Summary Points:

Coastal communities face tough decisions about how to manage flooding risks associated with rising seas and extreme rain events. Two project teams have developed an innovative planning tool that allows community leaders and residents to make sense of local climate projections and experiment with collaborative decision making in a safe environment.

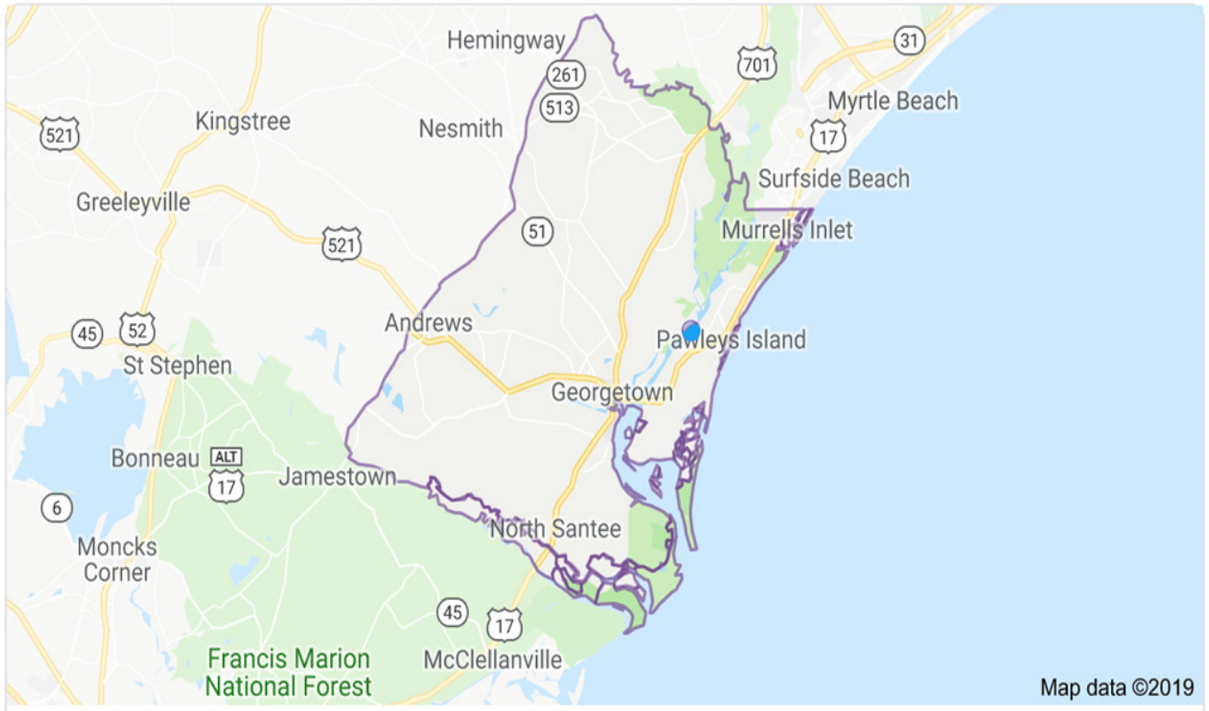
The New England Climate Adaptation Project tested the use of role-play simulations, or "games," to engage community members in climate adaptation planning. In a structured workshop setting, participants receive background information describing a fictional place - typically with a striking resemblance to their own - and must assume a fictional role in which they work collaboratively to prioritize actions that help the community manage climate risks. Following the framework developed in New England, the Georgetown Climate Adaptation Project produced a customized set of local climate projections and role playing materials for the coastal southeast. In this webinar, presenters discussed lessons learned from planning and leading simulation workshops in two different coastal regions.

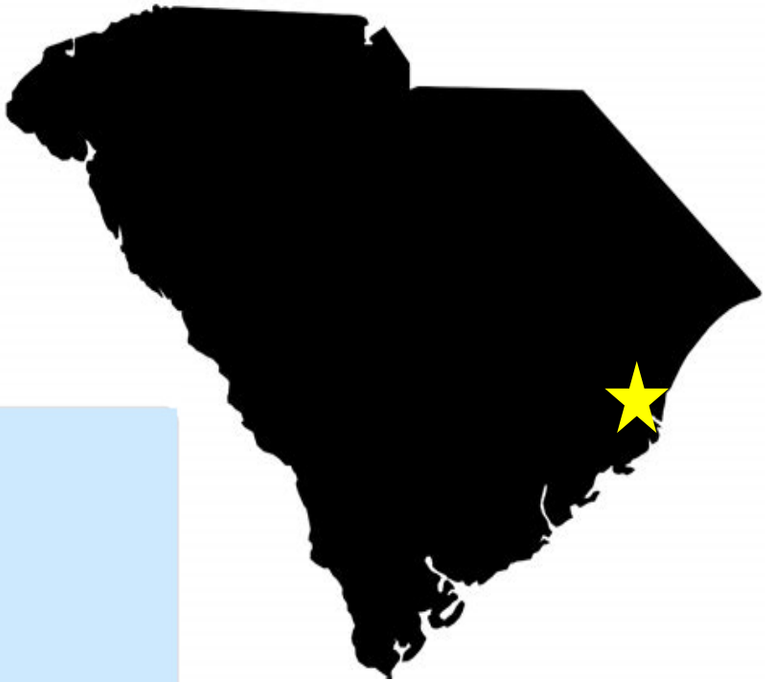
Transferring Climate Adaptation Knowledge and Tools from New England to Georgetown, South Carolina

Summary Points:

Maeve Snyder is the Coastal Training Program Coordinator at the North Inlet – Winyah Bay National Estuarine Research Reserve. In this role, she supports science-based decision making through tools, skills, information, and partnerships. Maeve earned a M.S. in Biological Sciences from the University of South Carolina and a B.S. in Biology from Coastal Carolina University. Maeve has experience in ecological research, including a thesis on climate - driven range shifts of marine organisms. She has also worked in science communication and education throughout the coastal southeast.

Georgetown County, South Carolina





Summary Points:

This project transferred climate adaptation knowledge and tools from the New England Climate Adaptation Project (NECAP) to Georgetown.

Georgetown is located between Charleston and Myrtle Beach, two major centers of population growth and economic development. It consists of many distinct communities, including industrial and rural areas inland and an affluent, coastal peninsular area created by a major river.

These distinct communities create diversity, but can also create points of contention around planning for issues such as climate.

Georgetown County, South Carolina

Summary Points:

Georgetown County is dominated by water, which has a large impact on inhabitants' way of life.

The North Inlet-Winyah Bay Reserve contains two distinct estuaries:

- North Inlet estuary, which is dominated by salt marsh creeks; and
- Winyah Bay, which is a river-dominated estuary with the third largest watershed on the East coast.

As living with water is a major aspect of life in the area, impacts on the wateshed produce direct effects on Georgetown county.

Summary Points:

The earliest inhabitants of Georgetown were indigenous people. During European colonization, enslaved Africans altered the landscape to support rice cultivation, which drove economic growth in the area.

After the civil war, rice cultivation declined and other industries developed in Georgetown, such as steel, paper, and timber.

More recently, Georgetown has been defined by four consecutive years of extreme weather events, including hurricanes and flooding. Several years of storms have elevated community concerns around climate issues.

RCE Georgetown

Georgetown RISE

Advancing Resilience, Innovation, Sustainability and Education in Georgetown County

A REGIONAL CENTRE OF EXPERTISE (RCE) ON EDUCATION FOR SUSTAINABLE DEVELOPMENT

North Inlet – Winyah Bay National Estuarine Research Reserve

Coastal Carolina University

RCE Regional Centre of Expertise on Education for Sustainable Development

Acknowledged by

United Nations University

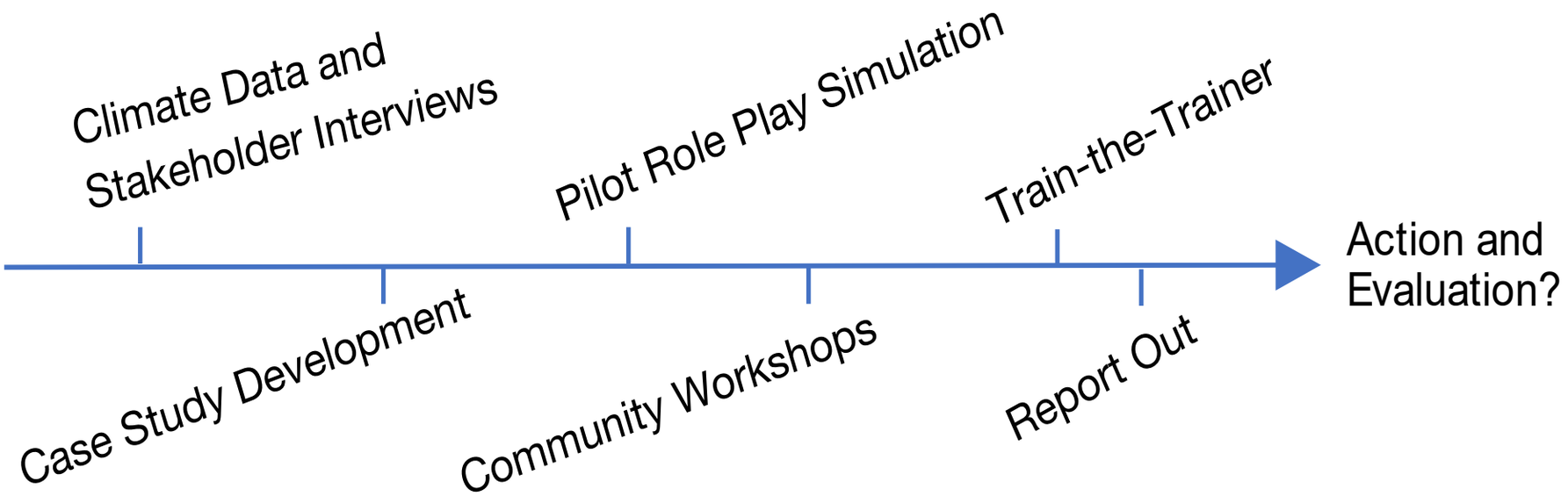
Georgetown RISE

Summary Points:

In 2017, Georgetown was designated a United Nations Regional Centre of Expertise on Education for Sustainable Development.

Locally, collaborators refer to the initiative as Advancing Resilience, Innovation, Sustainability and Education in Georgetown County, or Georgetown RISE. The network of organizations focuses on sustainable development issues.

Collaborators on the project team recognized RISE as a good network to convene people for discussions and as a vehicle for applying the role playing methodology transferred from NECAP.



Summary Points:

Prior to developing simulations for Georgetown, the team ran through the New England case studies with interested county members. Participant feedback overwhelmingly indicated that Georgetown needed similar exercises for their own region to facilitate conversations and practice dialogues, but that New England's case studies were not representative of conditions in Georgetown.

Wanting to follow an evidence-based approach, the project team gathered relevant climate data from Georgetown county and conducted stakeholder interviews to develop a representative planning group for the area.

They used the information to develop a role play case study and piloted it with community members to solicit feedback before launching the simulations in community workshops.

The team also held train-the-trainer workshops designed to prepare potential workshop facilitators from North Carolina to parts of Florida.

As part of the community workshops, the team conducted surveys and used participant feedback to report out to local elected officials and stakeholders who initially supported the project.

INDICATOR	HISTORICAL (1976-2005)		PROJECTED Short term (2010-2039)	Medium term (2040-2069)	Long term (2070-2099)
Temperature (degrees Fahrenheit)					
Average annual minimum	54.1		55.9	58.1	60.9
Average winter minimum	37.8		39.3	41.2	43.6
Average summer minimum	70.5		72.5	74.9	77.8
Average annual maximum	75.9		77.6	80.0	82.8
Average winter maximum	60.3		61.8	63.7	66.0
Average summer maximum	90.0		91.8	94.4	97.7
Temperature Extreme (days per year)					
colder than 28 °F (daily minimum)	19.6		14.7	10.1	5.6
hotter than 100 °F (daily maximum)	2.1		4.1	11.6	32.2
Precipitation (inches)					
Average annual precipitation	51.5		53.3	53.8	53.9
Average winter precipitation	10.8		11.0	11.5	11.6
Average summer precipitation	17.1		17.5	17.6	16.7
Storms (events per year)					
1" in 24 hours	10.4		11.3	11.6	12.1
2" in 48 hours	6.5		7.4	8.1	8.7
Storms (events per decade)					
4" in 48 hours	6.8		8.9	9.5	11.4
Sea Level Rise (feet)					
amount of increase over what the sea level was in the year 2000			between 1.9 and 2.13	between 3.58 and 4.3	between 8.66 and 10.6

Down-scaled Climate Projection Data

CISA
Carolinas Integrated Sciences and Assessments
A NOAA RISA TEAM

FACULTY AND STAFF

Gregory J. Carbone

Title: Professor
Department: Geography, College of Arts and Sciences
Email: greg.carbone@sc.edu
Phone: 803-777-0682
Office: Callcott, Room 327-B
Resources: Curriculum Vitae [pdf], Department of Geography

FACULTY AND STAFF

Kirstin Dow

Title: Carolina Trustees Professor, Lead Investigator, Carolinas Integrated Sciences and Assessments (CISA)
Department: Geography, College of Arts and Sciences
Email: KDow@sc.edu
Phone: 803-777-2482
Office: Callcott, Room 325
Resources: Curriculum Vitae [pdf], School of the Earth, Ocean and Environment, Department of Geography

Summary Points:

In order to enable workshop participants to practice making decisions based on a clear sense of future climate conditions, the project team worked with climate geographers from Carolinas Integrated Sciences and Assessments (CISA) to provide the best available projection data for Georgetown's climate variables.

INDICATOR (temperature)	HISTORICAL (1976-2005)		PROJECTED Short term (2010-2039)	Medium term (2040-2069)	Long term (2070-2099)
Average summer minimum	70.5		72.5	74.9	77.8

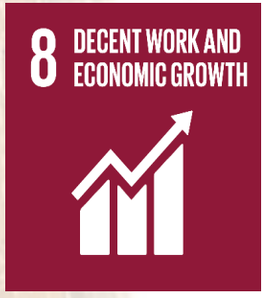
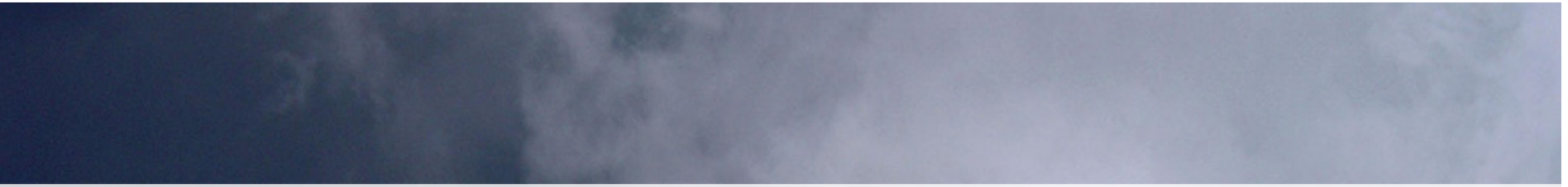


Photo by St. Mattox from FreeImages

Summary Points:

This slide shows an example of the interpretation work that the project team completed with participants. Pairing these variables with United Nations Sustainable Development Goals allowed the project team to extrapolate to potential impacts of a given variable on specific aspects of everyday life.

In this example, the climate variable is the average temperature of a summer night. Based on predictions, increased night temperatures would have an effect on public health and well-being, and increased energy costs associated with temperature regulation would likely inhibit economic growth.

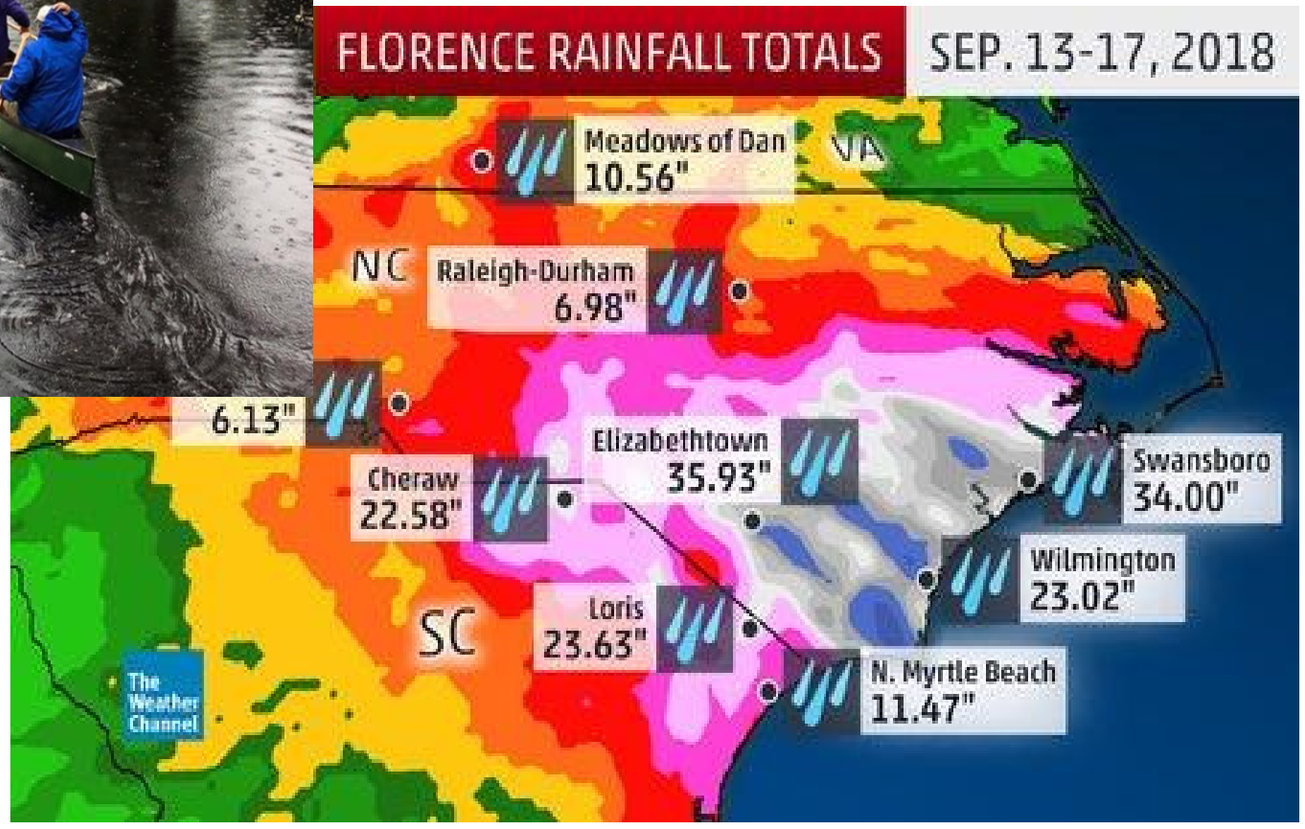


INDICATOR (events per decade)	HISTORICAL (1976-2005)		PROJECTED Short term (2010-2039)	Medium term (2040-2069)	Long term (2070-2099)
Storms greater than 4'' in 48 hours	6.8		8.9	9.5	11.4

Photo by Felipe Razera from FreeImages

Summary Points:

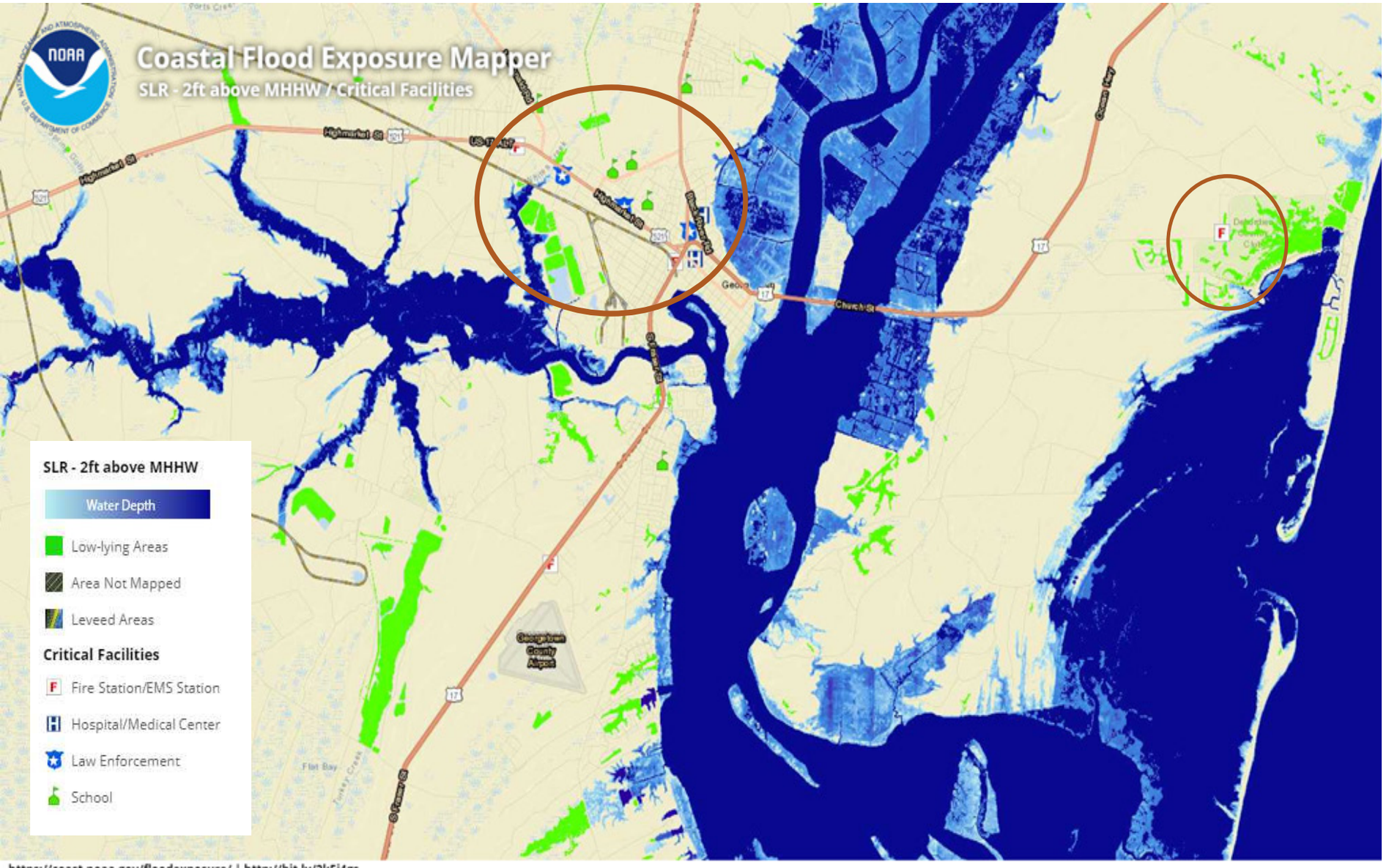
Another example is the frequency of intense storms, which is expected to increase. Increased flooding from these intense storms negatively impacts industry and infrastructure, which in turn has a negative effect on economic growth and community sustainability.



Summary Points:

Participants came to workshops with existing perceptions from personal experiences with storms and flooding.

In some cases, delayed effects from flooding can still occur due to the size of the watershed. The images on the slide highlight the delayed impacts of flooding observed following Hurricane Florence. Although the storm had less immediate impact on Georgetown than predicted, the county still experienced severe flooding in the days following the hurricane.



Summary Points:

Sea level rise is a chronic issue in the Georgetown community. The Coastal Flood Exposure map on the slide shows which areas in Georgetown would be under water in the event that sea levels rose 2 feet above MHHW. The areas in the orange circles show critical pieces of infrastructure, including fire departments and schools, that are located in vulnerable sites in Georgetown.

Reading this map:

- **Mean High Higher Water (MHHW)**: The average height of the highest tide recorded at a tide station each day during the recording period.
- Green-shaded locations represent low-lying areas that become more vulnerable as sea levels continue to rise.

Community Planning

Consensus Based Decision Making

CBI
CATALYZING COLLABORATION

"It looks like we have a consensus."

Summary Points:

The project approach is grounded in consensus-based decision making. To that end, the project team worked with Carri Hulet, a professional in role play development from the Consensus Building Institute, to craft the role-playing simulations based on stakeholder data and local county issues.

Terminology:

- **Consensus-based decision making**: A group decision-making process in which group members develop, and agree to support, a decision in the best interest of the whole group or a common goal.

Role Play Simulations

Summary Points:

A **role-playing simulation** is an approach to preparing for situations that are either too dangerous or impractical to practice in real life. Examples of groups that utilize role-playing simulations are the military and medical personnel. By closely resembling the true conditions of various scenarios, role-playing simulations help prepare trainees to perform as well as possible when confronted by the real scenario.

The role-playing simulations developed for Georgetown County employed this approach for community planning discussions. By practicing in a lower-stakes, fictional scenario, community members are better able to empathize in real life planning discussions and have more productive conversations.

County Director of Sustainability

Gullah Geechee Small Business Owner/Artisan

Executive Director, Business Alliance

Scenario: ”Shovel-Ready” projects with community support are more likely to receive funding for implementation

Challenge: Reach consensus on top projects to prioritize

Home Owner/Local Resident

County Superintendent of Schools

Mayor of Rural, Inland Town

Summary Points:

This slide shows a sample simulation given during the role-playing workshops. Each participant is assigned one of the roles, either randomly or intentionally different from their real identity, and given the scenario prompt.

The group must then reach consensus on the top projects to prioritize given their stakeholder priorities and the guidance for the scenario.

Participants

- Over 300 participants engaged in role plays, pilot, and training!
- High school students to retirees, coastal to inland communities
- Plantersville, Andrews, Murrells Inlet, City of Georgetown, Coastal Carolina University, Waccamaw Neck
- Train the Trainer in Charleston – regional replication

Summary Points:

Th team held workshops in a number of different communities within the county, making sure to represent different demographic and geographic sections. They also attempted to encourage regional replication through train-the-trainer sessions in Charleston.

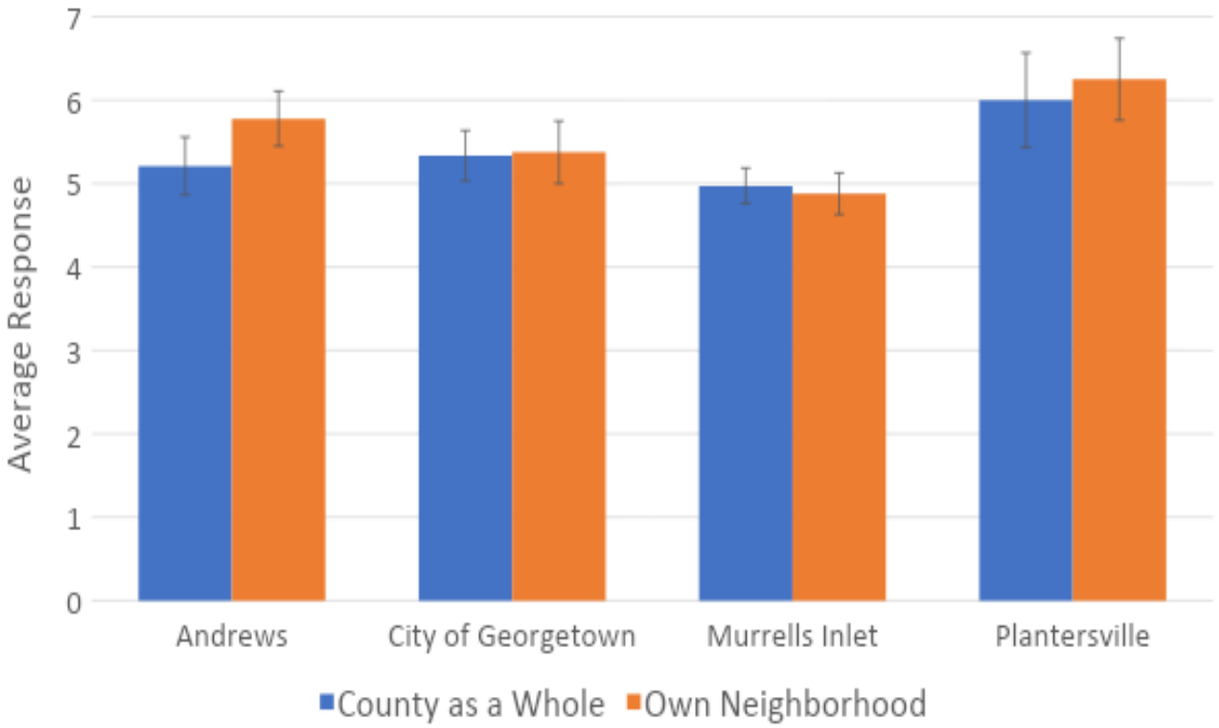
Summary Points:

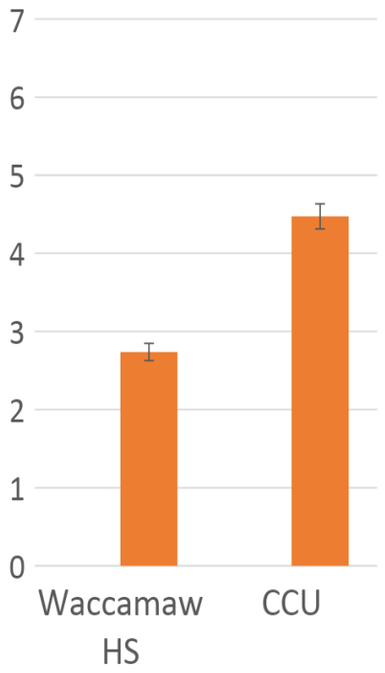
This photo: Community members in Murrells Inlet.

Summary Points:

This photo: Undergraduate students from Coastal Carolina University.

How concerned are you about climate impacts?



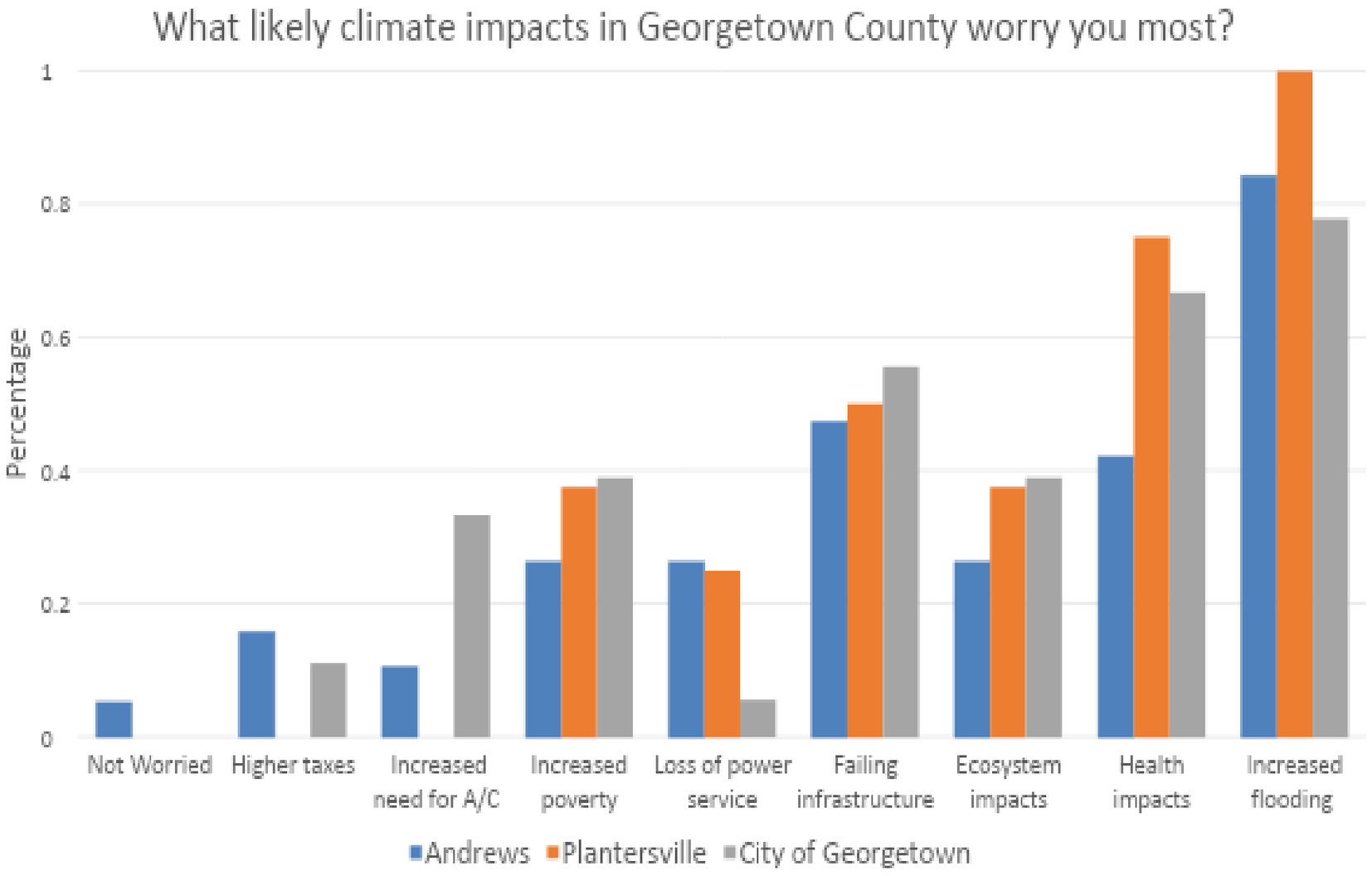


Summary Points:

The following three slides show some results from surveys given to participants.

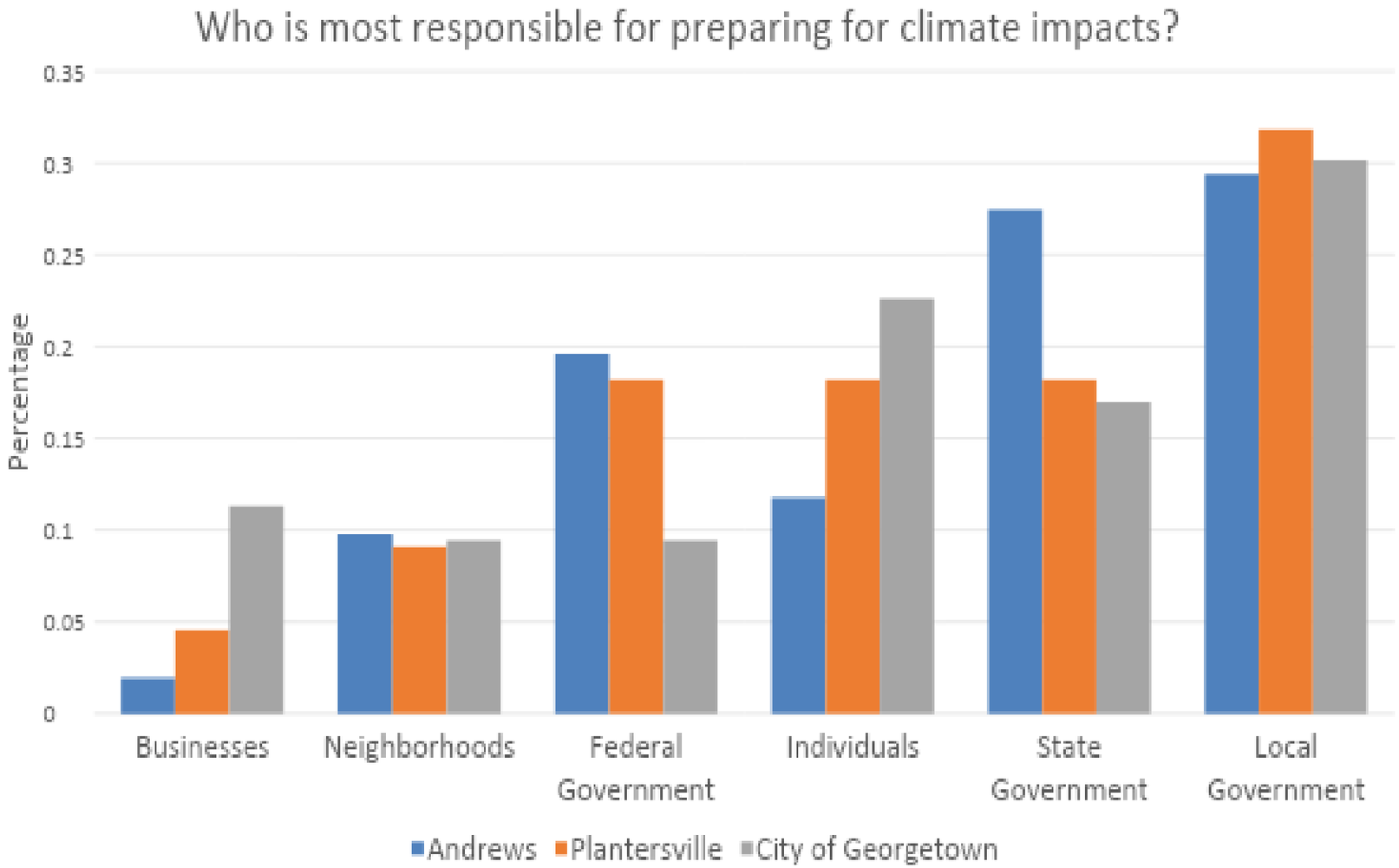
The graph on this slide shows results of a survey question asking respondents to indicate their level of concern about climate impacts on a scale from 1 to 7. Even in different communities across the county, residents expressed high levels of concern about climate impacts.

Notably, high school and college students showed significantly lower levels of concern. The team remarked that the result was interesting given the presence of youth in climate adaptation action, and that the responses do not match results from adults in the community.



Summary Points:

Survey respondents expressed a high degree of concern for increased flooding, health impacts, and failing infrastucture. Decisions made during the role-playing workshops supported these survey results as well, as participants largely prioritized solutions aimed at addressing those three concerns.

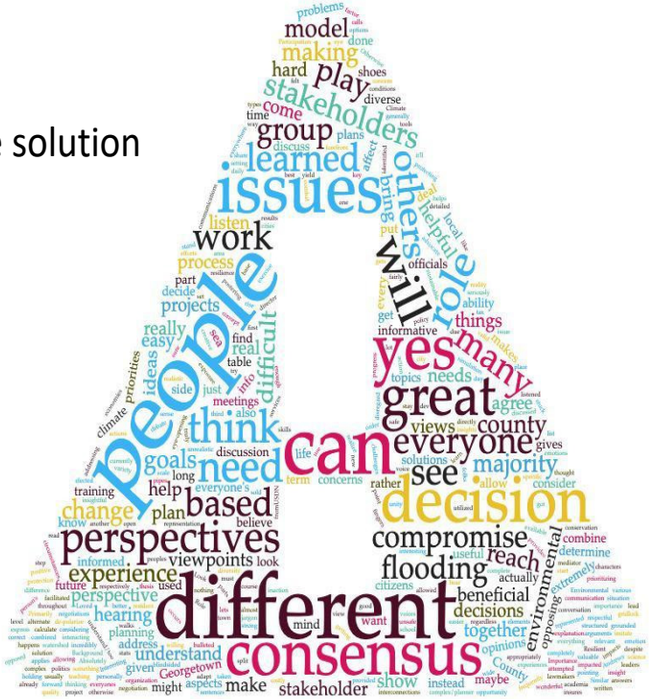


Summary Points:

The majority of survey respondents identified local government as the body they considered responsible for climate adaptation action.

In Their Own Words

- I learned to stop pointing fingers and see myself as part of the solution
- I learned I can advocate for things I don't agree with
- It is important to think about both short term and long term
- Important to bring all the stakeholders to the table
- It lets people learn and understand different perspectives
- [Role Play Simulations] with elected officials are a safe place to discuss ‘unsafe’ topics



Summary Points:

This slide shows some feedback from workshop participants following the role-playing simulations.

Summary Points:

Lessons learned:

- **Be sensitive to issues that participants might be facing**: The community workshop initially launched the same week that Hurricane Florence struck the coast, forcing the team to cancel many events so as to be considerate of community sentiment. The team felt it would be insensitive to ask people to simulate climate impacts while they were already experiencing them.

  This postponement did produce an unexpected opportunity to run the simulations with high school students - who were not a target audience in the initial planning - after a teacher read about the pilot project in the paper.

- **Information overload was a problem**: Depending on background knowledge and familiarity, many participants needed help filling knowledge gaps related to climate data, planning, and community roles in order to imagine themselves in climate planning scenarios.

Lessons Learned – Community Ambassadors

We are grateful to the communities of:

- The City of Georgetown
- Georgetown County
- The Town of Pawleys Island
- The Town of Andrews

Thank you to the following partners:

- The Frances P. Bunnelle Foundation
- The Village Group
- Murrells Inlet 2020
- Black River United Way

Summary Points:

Lessons learned, continued:

- **Value of community ambassadors**: Collaborating with trusted local partners provides opportunities to host events that may not otherwise be available.

Summary Points:

Recommendations

Community Task Forces:

- Specific recommendations for policy improvements, capital investments, open space/access opportunities and future studies
- Compete for future state and federal support for waterway improvements
- Create a resilience plan as part of the comprehensive planning process
- Produce scientifically-based maps and share information
- Provide informational sessions in flood zone areas

Questions:

Q: **How did you get people to participate in the role-playing simulations? Was it random? Was there any incentive?**

- **A**: Our main incentive was food, which usually works pretty well. We also advertised the events through as many different networks and contact lists as possible.

Q: **What kinds of people participated in the simulations? Did you have a mix of political ideologies, ages, or other interesting demographics?**

- **A**: Our demographics were largely representative of the communities where we held workshops. These types of public engagement opportunities are often dominated by retirees and people who have access to the information. Within some underserved communities we had great representation of age groups, different jobs and backgrounds. Bringing in high school students was great as well because the teachers were able to offer extra credit to have students attend the workshops. In one instance, a high school student was seated with the town Mayor and the two of them were working on a planning simulation together.

Q: **Did people get to vote for more than one impact?**

- **A**: They chose up to three. The surveys participants took are available online so you can see the results as well.

New England
Climate Adaptation PROJECT

MIT Science Impact Collaborative
Harmonizing Science, Politics, and Policy

Consensus Building Institute

University of New Hampshire

National Estuarine Research Reserve System

Funded by the NERRS Science Collaborative

Summary Points:

The New England Climate Adaptation Project began in 2012 as a collaboration between the Massachusetts Institute of technology, the Consensus Building Institute, University of New Hampshire, the four New England reserves, and four participating communities: Wells, Maine; Dover, New Hampshire; Barsntable, Massachusetts; and Cranston, Rhode Island.

Annie Cox is the Coastal Training Coordinator at the Wells National Estuarine Research Reserve. She develops and organizes workshops and trainings for professionals working with and making decisions that affect our natural resources. Annie holds a masters in Ecological Design from the Conway School. She became interested in land use planning issues during her Peace Corps service teaching sustainable agriculture and aquaculture in rural Zambia, where she served for two years. Annie's undergraduate degree is in Biology from the University of Maine at Farmington.

Summary Points:

Wells is located on the southern coast of Maine and has a population of approximately 10,000 year-round residents. Tourism is a major business in the town, with area beaches swelling the summer population to 40,000 in the summer months.

In addition to the Wells Reserve, Wells is also home to the Rachel Carson Wildlife Refuge. The town's barrier beaches and estuaries give it a unique ecological setting.

Summary Points:

Dover is located in southeast New Hampshire and has a population of around 30,000, making it the largest community in the New Hampshire coastal region. While only a portion of Dover is located in the estuary, tidal rivers run through the city. Approximately 10 percent of Dover residents live below the poverty line.

Photo provided by Town of Barnstable Growth Management Department

Summary Points:

Barnstable is home to approximately 45,000 year-round residents. It is the largest town on Cape Cod both in terms of size and population, and is comprised of seven villages.

While Barnstable has a somewhat diversified economy, tourism and maritime industry play major roles and are dependent upon the protection of the area's ecological resources, beaches, and coastal infrastructure. Their 170-mile coastline is vulnerable to sea level rise and damage from intense storms.

Cranston, RI

Photo credit: Michael, Flickr Creative Commons

Summary Points:

Cranston is located along Narragansett Bay and is part of the Providence Metropolitan area. With approximately 80,000 year-round residents, the economy is supported by small- and medium-sized businesses in industries such as retail, healthcare, social assistance, and professional scientific and technical services.

Riverine, forest, and marine ecosystems are found in the area.

New England
Climate Adaptation PROJECT

Project Goals:

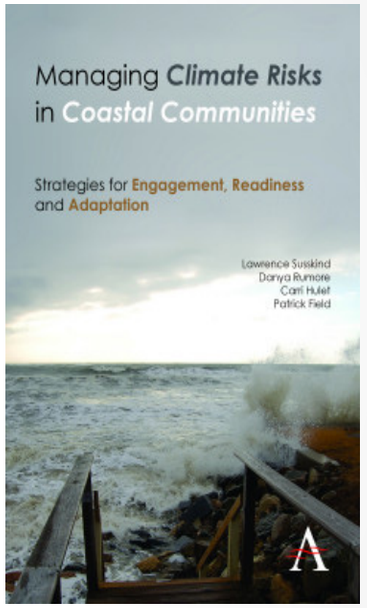
- Assess local climate change **risks**
- Identify key **barriers to** and **opportunities** for adaptation
- Test the use of role-play simulations as a tool for:
  - **Educating** and **engaging** the public about climate change adaptation
  - **Enhancing the "readiness"** of communities to collectively manage climate change risk

Summary Points:

As Maeve mentioned, role-playing simulation is an experiential learning exercise that asks participants to assume roles and imagine they are engaging in a decision-making process.

NECAP Work/Products

- Summary Risk Assessment
  - What are local climate change risks?
- Stakeholder Assessment
  - What do key stakeholders think about climate change risks and what, if anything, are they doing on this topic?
- Public Polls
  - What does the general public think about climate change risks and their town's role in building resilience?
- Role-Play Simulations
  - How can the local context and scientific information be built into an interactive game?
- Community Case Studies



- Publication: *Managing Climate Risks in Coastal Communities* 2015
  Lawrence Susskind, Danya Rumore, Carri Hulet,Patrick Field

All reports and materials available at: necap.mit.edu

Summary Points:

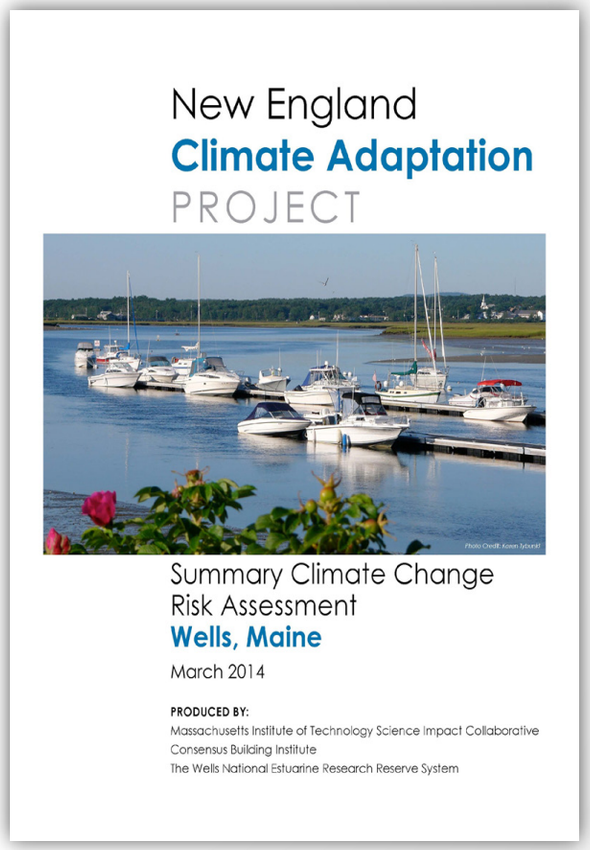
The NECAP team conducted polling before and after the role-playing simulations to gauge whether participation in the simulations drove any increases in community involvement and interest.

After the workshops, the project team compiled the summary risk assessments, stakeholder assessments, public polls, and role-play simulations into community case studies.

In 2015, the Consensus Building Institute published a book about the project process and results called *Managing Climate Risks in Coastal Communities*.

Summary Risk Assessments

- Local climate projections produced for each town
  - Precipitation, temperature, sea level rise, extreme weather events
  - Low-emissions and high-emissions scenarios
  - Short-, medium-, and long-term projections
- "Downscaled" using local meteorological data

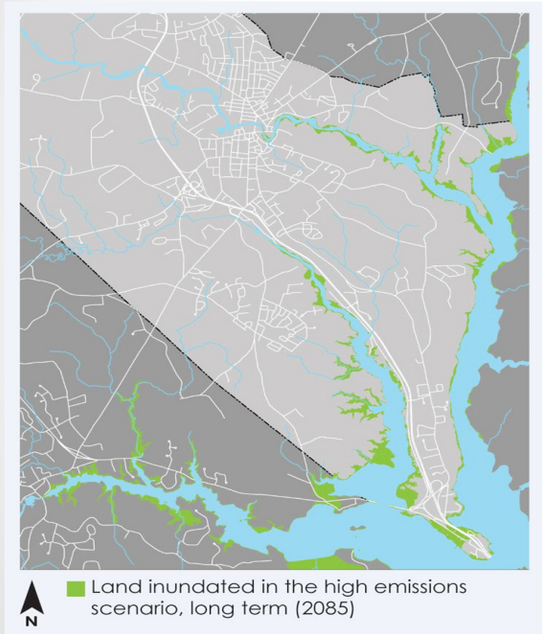


Summary Points:

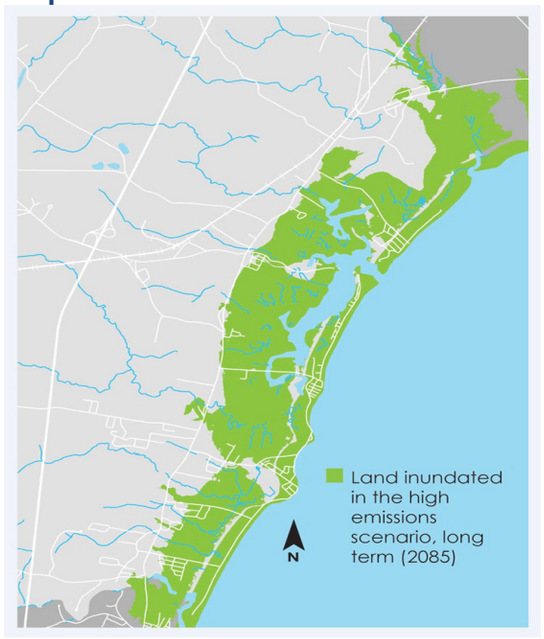
The summary risk assessments provided actionable and relevant climate information for each town, which served as a decision support tool with greater impact than the information available at the time.

Different Communities,

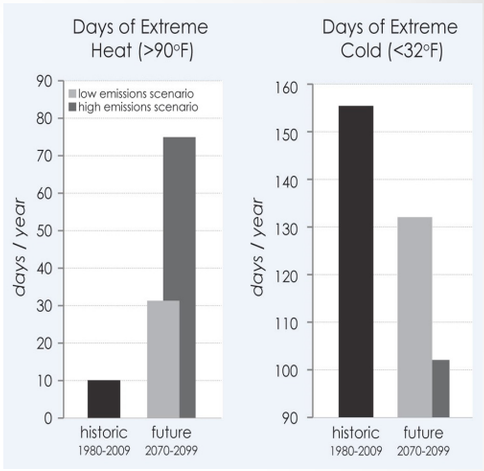
Different Impacts



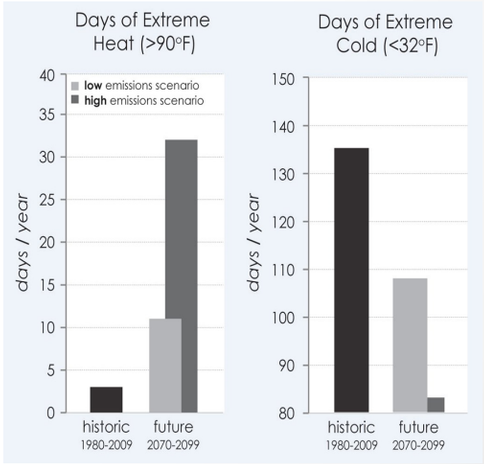
Dover Sea Level Rise



Wells Sea Level Rise



Dover Extreme Temperature



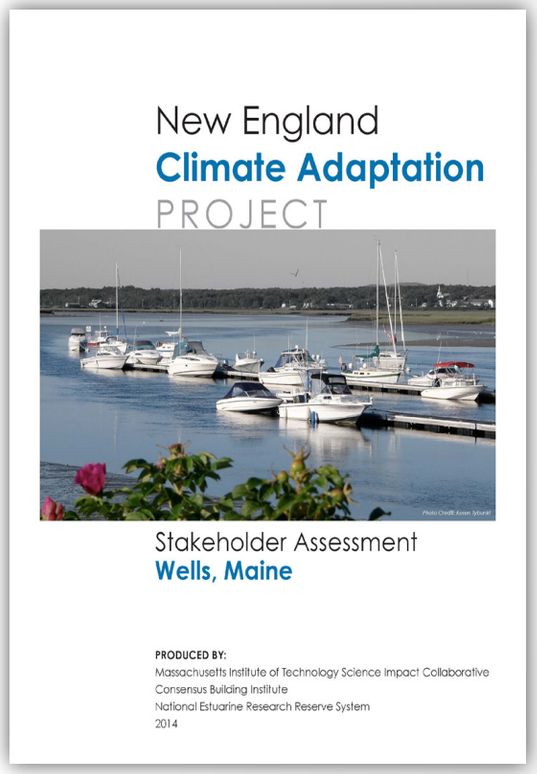
Cranston Extreme Temperature

Summary Points:

Climate change impacts for New England include increased precipitation, more extreme hot days, fewer cold days, and sea level rise. These trends fluctuated per community depending on factors such as elevation and proximity to the coasts.

Stakeholder Assessments

- Interviews with 15 to 20 stakeholder representatives
  - Town employees
  - Residents
  - Business owners
  - Civic groups
- Based on these interviews, the report identified:
  - Key threats
  - Impacts
  - Adaptation options
  - Obstacles to adaptation



Summary Points:

In every assessment, while attitudes within communities varied, residents expressed concern about climate change. Based on the interviews, the report identified:

- **Key threats** - Beach erosion, flooding, and stormwater.
- **Impacts** - Tourism, and destruction of private and public property.
- **Adaptation options** - Varied somewhat by community. For Wells, this included reducing vulnerability.
- **Obstacles to adaptation** - Lack of knowledge, disbelief, lack of finances, and lack of political will.

Climate Change Projections for Wells, ME (Change from Historical)

Indicators	Historical 1980-2009	Change from historical (+ or -)					
		Short Term 2010-2039		Medium Term 2040-2069		Long Term 2070-2099	
		Low Emissions	High Emissions	Low Emissions	High Emissions	Low Emissions	High Emissions
Temperature (F)							
Average annual minimum temperature	37.0	2.0	2.1	3.0	4.8	3.8	7.7
Average winter minimum temperature	16.5	2.9	3.0	4.0	5.9	5.0	9.4
Average summer minimum temperature	57.1	1.7	2.0	2.8	4.3	3.5	6.9
Average annual maximum temperature	55.6	2.1	2.1	3.4	5.1	4.3	8.5
Average winter maximum temperature	34.2	2.2	1.9	3.0	4.0	3.8	6.5
Average summer maximum temperature	76.5	2.5	2.7	4.4	6.7	5.4	10.8
Temperature Extreme *(days per year)*							
colder than 32 °F	147	-11	-11	-17	-30	-21	-47
hotter than 90 °F	4	2	4	8	21	11	45
Precipitation (in)							
Annual average	46.2	1.9	0.9	2.6	3.2	4.0	5.5
Winter average	10.2	1.2	1.3	1.8	1.7	2.5	3.7
Summer average	10.5	-0.9	-0.9	-0.7	-0.3	-1.5	-0.2
Extreme Precipitation *(events per year)*							
1" in 24 hrs	10.9	1.7	2.2	2.3	2.5	2.6	4.0
2" in 48 hours	4.6	2.2	2.1	2.9	3.4	3.6	5.2
Extreme Precipitation *(events per decade)*							
4" in 48 hours	9.0	0.4	-2.8	0.4	2.9	3.0	4.6
Sea Level Rise *(increase relative to the year in feet)*		0.5	0.8	1.0	1.7	2.0	4.7

Summary Points:

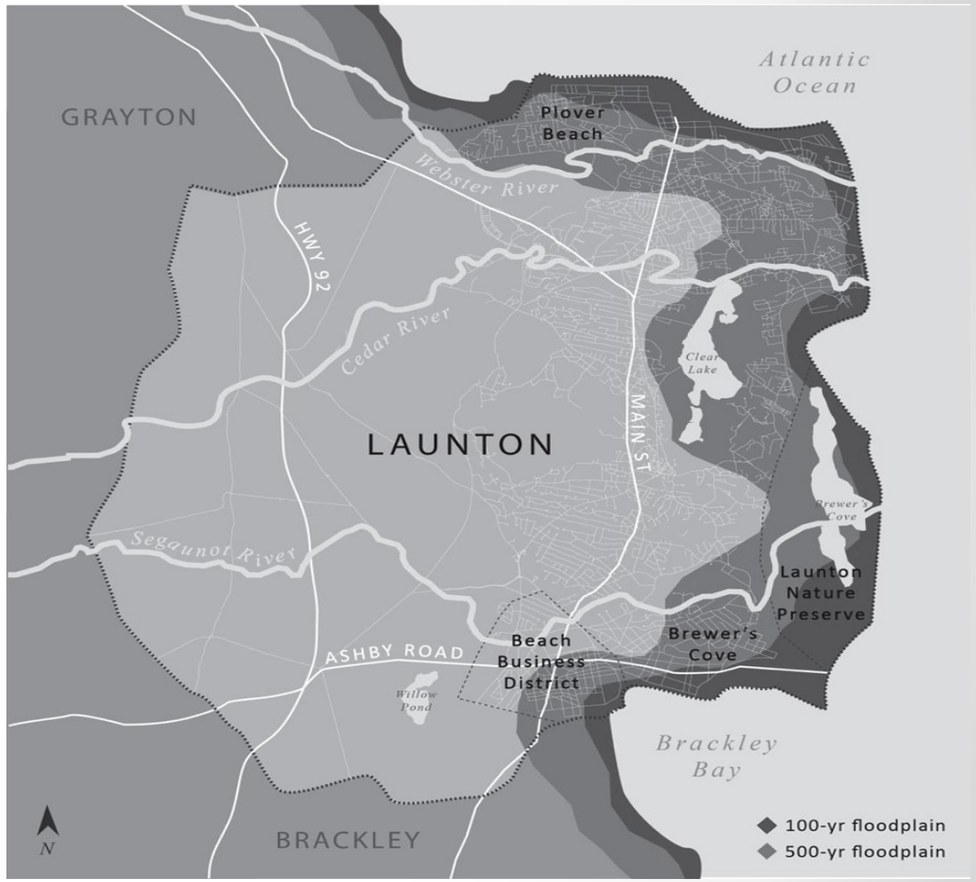
A major finding came during stakeholder interviews. The project team showed participants climate change projections based on local information.

The example on the slide is an example of climate projections that the project team shared with participants at Wells Reserve. Figures in the table showed a stark contrast; while historical records from 1980 to 2009 totaled four days hotter than 90 degrees Fahrenheit, mid-century projections for high-emissions scenarios estimated 21 to 45 more days above 90 degrees Fahrenheit by 2069 and 2099, respectively.

Interviewees indicated that seeing local projections made climate change feel real and allowed them to translate it into local impacts that affected them.

Role-Play Simulation Workshops

- The Players:
  - Emergency Management Director
  - Town Planner
  - Town Councilor
  - Chamber of Commerce
  - Great Coast Regional Land Trust
  - Brewers Cover Neighborhood Association
  - Facilitator
- The Issues:
  - Reducing Risks to Existing Coastal Development
  - Mitigating Risks to New Development



Summary Points:

Each community received a customized role-playing simulation tailored to their needs. Participants took the role of a player whose role differed from their own everyday role, and had one hour to reach consensus about an adaptation policy option to recommend. Each game included 115 to 170 participants per community, totaling around 500 people for New England.

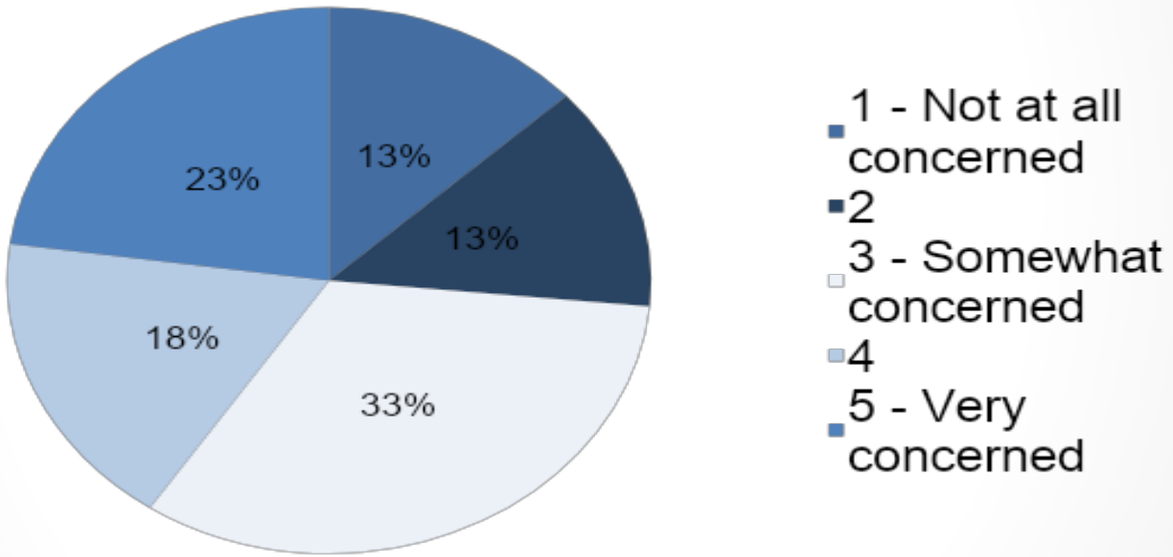
Maeve and Annie both noted that providing food for attendees can help increase workshop participation.

Role-play simulation findings

- **Increased concern** about local climate change risks
- **Increased** sense of **local collective responsibility** for preparing for and managing climate change risks
- **Increased confidence** in local adaptation action
- **Enhanced** understanding of **other perspectives** and appreciation for the need for **collective action** and **stakeholder engagement**
- **Enriched participants' understanding** of climate change risks and adaptation, and introduced **pathways forward** and actionable solutions

Summary Points:

How concerned are you about the possible impacts a changing climate might have on your town?



Public Poll |

Aggregated responses from Barnstable, MA; Dover, NH; Cranston, RI; and Wells, Maine

Summary Points:

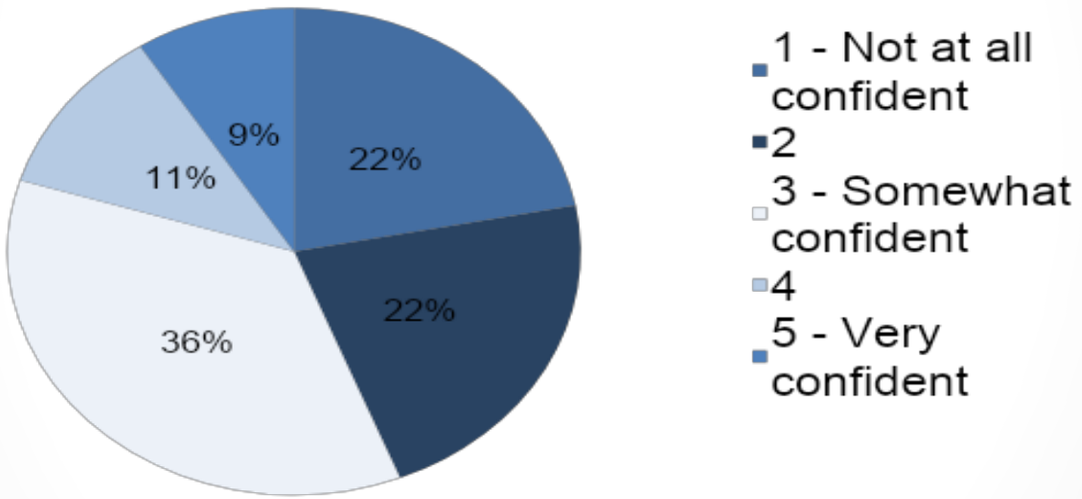
The project team conducted polling in 2013 and 2014, which provided views on community perception before and after running the role-playing simulation workshops.

The chart on the slide shows aggregated data for all the communities after polling in 2014. The sample population consisted of 100 people per community, polled randomly.

Key takeaways:

- The majority of respondents felt at least somewhat concerned about climate change impacts.

How confident are you that your town will be able to effectively respond to climate-related risks despite uncertainty about what the future climate will be like?



Public Poll |

Aggregated responses from Barnstable, MA; Dover, NH; Cranston, RI; and Wells, Maine

Summary Points:

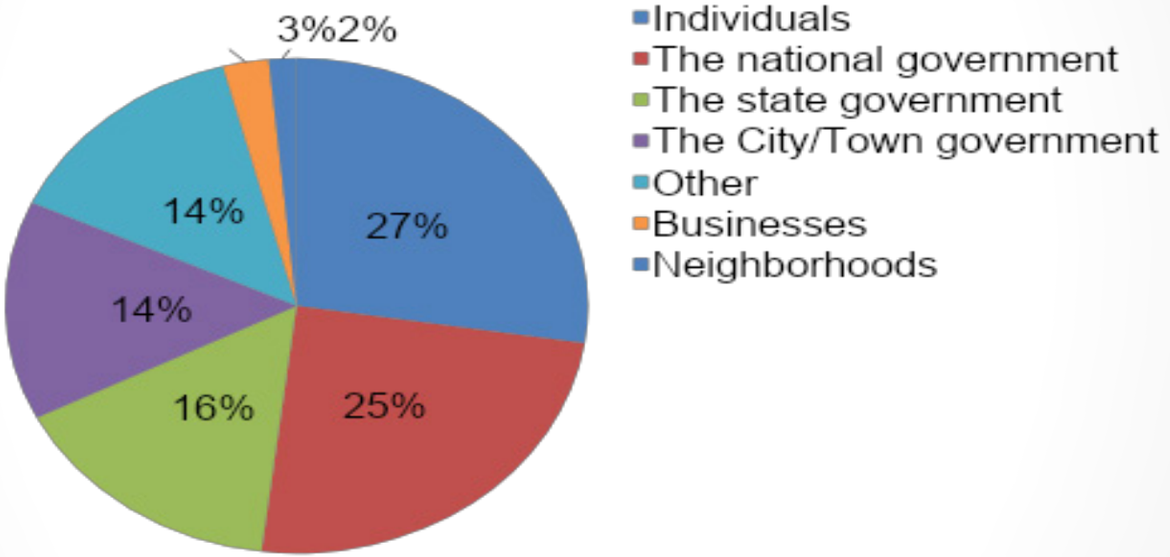
The chart on the slide shows aggregated data for all the communities after polling in 2014. The sample population consisted of 100 people per community, polled randomly.

Key takeaways:

- The majority of people did not feel very confident that their town would be able to effectively respond to climate-related risks.

If the climate is changing, who do you think should be responsible for preparing for the possible impacts on your community?

Please select up to 3 options (first response shown below)



Aggregated responses from Barnstable, MA; Dover, NH; Cranston, RI; and Wells, Maine

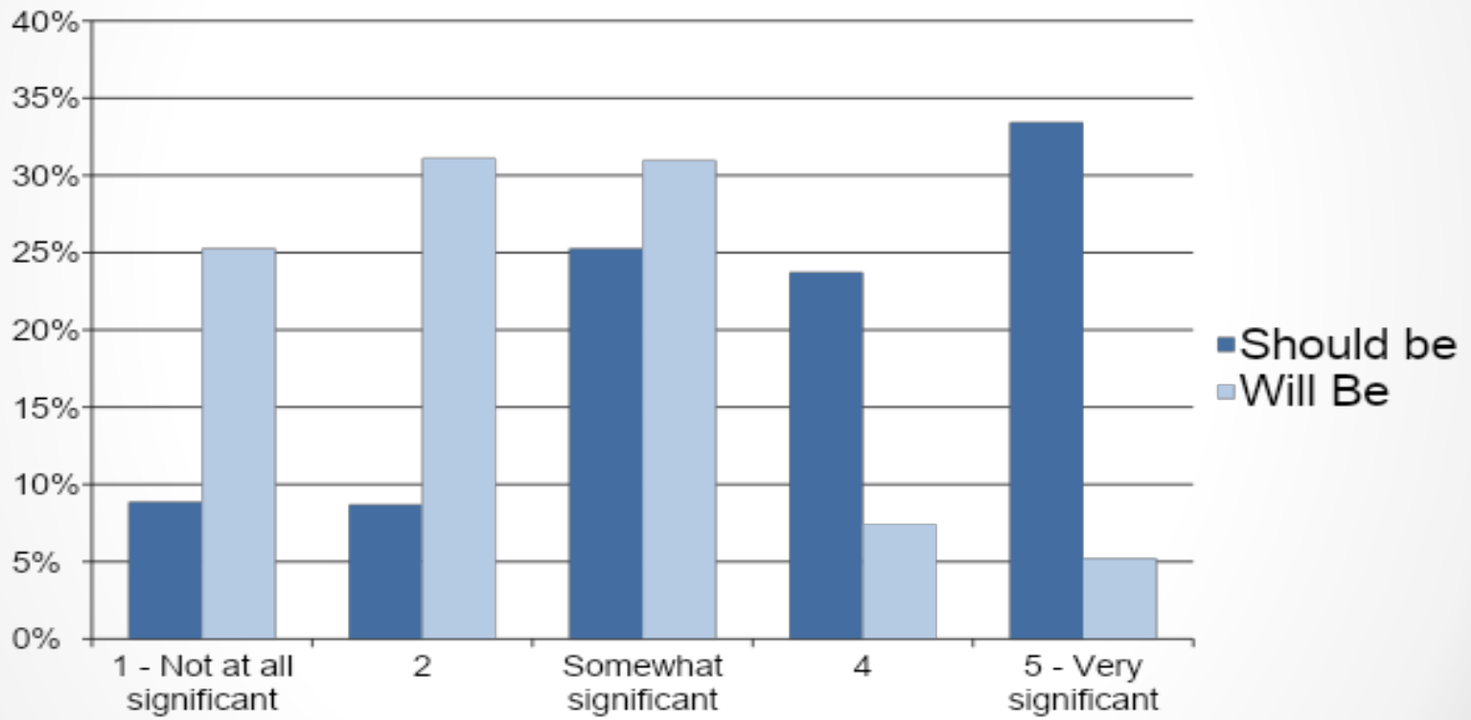
Summary Points:

The chart on the slide shows aggregated data for all the communities after polling in 2014. The sample population consisted of 100 people per community, polled randomly.

Key takeaways:

- People assigned more responsibility to individuals and the federal government than local government. This contrasts with responses to Georgetown's surveys, in which respondents indicated that responsibility should fall to state and local govertnment.

How significant do you think climate change <u>should/will</u> be in your town's planning and decision making over the next ten years?



Public Poll |

Aggregated responses from Barnstable, MA; Dover, NH; Cranston, RI; and Wells, Maine

Summary Points:

Key takeaways:

- People wanted their town to take action on climate change, but did not think that it actually would.

Summary Points:

"Prior to NECAP, the public officials in our partner towns underestimated how concerned residents in their own communities were about climate risks. Meanwhile, the residents of these communities—while concerned about local climate change risks—had no sense that they needed to push their elected and appointed officials to take appropriate action. In other words, many people didn't see responding to climate change risks as a local problem, assuming (for example) that the federal government was doing something about it. When pressed, very few had confidence in the ability of their community to respond effectively. For all these reasons and more, there was no shared sense of urgency."

Susskind,L. et.al., (2015) Managing Climate Risks in Coastal Communities

Summary Points:

What are the communities doing now?

- Land-use planning
- Infrastructure planning
- Long-term planning activities and key planning documents
- Comprehensive adaptation plans
- Environmental regulations
- Community and decision-maker engagement
- Partnerships
- Dedication of resources
- Public education
- Collective action and awareness
- Decision impact (e.g. development & funding decisions)

Summary Points:

Five years later, there have been measurable actions for planning and adaptation in New England.

Participating in NECAP opened the door for a later peer-to-peer transfer of knowledge between decision makers in Wells and decision makers in New Jersey who had recently been impacted by Hurricane Sandy. From that experience, Wells began engaging citizens in emergnecy preparedness and planning for temporary storage of storm debris, and the community has included a chapter on sea level rise in their comprehensive plan update.

In Dover, project findings encouraged the community to address climate change. They started a climate change committee, updated stormwater regulations, and have participated in several regional resilience projects.

Barnstable is now moving forward on a number of fronts on climate change preparedness planning, and strengthening resilience.

key lessons learned

- Preparing for & managing climate change risks is a socio-political & technical challenge
- Need to enhance the readiness of communities
  - not just about increasing concern
  - bring climate change home (local risks, local solutions)
- Communicate Risk (figurative & literal)
- Don't trust conventional wisdom
- Be ready for next steps

Summary Points:

In general:

- Enhancing climate readiness requires climate change to be grounded in local risks, impacts, and solutions.
- Make data tangible in order to communicate risks through resources such as maps, reports, or simulations. Providing this additional context turns data into information, which is easier to incorporate into conversation.
- "Don't trust conventional wisdom" - In New England, the project team found that what they believed people thought was not actually what people thought, and they suspect this is not a unique characteristic in the region.

Summary Points:

All reports and materials available at: necap.mit.edu

Q&A

Use the “Questions” function in the GoToWebinar console

Maeve Snyder
Coastal Training Program Coordinator
North Inlet-Winyah Bay NERR, SC

Annie Cox
Coastal Training Program Coordinator
Wells NERR, ME

Questions:

Q: Some communities might not be convinced that role playing is a serious tool for addressing local issues. How did you market the role playing events? Did that play a role in the community perception or attendance?

- **Maeve**: Yes, how we communicated about them was a very important aspect of getting people to attend workshops. In particular, we found that referring to the role-playing exercises as “games” gave the impression that we weren’t taking it seriously or that it wouldn’t lead to any real life outcomes, so we backed away from that language in favor of “simulations.”
- **Annie**: Yes, I agree that it’s best to avoid referring to the exercises as games.

Q: What timeline into the future were your scenarios? When did participants think climate risks were relevant? If not now, when did they think was the threshold for concern?

- **Maeve**: I would say the context for our county is that with these repetitive disasters that we’ve had, we’re kind of in a reactive mindset. Even though we started every workshop with climate projection data and said it was all about planning, our experience was that it was difficult to get people to think outside of the very near term since people are still focused on the most recent flood or the next upcoming flood.

Q&A

Use the “Questions” function in the GoToWebinar console

Maeve Snyder
Coastal Training Program Coordinator
North Inlet-Winyah Bay NERR, SC

Annie Cox
Coastal Training Program Coordinator
Wells NERR, ME

National Estuarine Research Reserve System Science Collaborative

Questions:

Q: Is there anything you can say about the budget for developing the scenarios, for example staffing size, or funding?

- **Maeve**: We had a few different subcontracts in our project, including the Carolinas Integrated Sciences and Assessments scientists who produced the downscale projections and the Consensus Building Institute staff who helped develop the case studies. We also budgeted for NERR staff time to work on the project. On a more general level, we budgeted for supplies such as food for community workshops, training materials, and printing.

Q: Did people specify what they expected the federal government to do during the NECAP polling? Has this mindset changed in the last couple years?

- **Annie**: I would imagine it’s changed. It would be great to poll everyone again and see what the shift has been.

Q: Can you comment on shifts in perception over shorter timeframes?

- **Annie**: I think before we were concerned about using terms like ‘climate change’ with the public, and now I feel like there’s been a shift in perception. It doesn’t appear to be as polarizing as it is in other places in the country.
- **Maeve**: We’re pretty early here in the follow-up stages, but it’s similar for us. It’s also that much easier to talk about climate or support for stakeholder engagement having collected this information because it adds extra justification when talking to audiences.

Q&A

Use the “Questions” function in the GoToWebinar console

Maeve Snyder
Coastal Training Program Coordinator
North Inlet-Winyah Bay NERR, SC

Annie Cox
Coastal Training Program Coordinator
Wells NERR, ME

National Estuarine Research Reserve System Science Collaborative

Questions:

Q: Were either of your projects informed by resilience plans in other areas?

- **Annie**: Not for us, I don’t believe.
- **Maeve**: We did share several models when we initially wrote the executive briefing for our report to our county council. One was the city of Tybee Island in Georgia because they have similar issues with sea level rise and they used community input to develop prioritized adaptation actions.

Q: Were there any other games or books that informed your work, such as Game of Floods or Game of Extremes?

- **Annie**: I wasn’t familiar with role-playing **simulations around coastal management in 2012.**
- **Maeve**: Similarly, this was all new to me. I’ve sinced learned about some of the others, but haven’t gotten to try them out myself.

Q: Did you happent o notice if any professions were more interested in the simulations?

- **Annie**: The people who signed up to come were already interested in environmental issues. It was harder to get people who weren’t as interested to come.
- **Maeve**: Similar for us. It was great to see so much elected officials and government staff representation. We did also have some individual small business owners who were pretty vocal about impacts they’ve experienced from storms and flooding.