The Once and Future Connecticut Shoreline
*The case for proactive planning for community resilience*

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**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

The issue:
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.”

Fig. S6. New London County, Connecticut

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

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

By Eva Botkin-Kowacki  Staff writer  SEPTEMBER 29, 2015

“...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...”
“Don’t shoot the messenger”
MEMO - 01

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

“...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]
MEMO - 01
The BFE (Base Flood Elevation) is not a sufficient guide to flood protection measures

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

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

FINISHED FLOOR ELEVATION
TOP OF LOWEST FLOOR

BFE “CODE MINIMUM”

PROBABLE 1% / annum FLOODING
MEMO - 01
The BFE (Base Flood Elevation) is not a sufficient guide to flood protection measures

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.

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.
MEMO - 02

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

“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.

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.
SMALL MOVES

A-ZONE wave height < 1.5 ft. RESIDENTIAL → MIXED-USE

EXISTING CONDITION FLOOD RISK

APPROVED MITIGATION
ELEVATE lowest habitable floor above BFE

APPROVED MITIGATION
ELEVATE WET-FLOODPROOFING Restricted uses below BFE

BEYOND CODE

NFIP INSURANCE $1,410/yr

$ 427 / yr.

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SMALL MOVES

Wave Runup Depth > 3 FT

Unelevated homes
Road parallel to shoreline
Exposed utilities above grade

Adjacent homes exposed to storm surge
Stacked seaward lots

Storm-suree risk exposure

100-yr Wave Crest
Elevation = BFE

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

Elevated homes
Road parallel to shoreline
Below-grade utilities

Narrow seaward lots
Private homeowner landscaping

Reduced exposure by means of house elevation

(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
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.
Zero Discharge Zone UWM

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

VOLUNTEERISM

http://repaircafetoronto.ca/
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*

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research & development - candidates for “PUSH” strategies

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ONE PLAN PROCESS

- Comprehensive Planning & Zoning
- Natural Hazard Mitigation
- Emergency Operations

Result: Resilience Action Plans

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Co-benefit measures: example of NYS

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
- GUIDELINE DOCUMENTS
- DESIGN CHARRETTEs

Design process
- INTEGRATED DESIGN
- PEER CONSULTS
- RESEARCH

Product R&D
- PROTOTYPE DEMONSTRATION PERFORMANCE SPECIFICATION
- PRODUCT CERTIFICATIONS (AGGREGATED MARKETS)

Property investment
- BUILDING COMMISSIONING LIFE CYCLE BUDGETING ESCOs

2009 → NYS CLIMATE SMART COMMUNITIES
# PLAN ELEMENTS

## ONE PLAN

### BUILDING SCALE
- 1. Bioclimatic Design
- 2. Daylighting
- 3. Water Conservation
- 4. Cool Zone
- 5. Green Wall
- 6. Wet Floodproofing
- 7. Safe Room
- 8. The Roof
- 9. Rainwater Harvesting
- 10. High Performance Building

### SITE / COMMUNITY SCALE
- 1. Compost Garden
- 2. Energy Food Water
- 3. Firewise Measures
- 4. Water Reservoir
- 5. Mixed Use Zoning
- 6. Green Infrastructure
- 7. Repair Cafe
- 8. Livable Community Design
- 9. Combined Heat & Power (CHP)

### CITY / REGIONAL SCALE
- 1. One Plan Process
- 2. Strong Codes / Standards
- 3. City Dashboard
- 4. Carbon Disclosure
- 5. Mining the Waste Stream
- 6. Resilience Officer
- 7. Lifeline Task Force

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**Market ready - candidates for “PULL” strategies**

**Research & development - candidates for “PUSH” strategies**
The OARS List

Organizations Addressing Resilience and Sustainability

news, resources, job postings, grant opportunities

A world of solutions and assignments, “...should WE choose to accept them.”

V.24 • October 1, 2015

The OARS LIST of Organizations Addressing Resilience and Sustainability 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.”

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THANK YOU

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