



Countywide Risk Assessment and Resilience Plan

Resilience Steering Committee Meeting

June 8, 2022



Presentation Outline

1.

Introduction to the Team

2.

Project Objectives

3.

Scope of Services, Deliverables, and Schedule

4.

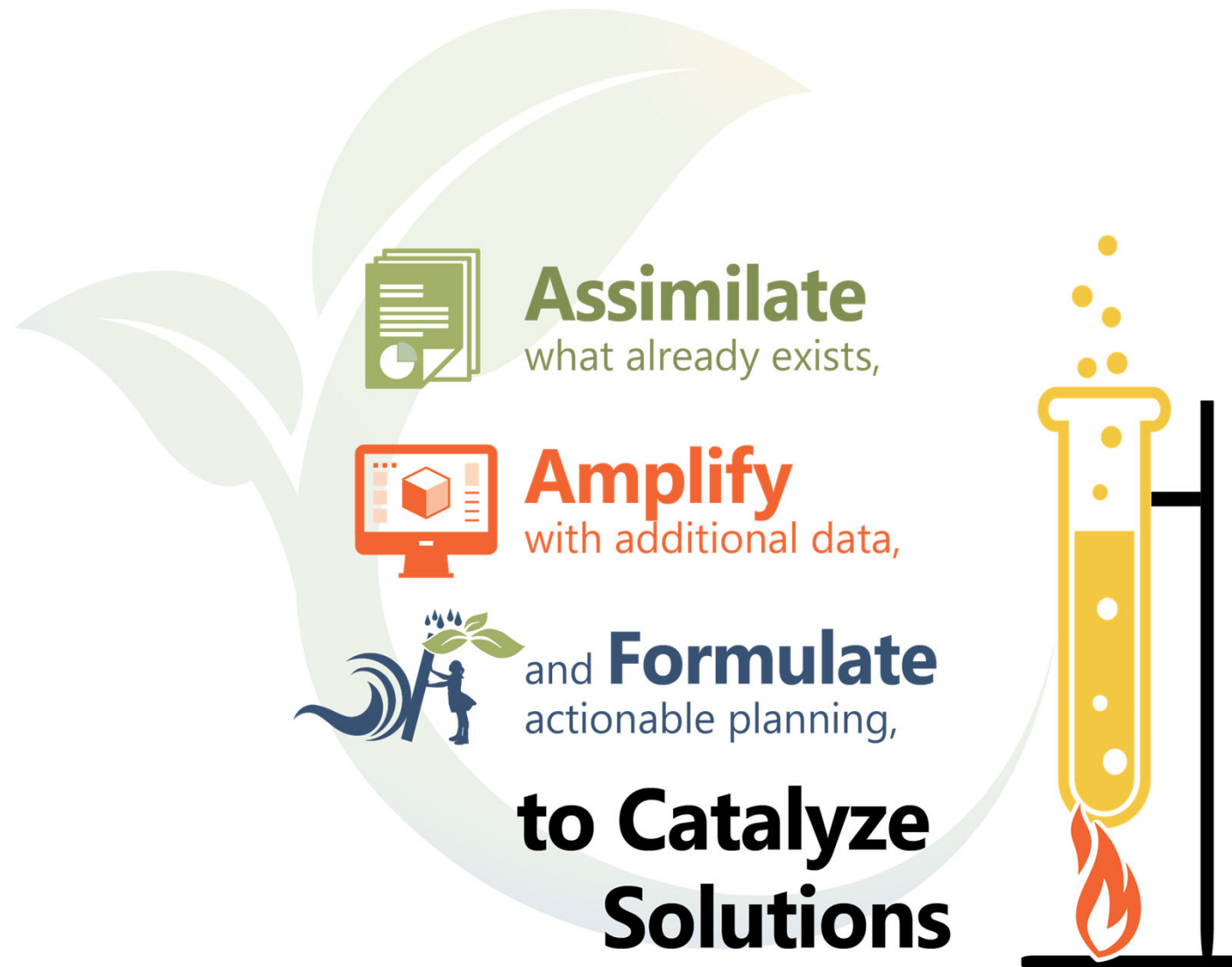
Involvement of Resilience Steering Committee



1.

Introduction to the Team

The Team assembled to assist the County was crafted specifically to...



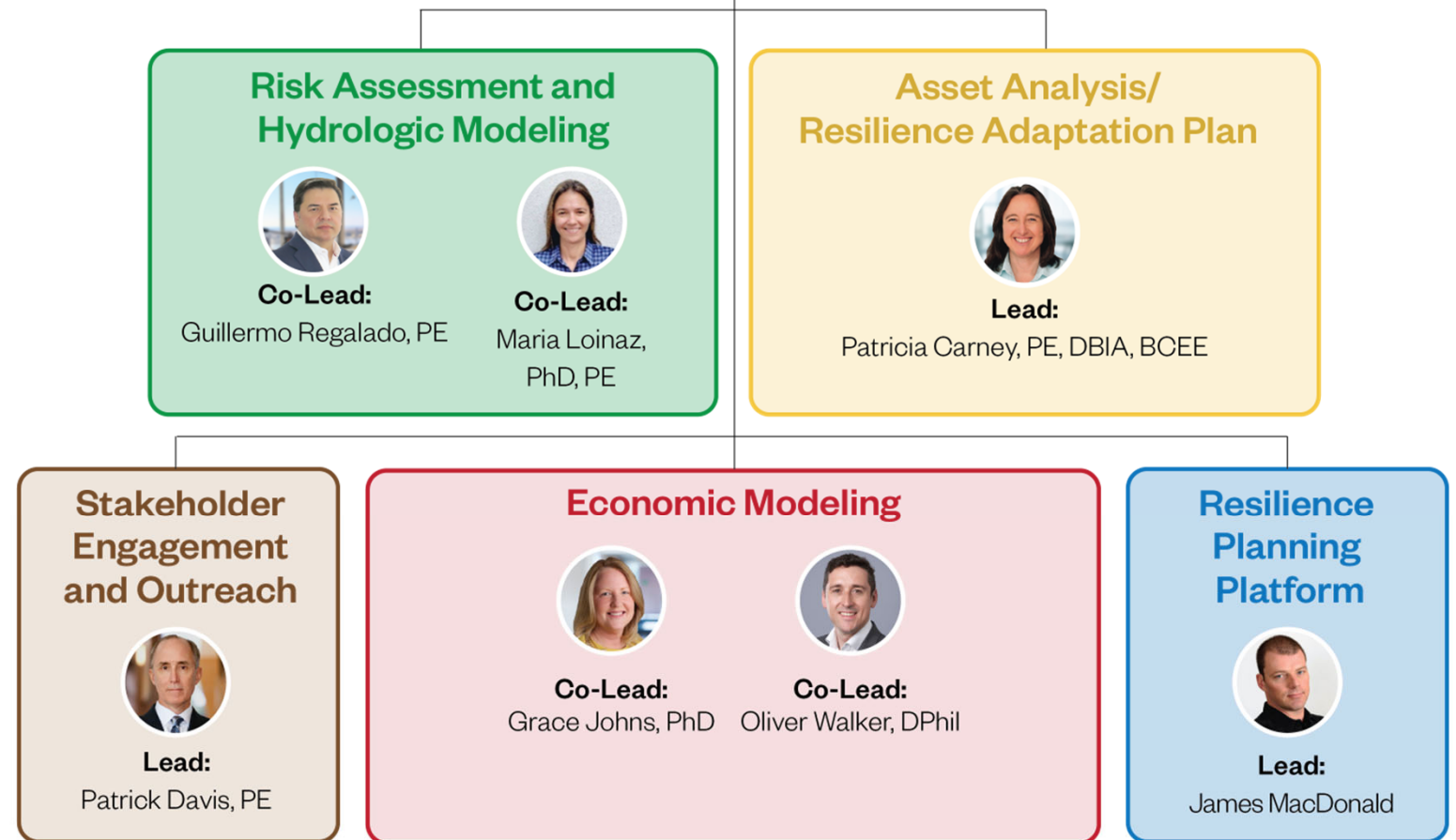
The Team has expertise in the various subject areas required for this project



Hazen



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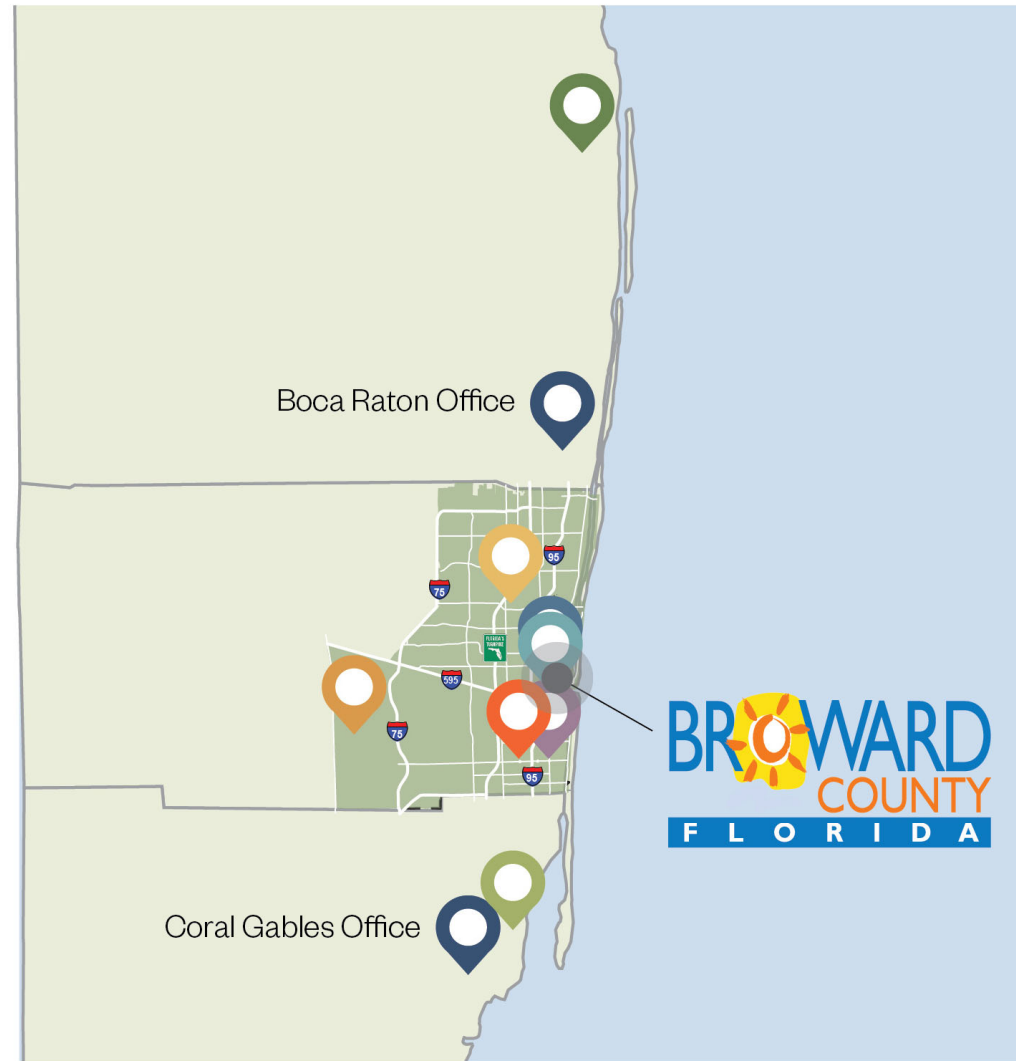
The majority of team members are local to Broward County and understand its needs and challenges

HAZEN AND SAWYER

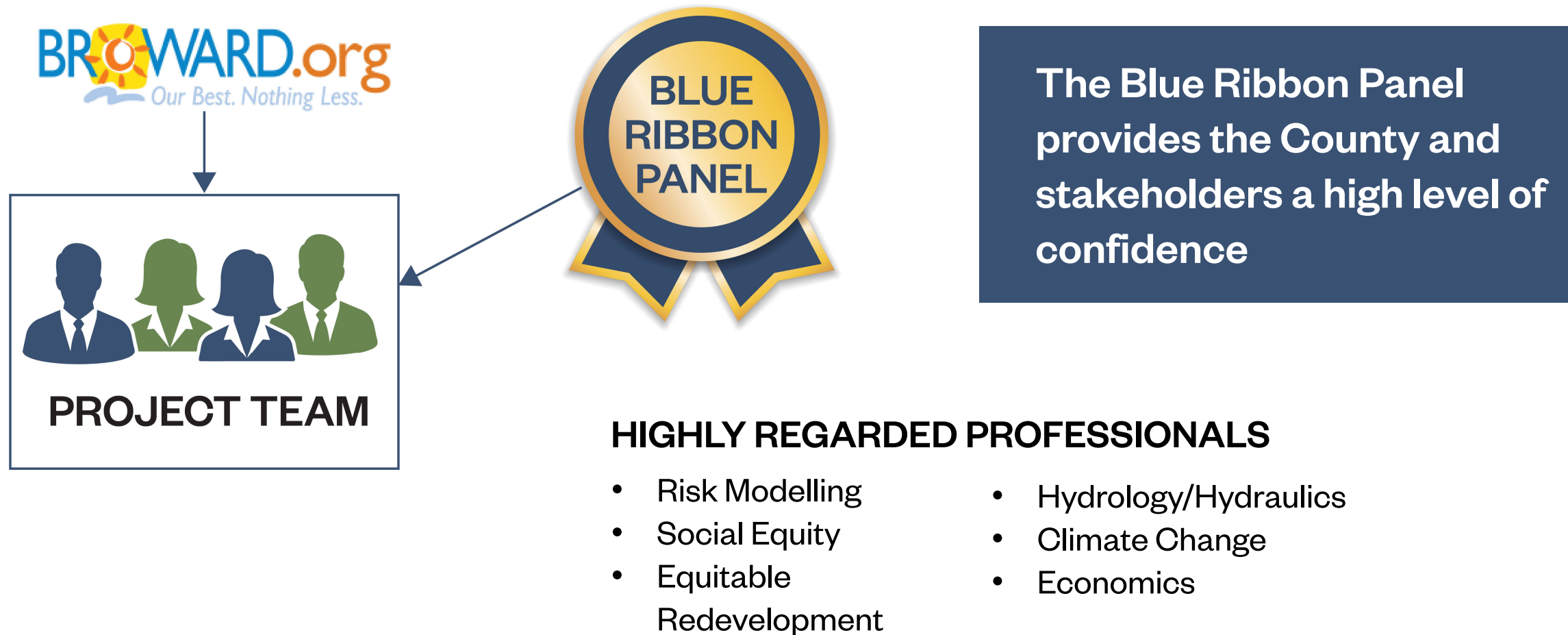
-  Florida Offices
-  SE Region Headquarters

SUBCONSULTANTS

-  **Collective Water Resources, LLC**
West Palm Beach, FL
-  **Cummins Cederberg, Inc. (CBE)**
Fort Lauderdale, FL
-  **R.J. Behar & Company, Inc.**
Pembroke Pines, FL
-  **Brizaga**
Fort Lauderdale, FL
-  **Craven Thompson & Associates, Inc.**
Fort Lauderdale, FL
-  **Louis C. Aurigemma, PE**
Hollywood, FL
-  **Gridics**
Miami, FL



Lastly, we have included a Blue Ribbon Panel of subject matter experts who may be engaged individually and collectively as needs dictate

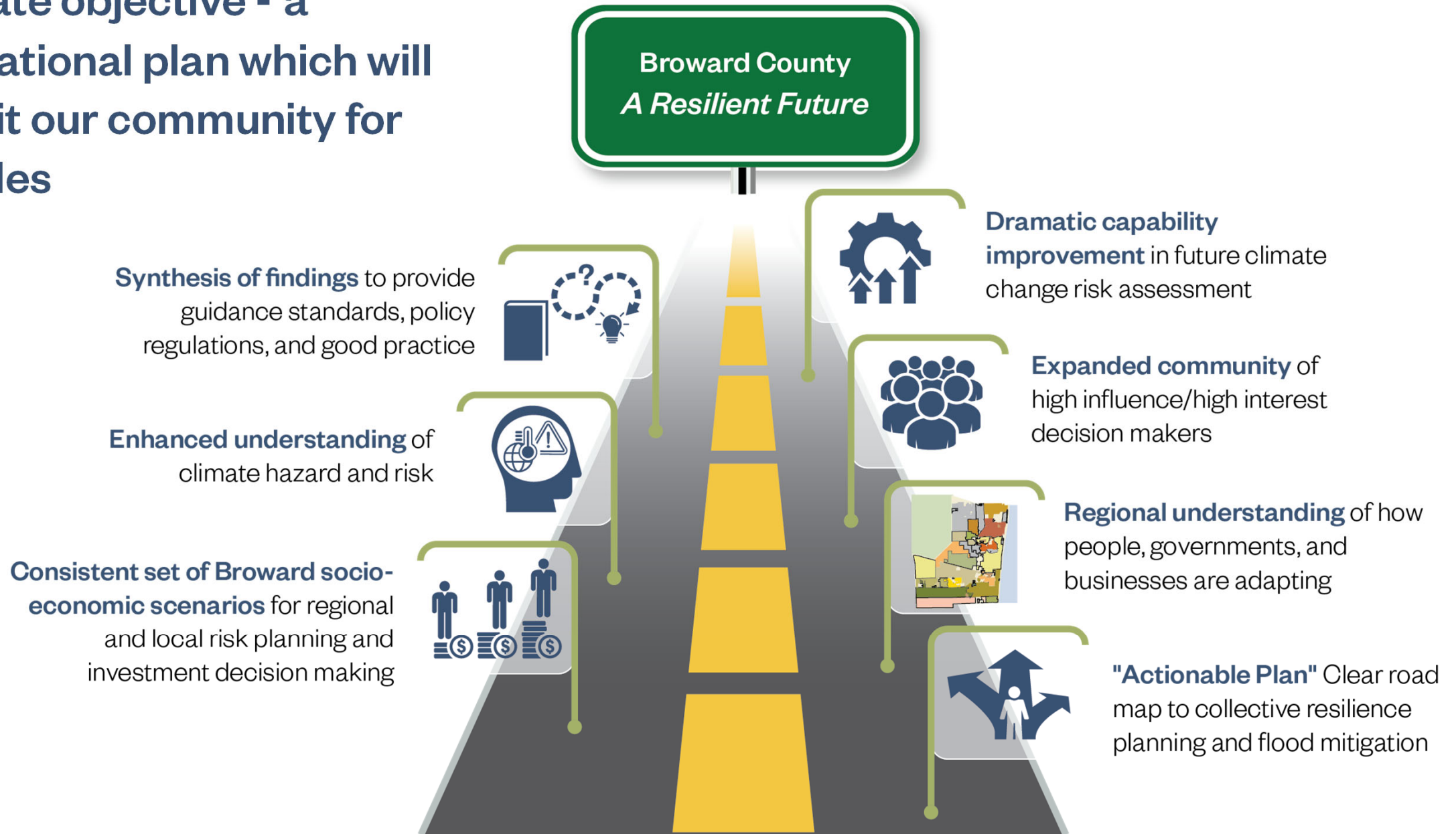




2.

Project Objectives

Ultimate objective - a foundational plan which will benefit our community for decades





3.

Scope of Services, Deliverables, and Schedule

The Scope of Work is arranged in nine specific tasks to be completed over two years

Task #	Title
1	Stakeholder Engagement and Outreach
2	Countywide Risk Assessment and Hydrologic Modeling
3	County Asset Analysis
4	Economic Modeling
5	Resilience Adaptation Plan
6	Resilience Planning Platform
7	Presentation of Results to County and Stakeholders
8	Prepare and Submit Draft Summary Report and Turnover of Platforms
9	Prepare and Submit Final Summary Report

Stakeholder Engagement and Outreach

- Resilience Steering Committee
- Community Stakeholders
- Blue-Ribbon Panel



ENGAGEMENT
OUTREACH
TRACKING

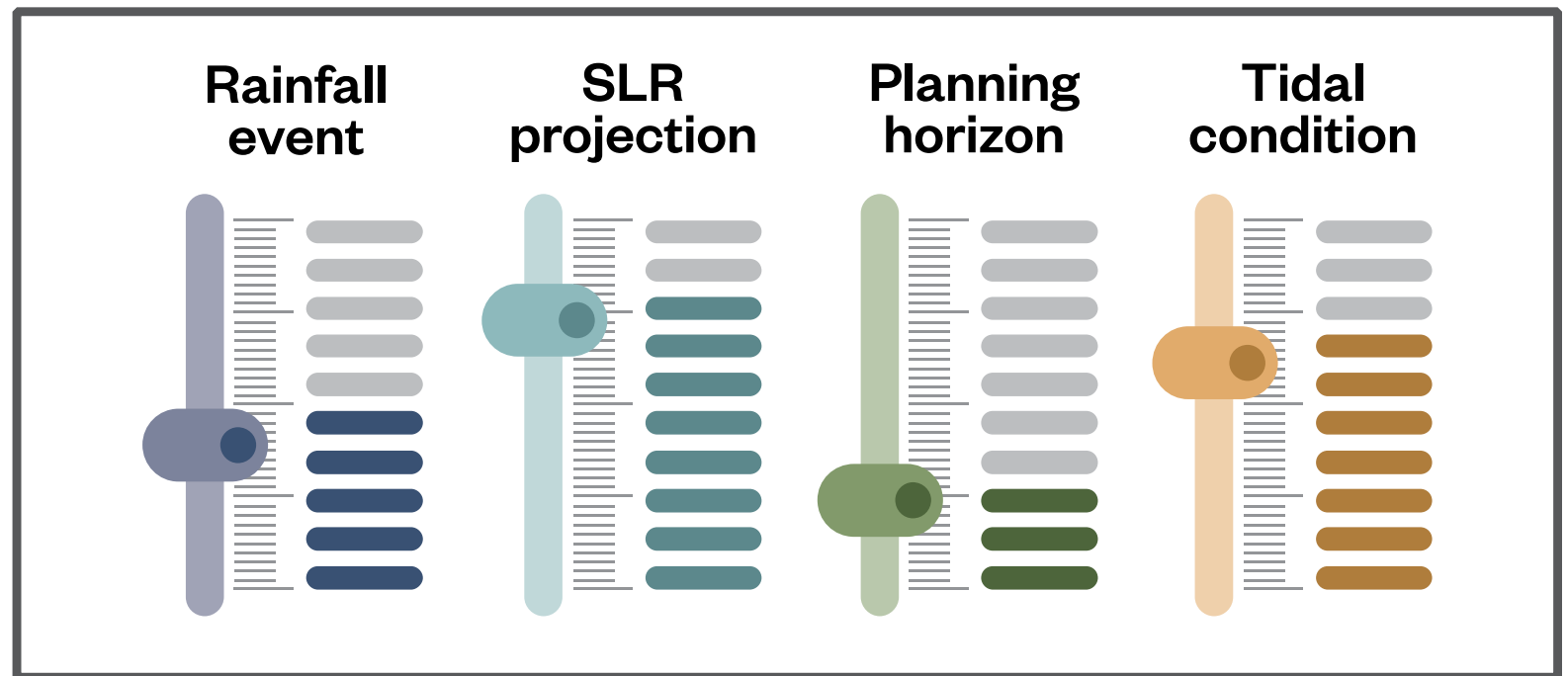
Countywide Risk Assessment and Hydrologic Modeling

- Countywide Hydrologic Modeling to simulate flood depths
 - Matrix of scenarios
 - Identification of "at risk" Critical Infrastructure
 - Heat Map Analysis – helps guide adaptation strategies and evaluation of GI co-benefits

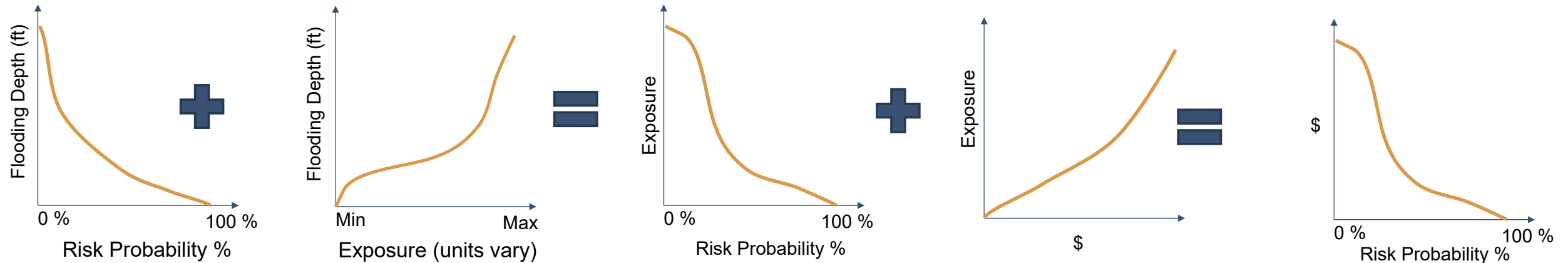


Deliverables

- Results maps
- GIS tools
- Model files



A series of modeling modules allows development of "Risk Probability"



- **Hazard Module** - or how high will the flooding waters be?
Output: A risk probability v. stage curve.
- **Exposure Module** - or how are the assets affected for each water level?
Output: A curve: stage v. exposure curve
- **Vulnerability Module** - or how does the hazard and exposure combine?
Output: A curve: risk probability v. exposure curve
- **Economic Evaluation Module** - or what does the vulnerability mean in \$?
Output: A risk probability v. \$ curve

County Asset Analysis

- Risk Assessment of County-owned assets (based on flood analysis)
- Assess County design-phase projects for resiliency
- Limited site specific/conceptual adaptation plans
- Capital Planning (Resiliency) Checklist



Deliverables

- Asset analysis maps, tools, and geodatabases
- Assessment methodology and checklist
- Conceptual adaptation representations and cost estimates

Economic Modeling

- Economic modeling methodology
- Financial risk and credit impact modeling (property damage/value, business disruption, insurance premiums, etc.)



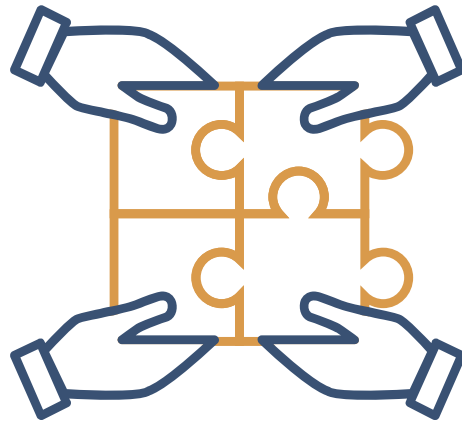
Deliverables

- Modeling methodology and assumptions
- GIS tools
- Results maps/graphics



Resilience Adaptation Plan

- Adaptation Strategies Analysis
- Property Scale Proposals
- Resilience Plan Elements & Recommendations



**Considerable
Stakeholder Involvement**

HazenConverge
Multi-Criteria Decision Tool

ADAPTATION PLAN DASHBOARD

CITY OF
Hollywood
FLORIDA

Dashboard >

EVALUATION SUMMARY

SELECT TYPE OF COMPONENT

Evaluator Name:

Evaluation Date:

Project Type:

- Assisted Living Facilities
- Rehabilitation Center
- Nursing Homes
- FPL Substations
- Hospitals
- Historical/Cultural
- Community Redevelopment Area
- Parks, Recreation & Cultural Arts
- Transportation/Evacuation Routes
- Police Department Assets
- Fire Department Assets
- City Hall/Management
- Water Treatment Plant
- Water Pumping Stations
- Wastewater Pumping Stations
- Wastewater Treatment Plant

SELECT COMPONENT/FACILITY

Select Component

- Fire Rescue Station 5
- Fire Rescue Station 31
- Fire Rescue Station 40

Vulnerability Score	Criticality Score	Combined Score
4	5	20

Project ID:

Project Address:

RISK SCORE

		Score
	Health and Safety 0 - No impacts 1 - Impacts	1
	Economic 1 - \$0 to \$10M 2 - \$10M to \$100M 3 - \$100M to \$500M 4 - Greater than \$500M	1
	Ecological Ranking from 1 to 5: 1 - Minimal Impact 5 - Highest Impact	3
	Cultural and Historical 1 - Minimal Impact 2 - Some Impact 3 - National Register	2

CONTRIBUTION TO TOTAL RISK SCORE

Adaptation Strategies Analysis

Basin Level Water Management Adaptation Strategies

Mitigation Strategies

- Pump Stations



- Natural Barriers



- Storage/Impoundments



- Regulation Changes

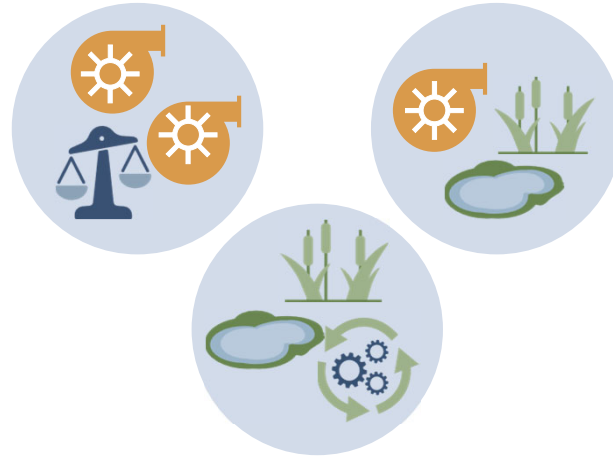


- Operation Changes



- Et cetera

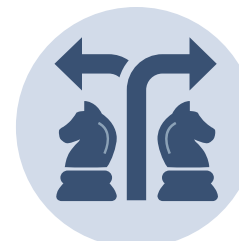
Strategy Combinations



Operational Strategies



Alternative Management and Development Strategies



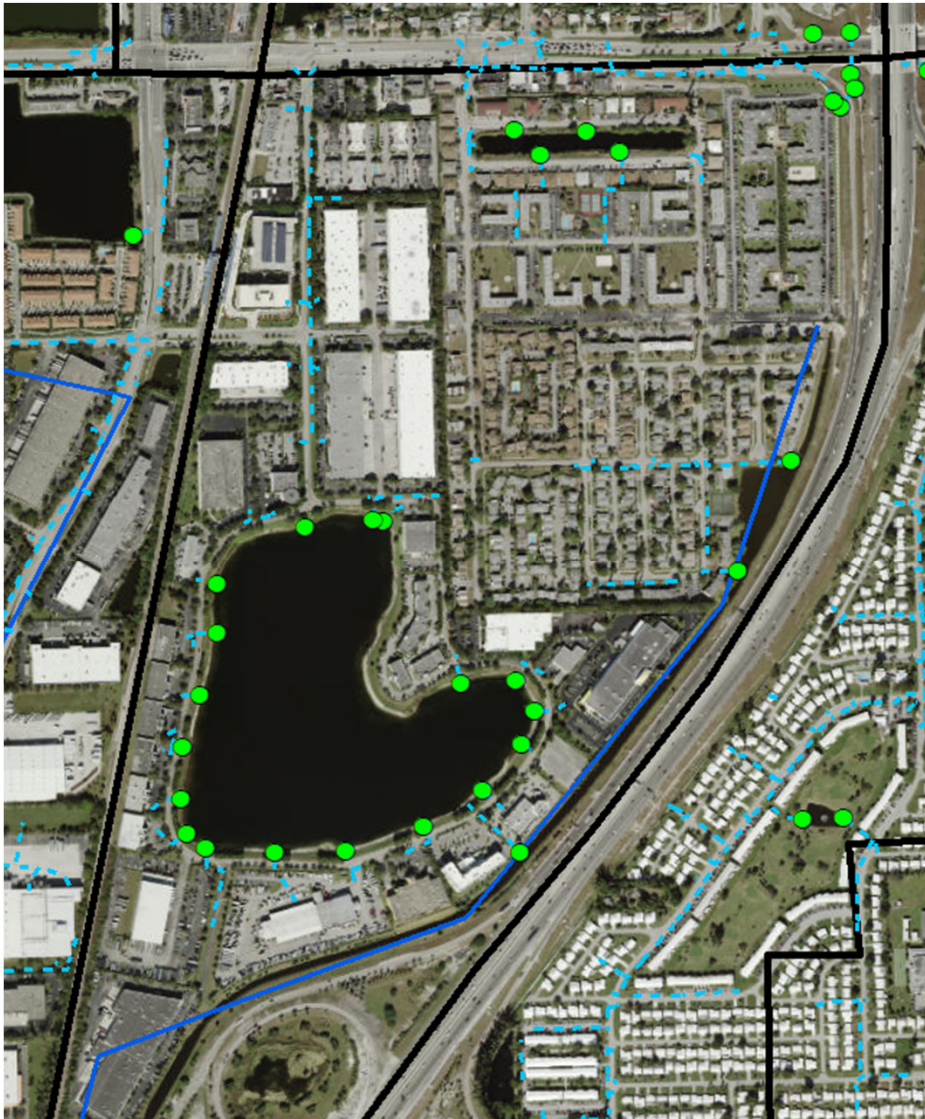
Deliverables

- Technical Summary of Analyses



**Compute
Risk
Reduction
Benefits**

Property Scale Proposals



Deliverables

- 10 Property scale proposals (including results maps, analysis files, GIS tools)

- Representative sites/sub-basins
- Consider innovative technologies
- Evaluated for multiple storm events

Resilience Plan Elements & Recommendations



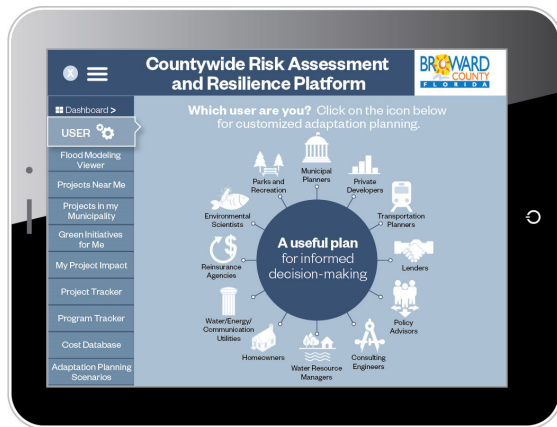
- Adaptation Roadmap (investment, funding, collaboration)
- Redevelopment Evaluation
- Use of Green Infrastructure
- Socioeconomic Challenges
- Financial Plan Considerations



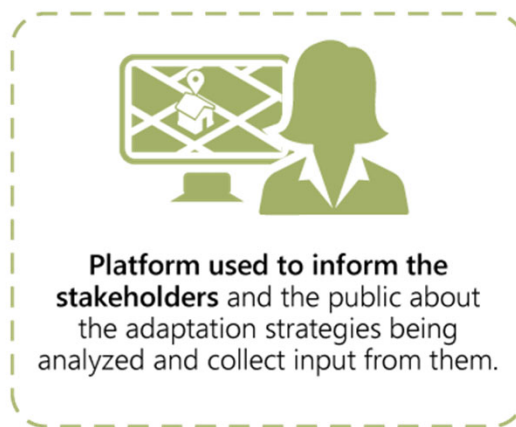
Deliverable

- Resilience Plan (Complete Summary Report)

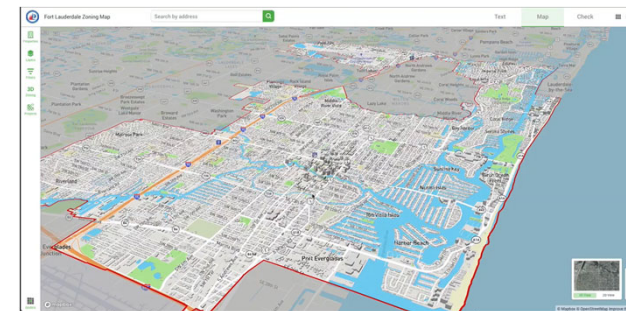
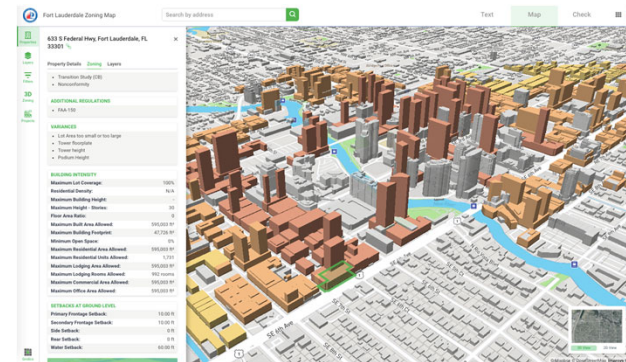
Resilience Planning Platform



The "Hub" of communications and information sharing



Tool to facilitate outreach and solicit stakeholder feedback



Incorporates visualization and mapping functionality



Includes economic analysis dashboards and investment/plan progress tracking

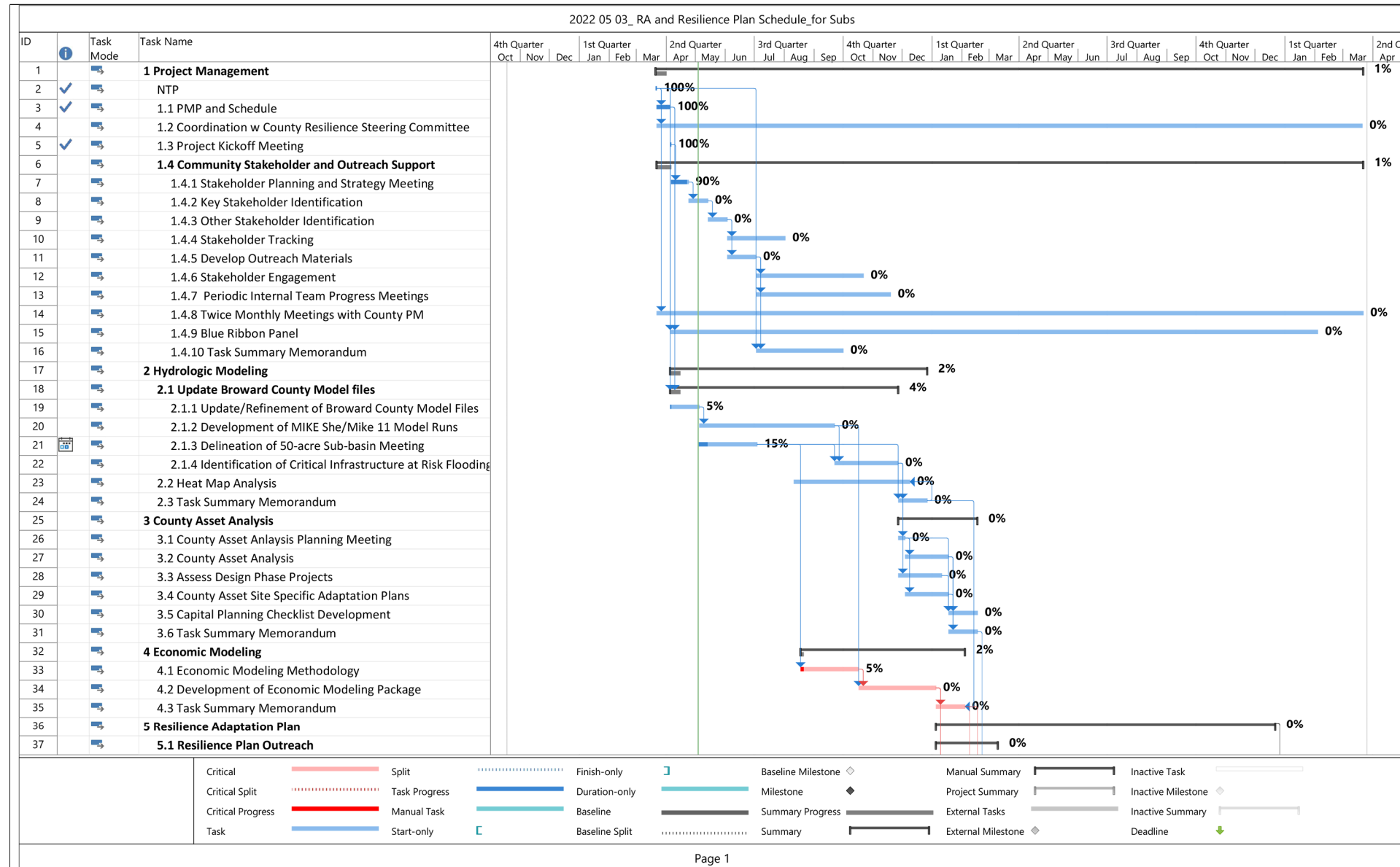
Sharing Project Results and Resilience Plan

- Dissemination of results to stakeholders throughout the project
- Submittal of Draft and Final Summary Reports
- Turn over of "Resilience Platform" to County

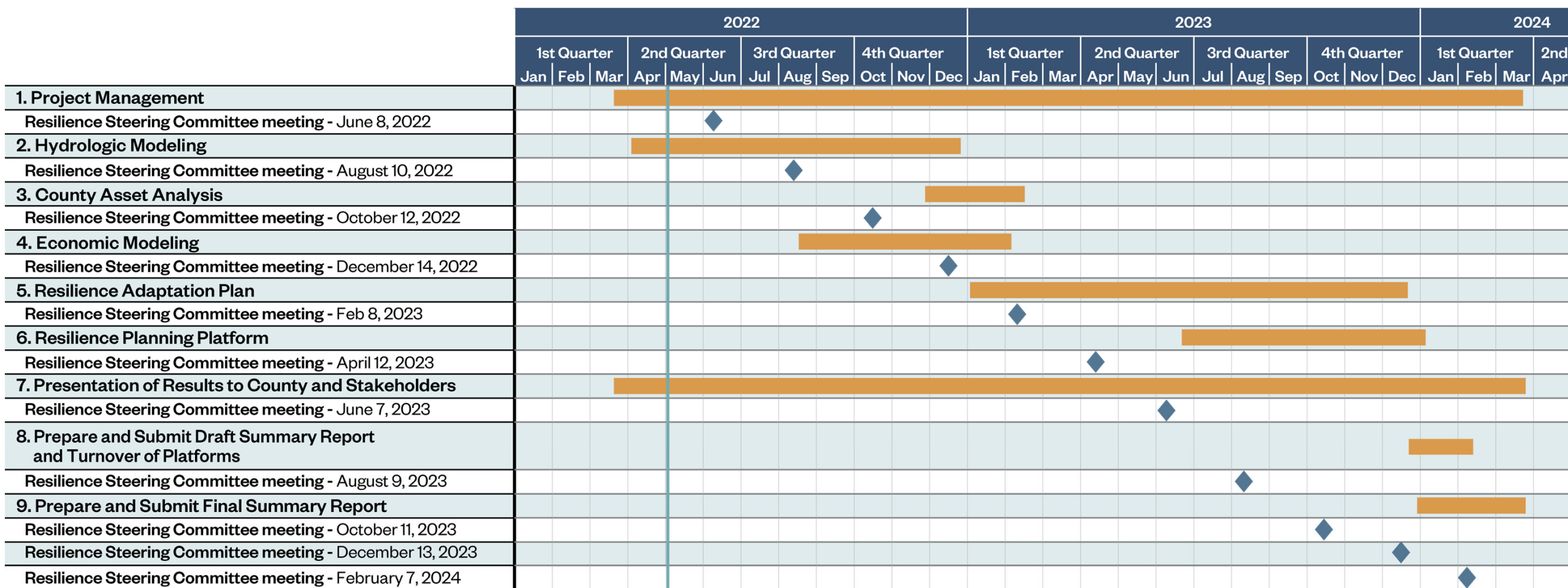


Visualizations used to translate information with stakeholders

We have a detailed two-year schedule to complete the work



Committee meetings throughout provide strong feedback loop





4.

Involvement of the Resilience Steering Committee

The role of this committee was previously addressed

- Serve as sectoral and community representatives
- Provide additional project oversight
- Contribute subject matter expertise
- Aid in identifying gaps/testing assumptions
- Propose refinements
- Review and respond to primary deliverables
- Help to ensure production of a powerful work product



Consider your role with a few simple things in mind

1

Beneficiaries should see and understand their benefits while recognizing we are all in this boat together.

2

The plan should be perceived as realistic.

3

The plan should be easy to understand and use.

4

We should identify early wins to build support and momentum.

