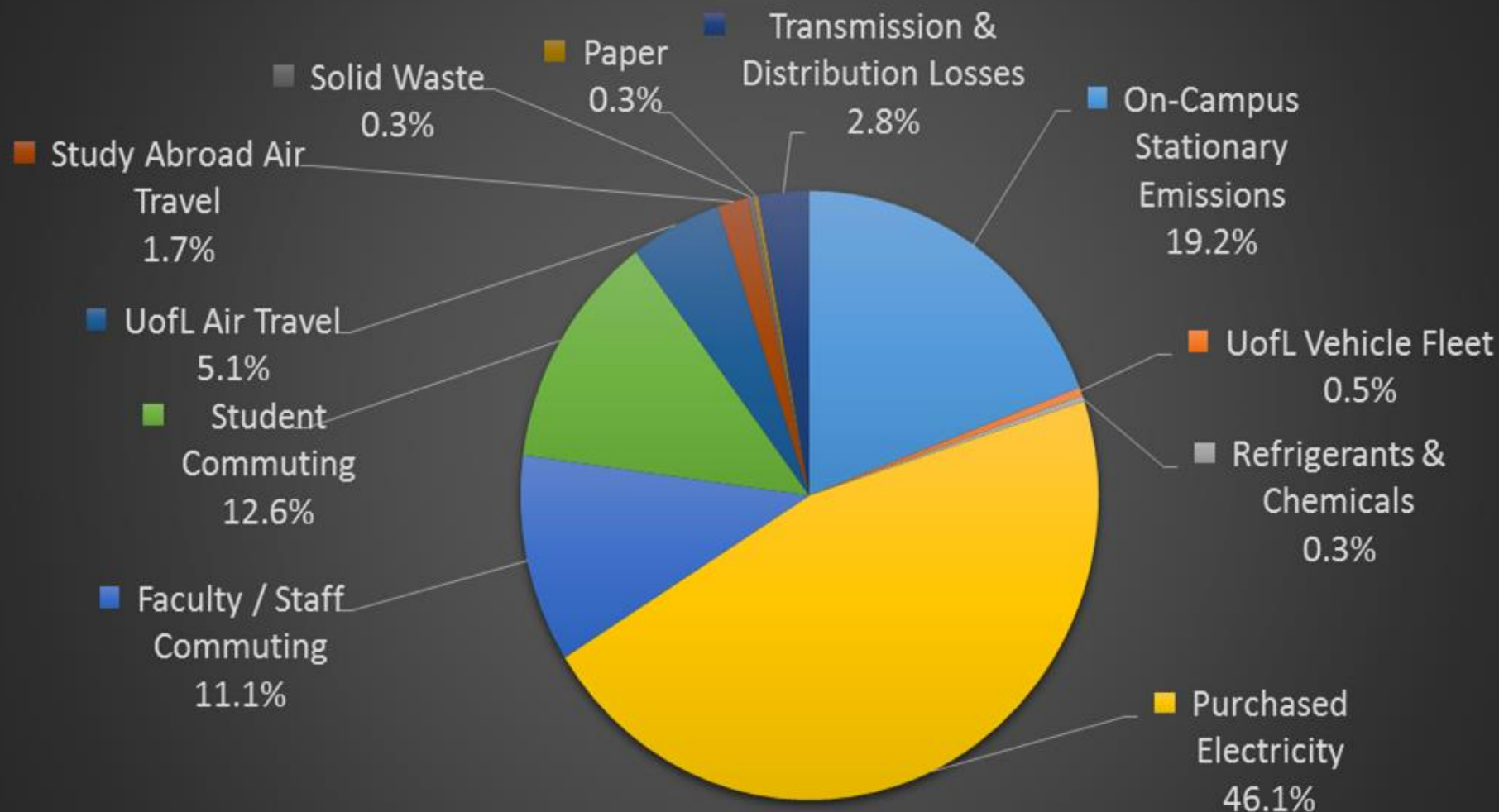
Decreased 18% (= taking 9500 cars off the road)

---



# UofL's Carbon Emissions by Source

UofL 2015 Greenhouse Gas Emissions by Source



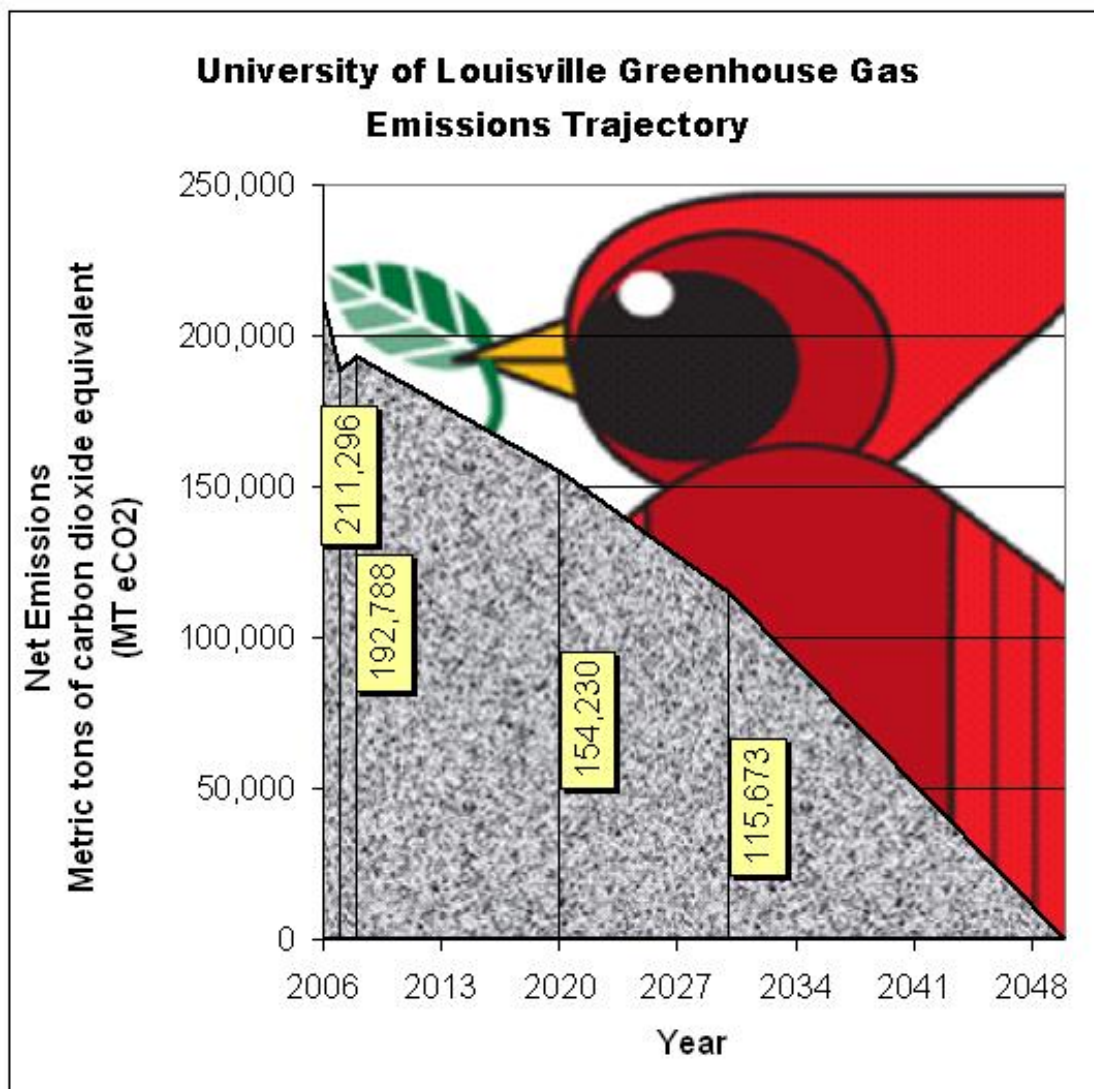
# UL<sup>OF</sup> Climate Action Plan

September 2010



President's Statement	
Provost's Statement	
Executive Summary	
Our Climate Commitment	
Background & Institutional Data	
Our Carbon Footprint	
Our Greenhouse Gas Emissions	
Reduction Plan	
Green Purchasing	
Energy Conservation and Efficiency	
Renewable Energy	
Carbon Sequestration	
Master Planning	
Green Building Design	
Composting & Horticultural Practices	
Behavior Change: Green Team	
Behavior Change: University-wide	
Recycling	
Transportation	
Food	
Carbon Offsets	
Financing Options	
Implementation Structure & Tracking	
Progress	
Communication, Education &	
Engagement	
Conclusion	

Goals	Timeframe	Percent reduction in net GHG emissions	Target maximum net GHG emissions (MT eCO <sub>2</sub> )
Short Term	2010–2020	20%	154,230
Mid Term	2021–2030	40%	115,673
Long Term	2031–2050	100%	0



# Emission Reduction Goals

# Energy Conservation & Efficiency

---

## Energy Savings Performance Contract Project Expenditures by Category



Category	Expenditures (Millions)
HVAC	\$22.3
Building Controls	\$11.1
Lighting/Electrical	\$10.7
Water Conservation	\$2.1
Building Envelope	\$0.1
Total	\$46.2

- Project includes upgrades to 88 buildings: Lighting, insulation, building energy management control, water, mechanical, & ventilation systems.
- UofL expects to reduce its utility bill by about **\$12,086 per day!**

# Renewable Energy

UofL Goal: 20% by 2020



- Biofuels / Biodigesters
- Solar
- Geothermal
- Wind
- Hydropower

Natatorium Solar Pool Heaters



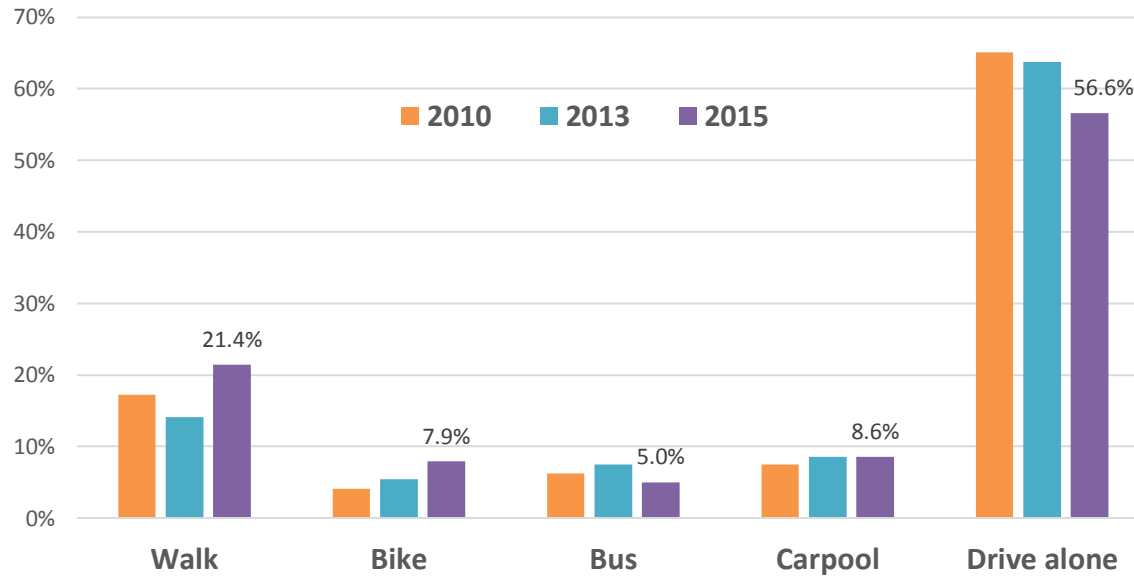
SRC  
Geothermal  
Wells



LG&E's Falls of the Ohio  
Hydropower



## UofL Students - Primary Commute Mode

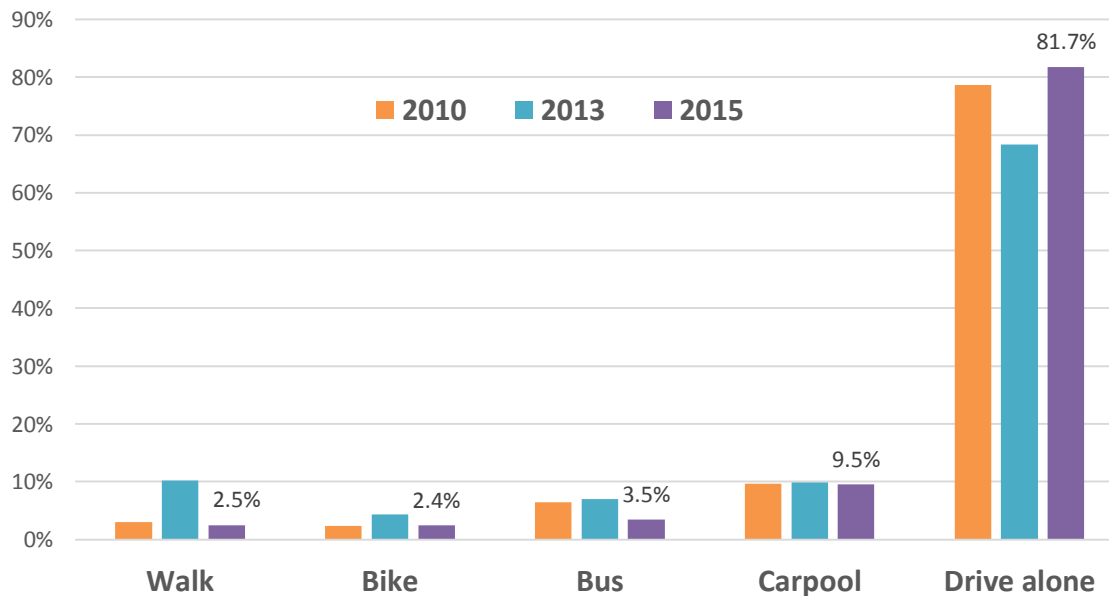


# Transportation

UofL needs to do more to discourage driving to campus and to encourage:

1. Living close to campus
2. Riding the bus
3. Biking & walking
4. Carpooling
5. Car-sharing

## UofL Employees - Primary Commute Mode



# Transportation

1. Enhance walkability & bikeability
2. More campus area housing
3. No idling on campus policy
4. Promote alternatives:



## **Walk**

Live nearby and get to know your neighbors!  
Stay fit while walking gently on the Earth!



## **Bike**

Save money. Get a workout as you go!

**Earn-A-Bike:** \$400 voucher if forgo parking permit for 2 years

**Campus Bikeshare:** Free daily bike check-out

**Find a Safe Route:** [ridethecity.com/louisville](http://ridethecity.com/louisville)



## **Bus**

Use your UofL ID for FREE rides anywhere TARC goes!

**Plan Your Trip:** [ridetarc.org](http://ridetarc.org)



## **Carpool**

Find or offer rides: [zimride.com/louisville](http://zimride.com/louisville)

**Guaranteed Ride Home/ Vanpools:** [tickettoride.org](http://tickettoride.org)

**UofL Car-share (hourly rental from campus):** [enterprisecarshare.com](http://enterprisecarshare.com)

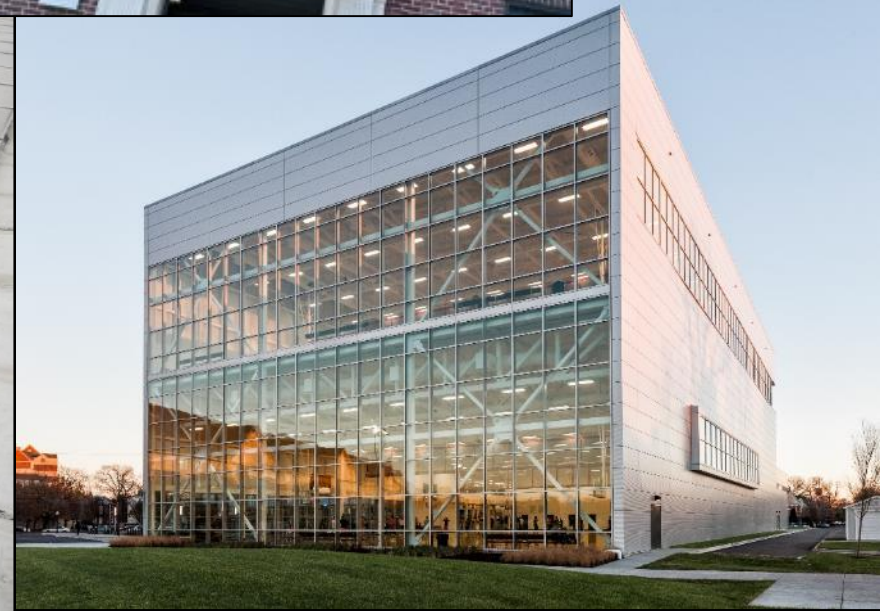


**zimride**



# Green Buildings

1. Minimum of LEED Silver for all new construction and major renovations
2. LEED Gold certified buildings on every campus
3. Reflective white roofs and vegetated roofs
4. Capture condensate from air conditioning and roofs for irrigation



# Grounds

1. Implement a plan to mitigate storm water runoff & install rain gardens
2. Use native plant species and avoid use of exotic or invasive species
3. Plant and protect trees to sequester carbon from atmosphere
4. Expand composting program



# Recycling

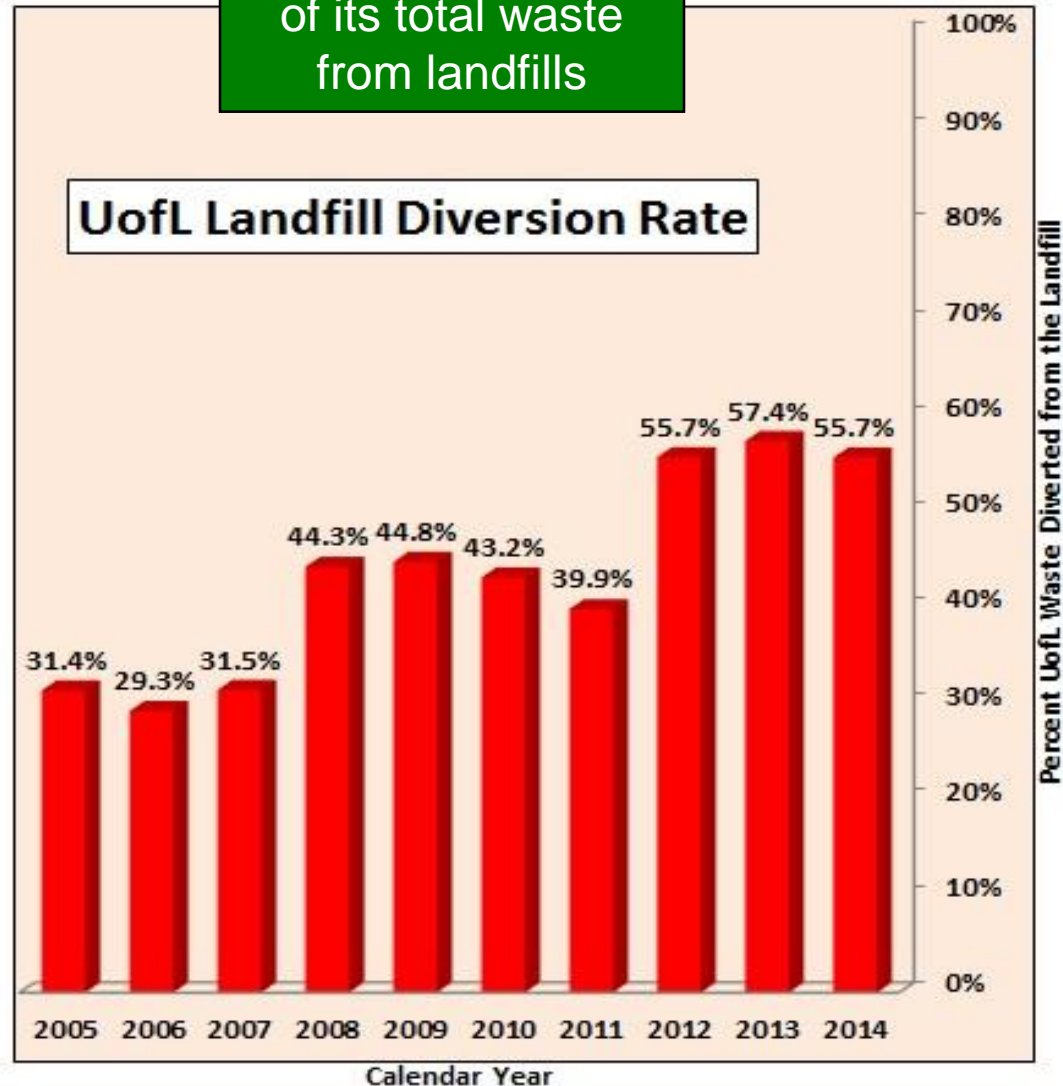


1. Single stream recycling and mini-bin garbage reduction
2. Convert outdoor garbage bins along campus walkways to recycling bins
3. Big Belly solar trash compactors to reduce the number of collections required
4. System for campus exchange and reuse of materials



UofL diverts 56%  
of its total waste  
from landfills

UofL Landfill Diversion Rate



# Food

1. Continue to expand access to local and seasonal foods on campus through Sodexo, caterers, University Club, etc.
2. Implement 100% trayless dining
3. Cooking & Nutrition Workshops
4. Expand campus Garden Commons
5. Expand CSA and Farmers' Market opportunities
6. Kentucky Proud products (e.g. UofL Bookstore & Cardinal's Nest)



## Local Farms and Businesses Supported by **sodexo**

Making every day a better day



### Businesses

- A. Creation Gardens - Louisville, KY
- B. Heine Brothers' Coffee - Louisville, KY
- C. Prairie Farms - Louisville, KY
- D. Dean's Milk - Louisville, KY
- E. Home City Ice - Louisville, KY
- F. John Corb Coffee Co. - Louisville, KY
- G. Trompeter - Louisville, KY
- H. Universal Linens - Louisville, KY
- I. Fresh Serve Bakeries - Louisville, KY
- J. Dawn Food Products - New Albany, IN
- K. Klosterman - Cincinnati, OH
- L. Piazza Produce - Indianapolis, IN

### Farms

- 1. George Gagel - Louisville, KY
- 2. Bourbon Barrel Foods - Louisville, KY
- 3. Grateful Greens - New Albany, IN
- 4. Capriole Cheese - Greenville, IN
- 5. Galrein Farms - Shelbyville, KY
- 6. Dutch Creek Farms - Pleasureville, KY
- 7. Courtney Farms, Inc - Bagdad, KY
- 8. Weisenberger Mills - Midway, KY
- 9. Marksbury Farms - Lexington, KY
- 10. Kentucky Honey Farm - Owensboro, KY
- 11. Kenny's Country Cheeses - Austin, KY
- 12. Habbegger Mennonite Farm - Scottsville, KY
- 13. Heartland Hydroponics - Benton, KY

[www.UofLdiningervices.com](http://www.UofLdiningervices.com)



# Behavior Change



1. Teach about Climate Change
2. University-wide education & awareness campaigns
3. Office assessments
4. Create model dorm rooms, offices, labs, and classrooms
5. Energy conservation competitions
6. Energy Conservation Teams
7. Provide continuous feedback on energy use (“building dashboards”)





# U<sup>L</sup> Sustainability



Commitment to a Sustainable Future. It's Happening Here.

[louisville.edu/sustainability](http://louisville.edu/sustainability)



Justin Mog, Ph.D.

[justin.mog@louisville.edu](mailto:justin.mog@louisville.edu)

Assistant to the Provost for  
Sustainability Initiatives

