From Pledge to Practice: Implementing a Climate Commitment on a Growing Campus

Richard R. Johnson
Director of Sustainability
16 October 2008
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I. An Overview: The American College and University Presidents Climate Commitment

II. Rice and the Climate Commitment

III. Scenarios for Reducing CO2 Emissions

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V. Integrating Sustainability Into the Curriculum
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Trans-Institutional Leadership on Climate Change

The American College & University Presidents’ Climate Commitment (ACUPCC) is committed to Climate Leadership for America. With over 560 institutions in all 50 states representing over 25% of the higher education student population in America, we are acting now to minimize GHG emissions, to ultimately neutralize our impact on climate, and to prepare graduates who will help society do the same. We are holding ourselves accountable by publicly sharing our plans and progress reports.

With our future at stake, we are working together to help America and the world turn this crisis into an unprecedented opportunity.

For more information, please visit:
www.presidentsofclimatecommitment.org
What Does Climate Neutral Mean?

Climate Neutrality is defined as having no net greenhouse gas emissions, to be achieved by minimizing greenhouse gas emissions as much as possible, and using carbon offsets or other measures to mitigate the remaining emissions.
The primary components of the Climate Commitment are as follows:

- Establish an Institutional Structure to oversee development and implementation of the program to comply with the Commitment
  - This structure must include faculty, staff, students, and administrators
- Complete a greenhouse gas emissions inventory within one year
- Implement two or more tangible steps to reduce greenhouse gas emissions within two years
- Develop a Climate Action Plan within two years that includes a target date and interim milestones for achieving climate neutrality
- Integrate sustainability into the curriculum and make it part of the educational experience
- Make the climate action plan, inventory, and progress reports publicly available
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Rice University Commits to Go Climate Neutral

The fight against global warming will shape the 21st century. Colleges and universities must exercise leadership in their communities and throughout society by modeling ways to eliminate global warming emissions, and by providing the knowledge and the educated graduates to achieve climate neutrality. Campuses that address the climate challenge by eliminating global warming emissions and by integrating sustainability into their curriculum will better serve their students and meet their social mandate to help create a thriving, ethical and civil society. We hope you will join us in supporting the American College & University Presidents Climate Commitment.

Sincerely,
The Signatories of the American College & University Presidents Climate Commitment
Intermediate Tangible Actions at Rice

Signatories must adopt at least 2 of the following 7 tangible actions to reduce greenhouse gas emissions within 2 years of signing the commitment:

- Green building policy, LEED-Silver minimum
- Energy Star Procurement Policy
- Air Travel Offsetting
- Provision of Public Transportation
- Green Power Production or Purchasing
- Climate-Friendly Investing
- Waste Minimization (through RecycleMania)
In Process…

Policies and Action

A committee is drafting a comprehensive energy policy for the campus. This committee has drafted a building temperature policy that is currently under review.

Another campus committee is leading energy conservation projects in various buildings.

Climate Action Plan

A class is updating Rice’s CO2 inventory and developing initial recommendations for a campus climate action plan.

This will feed into an energy master plan that will also include the climate plan.
Conducting an Emissions Inventory at Rice

**Scope 1 Emissions**

GHG emissions occurring from sources that are owned or controlled by the university, including:

- On-campus stationary combustion of fossil fuels: natural gas-fired cogeneration
- Mobile combustion of fossil fuels by university-owned/controlled vehicles: campus shuttle bus fleet
- Fugitive emissions, such as refrigerant leaks, or methane from university-owned farm animals: “De Minimis” emissions

**Scope 2 Emissions**

Indirect emissions generated from the production of electricity consumed by the university: electricity purchases from Reliant Energy

**Scope 3 Emissions**

All other indirect emissions, including those from commuting, university air travel, and solid waste disposal.
### Rice Carbon Footprint

#### CO2 in metric tons

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
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</thead>
<tbody>
<tr>
<td><strong>other</strong></td>
<td>1,578</td>
<td>372</td>
<td>372</td>
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<tr>
<td><strong>transportation</strong></td>
<td>15,300</td>
<td>17,350</td>
<td>17,350</td>
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<tr>
<td><strong>natural gas</strong></td>
<td>28,484</td>
<td>28,882</td>
<td>30,627</td>
</tr>
<tr>
<td><strong>electricity</strong></td>
<td>30,627</td>
<td>59,498</td>
<td>52,879</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>75,989</td>
<td>106,102</td>
<td>101,228</td>
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</table>

Sources: UNIV 303, 1999; CHBE/ENST 281, 2007
Energy at Rice

Sources
- Coal
- Natural Gas
- Nuclear
- Wind

Delivery
- Reliant Energy: Electricity
  - CenterPoint Energy: Natural Gas

Central Plant
- Rice Power Grid
- Rice Cogeneration
  - Rice Boilers

Campus Utilities
- Campus Electric Loads
  - Electric Chillers
  - Absorption Chillers
- Campus Chilled Water
- Campus Steam
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### Scenarios: Revising Transportation

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<thead>
<tr>
<th>Category</th>
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<tr>
<td>Fleet Vehicles</td>
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<td>Student Commuting</td>
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<tr>
<td>Faculty and Staff Commuting</td>
<td>6,308</td>
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<tr>
<td>Rice-sponsored air travel</td>
<td>7,778</td>
<td>7,778</td>
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<td>Transportation Total</td>
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Cost-saving or cost-neutral to Rice, assuming payback of about 5 years or less.
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The Rice Land Lumber Company: A Carbon Sink

Data
50,000 acres of slash pine
Trees harvested on approximately a 25-year cycle, with land reforested

Next steps
Model how much carbon is sequestered by these trees
Investigate the potential for offsetting Rice emissions with this asset
Study whether different management practices will increase sequestration
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- ????? sequestered

= Credit? Deficit?
Other Scenarios

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Other Rice-specific ideas

- Efficiency projects with 5 to 10-year payback
- More efficient fleet vehicles
- Waste/sewage to energy (fuel-switch for natural gas?)
- On-site renewables
- Create biochar from campus wastes

Possible Non-Rice factors

- Improved fuel efficiency of airplanes
- Changes in capabilities / costs of efficient and clean technologies
- Regulation (e.g. carbon tax)
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On January 31st 2008, more than 1,000 colleges & universities are holding teach-ins and political forums on “Global Warming Solutions” The event will engage 1 million students with decision-makers on global warming policy.

**Co₂ Forum & Sustainability Fair**
Hosted by the
Center for the Study of Environment & Society

**Guest Speakers**
- **David Leebron**  Rice President
- **Bill White**  Mayor of Houston
- **Dominique Raynaud**  IPCC Climatologist
- **John Hofmeister**  President Shell USA
- **Neal Lane**  Science Adviser to Bill Clinton

**When:** Thursday, January 31, 2008
**Where:** Rice Memorial Center
6100 Main St., Houston, Texas, 77005
**Forum** 7:00 – 9:30 pm in the Grand Hall
**Fair** 4:00 – 07:00 pm  throughout the RMC

**Questions?**  cses@rice.edu  - 713-348-5736
http://sustainability.rice.edu

**For information on visitor parking** visit  www.rice.edu/maps
The closest parking can be found in the Jones School parking garage.
SOLAR DECAUTLON
A DESIGN COMPETITION FOR HOMES
POWERED BY THE SUN
Ze-Row: The Zero Energy Row House
Feel free to contact me at:
(713) 348-5003
sustainability@rice.edu

Have a look at:
http://sustainability.rice.edu