

# Innovative Approaches: Managing Stormwater

*New tools to help communities  
prepare for future conditions*



**CHESAPEAKE  
STORMWATER  
NETWORK**

## TODAY'S OUTLINE

- 01.** Assess Vulnerability
- 02.** Plan for Risk Tolerance
- 03.** Adapt Designs for Resilience
- 04.** Build Staff Capacity through Training



## 3.7 °F TEMPERATURE

Temperatures are projected to increase by 3.7 F by 2055 relative to 1995.



## 15-25% RAINFALL

Precipitation intensity is projected to increase by 15-25% by 2055 for nearly all counties across the watershed.



## 1.7 FT SEA LEVEL

Sea level rise is expected to increase by 1.7 ft compared to 1995, resulting in higher water tables and increased nuisance flooding.

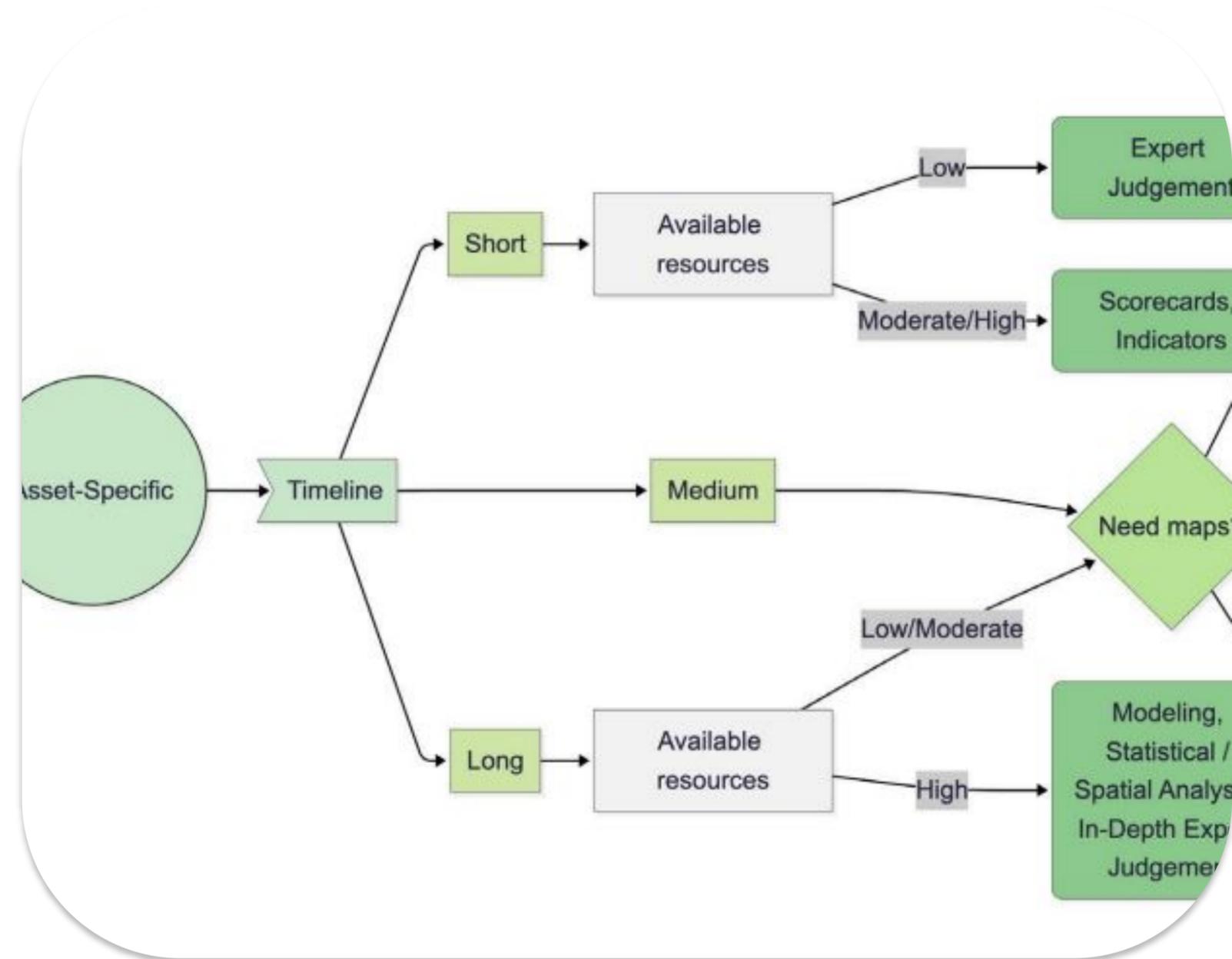


# WHAT OUR BIORETENTIONS WILL SEE IN 2055



## Background

- 5-task EPA-funded project that runs through 2028
- Led by RAND, with CSN and MARISA (Cornell, Watershed Institute, Carnegie Mellon)
- **Goal:** Develop tools to reduce barriers to implementation of more resilient stormwater infrastructure.



**MARISA**  
a NOAA Mid-Atlantic CAP team



# Assess Vulnerability

## The Tool:

A Practical Guide to Vulnerability Assessments for Stormwater Agencies:  
Approaches, Applications and Best Practices

## What it Does:

- Fit Assessment Approach to Available Capacity
- Connect Assessment to Planning and Decision-Making





# Assess Vulnerability

## GUIDEBOOK ROADMAP





# Case Study: Goshen, Indiana

## Goal:

City-scale assessment

Support regulatory and infrastructure improvement

## Approach:

Blended approach

GIS-based quantitative analysis

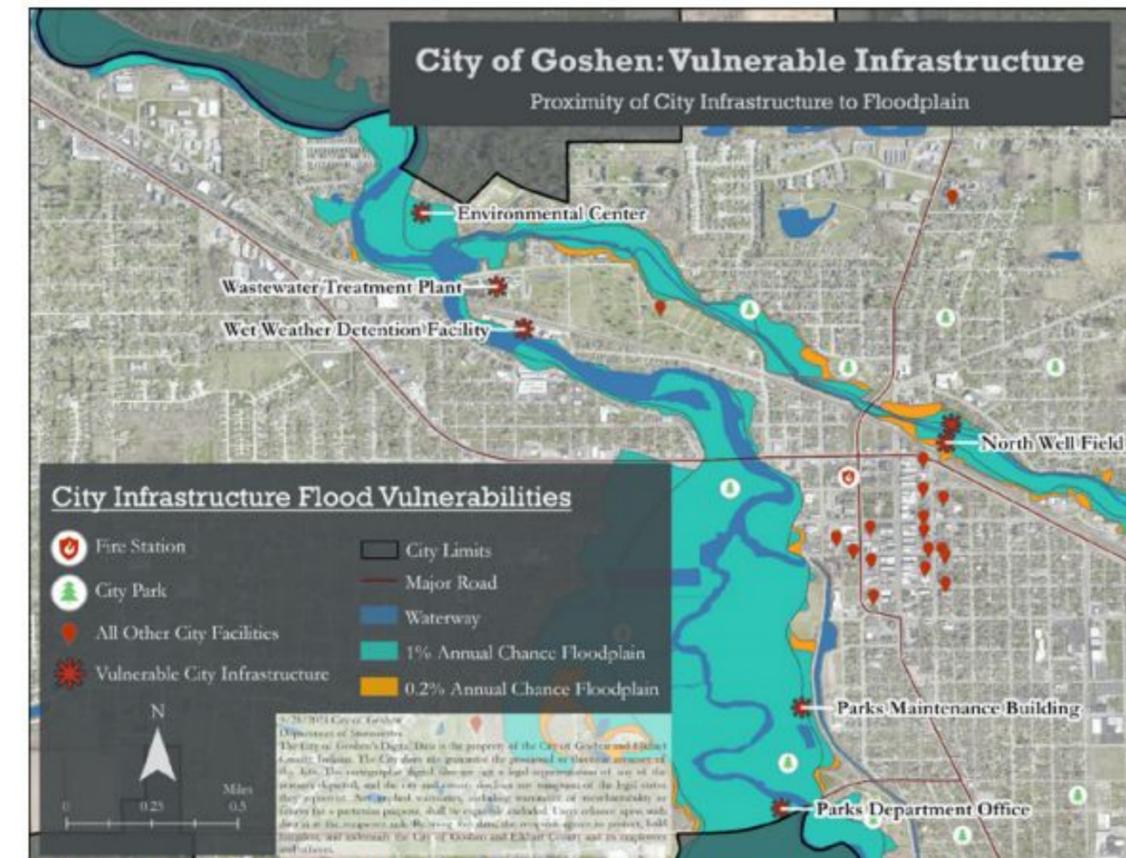
Expert Judgement

## Implementation:

Stakeholder Engagement & Data Collection

Assessment of Exposure, Risk, Adaptive Capacity

Implement Findings - Maps, Public Comms, Grants



# A Practical Guide to Vulnerability Assessments for Stormwater Agencies

## Approaches, Applications, and Best Practices

<https://www.rand.org/pubs/tools/TLA4308-1.html>





# Plan for the Right Future for You

## The Tool:

Decision Support for Selecting Projected Intensity-Duration-Frequency Curve Change Factors: A Guide for Stormwater Managers

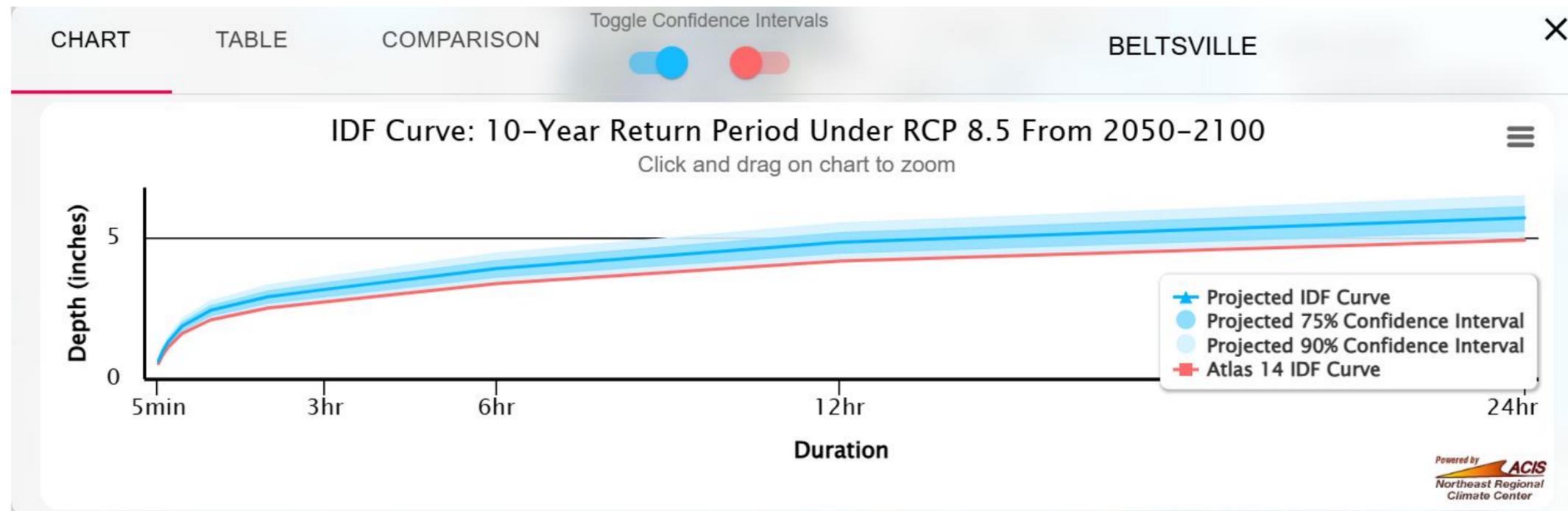
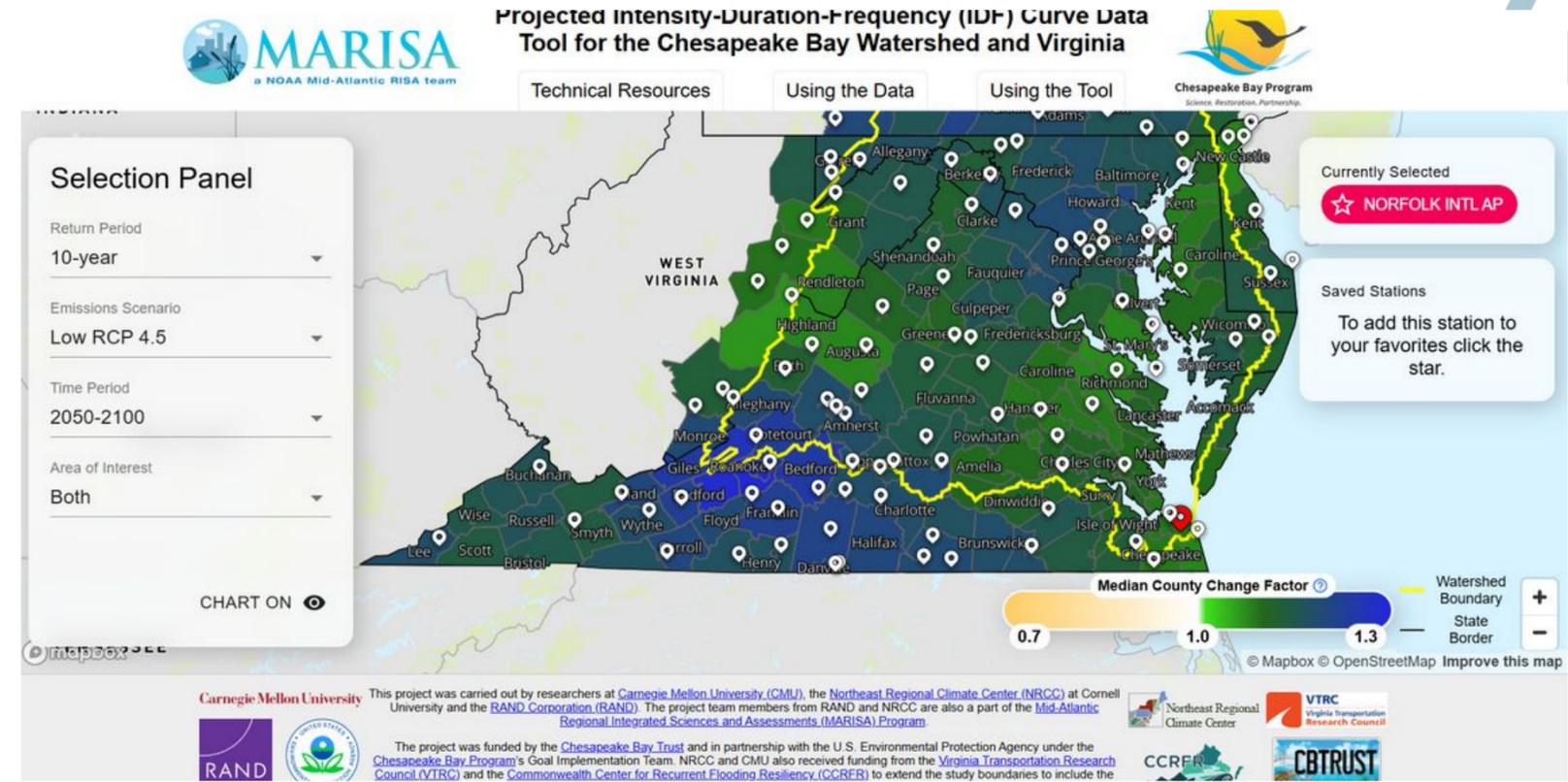
## What it Does:

- Pairs with MARISA Climate-Projected IDF Curve Tool
- Helps users select the most appropriate change-factors based on a risk-tolerance framework
- Provides sample messaging to communicate decisions





# Plan for Risk Tolerance





# Adapt Designs for Resilience

## The Tool:

Resilient Design Guidebook for Stormwater Best Management Practices

## What it Does:

- Characterize how BMPs are sensitive to climate-related hazards
- Identify design elements and materials most affected by those sensitivities
- Propose design strategies, technology and guidance approaches for making BMPs more adaptable and resilient





# Resilient BMPs

Workshops: March-May

Current Framework:

- Structural Conveyance
- Detention/Retention
- Infiltration/Filtration
- Habitat Restoration
- Programmatic

Discussion of Design Paradigms





# Building Staff Capacity

CUSP - Climate

3rd Course Offered Under  
[Chesapeake Urban Stormwater  
Professionals Program](#)

1.0 CEU

Covers all tools, in addition to  
introduction to core climate  
concepts



THANK YOU

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