The Once and Future Connecticut Shoreline

The case for proactive planning for community resilience

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The case for proactive planning for community resilience

The issue:

Rebuilding after Sandy has been haphazard and spotty…in absence of more proactive, but admittedly controversial, planning and zoning amendments.

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The case for proactive planning for community resilience

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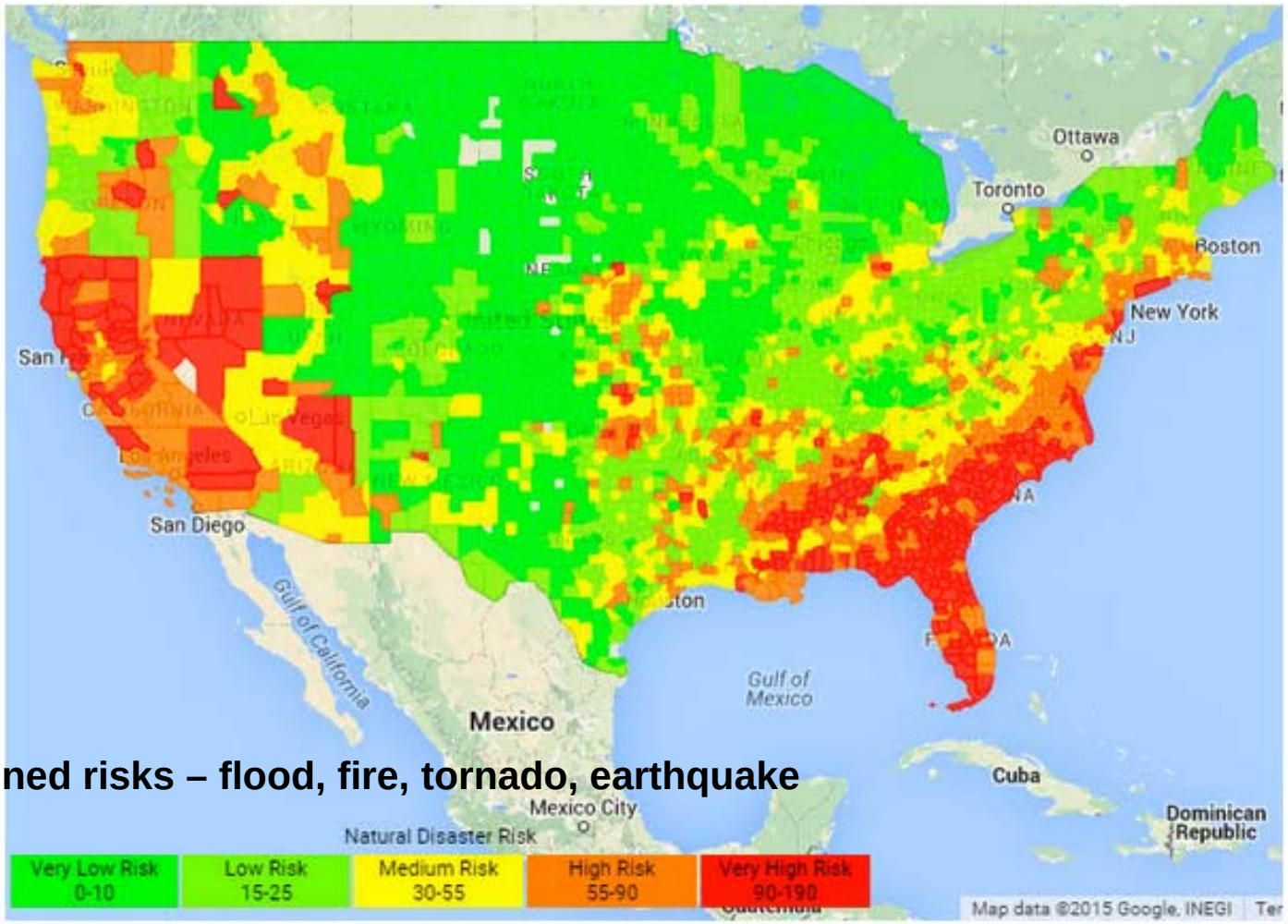
Rebuilding after Sandy has been haphazard and spotty…in absence of more proactive, but admittedly controversial, planning and zoning amendments.

The resolution:

Proactive zoning, conservation and development planning can enable public and private sector investments
to improve property values, protect natural systems, and create co-benefits of shared community services.

"Market value appreciation of homes is highest in low-risk areas and in areas with mitigation programs."

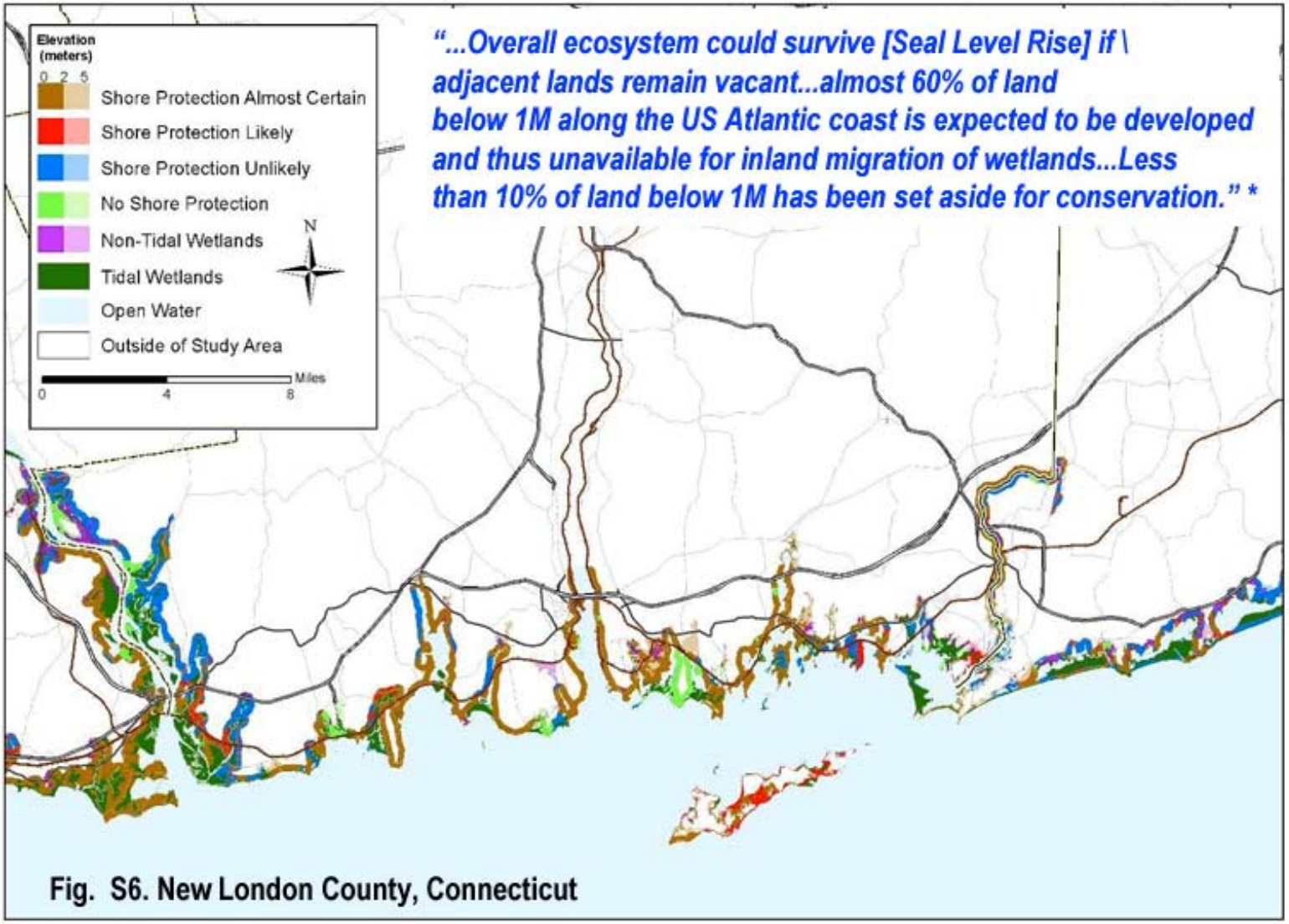


Combined risks – flood, fire, tornado, earthquake

03% **19%** **23%** **47%** **12%**

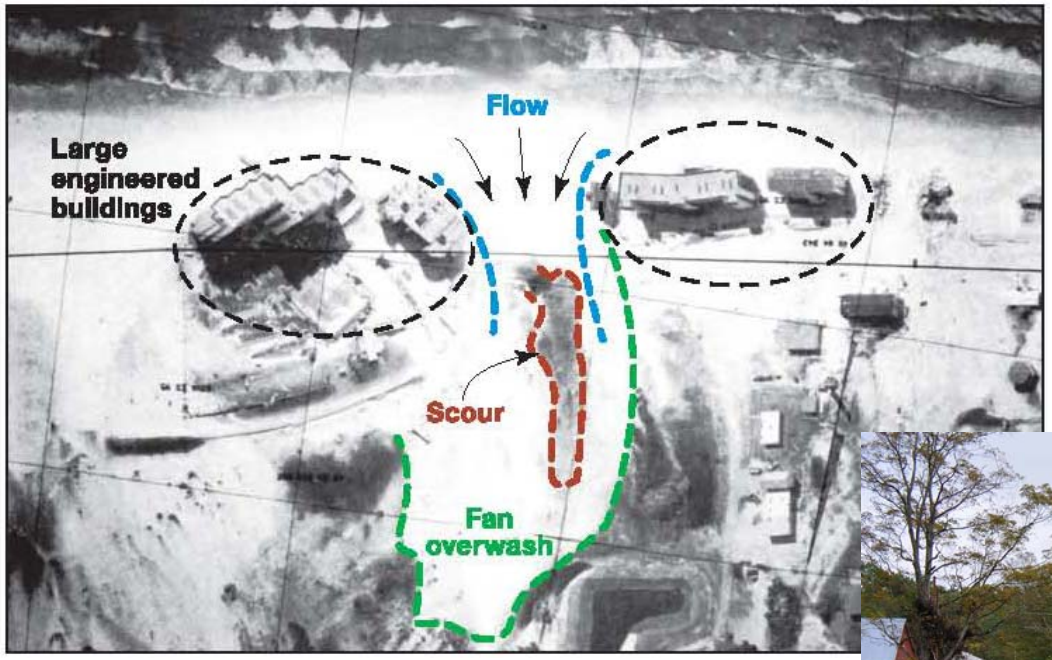
35.8 million homes

"Less than 10% of land [U.S. Atlantic Coast] below 1M has been set aside for conservation."



Titus, J.G, *et al.*, "State and local governments plan for development of most land vulnerable to rising sea level along the US Atlantic coast" *Environ. Research Letters 4* (2009) 044008

Storm debris flow / impoundments cause property and ecological damage, block timely emergency response, and increase recovery time / cost.



[1]

[2]

[1] FEMA 55 - Navarre Beach after Hurricane Opel (1995) [2] FEMA Library Hurricane Irene (2011)

Shoot the messenger - 1

"…just publishing…accepting this report dramatically alters the values of the properties considered…sales will be more difficult... property values will decrease…who would purchase a property that the town is probably projecting would not exist?"

"This plan has effectively rendered my property valueless… I cannot sell it"

Shoot the messenger - 2

ENERGY/ENVIRONMENT

The Christian Science Monitor

First Look

New flood projections for New York: Can the city prepare for rising seas?

By Eva Botkin-Kowacki, Staff writer | SEPTEMBER 29, 2015

Mark Lennihan/AP/File | View Caption

"...climate change might leave many low-ground metropolises submerged...

...new FEMA maps extend the flood zone...increasing the number of potentially affected residents by 83%....

...New York City is appealing FEMA's map with costs [of protective measures] in mind...to try to keep affordability for homeowners..."

Christian Science Monitor September 29, 2015

“Don’t shoot the messenger”

copleyraff.blogspot.com/2012/04/dont-shoot-messenger.html

MEMO - 01

The BFE (Base Flood Elevation) is not a sufficient guide to flood protection measures

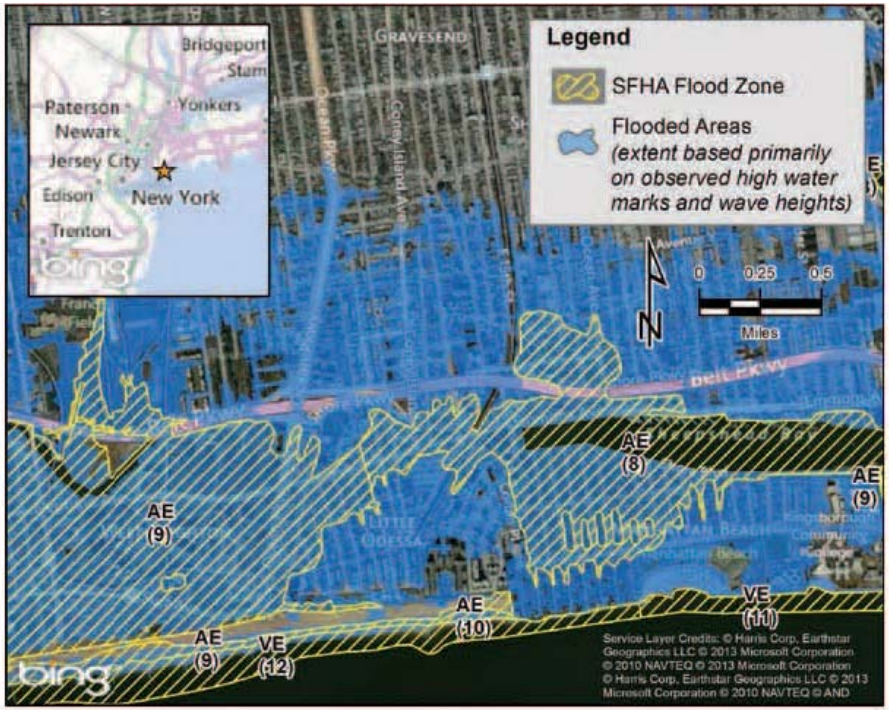


Figure 2: Comparison of SFHA and extent of inundation from Hurricane Sandy, Coney Island, NY

"….***buildings sited just outside the SFHA (beyond the 100-year flood hazard area) still have a significant chance of being flooded over their useful life."*** [p. 4]

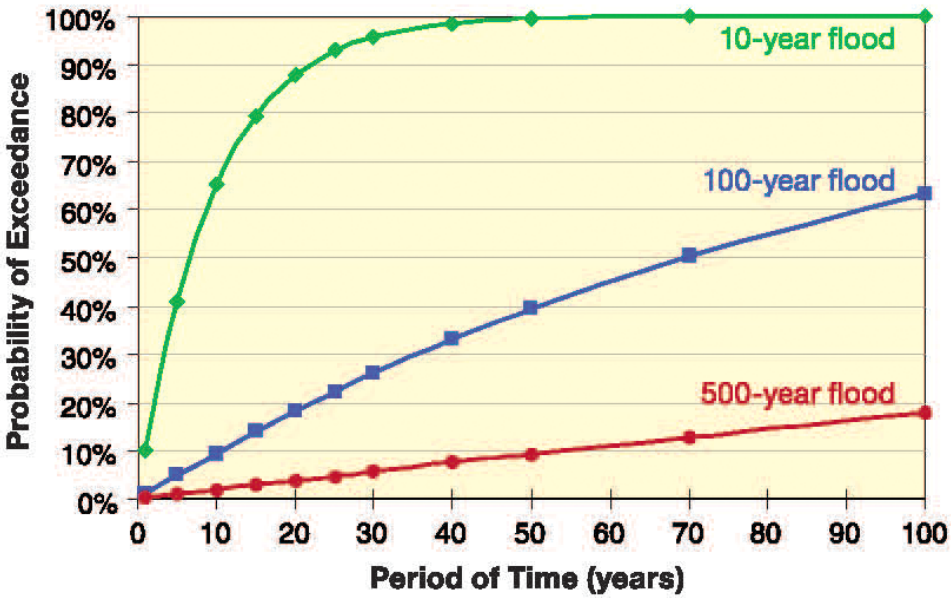


Figure 5: Probability of a flood exceeding the 10-year (10-percent-annual chance), 100-year (1-percent-annual chance), and 500-year (0.2-percent-annual chance) flood level during a given period of time (assuming no sea level rise)

FEMA Hurricane Sandy Recovery Advisory RA5 (April 2013)
www.fema.gov/media-library/assets/documents/30966

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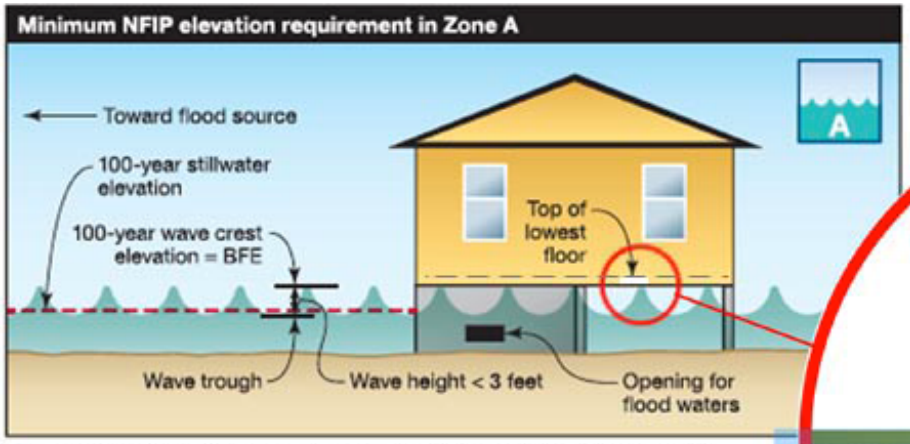
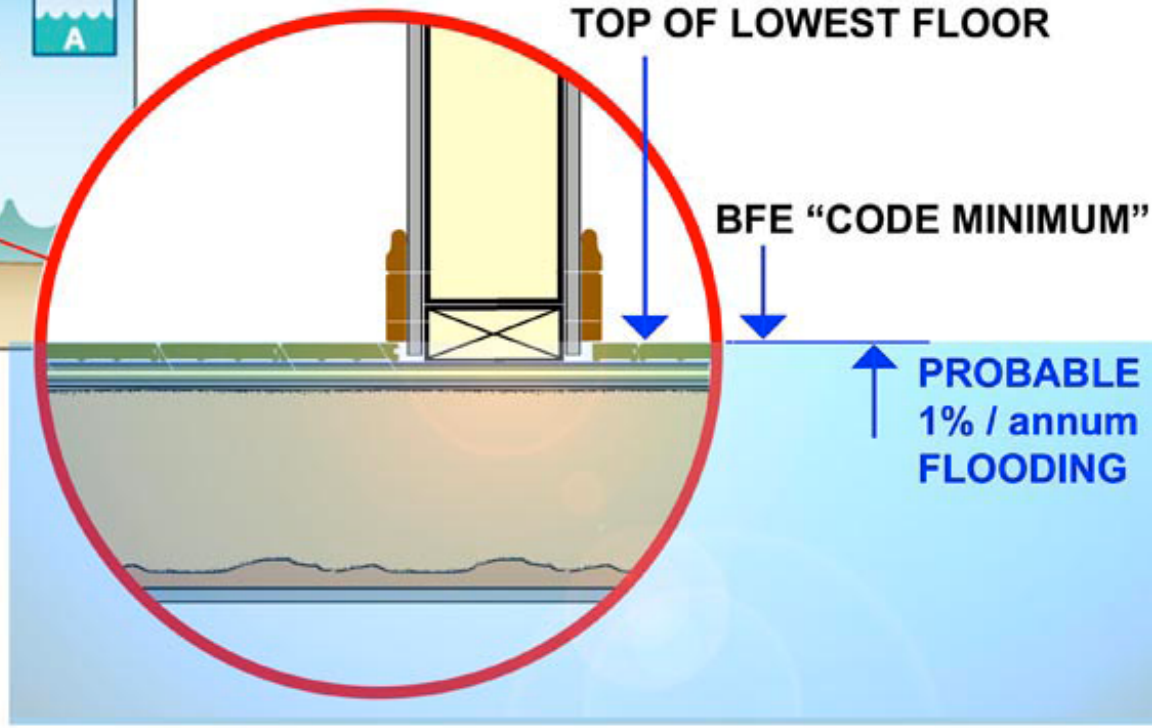


FEMA 55 *Coastal Construction Manual* (CCM) p. 5-19



Wood warping & cupping
Surface stains
Moisture wicking
Inaccessibility (to drying / cleaning)
Risk of rust / corrosion all connections
Mold

many wood preservatives are corrosive to galvanized steel even to zinc coatings

MEMO - 01

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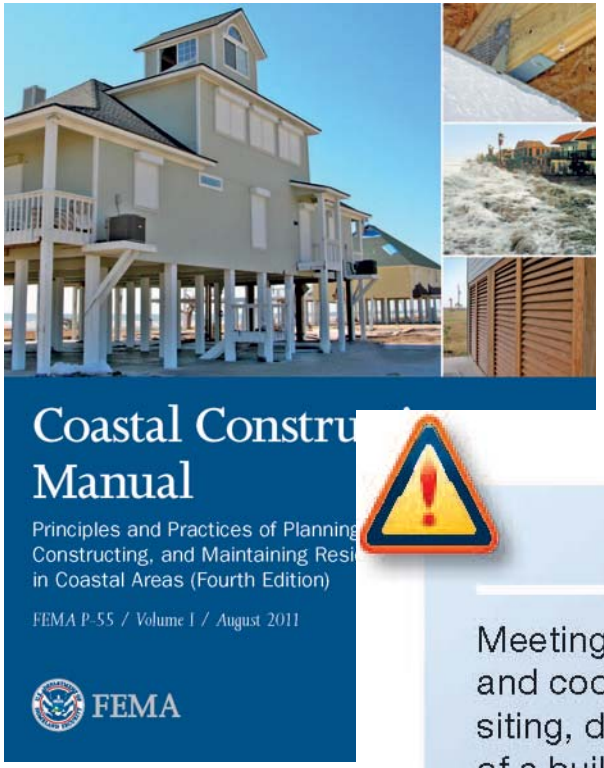


FEMA 55 p. 6-5

WARNING

Meeting minimum regulatory and code requirements for the siting, design, and construction of a building does not guarantee that the building will be safe from all hazard effects. Risk to the building still exists. It is up to the designer and building owner to determine the amount of acceptable risk to the building.

NOTE

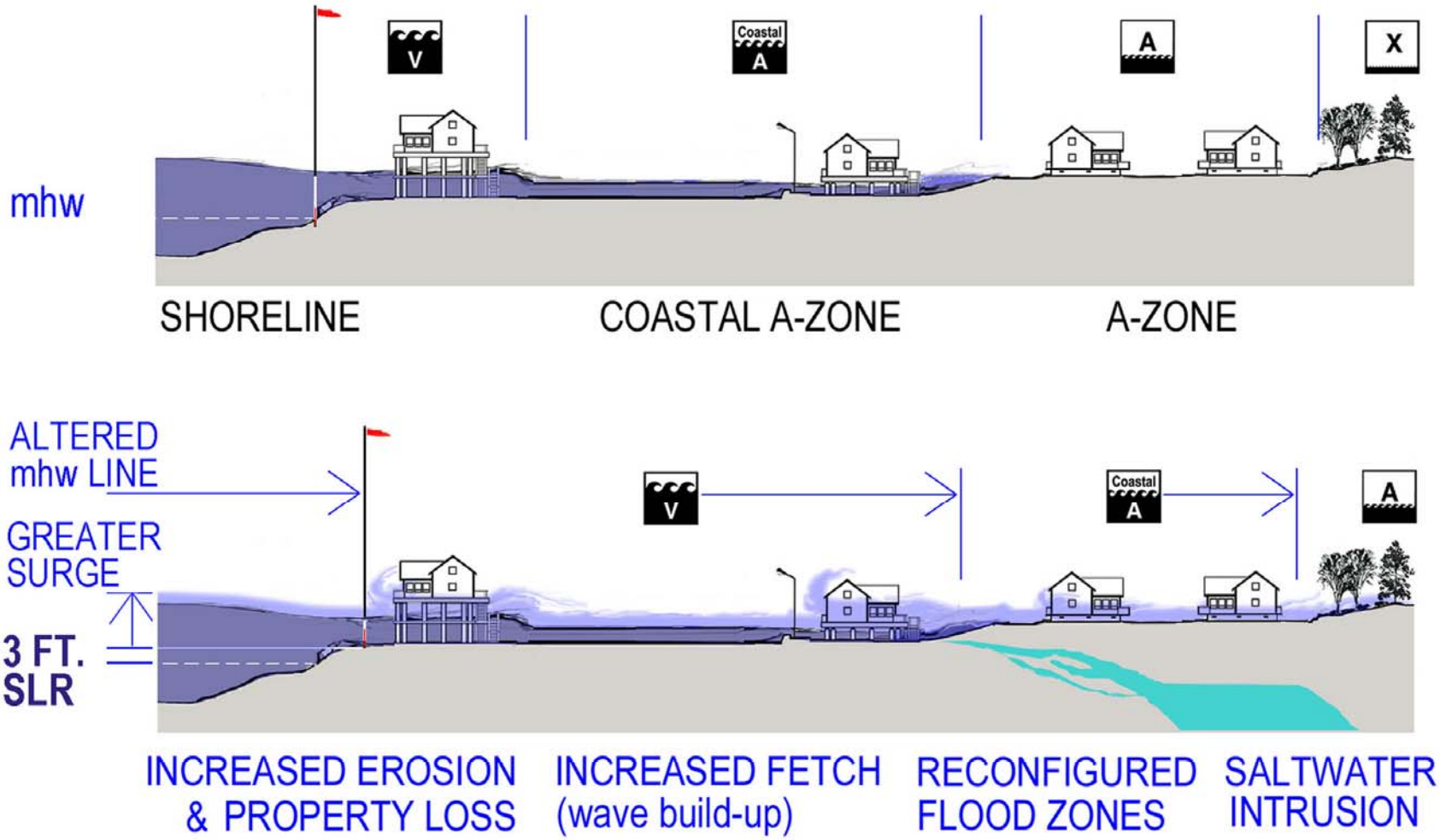
The designer should be familiar with the recommendations in this Manual, along with the building codes and engineering standards cited, as these may establish an expected level of professional care.

FEMA 55 p. 1-3

FEMA 55 *Coastal Construction Manual 4th edition 2011*
www.**fema**.gov/media-library/assets/documents/3293

MEMO - 02

We can predict Sea Level Rise, why and how…can't say exactly how soon or how much…



FLOOD / SLR VULNERABILITIES

"Rapid and aggressive carbon cuts could decrease these [SLR] threats by more than half, reducing damage inflicted on many iconic American cities and landmarks."

"Unabated carbon emissions could lock in 14 to 33 feet of long-term global sea level rise. Such rise would threaten to submerge land currently home to 20 to 31 million Americans, including the majority of residents in more than 1,100 municipalities and in more than 20 cities with at least six-digit populations.

“Don’t shoot the messenger”

Tips to communicate bad news [1]

Always lead with something favorable.

Set the context for the news in a way that may minimize the negative impact.

Deliver troubling news in measured terminology, avoiding hyperbole.

Provide an explanation using objective terms and do not attribute the problem to any individual or group, unless it is unavoidable.

Be ready with a solution that can mitigate or solve the problem.

Offer a timeline to redress the issue.

Be sure the data for your interpretation and solution is solid and measurable.

[1] copleyraff.blogspot.com/2012/04/dont-shoot-messenger.html

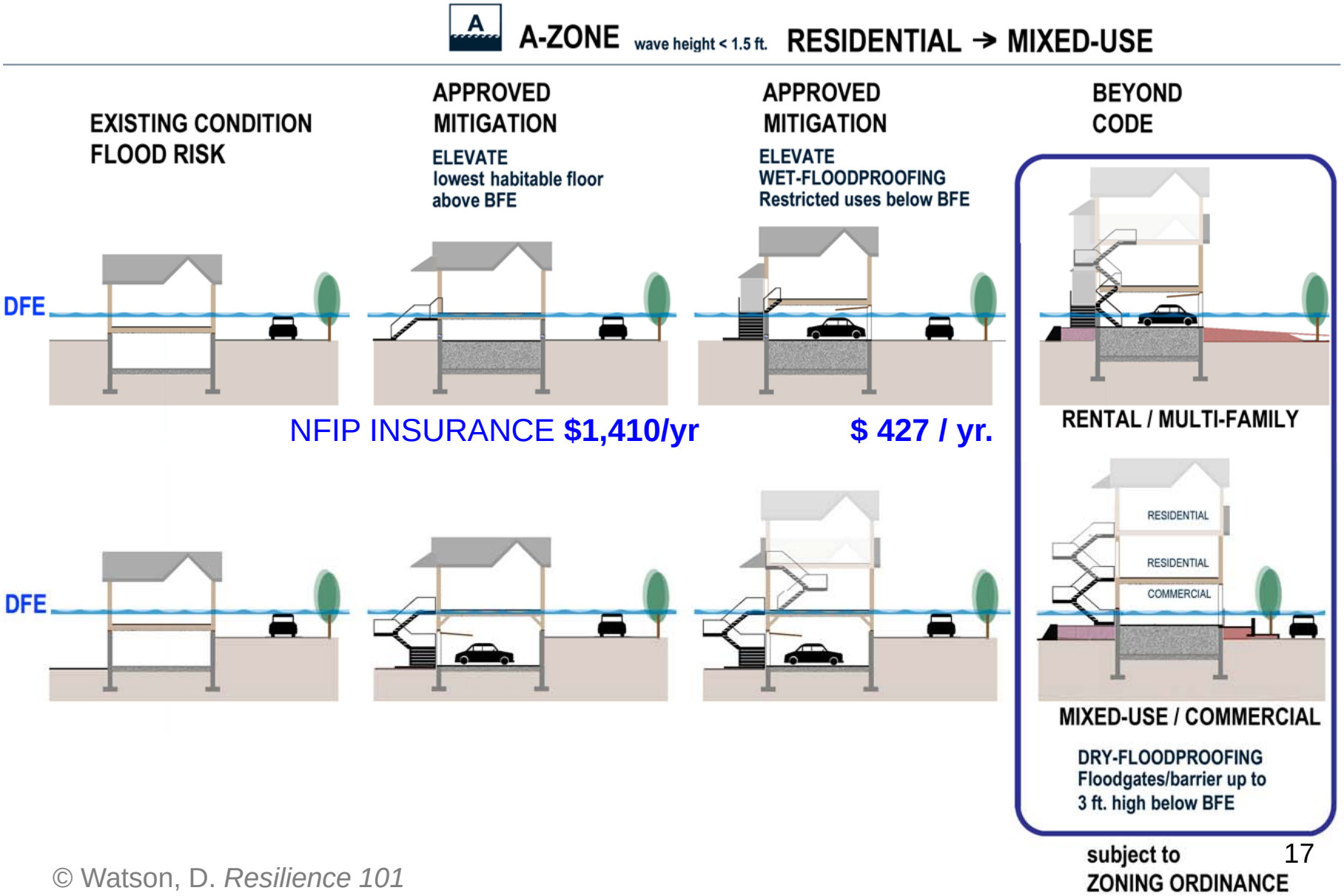
Substitute MEMO – 01

Proactive zoning, conservation and development planning can enable public and private sector investments to improve property values, protect natural systems, and create co-benefits of shared community services.

Living with Water – Providence RI

Save The Bay Providence - Croxton Collaborative

SMALL MOVES



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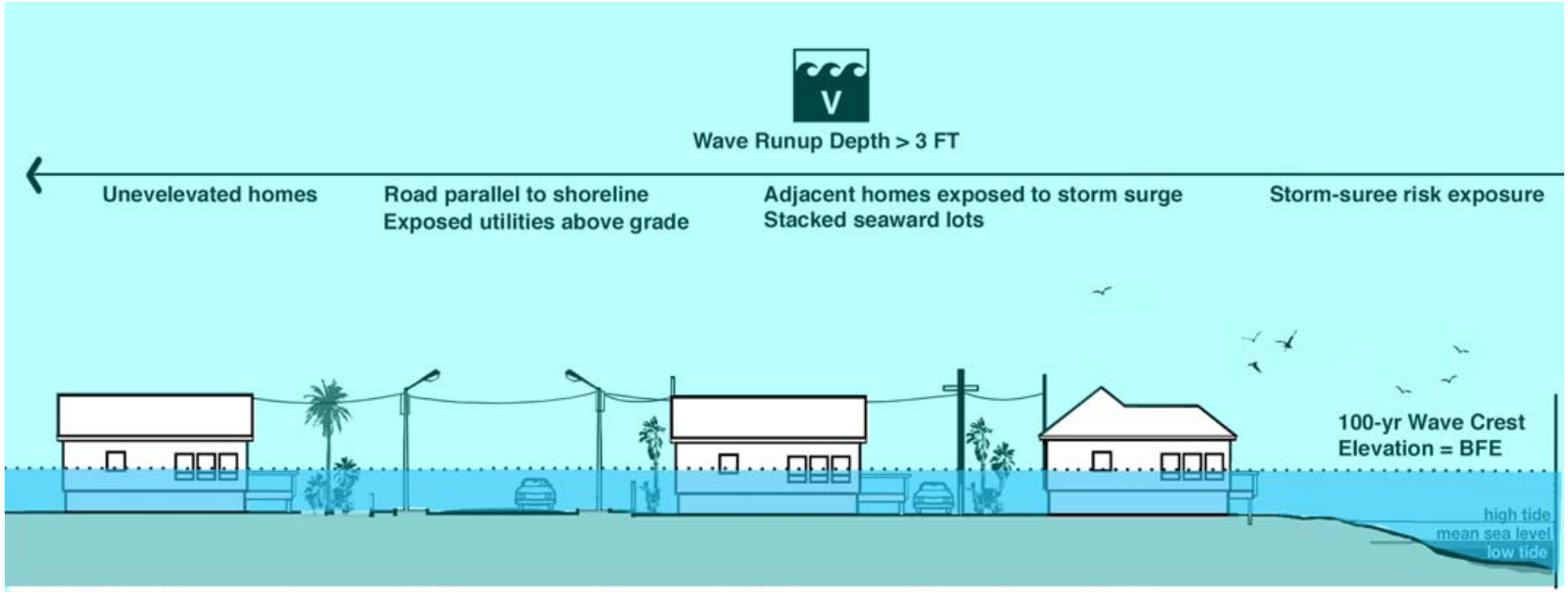
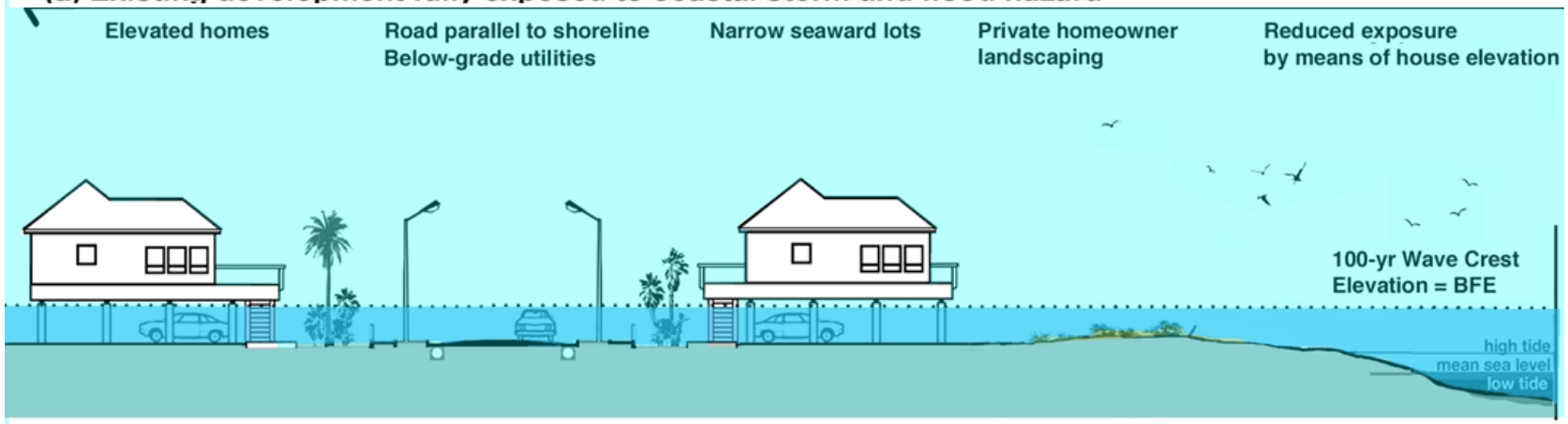
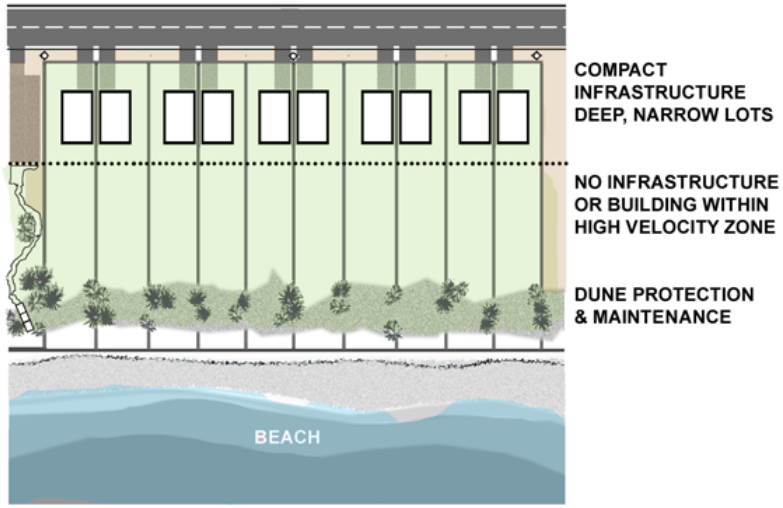


(a) Existing development fully exposed to coastal storm and flood hazard

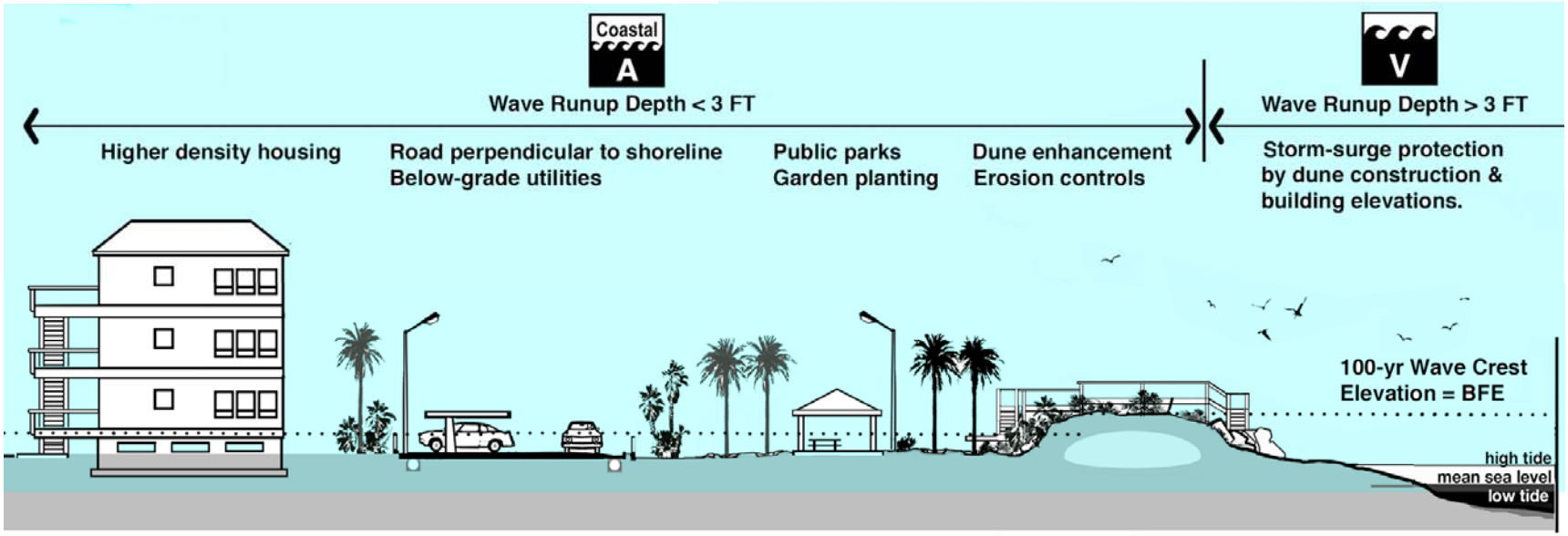


(b) Shorefront homes removed and rear lot homes elevated to NFIP requirements

LARGE MOVES w/ co-benefits

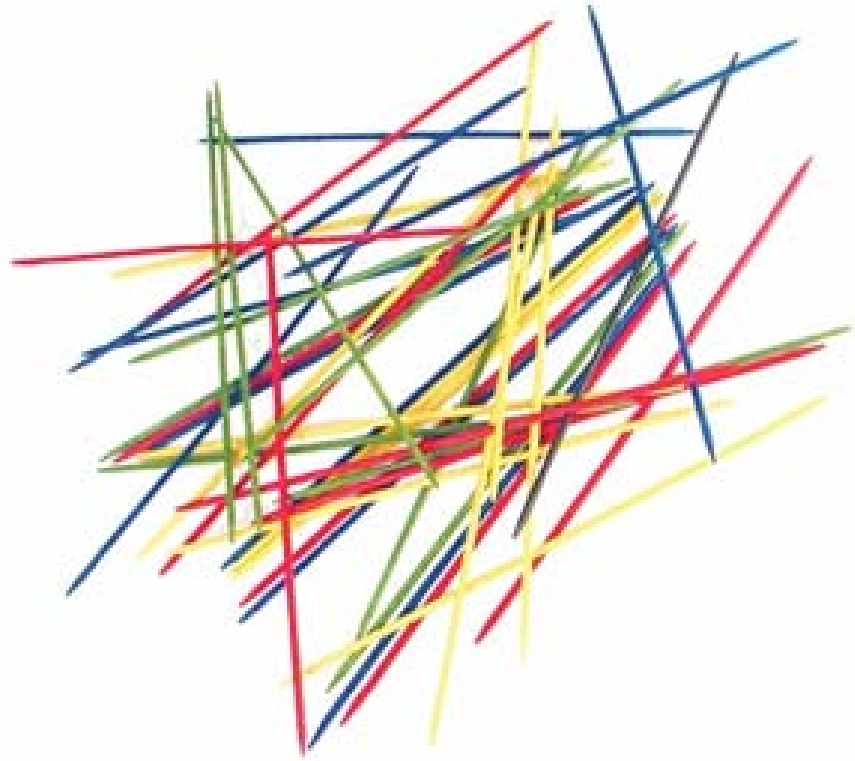


(c) RECOMMENDED Deep lots with conservation zone regulation



(c) Buildings removed from shoreline with restored dune and vegetative coastal buffer zone

Co-benefit measures: planning process



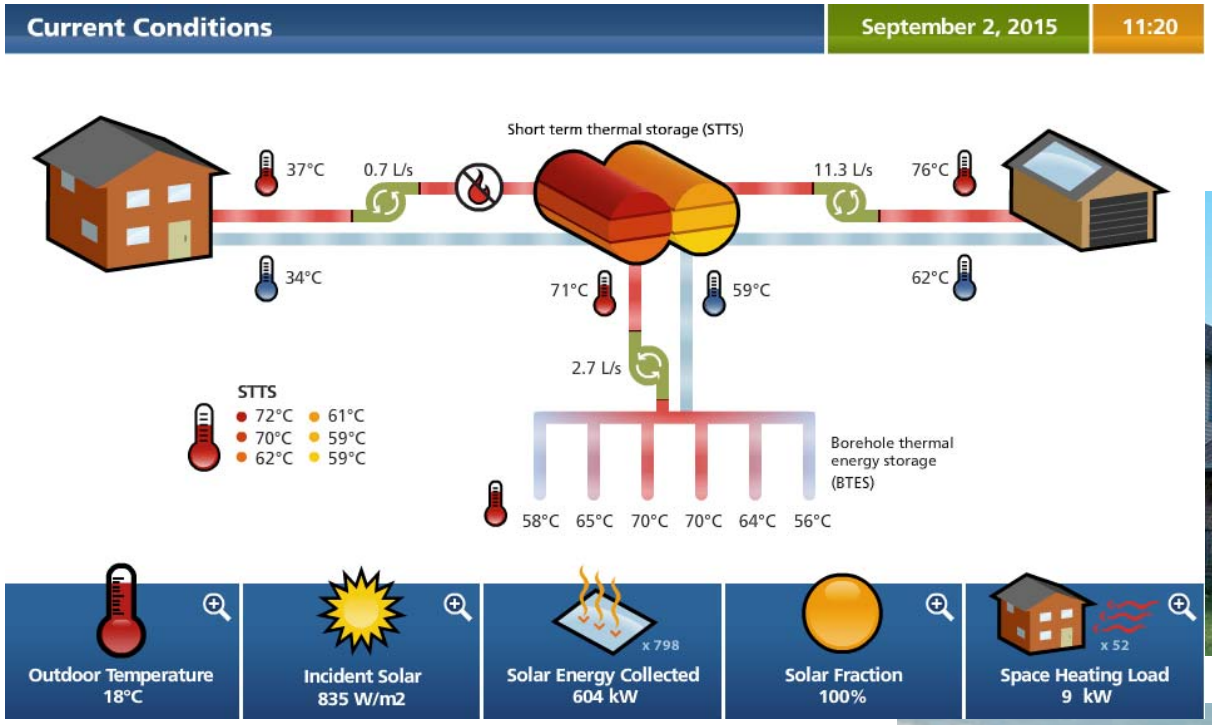
PROCESS

- **SYSTEMS APPROACH**
- **EASY ONES FIRST**
- **SEEK CLUSTERS AND CONNECTIONS**
- **LEVERAGE THE OTHERS**
- **CONCEPT OF "JOINT TENANCY IN COMMON"**

POSSIBILITIES to share and make affordable

- **ENERGY**
- **WATER**
- **SEPTIC**
- **COMPOSTING WASTE / RECYCLING**
- **FOOD GARDENS**
- **SAFE ROOMS**
- **VOLUNTEERISM**

DISTRICT SOLAR HEATING



DRAKE LANDING SOLAR COMMUNITY

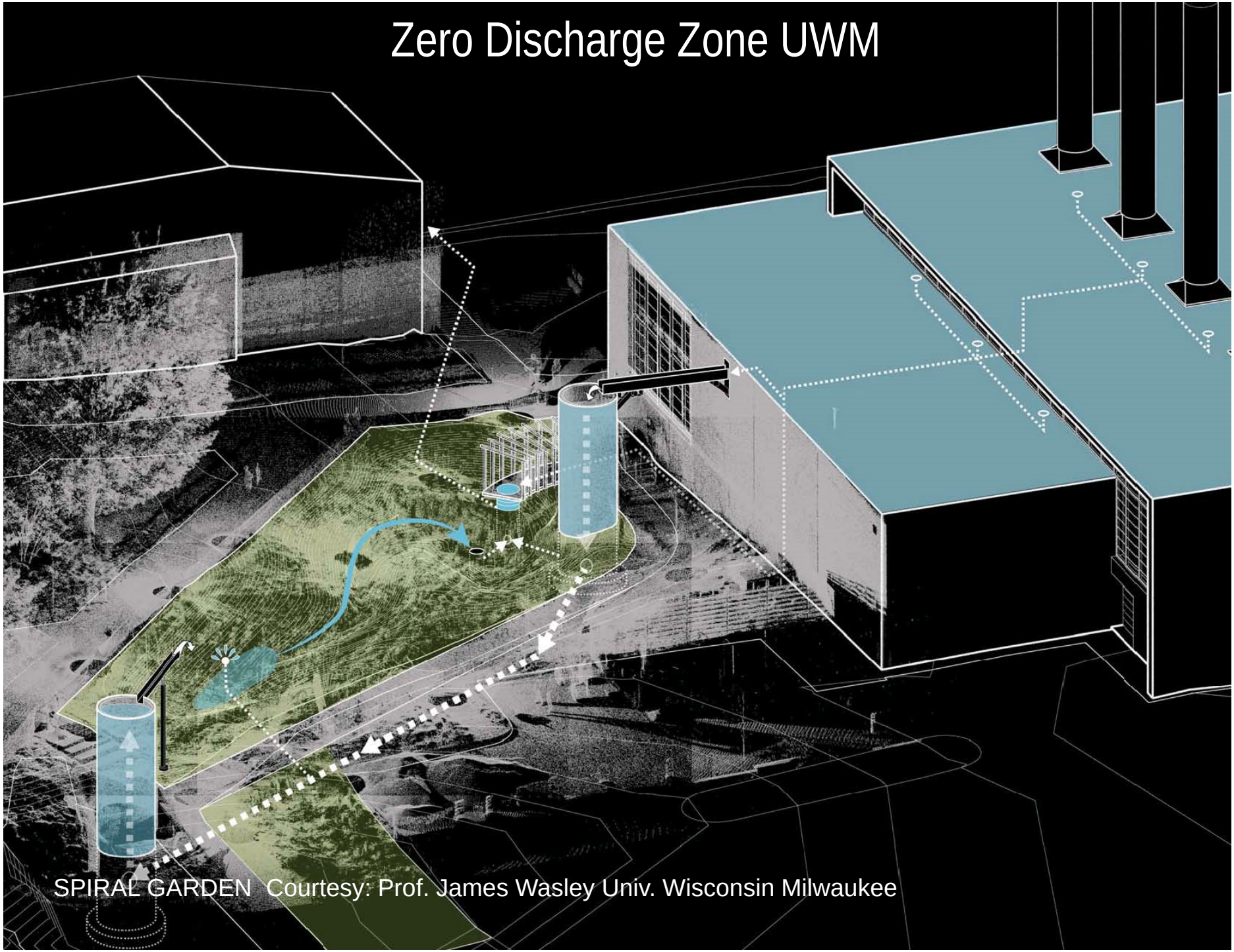
- Largest subdivision of R-2000 single-family homes in Canada, 30%
- Solar thermal energy district heating stores solar heat to meet over 90% of heating / DHW for 52 households in a cold climate.
- World Energy Globe Award for Sustainability.

PARKING OASIS

Courtesy: Wenk Landscape Architecture & Planning

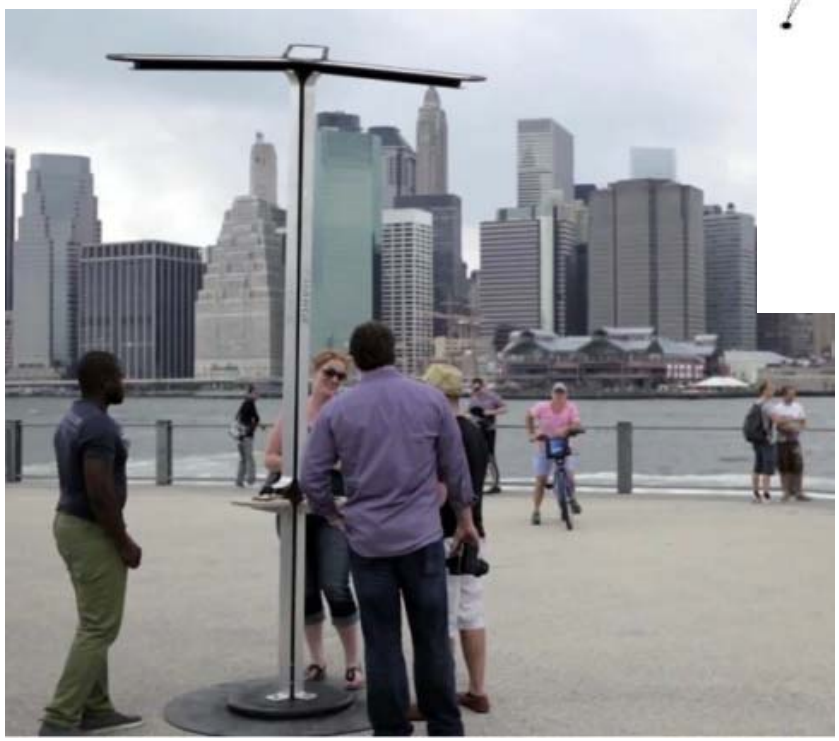
WATER RESERVOIR

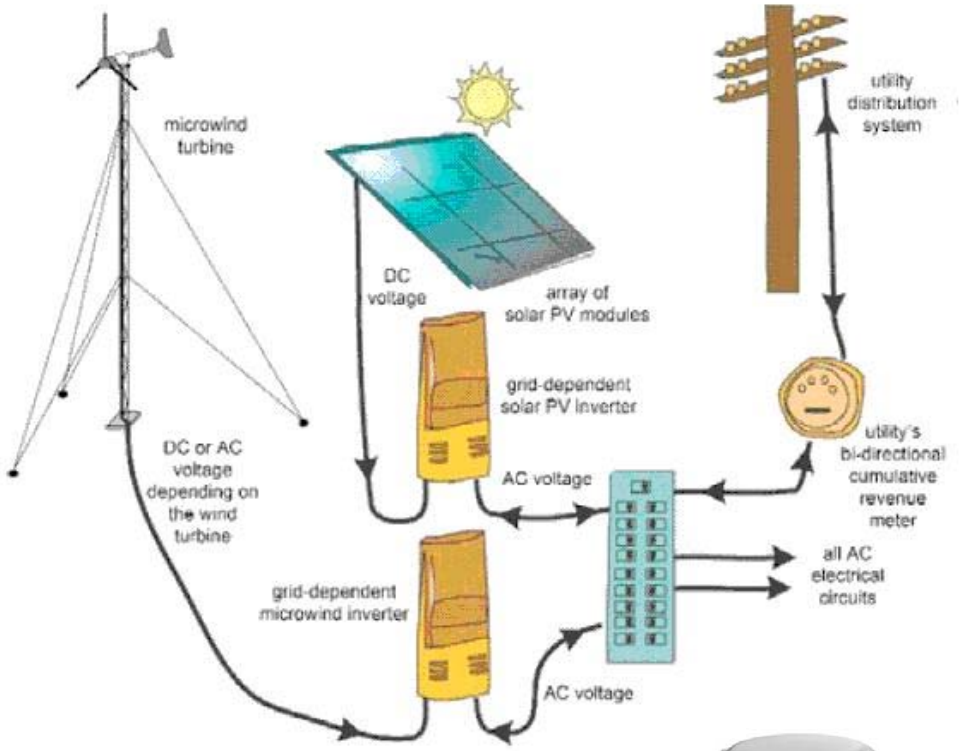
Zero Discharge Zone UWM



SPIRAL GARDEN Courtesy: Prof. James Wasley Univ. Wisconsin Milwaukee

COMMUTILITY POLE





http://www.weiku.com/products/13431301 High_power_Wind_Solar_LED_street_light.html

VOLUNTEERISM

Repair Café Toronto

Toss it? No way!

http://repaircafetoronto.ca/

Co-benefit measures: planning process

Town of Guilford
Community Coastal Resilience Plan

May 30, 2014

Prepared for

Town of Guilford
50 Boston Street
Guilford, Connecticut 06437

Partial funding provided by the National Oceanic and Atmospheric Association (NOAA) through Gulf of Maine Council on the Marine Environment and the Northeast Regional Ocean Council as part of the New England Municipal Resilience Initiative – Stimulating Innovation and Increasing the Pace of Municipal Responses to Climate Impacts along the Coast.

Prepared By:

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In Association with

The Nature Conservancy
55 Church Street, 3rd Floor
New Haven, CT 06510

And

Yale University
Urban Ecology and Design Laboratory
370 Prospect Street, Room 101
New Haven, CT 06511

Town of Guilford Community Coastal Resilience Plan

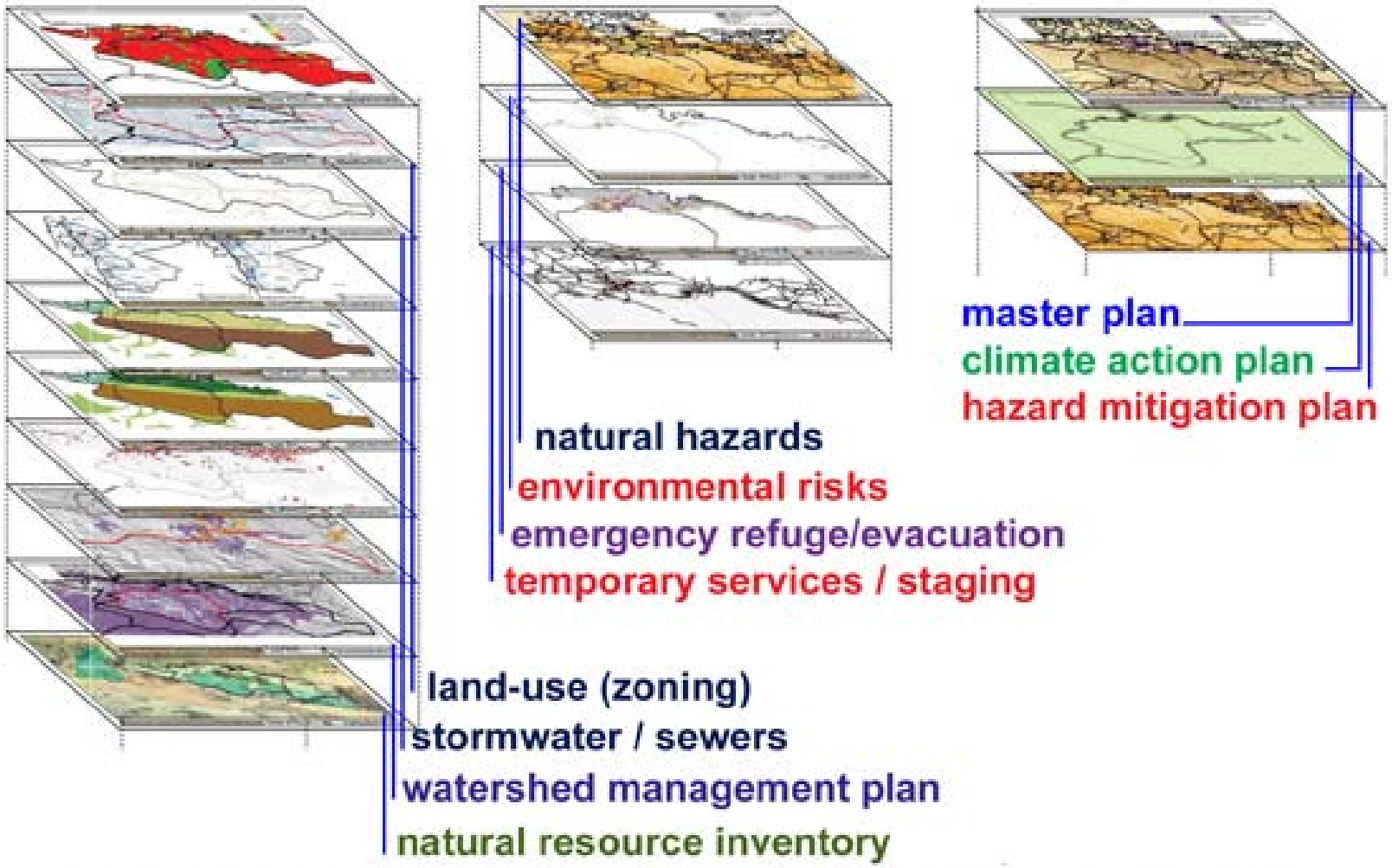
ZONING AMENDMENTS & OTHER REGULATORY PROCEDURES [p.34]
Tidal marsh protection and advancement
Transfer of Development Rights
Flexible development process (cluster, PRD, open space subdivision)
Land conservation for marsh advancement (rolling easements)
Septic system and other sewage disposal option (changes in CT Public Health Code)
Green infrastructure / Living shoreline (as bonus features)
Commercial water-dependent uses in residential ones
Expedited permits for reconstruction after emergency events (new standards)
Residential building design challenges (design competitions)

Town of Guilford *Community Coastal Resilience Plan* May 30, 2014
www.ci.**guilford**.ct.us/pdf/**community-coastal-resilience**...

Co-benefit measures: design innovations

BUILDING SCALE	SITE / COMMUNITY SCALE	CITY / REGIONAL SCALE
market ready - candidates for "PULL" strategies		
1 BIOCLIMATIC DESIGN	1 COMPOST GARDEN	1 ONE PLAN PROCESS
2 DAYLIGHTING	2 ENERGY FOOD WATER +	2 STRONG CODES / STANDARDS
3 WATER CONSERVATION	3 FIREWISE MEASURES	3 CITY DASHBOARD
4 COOL ZONE	4 WATER RESERVOIR	4 CARBON DISCLOSURE
5 GREEN WALL	5 MIXED USE ZONING	5 MINING THE WASTE STREAM
6 WET FLOODPROOFING	6 GREEN INFRASTRUCTURE	6 RESILIENCE OFFICER
7 SAFE ROOM	7 REPAIR CAFE	7 LIFELINE TASK FORCE
8 THE ROOF	8 LIVABLE COMMUNITY DESIGN	
9 RAINWATER HARVESTING	9 COMBINED HEAT & POWER (CHP)	
10 HIGH PERFORMANCE BUILDING		
research & development - candidates for "PUSH" strategies		
1 ZERO CARBON / LIVING BUILDING	1 COMMUNITY SHELTER	1 SMART GRID
2 GRAY WATER	2 SMART SEWERS	2 COMMUTILITY POLE
3 DRY FLOODPROOFING	3 PARKING OASIS	3 SKY H2O SEA MANAGEMENT
4 HIGH IMPACT GLAZING	4 POP-UP SERVICES	4 LIVING SHORELINE
5 ALGAE BIODIGESTER	5 FLOOD BARRIERS	5 DESIGN WITH OYSTERS
6 BIM DASHBOARD	6 DISTRICT SOLAR	6 RETREAT TO ADVANCE
	7 MICROGRID DEMAND / RESPONSE	7 EARTH DASHBOARD
	8 AMPHIBIOUS DESIGN	
	9 ZERO DISCHARGE ZONE	

ONE PLAN PROCESS



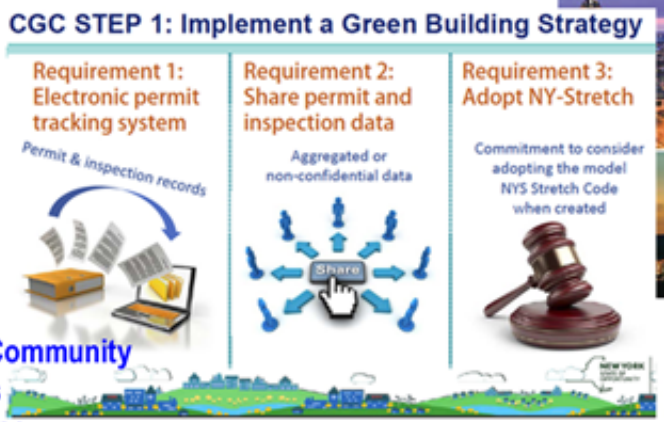
COMPREHENSIVE PLANNING & ZONING + NATURAL HAZARD MITIGATION EMERGENCY OPERATIONS = RESILIENCE ACTION PLANS

Co-benefit measures: example of NYS

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

NEW YORK STATE OF OPPORTUNITY. | Climate Smart Communities

BuildSmartNY
Five Cities Energy Master Plans
Albany • Buffalo • Rochester • Syracuse • Yonkers

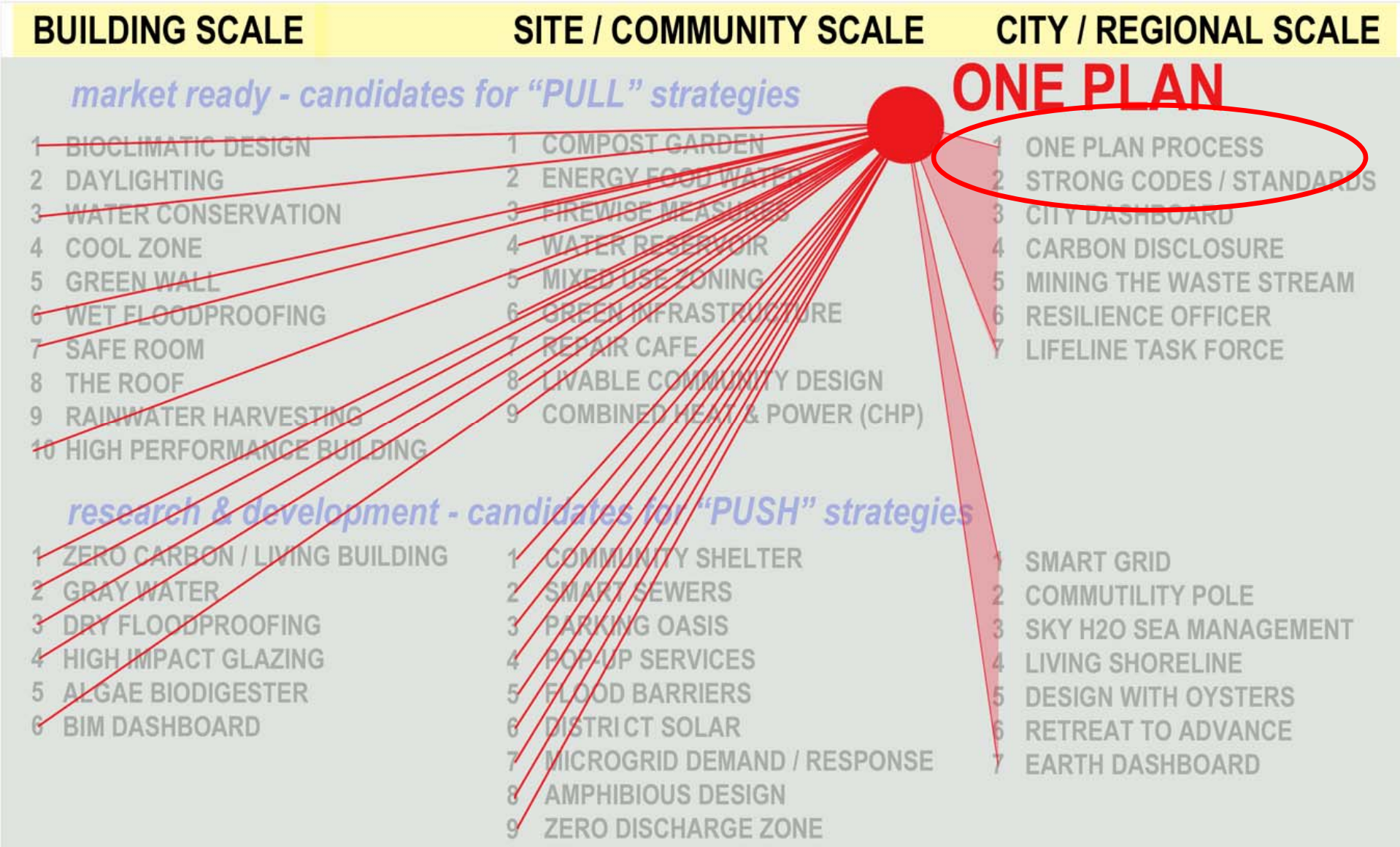


1 Pledge to be a Climate Smart Community
2 Set goals, inventory emissions
3 Decrease community energy use
4 Increase community use of renewable energy
5 Realize benefits of recycling and other climate-smart waste management
6 Reduce greenhouse gas emissions through climate-smart land-use tools
7 Enhance community resilience and prepare for effects of climate change
8 Support development of a green innovation economy
9 Inform and inspire the public
10 Commit to an evolving process of climate action

Planning	Design process	Product R&D	Property investment
GUIDELINE DOCUMENTS	INTEGRATED DESIGN	PROTOTYPE DEMONSTRATION	BUILDING COMMISSIONING
		PERFORMANCE SPECIFICATION	LIFE CYCLE BUDGETING
DESIGN CHARRETTES	PEER CONSULTS	PRODUCT CERTIFICATIONS	ESCOs
	RESEARCH	(AGGREGATED MARKETS)	

2009 → NYS CLIMATE SMART COMMUNITIES

PLAN ELEMENTS



The OARS List

Organizations **A**ddressing **R**esilience and **S**ustainability
news, resources, job postings, grant opportunities

The OARS LIST: Organizations Addressing Resilience & Sustainability

A world of solutions and assignments, *"…should WE choose to accept them."*

V.24 • October 1, 2015

The OARS LIST of **O**rganizations **A**ddressing **R**esilience and **S**ustainability provides:

An overview of individuals, groups and organizations pulling at the oars to achieve resilience in U.S. communities and the world.

A word-searchable reference to resources, membership services, grants, and employment opportunities.

A sign-post to thousands of references in support of climate-science, emergency management, disaster risk reduction, business and community security and prosperity, public health, and sustainability.

An invitation for your suggestions to improve the value, accuracy, and usefulness of the OARs LIST.

A world of solutions and assignments…"should we choose to accept them."

THANK YOU

Donald Watson **EarthRise001@SBCglobal.net**