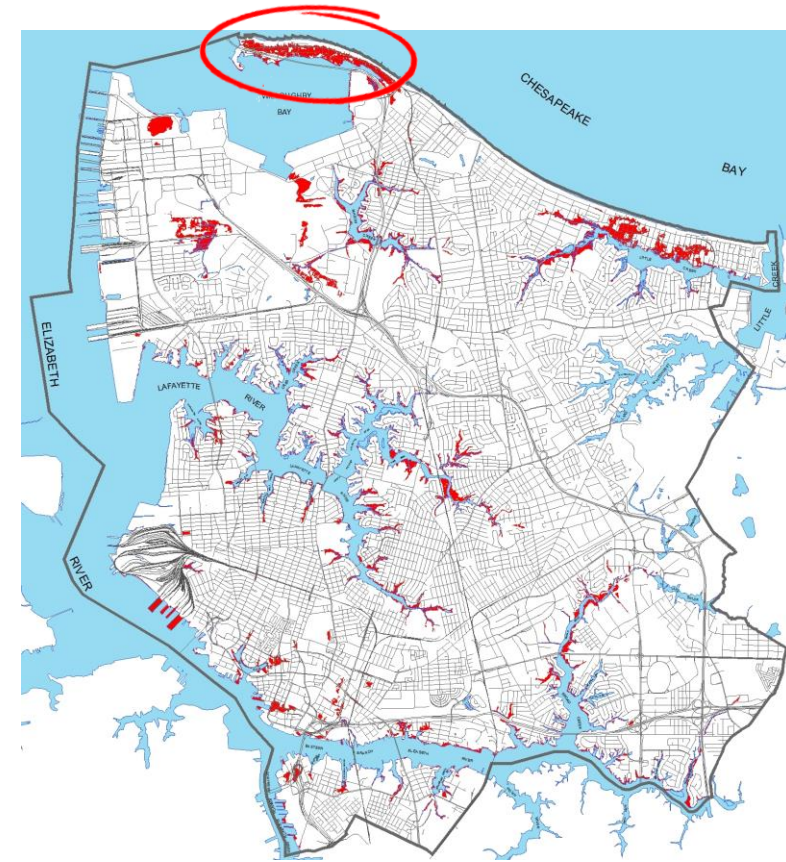


Resilience Zoning In Norfolk

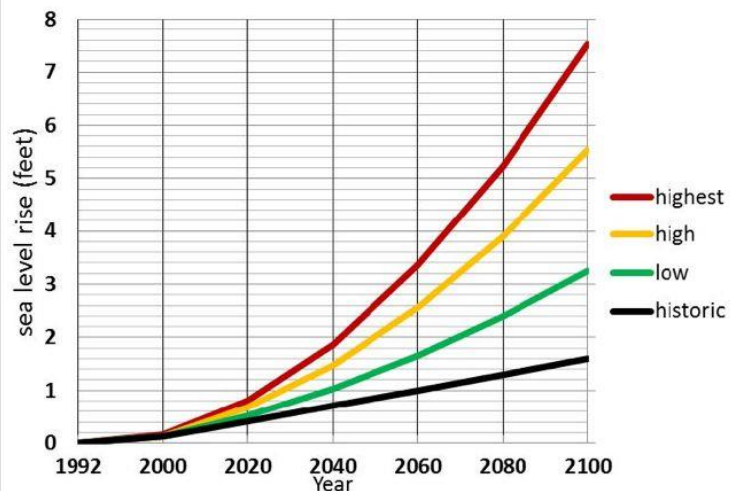
Jeremy E. Sharp, AICP
Zoning Administrator





Sea levels with 2-3 feet of
(relative) water rise

SE Virginia sea level rise scenarios



1938



February 2010



1962



1933



October 2015

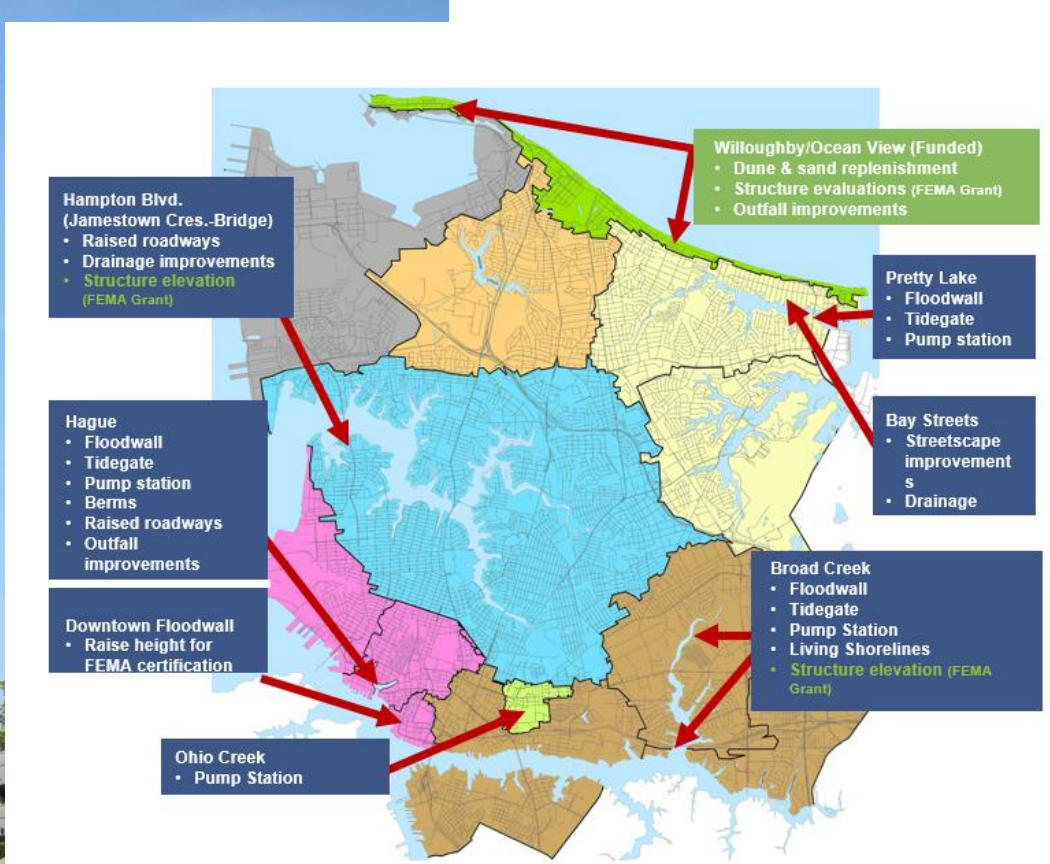


September 2016



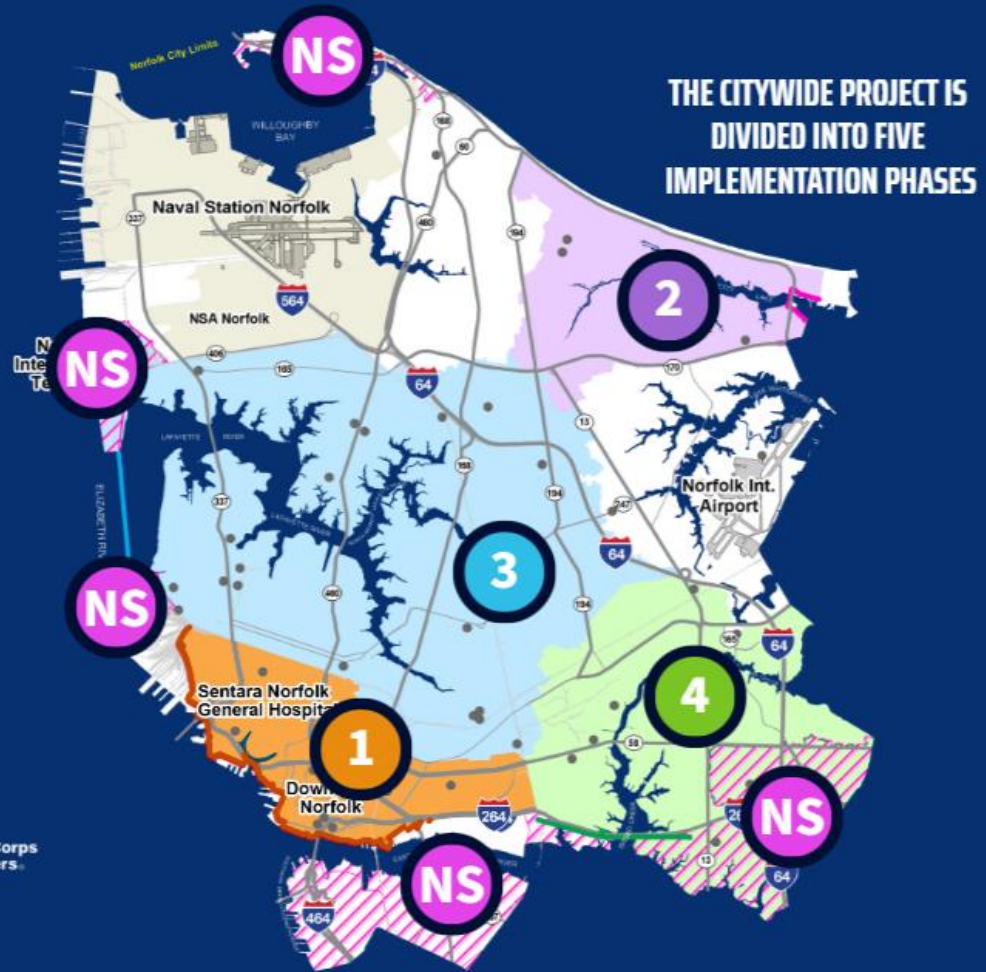
1962



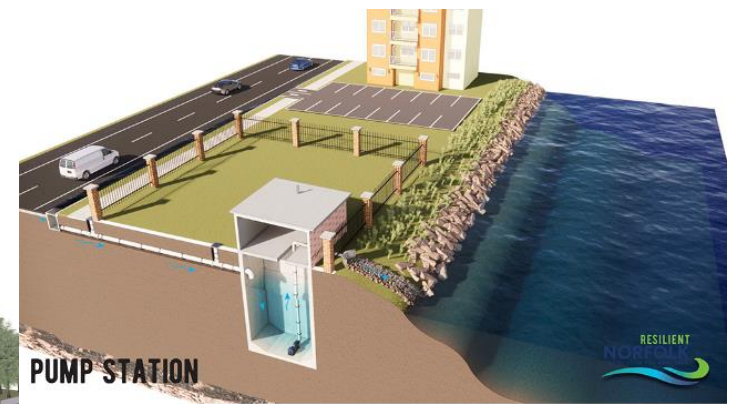




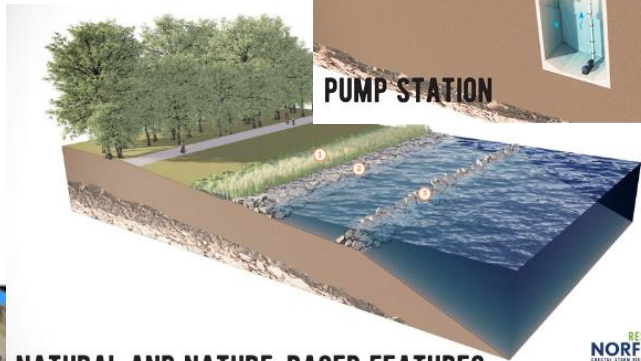
The city of Norfolk is increasingly at risk of flooding and damage from coastal storms. Norfolk has one of the highest rates of relative sea level rise (RSLR) among Atlantic coastal communities. The Coastal Storm Risk Management (CSRM) Project will protect the city from coastal flooding and damage from nor'easters, hurricanes, and other significant storm events.



THE CITYWIDE PROJECT IS DIVIDED INTO FIVE IMPLEMENTATION PHASES



PUMP STATION



NATURAL AND NATURE-BASED FEATURES





How can zoning respond to
resilience challenges?

Zoning Ordinance Rewrite

- Begun after adoption of 2013 Comprehensive Plan
- Informed by 2016 sea level rise action plan, Vision 2100
- 3½-year process
- 1,000's of residents reached
 - ~125 public/stakeholder presentations
 - Series of workshops with Tidewater Builders Association (that continue today)
- Council adoption January 23, 2018
 - Went live March 1, 2018



Resilience Quotient for Single-Family

Simpler options

1. Risk reduction – elevate by 16"
2. Stormwater management – capture 200 gallons of rainwater -or- plant/preserve 1-2 trees per 25 ft. of lot frontage
3. Energy resilience – install generator hookup



Resilience Quotient for Multifamily/Commercial

More options

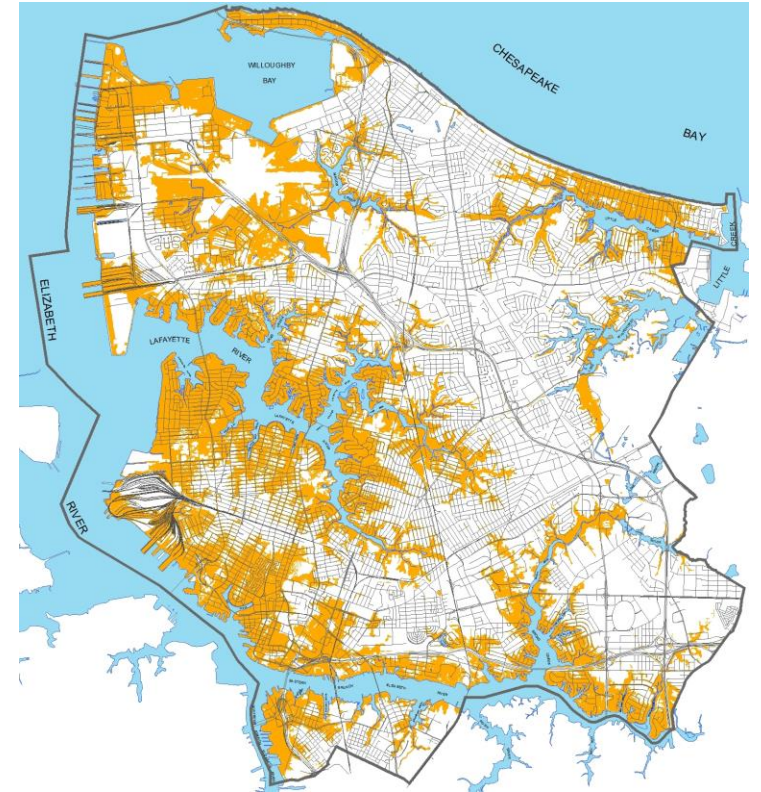
1. Elevate 16" and capture first 1.25" of rainfall
2. Select options from points tables
3. LEED Gold or equivalent
4. Historic rehabilitation

RESILIENCY QUOTIENT REQUIREMENTS		
COMPONENT 1: RISK REDUCTION	110 MILE WIND LOAD BUILDING DESIGN	2.0 POINTS
	IMPACT-RESISTANT ROOF	0.5 POINTS
	IMPACT RESISTANCE WINDOWS	0.5 POINTS
COMPONENT 2: STORMWATER MANAGEMENT	PERVIOUS PAVING ON 50% PARKING AREA	1.0 POINT
COMPONENT 3: ENERGY RESILIENCE	COOL ROOF	1.5 POINTS
	ENERGY EFFICIENT SITE LIGHTING	1.0 POINTS
	HVAC SYSTEM	0.5 POINTS
	MULTI-ROOM MINI-SPLIT HEATING AND COOLING	0.5 POINTS
	SOLAR OR TANKLESS WATER HEATING SYSTEM	0.5 POINTS
	AUTO-OFF OUTDOOR LIGHTING	0.25 POINTS
	HYBRID/ELEC./LOW ENERGY VEHICLE PARKING	0.25 POINTS

RESILIENCE QUOTIENT COMPLIANCE	
PER NORFOLK ZONING ORDINANCE §5.12.6(B)	
§5.12.6(B)(1) PROPOSED BUILDING IS ELEVATED MORE THAN 16" ABOVE NEAREST FEMA BASE FLOOD ELEVATION (FFE = 13.00' FEMA BFE = 8.0')	
§5.12.6(B)(2) ENTIRE BUILDING AND PARKING GARAGE DRAIN TO STORMWATER DETENTION FACILITY WITH CAPACITY FOR 1.25" OF RAINFALL	
ONSITE IMPERVIOUS AREA	62,092 SF
ONSITE STORMWATER STORAGE REQUIRED	6,468 CF (1.25" OF RUNOFF FROM IMPERVIOUS AREAS)
ONSITE STORMWATER STORAGE PROVIDED	22,330 CF (SEE BMP DETAILS ON SHEET C-8.3)

Other Zoning Solutions

- Resilience overlays
 - Additional requirements in high-risk areas
 - Incentives to develop in low-risk areas
- Tree canopy requirements
- Increased density allowances
 - 25' lot development
 - Accessory dwelling units
 - Flexible, mixed-use zoning
- Adaptive re-use provisions





What are your resilience challenges?
How can zoning regulations assist?