North Carolina Flood Resiliency Blueprint

Technical Advisory Breakout Groups (TAGs)

12:30-2:30pm

March 15, 2023

HAZARD IDENTIFICATION

DEQ

NORTH CAROLINA
Department of Environmental Quality

NC DEQ
SECRETARY'S ENVIRONMENTAL
JUSTICE AND EQUITY
ADVISORY BOARD

Hazard Identification
Breakout Session Agenda

- TAG-Specific Needs and Instructions   (30 min)
- Data Review   (15 min)
- Participant Introductions   (15 min)
- Participant Questions   (30 min)
- Engagement Plan   (15 min)
- Questions and Closeout   (15 min)

TAG-Specific Needs and Instructions

Hazard Identification TAG Role Within Blueprint

Blueprint Legislation
SL 2021-180 Section 5.9(c)

Department of Environmental Quality, Division of Mitigation Services (DMS), shall contract with an organization to:

- Develop a statewide Flood Resiliency Blueprint for major watersheds impacted by flooding;

- Form the backbone of a State flood planning process that increases community resiliency to flooding; and

- Identify the major watersheds affected by flooding and direct these funds toward the activities which are central to the creation of an actionable blueprint.

Blueprint Legislation
SL 2021-180 Section 5.9(c)

When developing the Blueprint with the organization selected, DMS shall ensure the Blueprint:

- Incorporates local knowledge, community goals, projections of future flood risk, and the best available science and hydrologic modeling; and
  - Creation of decision tool for flood mitigation investments and strategies

- Leads to a prioritized set of projects and funding strategies that the State can implement.

Blueprint Legislation
SL 2021-180 Section 5.9(c)

Throughout the development of the Blueprint, the selected organization is expected to:

- Examine examples from other states (e.g., Louisiana, South Carolina, and Virginia);

- Send all necessary information to DMS on the implementation of the blueprint upon request by DMS; and

- Submit an initial draft of the blueprint to DMS no later than December 31, 2023.

DMS shall report by July 1, 2022, and annually thereafter
to the Joint Legislative Commission on Governmental Operations and the
Fiscal Research Division on the implementation of this subsection.

Blueprint TAGs

Throughout the development of the Blueprint, there will be seven (7) TAGs:

Government		Environmental		Social		Neuse
Governance	Partnership/ Funding	Hazard Identification	Vulnerability/ Risk/Impact	Resilience/ Mitigation/ Reduction	Tool Development/ Acceptance	Neuse Regional Advisory Group

Hazard Identification TAG

- Provide advisory input and feedback on data and modeling utilized to best calculate and display **present and future flood probability and extent**

- Include consideration of deterministic and probabilistic riverine, lacustrine, dam and levee induced, urban, stormwater, and coastal and/or riverine confluence flooding
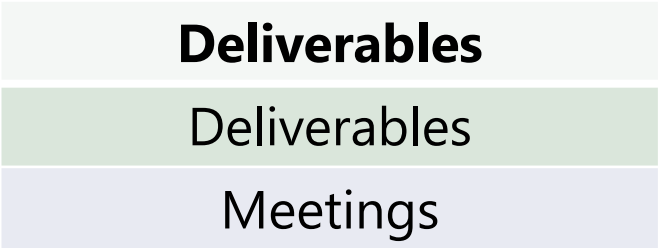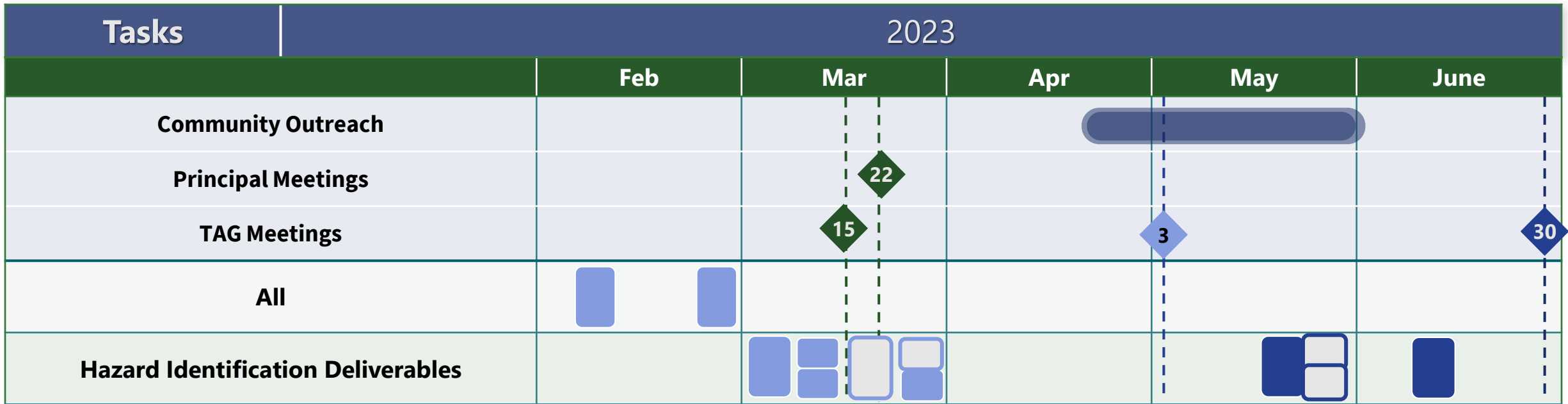
TAG Chair Role

- Facilitator in the meetings

- POC for DEQ and the Principal Advisory Group

- Assistance with agendas for meetings

- Assistance with resolutions for conflicting opinions with technical topics

TAG Feedback on Deliverables

All TAGs will provide advisory input and feedback

→

Receptors will include population, historically marginalized communities, Tribes, environment, structures, infrastructure, and commerce.

Tasks		2023				
		Feb	**Mar**	**Apr**	**May**	**June**
Community Outreach						
Principal Meetings			22			
TAG Meetings			15		3	30
All						
Hazard Identification Deliverables						

Meetings:

⬭ Potential timeline for community engagement

◆ 15 TAG kickoff meeting date

◆ 3 TAG meeting date in May

◆ 30 TAG meeting date in June

Deliverables

Deliverables

Meetings

Deliverables:

▮ Date deliverables are available for review

▮ Date deliverables are available for review

▯ Date deliverables are available for secondary TAG review

All Participants Review

	February		May 3rd
ALL	**1**	**1**	**2**
DEQ Public Participation Plan Stakeholder Engagement	1		1
Decision Making Process		1	1

Hazard Identification TAG Review

Hazard Identification		1	3		1	1				6			1	2		1			4
Task. Subtask	Delivery Date	March					April			May 3rd	May				June				June 30th
2.1	Inventory types and sources of flooding	1								1									
2.4	H&H Modeling Report		1							1									
2.2	Resource documentation for risk data		1							1									
2.5	Future Flood Hazard data identification				1					1									
3.5	Open-source H&H modeling approach recommendations												1						1
3.9	Standardizing statewide dataset and model implementation recommendations															1			1
1.1	Literature review and data collection inventory		1							1									
2.8	Natural infrastructure data assessment				1					1									
3.6	Decision tool storm frequency recommendations													1					1
3.7	Climate forecast model recommendations													1					1

Schedule of Review/Timeline

The Review Process will follow guidelines to ensure adequate time and protocol for expert feedback such as:

- All deliverables will be provided to DEQ for initial review

- Any deliverable with a due date **two weeks** before the next TAG meeting will be included in the TAG conversation

- Deliverables will be provided to TAG through SharePoint site

- Each deliverable will have a **14-day review** period by the TAG

Review Process

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│                 │     │ Accepted comments will  │     │                 │
│ Comments will be│ ──▶ │ be incorporated into the│ ──▶ │ DEQ will make all│
│ provided by TAGs│     │ recommendations         │     │ final decisions │
│                 │     │                         │     │                 │
└─────────────────┘     └─────────────────────────┘     └─────────────────┘
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Comments will be provided by TAGs

Accepted comments will be incorporated into the recommendations

- Not all comments will be included in final recommendations.
- All comments will be documented and tracked.

DEQ will make all final decisions

Document Review

[TAG SharePoint Live Demonstration](#)

[Link to Documents for TAG Review](#)

Accessing Documents

Accessing Documents

Data Review

Literature review   Data review

State review   Plan review

Literature Review
Statewide Plans and Strategies

- North Carolina Climate Risk Assessment & Resilience Plan

- North Carolina 2023 Enhanced Hazard Mitigation Plan

- NCDOT Resiliency Strategy Report

- North Carolina Natural & Working Lands Action Plan

- North Carolina Coastal Habitat Protection Plan: 2021 Amendment

- 2022 Climate Strategy Report

- Hurricane Matthew Resilient Redevelopment Plans

Literature Review

Statewide Technical Reports and Memos

- North Carolina Climate Science Report

State Laws and Policies

- North Carolina Executive Order 90: North Carolina's Commitment to Address Climate Change and Transition to Clean Energy Economy

- North Carolina Executive Order 246: North Carolina's Transformation to a Clean, Equitable Economy

Literature Review

NC Research Projects and Studies

- Collaboratory Flood Resilience Study

NC Programs

- Regions Innovating for Strong Economies and Environment Program
- North Carolina Resilient Coastal Communities Program

NC Data Tools

- North Carolina Clearing House
- Resilience Analysis and Planning Tool

Peer State Flood Resiliency Programs
A look at Louisiana, Massachusetts, South Carolina, Texas, and Virginia

This review assesses flood resilience programs in peer states. The objective is to understand:

- Each program's structure and governance scheme

- Level at which governance decisions are being made

- Datasets and models that are being used

- Platforms developed for decision-making

- Funding mechanisms to enable implementation

Peer State Data Review

Louisiana
- 2023 Louisiana Coastal Master Plan and Watershed Initiative Program

Massachusetts
- Massachusetts Integrated State Hazard Mitigation Plan and Climate Adaptation Plan

South Carolina

Texas
- Texas Coastal Resiliency Master Plan

Virginia

Indiana
- Indiana Floodplain Information Portal

Iowa
- Iowa Flood Resilience Program

Plan Review
Identify Existing Recommendations

- Includes existing statewide planning efforts that include flood resilience strategies

- Help visualize and understand what recommendations have been considered in past efforts

- Allow for review of what actions have been taken and if the need still exists to move forward with these actions

Plan Review
Report on Existing Statewide Planning Efforts

- North Carolina Climate Risk and Resilience Plan (20)

- North Carolina Enhanced Hazard Mitigation Plan (20)

- NCDOT Resilience Strategy Report (13)

- Natural and Working Lands Action Plan (7)

- North Carolina Coastal Habitat Protection Plan – 2021 Amendment (11)

- North Carolina Resilient Communities Program

North Carolina

Climate Risk Assessment and Resilience Plan

Impacts, Vulnerability, Risks, and Preliminary Actions

A Comprehensive Strategy for Reducing North Carolina's Vulnerability to Climate Change

June 2020
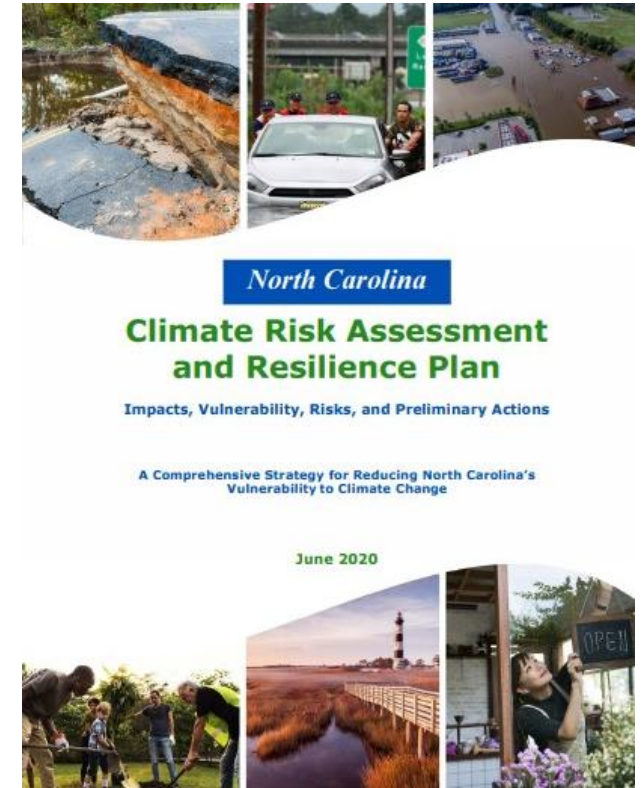
Plan Review
Report on Existing Statewide Planning Efforts

- Regions Innovating for Strong Economies and Environment Program (2)

- North Carolina Resilient Coastal Communities Program (20)

- Collaboratory 2021 Flood Resilience Study (43)

- North Carolina Resilience Clearinghouse

- North Carolina Climate Science Report

- Resilience Analysis and Planning Tool (RAPT)

North Carolina
Climate Science Report

Data Review

100 sources of flooding were identified and analyzed to determine any gaps in the datasets.

- Source of information

- Link to online data and any registration requirements to access and download

- Data owner

- Date the data was created

- Date of access

- Frequency of updates

- Recommendation for needed updates

- Sub-classified as either essential or supporting

Data Review

Category

- Fluvial Flooding (Riverine)
- Pluvial Flooding (Rain)
- Urban and Stormwater Flooding
- Dam and Levee Flooding
- Flash Flooding
- Snowmelt Flooding
- Groundwater Flooding
- Overland Ponding
- Agriculture and Mining Flooding
- Natural Disasters
- Coastal Flooding

Classification

- Natural Hazards and Engineering Study Datasets
- Foundational Datasets
- Natural Environment Datasets
- Built Environment Datasets
- Demographic Datasets
- Mitigation Support Datasets

Data Review- Examples

- FEMA: Regulatory Hydrologic and Hydraulic Modeling

- NCEM: 2D Advisory Flood Hydrologic and Hydraulic Modeling

- NCEM: Multi-Frequency Floodplain Raster Mapping Datasets

- City of Raleigh: H&H Models

- NCDWR, NC Climate Office, US Army Corps, and USGS: Water Resources Information, Storage, Analysis, & Retrieval System (WRISARS)

- Outreach: Models Developed by Local Governments

Plan Review

Identify existing recommendations

- Includes existing statewide planning efforts that include flood resilience strategies.

- Help visualize and understand what recommendations have been considered in past efforts.

- Allow for review of what actions have been taken and if the need still exists to move forward with these actions.

Report showing existing recommendations/strategies throughout the state

- Climate Risk Assessment and Resilience Plan

- Enhanced Hazard Mitigation Plan

- NCDOT Resiliency Strategy Report

- Collaboratory 2021 Flood Resilience Study

- North Carolina Climate Science Report

- Natural and Working Lands Action Plan

- North Carolina Coastal Habitat Protection Plan – 2021 Amendment

- Regions Innovating for Strong Economies and Environment Program

- North Carolina Resilient Communities Program

- North Carolina Resilience Clearinghouse

- Resilience Analysis and Planning Tool (RAPT)

Participant Introductions

Please share your name, agency/organization you represent, & your interest/experience in resilience in North Carolina

Hazard Identification Participants

Tom Langan- TAG CHAIR	**NC Department of Public Safety/Floodplain Mapping Program**
Adam Gold	Environmental Defense Fund
Danica Schaffer-Smith	The Nature Conservancy
Doug Marcy	NOAA
Gian Tavares	American Flood Coalition
John C Weaver	USGS South Atlantic Water Science Center
Kathryn Gaasch	NC Inclusive Disaster Recovery Network/ MDC Rural Forward
Klaus Albertin	NC DEQ/ Division of Water Resources
Kurt Golembesky	NC Department of Transportation/ Hydraulics Unit
Mackenzie Todd	NC DEQ/ Division of Coastal Management
Rick Luettich	University of North Carolina-Chapel Hill Institute of Marine Science
Wesley Brown	USACE

Participant Questions

Resilience in North Carolina

What do you think of when you hear "NC Flood Resiliency Blueprint"?

What would you prioritize as the most important actions to help with flood resilience?

What is the first thing the state specifically should do that would advance flood resilience?

What resilience efforts have been successful for the state and why?

What would be the most innovative thing people could do to help with flood resilience?

What is one thing hindering flood resilience for the state?

What are the greatest obstacles or gaps keeping the state from doing flood resilience?

Are there people you would recommend to serve on the TAGs?

Engagement Process

Overview and Build-out

Engagement Plan
Guiding Principles

Collaborative & Engaging

- Collaborative process with all agencies, local governments, NGOs, universities, and others

- Consider, consult, and meaningfully involve socially vulnerable populations

- Continue to enhance Blueprint to promote increased tool utilization

Holistic & Forward Looking

- Use best available data to incorporate future risk

- Focus on creating long-term, generational benefits for the state

- Deliver a solution that supports sustainable, long-term funding mechanism

Actionable & Outcome Oriented

- Leverage existing resources and build on momentum of efforts underway in NC

- Incentivize solutions with co-benefits, and factor in life-cycle cost

- Strive for decisions and outcomes that facilitate near-term action

Recommendations for Participation in NC Blueprint

- TAG meetings are intended for invited subject matter experts

- The Blueprint website will contain project information, including TAG member names

- Each TAG will be asked if they believe there are others that should participate in Blueprint

  - Additional requests must be submitted to DEQ by the TAG Chairs

Level of Impact

| Level of Impact	Description	Criteria
High	The issue has an elevated level of real or perceived impact on the whole project.	• Existing or potential conflict. • High impact on multiple end users. • Potential impact on regional or state strategies. • Significant cascading impacts on other tasks. • Impact on health, safety, and wellbeing
Medium	Issue has medium level of real or perceived impact on a specific participating entity.	• Potential for some controversy or conflict. • Potential for some, although not significant impact on regional or state strategies /direction. • Minor changes to recurring large scale programs. • Elevated level of interest.
Low	Issue has low level of real or perceived impact on the tasks.	• Low level of controversy or conflict. • Minor changes to recurring lower impact programs. • Minor changes to a facility or service at a local level.

Decision Making Process

- ? What recommendation must be made?
- ? Who is making the recommendation?
- ? How will the recommendation be made?
- ? What are the impacts of this recommendation?
- ? What is the next step for this recommendation

Engagement Plan
Final Decisions

- Information will come from the AECOM team to the appropriate TAG

- All participants will review and provide comments

- Comments will be discussed at in person meetings

- AECOM will coordinate responses and provide to DEQ as recommendations

- DEQ will make final decision with the assistance of executive leadership
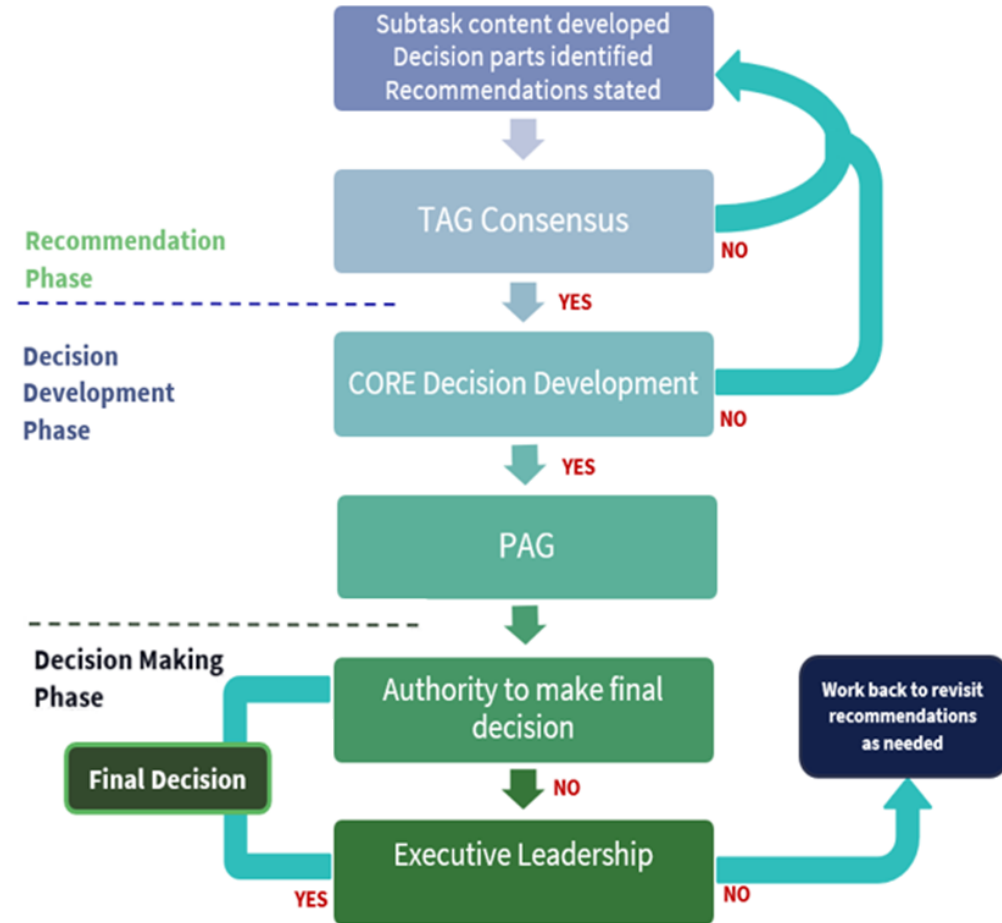
Questions/Close-Out

Thank you for your feedback & participation!