

Appalachian Energy Summit July, 2012

Academia's Role in Sustainability:

*Push the Envelope
Forge the Path*

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ENVIRONMENT



forging a sustainable future

The Global Challenge

- Meet the aspirations of 9+ billion while protecting the ecosystems that sustain and nurture us.
 - Decarbonize the energy sector
 - Secure adequate and clean water
 - Provide food and fiber

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The Global Challenge

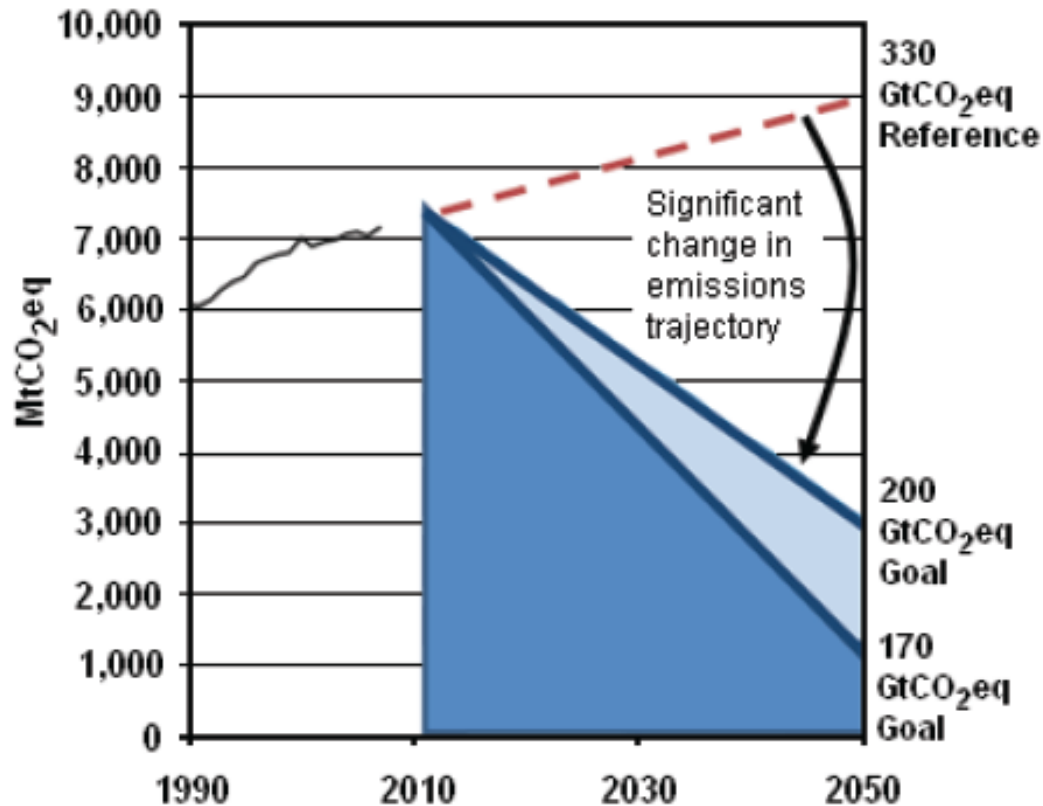


Figure 1. Illustration of the representative U.S. cumulative GHG emissions budget targets --170 and 200 Gt CO₂-eq (for Kyoto gases). (Gt = gigatons, or billion tons; Mt = megatons, or million tons). The exact value of the reference budget is uncertain, but regardless, illustrates a clear need for a major departure from business-as-usual.

The Challenge to US Universities

-- 2007--

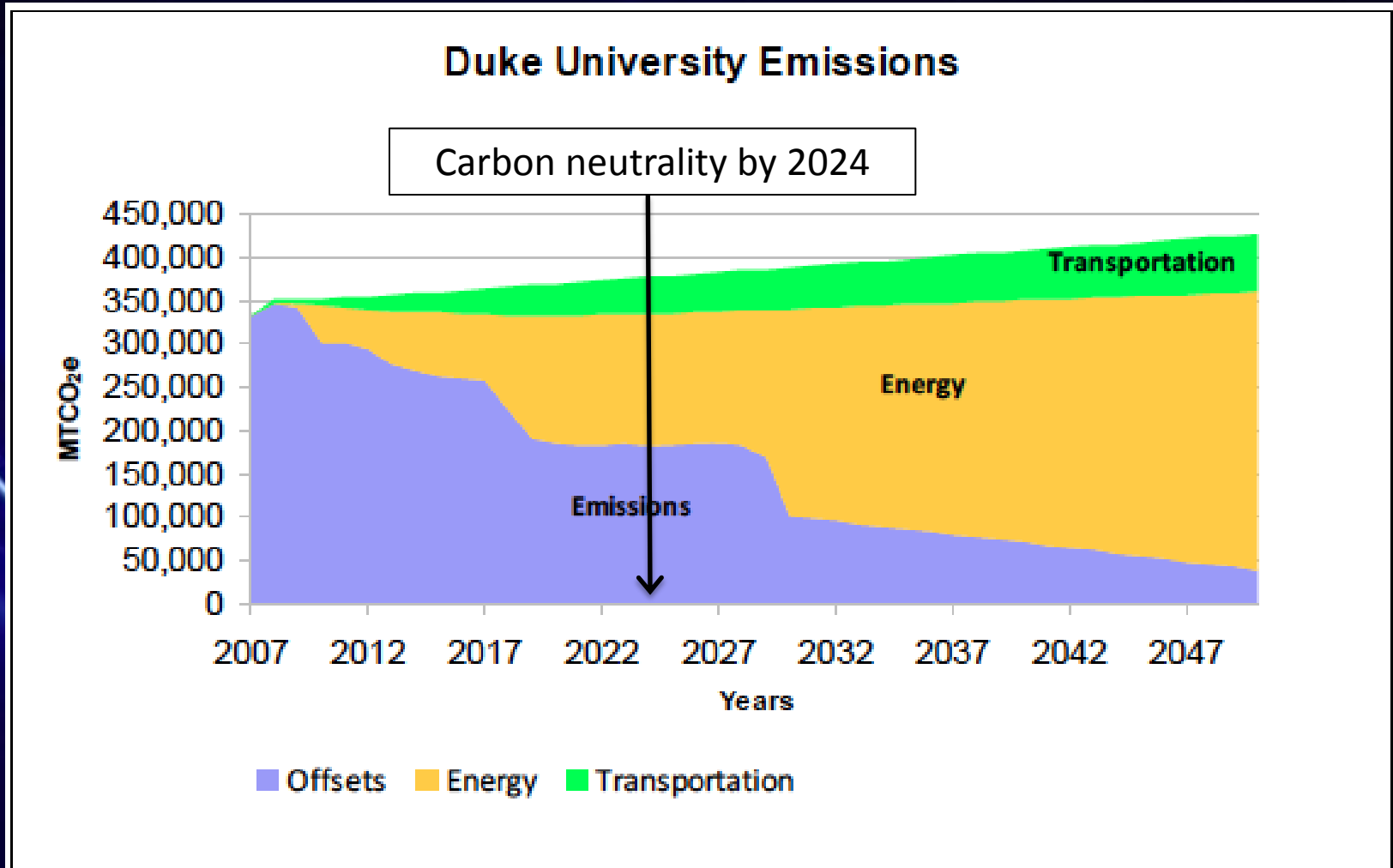


- Challenges colleges and universities to implement plans to achieve climate neutrality.
 - Includes development of sustainability curriculum
- To date: 677 signatories, 477 climate action plans



Duke Climate Action Plan

October 2009



The LEED Pledge

Not enough...

Taking LEEDS Outside

“The Sustainable Sites Initiative™ (SITES™) is an interdisciplinary effort ... to create voluntary national guidelines and performance benchmarks for sustainable land design, construction and maintenance practices.”

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The New LEEDS Standard



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ABOUT NET ZERO ENERGY BUILDING CERTIFICATION

Net Zero Energy is quickly becoming a sought after goal for many buildings around the globe - each relies on exceptional energy conservation and then on-site renewables to meet all of its heating, cooling and electricity needs. Yet the true performance of many developments is overstated – and actual Net Zero Energy buildings are still rare.

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Pushing the Envelope

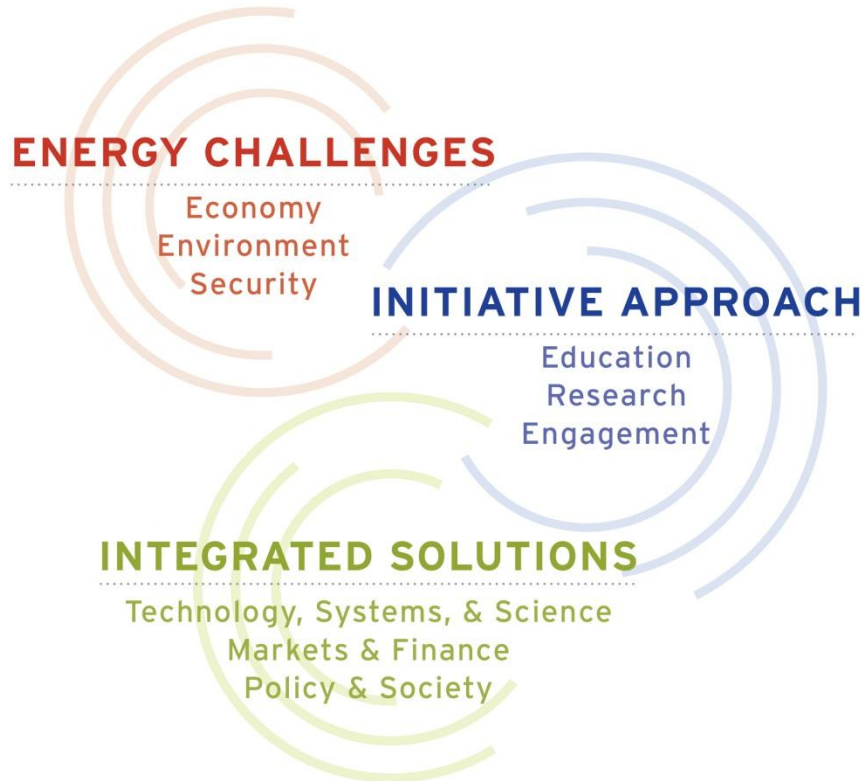
- If every campus in the nation was carbon neutral the global impact would be miniscule.
- The real leverage of the university is in:
 - Innovation
 - Experimentation
 - Education

Pushing the Envelope

-- By Pushing the Market --

Taking control of our supply chain





Mission and Approach

The Duke University Energy Initiative is a university-wide interdisciplinary collaboration addressing today's pressing energy challenges related to the economy, the environment, and security.

The Initiative cuts across business, science and engineering, environment, law, and policy to educate tomorrow's energy leaders, create new options through research, and improve energy decisions by engaging decision makers in business and government.

■ The Loyd Ray Farms Swine Waste-to-Energy Offsets Project

■ The Duke Carbon Offsets Initiative



Loyd Ray Farms System

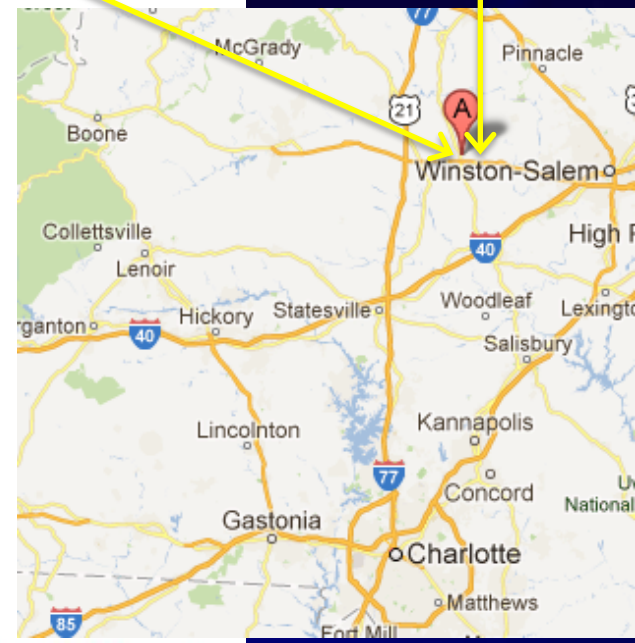
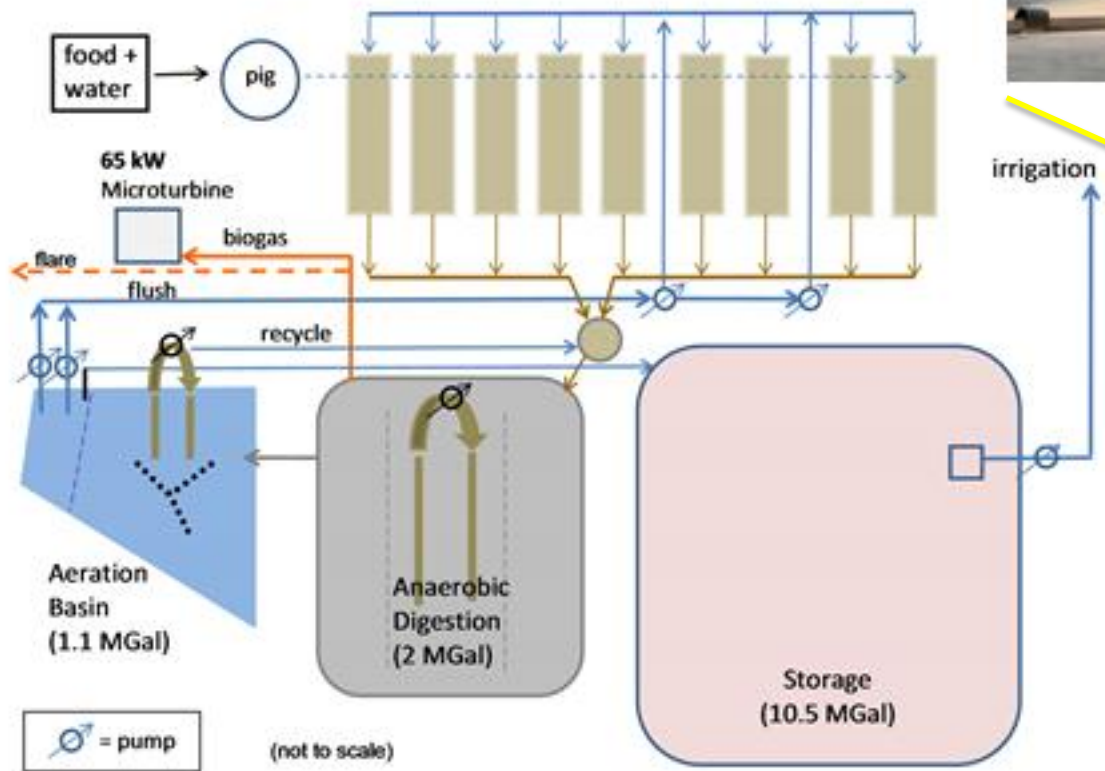


Diagram of the Innovative System at Loyd Ray Farms. Credit: Marc Deshusses, Duke University.



The Oberlin Project



“The Oberlin Project is a joint effort of the City of Oberlin, ***Oberlin College***, and private and institutional partners to improve the resilience, prosperity, and sustainability of our community. The ... aim is to revitalize the local economy, ***eliminate carbon emissions***, restore local agriculture, food supply and forestry, and create a new, sustainable base for economic and community development.”

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Case In Point: LEED Certification

The New York Times

Some Buildings Not Living Up to Green Label

“Research suggests that a quarter of the new buildings that have been certified do not save as much energy as their designs predicted and that most do not track energy consumption once in use. “

The Challenge: Align human behavior with technology

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The Future Passes Through Our Hands...



The Global Challenge

- Meet the aspirations of 9+ billion while protecting the ecosystems that sustain and nurture us.
 - Decarbonize the energy sector
 - Secure adequate and clean water
 - Provide food and fiber
- In a world with a changing climate

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Academia's Sustainable Opportunity

Forge the path... push the envelope

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