How can planners help implement and institutionalize resilience?

Kurt Christiansen, FAICP – Presenting the work of

Marissa Aho, AICP

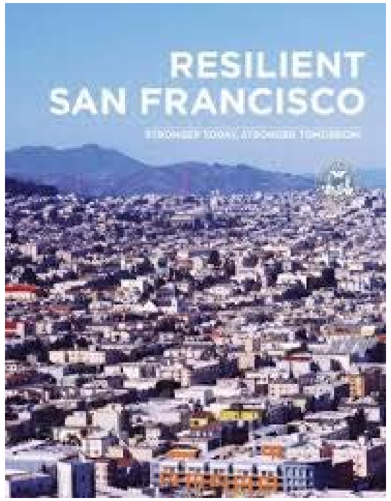
Chief Resilience Officer, City of Houston

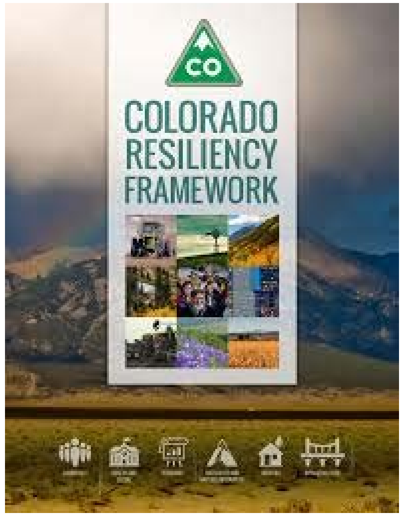
Former Chief Resilience Officer, City of Los Angeles

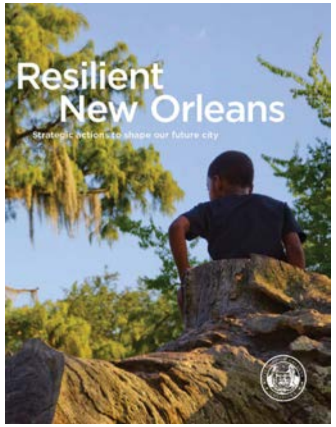
Plus States (Oregon, Colorado), Counties (San Diego), and Cities (Santa Monica, CA, Hoboken, NJ) and many others

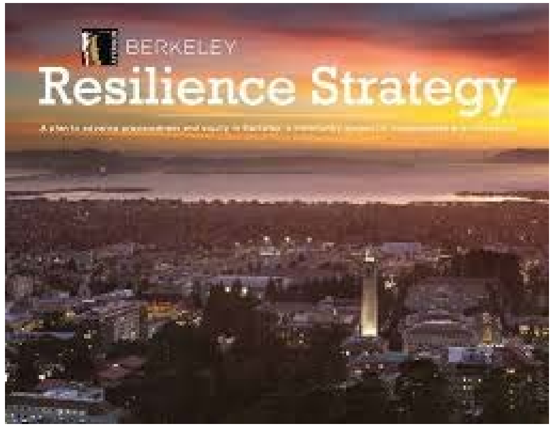
101 RESILIENT CITIES

Strategies released + State and local plans, programs, and policies







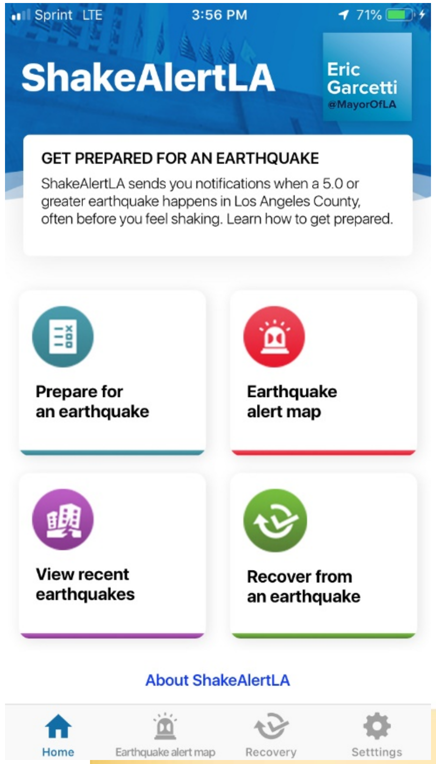


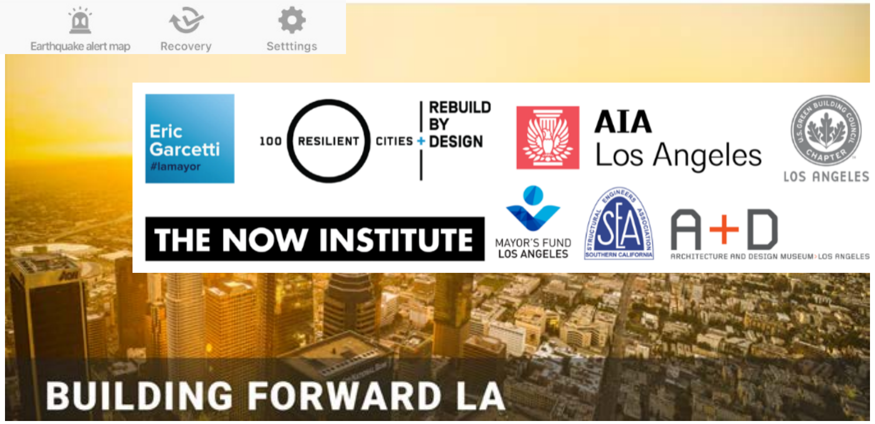
1) Breaking Down Silos

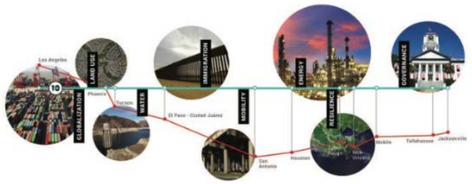
- Data/Technology
- Outreach and Engagement
- Decision-making
- Ownership
- Procurement
- Budgeting
- Capital Improvements
- Maintenance
- Planning
- And others

2) Fostering partnerships

- Internal
- Academic
- Science
- Engineering
- Community
- Private Sector
- Foundations
- Government
- Advocates
- Students
- Regional







3) How do you get started (with little or no resources)?

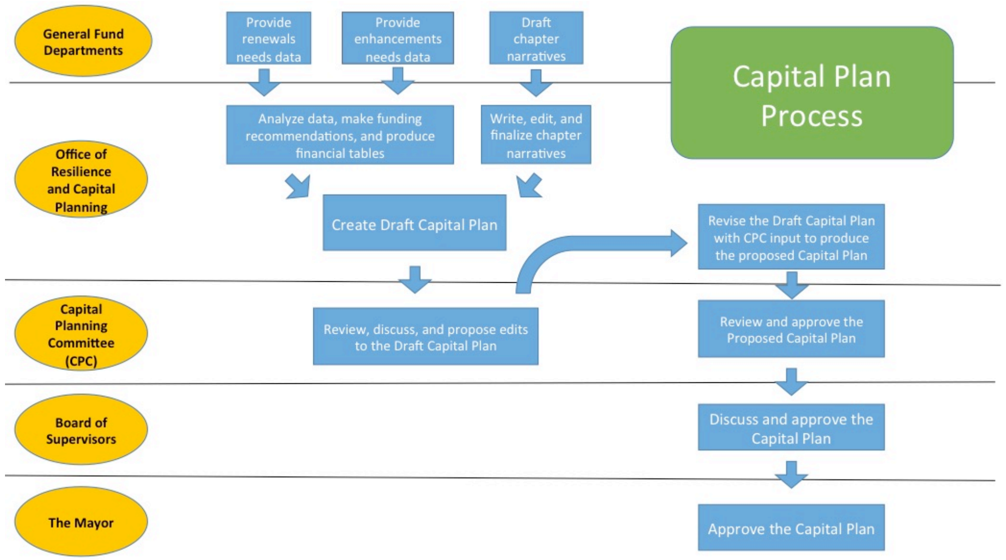
- a point person/people
- shocks and stresses data
- start with the greatest risk and find co-benefits
- treat resilience as a value or practice, and not an end state
- develop policies and plans that can be activated in the event of an emergency or disruption
- integrate resilience principles into all new plans and projects.

What do you see as Houston's most important existing efforts to strengthen and build the resilience of the city?

N=42

4) Follow the money

- Capital Planning
- State Funds
- Federal Funds
- Foundation funds
- Calculate the cost of doing nothing
- Take a “Precovery” approach
- Work with partners
- Change the marketplace
- Leverage recovery funding to “build forward”
- Retrofits



OneSanFrancisco.org

National Benefit-Cost Ratio Per Peril *BCR numbers in this study have been rounded	Federally Funded	Beyond Code Requirements
Overall Hazard Benefit-Cost Ratio	6:1	4:1
Riverine Flood	7:1	5:1
Hurricane Surge	Too few grants	7:1
Wind	5:1	5:1
Earthquake	3:1	4:1
Wildland-Urban Interface Fire	3:1	4:1

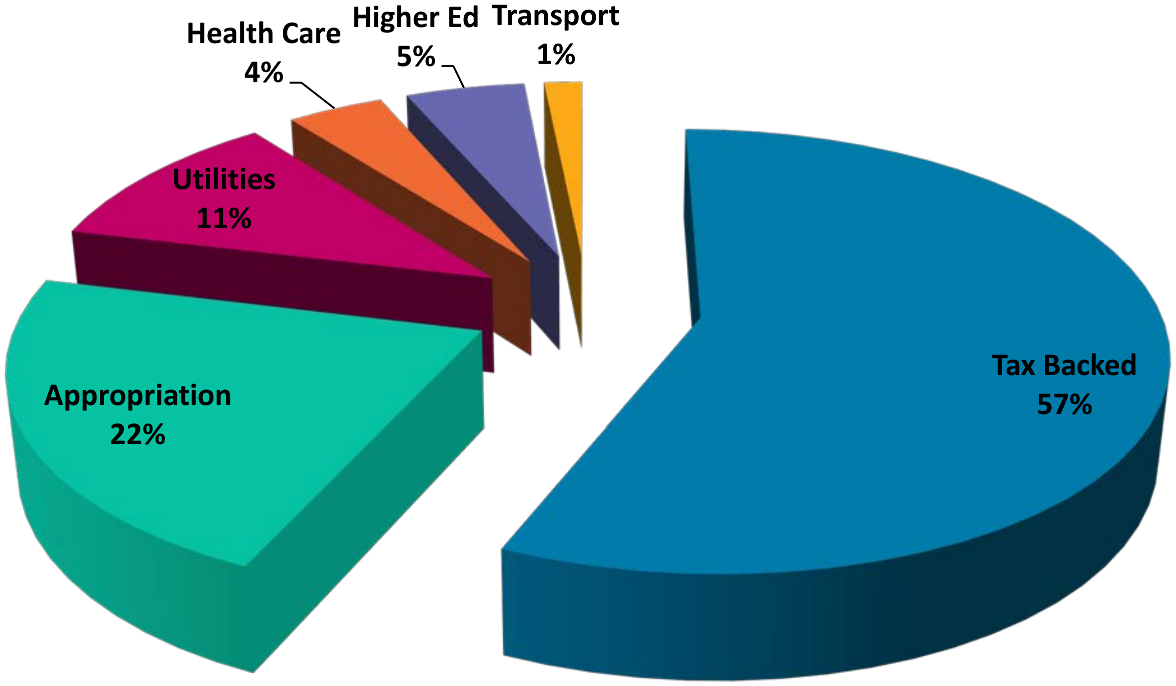
National Institute of Building Sciences

Climate Change, Extreme Weather Events, and Credit Ratings

Randy Layman, Associate Director – Local Government and Public Utility Ratings

S&P Global Ratings

S&P's U.S. Public Finance Ratings Universe



Of the nearly 18,000 U.S. local government entities with a public S&P credit rating, nearly 80% issue debt secured by taxes or an appropriation of general revenue

S&P maintains 472 ratings on local governments in AL and 68 in MS. 56% of these are backed by taxes or general revenue. 36% are backed by utility revenues.

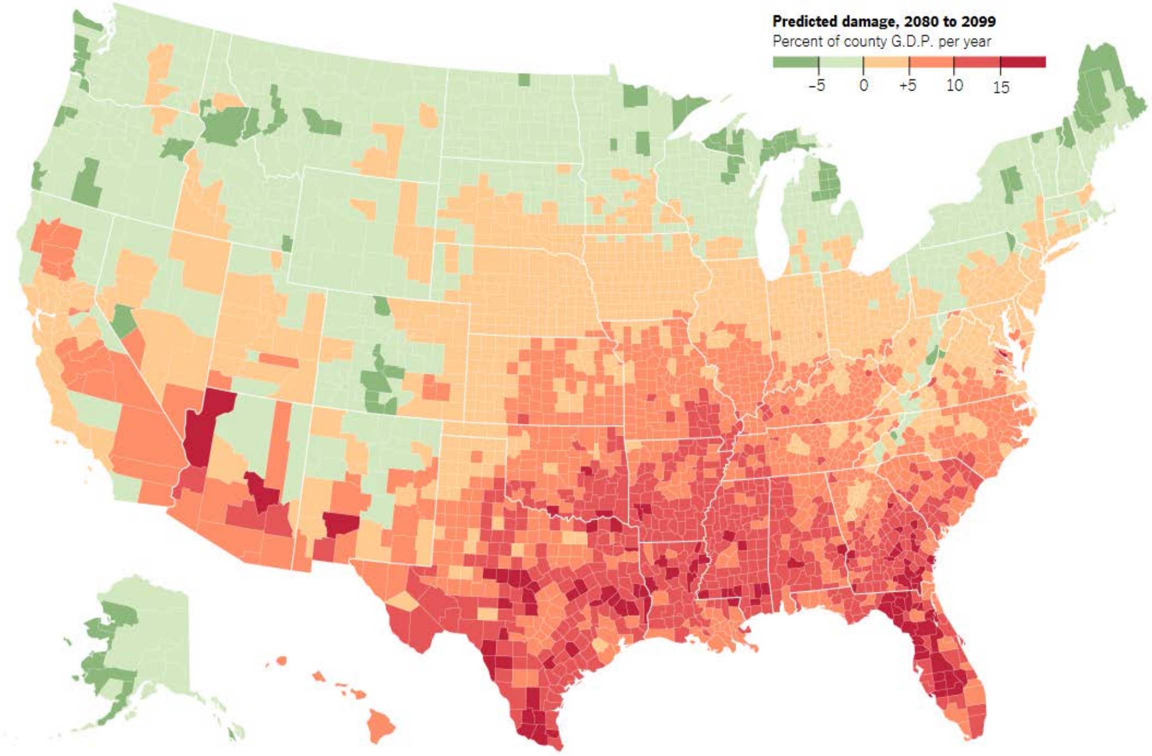
What Is A Credit Rating?

What Credit Ratings Are	What Credit Ratings Are Not
Opinions about relative credit risk	Indications of market liquidity or price
Opinions about ability & willingness of an issuer to meet financial obligations in full & on time	Investment advice or guarantees of future credit risk
Forward looking and continually evolving	Absolute measures of default probability
Intended to be comparable across different sectors and regions	Expected ultimate loss given default

- The key objective of S&P's ratings is assessing creditworthiness of debt issuers and securities
- Our ratings provide comparability and transparency
- Endeavor to consistently apply criteria

Projected Climate Change and Weather-Related Impacts

- Credits ratings agencies and investors strive to be forward-looking in their analysis
- Estimated $360 billion a year in climate change and weather-related events over next decade
- By 2060-2080, 58% of U.S. metro are anticipated to experience annual GDP impacts of 1% or more
- Coastal and southern states will be hit the hardest
- Damage is expected to be due to a combination of severe weather events and long-term environmental changes



Estimating economic damage from climate change in the United States
Solomon Hsiang, Robert Kopp, Amir Jina, James Rising, Michael Delgado, Shashank Mohan, D. J. Rasmussen, Robert Muir-Wood, Paul Wilson, Michael Oppenheimer, Kate Larsen, Trevor Houser

S&P Global Ratings

Why are Physical Climate and Weather-Related Risks Important to Debt Markets?

- Debt markets deal in absolute and relative risks
- Forecasts related to climate change are subject to substantial variability
- Identifying long-term environmental threats and appropriate solutions is challenging
- Costs to address certain risks are enormous, but inaction may be more costly
- As risk perceptions and the cost of disasters increase, insurability and state/federal government support are less viable
- Resiliency planning by governments can serve to reduce both actual risk and long-term risk

Our Assessment of Local Governments Begins with the Underlying Credit Fundamentals

Overview of S&P's Local Government Rating Methodology

Institutional framework	10%
Economy	30%
Management Assessment	20%
Liquidity	10%
Budgetary performance	10%
Budgetary flexibility	10%
Debt & contingent liabilities	10%

Indicative Rating + Overrides + Potential one notch adjustment → **Final Rating**

Relevant Overrides	Caps rating at:
Structural imbalance	BBB+
Weak liquidity	BBB+ or BB+
Weak management assessment	A or BB+

Natural Disaster and Climate Change Risk Within Ratings

- **Positive Resiliency Considerations:**
  - Long-term capital plans' inclusion of environmental risks
  - Emergency preparedness and disaster recovery policies
  - Procedures for submitting claims for FEMA disaster relief, state emergency funds, insurance
  - Adequately funded reserves
  - Economic diversity
  - Participation in federal, state, and regional planning efforts

Municipal Sector	Sector Specific Environmental Factors
Water/Sewer Utilities	Drought & water stress planning, saltwater intrusion, backup supply/treatment and regional interconnects
Electric Utilities	Carbon concentration, asset vulnerability, backup supply
State/Local/ Municipal Enterprises	Financial & Capital planning, zoning, building codes, emergency & disaster preparedness
All Sectors	Potential impacts to revenue bases and infrastructure

S&P Global
Ratings

Actual Questions Posed to Governments

- Please highlight the county's general strategy regarding planning for and adapting to sea level rise and other climate-related events, such as toxic algae blooms.
- Has the county incorporated any significant adaption-related projects into its long-term financial and capital plans?
- Following the nearby impacts from Hurricane Michael, has the county made any changes to disaster preparedness planning or post-event response activities?
- Please highlight the city's process for managing and responding to natural disasters, including processes to ensure any FEMA claims or other grant funds are submitted on a timely basis.
- Is the county engaged in any regional or state efforts to adapt to risks resulting from sea level rise.
- How does the city identify which streets require elevation increases to stem tidal flooding?
- Please detail the city's plans to improve storm water infrastructure to account for the increasing frequency of flooding and high-tide events. .

Examples of States and Cities Pursuing Resiliency Plans

Louisiana Master Plan for a Sustainable Coast:

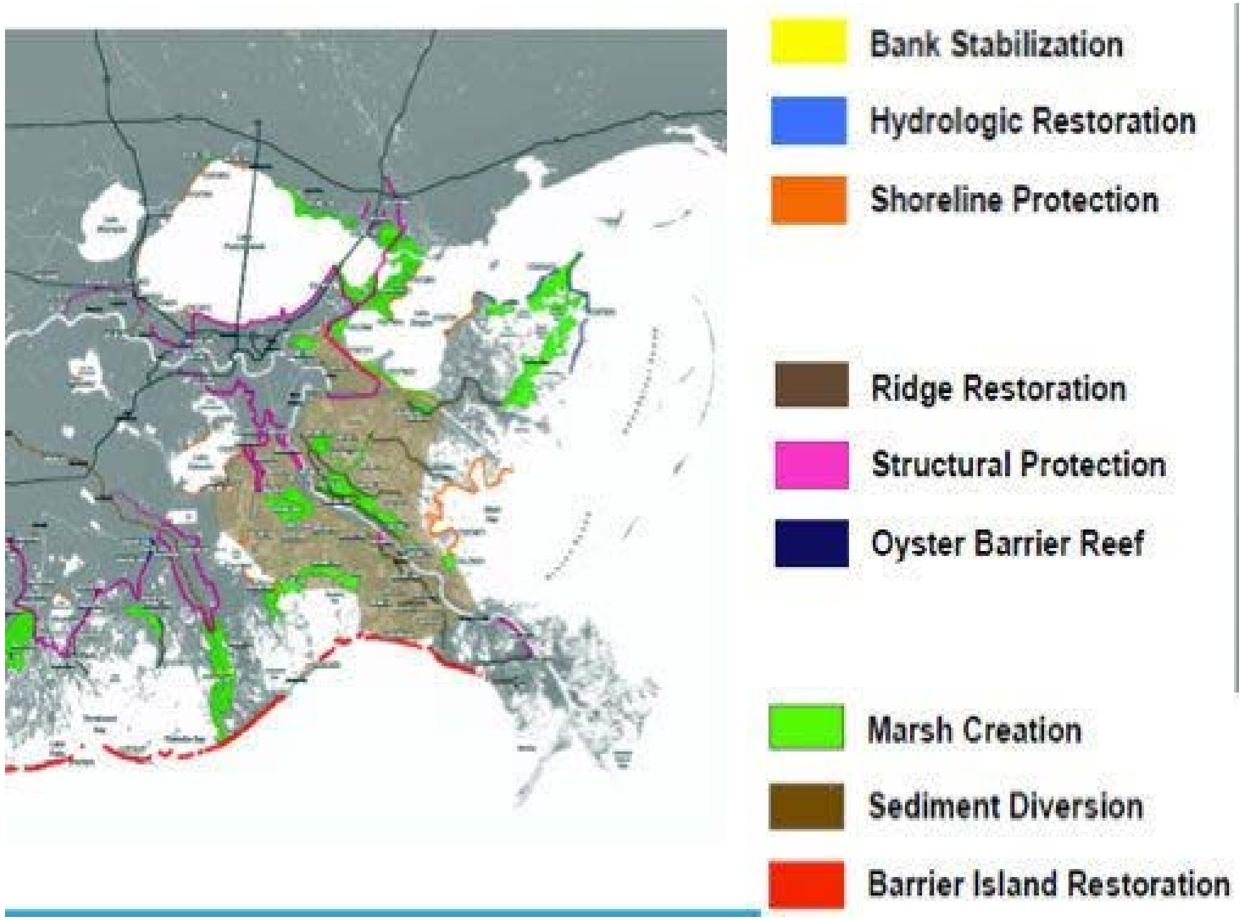
- The $50 billion plan includes projects that range from structural protection to barrier island restoration.

Safe Guarding California Plan:

- Statewide approach to evaluate the specific risks to the state's population and infrastructure posed by climate change.

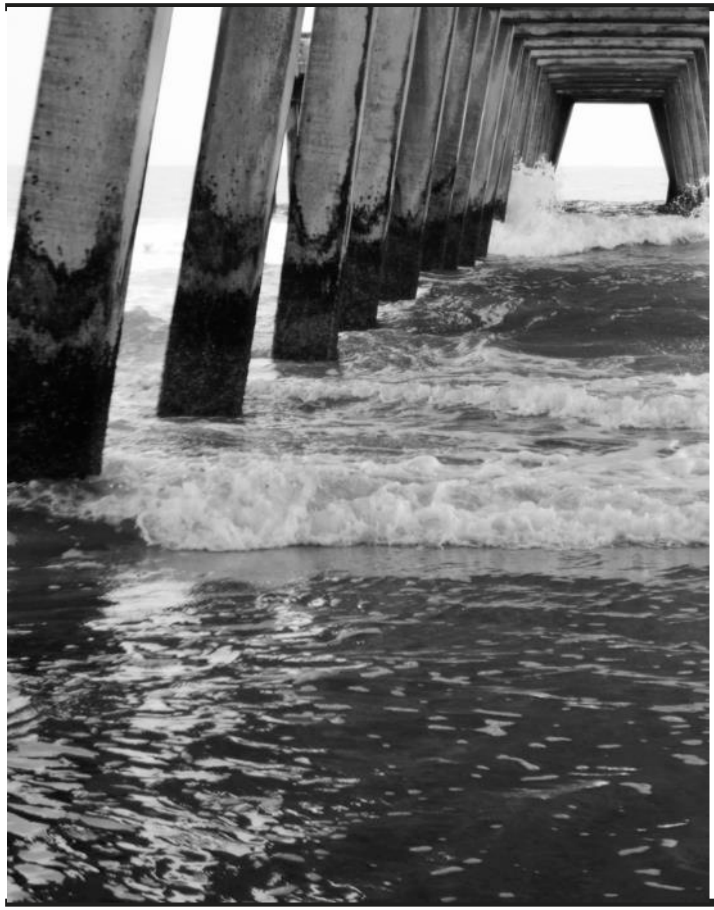
Miami Forever:

- $400 million bond; to fund infrastructure--storm drains, flood pumps, and sea walls--intended to prevent floods and make the city more resilient to rising sea levels



(Coastal Protection and Restoration Authority)

Conclusion



1. Climate Change will be increasingly considered in our rating analysis.

2. Challenges remain with time horizon matching and disclosure of information

3. We consider opportunities that may exist for municipal entities to mitigate climate change risk through proper planning and improving system resiliency

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Promoting, Planning, and Paying for Resilience

2019 Annual Conference

Alabama and Mississippi Chapters of the American Planning Association – Huntsville, Alabama

October 18, 2019

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What are the Costs of Becoming More Resilient?

Reducing Risk of Extreme Events is Costly

- Designing and improving buildings to withstand large seismic events
- Drought mitigation plans
- Fire hardening and vegetation clearing
- Back up generation
- Flood prevention measures

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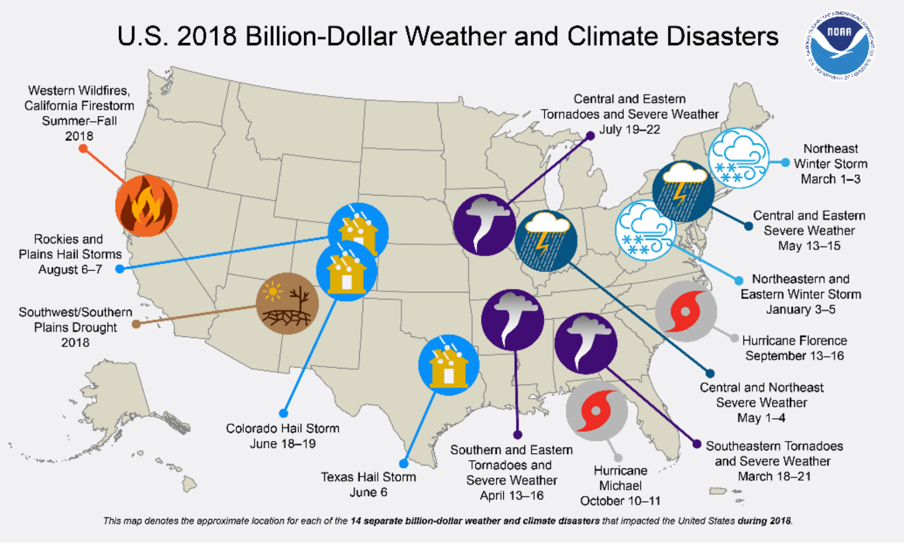
What are the Costs of Inaction?

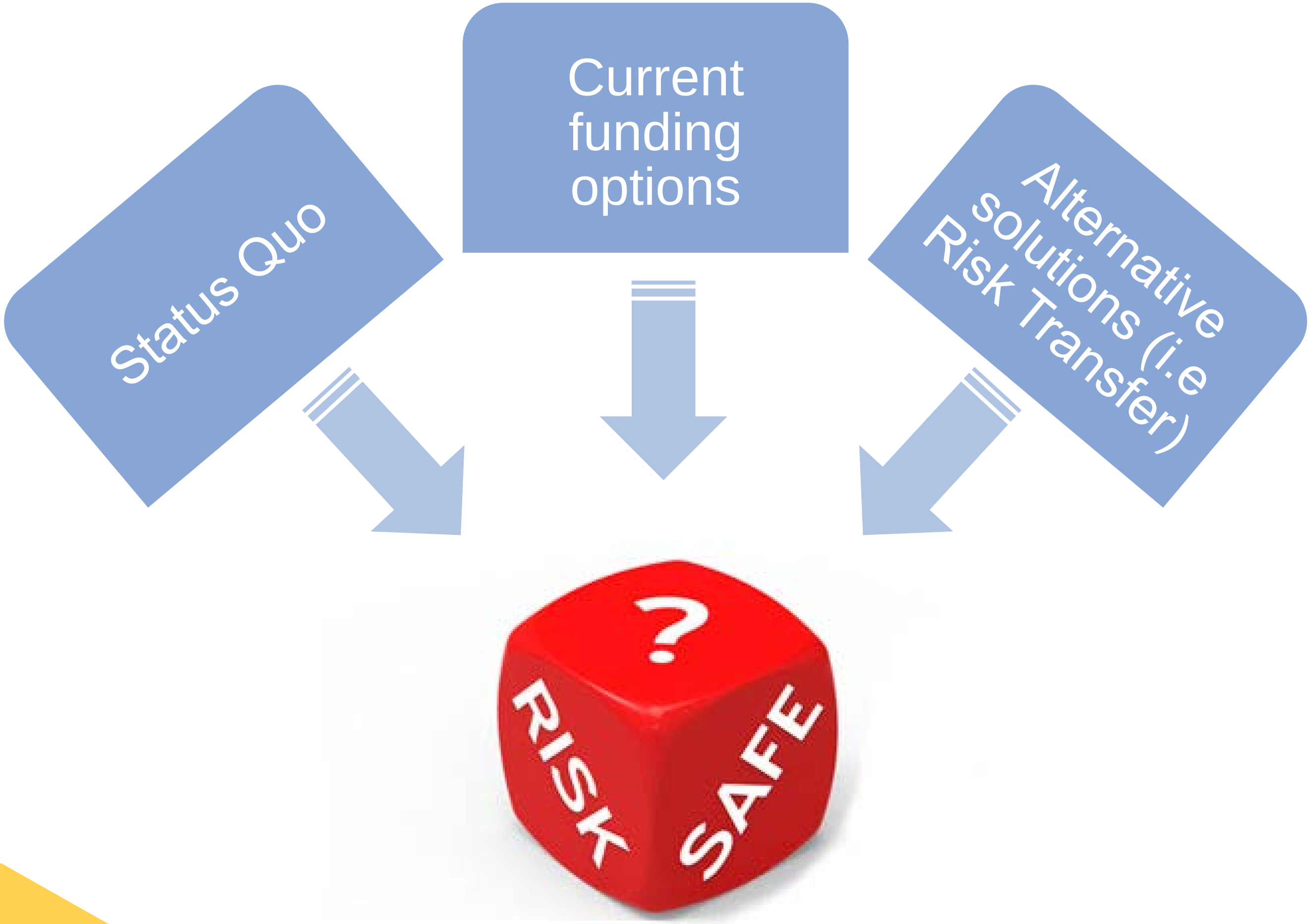


Inaction can be just as costly, if not more

- Emergency funds depleted
- Need for larger reserves
- Higher insurance premiums
- Increased debt
- Negative impact on credit ratings
- Adjustments to CIP
- Reduced local investment
- Extended recovery
- Population loss
- Reduced community services

Tools for Funding Resilience

- The answer to how cities can finance resilience will differ based on the resources available to your community. Generally speaking, three main approaches are used:



Status Quo

- Typical for government agencies to rely on financial assistance from the following after a significant event occurs:
  - FEMA
  - Private insurance
  - Internal reserves
  - Community and broader public support

- **Considerations**
  - Timing of financial assistance from FEMA or insurance may not correlate with immediate needs
  - Use of unrestricted reserves can impact CIP, priority of planned projects and put pressure on financial profile
  - Community support and resources generally do not cover the costs of a significant event

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Funding Mitigation Efforts

- PAYGO…for some

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Funding Mitigation Efforts

- Existing Revenues/Reserves
- Grants
  - Narrow focus/ limited availability
- Debt
  - Public (i.e. municipal bonds) and Private (bank loans and direct investments from investors) sector financing options
  - Low interest borrowing options available (SRFs, WIFIA, state infrastructure banks, etc.)
  - Must be repaid and secured by a source of revenue(s)
  - Increased leverage not possible for all
- New / Dedicated Revenues
  - Revenues created and dedicated to specific efforts
  - Tax Increment Financings
  - Political will can be difficult

Alternative Solutions:

- Risk Transfer Options - Government pays a premium or limits upside by transferring risk to a third-party
  - Use of insurance to manage risk and limit cost of recovery
  - Public Private Partnerships (P3s)
  - Pay for Performance Tools
- “Soft” Infrastructure has to play a role:
  - Financial regulations
  - State/local laws
  - Creditworthiness/ credit rating agencies
  - Changing procurement practices

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Paving a Path Forward

- Identifying major risks and probability of occurrence
- Evaluating potential cost exposure of event(s) and assigning costs to planning efforts
- Mapping available resources and funding limitations
- Facilitating collaborative planning efforts (local, regional, state, federal, research institutions, private sector)
- Incorporating resilience goals into design and development codes as well as rethinking zoning and land use
- Aligning CIP with resilience principles and focusing on incremental changes to achieve long-term goals
- Designing policies & procedures that address the pre-occurrence intentions and post-occurrence processes
- Most cities will need to rely on an “all-of-the-above” approach to when it comes to financing resiliency

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Thank You

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Resiliency Projects

October 18, 2019

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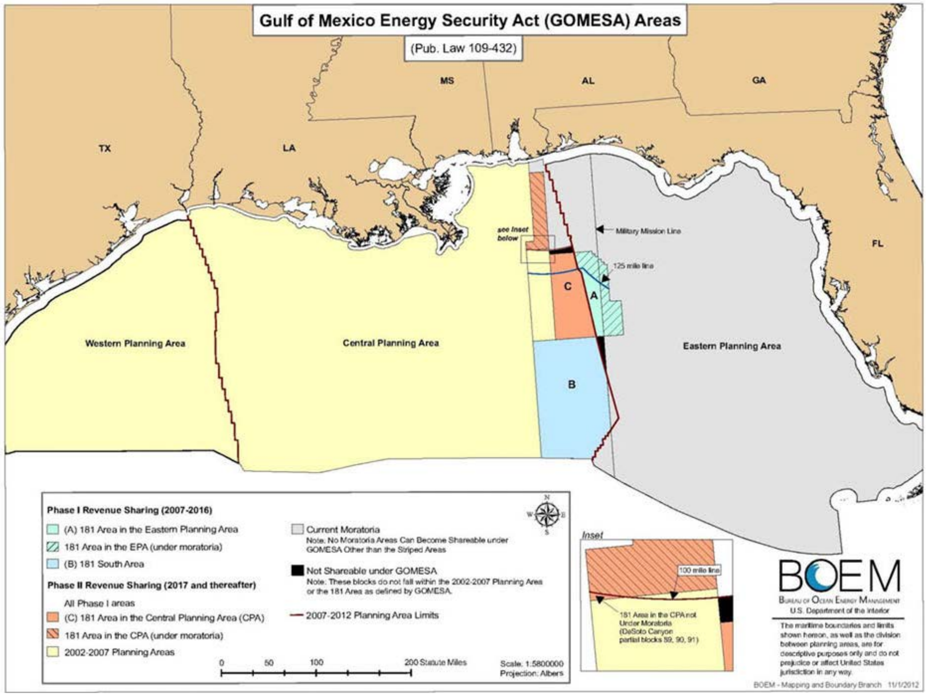
4Q19

Securitization of GOMESA Revenues

Overview

- The **Gulf of Mexico Energy Security Act of 2006** ("GOMESA") established the new revenue sharing system of disbursing royalty payments from offshore oil and gas activities in the GOM Outer Continental Shelf to various coastal states and their coastal parishes/counties
- These states and coastal municipalities receive annual payments from the Department of Interior; however, the revenue stream is volatile and depends on multiple factors including: 1) oil and gas prices; 2) the oil and gas industry's capital investment in the GOM; and 3) future legislative or regulatory actions that impact oil and gas exploration or the authorizing legislation
- **12 coastal parishes/counties have already leveraged their GOMESA payments to generate up-front project funds**



Federal FY 2019 Aggregate GOMESA Disbursements

State	State Disbursement	CPS Disbursement	Total Disbursement
Mississippi	$25,379,085	$6,344,771	$31,723,856
Alabama	$75,782,553	$18,945,638	$94,728,192
Louisiana	$24,476,088	$6,119,022	$30,595,110
Texas	$46,313,471	$11,578,368	$57,891,839
Total	**$171,951,197**	**$42,987,799**	**$214,938,996**

Sources: https://www.onrr.gov/about/PDFDocs/GOMESA-FY2018-Dibursements.pdf
Gulf of Mexico Energy Security Act of 2006 (Public Law 109-432).
2017-2022 OCS Oil & Gas Leasing Program (https://www.boem.gov/National-OCS-Program-for-2017-2022/)

Securitization of GOMESA Revenues

Clients have funded resiliency projects through GOMESA bond financings

- The GOMESA Act restricts the use of GOMESA funds to the following[1]:
  - Mitigation of the effects from OCS activities through onshore infrastructure projects
  - Coastal protection
  - Mitigation of damage to wildlife or natural resources
  - Implementation of a federally-approved conservation management plan
  - Associated planning and administrative expenses
- Below are examples of how some local governments have chosen to use leveraged GOMESA funds

Issuer	Projects[2]
Vermilion Parish, LA	Placement of onshore revetment and near-shore dikes to combat effects of coastal erosion
Lafourche Parish, LA	Improvements to hurricane protection and evacuation routes; marsh and water quality restoration; beach re-nourishment and dredging of additional breakwater structures to combat erosion; construction of a coastal research education center at Nicholls State University; and levee improvements
St. Martin Parish, LA	Replacement of a bridge servicing a vulnerable area of the Parish
St. Mary Parish, LA	Road and drainage improvements
Hancock County, MS	Countywide storm water, drainage and erosion control program; dredging navigational channels within County

(1) Source: Gulf of Mexico Energy Security Act of 2006 (Public Law 109-432).
(2) Source: Official Statements

Green Bonds
Overview

- **Green Bonds demonstrate investor interest in resiliency projects in the tax-exempt bond market**

- ***Green Bonds*** are any type of bond for which the proceeds will be exclusively applied to finance or refinance new and/or existing eligible *Green Projects* and aligned with the 4 core components of the Green Bond Principles ("GBP"), a voluntary set of guidelines that encourage transparency and disclosure

- Eligible Green Bond Projects Categories:

  - *Renewable Energy | Energy Efficiency | Pollution Prevention and Control | Climate Change Adaptation*

  - *Environmentally Sustainable Management of Living Natural Resources & Land Use | Clean Transportation*

  - *Terrestrial and Aquatic Biodiversity Conservation | Sustainable Water and Wastewater Management*

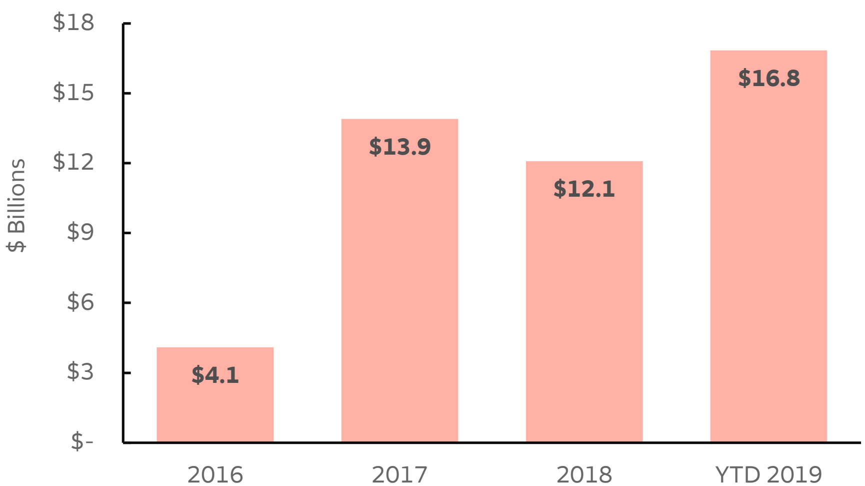
  - *Eco-Efficient and/or Circular Economy Adapted Products, Production Technologies and Processes Green Buildings (which meet regional, national or internationally recognized standards or certifications)*

Green Bonds

There are a Growing Number of Green-Focused Investors and Bond Funds

- Sustainable, responsible and impact (SRI) investing is an investment discipline that considers environmental, social and corporate governance (ESG) criteria to generate long-term competitive financial returns and positive societal impact
- There are now seven tax-exempt funds that have been tagged as ESG/SRI funds; an additional 20 ESG/SRI tagged funds invest in US municipal bonds
- Other investors are integrating ESG analysis into their decision making process.

ESG/SRI Funds Total Assets Under Management



US Municipal Bond ESG/SRI Funds

Fund Name	AUM ($mm)
JP Morgan Asset Management Muni Income Fund	232.11
Tortoise Tax-Advantage Social Social Infrastructure Fund	231.70
Alliance Bernstein Municipal Impact Portfolio	176.06
Calvert Responsible Municipal Income Fund	173.72
Green California Tax-Free Income Fund	65.41
Neuberger Berman Municipal Impact Institutional Fund	59.12
Columbia US Social Bond Fund	53.43

[1] Largest Funds by Assets Under Management

Other ESG/SRI Funds that invest in US Municipal Bonds

Fund Name	AUM ($mm)
American Equity Invest Life Insurance Company	530.29
American Tax-Exempt Bond Fund Of America/The	351.24
Blackrock California Municipal Opportunities	309.17
Blackrock Strategic Municipal Opportunities	258.77
TIAA Cref Social Choice Account	229.15
Franklin New York Tax-Free Income Fund	197.49
iShares National Muni Bond ETF	183.70
Nuveen High Yield Municipal Bond Fund	182.06
Oppenheimer Rochester High Yield Municipal Fund	170.79
St Paul Fire And Marine Insurance Company	166.16
State Farm Fire And Casualty Company	165.40
State Farm Mutual Automobile Insurance Company	148.98
T Rowe Price Summit Municipal Intermediate Fund	135.07
Teachers Insurance & Annuity Association of America	130.36
Travelers Indemnity Company	127.69
Vanguard California Intermediate Term Tax-Exempt	122.70
Vanguard High-Yield Tax-Exempt Fund	112.49
Vanguard Intermediate-Term Tax-Exempt Fund	112.40
Vanguard Limited-Term Tax-Exempt Fund	110.33
Vanguard New York Long-Term Tax-Exempt Fund	109.49

Sources: Bloomberg, epfrglobal.com, as of October 15, 2019

Monetizing Existing Assets Through Public-Private Partnerships

- Over $44 billion of capital has been raised for US infrastructure in 2018 from investors such as pension funds and private equity funds[1]
- This is in addition to the investor demand in the tax-exempt bond market, which is the traditional form of private finance for infrastructure in the US
- Investors are assuming risks such as operating, maintaining, and/or usage level for assets such as water, energy, parking, and telecommunications
- In concession agreements, governmental entities can maintain ownership of an asset
- Governmental entities can require investors to help meet resiliency goals, such as facilitating conversion to more sustainable energy sources
- Up-front payments from investors can facilitate investments in other priority areas

(1) Source: preqin.com, “2018 Fundraising Update”

Case Study: University of Iowa – Utility System P3 Project

On February 8, 2019, The University of Iowa announced the exploration of a public-private partnership ("P3") involving the University's utility system. Wells Fargo Securities is serving as Exclusive Advisor.

The University of Iowa

Announces P3 Exploration

WELLS FARGO Securities

Exclusive Advisor

Deal Summary

- UI will receive an upfront payment to be deposited into the University's endowment
- The University will maintain ownership of its utility system
- For the next 50 years, the University will pay the operating partner for the cost of utilities, as well as the cost of care, maintenance, and operation of the plant
- The University plans to have an agreement with a strategic partner signed by the end of the Fall 2019 semester

University Overview

- The University of Iowa ("UI") is a public research university, serving over 32,000 students with over 200 academic programs
- Established in 1847, UI is the state's oldest higher education institution
- UI is home to over 40 Pulitzer Prize winning faculty and alumni
- The institution is ranked one of the top 200 universities[1] in the world and one of the 100 "Most Innovative Universities"[2] in the world

Strategic Rationale

- UI is exploring opportunities, including this P3, that will materially impact its future through investments in its core mission
- UI is hoping to bridge a meaningful gap in available resources, similarly faced by institutions across the country
- The University is working to insulate itself from challenges in the higher education marketplace arising from demographic shifts
- UI will be able to operate the plant without burning coal no later than Jan 1, 2025 as a result of this strategic partnership
- The partner will explore new sources of bio-fuels, furthering UI's sustainability efforts

Sources:
(1) https://www.usnews.com/education/best-global-universities/rankings, accessed 5/21/2019;
(2) https://www.reuters.com/article/us-amers-reuters-ranking-innovative-univ/reuters-top-100-the-worlds-most-innovative-universities-2018-idUSKCN1ML0AZ, accessed 5/21/2019