

# Sprawleigh: Generating Sustainable Solutions for Urbanization Impacts A Case from Raleigh, North Carolina

## **The BIG Question**

Throughout the semester we have examined case studies that highlight some of the grand challenges we are facing in the environment, along with a multidisciplinary approach to working on solutions. However, we have only scratched the surface! Ensuring sustainable communities is fundamental to our future. As NC State students, you are empowered to propose a creative campus project for sustainability grant funding. For this assignment, your team will develop a proposal and a pitch for your idea. After completing the assignment, you can submit your proposal for funding next spring if you choose to. This is not mandatory for this course. However, we will be happy to help with feedback and write a letter of support. Sustainability Grants at NC State are student-driven initiatives and proposals will be reviewed and recommended for funding by the NC State Stewards.

## **Introduction**

Raleigh, the capital of North Carolina, is one of the fastest-growing cities in the nation with 143 square miles of land and an estimated population of 464,000 individuals (worldpopulationreview.com). When considering the greater Research Triangle area, which consists of Raleigh-Durham-Chapel Hill, the population estimates to approximately 2,037,430 (worldpopulationreview.com). In 2013, a [Forbes analysis](#) discovered that the Raleigh metropolitan area’s population increased by 47% between 2000 and 2012 (WRAL, 2013). In addition, Wake County, consisting of Raleigh, gains on average 40 individuals per day (wakegov.com), giving the city its label of “Sprawleigh” (Time, 2011).

The increase of urban sprawl and its environmental impacts have been highly studied by many researchers. Some of these impacts are discussed in Table 1.

Table 1: Environmental, social, and economic impacts from urbanization

<b>Environmental</b>	<b>Social</b>	<b>Economic</b>
<ul style="list-style-type: none"> <li>a. Loss of land and forests,</li> <li>b. greater air pollution,</li> <li>c. higher energy consumption,</li> <li>d. decreased aesthetic appeal,</li> <li>e. reduced species diversity,</li> <li>f. increased storm water runoff,</li> </ul>	<ul style="list-style-type: none"> <li>a. Degraded human health, including obesity, hypertension, respiratory problems (Ewing et al., 2003)</li> <li>b. High segregation between residential and commercial uses (Wheeler, 2006)</li> <li>c. Crowded schools</li> </ul>	<ul style="list-style-type: none"> <li>a. Increased development costs</li> <li>b. Inflated housing costs</li> <li>c. Increased commuting cost</li> <li>d. Increased public and private capital and operating costs (Burchell, 1997)</li> </ul>

<p>g. increased risk of flooding, h. and ecosystem fragmentation (Johnson, 2001)</p>	<p>d. Increased traffic congestion and traffic-related fatalities (Ewing et al., 2011) e. Greater segregation of residential development according to income (Wheeler, 2006)</p>	
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This emerging urban sprawl to the Raleigh metropolitan area calls upon local communities and institutions to seek innovative and sustainable solutions. One of Raleigh’s community leaders in sustainable efforts is North Carolina State University (NCSU). The University has developed a Sustainability Strategic Plan to engage its students, faculty, and staff to develop their own innovative solutions to campus sustainability problems and participate in conservation-minded practices. Through collaboration, education, and research, NCSU’s campus seeks solutions that lead to a more sustainable future. The Sustainability Strategic Plan that seeks to reduce greenhouse gases on campus by 25%, expand renewable energy efforts, reduce water consumption by 65%, and enhance storm water efforts to ensure water quality for the university. In addition, NCSU has committed that all new construction and major renovations over 20,000 square feet are at minimum LEED Silver Certified (NCSU Sustainability Strategic Plan, 2017).

**Learning Objectives:**

- a. In groups, generate a solution that addresses a sustainability problem on campus.
- b. Collaborate effectively with your team and campus partner(s).
- c. Use critical and creative thinking skills to research and design the project to the Campus Sustainability Plan.
- d. Create a team pitch to communicate your proposed plan.
- e. Use feedback received from team pitch to revise the grant proposal.

**Readings and Resources**

- a. **Sustainability Strategic Plan** - proposals that tie to the strategic plan and connect to its objectives and mission are more likely to be funded!
- b. **Sustainability Grant Proposal Form** – use this for your written proposal.
- c. **Sustainability Proposal Example from former student** - this document is to be used as a learning guide and template for writing a proposal. You are not to copy the wording or use the idea for your own proposal. Doing so will result in a zero for the assignment.

- d. **Grading Rubric-** Be familiar with the proposal rubric. This is how your instructor and peers will evaluate your work. You will receive feedback from your classmates on your in-class pitch presentations and should use your peer's suggestions for finalizing your final proposal.

**Schedule and due dates**

Assignment	Description of assignment
1st week introducing the case	Introduce the project and assign groups
<b>Team Checkpoint #1</b>	a. Top three ideas b. Reflection on choosing which topic to pursue
<b>Team Checkpoint #2</b>	a. Reflection of the experience with campus partner(s) b. Anticipated outcomes and impact section c. Project benchmarking and innovation
<b>Team Checkpoint #3</b>	a. Metrics for assessment, budget, and cost savings b. Project benchmarking and innovation c. Broader vision and project milestone d. Reflection on work completed so far
<b>In-Class Presentation Pitch + Peer Review</b>	Develop and make presentation pitch and student-student peer-review
<b>Final Grant Proposal</b>	Revise and combine Checkpoints #1, 2, 3, using peer and instructor feedback.

**Guidelines for Sustainability Grant Assignments**

**Checkpoint #1. Ideas generation**

Submit one memo per group. Discuss in 1 to 2 pages the following:

- a. Do you have a great idea for how to make NC State a more sustainable campus and community? **Discuss your top three ideas** of where you see a future for sustainability on NC State's campus. You might already have a great idea that you just need to research and develop or you might need to do some thinking. Here are a few places that might help your ideas:
1. An ENV 101 case study or issue we discussed sometime during the semester (e.g., environmental justice)
  2. The Sustainability Strategic Plan
  3. Past grant winners – on the Sustainability Office website
  4. In your communities (e.g., EcoVillage, WISE, or your student organization)
  5. A specific campus partner -- like Clean Energy Technology Center, Grounds and Facilities, Transportation, or Dining Facilities.
- b. Reflection write-up.

1. Brief summary of work completed and outline of next steps
2. Notes on challenges faced
3. Define overall scope of the project
4. How did you choose which topic to pursue?

**Checkpoint #2: Campus partner meeting, anticipated outcomes, and project benchmarking and innovation**

- a. **Campus partner meeting.** Set up a meeting with a representative to discuss your proposed idea. Prior to the meeting, brainstorm interview questions that will help you gain important information on your project. Consult with your campus partner to determine the following:
1. Is this project feasible?
  2. Is the project appropriate for NC State's campus?
  3. What additional steps will you need to take to successfully draft your grant proposal.

You should ask your campus partner for additional help to find resources for metrics for assessment, budget, and cost savings. In this section, write-up a brief summary of your experience with the campus partner, addressing the above three points (numbers i.-iii.)

- b. **Anticipated Outcomes and Impacts.** Write up an initial draft of the anticipated outcomes for your grant proposal. This section should address the following questions:
1. What outcomes do you anticipate?
  2. How will your project improve student life, infrastructure, education, outreach, operations, or other aspects of sustainability?
  3. How will you educate the campus community about your project?
- c. **Project Benchmarking and Innovation.** Write up an initial draft of the project benchmarking and innovation section of your grant proposal. This section should address the following questions:
1. Have similar projects been implemented on other campuses? What were their successes? Shortcomings?
  2. Why should this be done at NC State?
- d. **Reflection.**
1. Brief summary of work completed and outline of next steps
  2. Notes on challenges faced
  3. What assumptions did you have going into the meeting with your campus partner?
  4. What did you learn from your campus partner?
  5. How has your thinking changed (or been confirmed) based on your meeting with your campus partner?
  6. How did you prepare for your meeting?
  7. Is your project feasible? Is it appropriate for NC State's campus? Please explain.

### **Checkpoint #3: Metrics for assessment, budget and justification, cost savings, broader vision, and project milestones**

For this checkpoint, you will need to write up your metrics for assessment, budget and justification, cost savings, broader vision, and project milestones. This will most likely require some research and in-depth group discussion.

- a.
  1. **Metrics for Assessment:** How will you measure and evaluate your project's success?
  2. **Budget and Justification:** What is the total project budget? What is your plan for sustained funding? You will need to include a detailed budget in the form of a table that includes each of the following categories: personnel, supplies and materials, travel, and other. A template is shown in the Sustainability Grant Project Application (this document is also listed in this SESYNC package). Each item should have a corresponding paragraph for justification. (You can also get additional information on creating a budget from Harvard's College of Undergraduate Research and Fellowship page at <https://uraf.harvard.edu/budget-and-proposal-writing-tips>)
  3. **Cost Savings:** Will the project result in cost savings? If yes, what is the payback period?
- b. **Broader Vision:** This section should address the following questions:
  1. What potential does this project have for long-term benefits to the campus community?
  2. Is there potential for your project to be scaled for broader community application?
  3. As you are developing this project, how do you plan to sustain leadership of the project into the future?
- c. **Project Milestone:** Indicate your major project milestones including dates (month/year) of expected completion date.
- d. **Reflection.**
  1. Brief summary of work completed and outline of next steps
  2. Notes on challenges faces
  3. So far, was there a time when you realized you made incorrect or inappropriate assumptions? Describe your initial assumptions and how they have changed.
  4. What were some of the most interesting discoveries you made while researching your project? What surprised you the most?
  5. How did you choose which sources were appropriate for the budget?

### **Presentation Pitch**

Pitching your ideas gives you practice in articulating your ideas and convincing others. You will both give and receive feedback on the proposals, ask questions, and vote for your favorite. Your team should have slides for each part of your proposal (in **bold** font above) that will help you structure your pitch. Each team member should have a

speaking role, and be present the entire proposal. Be thorough, enthusiastic, and convincing! Maximum 10 minutes. We recommend practicing your pitch as a team *before* you arrive to class that day!

In addition to NCSU Critical Thinking Standards rubric (found under the “Grading rubric” section in this document), your presentation pitch will also be graded on the following:

<b>Grading criteria</b>	<b>3 pts</b>	<b>2 pts</b>	<b>1 pts</b>	<b>0 pts</b>
<b>Organization and flow</b>	Speakers present information in logical sequence in which the audience can follow. Students are well prepared for their speaking role and the presentation flows continuously	Speakers present information in logical sequence, but students are not prepared for their speaking role. Presentation flow is somewhat easily	Speakers present information somewhat in logical sequence, but transition between students is interrupted and disconnected	The presentation of information is very unorganized and inconsistent. It is difficult for the audience to follow the sequence. Speakers are not prepared for their speaking part
<b>Graphics and visual aids</b>	Speaker’s graphics, explain and reinforce screen text and presentation	Speaker’s graphics relate to text and presentation	Speaker occasionally uses graphics that rarely support text and presentation	Speaker uses superfluous graphics or no graphics
<b>Speaking</b>	All members of the team spoke during the presentation 3 pts		Not all members of the team had a speaking part 0 pts	
<b>Length</b>	1 minute less or over the 10-minute mark	3 minutes less or over the 10-minute mark	5 minutes less or over the 10-minute mark	7 minutes less or over the 10-minute mark

**Final Grant Proposal**

The Sustainability Fund Project Application is straightforward. Proposals should include a cover sheet and eight required sections (which you have already done via checkpoints!). Grant proposal sections *must* include:

- a. A Coversheet - make sure all team members are listed and that you have a title!
- b. Project Description (*you have not done this yet in your Checkpoints!*)
  - 1. The best proposals have a clear and detailed project description (1-2 pages). Your project description should provide a summary of your project with enough detail that reviewers will clearly understand your project goal(s), your approach, and how you expect your project will impact some aspect of sustainability on campus.
- c. Anticipated Outcomes and Impacts
- d. Project Budget and Justification
- e. Project Benchmarking and Innovation
- f. Metrics for Assessment
- g. Cost Savings
- h. Broader Vision
- i. Project Milestones

Great proposals also have enough research and depth to explain how the project will come together, all relevant pieces, and vision for how the project makes a difference. Grant proposals will be graded for writing, citations, completeness, and the following critical and creative standards: **Relevance, Clarity, Logic, Depth, Breadth, Fairness, and Flexibility and Adaptation**. You will have a chance to revise your proposals after you pitch them to your peers and must submit the final draft as outlined above.

**Grading Rubric**

	<b>3</b>	<b>2</b>	<b>1</b>	<b>0</b>
<b>Relevance (How does the solution help us with the issue?)</b>	Exceeds expectations. All or most relevant portions of the reflection are present, complete, and related to the scope of the question	Meets expectations. All or most relevant portions of the reflection are present, but not necessarily complete or related to the stated scope of the question	Below expectations. Many portions of the reflection are absent or not related to the stated scope	Not done or addressed
<b>Clarity (Is the topic</b>	Exceeds expectations.	Meets expectations.	Below expectations.	Not done or addressed

<b>elaborated further? Could students illustrate what they mean?)</b>	All or most parts of the reflection are presented in a manner that is clear	Some portions of the reflection are clear, but portions are unclear	Many portions of the reflection are presented in a manner that is unclear	
<b>Logic (Does all this make sense together? Does it follow from evidence?)</b>	Exceeds expectations. The conclusions stated follow logically from the data	Meets expectations. The overall report makes sense, but there are a few logical inconsistencies	Below expectations. The reflection has a significant or multiple logical flaws	Not done or addressed
<b>Depth (What are some of the complexities of the solution? What factors make this a difficult problem?)</b>	Exceeds expectations. The reflection explores complexities with appropriate depth	Meets expectations. Some complexities are explored in the reflection, but it would benefit from deeper exploration	Below expectations. The reflection only scratches the surface	Not done or addressed
<b>Breadth (Does the student look at this from another perspective?)</b>	Exceeds expectations. The scope of the report is appropriately bold and contains the important elements.	Meets expectations. Some adjustment in narrowing or broadening the scope is needed	Below expectations. The scope is either much too narrow or too broad	Not done or addressed
<b>Fairness (Are viewpoints of others represented?)</b>	Exceeds expectations. Alternate points of view/interpretations are appropriately considered	Meets expectations. Alternate interpretations are raised, but are given only partial consideration	Below expectations. Alternate interpretations are either not raised or discarded without consideration	Not done or addressed



<b>Flexibility and Adaptability (Did students adjust thinking to changes in the situation or context?)</b>	Exceeds expectations. The student is able to adapt to changes in context	Meets expectations. The student is able to adapt partially to changes in context and recognizes that a change in thinking strategy is called for	Below expectations. The student make a few adjustments in the face of change in context	Not done or addressed
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