Addressing Resilience for Communities

Presenters: Neal T. Wright, PE, PMP

Session Outline

- Resilience Defined

- Approach for Communities

- Example Projects and Lessons Learned

- Closing Thoughts

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What is Resilience

- From Executive Order 13653 (2013) resilience is "the ability to anticipate, prepare for and adapt to changing conditions and withstand, respond to and recover from disruptions"

- From our CEO Don Stone: Resilience is "The capacity of a system or enterprise to maintain its core purpose in the face of dramatically changed circumstances"

EXECUTIVE ORDER ON
CLIMATE PREPAREDNESS

"We're going to need to get prepared. And that's why this plan will also protect critical sectors of our economy and prepare the United States for the impacts of climate change that we cannot avoid."
—President Barack Obama – June 25, 2013

$136B
TOTAL FEDERAL SPENDING ON DISASTER RECOVERY AND RELIEF IN 2011-2013

On November 1, 2013 the President signed an Executive Order (13653) that directs federal agencies to take a series of steps to make it easier for American communities to strengthen their resilience to extreme weather and prepare for other impacts of climate change.

IMPACTS

E.O. 13653 addresses impacts of climate change and extreme weather, such as:

BLIZZARDS EXTREME COLD EXTREME HEAT HURRICANES HEAVY RAINS

SEA LEVEL RISE STORM SURGE WILDFIRES DROUGHT LIGHTNING TORNADOES

ACTION AREAS

E.O. 13653 identifies four primary action areas to enhance climate preparedness and resilience.

http://www.slideshare.net/ICFI/executive-order-on-climate-preparedness-infographic

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Resilience for Communities

- Identify what is most important to the community

- Getting what is most important back defines resilience

Schools

Industrial/Manufacturing

Infrastructure

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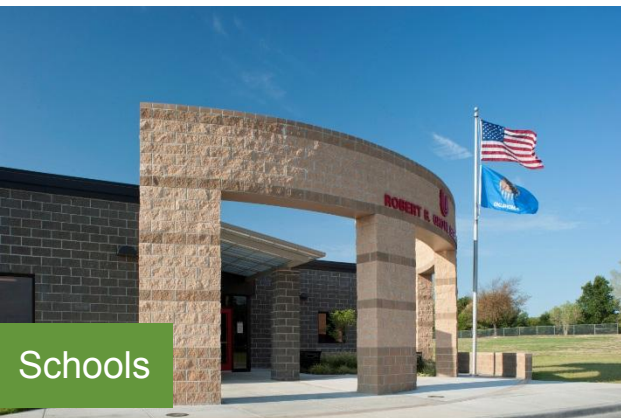
Our Community Approach

- Take the longer view to protect what the community values most

- Supplement response and recovery plans with resilience-based infrastructure planning and capital projects

- Take advantage of creative funding sources and capital planning

Elected officials have an opportunity to preserve the community's way of life for the long term

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Communities face unprecedented threats to their well-being and way of life

Resilience is about minimizing the impact of the hazards that have:

- The **greatest likelihood** of occurring, with

- The **most significant disruptive impact** on the community fabric,
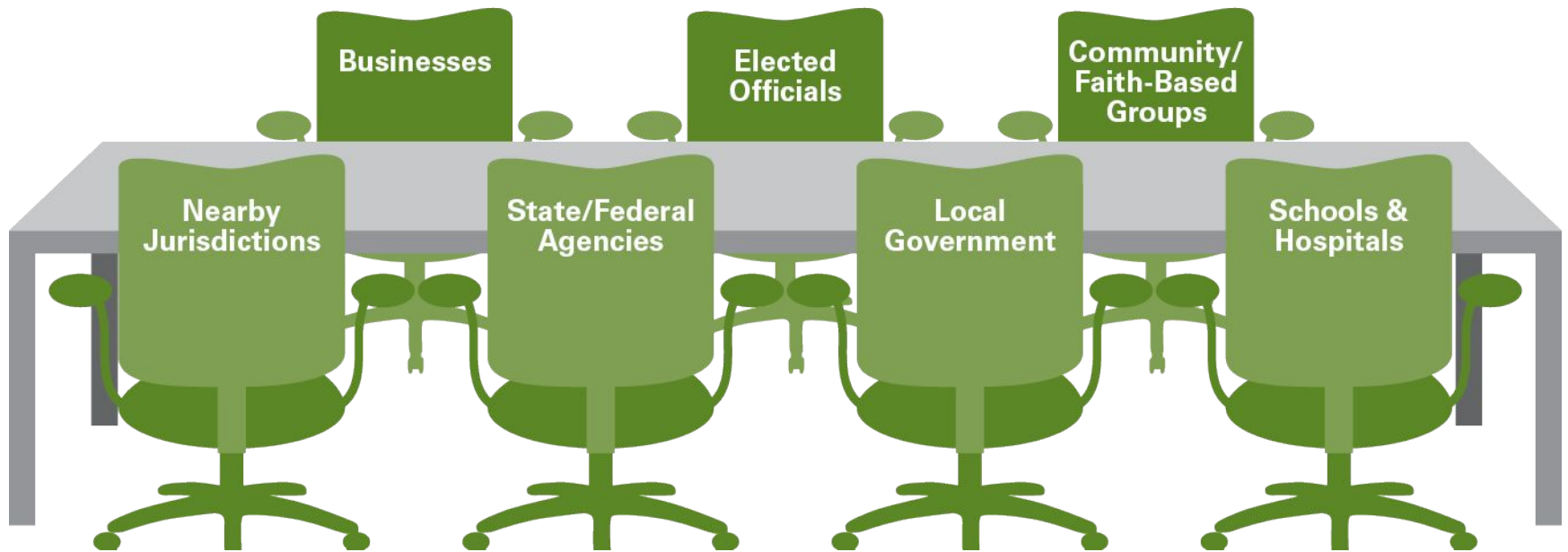
- For the **longest period of time.**

Aging Infrastructure

Flint Water Crisis

Sea Level Rise

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Our Solution

STAKEHOLDER ENGAGEMENT

STEP **4** Develop an Affordable Plan

STEP **3** Analyze Solution Alternatives

STEP **2** Define the Greatest Threats/Vulnerabilities

STEP **1** Define the Community Fabric
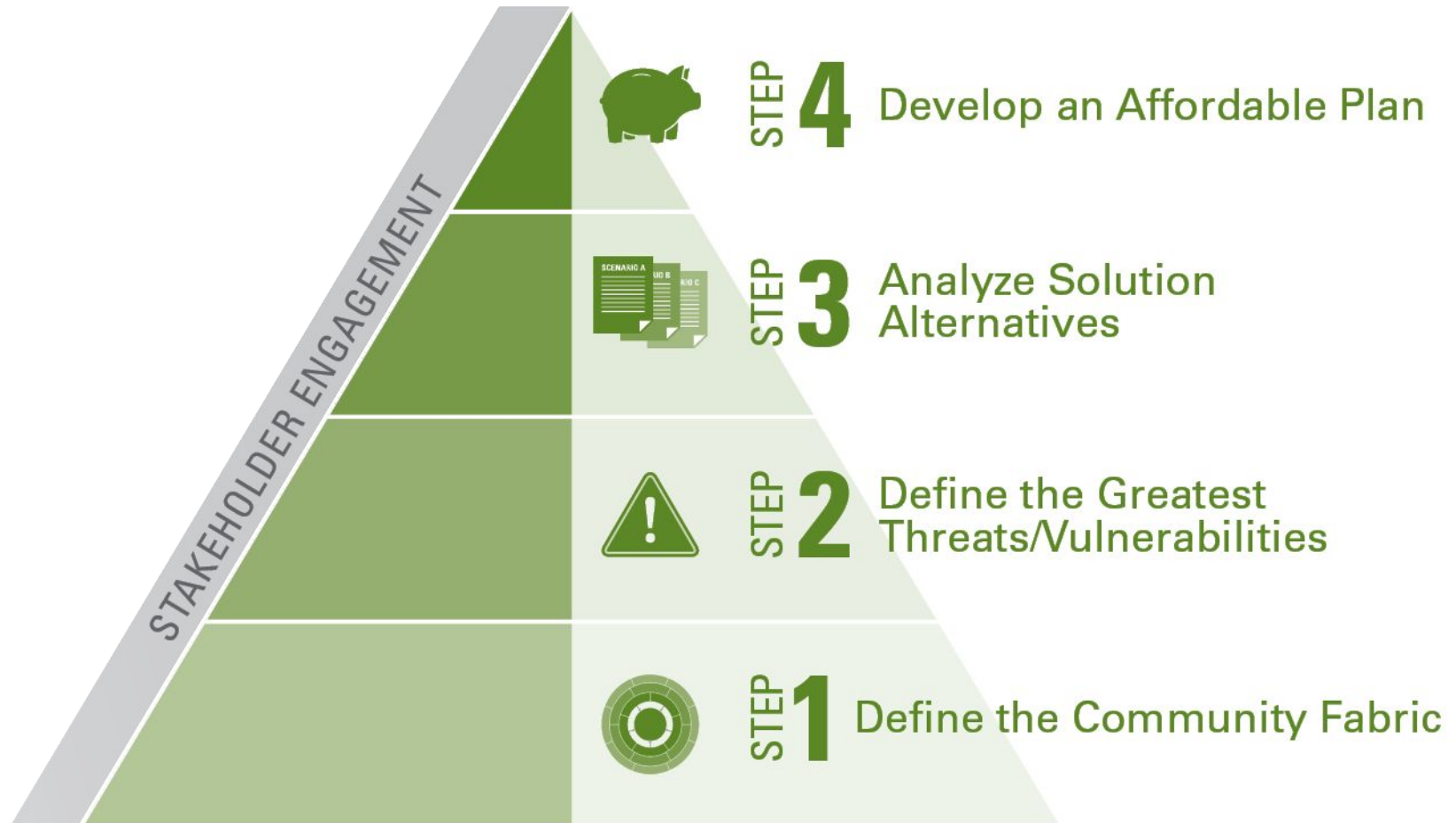
Players & Relationships

ID Players and Relationships
Cast a Wide Net

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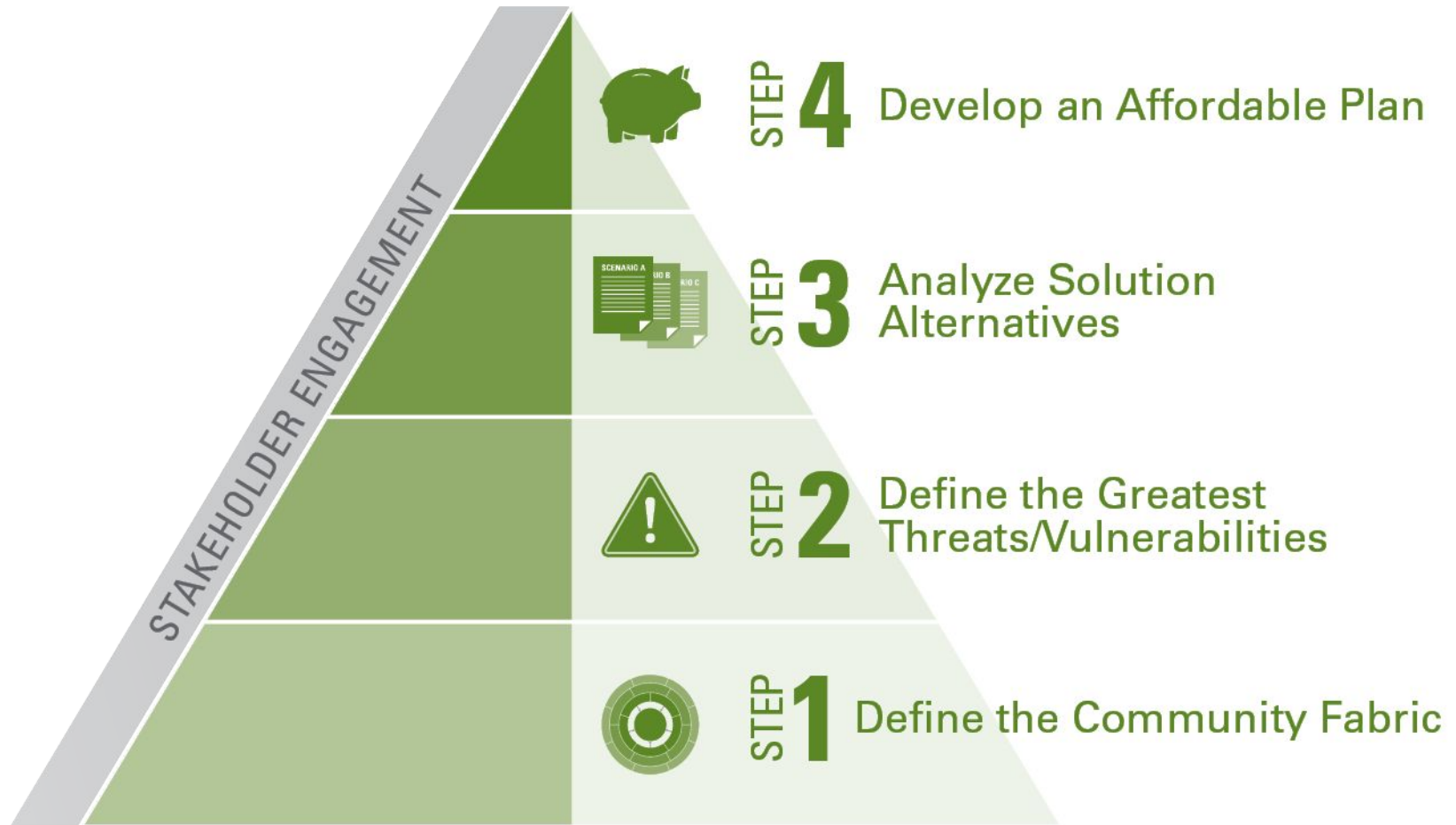# Define the Community Fabric

How does the community define **"normal?"**

- Activities: What

- Sectors: How

- Organizations: Who

What does it **value** most?

What does it need to **protect** most?

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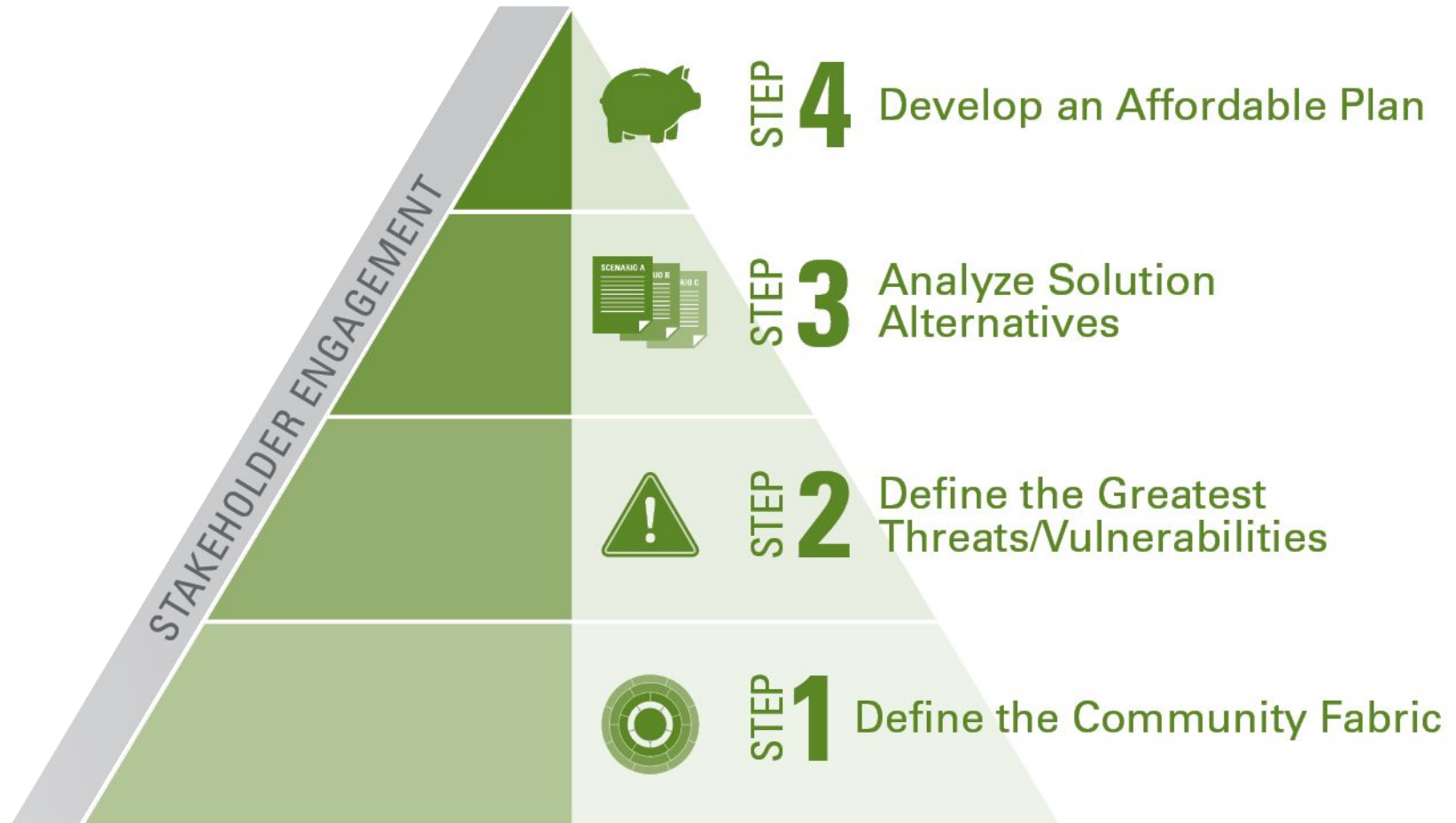
Our Solution

A pyramid diagram with "STAKEHOLDER ENGAGEMENT" running up the left edge, and four horizontal tiers:

- STEP 4 — Develop an Affordable Plan
- STEP 3 — Analyze Solution Alternatives
- STEP 2 — Define the Greatest Threats/Vulnerabilities
- STEP 1 — Define the Community Fabric

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Threats, Vulnerabilities & Opportunities

STEP 2

DISTILL TO MAJOR THREATS

- Impact the elements that drive the economy.

- Usually pose the greatest risk of disruption.

Climate Change

Severe Storm

Infrastructure

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Our Solution

STEP **4** Develop an Affordable Plan

STEP **3** Analyze Solution Alternatives

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STEP **1** Define the Community Fabric

STAKEHOLDER ENGAGEMENT

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Analyze Solution Alternatives

STEP 3

Timeline for Scenario Occurrence

Anticipated Impacts on the Community Fabric

- Controllable factors
- Uncontrollable factors

Options to Address Impacts

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Our Solution

STAKEHOLDER ENGAGEMENT

STEP **4** Develop an Affordable Plan

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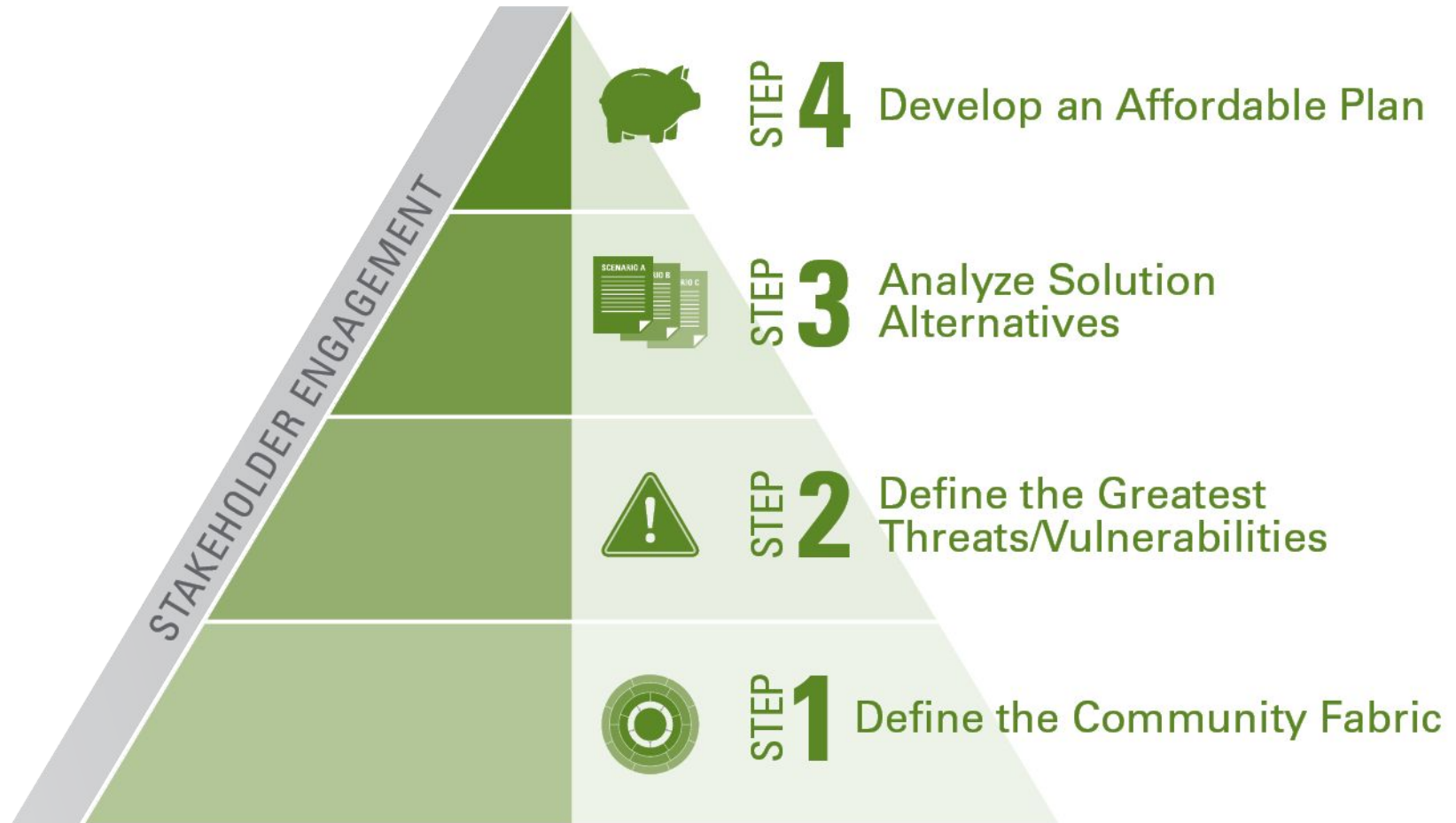
Develop an Affordable Plan

We address funding needs and gaps through:

- Funding analysis tools

- Knowledge of non-traditional sources of funds

- Capital project funding profile

- Funding timeline

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Benefits of this Approach

Heavy Engagement of the Right Stakeholders

Focus on Long-Term Stability

Hones in on the Most Significant Risks

Leverages Creative Financing and Planning

Intended Outcomes

- Clearer **focus on the greatest threats** to the community

- Long-term **community stability, security, and well-being**

- Greater **ability to attract/retain businesses and drive growth**

- Greater **confidence in leadership** to engage the right people and protect the community's way of life

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Example Project: Lower Hudson River Rebuild by Design Project

- Follow up Post-Sandy project for City of Hoboken from Rebuild by Design Competition

- Assessment of concepts and alternatives to reduce flood risk from coastal storm surge and rainfall flooding

- Concurrent use of NEPA framework to conduct EIS

- Feasibility assessment and EIS schedule – Two years
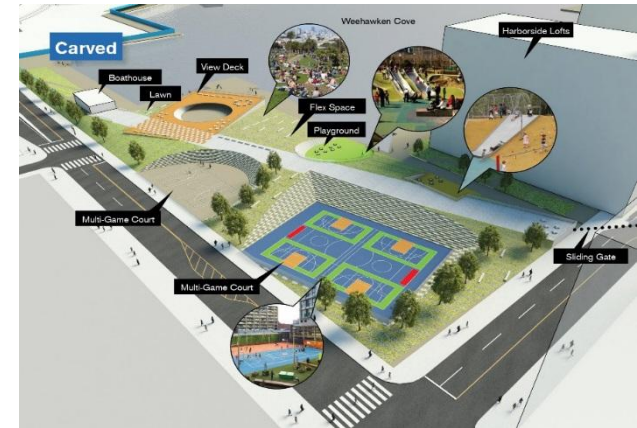
For more information about this project, go to www.rbd-hudsonriver.nj.gov

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Lessons Learned: Lower Hudson River Rebuild by Design Project

- Involve local community leaders in community engagement to discuss pros and cons of the project

- Provide urban amenities along with flood risk reduction benefits to gain community buy-in

- Use multidisciplinary feasibility assessment following NEPA framework to analyze and screen alternatives producing the recommended preferred alternative


Caption: helping residents visualize new infrastructure

Published on Oct 14, 2016 Preferred Alternative Flyover presented at 9/8/2016 public meeting **Category** Education **License** Standard YouTube License

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Example Project: Virginia Beach SLR/Recurrent Flooding Study

- Comprehensive flood risk assessment addressing climate science and SLR

- Formulation of adaptation strategy

- Strategy evaluation including feasibility and ROI

- Deliverable: Watershed –based adaptation plans

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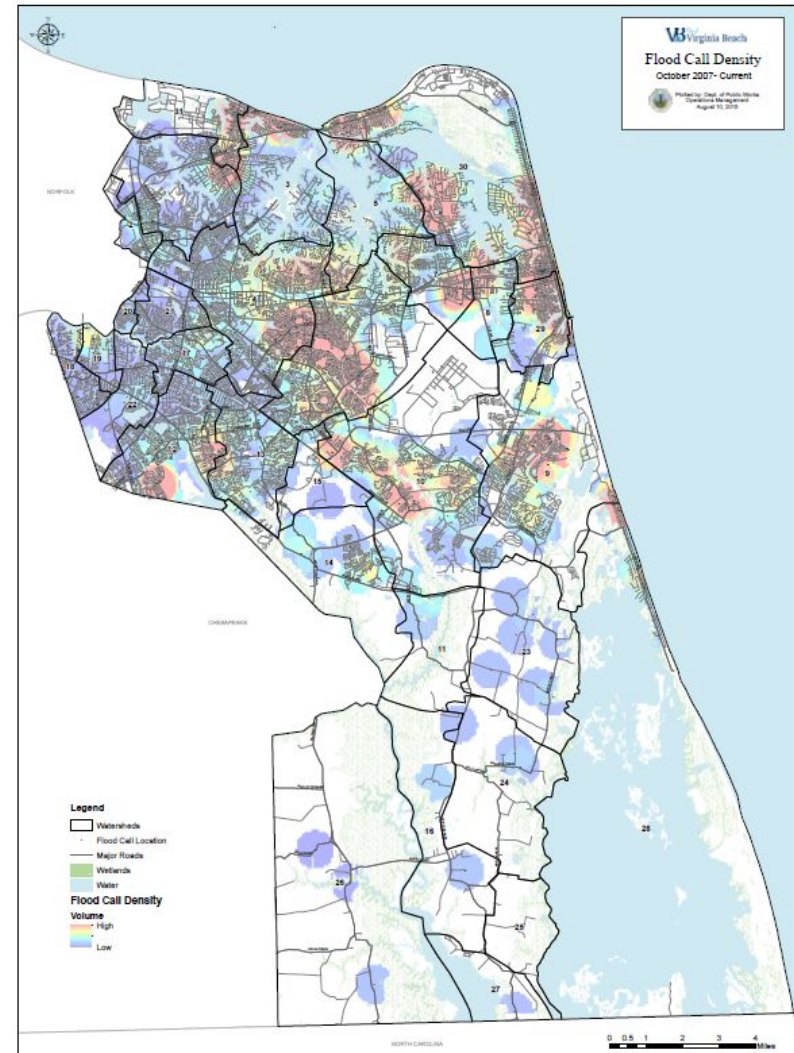
Lessons Learned: Virginia Beach SLR/Recurrent Flooding Study

- Piece meal approach is not long-term solution

- Aligning SLR planning scenarios with CIP and infrastructure lifecycles enables action

- Revise design standards to assess climate science and SLR

- Use Hazus as a forensic tool to identify project needs

- Synchronize Water Quality, Stormwater Master Plan and SLR Study in "Trident approach"

Example Project: Florida DEO SLR vulnerability/adaptation studies

- Scope: Conduct Risk Assessment and Adaptation Planning

- Three Pilot Locales
  - St Augustine
  - City of Clearwater
  - Escambia County

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Lessons Learned: Florida DEO SLR vulnerability/adaptation studies

- Engage community representatives early to define issues and tailor scope

- Each community's SLR scenarios were different

- Use multiple flood types to gain perspective on the range of future impacts

- Finished floor elevations are expensive to collect, but very valuable in effective risk assessment

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Closing Thoughts

- *Tough question for engineers:* What would you do?

- Think, do, record, communicate, **resilience** in all your projects

- *It's all about Perspective*

We (engineers) are doing resilience work in so many of our projects, but maybe not calling it that or highlighting it for what it is…focusing on the resilience aspect of studies and designs is something we should work to become more commonplace

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Questions

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