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## Development Finance Solutions for Disaster Resiliency

The Broadcast will Begin at 1:00pm Eastern

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## Kara Knight

Manager, Education  
Council of Development Finance Agencies  
Columbus, OH

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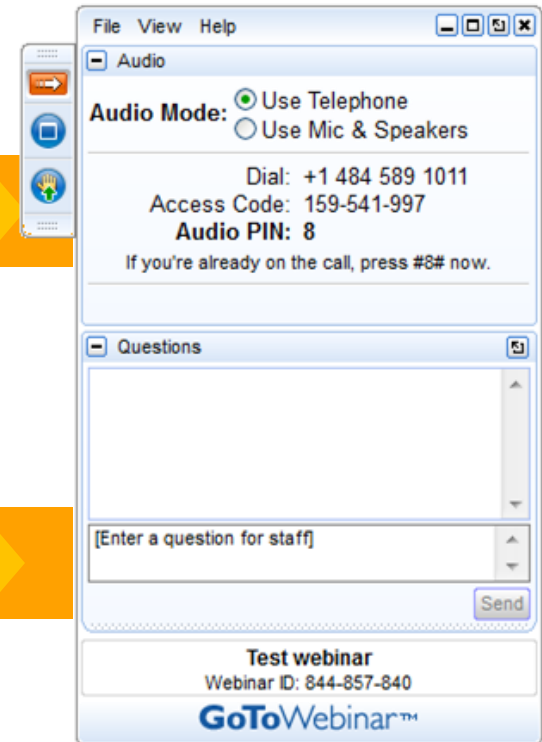
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# Development Finance Solutions for Disaster Resiliency

## Intro Revolving Loan Fund WebCourse



May 23-24, 2016  
Daily: 12-5pm (EDT)

## Seed & Venture Capital Finance WebCourse



May 25-26, 2016  
Daily: 12-5pm (EDT)

## Panelists

**David Safer, Moderator**  
Vice President  
The Bank of New York Mellon

**Theresa Cassano**  
Senior Analyst  
HR&A Advisors, Inc.

**Kevin Bush**  
Resilience Team Lead  
HUD

**Larry Levitz**  
Director, Public Finance  
Fitch Ratings

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## David Safer

Vice President  
The Bank of New York Mellon  
New York, NY

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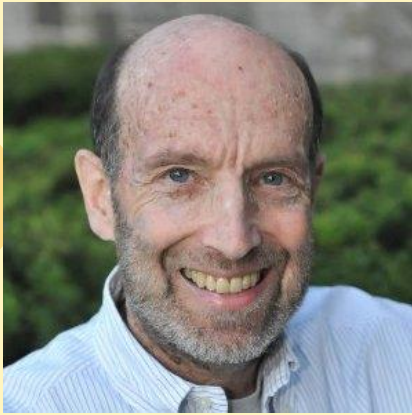
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## Larry Levitz

Director, Public Finance  
Fitch Ratings  
New York, NY

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**Fitch**Ratings

# Development Finance Solutions for Disaster Resiliency

Larry Levitz, Director

April 19, 2016

# Fitch's Approach to Disaster Resiliency

- Fitch does not rate to event risk
- Fitch's ratings reflect our assessment of credit characteristics that point to an issuer's overall resiliency to handle unexpected events
- Credit attributes such as revenue diversity, ample reserves and available liquidity afford local government greater capabilities to restore services and finance recovery following a disaster



# Fitch's Approach to Disaster Resiliency

- Fitch's analysis also takes into account other factors which weigh in on resiliency such as:
- Preparedness for Emergencies
- Relations/Coordination with other governments – local, state and federal
- Range and diversity of the underlying economy

# Fitch's Approach to Disaster Resiliency

- Key Role of FEMA
- FEMA grants following a disaster can be a critical factor in stabilizing a local government's finances
- Grants can cover 75% or more of infrastructure repair, debris removal and sometimes additional operating costs
- FEMA hazard mitigation grants provide funding to local governments and other entities to implement long term hazard mitigation measures following a disaster

# Fitch's Approach to Disaster Resiliency

- Projects funded by FEMA Hazard Mitigation Grants include:
  - Buying and relocating structures in hazardous areas
  - Retrofitting structures to protect against floods, wind, earthquakes and other hazards
  - Funding flood control projects
  - Providing assistance in the development of local, state and tribal government disaster mitigation plans.
- FEMA also provides state and local governments with preparedness funding through Non-Disaster Grants
- In 2016, FEMA will approve disaster preparedness funds only for states with mitigation plans that include climate change

# Fitch's Approach to Disaster Resiliency

- Will FEMA be there in the future?
- FEMA spending on disaster relief, while fluctuating from year to year, has been gradually increasing over the decades.
- Spending totaled \$10 billion in fiscal 2014
- Some are already calling for an end to FEMA disaster preparedness, relief and mitigation programs as well as privatization of flood insurance
- On the other hand, federal funding for emergency preparedness has been declining since the Recession
- States would have to step in and fill these needs but the response will vary from state to state

# Fitch's Approach to Disaster Resiliency

- All states have emergency management agencies and either require or encourage local governments to develop their own coordinated emergency preparedness plans
- All state emergency management agencies are prepared to direct and coordinate with federal and local governments regarding a wide range of threats
- Coordination also involves critical parties such as key utilities within the state to ensure that they continue to operate and there are no closures due to lack of power

# Fitch's Approach to Disaster Resiliency

## Southeast Florida Regional Climate Compact

- Collaborative effort among Palm Beach, Miami-Dade, Broward & Monroe Counties
- South FL particularly vulnerable to sea level rise
- Goal is to integrate climate adaptation and mitigation into existing decision-making
- Est. Adaptation Action Areas – designated as vulnerable to flooding
- Looking for support from State (meager so far) and federal govt.
- Plan also mention possible local option sales tax as funding mechanism

# Fitch's Approach to Disaster Resiliency

- Event Risk Considerations by Sector

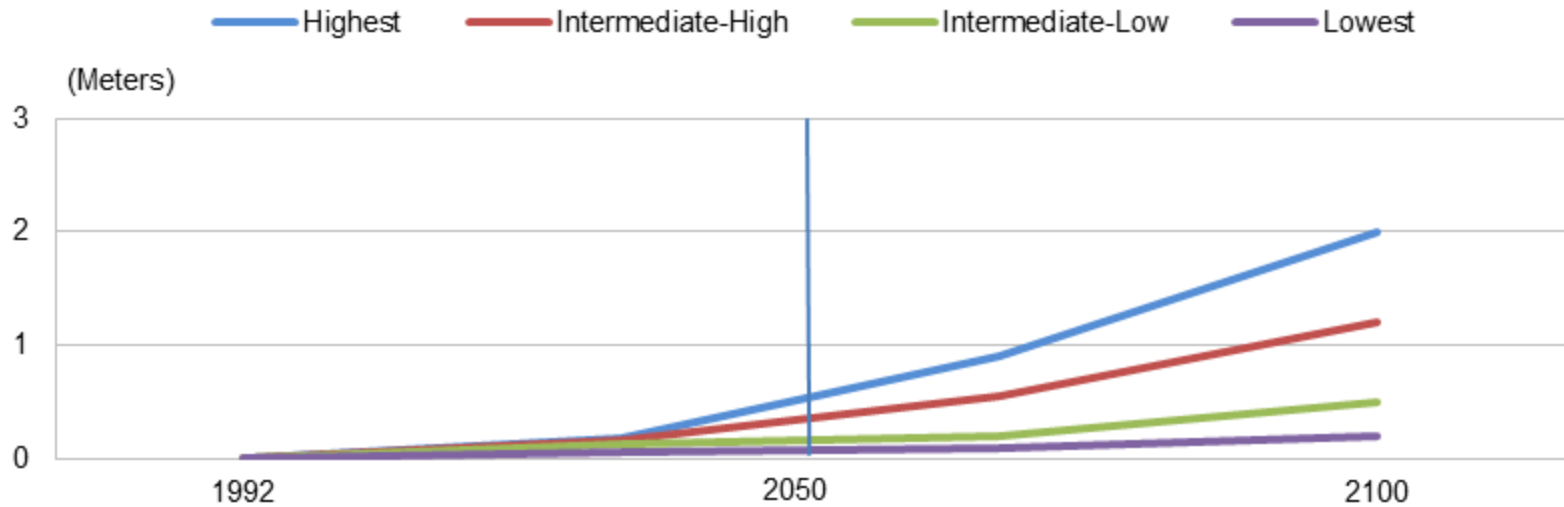
Organization	Consideration
States	No significant considerations
Local Governments	Small geographic territory Concentrated revenues in narrow economy ( sales taxes ;tourist economy)
Electric Utilities	Small service area in hazard prone region Single asset risk/Unit contingent contract
Water Utilities	Weather patterns Aging infrastructure
Healthcare	Geographic concentration
Higher Education	Revenue concentration (tuition) Concentrated asset risk
State Housing Agencies	No significant considerations

# Fitch's Approach to Disaster Resiliency

- Sea Level Rise - SLR

## Global Sea Level Rise Scenarios

(Meters Above 1992 Levels)



Source: National Tidal Datum Epoch (NTDE) by NOAA.

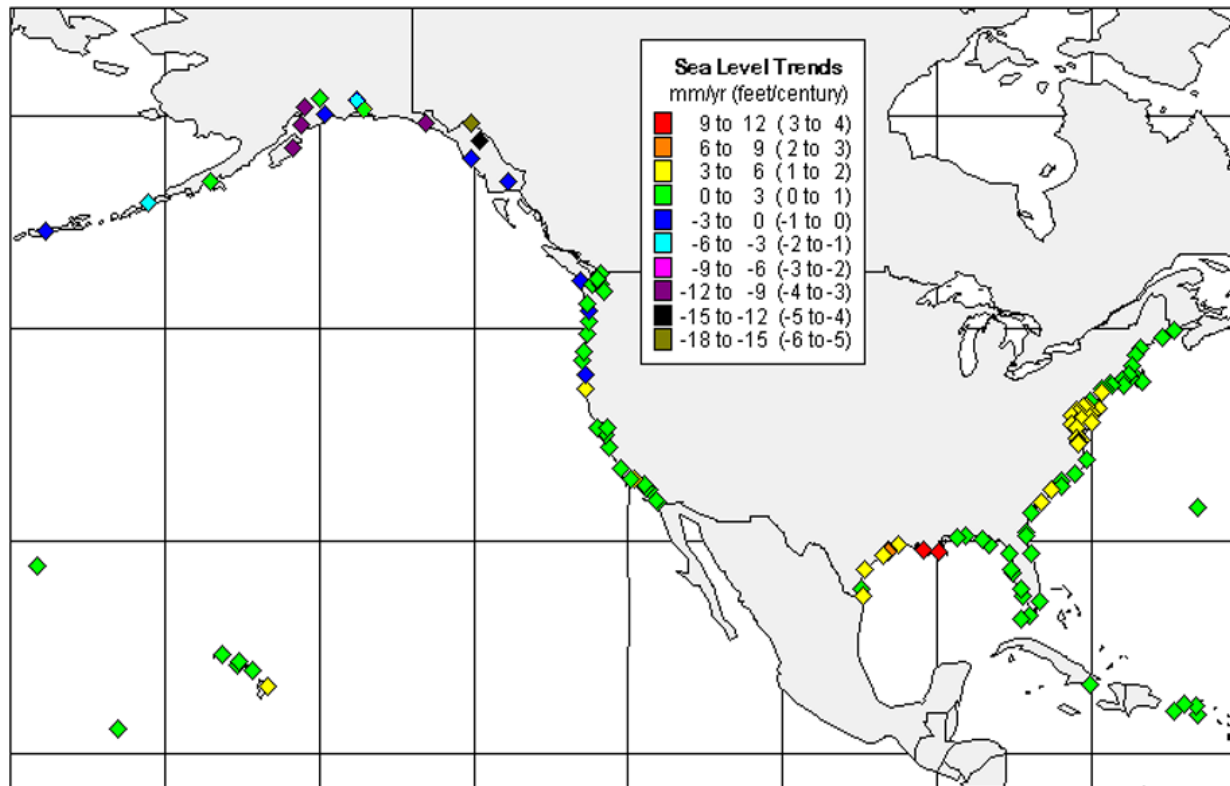
Adding a vertical line at 2050 shows low end SLR of 0.5 feet and higher end SLR of up to 2.0 feet. Recent research suggests more rapid SLR.



# Fitch's Approach to Disaster Resiliency

- Two aspects of Sea Level Rise
  - Risks related to more frequent episodic events and storm surges (event risk)
  - Risk from chronic flooding and permanent loss of land
- SLR has yet to materially alter fundamental credit characteristics of any Fitch-rated credits
- However, Fitch recognizes the threats to coastal areas from SLR but still difficult to predict how and when it will impact susceptible communities
- As the effects of SLR upon credit fundamentals become known and measurable, SLR considerations become a more important credit factor in Fitch's rating decisions

# Fitch's Approach to Disaster Resiliency



Source: Department of Commerce, NOAA, National Ocean Service, Center for Operational Oceanographic Products and Services.

# Fitch's Approach to Disaster Resiliency

- Local governments in especially vulnerable areas are already building or upgrading infrastructure due to SLR
- Miami Beach - \$300 million upgrade of its stormwater system to reduce persistent flooding
- Norfolk is in the process of raising streets and upgrading its drainage systems
- San Francisco last year established guidelines to incorporate SLR into all capital spending decisions
- SLR factored into Miami-Dade Water & Sewer's decision to spend an additional \$800 million in its capital program to build a new wastewater treatment plant and expand an existing one in order to reduce reliance on two more vulnerable plants

# Fitch's Approach to Disaster Resiliency

- Fitch expects that government strategies to cope with SLR will vary widely
- Aggressive measures such as construction of sea walls, drainage systems and bulkheads may involve substantial outlays
  - This strategy could result in elevated debt levels and impose higher operating and maintenance costs negatively affecting credit.
  - Uncertainty regarding whether these measures will work and for how long they might be effective. Could technological advances in the future render them obsolete?
- Doing nothing, however, could lead to even higher costs in the future, particularly if federal support diminishes
- Could waiting for a disaster at which point the government would qualify for FEMA mitigation funds be a better strategy than initiating mitigation projects now at the government's expense?

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# Development Finance Solutions for Disaster Resiliency



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# Development Finance Solutions for Disaster Resilience

CDFA // BNY Mellon Development Finance Webcast Series

April 19, 2016



**OFFICE OF COMMUNITY PLANNING & DEVELOPMENT**  
U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT





# OFFICE OF ECONOMIC RESILIENCE



Sustainable Communities Initiative



Climate Resilience and Adaptation



Energy Efficiency, Renewable Energy,  
and Green Building

# RESILIENCE 101

## Definition

re·sil·ience (n.) : the ability to plan and prepare for, recover from, or more successfully adapt to actual or potential adverse events

## Takeaways

- Many shocks and stresses are regional
- Distant vulnerabilities can have local impacts
- Chronic stresses affect anticipation, response, and recovery from major shocks
- There are several scales to resilience

# REASONS

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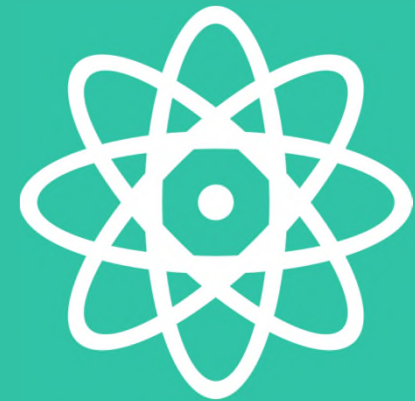
*Why We Are Talking About Resilience*



**AN  
UNCERTAIN  
ECONOMY**



**SEVERE WEATHER  
&  
CLIMATE CHANGE**



**CHANGING  
TECHNOLOGIES &  
INNOVATION**

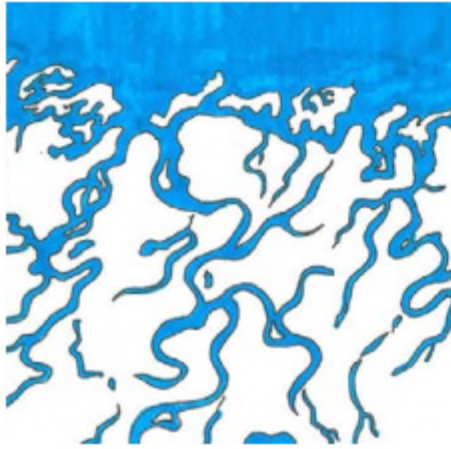


Source: OMA Rebuild by Design Team



Source: City of New York

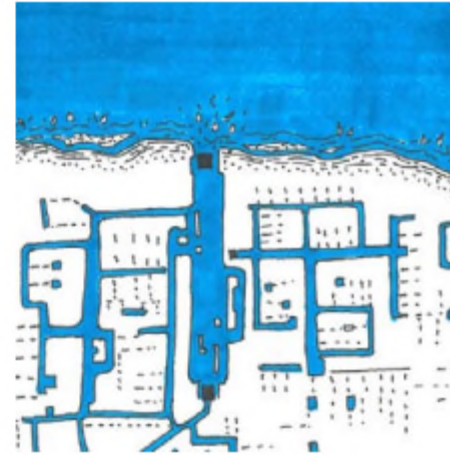
# Make room for water



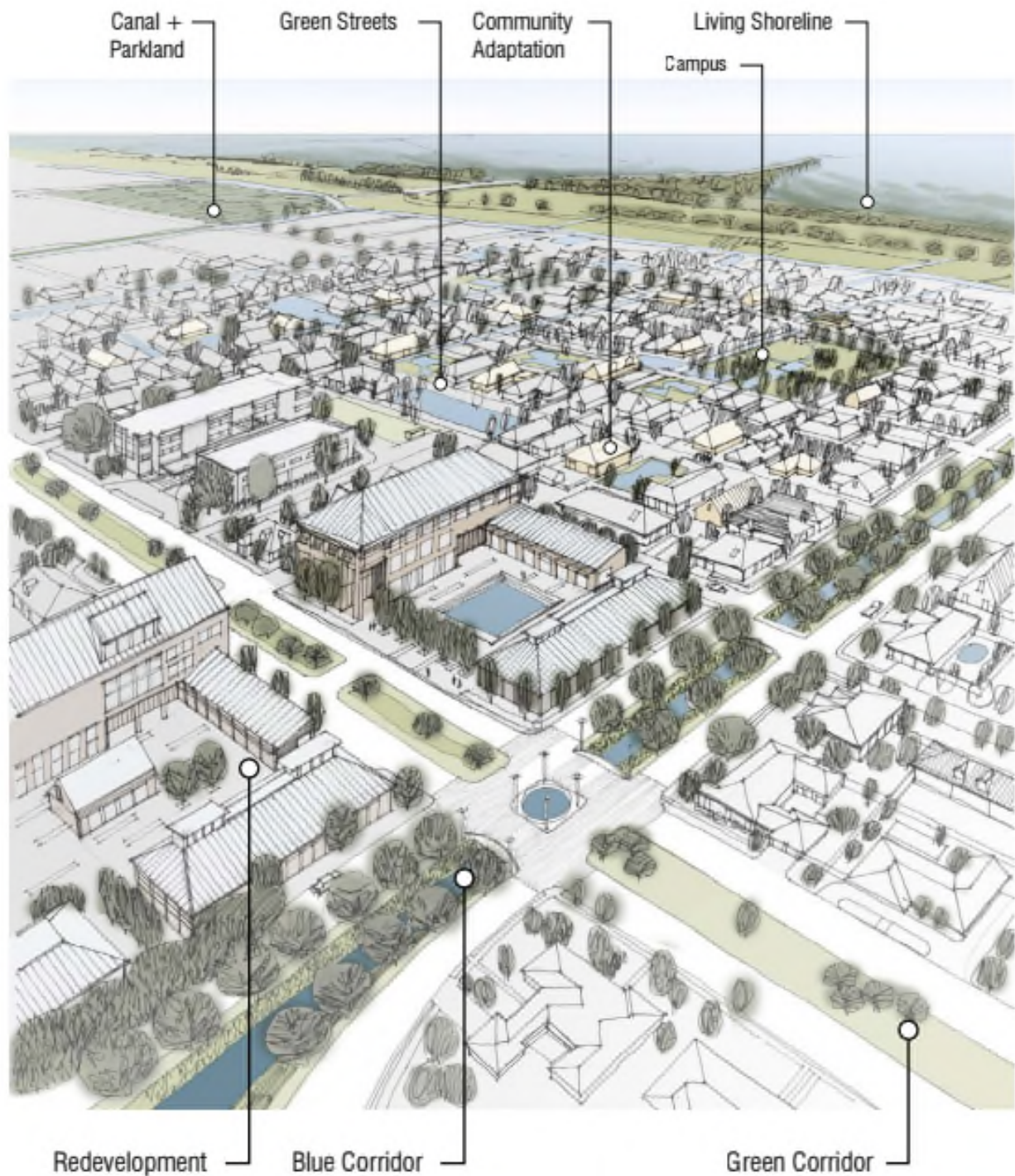
Past



Current



Future



Source: City of New Orleans

# DESIRED INFRASTRUCTURE OUTCOMES



Cost-Effective



Multiple Benefits



Resilient



Equitable



Full Life Cycle



Innovative





# **Build America Pre-Development Principles**

---

- 1) Base Project Objectives on Regionally or Locally Established Plans and Policies**
- 2) Conduct and Utilize Comprehensive Analysis to Determine Needs and Approaches**
- 3) Seek Broad Community Engagement and Support**
- 4) Position Communities to Advance Equity**
- 5) Foster the Potential for Multiple Funding Sources**
- 6) Consider Multiple Potential Scenarios for Achieving Desired Outcomes**
- 7) Coordinate with Other Infrastructure Investments**
- 8) Employ Adaptable and Reliable Technologies that Look to the Future**

# SECTION 108

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**Enables state and local jurisdictions to make loans for community and economic development projects that primarily benefit low- and moderate-income communities**

# NDRC TWO-PHASE COMPETITION

## Phase 1

[ Framing Unmet Recovery Needs, Vulnerabilities, and Community Development Objectives ]

**NOFA  
PUBLISHED**  
9/17/2014

[ 180 DAYS  
(~6 MONTHS) ]

**PHASE 1  
APPLICATION  
DEADLINE**  
3/27/2015

[ 60 DAYS  
(~2 MONTHS) ]

**PHASE 1  
REVIEW  
PERIOD**

**PHASE 1  
WINNERS  
ANNOUNCED**  
6/22/2015

[ 120 DAYS  
(~4 MONTHS) ]

**PHASE 2  
APPLICATION  
DEADLINE**  
10/27/2015

**PHASE 2  
REVIEW  
PERIOD**

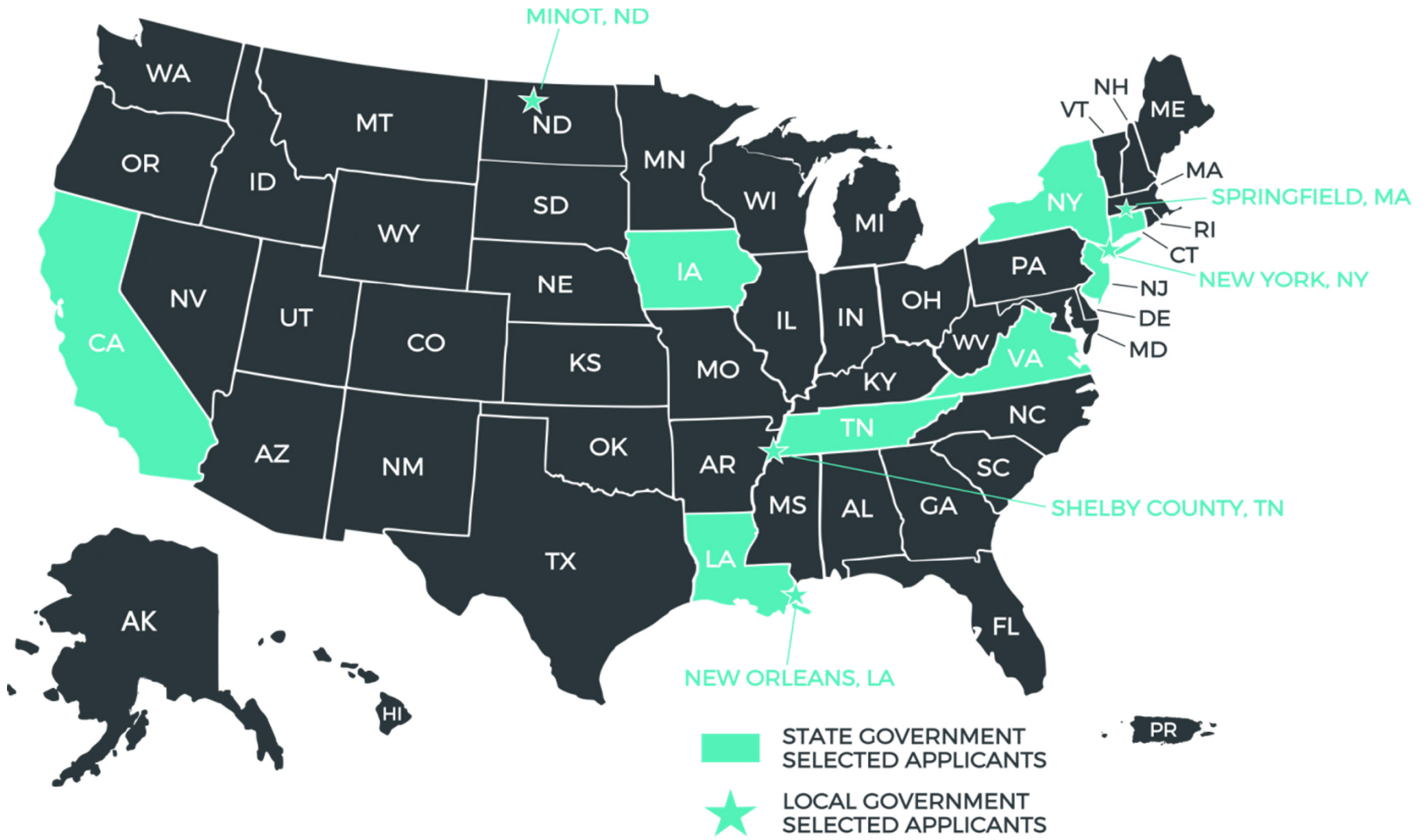
[ 60 DAYS  
(~2 MONTHS) ]

**PHASE 2  
WINNERS  
ANNOUNCED**  
1/21/2016

## Phase 2

[ From Framing to Implementation ]

# NDRC GRANTEES



# NDRC BCA APPROACH

- Part of a broader story
- Expanded benefit/cost categories
  - Lifecycle costs
  - Resiliency value
  - Environmental value
  - Social value
  - Economic revitalization
- Incorporated change and trends
- Flexible discount rate

# HIGH-PERFORMANCE INFRASTRUCTURE

---

CDBG  
GREEN BONDS  
VALUE CAPTURE  
TECHNICAL ASSISTANCE



---

# contact

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# Development Finance Solutions for Disaster Resiliency



## Theresa Cassano

Senior Analyst  
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# Opportunities for Financing Resiliency



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# HR&A Resiliency Practice

## Large-Scale Engagement & Capacity-Building



PIONEERED BY THE  
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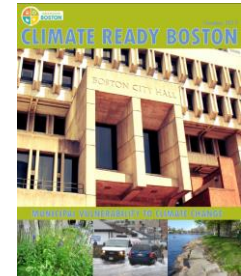
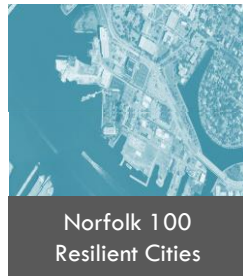
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CITIES



## Strategic Planning & Policy Design



## Project Design & Pre-Development



# Resilience Principles



# HAZARDS



Sea Level Rise



Heavy Precipitation



Extreme Heat

# VULNERABILITIES



Aging Infrastructure & Housing



Impervious Surfaces



Storm Drain & Sewer Systems

**RESILIENCE PRINCIPLE** | *Increasing climate-related risks combine with vulnerabilities...*

- ▲ Orchard Beach, Bronx
- Armor Stone (Revetments)**
  - ① Coney Island Creek, Brooklyn
  - ② Annadale, Staten Island
  - ▲ South Shore, Staten Island
- Bulkheads**
  - ③ Citywide Program
  - ④ Belt Parkway, Brooklyn
  - ⑤ Beach Channel Drive, Queens
- Tide Gates / Drainage Devices**
  - ⑥ Oakwood Beach, Staten Island
  - ⑦ Flushing Meadows, Queens
  - ▲ Coney Island Creek, Brooklyn
  - ▲ Mill Creek, Staten Island
- Minimize Upland Wave Zones**
- Dunes**
  - ⑧ Rockaway Peninsula, Queens
  - ⑨ Breezy Point, Queens
  - ⑩ Coney Island, Brooklyn
- Offshore Breakwaters**
  - ⑪ Great Kills Harbor, Staten Island
  - ▲ South Shore, Staten Island
  - ▲ Rockaway Extension
  - ▲ City Island, Bronx
- Wetlands, Living Shorelines and Reefs**
  - ⑫ Howard Beach, Queens
  - ⑬ Tottenville, Staten Island
  - ⑭ Plumb Beach, Brooklyn
  - ⑮ Brant Point, Queens
  - ▲ Jamaica Bay
  - ▲ Bay Ridge Flats
  - ▲ Saw Mill Creek, Staten Island
- Groins**
  - ⑯ Sea Gate, Brooklyn
- Protect Against Storm Surge**
- Integrated Flood Protection System**
  - ⑰ Hunts Point, Bronx
  - ⑱ East Harlem, Manhattan
  - ⑲ Lower Manhattan / Lower East Side
  - ⑳ Hospital Row, Manhattan
  - ㉑ Red Hook, Brooklyn
  - ▲ Brooklyn-Queens Waterfront
  - ▲ West Midtown, Manhattan
- Floodwalls / Levees**
  - ㉒ East Shore, Staten Island
  - ㉓ Farragut Substation, Brooklyn
  - ▲ Astoria Generating Station, Queens
- Local Storm Surge Barrier**
  - ▲ NYC
  - ▲ Rockaway Inlet
  - ▲ Gowanus Expressway, Brooklyn
- Multi-purpose Levee**
  - ▲ Lower Manhattan



**RESILIENCE PRINCIPLE |** *Work in layers for independently effective solutions.*  
 NYC Special Initiative for Rebuilding & Resilience



**RESILIENCE PRINCIPLE** | *Create interventions that generate multiple benefits.*  
*Cedar Rapids Flood Protection Strategy*

Source: RD Walker, Sasaki Associates



**RESILIENCE PRINCIPLE** | *Include an approach that is inclusive, integrated, robust, reflective, redundant, and resourceful*  
*NY Rising Community Reconstruction Program*

2016 2030 2050 2100



**OPERATIONS FOCUS**

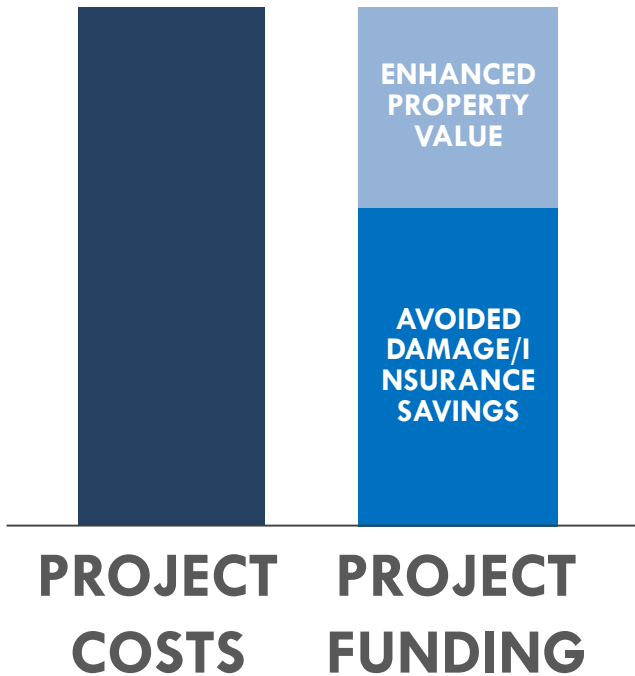
**CAPITAL INVESTMENT FOCUS**

**RESILIENCE PRINCIPLE** | *Make improvements as part of natural building cycle and address market failures.*



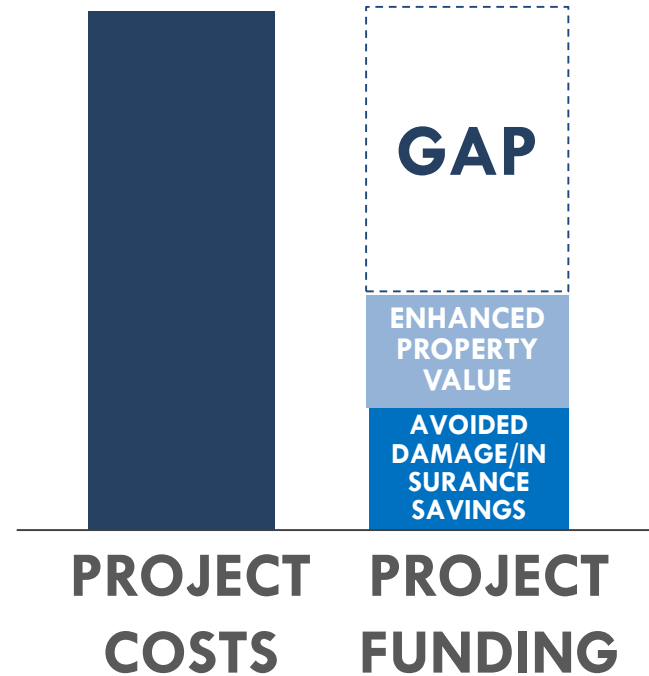
New value of assets  
exceeds cost of  
adaptation:

### PRIVATE FUNDING



Value of adaptation  
exceeds new cost of assets:

### PUBLIC FUNDING



**RESILIENCE PRINCIPLE** | *Use public funds to leverage private value capture and for public policy purposes.*

## PROJECT BENEFIT CATEGORIES

Direct Revenues

User rates/fees, taxes

Indirect Revenues

Property value increases

Efficiency Gains

Utility savings, decreased use

Avoided Losses

Reduced disaster spending or  
Insurance premium savings

Non-Monetary Benefits

Ecosystem services, broad  
social benefits

## SOURCES

Private Financing

Philanthropic  
Funding/Financing

Public  
Funding/Financing

**RESILIENCE PRINCIPLE** | *Match project benefits to financing sources.*

# Case Study: Storm Surge Barriers



# SCOPE

Analyzed **potential project alignments** that meet HUD CDBG-DR and Army Corps program requirements

Developed broad **benefits case** and refined benefit-cost analysis

Developed a neighborhood assessment **value capture strategy**

Supported **stakeholder engagement** across city agencies

# STRATEGY

Explore how the City can leverage other public and private investments to reduce total project costs.



**INTEGRATE PARKS & INFRASTRUCTURE**

**DEVELOPER IN-KIND CONTRIBUTIONS**

# OPPORTUNITY

Incorporate future private development and public projects into flood protection.

## DEVELOPMENT STATUS

Sources: NYC DCP; NYS DOT

-  REZONED / UNDER CONSTRUCTION
-  REZONED / PLANNED
-  REZONED / UNPLANNED
-  CURRENTLY SEEKING CITY ACTION
-  ANTICIPATED TO SEEK CITY ACTION
-  17 FT DESIGN FLOOD ELEVATION





**elevated  
bikeway**

**elevated  
sites**

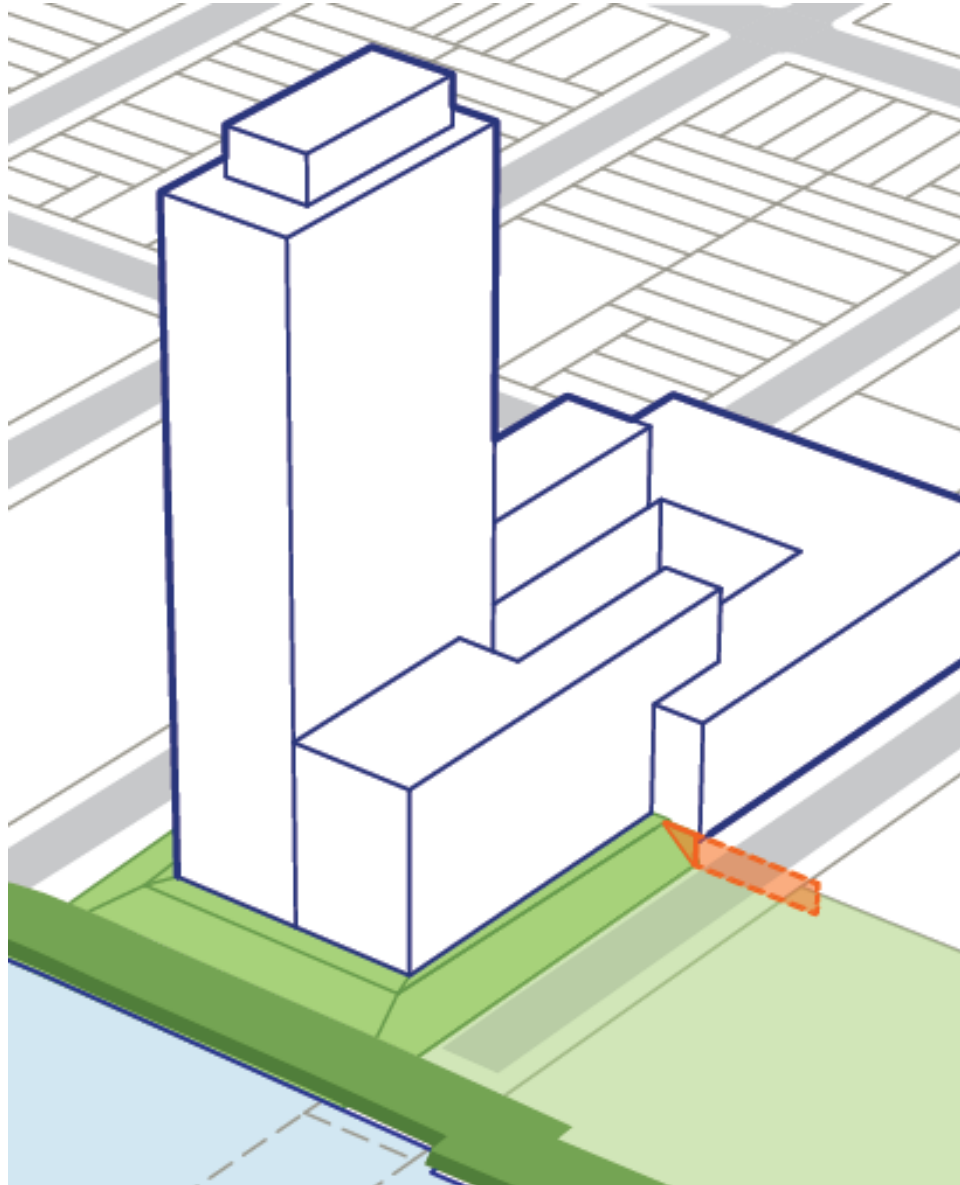
**elevated  
sites**

# OPPORTUNITY

Make street ends into parkland

Reduce height of flood defenses (+7' to achieve the DFE)

Site new developments behind the line of defense





## BENEFITS

Protect approximately **7,000 residents** in socially vulnerable communities

Preserve over **2,500 jobs** and **100 businesses**, including those in industrial sectors, performing critical functions within the local economy.

Ensure **residents can remain in place** during a storm, and key **neighborhood assets**, such as retail, remain functional.

# LESSONS

Recognize and quantify a broad array of **public and private benefits**.

Attract federal funds by **matching** the project **benefits** case to evolving federal **cost-benefit frameworks**.

Apply value capture mechanisms to **monetize the benefits** of resilience projects accruing to a diverse mix of parties.

Align resiliency investment plans with other municipal levers to **reduce total project costs**.

# TAKEAWAYS

More functions,  
more benefits,  
more funding

Layered strategies  
for resilience

Essential public  
engagement

Opportunities result  
from coordination

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Financing Water Infrastructure  
Tuesday, May 17@ 1:00 pm Eastern

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