Preserving our Sense of Place in an Increasingly Wet World

Why do we live where we do?

- Historical roots
- Family roots
- Ambience
- Sense of community
Increasing threats of flooding

- Persistent flooding versus event flooding
- Changes in precipitation patterns
- Sea level rise
- Subsidence
- Inadequate stormwater capacity
- Infrastructure failure

Our primary approaches to flooding

- Elevate
- Relocate
- Abandon
If it has “port” in its name, it probably floods

- Portland, ME and Portland, OR
- Portsmouth, NH
- Newport, RI
- Port Richmond, PA
- Newport News, VA
- Portsmouth Island, NC
- Gulfport, MS
- Port Sulphur, LA
- Port Lavaca, TX

Early towns and cities expanded by fill (“land reclamation”)

- Boston, MA – founded 1630
- Philadelphia, PA – founded 1682
- Annapolis, MD – founded 1649, Naval Academy 1845
And some later retrofitted with fill

When money is not a problem
When “up” then is not “up” now

Sinking and sea level rise are a bad combination
The **MOSE** Project – **MOdulo Sperimentale Elettromeccanico**

**How it works**
1. Barrier will stay on the seabed until high tides and storms are forecast.
2. Air is pumped into each mobile gate causing it to rise to the surface. It takes approximately 5 minutes to raise and 15 minutes to return.
3. Each gate moves independently allowing the barrier to deal with rough seas. Lagoon floor can be raised as much as 4 ft. during one cycle.

**Project name:** MOSE

**Goals:** 9.5 ft. of protection to operate for 100 years.

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**When there is no place to go**

*Image by Isle de Jean Charles Band of Biloxi-Chitimacha-Choctaw Tribe*
Isle de Jean Charles, LA
98% loss of land since 1950s

National guidance for historic properties
NPS distinctions: 36 CFR §68.2 - Definitions

- Preservation
  - Maintains existing form, integrity and materials of a property

- Rehabilitation
  - Makes efficient compatible use available through repair, alterations, and additions while preserving other portions

- Restoration
  - Depicts form, features, and character as property appeared during a particular period of time

- Reconstruction
  - Depicts vanished or non-surviving portions of a property

From National Standards, 36 CFR §68.3

- Historic or new use is to require minimal change to distinctive features, spaces, and spatial relationships

- Preserve distinctive materials, features, finishes, construction techniques

- Repair rather than replace deteriorated historic features – or match in design, color, texture, and, where possible, materials

- New additions, exterior alterations, or related new construction will not destroy historic materials, features and spatial relationships that characterize the property
Local ordinances and historic properties

- Historic districts
- Façade easements
- Designated materials and finishing
- Height restrictions
- Off-street parking requirements
- Plumbing and electrical regulations
- Additional costs of substantial improvements

Basic improvements for flood resilience

- Maintenance of historic resources and properties
- Relocation of critical systems and equipment above DFE
- Installation of secondary power sources
- Use of flood damage-resistant materials
What elevation looks like

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Considerations when elevating

- Neighborhood considerations
  - Context and character
  - Level of flood vulnerability
  - Possible interior elevation only

- Site considerations
  - Size and configuration
  - Access
  - Landscaping

Considerations when elevating

- Building preservation considerations
  - Historic building types and styles
  - Character defining features
  - Stairs, porches, stoops, and accessibility
  - Prominent alignments and arrangements
  - Building foundations (open, closed)
  - Foundation screening (landscaping, architectural)
Exploring and sharing concerns and approaches

http://historyabovewater.org

Assessing community types, local values

- Maritime economies
- Resort towns
- Industrial
- Parks
- Military installations
- Early 20th century suburbs
- 19th century workers housing
- Institutions

KEEPS HISTORY ABOVE WATER

HERITAGE RESILIENCE IN A CHANGING CLIMATE
Approaches for individual buildings

- Strategy 1: Plan to flood
- Strategy 2: Elevate and plan to flood
- Strategy 3: Elevate building and site
- Strategy 4: Elevate with freeboard
- Strategy 5: Construct a floodwall

The need to engage the public

- The community’s relationship to water
- Degree of community support for preservation
- Establishing local preservation priorities
  - Critical to sense of place
  - Vulnerable to flood hazards
  - Economic contribution
  - Other considerations
Community Assessment

- Basic needs (food, water, shelter)
- Infrastructure (transportation, energy, etc.)
- Emergency response
- Character of the community
- Economic, social, environmental impacts
- Resources available
Balancing costs, resources, and equities

PROTECT
- Revetment/Seawall
- Wall & Pump Station
- Tide Gate
- Traditional Levee
- Hard Engineering
- Horizontal Levee
- Offshore Structure
- Wetland Restoration
- Beach Maintenance
- Soft Engineering

ACCOMMODATE
- Elevate Buildings
- Elevate/New Road
- Floodproof (Dry or Wet)
- Amphibiate Buildings
- Accommodate Water

RETREAT
- Abandonment
- Relocation
- Managed Retreat

Resources
- "Flood Mitigation Guide for Historic Properties" (NJ)
- "Elevation Design Guidelines for Historic Properties" (NJ)
- National Park Service Technical Preservation Services
  - https://www.nps.gov/tps/standards/rehabilitation/flood-adaptation.htm