Sustainable Development

“To meet the needs of the present without compromising the ability of future generations to meet their own needs”

- World Commission on Environment and Development
Triple Bottom Line of Sustainability

- **People** (meeting needs and providing equal access, supporting fundamental human and civil rights, respecting cultural values)

- **Planet** (robust, self-healing natural systems)

- **Prosperity** (supporting fair prices and wages, encouraging true economic growth)

Joshua J. Yates, 2012
Declining resources and ecosystem services

Increasing demand for resources and ecosystem services

Time
History of energy consumption in the United States (1776-2012)

Source: U.S. Energy Information Administration, AER Energy Perspectives and MER
Global Surface Temperatures
Four independent records show nearly identical long-term warming trends.

Credit: NASA Earth Observatory/Robert Simmon

Data Sources: NASA Goddard Institute for Space Studies, NOAA National Climatic Data Center, Met Office Hadley Centre/Climatic Research Unit, and the Japanese Meteorological Agency.
The University of Iowa Commitment

“Sustainability is the most important issue facing the 21st century.”

University of Iowa President Bruce Harreld

What is the UI’s role?
• To teach new generations to tackle wicked problems
• To promote research to solve problems
• To model a sustainable society
2010 - UI and Region 7 EPA sign sustainability partnership to support 2020 Sustainability Goals:

1. Achieve net-negative energy growth
2. Green our energy portfolio
3. Decrease our production of waste
4. Reduce carbon impact of transportation
5. Student success in sustainability
6. Support sustainable water resources and research
7. Partnerships for a sustainable campus and state
U of I 2020 Vision – Goal 1

Achieve Net-negative Energy Growth

• *Consume less energy on campus in 2020 than consumed in 2010 despite projected growth*
  
  – Pursue aggressive energy conservation opportunities
  
  – Update building design standards to reduce impact of growth
  
  – Upgrade HVAC systems to maximize energy conservation
  
  – Develop a branded energy conservation marketing effort
UI Energy Control Center

• State of the art hub for all energy information
• Live displays of energy usage - building dashboards
• Real-time predictions of energy consumption
Building Smarter

- Smart buildings and technology
- Conservation across campus
40% renewable energy consumption on campus by 2020

- renewable energy supply strategy
- transition from our dependency on fossil fuels
  - increase the use of biomass, geothermal, solar, wind, landfill gas, gasification and other emerging energy alternatives
2010 vs 2016 Fuel Mix, by MMBTU

2010:
- Stoker Coal: 42%
- FB Coal: 27%
- Oat Hulls: 15%
- Nat Gas: 16%

2016:
- Nat Gas: 40%
- Stoker Coal: 18%
- FB Coal: 20%
- Oat Hulls: 20%
- Wood Chips: 2%
Coal-free by 2025

“In 2025, we expect to have diminished our reliance on coal to the point it is no longer included in our fuel portfolio. The university will continue to pursue and develop its innovative renewable energy program to ensure an abundant supply of alternative sources of energy. It’s the right choice for our students and our campus, and it’s the surest path to an energy-secure future.”

- President Bruce Harreld, Feb. 20, 2017
Solid Fuel Alternatives

- Outdated seed
- Grasses – *Miscanthus*
- Poplar plantings
- Timber stand improvement
- Invasive species removal
- Industrial by-products and residuals
- Opportunity fuels
Miscanthus Plots

- On private and UI land
- Less than 50-miles from Iowa City
- University of Iowa procured and planted rhizomes
- Five-year contracts with private growers
- AGrow Tech, UI farm manager

Result – 17.3% renewable energy as of 5/17
U of I 2020 Vision – Goal 3

60% waste diversion by 2020

• Decrease our production of waste
  – foster a culture oriented to reducing waste, increasing recycling, facilitating composting of organic waste
  – enhance sustainable purchasing practices
U of I 2020 Vision – Goal 3

– Invest in building modifications and containers
– Capture more food waste for composting
– Game day recycling
– Educate and communicate

Result – UI waste diversion at 40%
RECYCLE LIKE A HAWK
All Recyclables Must Be Clean and Empty

Plastic Containers
Metal Containers
Flattened Cardboard
Cartons
Paper Products

DO NOT RECYCLE
- Glass
- Styrofoam
- Plastic Bags
- Food

The University of Iowa Office of Sustainability
recycle.uiowa.edu
Thank You For Recycling
U of I 2020 Vision – Goal 4

• **Reduce the Carbon Impact of Transportation.**
  
  - reduce the vehicle miles traveled by single occupant vehicles
  - employ increasingly efficient fuels and technologies
  - improve the greenhouse gas efficiency of vehicles
  
  - *achieve 10% reduction in per capita emissions of fossil fuel-produced CO2 from University-related transportation and travel by 2020*
U of I 2020 Vision – Goal 4

- Increase access to and knowledge of alternative transportation options
- Employ carbon-efficient fuels and technologies
- EV charging stations
- Zipcar
- Bike-Friendly Campus

Result – UI per capita carbon emissions reduced 14%
U of I 2020 Vision – Goal 5

• Increase Student Opportunities to Learn and Practice Principles of Sustainability

  – Provide career-related certificate or degree programs, internships and sustainability-related research experiences

  – Provide opportunities for student involvement in the “greening” of campus and civic engagement
U of I 2020 Vision – Goal 6

• Support and Grow Interdisciplinary Research in Sustainability-focused and Related Areas
  – Understand the connection of water resources to global climate change
  – Raise awareness of the shared value of the Iowa River and the impacts of land use in its watershed
U of I 2020 Vision – Goal 7

• Develop Partnerships To Advance Collaborative Initiatives, Both Academic and Operational.
  – With communities, businesses, government agencies and other educational institutions
  – In particular, with Iowa businesses and community colleges to
    • meet workforce demands
    • meet economic development needs of green industries
2015-2020 – What’s Next?

• We accomplished mid-term targets
• With continued support and commitment, we will achieve the 2020 Targets
• What’s needed most?
  – Build the culture of sustainability
  – Ensure UI students are climate and sustainability literate
THANK YOU

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