A Competition for University Students

University students, can you solve…

The Environmental Challenge?

Florida Section A&WMA 55th Annual Conference
October 29 - 30, 2019
Tallahassee, Florida

PURPOSE

The Environmental Challenge gives student teams the opportunity to develop solutions to an environmental problem and present their solution to a panel of environmental professionals. We are very interested in hearing about how you interpreted the challenge, the issues you identified, your approach, how you arrived at the conclusions, and how well you can communicate and defend your thoughts and position. We want you to learn and have fun during the entire process! This exercise provides the professionals of tomorrow an opportunity to address one of Florida's most challenging issues while interacting with the professionals of today.

PROBLEM STATEMENT

Florida's sea level is rising and its costing tax payers billions of dollars. According to the National Oceanic and Atmospheric Administration (NOAA), Florida has 8,436 miles of ocean shoreline (3,341 miles on the Atlantic and 5,095 miles on the Gulf)[1]. Many residents live in coastal areas and beaches are a major reason that tourists flock to the state (tourism is the number 1 industry driving Florida's economy). Florida's more densely populated areas, such as the City of Miami and Broward County, have more readily available resources and are able to address rising sea levels more easily than less populated communities. Rural communities face daunting challenges with sea level rise because of a lack of resources.

The sea level around Florida is up to 8 inches higher than it was in 1950. The geology in Florida exacerbates the problem of saltwater intrusion, compromising our groundwater in many locations. Many traditional methods for shoreline erosion protection (like seawalls) that can also serve as a solution to address sea level rise and flooding don't work as well in Florida because groundwater can flow through limestone, up from below, and under seawalls. There are already over 100,000 properties at risk from frequent tidal flooding in Florida.

---

[1] Shoreline Mileage of the outer coast includes offshore islands, sounds, bays, rivers, and creeks to the head of tidewater or to a point where tidal waters narrow to a width of 100 feet (https://coast.noaa.gov/data/docs/states/shorelines.pdf).

Scientists are not certain how fast the sea level will rise. They expect water levels to continue to rise faster but are unsure at what rate. Scientists from NOAA and the US Army Corps of Engineers (USACE) have made sea level rise predictions that range from low to high, depending on future carbon emission scenarios. There's a lot at risk from sea level rise and flooding in Florida. When sea levels rise and water spills over into the streets, it puts not only homes and cars at risk, but can cause roads to be shut down and prevents access to important infrastructure like schools and hospitals. As sea level elevations rise, rising sea levels can wreak havoc on stormwater and sewage systems causing flooding and health hazards (https://sealevelrise.org/states/florida/).

In Southeast Florida, several counties joined forces in 2009 to create the Southeast Florida Regional Climate Change Compact to discuss challenges and strategies for responding to the impacts of climate change. The Compact outlines ongoing collaborative efforts among the Compact Counties to foster sustainability and climate resilience at a regional scale. This group developed the Regional Climate Action Plan (RCAP) which is the Compact's guiding tool for coordinated climate action in Southeast Florida to reduce greenhouse gas emissions and build climate resilience. The RCAP provides a set of recommendations, guidelines for implementation, and shared best practices for local entities to implement to foster compatibility within the region. Their website is a good resource for evaluating ideas to improve resiliency for coastal communities (http://southeastfloridaclimatecompact.org/).

The Florida Department of Environmental Protection (FDEP) is committed to helping identify resources to prepare Florida's coastal communities and habitats for the effects of climate change, especially rising sea levels. Through the Florida Resilient Coastlines Program, FDEP continues its efforts to ensure collaboration among Florida's coastal communities and to offer technical assistance and funding to coastal communities dealing with increasingly complex flooding, erosion and habitat shifts. Visit their website to learn more and to access valuable resources (https://floridadep.gov/rcp/florida-resilient-coastlines-program/content/resilience-resources).

ASSIGNMENT

Your team is responding to a Request for Proposal (RFP) from the FDEP Office of Resilience and Coastal Protection. The RFP requires that your team evaluate the resiliency of a rural coastal community that you select and develop ideas to improve resiliency to sea level rise. The community must have a population of less than 2,500. Your charge is to prepare a proposal and potentially a presentation (if your team is selected to continue on to the next round) to convince the Selection Committee that your community should be selected for potential funding of resiliency and adaptation measures. Your team has been tasked with addressing the problem

statement above in a clear and concise manner. If you are selected for a presentation, your team will be presenting in a public forum to the members of the Selection Committee.

Overview

Resilience has been defined by 100 Resilient Cities as "the capacity of individuals, communities, institutions, businesses, and systems within a city to survive, adapt, and grow, no matter what kinds of chronic stresses and acute shocks they experience." There are seven qualities that characterize resilient cities and allow them to withstand, respond to, and adapt more readily to shocks and stresses. These qualities include: (1) reflective; (2) resourceful; (3) robust; (4) redundant; (5) flexible; (6) inclusive; and (7) integrated (http://www.100resilientcities.org/). The USACE looks at resilience as four key actions: prepare, absorb, recover, and adapt. Coastal flooding and sea level rise can be viewed as chronic stressors to coastal communities. NOAA's Sea Level Rise Viewer (https://coast.noaa.gov/digitalcoast/tools/slr) and Flood IQ (https://floodiq.com/) are tools that can be utilized to evaluate sea level rise. These mapping tools can be used to visualize impacts to communities from coastal flooding or sea level rise.

Scope of Work

Identify a coastal city within Florida with less than 2,500 residents that will likely be impacted by sea level rise between now and 2100.

1. *What are the top five stressors that the community faces today?*
2. *What is the anticipated sea level rise for this community? Evaluate the change in inundation by decade until 2100. You can use the tools mentioned above or use another scientific tool to evaluate the change in sea level rise.*
3. *Evaluate the vulnerability of physical features of importance to the community. These could include roadways to and from and within the community, schools, emergency shelters, hospitals, water and wastewater treatment plants, landfills, evacuation routes, power plants, historic structures, and marine facilities. Evaluate the vulnerability of natural resources. Also evaluate impacts to residential neighborhoods and commercial/industrial establishments. Identify economic drivers in the community and evaluate how you will protect those economic drivers in response to sea level rise.*
4. *Select seven ideas that the community should consider to reduce risks of rising sea levels and erosion or adapt to rising sea levels and flooding. These ideas can include specific changes in policy and planning, building infrastructure, public outreach, or a multitude of other options. Consider implementation of living shorelines as one of the seven ideas.*
5. *Prepare a timeline for implementation of the ideas developed in 4 above, identify resources needed and develop a budget for each of those ideas.*

Each project team must develop a proposal that includes approach and strategies. If selected for the short list, your team must then present its proposal at the AWMA conference in a venue simulating a presentation to the Selection Committee in a public forum. You can use PowerPoint, storyboards, or other means to present your arguments. As noted above, the environmental challenge will simulate the public forum environment and a number of parties (both pro and con) are likely to be present.

EXPECTATIONS

Clarity of vision and logic of presentation are critical. Remember you can come up with assumptions, but they need to be able to pass the straight face test. This is effectively the real world! We have the following expectations with regard to both your Proposal and Presentation.

PROPOSAL

The proposal is limited to eight 8 x 11 pages (not including the cover page) and must be 12 font and 1.1 spacing. Not meeting these requirements will negatively impact your scoring. Teams should be comprised of three to five individuals. Everyone should have a primary role in the research of the issues and proposed solutions. The Proposal should identify all team members by name and assumed project roles (e.g., specialty areas may include public policy, planning, public relations/communications, engineering, financial analyst, attorney, etc.). The proposals should include:

- Problem Statement
- Methods
- Resources
- Proposed Solutions/Strategies
- Conclusions

Persuasive and concise writing is critical to address the issues within the page limit.

The Proposal **submittal deadline is midnight EST, October 7th, 2019**, and shall be submitted to flawmaeci@gmail.com. Proposal quality will factor into competition judging.

PRESENTATION

Depending on the number of proposals submitted, all teams may not be selected to move on to the next round. If your team is selected to present, your team will need to demonstrate your understanding of the topic presented in your proposal. Your presentation may be a more advanced development of the ideas presented in your proposal. While faculty guidance may be sought, you must present an approach based on your own research and work. Winning will hinge on approach, clarity, and creativity.

Presentations will be held on **Tuesday, October 29th (9:00 – 10:30am).** A final schedule of the team presentation order will be prepared once the total number of teams competing is known. Be present at least 20 minutes prior to meeting. A projector and laptop (with Microsoft Power Point) will be provided. Please bring a flash drive (memory stick) so your presentation can be loaded onto the laptop. We currently anticipate that you will be allowed 15 minutes for your presentation. After your presentation, you must be available for 10-15 minutes to answer questions related to your topic and presentation. The details on the timing and the exact time allotted for your presentation will depend on the number of teams that submit and time available. This information will be provided after proposals are received.

The Challenge Event at the AWMA Conference

Selected teams will make the presentation in a public forum. The range of interests of the expected attendees are varied. Your team should be capable to make persuasive technical arguments to support your positions. Your team can build its arguments using all means available. Given your team is comprised of various specialists, the team should confer and ensure that all its arguments are sound.

Presentation Guidelines and Tips:

- The Selection Committee may include representatives from the private sector, individuals from not-for-profit associations (e.g., the Audubon Society, the Coastal Conservation Association, etc.), the Florida Rural Water Association, the Florida Division of Emergency Management, Florida Sea Grant, or FDEP's Office of Resiliency and Coastal Protection. Your team is being considered to solve "real world" issues associated with the sea level rise in Florida.
- Your presentation needs to flow in a logical manner: present the issue, discuss the Scope of Work in a manner and order you choose, and provide solutions.
- Practice good presentation skills – if you use a PowerPoint presentation, do not read from the slides. Let them be a summary of what you present.
- Make sure presentation materials are legible, clear, and concise.
- Recognize other contributors to your team's efforts – other team members not present or mentors.
- All team members present should have a speaking part during the presentation.
- Come up with a game plan for answering questions.
- Clearly state the main points, assumptions, and conclusions.
- Provide a little background on the topic – don't assume the Selection Committee knows everything about the topic.

- If you had challenges completing the assignment, state what those were and how you addressed the challenges. If you made assumptions, please state those as well.
- Remember practice makes perfect! However, we aren't looking for perfection – we want each team to have fun and learn as much as you can about the topic you are exploring.
- Practice your timing and dress for success.

Please email questions regarding the assignment to: flawmaeci@gmail.com.
Significant questions and answers will be posted at http://flawma.org/.

CLIMATE CHANGE AND SEA LEVEL RISE INFORMATION - RESOURCES

https://coast.noaa.gov/data/docs/states/shorelines.pdf
http://flawma.org/
https://www.epa.gov/smartgrowth/smart-growth-small-towns-and-rural-communities
https://www.usgs.gov/centers/whcmsc/science/national-assessment-coastal-vulnerability-sea-level-rise?qt-science_center_objects=0#qt-science_center_objects
https://sealevelrise.org/
https://www.publications.usace.army.mil/Portals/76/Publications/EngineerPamphlets/EP_1100-1-2.pdf?ver=2017-11-02-082317-943
http://southeastfloridaclimatecompact.org/wp-content/uploads/2014/09/vulnerability-assessment.pdf
https://www.frwa.net/uploads/4/2/3/5/42359811/epafloodresilienceguide.pdf
https://floridadep.gov/rcp/florida-resilient-coastlines-program/content/resilience-resources
https://www.flseagrant.org/