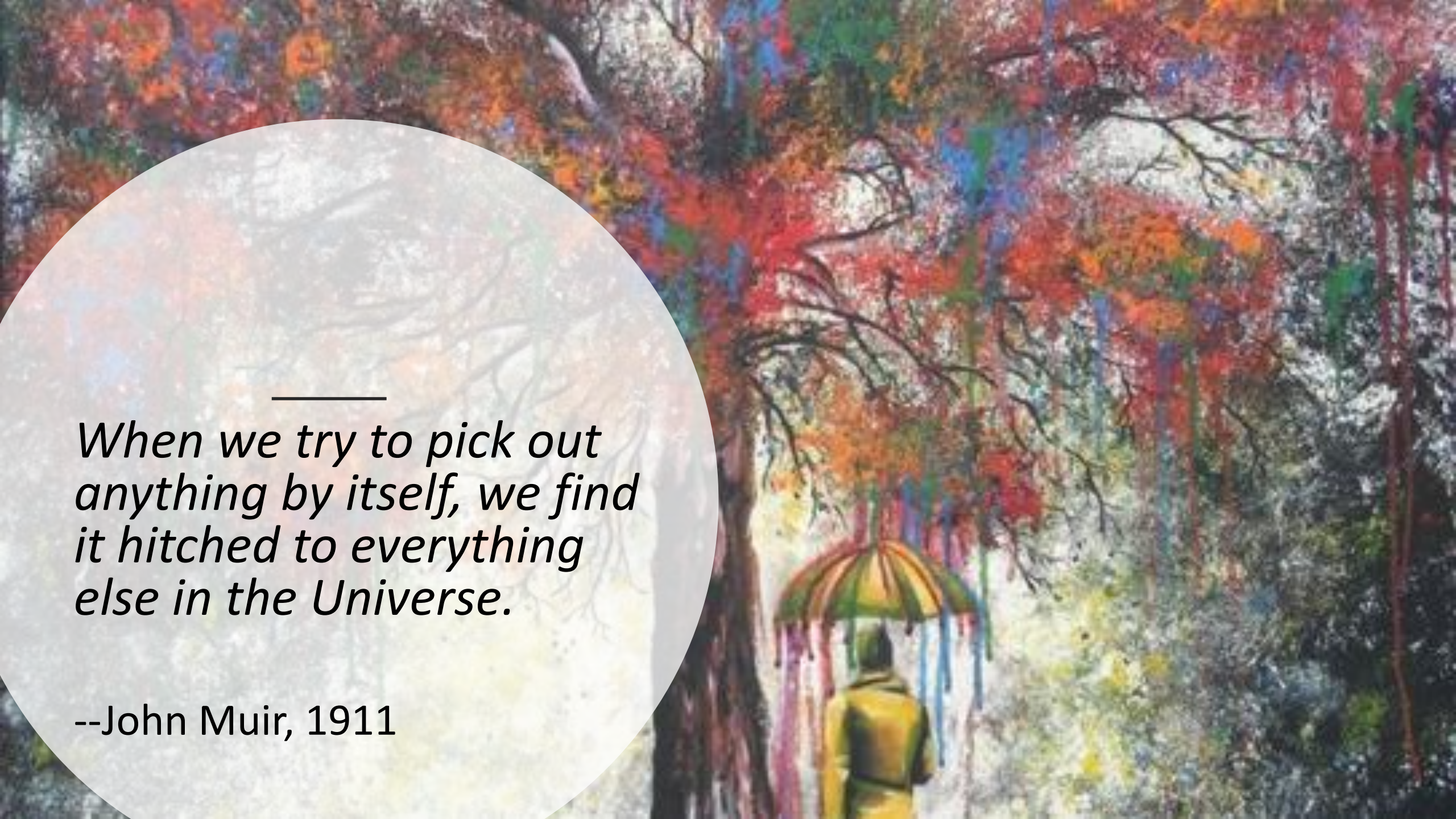
Resilience Quotient

Point-Based System for Managing Shocks & Stresses

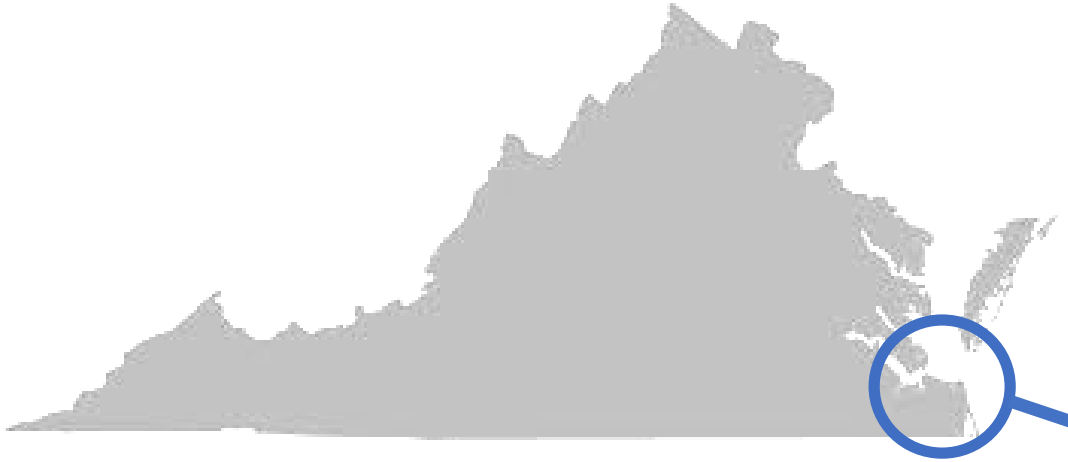
Resilience is the capacity of **individuals, communities and systems** to survive, adapt and grow in the face of **stresses** and **shocks** and even transform when conditions require it.



When we try to pick out anything by itself, we find it hitched to everything else in the Universe.

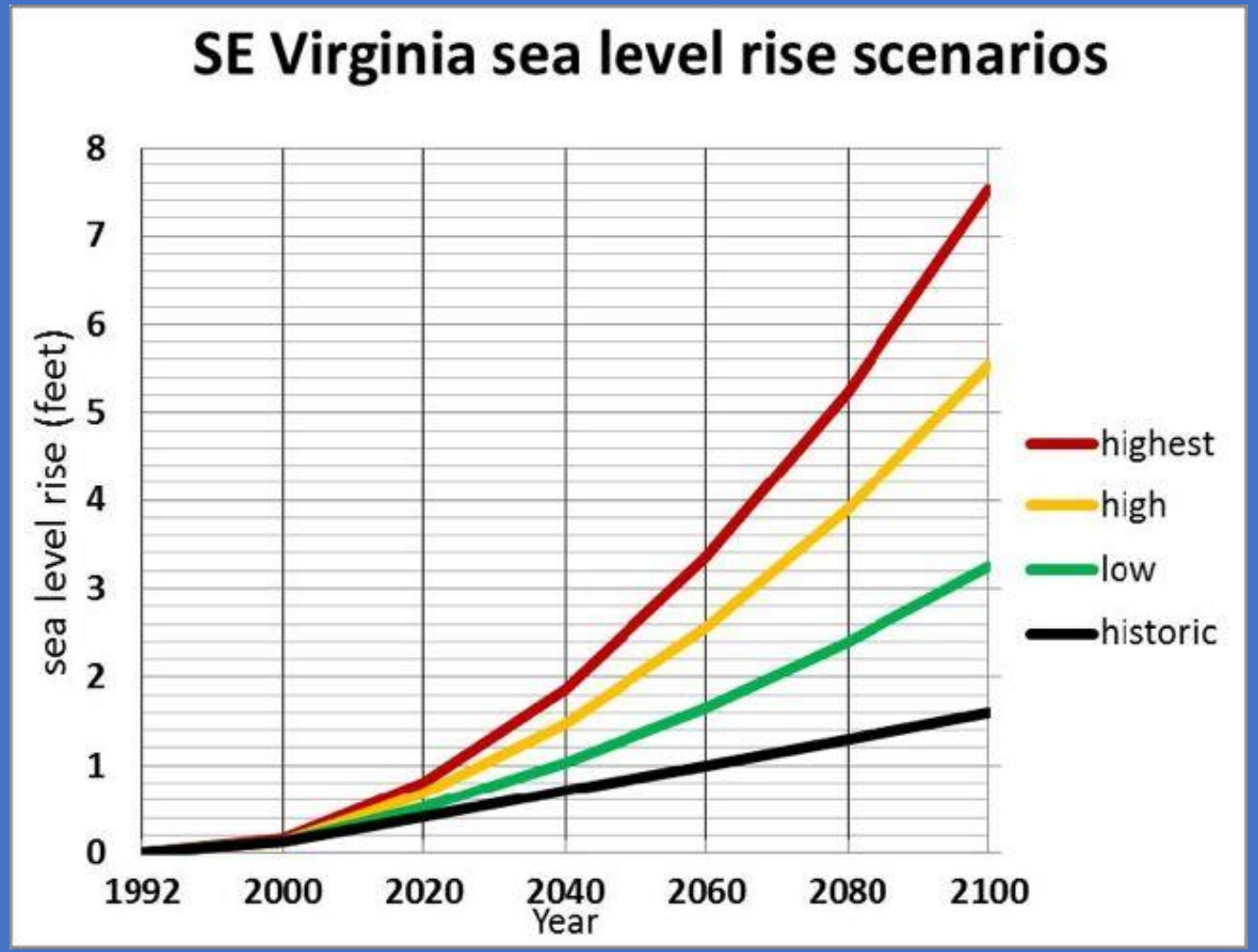
--John Muir, 1911

Norfolk: Second-Largest City in Virginia

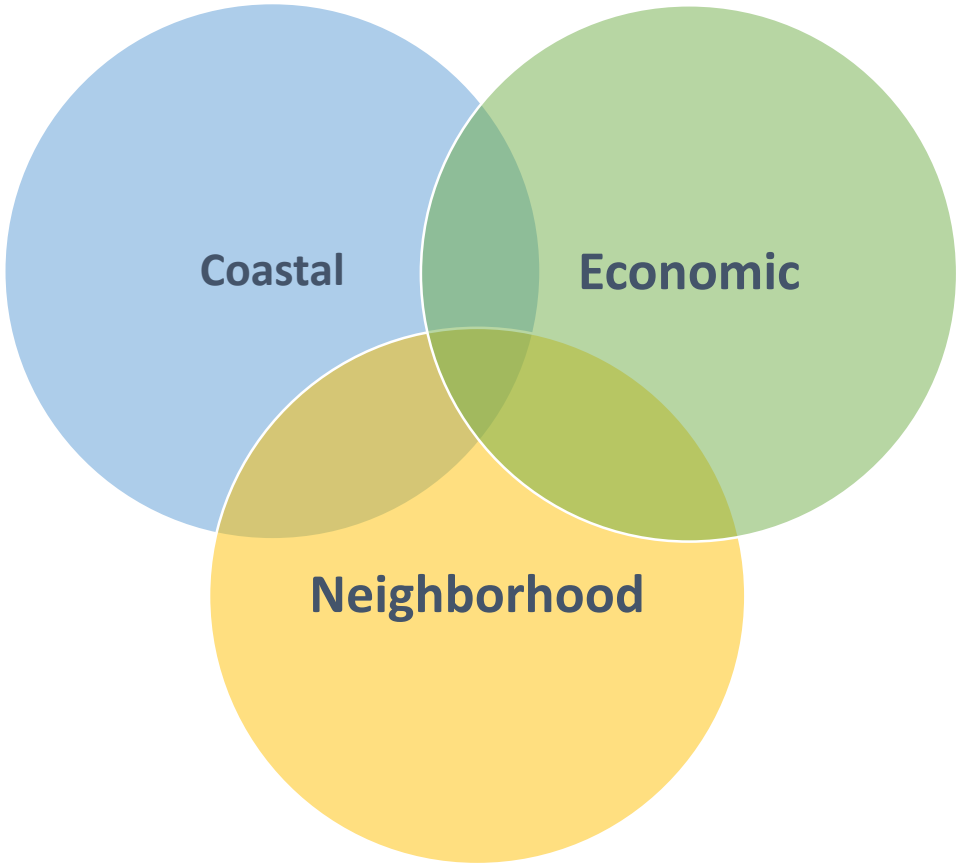


- 54 square miles, 144 miles of coastline
- Approximately ¼ million residents
- World's largest Naval Base
- Port of Virginia (3rd busiest on east coast with deepest natural channel)

Norfolk's Existential Threat: Sea Level Rise



Resilience Challenges in Norfolk



Coastal

- Recurrent flooding and SLR

Economic

- Navy and port are dominant; too little else

Neighborhood (Social)

- Concentrated poverty & disconnected communities

Overall Resilience Goals

- Design the coastal community of the future
- Create economic opportunity by advancing efforts to grow existing and new sectors
- Advance initiatives to connect communities, deconcentrate poverty, and strengthen neighborhoods

How can Zoning Respond to Resilience Challenges?

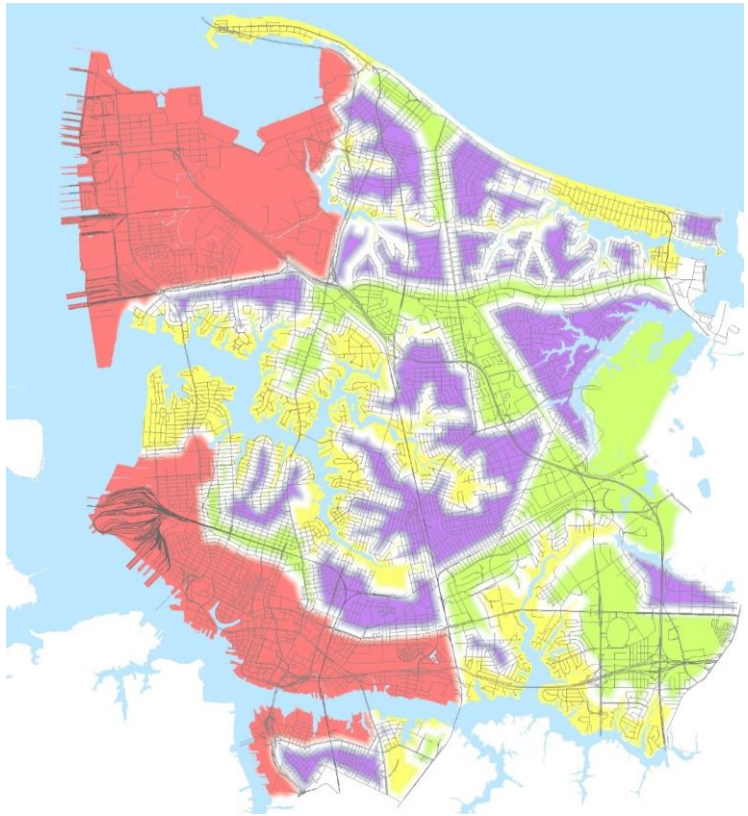
Flood Resilience Through Zoning

Norfolk has adopted “Rise Above the Risk” Approach

- Freeboard requirements:
  - 3 feet in SFHA
  - 18” in Shaded X
  - 16”-24” everywhere else in City
  - No new basements

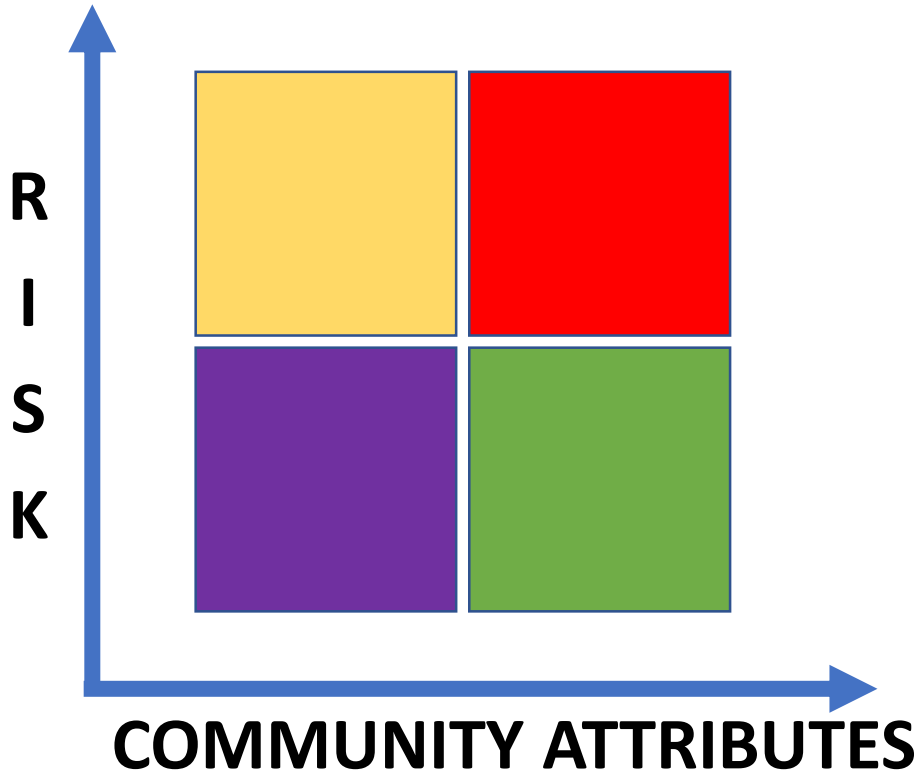
But, Beyond Freeboard…???

How to increase resilience in a city that is 97% developed…



…with a LMI-oriented construction market?

Philosophical Underpinning



Aligning Risk and Attributes:

- Focus on where to invest first public and private dollar
- Drives zoning choices
- Forms the basis for a community conversation about concentrating on protecting, preserving and enhancing community attributes as part of a risk management strategy

Resilience Strategy in Zoning

Focus on flexibility and choice

- Must do—build into requirements
- Should do—create options
- Nice to do—provide a bonus

Add performance standards

Resilience Quotient is a blend of all

Performance Standards

Several uses are required to maintain power through generators:

- Assisted Living
- Nursing Home
- Pharmacy
- Bank
- Convenience Store
- Grocery Store
- Gas Station

RESILIENCE FEATURES IN THE ORDINANCE

Building a Better Norfolk
a zoning ordinance for the 21st century

BASELINE RESILIENCE STANDARDS
required for all development

- **STORMWATER MANAGEMENT** store first 1.25" of rainfall on site (rain barrels for SFD)
- **RISK REDUCTION** Flood and wind resistance
- **ENERGY SELF RELIANCE** Alternative energy sources and/or "generator ready"

RESILIENCE QUOTIENT POINTS
required for all development

- **COASTAL RESILIENCE OVERLAY** (requires more resilience points)
- **RESILIENCE BONUS PROVISION** Allows development rights to be converted to resilience points
- **UPLAND RESILIENCE OVERLAY** (requires fewer resilience points)

Easements on dwelling units in Coastal Resilience Overlay can be used as Resilience Quotient Points in Upland Resilience Overlay

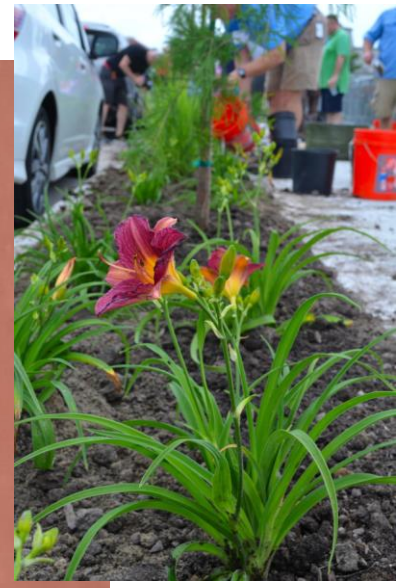
Premise of Resilience Quotient

Provide Flexibility to Developer and Property Owner to use the resilience tactics that work best for the specific project while still contributing positively to meeting the City's resilience strategies

Basic Construct of Resilience Quotient

Resilience Quotient

- Point-based system with many choices
- Intended to be both flexible and impactful
- Provides individuals with opportunity to be part of the solution



Resilience Quotient

Creating the most resilience-focused zoning ordinance in America

- Encouraging the use of resilient technologies
  - Stormwater management
  - Risk mitigation
  - Energy self-sufficiency
- Required of new development

TABLE 5.12.6: RESILIENT POINT SYSTEM FOR RESIDENTIAL DEVELOPMENT

Resilient Development Activity	Points Earned
Component 1: Risk Reduction	
Construct building to meet 110-mile wind load design requirements of the VUSBC	2.00
Elevate the ground story finished floor and all significant electrical and mechanical equipment no less than 3 feet above highest adjacent grade	1.00, plus 0.50 per ft. above 3 ft.
Construct an impact-resistant (hail, tree damage) roof	0.50
Install impact (hurricane or wind) resistant windows	0.50
Install operable storm shutters	0.50
Establish operating procedures for how the project will handle loss of off-site or grid power, transition to a backup source of power, and transition back to normal operation	0.50
Component 2: Stormwater Management	
Install a "green roof" on at least 50 percent of the total roof area (25 percent for renovated buildings) and only plant materials permitted in Section 5.2, Landscaping Standards	2.00
Install a "green roof" on at least 25 percent of the total roof area and only plant materials permitted in Section 5.2, Landscaping Standards	1.00

C. ALTERNATIVE M

Any multiple dwelling
resilience quotient sta
of the portion of the site plan review process established in Section 5.12.4, Compliance with Resilience Quotient Standards, above. The point system provides options within each of three components and each development shall achieve a minimum number of points from the menu of options shown in Table 5.12.6, Resilient Point System for Residential Development, based on the number of dwelling units within the development as shown below.

(1) 1 to 5 units: 4 points total, no less than 1 point per component.

(2) 6 to 29 units: 5 points total, no less than 1.5 points per component.

(3) 30 to 89 units: 6 points total, no less than 1.5 points per component.

(4) 90 to 199 units: 8 points total, no less than 2 points per component.

(5) 200 or more units: 10 points total, no less than 2 points per component.

Summary

- Norfolk uses for SLR; Resilience Quotient construct is transferrable to whatever existential threats exist for a community

Questions

For More Information

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