Be a Part of the Solution

Student Greenhouse Gas Solutions at Rutgers

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Historical Context

Fall 2019

Students Climate Strike
President Barchi announces “he would support the students demand for Rutgers to reach zero carbon emissions by 2030”

Presidents task force on Carbon Neutrality and Climate Resilience Formed
Pre-planning report 2/3/2020
Interim report 7/13/2020
Historical Context

Rutgers Energy Institute

Discussed ideas of using Rutgers as a “living lab” for students to understand sustainable energy production and consumption transitions.
Advancing a Climate Action Plan through Undergraduate Research

Addressing the Problem

Coordinating the Students

Communicating the Results

01

02

03
Addressing the Problem

**Fast Timeline**
Put the date of creation of task force and date of intended climate plan, compare to the timeline other schools could follow.

**Student Availability**
With the onset of covid-19, many students were left with cancelled summer internships and programs. Entire departments of students needed experiential learning credits.

**Low Resources**
Include some of the tasks needed from the different working groups, and talk about how budgets were cut because of covid.
Research Needed for Climate Action Plan

Work Needed

WG 2: Transportation

Assessing Potential Climate Solutions

1. Make recommendations for new initiatives for teaching, research, and university operations involving food systems and climate. The Working Group will identify gaps and opportunities at Rutgers for teaching and research in the area of food systems, and climate neutrality and resilience. This will include, but is not limited to:
   a. food waste reduction
   b. food recovery and potential benefits to local communities
   c. influencing student food choices in Dining Halls to reduce carbon footprint while also ensuring healthy eating
   d. anaerobic digestion and composting of food waste
   e. water quality and climate impacts
   f. sustainable food production
   g. food production on campus including technological innovation for urban food production and plant breeding opportunities
   h. food storage technologies to reduce energy for heating and cooling
   i. food-energy-water nexus
   j. local food system resiliency and economic opportunities
Addressing the Problem

Student Involvement

- 125 students expressed interest
- Evenly distributed across classes
- Interdisciplinary success!
Student Involvement: Broad Recruitment through Institute Faculty & Student Groups

No selection process

- Lower barriers to introduction to research
- Increase diversity of participants
- Larger number than expected
- 60 overall, 25 or so for credit
Coordinating the Students

Two different types of structures

More structured
- Mostly not-for-credit students
- Certain Number of self-reported hours per week
  - Specific tasks every week
    - 1 cr. – 6 hrs.
    - 2 cr. – 12 hrs.
    - 3 cr. – 18 hrs.

Students could choose for credit or not for credit

Less Structured
- 11 specialized groups
- Same self-reporting hours system
- No specific tasks or meeting times
- Some had faculty leaders - Xenia Morin, Mike Kornitas, Ahmed Aziz Ettat

Students could choose for credit or not for credit
Coordinating the Students

More structured

<table>
<thead>
<tr>
<th>Week July 27, 2020 and August 3, 2020</th>
<th>Tasks (work until you’ve met your hours – submit hours July 27th through August 7th)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Survey</strong></td>
<td>Take the revised survey for the Rutgers climate action plan baseline: <a href="https://rutgers.ca1.qualtrics.com/jfe/form/SV_8HBhguLviHpaM">https://rutgers.ca1.qualtrics.com/jfe/form/SV_8HBhguLviHpaM</a></td>
</tr>
<tr>
<td></td>
<td>If you have a comment on the revised survey where there is a typo, a not clear question, or a computer programming: <a href="https://docs.google.com/document/d/1UTtCwFbOntifJfjYhZ_b0AhwXTMs/">https://docs.google.com/document/d/1UTtCwFbOntifJfjYhZ_b0AhwXTMs/</a></td>
</tr>
<tr>
<td><strong>Food Greenhouse gas emissions</strong></td>
<td>Under resources for 7 27 2020 there are two excel spreadsheets. One has the emission factors for food – that is they tell you how much CO2e per kg of each kind of food (column E). One has the amounts of food Rutgers has purchased by pounds (so you will need to change those pounds to kg). Calculate CO2e the emissions from the foods Rutgers has purchased and upload those in an excel sheet in your dropbox.</td>
</tr>
</tbody>
</table>
Coordinating the Students

More structured

Power purchasing Agreements

a) Go to https://drive.google.com/drive/folders/1YITewvACbtaPwOvKQoWF3oIB0O_gw2zH?usp=sharing and find a campus plan that used power purchasing agreements.

b) Using the campus plans and other sources from the internet answer the questions in the “power purchasing agreement questions” document posted in sakai. Upload in the dropbox when you are done.
Coordinating the Students

Less Structured

- Analysis of administrative university travel records
- Analysis of switching to carbon-capturing concrete
- Analysis of Heat system electrification
- Analysis of Biking and Walking Infrastructure
- Analysis of Fleet Decarbonization
- Modeling and Analysis of Building Energy Data
- NJ Clean Energy building submissions
- Purchased Water Analysis
- Dining Hall Waste Assessment
- Getting Rutgers Buses on Google maps
- Cost-Benefit analysis of building energy solutions
Coordinating the Students

Less Structured

- Slack workspace was used to coordinate all projects
- Individual channels to put together specific projects
- General channels for everybody to collaborate
Communicating the Results

- Diversity of Interdisciplinary research
- Familiarity with new data sets
- Application to real life
- Feeling like a part of the Rutgers sustainability community
Communicating the Results

- Emphasis on visual displays of information
- Students learned to make infographics using Adobe software
- Food waste was used as the topic of interest
Communicating the Results

- Ties to Students for Environmental Awareness: Instagram as a method of distributing research
- This post summarizing the Rutgers pre-plan reached 292 students
- Used to refer back to and educate newcomers in the sustainability community
Communicating the Results

The use of social media to communicate findings in a visually appealing way

- Video made for a “Climate Action Week” breaking down Rutgers emissions
- Reached 212 accounts, watched by 115 individual people
What did Students Get Out of This?

- Interdisciplinary Applications
- Access to professors
- Handling real data
- Integration into sustainability community
- Real work with real impact!
Questions?
Questions for Audience Input

Ideas for organizing broad, large numbers in student research?

Ideas for sustainable funding mechanism so there is faculty time and funding for research?